Catalog 2022

Prices valid from January 01, 2022 to December 31, 2022

YOUR PARTNER FOR
MEASURING TECHNOLOGY & AUTOMATION

ACS
CONTROL-SYSTEM

This catalog covers the offer of the ACS-CONTROL-SYSTEM GmbH.
All devices in this catalog are CE certified.

The devices listed are just a selection from the entire product range.

Other device versions such as other mechanical connections, materials, etc. are of course possible. Our Customer Service Team will be happy to help.

We would be delighted if you could convince yourself of the quality and performance of our products and bring ACS products in your company to use.

This catalog supersedes all previous editions, which thereby become invalid.

The prices listed shall be net prices excluding VAT, ex work, inclusive packing and are valid from 01.01.2022 to 31.12.2022.

Transport packaging, taxes and shipping costs must be added.

Our minimum order is 50,00 €

If payment is made within 8 days of the invoice date
2% discount granted within 30 days, net cash.

Our general terms and conditions of sale and delivery shall apply exclusively, which we send to you on request.

Prices valid from 01.01.2022 to 31.12.2022

Subject to modifications

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Hydrocont®, Sonicont®, Hydrolog®,
Flowcont®, Precont®, Thermocont®

1. Fill level measurement

Contents

What to use where

Measuring principle	Hydrocont® HN4	Hydrocont® S50	Hydrocont® M/B	Hydrocont® HP4	Hydrocont® LK	Sonicont USN4	Sonicont USG2/USF2	Sonicont USP4	SAT, STK, SST, SHT, SNT, SBS, KAK, PUK	SLK, KLK	Vibrocont SCM-300	Vibrocont SHM-300	Silocont SIC-350	Capcont L, M
Hydrostatic	●	●	●	●	●									
Ultrasonic						●	●	●						
Conductive									●	●				
Mechanically													●	
vibration											●	●		
Capacitive														●
Function														
Level detection	●	●				●	●		●	●	●	●	●	●
Continuous measurement	●	●	●	●	●	●	●	●						
Media														
Liquids	●	●	●	●	●	●	●	●	●	●	●	●		●
Solids						●	●						●	●
Operating conditions														
Hazardous area		⟨Ex⟩	⟨Ex⟩				⟨Ex⟩		⟨Ex⟩	⟨Ex⟩			⟨Ex⟩	⟨Ex⟩
WHG area											●	●		
Aggressive media		●	●	●	●	●	●	●						
Coat forming media	●	●	●	●	●	●	●	●			●	●		
High dust													●	●
Non conductive media	●	●	●	●	●	●	●	●			●	●	●	●
Foaming	●	●	●	●	●			●	●	●	●	●		
Vacuum or Druckbeaufschl. container									●	●	●	●	●	●
Extreme climatic conditions					●	●	●		●	●	●	●	●	●
Hygienic sector	●	●	●							●		●		●

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Type	Hydrocont® S5N0	Hydrocont® S50	Hydrocont® B and ExB	Hydrocont® M and ExM	Hydrocont® LK	Hydrocont® HP4
Operating principle	**Hydrostatic measurment**	**Hydrostatic measurment**	**Hydrostatic measurment**	**Hydrostatic measurment**	**Hydrostatic measurment**	**Hydrostatic measurment**
			ø 40 mm 	ø 22 mm		
Design	compact version, cable-, tube extension	compact version, cable-, tube extension	slope probe	lope probe	slope probe, screw-in probe	slope probe
Areas of application	liquids, standard-measurements, hygienic applications	liquids, standard-measurements, hygienic applications	liquids water level measurement	liquids water level measurement	liquids water level measurement	liquids water level measurement
Measure ranges	-1...20 bar relative	-1...20 bar relative	0,05...20 bar 1...100 mWs	0,1...20 bar 1...100 mWs	0...1 bar	0...10 bar
Process connections	thread G½" G1½", milk tube, Varivent; DRD, Tri-Clamp, flange, groov nut adapter	thread G½" G1½", milk tube, Varivent; DRD, Tri-Clamp, flange, groov nut adapter	rope clamps screw plug , G1", G1½", Connection housing G1½", screw-in thread, G½", G1½"	rope clamps screw plug G1", G1½" Connection housing G1½"	rope clamps G½"	rope clamps screw plug
Process temperature/ Operating temperature	-40...+100°C, with temperature decoupler:up to 125°C	-40...+100°C, with temperature decoupler: up to 125°C	-20...+70°C	-20...+70°C	-20...+70°C	-20...+70°C
Process pressure	-	-	-	-	-	-
Sensor voltage/ Auxiliary power	(0)4...20 mA: 9...30V DC 0...10V: 14...30V DC	10,5...45 V DC	4...20mA: 11,5...45 V DC PFM: 13...30 V DC	4...20mA: 11...45 V DC ATEX: 12,5...25,2 V DC 0...10V: 14...30 V DC	4...20mA: 10...36 V DC 0...10V: 14...30 V DC	6...35 V DC
Output	(0)4...20 mA / 0...10V	4...20 mA 2-wire, 0...10 V 3-wire,	PFM-signal or 4...20 mA 2-wire non-adjustable	4...20 mA 2-wire non-adjustable	4...20 mA 2-wire 0...10 V 3-wire	RS 485 Modbus RTU
Switching points	0 /2x PNP/ 4x PNP	0 / 2x PNP	-	-	-	-
display	color display TFT	4-digit 7-Segment- LED-display	-	-	-	-
Certifications	-	ATEX	ATEX	ATEX	-	-
Accuracy	≤ ±0,05% / 0,1% / 0,2%	0,05% / 0,20%	0,10% / 0,20%	0,10% / 0,25%	0,10% / 0,25%	0,05% / 0,10% / 0,20%
Long term stability	≤ ±0,1% year	0,1% / year	0,1% / year	0,15% / year	0,15% / year	0,15% / year
Blocking distance	-	-	-	-	-	-
Medium contacting materials	1.4404 (316L), Al2O3, PE, FEP, gasket per choice	1.4404 (316L), Al2O3, PE, FEP, gasket per choice	1.4404 (316L), marine bronze, Hastelloy, PEEK, Titan, Al2O3, PE, FEP, gasket per choice	1.4404 (316L), Al2O3, PE, PUR, gasket per choice	1.4404 (316L), Al2O3, PE, PUR, gasket per choice	1.4404 (316L), Al2O3, PE, PUR, gasket per choice
Measuring cell	capacitive ceramic	capacitive ceramic	capacitive ceramic	capacitive ceramic	capacitive ceramic	capacitive ceramic
min DK	-	-	-	-	-	-
max. viscosity	-	-	-	-	-	-
Limits of use	-	-	-	-	-	-

Type	Sonicont® USN4	Sonicont® USG2/USF2	Sonicont® USP4
Operating principle	**ultrasonic measurement**	**ultrasonic measurement seperated**	
			
			28
Design	compact version	seperated version	slope probe
Areas of application	ultrasonic fill level sensor for solids and liquids	ultrasonic fill level sensor for solids and liquids	ultrasonic fill level sensor for solids and liquids
Measure ranges	liquids: 2 / 5 / 8 m solids: 1 / 2 / 3,5 m	liquids: 2 / 5 / 8 m solids: 1 / 2 / 3,5 m	liquids: 2 / 5 / 8 m solids: 1 / 2 / 3,5 m
Process connections	G1", G1½", G2"	G1", G1½", G2"	rope clamps screw plug
Process temperature/ Operating temperature	-40...+80°C	-40...+80°C	-20...+70°C
Process pressure	-0,3 up to +2 bar	-0,3 up to +2 bar	-0,3 up to +2 bar
Sensor voltage/ Auxiliary power	Output 0/4...20mA: 9...30 VDC Output 0...10 V: 14...30 VDC	Output 0/4...20mA: 9...30 VDC Output 0...10 V: 14...30 VDC	11...35 VDC
Output	(0)4...20 mA / 0...10V	(0)4...20 mA / 0...10V	4...20 mA 2-wire
Switching points	0/2x PNP / 4x PNP	0/2x relay /4x relay	-
display	color display TFT	color display TFT	-
Certifications	-	ATEX	-
Accuracy	0,2%	0,2%	0,2%
Long term stability	-	-	-
Blocking distance	< 0,2m / < 0,25m / <0,35 m	< 0,2m / < 0,25m / <0,35 m	< 0,1m / < 0,15m / <0,350m
Medium contacting materials	steel 1.4404 / PVDF / EPDM	steel 1.4404 / PVDF	PVDF / POM / PA / NBR / FPM / PE/ PUR
Measuring cell	-	-	-
min DK	-	-	-
max. viscosity	-	-	-
Limits of use	-	-	-

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Type Operating principle	SAT conductive probe	STK conductive probe	SLK conductive probe	SST conductive probe	SHT conductive probe	SNT conductive probe	SBS conductive probe
							
Design	rod probe with plastic screw-in thread, up to 7 rods	rod probe with metal screw-in thread, up to 5 rods	rod probe with hygienic connection, up to 5 rods	rope probe with plastic screw-in nut, up to 7 probes	cable probe to hang, up to 2 probes	rod probe with plug connection, up to 4 rods	rod probe with sealed cable, up to 5 rods
Areas of application	conductive liquids standard measurments	conductive liquids standard measurments, aggressive liquids	conductive liquids hygienic applications in breweries and dairies	conductive liquids standard measurments in wells and pools	conductive liquids submersible sensor	conductive liquids standard measurments	conductive liquids standard measurments
Measure ranges	-	-	-	-	-	-	-
Process connections	thread G½", G1" thread G1½", G2"	thread G½", G1" thread G1½", G2" DIN-flange DN 50	thread G½", G1", thread G1½", with front-flush gasket, Milk tube connection DIN 11851	thread G½", G1" thread G1½", G¾"	to slope on cable	thread G½", G1" thread G1½"	thread G½", G1" thread G1½"
Process temperature/ Operating temperature	-15...+150°C	-15...+150°C	-40...+130°C	-10...+120°C	-20...+100°C	-20...+100°C	-20...+100°C
Process pressure	-1...10 bar	-1...20 bar	-1...20 bar	pressureless	pressureless	0...10 bar	0...10 bar
Sensor voltage/ Auxiliary power	-	-	-	-	-	-	-
Output	-	-	-	-	-	-	-
Switching points	max. 7	max. 5	max. 4	max. 7	max. 1	max. 4	max. 5
display	-	-	-	-	-	-	-
Certifications	ATEX	ATEX	ATEX	-	-	-	-
Accuracy	-	-	-	-	-	-	-
Long term stability	-	-	-	-	-	-	-
Blocking distance	-	-	-	-	-	-	-
Medium contacting materials	1.4404 (316L), 1.4571 (316), Hastelloy, Titan, PA, E-CTFE (Halar), PP, POM, PTFE, NBR, FPM	1.4404 (316L), 1.4571 (316), Hastelloy, Titan, PA, E-CTFE (Halar), PTFE, NBR, FPM	1.4404 (316L), 1.4571 (316), Hastelloy, Titan, PA, E-CTFE (Halar), PTFE, NBR, FPM	1.4404 (316L), PTFE, POM, polypropylene, NBR	1.4404 (316L), PE, E-CTFE (Halar), polypropylene	1.4404 (316L), 1.4571 (316), PA, E-CTFE (Halar), PP, POM, PTFE, Hastelloy, Titan	1.4404 (316L), 1.4571 (316), PA, E-CTFE (Halar), PP, POM, PTFE, Hastelloy, Titan
Measuring cell	-	-	-	-	-	-	-
min DK	-	-	-	-	-	-	-
max. viscosity	-	-	-	-	-	-	-
Limits of use	-	-	-	-	-	-	-

Type Operating principle	PUK | PUKK electrode probe	KAK/KLK conductive compact probe	SRA/ExSRA-100-U0 electrode relay conductive	Vibrocont SCM-300 vibration limit switch	Vibrocont SHM-300 vibration limit switch
					
Design	electrode probe for floor mounting; seperated or compact electronics	rod probe with compact electronics, up to 3 rods universal voltage	B/H/T 22,5x114x99 mm	compact smallest dimensions	compact hygienic connections
Areas of application	leakage detection	conductive liquids limit switch two-point controller	for conductive liquids	liquids of all sorts standard measurments	liquids of all sorts hygienic applications
Measure ranges	-	0...200 kOhm	0...10 kOhm 0...1 kOhm, 0...200 kOhm	-	-
Process connections	-	thread G½", G1" thread G1½" Milk tube connection DIN 11851	-	thread G½", G¾", G1"	thread G¾", G1" front-flush DIN 11851, DN25/32, Tri-Clamp
Process temperature/ Operating temperature	-20...+60°C	-40...+100°C	-40...+85°C	-40...+100°C or -40...+150°C	-40...+150°C
Process pressure	-	0...20 bar	-	-1...40 bar	-1...40 bar
Sensor voltage/ Auxiliary power	AC voltage 24 V DC +/- 10% universal voltage 20...30 V AC, DC	AC voltage 24 V DC +/- 10% universal voltage 20...253 V AC, DC	universal voltage 20...253 V AC/DC	20...253 V AC 2-wire; 10...30 V DC PNP 3-wire	19...253 V AC 2-wire; 10...55 V DC PNP 3-wire
Output	1 PNP 1 relay	1 PNP 1 relay	1 / 2 relay	1x PNP 1x Relay	1x PNP 1x Relay
Switching points	1 switching point	max. 2	max 2	1	1
display	-	-	LED	LED	LED
Certifications	-	-	ATEX	WHG	EHEDG-certificate, 3-A, WHG
Accuracy	-	-	-	-	-
Long term stability	-	-	-	-	-
Blocking distance	-	-	-	-	-
Medium contacting materials	1.4404 (316L), POM, FPM, PA, NBR	1.4404 (316L), 1.4571 (316), Hastelloy, Titan, PA, E-CTFE (Halar), FPM, EPDM	-	1.4404 (316L)	1.4404 (316L)
Measuring cell	-	-	-	-	-
min DK	-	-	-	-	-
max. viscosity	-	-	-	-	-
Limits of use	-	-	isolating liquids	very viscous media (viscosity max. 10.000 cSt)	very viscous media (viscosity max. 10.000 cSt)

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Type Operating principle	Silocont SIC-350 rotary paddle switch	Capcont M capacitive limit switch	Capcont L capacitive limit switch	Mycrocont MCN4 capacitive level controller
				
Design	Cable extension compact	compact	compact tube extension	compact
Areas of application	solids of all sorts	liquids and solids of all sorts	liquids and solids of all sorts	conductive liquids standard measurement, coat forming media, hygienic applications
Measure ranges	-	-	-	-
Process connections	thread PBT/303 NPT 1-½"; NPT 1-¼"; G 1-½"	thread M18, G½"	sliding sleeve G½" or thread G½"	standard thread G½" elastomerfrei PEEK Spitze
Process temperature/ Operating temperature	-20...+80°C	-30...+125°C	LS -40...+100°C LL -40...+140°C	0... +100°C
Process pressure	0,5...2,5 bar abs. / ≤ 1,5 bar Überdruck	-1...10 bar	LS -1...+1 bar LL -1...+10 bar	max. 10 bar
Sensor voltage/ Auxiliary power	20-28VDC; 24VAC; 115VAC; 230VAC	10...35 V DC	10...35 V DC	Ub = 24V +/-20% (18...32VDC)
Output	micro switch with switch contact max. 6 A/250 VAC 100 mA	PNP (NO/NC)	PNP (NO/NC)	1x PNP
Switching points	1	1	1	-
display	-	LED	LED	-
Certifications	ATEX II 1/3 D; CSA DIP/ II, III/1/E-G (applied for!); FM DIP/ II, III/1/E-G	-	ATEX	EHDEG
Accuracy	-	-	-	-
Long term stability	-	-	-	-
Blocking distance	-	-	-	-
Medium contacting materials	1.4305	1.4404 (316L), 1.4571 (316Ti), PTFE, gasket per choice	1.4404 (316L), 1.4571 (316Ti), PTFE-TFM / PEEK LS -> gasket EPDM, FPM	Stainless steel PEEK
Measuring cell	-	-	-	-
min DK	-	> 1,8	> 1,8	> 2,0
max. viscosity	-	-	-	-
Limits of use	-	-	-	-

Hydrocont® HN4

Hydrostatic level transmitter / level switch with data memory for general applications
Monitoring of levels in liquids

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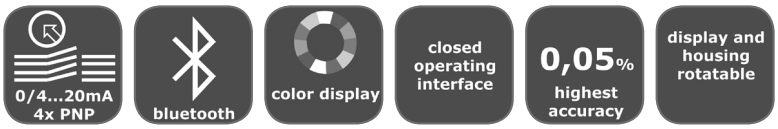
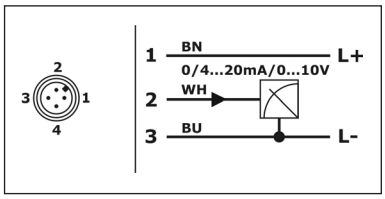
Technical data

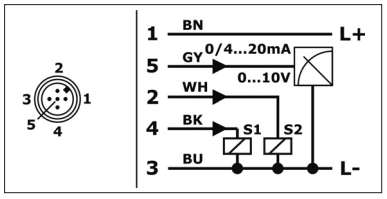


Supply voltage:	Setting output 0/4...20 mA: 9..30 VDC, reverse polarity protected Setting output 0…10 V: 14..30 VDC, reverse polarity protected
Supply current:	≤ 50mA up to ≤ 100mA (depending on output, bluetooth ON/Off, US)
Start-up time:	≤ 1s
Step response time:	≤ 15 ms (td = 0s)
Operating range:	Analogue output – current 0…20mA IOut: 0…20,5mA, max. 22mA Analogue output – current 4…20mA IOut: 3,8…20,5mA, min. 3,6mA, max. 22mA Analogue output – voltage 0…10V UOut: 0 ... 10,5 V, max. 11 V
Switch output PNP S1 / S2 / S3 / S4	
Function:	PNP switch to +L
Output current:	0… ≤ 200mA current limited, short circuit protected
Measuring accuracy	
Characteristic deviation:	≤ ±0,05% / ±0,1% / ±0,2% FS
Long term drift:	≤ ± 0,1% FS / year not cumulative
Temperature deviation	Zero: ≤ ±0,015% FS 2) / K, max. ±0,75 % (-20°C…+80°C) Span: ≤ ±0,015% FS 2) / K, max. ±0,5 % (-20°C…+80°C / > 0,4 bar), max. ±0,8 % (-20°C…+80°C / ≤ 0,4 bar)
Materials	
Diaphragm: (process wetted)	Process connection Type 7 – G1½" / Sensor Ø40mm: Ceramic Al_2O_3 – 99,9% Process connection Type 8 – G¾" / Sensor Ø22mm Measuring range ≤ 1bar: Ceramic Al_2O_3 – 99,9% Process connection Type 8 – G¾" / Sensor Ø22mm Measuring range ≥ 1,6bar: Ceramic Al_2O_3 – 96%
Process connection: (process wetted)	Steel 1.4404/316L / Steel 1.4571/316Ti
Terminal enclosure:	CrNi-steel
Gaskets (process wetted):	FPM – fluorelastomere (e.g. Viton®) EPDM – ethylene-propylene-dienmonomere, FDA-listed FFKM – perfluorelastomere (e.g. Kalrez®) FFKM hd – perfluorelastomere high density
Environmental conditions	
Environmental temperature:	– 20°C...+70°C
Process temperature:	-40...+100°C (extended -40...+125°C)
Process pressure:	– 1 bar ...20 bar (depending on process connection)
Protection:	IP65/IP67 EN/IEC 60529

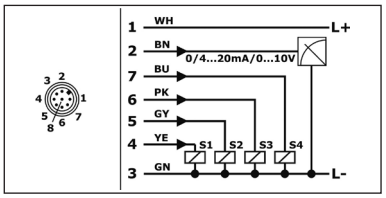
connection



Electronic output type M
1x signal 0/4…20mA-0…10V, supply 24VDC



Electronic output type K
1x signal 0/4…20mA-0…10V, 2x switch PNP, supply 24VDC



Electronic output type R
1x signal 0/4…20mA-0…10V, 4x switch PNP, supply 24VDC

Application

The device is an electronic level transmitter / level switch for monitoring, control as well as continuous measurement of levels in liquids.
Due to the device construction with measuring ranges from -1 bar to 20 bar, measuring spans from 50 mbar to 20 bar, process temperatures from –40°C to +125°C and process materials Al2O3-ceramic / CrNi-steel as well as the availability of the two construction types extension cable (e.g. at limited installation situations, long sensor length) or extension tube (e.g. at strong turbulences, aggressive media, high temperatures) and the availability of industrial standard process connections like thread connection ISO 228-1 the device is especially suitable for the use for level and volume measurement, flow measurement at open channels and measuring weirs and for general applications in water and waste water sector machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry and environmental technology.
The device is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether low temperatures when used outdoors, high shock and vibration or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS-free resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or factory certifications for drink water resp. food suitability.

Hydrocont® HN4

Hydrostatic level transmitter / level switch with data memory for general applications
Monitoring of levels in liquids

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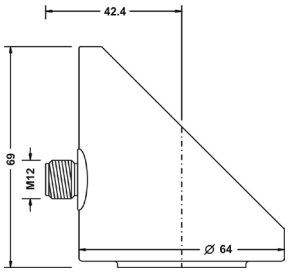
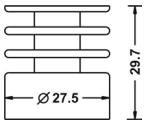
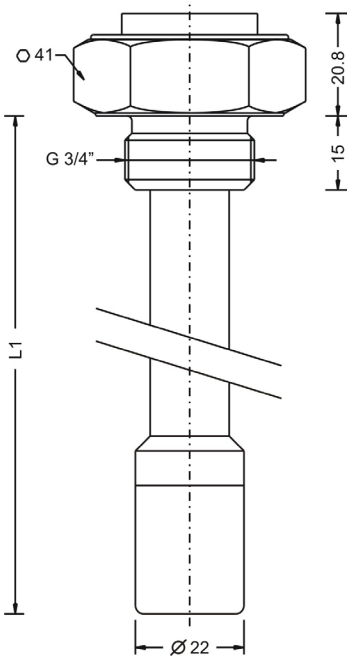
Terminal enclosure



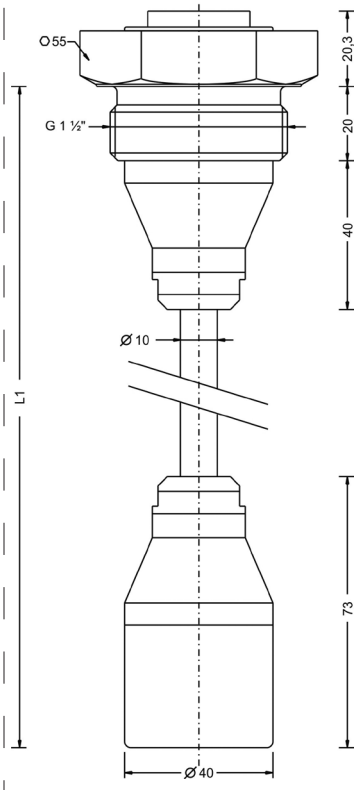
Temperature decoupler



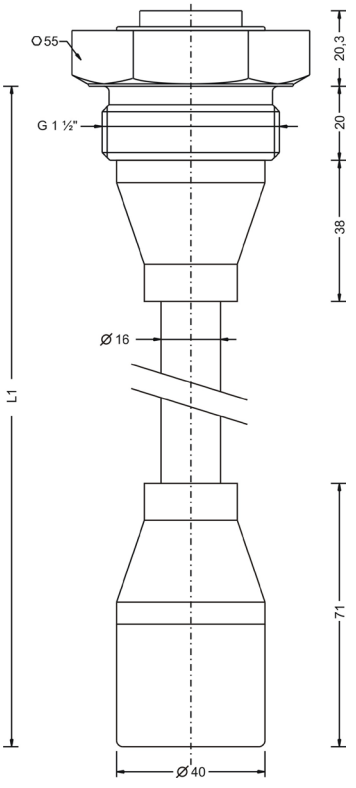
Type 8 – Thread ISO 228-1 – G¾"A Probe extension type F – Tube Ø16mm / Probe Ø22mm
Length L1 ≤ 2000 mm



Type 7 – Thread ISO 228-1 – G1½"A Probe extension type A / E – Extension cable / Probe Ø40mm
Length L1 ≤ 100 000 mm



Type 7 – Thread ISO 228-1 – G1½"A Probe extension type D – Tube Ø16mm / Probe Ø40mm
Length L1 ≤ 3000 mm



Hydrocont® HN4

Hydrostatic level transmitter / level switch with data memory for general applications
Monitoring of levels in liquids

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Basic price

Type
HN4R Probe extension tube
HN4T Probe extension cable

Measuring system – material diaphragm (process wetted) **/ sensor type**
C Ceramic Al2O3 96%/99,7%/99,9% / capacitive

Approval
S Standard

Process connection
7 Thread ISO 228-1 – G1½"A
8 Thread ISO 228-1 – G¾"A
Y others

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®)
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed
4 FFKM - perfluorelastomere (e.g. Kalrez®)
6 FFKM hd - perfluorelastomere high density - gas applications
Y others

Material process connection (process wetted)
V CrNi-steel

Material terminal enclosure
C CrNi-steel

Measuring range
26 0...50 mbar
01 0...100 mbar
02 0...200 mbar
03 0...400 mbar
04 0...600 mbar
05 0...1 bar
06 0...1,6 bar
07 0...2,5 bar
08 0...4 bar
09 0...6 bar
10 0...10 bar
11 0...16 bar
12 0...20 bar
15 -100...0 mbar
16 -1...0 bar
17 -1...+1 bar
18 -100...+100 mbar
YY Special measuring range

Electronic – output
M 1x signal 0/4...20mA-0...10V, supply 24VDC
K 1x signal 0/4...20mA-0...10V, 2x switch PNP, supply 24VDC
R 1x signal 0/4...20mA-0...10V, 4x switch PNP, supply 24VDC

Electronic – function
0 without
1 Bluetooth-Interface
2 Data logger with time stamp, battery powered
3 Bluetooth-Interface / Data logger with time stamp, battery powered
Y others

Process temperature
0 Standard -40°C...+100°C
1 Extended -40°C...+125°C, temperature decoupler
5 Reduced -20°C...+70°C, probe extension – extension cable

Pressure type
R Gauge pressure

Measuring system – accuracy
1 0,2%
3 0,1% (FS ≥ 100mbar), linearization protocol
6 Xcellence – 0,05% (FS ≥ 200mbar), linearization protocol

Electrical connection
S Plug M12

Probe extension
(Price per started 100 mm)
A Extension cable PE / Probe Ø40mm
E Extension cable FEP / Probe Ø40mm
D Tube Ø16mm / Probe Ø40mm
F Tube Ø16mm / Probe Ø22mm
Y others

Length L1 / mm

Hydrocont®	HN4R/ HN4T	C	S			V	C				R		S		

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Hydrocont® HN4

Hydrostatic level transmitter / level switch with data memory for general applications
Monitoring of levels in liquids

1 / 01.22

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .

ML Measurement point designation / TAG – Laser marking . . . . . .

KF Configuration / Preset . . . . . .

MZ Material test certificate – EN10204 3.1 . . . . . .

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
LKZ0805PUR-AS	Connection cable 5 m, 8-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

Hydrocont® S50

Hydrostatic filling level measurement, suitable also for Ex areas, with dry capacitive measurement system, with display, 4-20mA or 0-10V output and 2 pnp switching outputs

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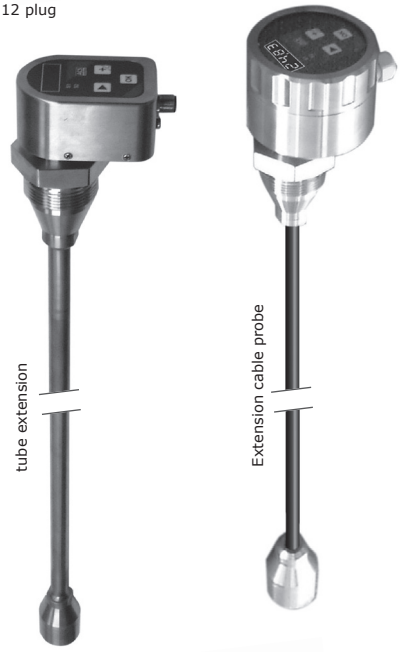
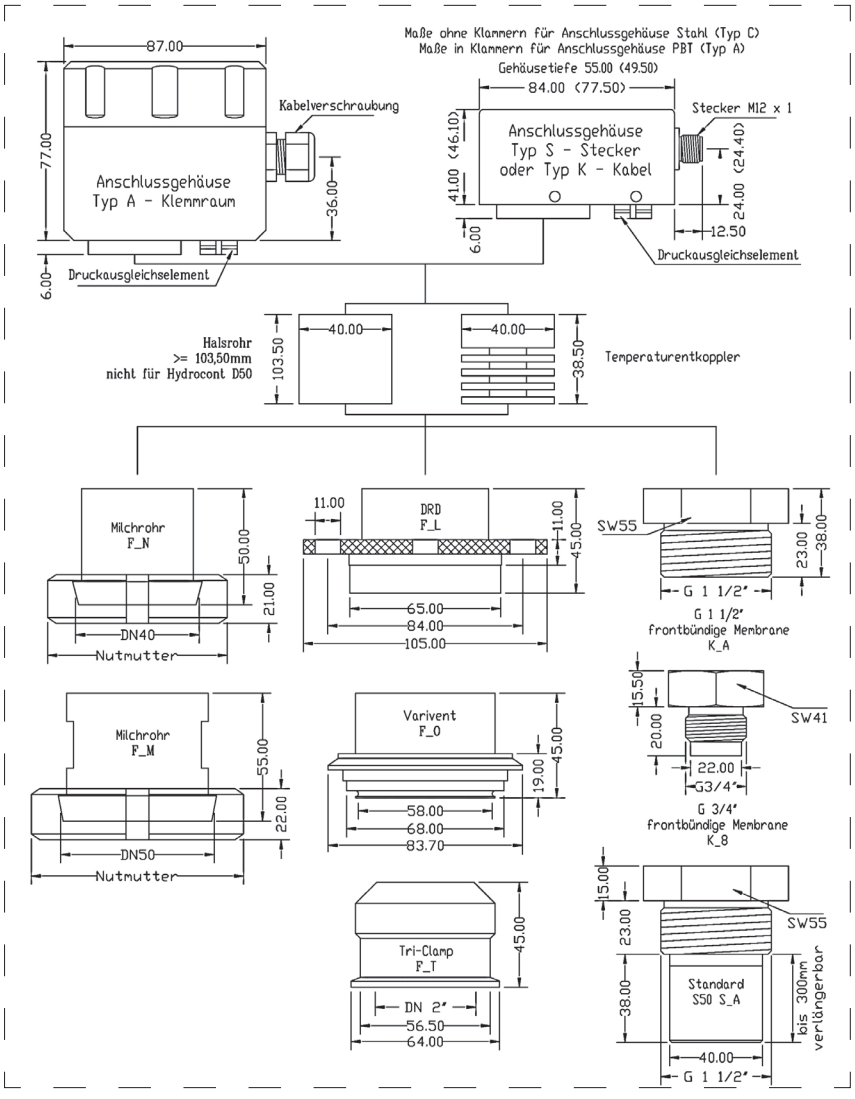
Technical data

Output variations A/B/C/D:	4..20 mA, 2-wire
Output variations E/F/G/H:	0...10 V, 3-wire
Permitted supply voltage:	Variation C/D: 10,5 V up to 45 V DC
Variation A/B/E/F/G/H:	14,5 V up to 45 V DC
Residual ripple:	≤ 2 Vss
Switching outputs (S1 / S2):	2x PNP switching on +VS
Output current:	> 250 mA, current limited, short circuit predected
Measuring accuracy	
Temperature deviation:	≤ 0,1% / 10 K of the nominal range
Deviation in characteristics:	≤ 0,1% / 0,2% of the nominal range (depending on
the order code)	
Calibration deviation:	≤ 0,05% of the nominal range
Long term drift:	≤ 0,1% / year of the nominal range
Influence of supply voltage:	≤ 0,02% / 10 V of the nominal range
Resolution:	better 1 µA resp. 0,5 mV (16 Bit = 65536 steps)
Material	
Membrane:	Ceramic AL2O3 96% resp. 99,9%
Process connection:	Steel 1.4404 / otherson request
Temperaturtrennstück:	Steel 1.4404 / otherson request
Gaskets:	Viton® / EPDM Neoprene® / Perfluorelastomer
Connection housing:	Steel 1.4301 / POM - Delrin® / PBT
Extension cable:	PE/FEP
Environmental conditions	
Medium temperature:	-40°C...+125°C (for 1h 140°C)
with extension cable -20°C...+70°C	
Ambient / storage temperature:	-40°C...+85°C; with extension cable -20°C...+70°C
Protection:	IP65 / IP67

M12 plug



Terminal box



Application

The devices of the series Hydrocont® S50 with integrated digital evaluation electronic are compact sensors for measuring and monitoring of fill levels. The excellent characteristics like highest strength against pressure and pressure blows, high resistance against chemicals and corrosion, very good insensitiveness against temperature shocks and EM interference, highest accuracy and long term stability and also low influence of temperature makes it possible to use the sensor in all pressureless containers for liquid medium like water, waste water, solvents, oil, sludge, grease, cleaning agents, etc.
The level measurement system Hydrocont® S50 is built in the wall of the medium container. The medium contacts directly the ceramic membrane of the sensor without using a pressure mediator liquid and causes there a deflection of the membrane because of the hydrostatic pressure of the medium.
At the maximum deflection the membrane contacts a robust ceramic carrier and because of this, the membrane come through over pressure of e.g. 80-times of nominal load at a sensor with a pressure range of 0...50 mbar without damage. The fill level proportional pressure signal of the ceramic membrane is recorded from a processor with high resolution, adjusted according to the settings and converted into a high resolution output signal of 4...20mA or 0...10V. By using 3 keys and an LED display the sensor measurement range, the display, the PNP-switching outputs and the damping can be adjusted or the behaviour in the case of failure and the release of the fast adjustment can be set.

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Hydrocont® S50

Hydrostatic filling level measurement, suitable also for Ex areas, with dry capacitive measurement system, with display, 4-20mA or 0-10V output and 2 pnp switching outputs

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Basic price

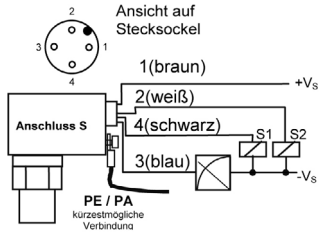
Equipment

Equipment like Hydrocont® HN4 page 12

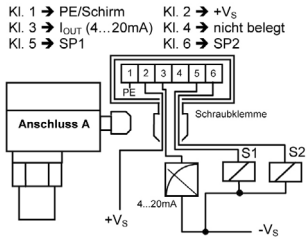
Welded flanges page 64

Connection

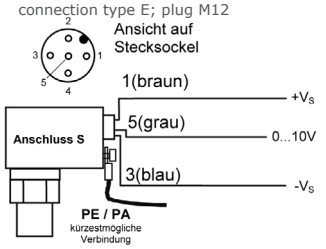
connection type A; plug M12



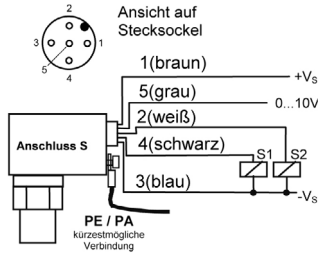
connection type A; terminal box



connection type E; plug M12



connection type E; terminal box



Type

S50 standard
ExS50 ATEX II 1/2 G Ex ia IIC T4 Ga/Gb (not for construction form type W – extension cable probe)
XDS50 ATEX II 1/2 D Ex ia IIIC T60°C/T102°C Da/Db + ATEX II 1/2 G Ex ia IIC T4 Ga/Gb

Construction form

S Standard – process connection type A / 6 – Probe extension type C
K Short form flush-mounted – process connection type 8 / 9 / A / 6
T Extension cable – Probe extension type A / E
R Tube extension – Probe extension Type D / F
F Flush-mounted - process connection type N / M / O / L / R / F / G / H / J / T / B
H High-Temperature –10..+200°C process diaphragm seal metallic membrane
W Extension cable probe / Field enclosure
Y Special construction

Measuring membrane – material / accuracy (medium contact)

H Ceramic 99,9%, capacitive / 0,2%
(Probe extension type F >> membrane ceramic 96%)
L Ceramic 99,9%, capacitive / 0,1%, linearization protocol; Measuring span ≥ 0,1 bar
(Probe extension type F >> membrane ceramic 96%)
M Xcellence - ceramic 99,9%, capacitive / 0,05%, linearization protocol
(Measuring span ≥ 0,2 bar; not for process connection type 9;
Construction form short form type K – Process connection type 8 >> membrane ceramic 96%;
Construction form tube extension type R – Probe extension type F >> membrane ceramic 96%)

Process connection

8 G¾" A, ISO228-1
9 G½" A, ISO 228-1
6 G1½" A, ISO 228-1, PEEK
A G1½" A, ISO 228-1
M Milk tube DN 50, PN40 DIN 11851
N Milk tube DN 40, PN25 DIN 11851
O Varivent® N, Ø68 mm, DN40-125 (1½"-6"), PN 40
L DRD 65 mm DN 50, PN 25
T Tri-Clamp 2" (ISO 2852 DN51 / DIN32767 DN50), PN16/40
R Flange DIN EN 1092-1, A (B - DIN 2527), DN25, PN10-40
F Flange DIN EN 1092-1, A (B - DIN 2527), DN40, PN10-40
G Flange DIN EN 1092-1, A (B - DIN 2527), DN50, PN10-40
H Flange DIN EN 1092-1, A (B - DIN 2527), DN80, PN10-40
B Nut groove adapter Ø44mm
W Extension cable probe Ø40mm

Electronic - output

A 2-wire, signal 4...20mA, 2x PNP, LED display, keypad
B 2-wire, signal 4...20mA, LED display, keypad
C 2-wire, signal 4...20mA, keypad
D 2-wire, signal 4...20mA
E 3-wire, signal 0...10V, 2x PNP, LED display, keypad
F 3-wire, signal 0...10V, LED display, keypad
G 3-wire, signal 0...10V, keypad
H 3-wire, signal 0...10V

Measuring range

0 0...200 mbar
1 0...400 mbar
2 0...1 bar
3 0...2 bar
4 0...4 bar
5 0...10 bar
6 0...20 bar
7 -1...+1 bar
8 0...50 mbar
9 0...100 mbar.
Y Special measuring range

Material terminal enclosure

A PBT – polybutyleneterephtalat, not for Electrical connection Type A
C CrNi-steel
D POM - polyoxymethylene (Delrin®), only for Electrical connection Type A
W PC – polycarbonate or PS – polystyrene, only for construction form type W

Electrical connection

S Plug M12
K Cable, L = 2m
A Terminal box

Material process connection / process temperature

1 Steel 1.4404/316L / -40°C...+100°C.
2 Steel 1.4404/316L / -40°C...+125°C, temperature decoupler
6 PEEK / standard, -40°C...+100°C
Y Others

Material gaskets (process wetted)

1 FPM – fluorelastomere (Viton®)
2 CR – chloroprene-rubber (Neopren®)
3 EPDM – ethylene-propylene-dienmonomere – food applications
4 FFKM – perfluorelastomere (Kalrez®), not for type R / T / S / W
7 FFKM – perfluorelastomere (Kalrez®) – type R / T / S / W.
5 welded – construction form type H.
6 FFKM hd – perfluorelastomere high density – gas applications
8 FFKM hd – perfluorelastomere high density – type R / T / S / W.

Probe extension

(Price per started 100 mm)

A Extension cable PE / -20°C..+70°C (not for XDS50)
C Tube Ø40 mm / probe Ø40 mm
D Tube Ø16 mm / probe Ø40 mm
E Extension cable FEP / -20°C..+70°C
F Tube Ø16 mm / probe Ø22 mm
Y Special construction
0 No probe extension

Order code

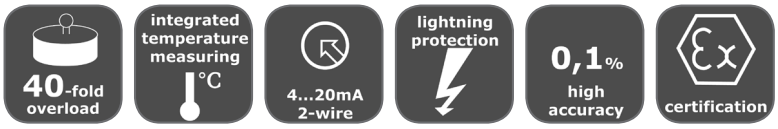
Hydrocont® ____ mm **Length L1 / mm (probe)**

Hydrocont® B and Hydrocont® ExB

Hydrostatic filling level sensor – Ø 40mm
for continuous measurement of filling levels and temperatures in liquids, level probe

1 / 01.22

Technical data

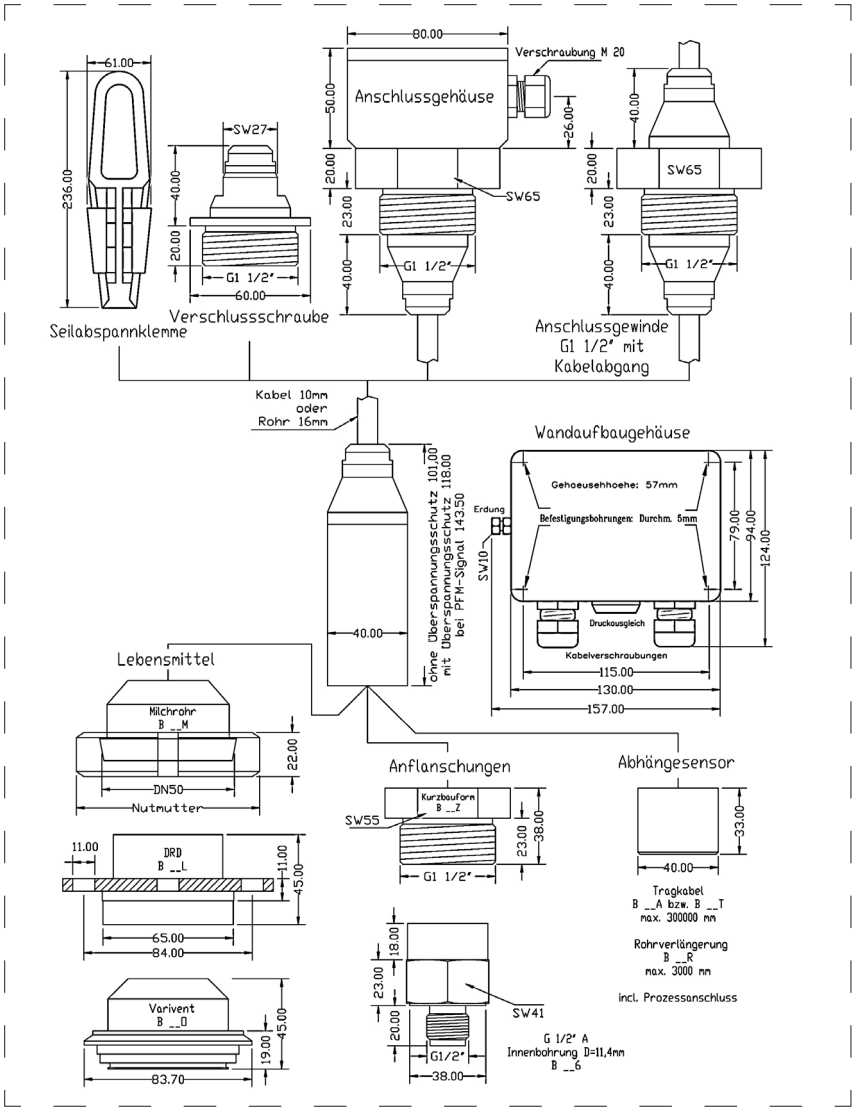


Output:	signal 4-20 mA 2-wire
Permitted supply voltage:	11.5 V to 45 V DC for Ex version 11.5 V to 30 V DC
Ripple:	≤ 2 Vpp (condition: within the permitted supply voltage range)
Temperature deviation:	≤ 0.1% / 10 K of the nominal measurement range
Accuracy:	≤ 0.1% / 0.2% of nominal measurement range (see order code)
Calibration deviation:	≤ 0.05% of the nominal measurement range
Long term drift:	≤ 0.1% / year of nominal measurement range
Supply voltage influence:	≤ 0.02% / 10V of nominal measurement range
Resolution:	infinite, because analog measurement electronics
Delay time output:	T90 < 100us
Surge Protection:	Max signal voltage: 30V (peak value; to groand)
Nominal discharge current:	2 500A (wave 8/20µS)
Temperature-measuring resistance:	Pt100 class B 3-wire connection 0 ° C - Deviation + / - 0.30 K End point error + / - (0.30 K + 0.005 K per K DT0 ° C) (Optional built-in wall mounting case Pt100 - Transmitter type e.g. KTM, which is adjusted according to customer specification)
Protection:	Suspension sensor IP68 End Cap / Connector Housing IP67 Wall-mounted housing IP65
Membrane material:	AL2O3 96%, High Purity 99.9%
Material slopes sensor:	Steel 1.4404
Cap material:	Steel 1.4404
Sealing material:	FPM (Viton®) / EPDM / Neoprene® / Kalrez®
Material Connection housing:	Polyacetal POM (Delrin), screw steel 1.4404
Material carrying cable:	PE / PUR / FEP
Allowable product temperature:	-20°C ... +70°C

W - Wall-mounted casing

S | U - Straining clamp

V - Sealing screw G1½"



ø40 mm

Application

The device Hydrocont® B with integrated analogue evaluation electronic is a compact sensor for continuous measurement of fill levels in liquid media. This includes e.g. the registration of levels in reservoirs, clarification basins, deep wells etc., but also the fill level measurement in closed containers.
For applications, where food or drink water suitability is necessary, a corresponding put in variant can be ordered.

The excellent characteristics like highest strength against pressure and pressure blows, high resistance against chemicals and corrosion, very good insensitiveness against temperature shocks and EM interference, highest accuracy and long term stability and also low influence of temperature makes it possible to use the sensor in all containers for liquid medium like water, waste water, solvents, oil, sludge, grease, cleaning agents, etc. In addition to the level measurement the temperature of the medium can be measured by a Pt100 resistor, that is integrated in the sensor.

Hydrocont® B and Hydrocont® ExB

Hydrostatic filling level sensor – Ø 40mm
for continuous measurement of filling levels and temperatures in liquids, level probe

1 / 01.22

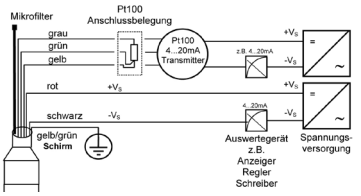
Basic price . . . . . .

Equipment

Equipment
page 64

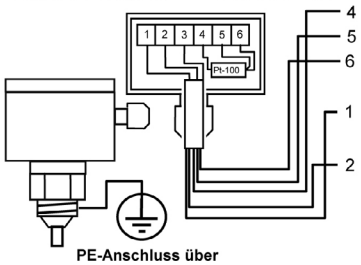
Connection

Connection in Non-Ex-Area



Connection Type A Terminal Housing

Klemme 1 → +V_S **Klemme 4 → Pt-100**
Klemme 2 → I_{OUT} (4...20mA) **Klemme 5 → Pt-100**
Klemme 3 → PE/Schirm **Klemme 6 → Pt-100**



PE-Anschluss über Einschraubgewinde

Type

B Standard . . . . . .
Ex1B ATEX II 2 G Ex ib IIC T4 . . . . . .
Ex0B ATEX II 1/2 G Ex ia IIC T4 . . . . . .

Wall installation housing

W Wall installation housing . . . . . .
0 Without wall installation housing . . . . . .

Put-in device – process connection

0 Without put-in device . . . . . .
S Cable clamp fixing steel, hot galvanized . . . . . .
U Cable clamp fixing CrNi-steel . . . . . .
V Screw plug G 1½" DIN EN ISO228-1 steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti). . . . .
G Connection housing G 1½" DIN EN ISO228-1 . . . . . .
H Connection thread G 1½" DIN EN ISO228-1
probe cable connection specify cable length. . . . . .

Variant sensor – process connection

A Standard . . . . . .
T Food and drink water suitability of all medium contacting materials. . . . . .
R Tube prolongation Ø 16mm
(only for ype G or type H) . . . . . .
Z G 1½" B DIN EN ISO228-1. . . . . .
6 G ½" B DIN EN ISO228-1 inside drill 11,4 mm . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
L DRD – DN50 / Ø65mm, PN25 . . . . . .
O Varivent® – Type N / tube DN40-162 / 1½"-6", PN40. . . . . .

Electronic – output

0 2-wire-technology 4...20 mA. . . . . .
P 2-wire-technology PFM 90...520 Hz (not for Ex). . . . . .

Meausure range in bar

8 0...100 mbar
0 0...200 mbar
1 0...400 mbar
6 0...600 mbar
2 0...1000 mbar
3 0...2000 mbar
4 0...4000 mbar
7 0...6000 mbar
9 0...5000 mbar
5 0...10000 mbar
P 0...50 mbar
Z 0...20 bar

Meausure range in m water column

A 0...1 m water column. . . . . .
B 0...2 m water column. . . . . .
C 0...4 m water column. . . . . .
M 0...5 m water column. . . . . .
D 0...6 m water column. . . . . .
E 0...10 m water column . . . . . .
F 0...20 m water column . . . . . .
L 0...25 m water column. . . . . .
G 0...40 m water column. . . . . .
J 0...50 m water column. . . . . .
K 0....60 m water column . . . . . .
H 0...100 m water column. . . . . .
Y Special measuring range. . . . . .

Accuracy measuring system

H 0,2% ceramic AL_2O_3 99,9% (highly clean) . . . . . .
L 0,1% Linearization protocol ceramic AL_2O_3 99,9% (highly clean). . . . .

Over voltage protection

0 Without over voltage protection . . . . . .
P Integrated over voltage protection not for variant type Ex0B . . . .

Temperature sensor

0 Without temperature sensor. . . . . .
1 Integrated temperature sensor Pt100 . . . . . .
2 Integrated temperature sensor Pt100 with an installed Pt100
. . . . . transmitter in the wall installation housing
specify temperature measurement range separately . . . . . .

Material probe (medium contact)

1 Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti) . . . . .
3 Navy bronze CU SN 12 . . . . . .
4 Hastelloy C . . . . . .
6 PEEK . . . . . .
7 Titan . . . . . .

Material gaskets (medium contact)

1 FPM fluorelastomere (Viton®) . . . . . .
2 CR chloroprene-rubber (Neopren®) . . . . . .
3 EPDM etylene-propylene-dienmonomere for food applications. . . . .
4 FFKM perfluorelastomere (Kalrez®) . . . . . .
6 FFKM perfluorelastomere high density for gas application . . . . . .
7 FFKM perfluorelastomere (Kalrez®) – construction form type R/T/S
8 FFKM perfluorelastomere high density–construction form typeR /T/S.

Material probe prolongation

(medium contact, price per 100mm)
A PE Polyethylene. . . . . .
E FEP Fluorinated Ethylene Propylene . . . . . .
D Tube Ø 16mm steel 1.4404 (AISI 316L) /
1.4571 (AISI 316Ti). . . . . .

Sensor length

incl. Process connection:
mm measure in mm

Order code

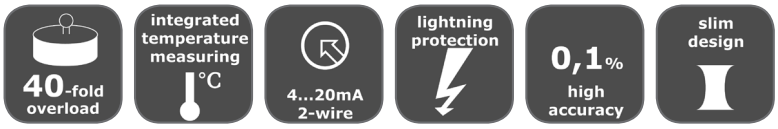
Hydrocont®

Hydrocont® M and Hydrocont® ExM

Hydrostatic filling level sensor – Ø 22mm
for continuous measurement of filling levels and temperatures in liquids,
integrated temperature measurement with Pt100, level probe

1 / 01.22

Technical data



Output:	Signal 4...20 mA, 2-wire	
Residual ripple:	≤ 2 Vss (Condition: within the permitted supply voltage range)	
Permitted supply voltage:	Output signal 4...20mA: 11 V up to 45 V DC	
Output signal 10...10 V: 14...30 V DC		
at Ex-Variation 12,5 V up to 25,2 V DC		
Measuring accuracy		
Temperature deviation:	≤ 0,15% / 10 K of the nominal range	
Deviation in characteristics:	≤ 0,1% / 0,25% of the nominal range (depending on the order code)	
Calibration deviation:	≤ 0,05% of the nominal range	
Long term drift:	≤ 0,15% / year of the nominal range	
Influence of supply voltage:	≤ 0,02% / 10 V of the nominal range	
Resolution:	infinite, because analog measurement electronics	
Material		
Membrane:	Ceramic AL2O3 96%	
Material slopes sensor:	Steel 1.4404	
Sealing screw:	Steel 1.4404	
Gaskets:	FPM (Viton®) / EPDM / Neoprene®	
Connection housing:	Polyacetal POM (Delrin), screw-in thread aus Steel 1.4404	
Wall-mounted casing:	PC / PS	
Extension cable:	PE / PUR	
Environmental conditions		
Permitted filling temperature:	-20°C...+70°C	
Protection:	Material slopes sensor	IP68
	Sealing screw / Connection housing	IP67
	Wall-mounted casing	IP65

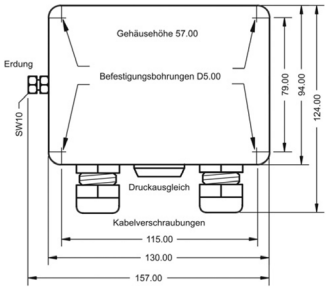
W - Wall-mounted casing

S | U - Straining clamp

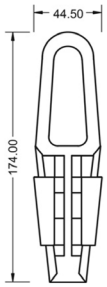
T - Sealing screw G1½"
W - Sealing screw G1"

ø22 mm

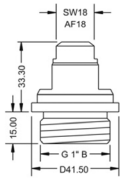
Wandaufbaugehäuse 130 x 98mm



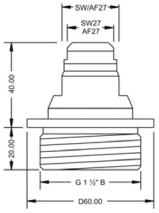
Seilspannklemme D8mm

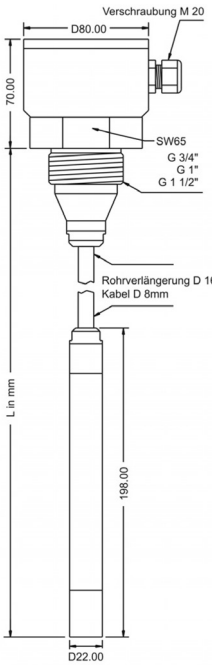


Verschlussschraube G 1“

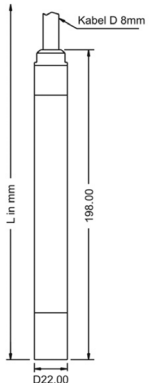


Verschlussschraube G 1 ½“





Sensor – ohne Anschlussgehäuse



Application

The filling level sensor Hydrocont® M with integrated analogue evaluation electronic is a compact transmitter for continuous measuring of fill levels and temperatures in liquid media.
This includes e.g. the measurement of levels in reservoirs, clarification basins, deep wells etc., but also the fill level measurement in closed containers.
For applications, where food or drink water suitability is necessary, a corresponding variant can be ordered.
The excellent characteristics like highest strength against pressure and pressure blows, high resistance against chemicals and corrosion, very good insensitiveness against temperature shocks and EM interference, highest accuracy and long term stability and also low influence of temperature makes it possible to use the sensor in various applications with liquid media like water, waste water, solvents, oil, sludge, grease, cleaning agents, etc.
Besides the level measurement it is possible to get the temperature of the medium by an integrated Pt100 resistor in parallel with this sensor.

Hydrocont® M and Hydrocont® ExM

Hydrostatic filling level sensor – Ø 22mm
for continuous measurement of filling levels and temperatures in liquids,
integrated temperature measurement with Pt100, level probe

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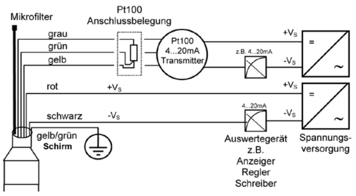
Equipment

Equipment page 64

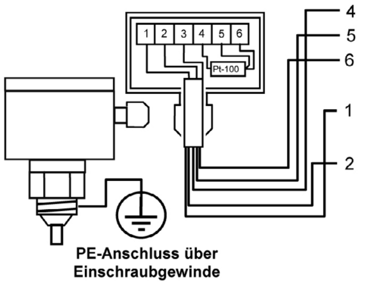
Connection

Connection in Non-Ex-Area



Connection Type A Terminal Housing

Klemme 1 → $+V_S$
Klemme 2 → I_{OUT} (4...20mA)
Klemme 3 → PE/Schirm
Klemme 4 → Pt-100
Klemme 5 → Pt-100
Klemme 6 → Pt-100



Basic price . . . .

Type
- M Standard . . . .
- Ex0M II 1/2 G Ex ia IIC T4 for Ex zone 0 . . . .
- Ex1M II 2 G Ex ib IIC T4 for Ex zone 1 . . . .

Variant wall installation housing
- W Wall installation housing . . . .
- 0 Without wall installation housing . . . .

Put-in device / process connection
- 0 Without put-in device . . . .
- S Cable clamp fixing steel, hot galvanized . . . .
- U Cable clamp fixing CrNi-steel . . . .
- W Screw plug G 1" ISO228-1 steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti). . . . .
- T Screw plug G 1½" ISO228-1 steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti) . . . .
- G Connection housing G 1½" ISO288-1 steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti) . . . .
- 8 Connection housing G ¾" ISO288-1 steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti) . . . . .
- 9 Connection housing G 1" ISO288-1 steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti). . . . . .

Variant sensor
- S Standard . . . .
- T Food and drink water suitability of all medium contacting materials. . . . .
- R Tube prolongation Ø 16mm only for connection housing – type G / 8 / 9 . . . .

Transmitter electronic
- 0 2-wire-technology 4...20mA . . . .
- B 3-wire-technology 0...10 VDC . . . .

Measure range in bar
- 8 0...100 mbar
- 0 0...200 mbar
- 1 0...400 mbar
- 6 0...600 mbar
- 2 0...1000 mbar
- 3 0...2000 mbar
- 4 0...4000 mbar
- 9 0...5000 mbar
- 7 0...6000 mbar
- 5 0...10000 mbar
- Z 0...20 bar

Measure range in m water column
- A 0...1 m water column . . . .
- B 0...2 m water column . . . .
- C 0...4 m water column . . . .
- M 0...5 m water column . . . .
- D 0...6 m water column . . . .
- E 0...10 m water column . . . .
- F 0...20 m water column . . . .
- L 0...25 m water column . . . .
- G 0...40 m water column . . . .
- J 0...50 m water column . . . .
- K 0...60 m water column . . . .
- H 0...100 m water column . . . .
- Y Special measuring range . . . .

Accuracy measuring system
- 0 0,25% ceramic AL2O3 96% . . . .
- K 0,1% Linearization protocol ceramic AL2O3 96%. . . . .

Over voltage protection
- 0 Without over voltage protection . . . .
- P Integrated over voltage protection not for Ex zone 0 – type Ex0M

Temperature sensor
- 0 Without temperature sensor. . . . .
- 1 Integrated temperature sensor Pt100 not for Ex0M / Ex1M . . . . .
- 2 Integrated temperature sensor Pt100 not for Ex0M / Ex1M
  With an installed Pt100 transmitter in the wall installation housing

Material probe (medium contact)
- 1 Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti) . . . . .

Material gaskets (medium contact)
- 1 FPM fluorelastomere (Viton®) . . . .
- 2 CR chloroprene-rubber (Neopren®) . . . .
- 3 EPDM etylene-propylene-dienmonomere for food applications. . . . .

Materials probe prolongation
- A PE polyethylene. . . . .
- B PUR polyurethane . . . .
- D Tube Ø 16mm . . . .

Sensor length
Measure in mm (inclusive process connection)

+ Additional Options (optional)

- SF LABS-free, silicone-free / paint compatible version . . . .
- ML Measurement point designation / TAG – Laser marking . . . .
- MZ Material test / certificate – EN10204 3.1. . . .

Order code

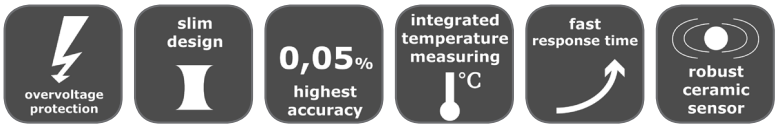
Hydrocont®	1	mm

Hydocont® HP4SC

Levelsensor ø 22mm, for hydrostatic level measurement with capacitive ceramic measuring cell;
Output signal RS 485 Modbus RTU

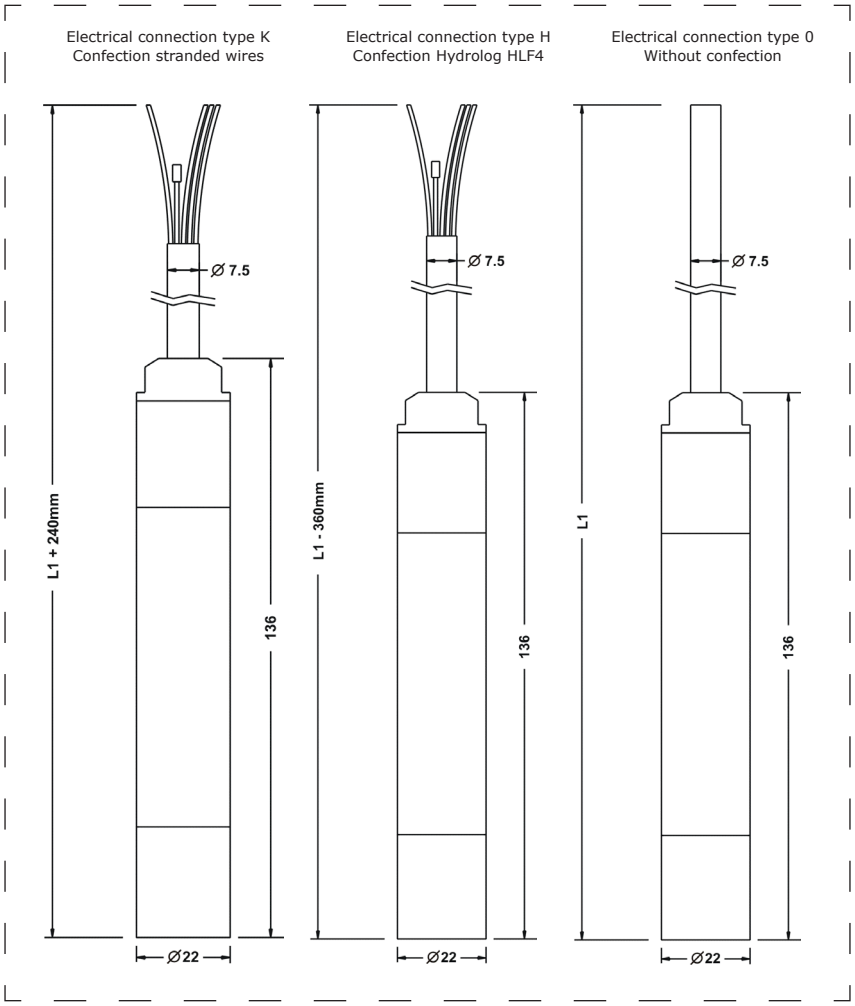
1 / 01.22

Technical data



Modbus

Input Pressure	
Nom. pressure PN relative:	0…0,1bar up to 0…10bar
Characteristic deviation:	≤ ±0,05%/±0,1%/±0,2%FSO
Temperature deviation:	Tk Zero ≤ ±0,015%FSO/K, ≤ ±0,75%FSO
	Tk Span ≤ ±0,015%FSO/K, ≤ ±0,5%FSO (≥0,4bar) / ≤ ±0,8%FSO (<0,4bar)
Time behavior:	T90 ≤ 2ms (td = 0s)
Input Temperature	
Sensor type:	Pt1000 class A
Characteristic deviation:	≤ ±0,1K + 0,002 x [dt (25°C)]
Time behavior:	T90 ≤ 4s
Output RS485 Modbus®-RTU	
Interface:	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior:	ton ≤ 250ms (td = 0s)
Auxiliary power	
Supply voltage Us	
polarity protected:	6…35VDC
Overvoltage protection	
Coarse protection:	75V / 10kA – wave 8/20µs / all lines to PE
Fine protection:	36V / all lines to -L
Environmental conditions	
Environmental temperature:	-20°C...+70°C
Protection level:	IP68 (EN/IEC 60529)
Materials	
Process wetted:	Ceramic Al2O3,CrNi-Steel, FPM, EPDM, PE, PUR



Application

The hydrostatic level probe Hydrocont HP4SC is suitable for monitoring, control and continuous measurement of levels and temperatures. Thanks to the capacitive ceramic measuring cell, the submersible probe offers maximum accuracy and long-term stability. Its slim design, with a diameter of 22mm, enables it to be used even in small dip tubes. Due to the possibility of combining different materials for sensors, cables and seals, the measuring system can be designed for a large number of, also aggressive, filling media.

The signal evaluation is based on RS485 Modbus-RTU. This also makes it possible to digitally adjust the sensor according to the respective circumstances.

In addition to level measurement, the Hydrocont HP4SC can also measure the temperature of the medium via a built-in sensor and also output it using the Modbus protocol.
To ensure safe operation, especially outdoors, the Hydrocont HP4SC has an integrated surge protection, which is designed as a coarse and fine protection.
A captive laser inscription on the nameplate ensures identifiability over the entire life of the device.

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Hydocont® HP4SC

Levelsensor ø 22mm, for hydrostatic level measurement with capacitive ceramic measuring cell;
Output signal RS 485 Modbus RTU

1 / 01.22

Basic price . . . . . .

Type
S Standard . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
C Ceramic Al2O3 96%/99,7% / capacitive . . . . . .

Approval
S Standard . . . . . .

Process connection
O without . . . . . .
Y others . . . . . .

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
Y others. . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .
V CrNi-steel, duplex, sea water resistant . . . . . .
Y others . . . . . .

Material terminal enclosure
0 without. . . . . .

Measuring range

01	0...100 mbar	07	0...2 bar . . . . .
02	0...200 mbar	08	0...4 bar . . . . .
03	0...400 mbar	09	0...6 bar . . . . .
04	0...600 mbar	10	0...10 bar . . . . .
05	0...1 bar		
YY	Sondermessbereich		

Electronic – output
V RS485 Modbus®-RTU, 4-wire . . . . . .

Electronic – function
0 without . . . . . .
3 Temperature sensor Pt1000. . . . . .
Y others. . . . . .

Process temperature
0 Standard –20°C...+70°C . . . . . .

Pressure type
R Gauge pressure . . . . . .

Measuring system – accuracy
1 0,2% . . . . . .
3 0,1%, linearization protocol. . . . . .
6 Xcellence – 0,05% (FS ≥ 200mbar), inearization protocol . . . . . .

Electrical connection
K Cable, confection stranded wires, length L1 +240mm. . . . . .
H Cable, confection Hydrolog HLF4, length L1 -360mm . . . . . .
0 Cable, without confection, incl. confection kit . . . . . .

Material Cable (process wetted)
A Cable sheath PE . . . . . .
B Cable sheath PUR . . . . . .
G Cable sheath PUR, increased diffusion-tightness .

Length L1 / mm (≤ 300.000mm)

+ Additional options

SF	LABS-free, silicone-free / paint compatible version . . . .
ML	Measurement point designation / TAG – Laser marking. . .
MZ	Material test certificate – EN10204 3.1. . . . .
WT	Factory certification – drink water suitability. . . . .
KF	Configuration / Preset . . . . .

Order code

Hydrocont®HP4	S	C	S				0		V		0	R				mm

Equipment

Order designation	*execution*
65000399	Tension clamp, galvanized steel. . . . .
65001899	Tension clamp, CrNi-steel . . . . .
91982121	Screw G1" CrNi-steel . . . . .
91982124	Screw, G1 1/2" CrNi-steel. . . . .
	Junction box G1" . . . . .
	Junction box, G1 1/2" . . . . .
	Wall mounting housing made of plastic . . . . .
	Reduction kit cable . . . . .

Hydrocont® LK

Level probe as a probe or suspension suitable for outdoor installation; **Low Cost Version**

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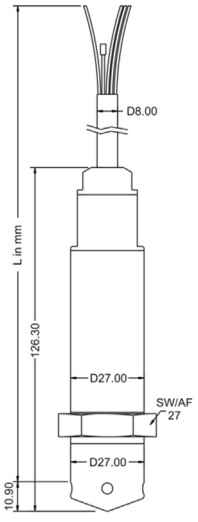
Technical data

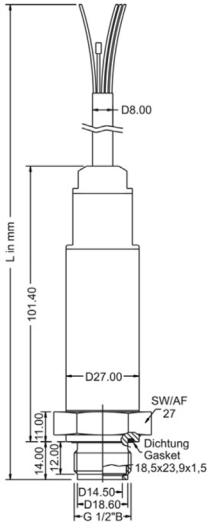
2-wire 4...20 mA	10..30 V DC	
3-wire 0...10 V	14..30 V DC	
Supply current:	2-wire 4...20 mA	≤ 30 mA
	3-wire 0...10 V	≤ 6 mA
Measuring accuracy		
Deviation in characteristics:	≤± 0,1% / 0,25% FS	
Long term drift:	≤± 0,15% FS / year	not cumulative
Temperature deviation :	≤± 0,15% FS / 10 K	
Material		
Membrane:	Ceramic AL_2O_3 96% (medium contact)	
Process connection:	Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti) (medium contact)	
Housing rope:	CrNi-steel	
Gaskets:	FPM – Fluoroelastomer (Viton®)	
(medium contact)	EPDM – ethylene-propylene-diene monomer	
	NBR – Nitrile Butadiene Rubber	
Connection cable:	Coated cable PE Polyethylen	
Environmental conditions		
Ambient temperature:	– 20°C...+70°C	
Process temperature:	– 20°C...+70°C	
	outdoor installation via process connection	
	– 40°C...+100°	
Process pressure ranges:	0...1 bar	
Protection:	IP68	DIN EN 60529

with front cap

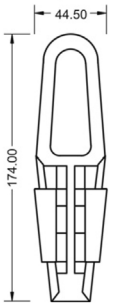
Abhängesensor mit Schutzkappe



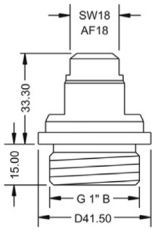
Einschraubsensor Prozessanschluss G 1/2“



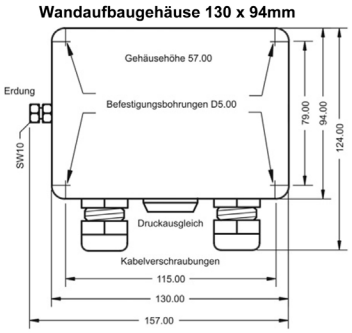
Seilspannklemme D8mm



Verschlussschraube G 1“



Wandaufbaugehäuse 130 x 94mm



Sealing screw

Straining clamp

Wall-mounted casing

Application

The device Hydrocont® LK with integrated analogue evaluation electronic is a compact hydrostatic transmitter for continuous measuring of filling levels in liquids at hydrostatic pressures from 0 up to 1 bar within pressure less container, at process temperatures from – 40°C to +100°C.

The use of a capacitive measuring sensor with ceramic membrane, allows the use in nearly all fields of industry.

Application fields are e.g. the measurement of levels in reservoirs, clarification basins, deep wells etc., but also the filling level measurement in closed containers at liquids, like e.g. water, waste water, solvents, oil, sludge, fat, cleaning liquids, etc.

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Hydrocont® LK

Level probe as a probe or suspension suitable for outdoor installation; **Low Cost Version**

1 / 01.22

Basic price . . . . . .

Type
0 Standard . . . . . .

Measuring membrane (medium contact)
LK Ceramic capacitive membrane ceramic AL2O3 96% . . . . . .

Process connection
0 G ½" B DIN EN ISO228-1 slopes probe with flush measuring cell and cap, suitable by G- "connection for outdoor installation . . . . . .
Y Others on request. . . . . .

Gaskets (medium contact)
1 FPM fluorelastomere (Viton®) . . . . . .
3 EPDM etylene-propylene-dienmonomere for food applications . . . . . .

Material process connection (medium contact)
V Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti) . . . . . .

Material Connection housing
C CrNi-steel . . . . . .

Measuring range
01 0...0,1 bar . . . . . .
02 0...0,2 bar . . . . . .
03 0...0,4 bar . . . . . .
04 0...0,6 bar . . . . . .
05 0...1 bar. . . . . .
YY Special measuring range separate spec. necessary . . . . . .

Electronic – output
A 2-wire-technology signal 4...20 mA . . . . . .
B 3-wire-technology signal 0...10 V. . . . . .

Process temperature
0 Standard -40°C to 100°C outside installation,. . . . . .
-20°C to +70°C as slope version

Pressure type
R Relative pressure . . . . . .

Accuracy measuring system *):
0 0,1 %, with Linearization protocol. . . . . .
2 0,25 % . . . . . .

Probe prolongation
(price per 100mm)
A Carrying cable PE . . . . . .

Probe length L
incl. process connection measure in mm

Order code

Hydrocont®	-	LK			V	C			0	R		A	mm

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
MZ Material test / certificate – EN10204 3.1. . . .

Equipment

Sealing screw VSM-1000 G1" . . . . . .
Sealing screw VSM-1500 G1 ½". . . . . .
Straining clamp hot galvanized. . . . . .
Wall-mounted casing without laser marking. . . . . .

Sonicont® USG2 / USF2

Ultrasonic fill level sensor for liquids and solid materials - separate version

1 / 01.22

Technical data Sensor USG2

Supply voltage:	Supplied by signal converter Sonicont USF
Output	
Distance signal:	Analog voltage / pulse signal
Temperature signal:	Resistance – NTC 10 kΩ
Measurement range	
Liquids:	USG2 020: 2 m; USG2 050: 5 m; USG2 080: 8 m USG2 150: 15 m; USG2 250: 25 m
Solids:	USG2 020: 1 m; USG2 050: 2 m; USG2 080: 3,5 m USG2 150: 7 m; USG2 250: 12 m
Process conditions	
Process temperature:	-40°C…+85°C
Process pressure:	-0,3…2 bar
Material	
Sensor(medium contact):	PVDF
Process connection (medium contact):	Measuring range 020/050/080/150: PVDF Measuring range 250: PVDF, PBT Valox
Sensor back (casting):	PVDF
Connection cable:	TPE-U
Environmental conditions	
Ambient temperature:	-40°C...+85°C
Protection:	Electrical connection type B – cable: IP65 / IP68 [≤ 1 mWs-1h] (EN/IEC 60529) Electrical connection type S – cable/plug connection M12: IP67 (EN/IEC 60529)
Climate Class:	4K4H [-20…+55°C / 4…100%] (EN/IEC 60721-3-4)
Shock resistance:	15 g [11ms] (EN/IEC 60068-2-27)
Vibration resistance:	4g [10…2000 Hz] (EN/IEC 60068-2-6)
EM – compatibility:	Equipment Class B / industrial sector (EN/IEC 61326)
Weight sensor:	USG2 020/050/080: 0,3 kg ; USG2 150: 0,6 kg; USG2 250: 0,9 kg

Technical data Transmitter USF2

Supply voltage Type A/B/C:		18...30 V
Power consumption Type A/B/C:		≤ 5W
Supply voltage Type S/T/U:		186...253V AC
Power consumption Type S/T/U:		≤ 20 VA
Output Signal U/I		
Work area:	(0)4...20mA / 0...10 V, adjustable	
Sprungantwortzeit:	≤ 35 ms	
Measurement range		
Liquids:	USG2 020: 2 m; USG2 050: 5 m; USG2 080: 8 m	
USG2 150: 15 m; USG2 250: 25 m		
Solids:	USG2 020: 1 m; USG2 050: 2 m; USG2 080: 3,5 m	
USG2 150: 7 m; USG2 250: 12 m		
Switching outputs		
Amount:	0/2/4 depending on device version	
Function:	potential-free changeover contact	
Output current:	6A at 253 V AC (resistive load)	
Response time:	≤ 20 ms	
USB Interface		
Version:	2.0 FS	
Function:	Host	
Connection:	Micro-USB AB	
Bluetooth Interface		
Version:	2.0 Full Speed	
Function:	Host	
Output voltage:	5V ±5%, ≤ 100mA	
Jack socket:	USB 2.0-A	
Datenspeicher:	≥ 500.000 measurement values	
Measuring accuracy		
Deviation in characteristics:	≤ ± 2 mm or ±0,2 % of the measuring ranges (whichever is greater) (td ≥ 5s)	
Temperature deviation:	≤ ±0,06% FS / 10 K (Zero / Span)	
Material		
Connection housing wall-mounted casing / DIN rail housing :	PC / PES / CrNi-Steel / PA / CR-NBR	
Connection housing front panel housing:	PPE / PES / Steel verzinkt / CrNi-Steel / PA / NBR-EPDM	
Environmental conditions		
Ambient temperature:	-20°C...+50°C	
Expansion		
Backlight LCD ≤ 80% >> -20°C...+60°C		
Backlight LCD ≤ 60% >> -20°C...+70°C		
Protection: wall-mounted casing / DIN rail housing:		
	IP65	EN/IEC 60529
Protection: front panel housing:		
	Front side IP54 / IP65 (Option)	EN/IEC 60529
	Back side IP20	EN/IEC 60529

Application

With the Sonicont® USF2 and USG2 provides ACS-CONTROL-SYSTEM GmbH an ultrasonic level transmitter remote version for non-contact level measurement of fluids, pastes and coarse bulk materials before. By long life, easy installation and less maintenance, the ultrasonic measuring system is a proven and cost-effective solution.

Combined with up to 4 freely adjustable switching points and suitable for measuring ranges up to 8m in liquids and up to 3.5 m in bulk materials (on request up to 25m in liquids and up to 12m in solids), this sensor can be used for various measuring tasks for volume linear display in all container types - and with an accuracy of 0.2% and ≤ 2 mm. In addition, the analog output 0 (4) ... 20 mA and 0 .. 10V is switchable. The morn transmitter has extensive diagnostic functions for system analysis and still allows easy setup and operation by clear menu guidance.

Besides level measurements the Sonicont® USG2 and USF2 is able for measurement of flow rates and currents. The mathematical formulas are already stored in the device. The sensor Sonicont® USG2 can be installed up to 300m from the transmitter Sonicont® USF2 and has IP65/ IP68 protection. The 2 „TFT color display of the Sonicont® USF2 provides an excellent representation of the measured values and easy readability. Intelligent data management enables the Sonicont® USF2 to record measured values through the Bluetooth interface and a built-in data logger function.

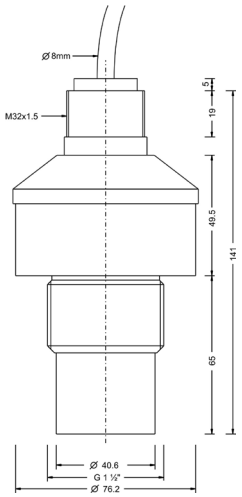
Sonicont® USG2 / USF2

Ultrasonic fill level sensor for liquids and solid materials - separate version

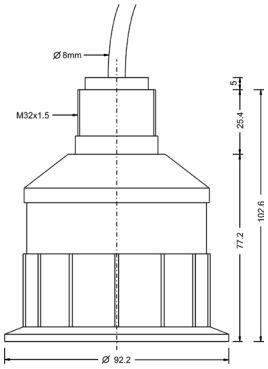
1 / 01.22

Sensor Sonicont® USG2

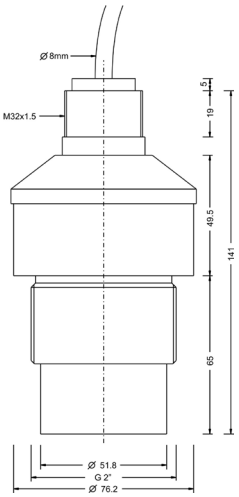
Process connection
Type USG2 020 G15 - G 1½" ISO 228-1
Type USG2 050 G15 - G 1½" ISO 228-1



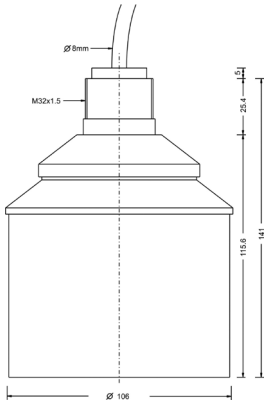
Process connection
Type USG2 150



Process connection
Type USG2 080 G20 - G 2" ISO 228-1

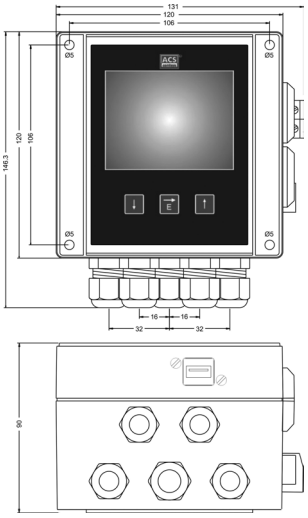


Process connection
Type USG2 250

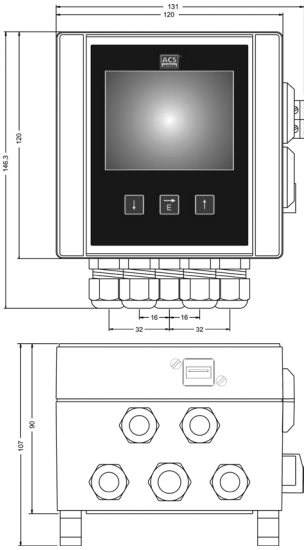


Signal converter Sonicont® USF2

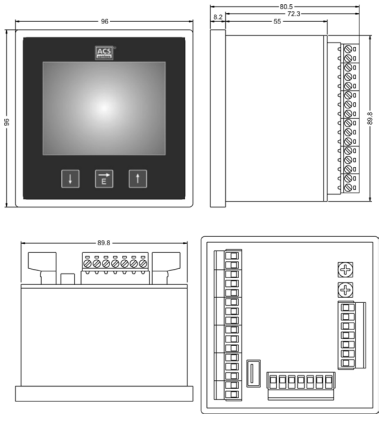
Connection housing
Wall mounted housing
Type F



Connection housing
DIN rail housing
Type P



Connection housing
Front panel enclosure
Type M



Sonicont® USG2

Ultrasonic fill level sensor for liquids and solid materials - separate version

1 / 01.22

Sensor

Basic price . . . . . .

Measuring range

020 2m
050 5m
080 8m
150 15m
250 25m

Approval

0 Standard
X ATEX II 1 G Ex ia IIC T6/T5 Ga / ATEX II 1 D Ex ia IIIC T95°C Da

Process connection

G15 Thread ISO 228-1 – G1½", Thread DIN 13 – M32x1,5 Measuring range 020 / 050
G20 Thread ISO 228-1 – G2", Thread DIN 13 – M32x1,5 Measuring range 080
M32 Thread DIN 13 – M32x1,5 Measuring range 150 / 250

0

0

Material process connection (medium contact)

P PVDF *(Measuring range 020/050/080/150) resp.* PVDF/PBT *(Measuring range 250)*

0

Electrical connection

B Connection cable TPE-U
S Cable TPE-U, plug connection M12

Length L1 - connection cable

1 5m
2 10m
3 15m
4 20m
5 25m
6 30m

0 Standard

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking

Order code

Sonicont® USG2									
			0	0	P	0			0

For the measurement you need the sensor Sonicont® USG2 and the transmitter Sonicont® USF2.

Equipment

Cable TPE-U price per m

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Sonicont® USF2

Ultrasonic fill level sensor for liquids and solid materials - separate version

1 / 01.22

Transmitter

Basic price . . . . . .

Approval

0 Standard . . . . . .
X ATEX II (1) G [Ex ia Ga] IIC / ATEX II (1) D [Ex ia Da] IIIC . . . . . .

Enclosure type

F Wall-mounted casing . . . . . .
M Front panel housing . . . . . .
P DIN rail housing . . . . . .

Electronic – supply / output

A 18...36V DC / 1x 0/4...20mA - 0...10V . . . . . .
B 18...36V DC / 1x 0/4...20mA - 0...10V, 2x relay, 2x digital input . . . . . .
D 18...36V DC / 1x 0/4...20mA - 0...10V, 4x relay, 4x digital input . . . . . .
S 186...253V AC / 1x 0/4...20mA - 0...10V . . . . . .
T 186...253V AC / 1x 0/4...20mA - 0...10V, 2x relay, 2x digital input. . . . . .
U 186...253V AC / 1x 0/4...20mA - 0...10V, 4x relay, 4x digital input. . . . . .

Electronic - function

0 USB-Interface . . . . . .
1 USB+Bluetooth-Interface . . . . . .
2 USB-Interface / Data logger with time stamp, battery powered . . . . . .
3 USB+Bluetooth-Interface / Data logger with time stamp, battery powered. . . . . .
Y Others . . . . . .

Electronic - extras

0 Standard. . . . . .
1 USB device jack – Enclosure type F / P. . . . . .
2 Increased protection class IP65 – Enclosure type M . . . . . .

0 Standard . . . . . .

+ Additional Options (optional)

KF Configuration / Preset . . . . . .

Order code

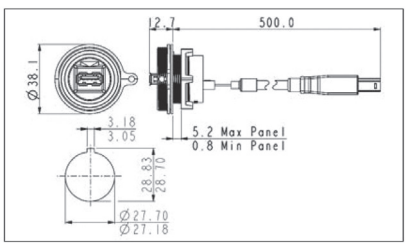
Sonicont® USF2	0

For the measurement you need the sensor Sonicont® USG2 and the transmitter Sonicont® USF2.

Equipment

Ordering information — *Model*

611000312 USB socket for front panel installation, for installation of USB-socket in the switchboard door, incl. covering cap IP68 . . . . . .



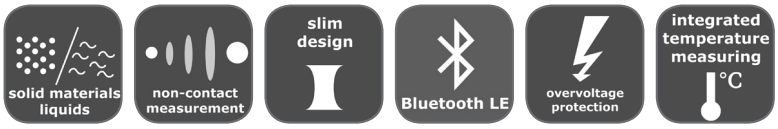
911000482 USB 2.0 adapter socket A on plug Micro-B . . . . . .

Sonicont® USP4

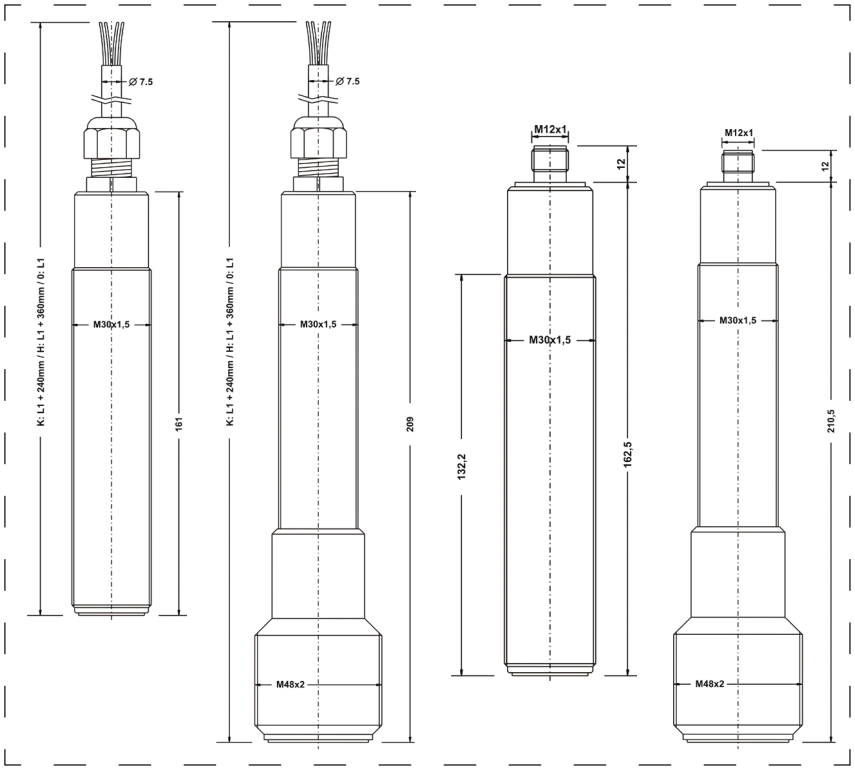
Ultrasonic sensor for non-contact level measurement in liquids and bulk materials
Suspended version

1 / 01.22

Technical data



Input Distance			
Measuring range:	MB-02: 0…≤ 2m	MB-05: 0…≤ 5m	MB-08: 0…≤ 8m
Blocking distance BD:	≤ 0,10m (typ. 0,06m)	≤ 0,15m (typ. 0,10m)	≤ 0,30m (typ. 0,19m)
Pulse rate tp			
(meas. cycle time):	≤ 10Hz / ≥ 100ms	≤ 4Hz / ≥ 250ms	≤ 2Hz / ≥ 500ms
Characteristic deviation:	≤ ±2mm or ±0,2%FSO		
Temperature deviation:	Tk Zero (mean value) ≤ ±0,006%FSO/K		
Output current 4…20mA Bluetooth® 5.0 LE			
Analogue output 4…20mA:	3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA		
Time behavior:	T90 ≤ Pulsrate tp (td = 0s) / ton ≤ 3s (td = 0s)		
Interface:	Bluetooth 5.0 LE (2Mbit/s)		
Auxiliary power			
Supply voltage Us			
polarity protected:	11…35VDC		
Overvoltage protection			
Coarse protection:	EL-K/H/0: 75V / 10kA – wave 8/20µs / +L/-L to cable shield		
	EL-S: 150V / 10kA – wave 8/20µs / +L to -L		
Fine protection:	36V / all lines to -L		
Environmental conditions			
Environmental temperature:	-20°C...+70°C		
Protection level:	EL-K/H/0: IP68 [≤3m/≤0,3bar] (EN/IEC 60529)		
	EL-S: IP65/IP67 (EN/IEC 60529)		
Materials			
Process wetted:	PVDF, POM, PA, NBR, FPM, PE, PUR		



Application

The Sonicont USP4 is an ultrasonic sensor for non-contact level measurement and monitoring in liquids and bulk solids.

The sensor is designed as a suspended version with a cable outlet or as a screw-in sensor with a cable or plug connection. Due to its slim design, the sensor can be inserted through small container bores or installed in thin water wells. The Sonicont USP4 can optionally be combined with measuring tubes made of PE. As a result, the ultrasound signal receives a defined measuring path, which influences, e.g. would affect the ultrasonic signal through oxidized and uneven level pipes or container walls.

The electronics are designed as 4… 20mA 2-wire signals. To ensure safe operation, especially outdoors, the Sonicont USP4 has an integrated surge protection.
Due to its high accuracy, the compact Sensor for various applications in Range of ground and surface water measurements, tank monitoring, wastewater area and distance measurements can be used. By means of a free app, the Sonicont USP4 can Bluetooth® 5.0 LE, can be adapted to the respective conditions of use.

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Sonicont® USP4

Ultrasonic sensor for non-contact level measurement in liquids and bulk materials
Suspended version

1 / 01.22

Basic price . . . . . .

Type
S Standard . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
P PVDF / Piezo . . . . . .

Approval
S Standard . . . . . .

Process connection
U Terminal enclosure, thread DIN 13 – M30x1,5 . . . . . .
Y others . . . . . .

0

Material process connection (process wetted)
G POM . . . . . .
Y others . . . . . .

0

Measuring range
02 0…2 m . . . . . .
05 0…5 m . . . . . .
08 0…8 m . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A Current 4…20mA, 2-wire, Bluetooth® 5.0 LE . . . . . .
Y others . . . . . .

Electronic – function
1 Standard. . . . . .
Y others. . . . . .

Process temperature
0 Standard –20°C…+70°C . . . . . .

0

0

Electrical connection
K Cable, confection stranded wires, length L1 +240mm . . . . . .
H Cable, confection Hydrolog HLF4, length L1 -360mm . . . . . .
0 Cable, without confection, incl. confection kit. . . . . .
S Plug M12 . . . . . .
Y others . . . . . .

Material Cable (process wetted)
0 without . . . . . .
A Cable sheath PE . . . . . .
B Cable sheath PUR . . . . . .
G Cable sheath PUR, increased diffusion-tightness. . . . . .
Y others . . . . . .

Length L1 / mm
(≤ 300.000mm) . . . . . .

+ Additional options

SF LABS-free, silicone-free / paint compatible version . . . .
ML Measurement point designation / TAG – Laser marking. . .
KF Configuration / Preset. . . . . .

Order code

Sonicont®USP4	S	P	S		0		0				0	0	0			mm

Equipment

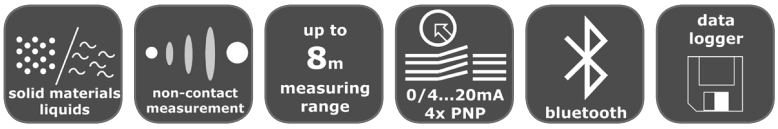
Order designation	*execution*
65000399	Tension clamp, galvanized steel. . . . .
65001899	Tension clamp, CrNi-steel . . . . .
91982121	Screw G1" CrNi-steel . . . . .
91982124	Screw, G1 1/2" CrNi-steel. . . . .
	Junction box G1" . . . . .
	Junction box, G1 1/2" . . . . .
611000542	Measuring tube PE2m for ultrasonic sensor USP4-02 . . . . .
611000544	Measuring tube PE 2m basic module for ultrasonic sensor USP4-05. . . . .
611000545	Measuring tube PE 2m extension for ultrasonic sensor USP4-05 . . . . .
611000559	Measuring tube PE 1m extension for USP4_05 . . . . .

Sonicont® USN4

Ultrasonic filling level transmitter, non-contact measurement of filling levels in liquids, pastes and coarse bulk materials, level measurement in liquids up to 2 / 5 / 8 m and in bulk materials up to 1 / 2 / 3,5 m

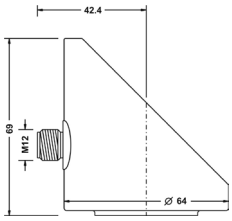
1 / 01.22

Technical data

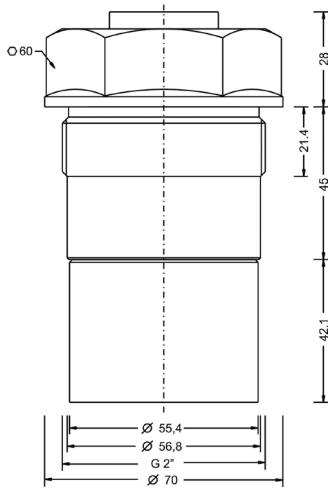


Supply voltage:	Setting output 0/4...20 mA: 9..30 VDC, reverse polarity protected Setting output 0...10 V: 14..30 VDC, reverse polarity protected
Supply current:	≤ 50mA up to ≤ 100mA (depending on output, bluetooth ON/Off, US)
Start-up time:	≤ 1s
Operating range:	Analogue output – current 0...20mA IOut: 0...20,5mA, max. 22mA Analogue output – current 4...20mA IOut: 3,8...20,5mA, min. 3,6mA, max. 22mA Analogue output – voltage 0...10V UOut: 0 ... 10,5 V, max. 11 V
Switch output PNP S1 / S2 / S3 / S4	
Function:	PNP switch to +L
Output current:	0... ≤ 200mA current limited, short circuit protected
Measuring accuracy	
Characteristic deviation:	≤ ±2mm or ±0,2% of set measuring range
Long term drift:	≤ ± 0,1% FS / year not cumulative
Temperature deviation	≤ ±0,006% FS / K
Materials	
Sensor	PVDF
Process connection	Steel 1.4404/316L / Steel 1.4571/316Ti
Gaskets	EPDM – ethylene-propylene-dienmonomere
Terminal enclosure	CrNi-steel
Control panel surface	PES
Electrical connection part: Device plug PUR	
Pressure compensation element: Acrylic copolymer	
Gaskets:	FPM – fluorelastomere (e.g. Viton®)
Environmental conditions	
Environmental temperature: – 20°C...+70°C	
Process temperature:	-40...+85°C
Process pressure:	-0,3...2 bar
Protection:	IP65/IP67 EN/IEC 60529

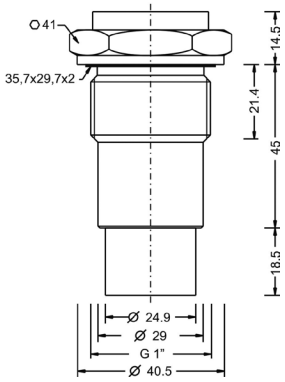
Terminal enclosure



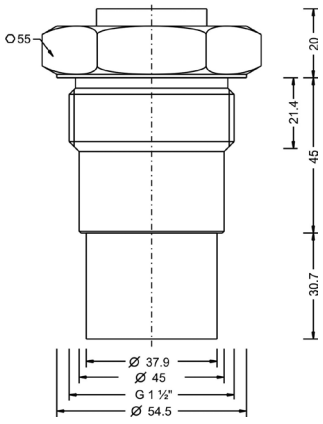
Type D – Thread ISO 228-1 – G2"B / Measuring range type 08 – 8m



Type 5 – Thread ISO 228-1 – G1"B / Measuring range type 02 – 2m



Type 7 – Thread ISO 228-1 – G1½"B / Measuring range type 05 – 5m



Application

The device is an electronic level transmitter / level switch for monitoring, control as well as continuous measurement of filling levels in liquids, pastes and coarse bulk materials.
Additional application fields are volume or flow measurement.
The software was optimized and extended by a new algorithm. The Sonicont is a better algorithm for the detection of ultrasonic signals, so that interference signals e.g. agitators etc. can be recognized even better and thus a safe operation can be ensured.
Due to the device construction with measuring ranges of 2m / 5m / 8m, process temperatures from –40°C to +85°C and process materials PVDF / CrNi-steel / EPDM as well as the availability of extensive equipment and functionality predefined vessel types for fast commissioning, predefined linearization curves for volume and flow measurement, integrated error signal suppression for adaption the installation situation, integrated compensation of the process temperature, limit value function for two-point control, pump control function, impulse output function for quantity counter and error indication function for error monitoring the device is especially suitable for the use for level and volume measurement and flow measurement at open channels and measuring weirs for water and waste water sector, process industry, environmental technology, storage tanks, storage bunkers, silos.
The device is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether low temperatures when used outdoors, high shock and vibration or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

Sonicont® USN4

Ultrasonic filling level transmitter, non-contact measurement of filling levels in liquids, pastes and coarse bulk materials, level measurement in liquids up to 2 / 5 / 8 m and in bulk materials up to 1 / 2 / 3,5 m

1 / 01.20

Basic price . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
P PVDF / Piezo. . . . . .

Approval
S Standard . . . . . .

Process connection
5 Thread ISO 228-1 – G1″B *(only at measuring range 2m)* . . . . . .
7 Thread ISO 228-1 – G1½"B *(only at measuring range 5m)* . . . . . .
D Thread ISO 228-1 – G2"B *(only at measuring range 8m)* . . . . . .
Y others . . . . . .

Material process gaskets (process wetted)
3 EPDM – ethylene-propylene-dienmonomere . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
02 2 m . . . . . .
05 5 m . . . . . .
08 8 m . . . . . .

Electronic – output
M 1x signal 0/4...20mA-0...10V, supply 24VDC . . . . . .
K 1x signal 0/4...20mA-0...10V, 2x switch PNP, supply 24VDC . . . . . .
R 1x signal 0/4...20mA-0...10V, 4x switch PNP, supply 24VDC . . . . . .

Electronic – function
0 without . . . . . .
1 Bluetooth-Interface . . . . . .
2 Data logger with time stamp, battery powered . . . . . .
3 Bluetooth-Interface / Data logger with time stamp, battery powered . . . . . .
Y others . . . . . .

Process temperature
0 Standard -40°C...+85°C . . . . . .

0 . . . . . .

0 . . . . . .

Electrical connection
S Plug M12 . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
KF Configuration/ Preset . . . . . .

Order code

Sonicont® USN4S	P	S		3	V	C				0	0	0	S

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
LKZ0805PUR-AS	Connection cable 5 m, 8-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

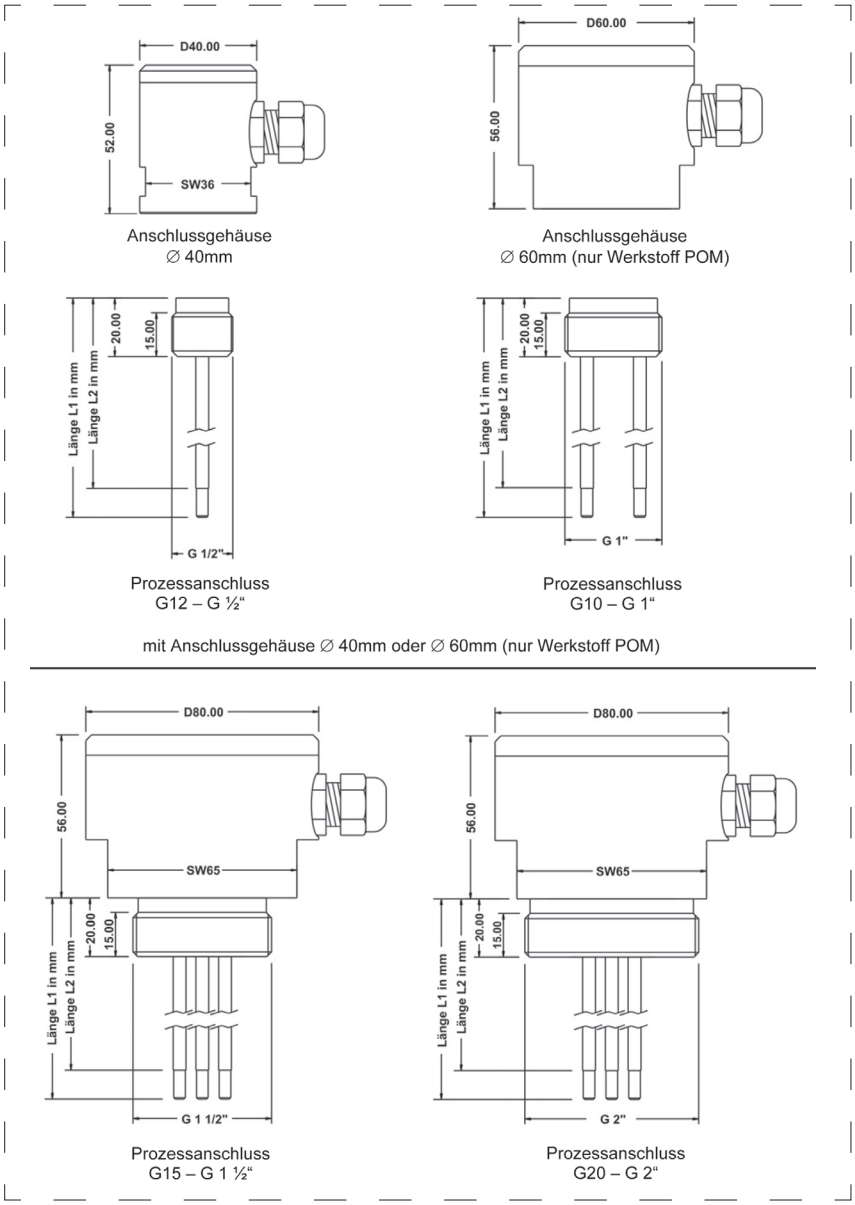
Rod probe SAT

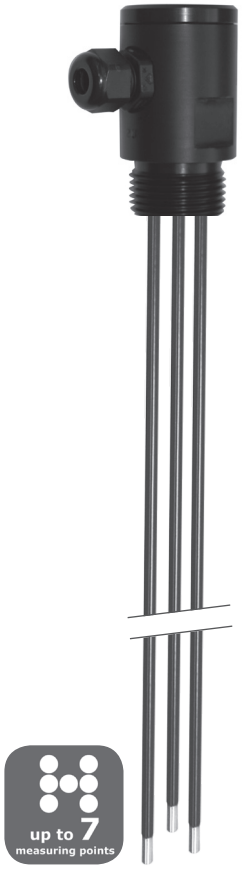
Electrode probe for conductive limit level detection in electrically conductive filling materials with up to 7 electrode rods – plastic screwing thread; up to 6 measuring points; temperature: -40°C...+150°C; pressure: 10 bar

1 / 01.22

Technical data

Process pressure:	-1...10 bar
Process temperature:	-40°C...+150°C, observe limitations (see operating instructions)
Protection classification:	IP65 EN/IEC 60529
Material Process connection:	POM / PP / PTFE
Material Electrode rod:	Stahl 1.4404 (AISI316L) bzw. 1.4571 (AISI316Ti) / Hastelloy C22
Isolation Electrode rod isolation:	PA / ETFE bzw. E-CTFE
Gaskets (medium contact)	Electrode isolation PA: NBR / Electrode isolation ETFE bzw. E-CTFE: FPM





Application

The SAT rod probes are used in conjunction with the evaluation units (eg, SRA-100-U0) is used for level detection and level control in conductive liquids. Depending on the number of bars and evaluation devices used, different measurement tasks such as Overflow, dry run, two-step control, moisture detection, etc. are realized.
Depending on model selected can include the container wall as a mass, to be implemented to 7 switch points. The ground connection erflogt either directly to the container or conducting a probe rod. In the probe head, an additional module (diode module LBM) for permanent circuit monitoring to be installed.

In the case of a line break between the electrode probe and an appropriate evaluation, the evaluation issue an alert.

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Rod probe SAT

Electrode probe for conductive limit level detection in electrically conductive filling materials with up to 7 electrode rods – plastic screwing thread; up to 6 measuring points; temperature: -40°C...+150°C; pressure: 10 bar

1 / 01.22

Equipment

mounting sleeves and nuts
page 64

amplifiers
page 50

Surcharge

* each rod **over** 1500 mm 25,50 € surcharge!

Model
- 0 Standard
- Ex ATEX II 1 G Ex ia IIB/IIC T6...T1 Ga

Electrode rods
- 1 1 electrode rod
- 2 2 electrode rods
- 3 3 electrode rods
- 4 4 electrode rods
- 5 5 electrode rods
- 7 7 electrode rods

Process connection
- G12 Thread ISO 228-1 – G½" only with one electrode rod possible
- G10 Thread ISO 228-1 – G1" up to three electrode rods possible
- G15 Thread ISO 228-1 – G1½" up to five electrode rods possible
- G20 Thread ISO 228-1 – G2"" up to seven electrode rods possible

Material probe rod
(price per 100mm)
- A4 CrNi-steel, rod diameter 4mm
- A8 CrNi-steel, rod diameter 8mm
- D Hastelloy® C22, rod diameter 3,2 mm oder 6 mm
- Y Others

Material Connection housing
- D POM – polyoxymethylenee Delrin®, Ø 40 mm for G½" / G1" resp. Ø 80 mm for G1½" / G2"
- E POM – polyoxymethylenee Delrin®, Ø 60 mm for G½" / G1"
- P PP – polypropylenee, Ø 40 mm for G½" / G1"
- M PP – polypropylenee, Ø 80 mm for G1½" / G2"
- T PTFE – Polytetrafluoroethylene Teflon®, Ø 40 mm for G½" / G1"
- L PTFE – Polytetrafluoroethylene Teflon®, Ø 80 mm for G1½" / G2"

Material probe insulation
(price per 100mm)
- R PA – Polyamid (standard) *not for material process connection T / L – PFTE*
- H4 E-CTFE – Ethylene-chlorotrifluoroethylene (Halar®) 4mm.
- H8 E-CTFE – Ethylene-chlorotrifluoroethylene (Halar®) 8mm.

Circuit monitoring
- A Without circuit monitoring
- B Diode module LBM only for terminal enclosure from Ø 60mm (only at head Ø ≥ 60 mm, resp. thread ≥ 1½")

Diameter probe rod
- 0 4 mm (L1 max. 3000mm)
- W 8 mm (L1 max. 3000mm)

Length L1 probe rod in mm

Length L2 insulation mm

+ Additional Options (optional)

- SF LABS-free, silicone-free / paint compatible version
- ML Measurement point designation / TAG – Laser marking
- ME Measuring point label as adhesive label

Order code

SAT		mm	mm

SAT probes are only available in 500 mm increments!
Probe rods should be shortened by oneself!

Equipment

Order information	*Model*
AH-2	Spacers for 2-rod probes
AH-3	Spacers for 3-rod probes
AH-4	Spacers for 4-rod probes
AH-5	Spacers for 5-rod probes

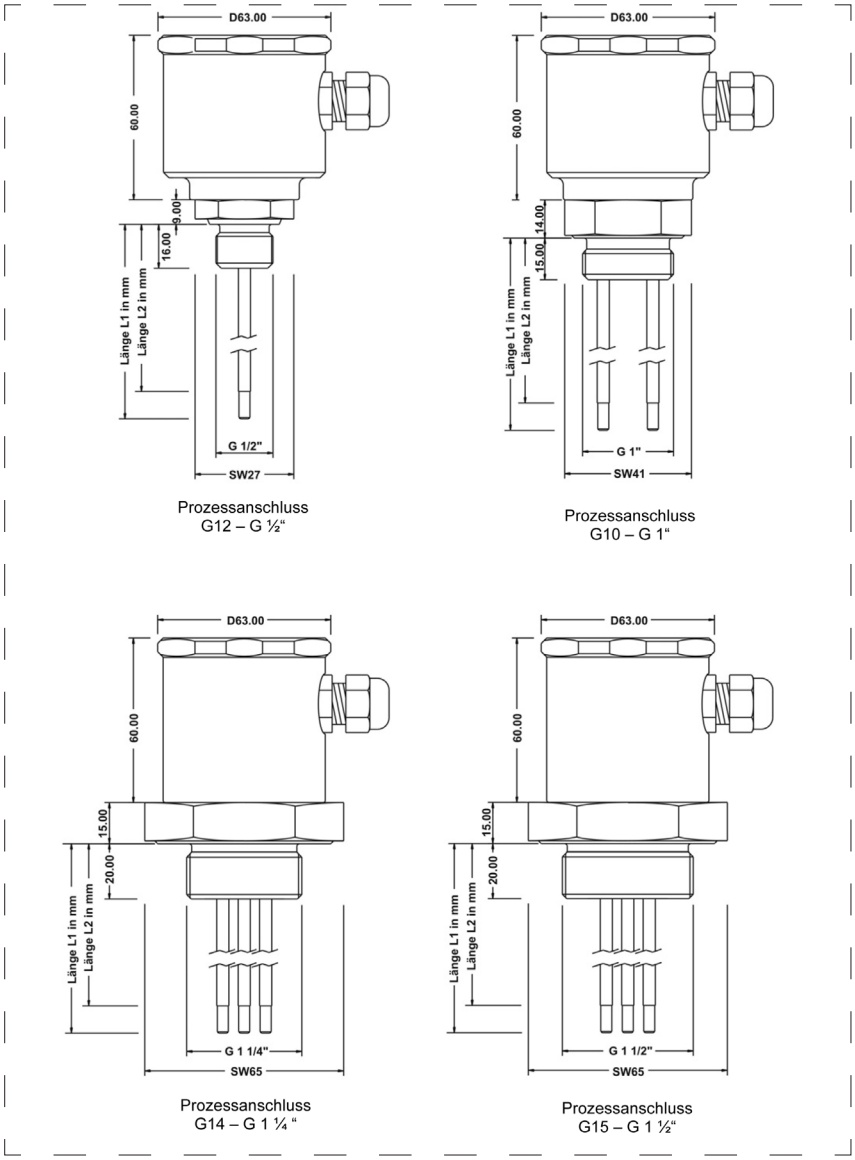
Rod probe STK

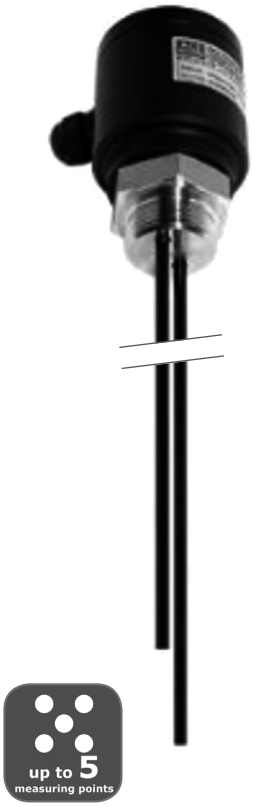
Electrode probe for conductive limit level detection in electrically conductive filling materials
with up to five electrode rods – metallic process connection; temperature: -15°C...+150°C; pressure: 20 bar

1 / 01.22

Technical data

Process pressure max:	-1...+20 bar
Medium temperature:	-15°C...150°C
Protection:	IP65 EN/IEC 60529
Material connection housing:	CrNi-steel / POM / PP / PTFE
Material Process connection:	Steel 1.4404 (AISI316L) resp. 1.4571 (AISI316Ti)
Material probe rod:	Steel 1.4404 (AISI316L) resp. 1.4571 (AISI316Ti) / Hastelloy C22 / Titan (medium contact
Isolation probe rod:	PA / ETFE resp. E-CTFE
Gaskets:	Medium contact: Electrode isolation PA: NBR / Electrode isolation ETFE resp. E-CTFE: FPM, Others: NBR, FPM





Application

The STK rod probes are used in conjunction with the evaluation units (eg, SRA-100-U0) is used for level detection and level control in conductive liquids.
Depending on the number of bars and evaluation devices used, different measurement tasks such as Overflow, dry run, two-step control, moisture detection, etc. are realized.
Depending on model selected can include the container wall as a mass, to be implemented to 5 switch points. The ground connection is made in the probe head and is transferred through the threads on the conductive container.
In the probe head, an additional module (diode module LBM) for permanent circuit monitoring to be installed.

In the case of a line break between the electrode probe and an appropriate evaluation, the evaluation issue an alert.
By stainless steel process connection, the probe is to 20bar pressure stable and in conjunction with the ETFE- resp. E-CTFE coating, process temperatures up to +150 ° C can be realized.

Rod probe STK

Electrode probe for conductive limit level detection in electrically conductive filling materials
with up to five electrode rods – metallic process connection; temperature: -15°C...+150°C; pressure: 20 bar

1 / 01.22

Equipment

mounting sleeves
and nuts
page 64

amplifiers
page 50

Surcharge

* each rod
over 1500 mm
25,50 € surcharge!

Model
0 Standard
Ex ATEX II 1 G Ex ia IIB/IIC T6...T1 Ga

Electrode rods
1 1 electrode rod
2 2 electrode rods
3 3 electrode rods
4 4 electrode rods
5 5 electrode rods

Process connection material steel 1.4404 *(AISI 316L)* / 1.4571 *(AISI 316Ti)*
G12 G½" only possible with one electrode rod
G10 G1" up to three electrode rods possible
G14 G1¼" up to four electrode rods possible
G15 G1½" up to five electrode rods possible.
G20 G2" up to four electrode rods possible.
F50 Flange EN 1092-1 – DN50, PN 10-20, sealing surface ASTM D 2527
YYY Others

Material electrode rod
(price per 100mm)
A4 CrNi-steel, rod diameter 4 mm
A8 CrNi-steel, rod diameter 8 mm
A10 CrNi-steel, rod diameter 10 mm
D Hastelloy C22, rod diameter 3,2 mm oder 6 mm.
T4 Titan not for Ex-version, 4 mm
T8 Titan not for Ex-version, 8 mm
T10 Titan not for Ex-version, 10 mm
E Steel 1.4404 *(AISI 316L)* / 1.4571 *(AISI 316Ti)* tantalum tips 20 mm
Y Others

Material Connection housing
D POM, Ø 60 mm
V CrNi-Steel, Ø 60 mm
M PP, Ø 60 mm
L PTFE, Ø 60 mm

Material probe insulation
(price per 100mm)
R PA-Polyamid *(standard)*
H4 ETFE resp. E-CTFE, rod diameter 4 mm
H8 ETFE resp. E-CTFE, rod diameter 8 mm

Circuit monitoring
A Without circuit monitoring
B With circuit monitoring

Diameter probe rod
0 4 mm (L1 max. 3000mm)
W 8 mm (L1 max. 3000mm)
Z 10 mm

Length L1 probe rod in mm

Length L2 insulation mm

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
ME Measuring point label as adhesive label

Order code

STK		mm	mm

Please name every length if you order different probe lengths!
eg. rod 1: L1/L2, rod 2: L1/L2
standard lengths in 500 mm increments. Others on request. Probe rods should be shortened by oneself!

Equipment

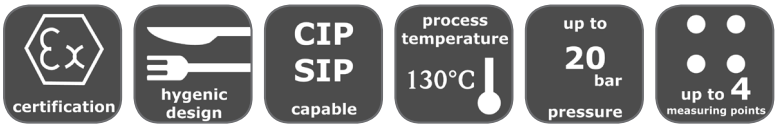
Order information	*Model*
AH-2	Spacers for 2-rod probes
AH-3	Spacers for 3-rod probes
AH-4	Spacers for 4-rod probes
AH-5	Spacers for 5-rod probes

Rod probe SLK

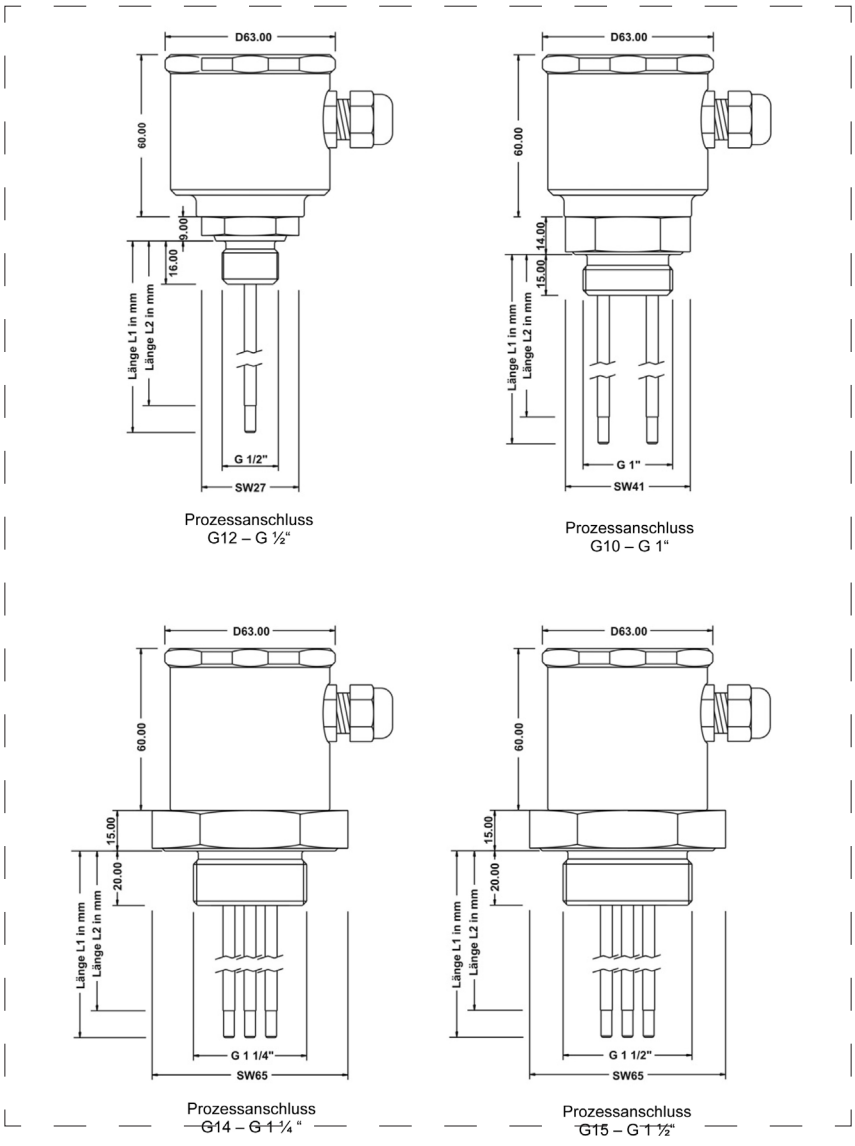
Electrode probe for conductive limit level detection in electrically conductive filling materials with up to five electrode rods – metallic hygienic process connection for food applications up to 4 measurement points; temperature: -40°C...+130°C; pressure: 20 bar

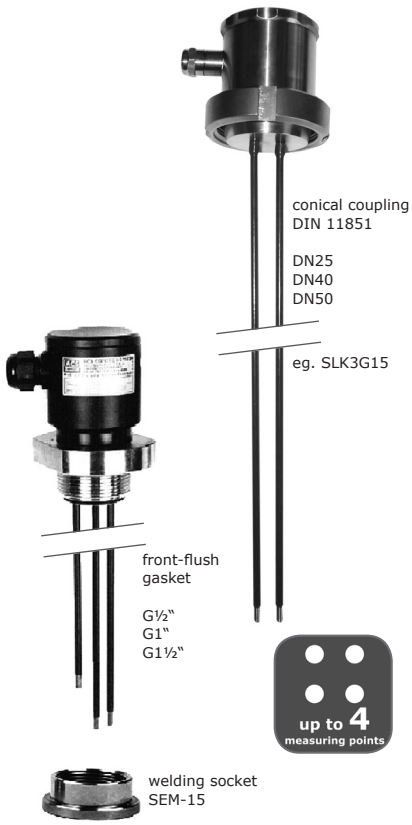
1 / 01.22

Technical data



Process pressure max:	-1...+20 bar
Medium temperature:	-40°C...130°C
Protection:	IP65 EN/IEC 60529
Material connection housing:	CrNi-steel / POM / PP / PTFE
Material process connection :	Steel 1.4404 (AISI316L) resp. 1.4571 (AISI316Ti)
Material probe rod:	Steel 1.4404 (AISI316L) resp. 1.4571 (AISI316Ti)/Hastelloy C22/Titan
Isolation probe rod:	ETFE
Gaskets:	Medium contact: EPDM, FDA-listed / Others: NBR, FPM





Application

The SLK rod probes are used in conjunction with the evaluation units (eg, SRA-100-U0) for level detection and level control in conductive liquids, especially in food and used in the pharmaceutical sector, where high hygiene requirements.
Depending on the number of bars and evaluation devices used, different measurement tasks such as Overflow, dry run, two-step control, moisture detection, etc. are realized.

Depending on model selected can include the container wall as a mass, to be implemented to 4 set points. The ground connection is made in the probe head and is transferred through the threads on the conductive container.
process connections, various hygienic connections are available, the seal gap, flush.

In the probe head, an additional module (diode module LBM) for permanent circuit monitoring to be installed.
In the case of a line break between the electrode probe and an appropriate evaluation, the evaluation issue an alert.

By stainless steel process connection the probe is to 20bar pressure stable and in conjunction with the ETFE coating, process temperatures up to +130°C can be realized.

Rod probe SLK

Electrode probe for conductive limit level detection in electrically conductive filling materials with up to five electrode rods – metallic hygienic process connection for food applications up to 4 measurement points; temperature: -40°C...+130°C; pressure: 20 bar

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Equipment

mounting sleeves and nuts page 64

amplifiers page 50

Surcharge

* each rod **over** 1500 mm 25,50 € surcharge!

Model

0 Standard
Ex ATEX II 1 G Ex ia IIB/IIC T6...T1 Ga

Electrode rods

1 one-rod-probe
2 two-rod-probe
3 three-rod-probe
4 four-rod-probe

Process connection material steel 1.4404 *(AISI 316L)* / 1.4571 *(AISI 316Ti)*

D25 Dairy coupling DIN 11851 – DN25, only with one electrode rod possible
D40 Dairy coupling DIN 11851 – DN40, up to three electrode rods possible.
D50 Dairy coupling DIN 11851 – DN50, up to four electrode rods possible
G12 G½" O-ring flush mounted only with one electrode rod possible.
G10 G1" O-ring flush mounted up to three electrode rods possible
G15 G1½" O-ring flush mounted up to four electrode rods possible
M12 G½" metal-seated only with electrode rod possible

Material probe rod
(price per 100mm)

A4 CrNi-steel, rod diameter 4 mm
A8 CrNi-steel, rod diameter 8 mm
D Hastelloy C22, rod diameter 3,2 mm oder 6 mm.
T4 Titan not for Ex-version, 4 mm
T8 Titan not for Ex-version, 8 mm
E 1.4404 steel with 50 mm tantalum tips
Y Others

Material Connection housing

D POM, Ø 60 mm
V CrNi-Steel, Ø 60 mm
M PP, Ø 60 mm
L PTFE, Ø 60 mm
Y Others

Material probe insulation
(price per 100mm)

H4 ETFE, rod diameter 4 mm
H8 ETFE, rod diameter 8 mm

Circuit monitoring

A Without circuit monitoring
B Diode module LBM

Diameter probe rod

0 4 mm (L1 max. 3000mm)
W 8 mm (L1 max. 3000mm)

Length L1 probe rod in mm

Length L2 insulation mm

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
ME Measuring point label as adhesive label

Order code

SLK		H	mm	mm

Please name every length if you order different probe lengths! eg. rod 1: L1/L2, rod 2: L1/L2

Equipment

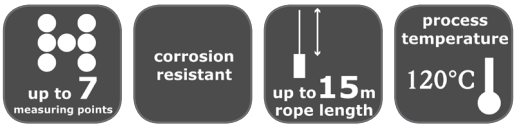
Order information	*Model*
AH-2	Spacers for 2-rod probes
AH-3	Spacers for 3-rod probes
AH-4	Spacers for 4-rod probes
AH-5	Spacers for 5-rod probes

Rope probes SST

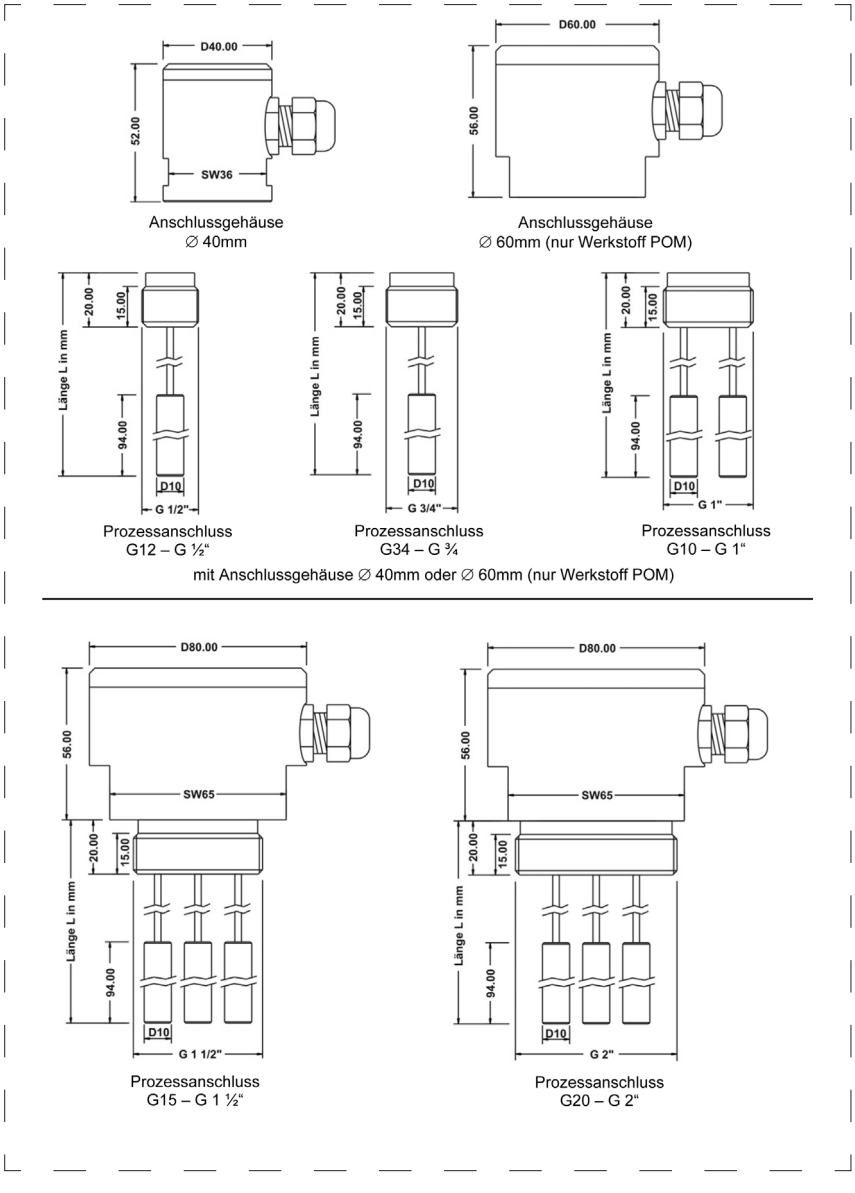
Electrode probe for conductive limit level detection in electrically conductive filling materials with up to seven electrode ropes – plastic screwing thread; up to 6 measureing ponts; temperature: -10°C...+120°C; pressure: at pressure zero

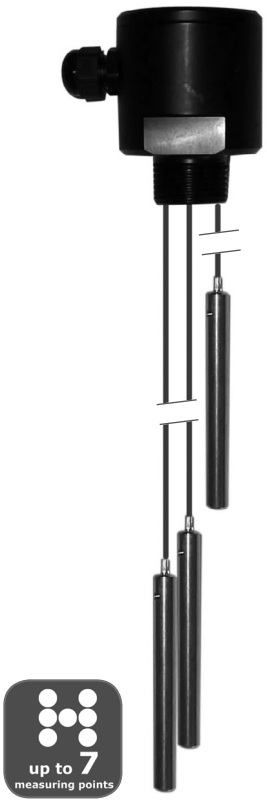
1 / 01.22

Technical data



Process pressure max:	pressureless operation
Medium temperature:	-10°C...120°C
Material connection housing:	POM / PP / PTFE
Material process conncetion:	POM / PP / PTFE
Material probe rope:	Steel 1.4404 (AISI316L) resp. 1.4571 (AISI316Ti)
Isolation probe rope:	PTFE
Gaskets:	Medium contact : NBR; Others: NBR, FPM





Application

The cable SST probes are related to the evaluators (eg, SRA-100-U0) is used for level detection and level control in conductive liquids.

Depending on the number of cables used and the evaluation units, different measurement tasks such as Overflow, dry run, two-step control, moisture detection, etc. are realized.

Depending on the selected version, can include the container wall as a mass, to be implemented to 7 switch points. The ground connection is made either directly to the conductive container or through a cable probe.

In the probe head, an additional module (diode module LBM) for permanent circuit monitoring to be installed.

In the case of a line break between the electrode probe and an appropriate evaluation, the evaluation issue an alert.

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Rope probes SST

Electrode probe for conductive limit level detection in electrically conductive filling materials with up to seven electrode ropes – plastic screwing thread; up to 6 measureing ponts; temperature: -10°C...+120°C; pressure: at pressure zer

1 / 01.22

Equipment

mounting sleeves and nuts page 64

amplifiers page 50

Model

0 Standard

Number of electrodes
(Basic price incl. 3 m rope!)

1 1 electrode rope
2 2 electrode ropes.
3 3 electrode ropes.
4 4 electrode ropes.
5 5 electrode ropes.
6 6 electrode ropes.
7 7 electrode ropes.

Connection

G12 Thread ISO 228-1 – G½" only with one electrode rope possible
G34 Thread ISO 228-1 – G¾" up to two electrode ropes possible
G10 Thread ISO 228-1 – G1" up to three electrode ropes possible
G15 Thread ISO 228-1 – G1½" up to four electrode ropes possible
G20 Thread ISO 228-1 – G2" up to seven electrode ropes possible

Material probe rope
(Preis pro angefangene 1000 mm je Seil)

A CrNi-steel.
Y Others

Material Connection housing

D POM, Ø 40 mm for G½" / G1" / G¾" resp. Ø 80 mm for G1½" / G2"
E POM, Ø 60 mm for G½"/ G¾" / G1"
P PP, Ø 40 mm for G½" / G¾" / G1"
M PP, Ø 80 mm for process connection G1½" / G2"
T PTFE, Ø 40 mm for G½" / G1" / G¾".
L PTFE, Ø 80 mm for G1½" / G2"

Material probe insulation

H PTFE

Circuit monitoring

A Without circuit monitoring
B With circuit monitoring
(only at head Ø ≥ 60 mm, resp. thread ≥ 1½")

Length electrode rope in mm

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
ME Measuring point label as adhesive label

Order code

SST	0			H		mm

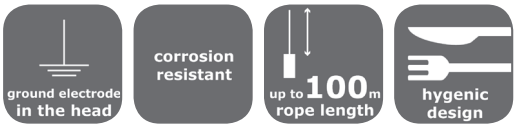
Please name every length if you order different probe lengths!
eg. rod 1: L1/L2, rod 2: L1/L2

Rope probes SHT

with cable or terminal connection, 2-pole rod probe, 1 point level

1 / 01.22

Technical data

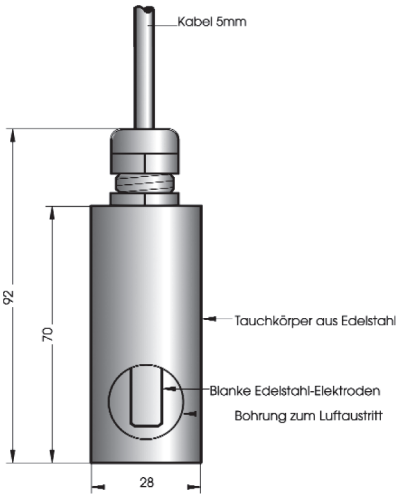


Operating pressure max:	pressureless
Medium temperature:	-20°C...60°C
Material submersible heating element:	POM (Delrin®)/ stainless steel 1.4571
Material probes:	Stainless steel 1.4571
IsolationSondenkabel:	PVC

SHT-2000 / 2001 SHT-1

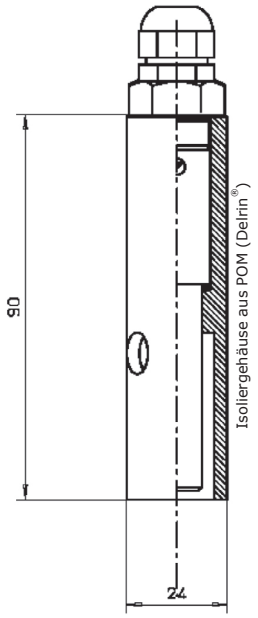
SHT-2000 / 2001

cast in
2-pole



SHT-1

with terminal connection
1-pole



Application

The cable electrode SHT is primarily used as a submersible sensor in conjunction with appropriate evaluation devices (eg SRA-100-U0) for limit detection and level control in conductive liquids.

The switch point is given by the length of the connecting cable, thus a simple switching point adjustment possible. With the 2-pole version no additional mass probe is required.
The SHT-1 probe can be equipped with a cable.

Rope probes SHT

with cable or terminal connection, 2-pole rod probe, 1 point level

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Equipment

amplifiers
page 50

Basic price . . . . . .

Circuit monitoring
A Without circuit monitoring . . . . . .
B With circuit monitoring . . . . . .

Length probe cable in m
price per meter . . . . . .

Order code

SHT-2000-ADH m

2-pole fountain sensor for use in drinking water areas with drinking water certificatB

Basic price . . . . . .

Circuit monitoring
A Without circuit monitoring . . . . . .
B With circuit monitoring . . . . . .

Length probe cable in m
price per meter . . . . . .

Order code

SHT-2001-ADH m

Basic price . . . . . .

Model
0 Standard . . . . . .

Number of electrodes
1 1 electrode contact . . . . . .

Material electrode contacts *(medium contact)*
A Steel 1.4404 *(AISI 316L)* / 1.4571 *(AISI 316Ti)* . . . . . .

Material Connection housing *(medium contact)*
D POM – polyoxymethylenee *(Delrin®)* . . . . . .

Order code

SHT	0	1	A	D

Rod probes SNT

with plastic screw-in thread and plug-in connection; up to 3 measurement points, with 4 rods.
medium temperature: -20°C...+100°C; pressure: 10 bar

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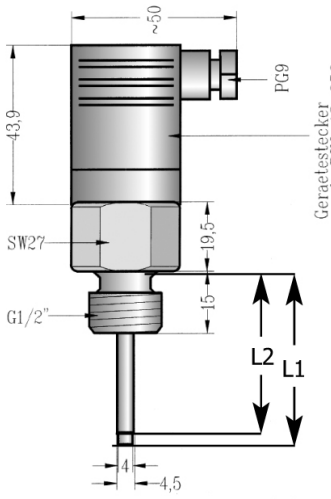
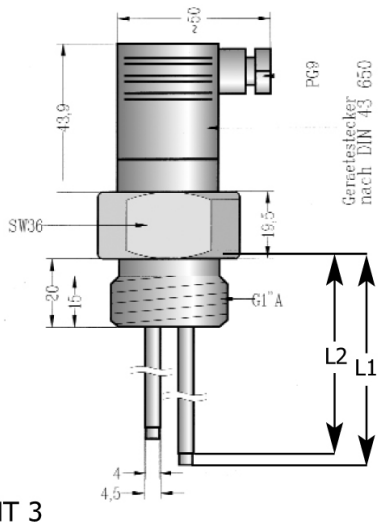
Technical data

Operating pressure max:	10bar
Medium temperature:	-20°C...100°C
Material connection head:	POM / polypropylenee (PP) / PTFE
Material probes:	Stainless steel 1.4571, 1.4404 / Hastelloy® C22
Isolation probe rod:	Polyamid / E-CTFE

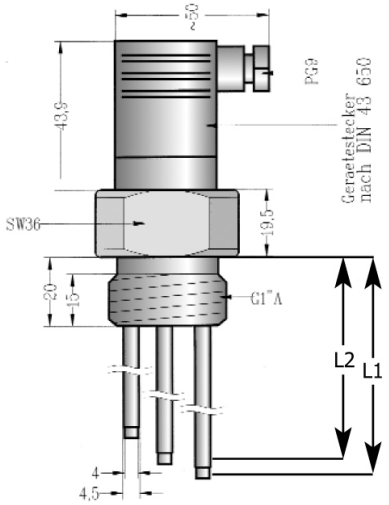
Typ: SNT 1



Typ: SNT 2



Typ: SNT 3



Application

The SNT rod probes are used in conjunction with-the evaluation units(eg,SRA-100-U0) is used for le-veldetection and levelc ontrol inc onductive liquids.

Depending on the number of bars and evaluation devices used, different measurement tasks such as Overflow, dry run,two-step control,moisture detec-tion, etc. are realized.

Depending on model selected can include the container wall as a mass,to be implemented to 5 switchpoints.The ground connection goes either di-rectly to the container orconducting ap robe rod.

The electrical connection is made via a plugin type SNT content, thus a rapid assembly and disassem-bly of the probe or a repositioning of the indicator-to other probes possible.

Rod probes SNT

with plastic screw-in thread and plug-in connection; up to 3 measurement points, with 4 rods.
medium temperature: -20°C...+100°C; pressure: 10 bar

1 / 01.22

Equipment

mounting sleeves and nuts
page 64

amplifiers
page 50

Surcharge

* each rod
over 1500 mm
25,50 € surcharge!

Electrode rods

1 One-rod-probe
2 Two-rod-probe
3 Three-rod-probe
4 Four-rod-probe

Connection

G12 G½" plastic connection *(only for 1-rod)*
G10 G1" plastic connection *(up to 3-rod)*
G15 G1½" plastic connection *(for alle probes possible)*

Material probe rod
(price per 100mm)

A 1.4404 steel 4 mm
D Hastelloy® C22, 3,2 mm oder 6 mm
Y Others.

Material process connection

D POM – polyoxymethylene Delrin®
P PP – polypropylenee
T PTFE – Polytetrafluoroethylene Teflon®

Material probe insulation
(price per 100mm)

R PA-Polyamid *(standard)*
H E-CTFE – Ethylene-chlorotrifluoroethylene Halar® 4 mm

Diameter probe rod

0 4 mm (L1 max. 3000mm)

Length L1 probe rod in mm

Length L2 insulation mm

Plug

0 Type: NKW04-0 (1x included with delivery)
1 Tadditional plug NKW04-0

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
ME Measuring point label as adhesive label

Order code

SNT		0	mm	mm	0

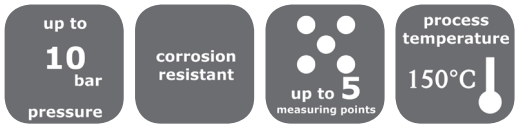
SNT probes are only available in 500 mm increments!
Probe rods should be shortened by oneself!

Rod probes SBS

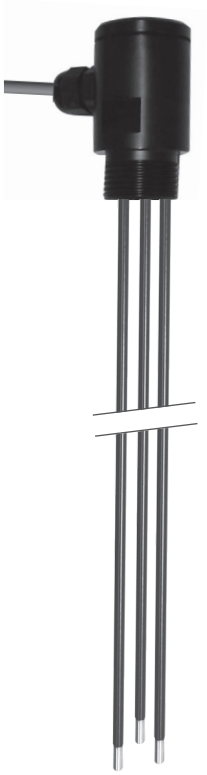
with permanently attached cable and encapsulated probe head; up to 4 measurement points, with 5 rods.
medium temperature: -20°C...+150°C; pressure: 10 bar

1 / 01.22

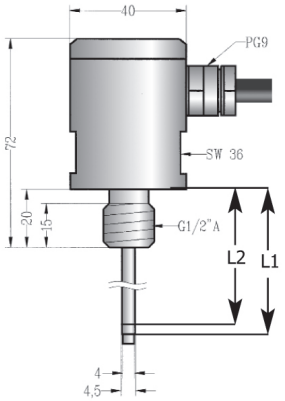
Technical data



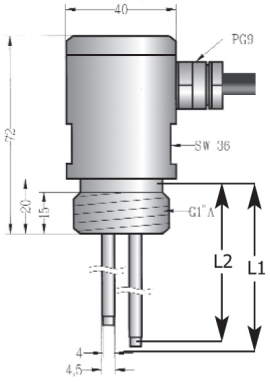
Elektrode rod (medium contact):	Stahl 1.4404 (AISI316L) resp. 1.4571 (AISI316Ti) / Hastelloy C22 / Titan
Elektrode trod isolation (medium contact):	PA / ETFE resp. E-CTFE
Connection housing:	POM / PP / PTFE
Cable screw:	Housing PA / Gaskets CR, NBR
Gaskets:	Medium contact: Elektrode isolation PA: NBR / Elektrode isolation ETFE resp. E-CTFE: FPM; others: NBR, FPM
Process temperature:	Max – 20°C...+100°C
Process pressure max:	10 bar
Protection:	IP65 EN/IEC 60529



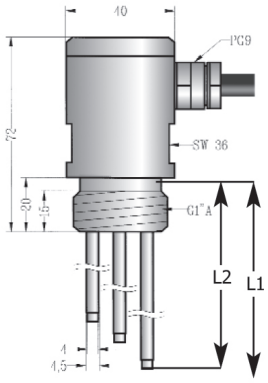
Typ: SBS 1



Typ: SBS 2



Typ: SBS 3



Application

The bar probe SBS is related to the evaluators (eg, SRA-100-U0) is used for level detection and level control in conductive liquids.

Depending on the number of bars and evaluation devices used, different measurement tasks such as Overflow, dry run, two-step control, moisture detection, etc. are realized.

Depending on model selected can include the container wall as a mass, to be implemented to 5 switch points. The ground connection works either directly to the container or conducting a probe rod.

Type in the SBS is the connecting cable already connected and encapsulated in the probe head. Through this encapsulation, the probe is outside of the container completely submersible.

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Rod probes SBS

with permanently attached cable and encapsulated probe head; up to 4 measurement points, with 5 rods.
medium temperature: -20°C...+150°C; pressure: 10 bar

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Equipment

mounting sleeves and nuts
page 64

amplifiers
page 50

Surcharge

* each rod
over 1500 mm
25,50 € surcharge!

Electrode rods

1 One-rod-probe
2 Two-rod-probe
3 Three-rod-probe
4 Four-rod-probe
5 Five-rod-probe

Connection- plastic

G12 G½" *(only for 1-rod)*
G10 G1" *(only up to 3-rod)*
G15 G1½" *(for all probes possible)*

Material probe rod
(price per 100mm)

A4 CrNi-steel, rod diameter 4mm
A8 CrNi-steel, rod diameter 8mm
D Hastelloy C22, rod diameter 3,2 mm oder 6 mm
T4 Titan not for Ex-version, 4 mm
T8 Titan not for Ex-version, 8 mm.
E 1.4404 steel with 50 mm tantalum tips
Y Others.

Material Connection housing sealed

D POM – polyoxymethylenee Delrin®, Ø 40 mm for G½" / G1" resp. Ø 80 mm for G1½" / G2"
E POM – polyoxymethylenee Delrin®, Ø 60 mm for G½" / G1"
P PP – polypropylenee, Ø 40 mm for G ½" / G 1"
M PP – polypropylenee, Ø 80 mm for process connection G1½" / G2"
T PTFE – Polytetrafluoroethylene Teflon®, Ø 40 mm for G½" / G1"
L PTFE – Polytetrafluoroethylene Teflon®, Ø 80 mm for G1½" / G2"

Material probe insulation
(price per 100mm)

R Polyamid *(standard) not for material process connection T / L – PFTE*
H4 ETFE resp. E-CTFE, rod diameter 4mm
H8 ETFE resp. E-CTFE, rod diameter 8mm
*at length over 1 m

Circuit monitoring

A Without circuit monitoring
B Diode module LBM only for terminal enclosure from Ø 60mm.

Diameter probe rod

0 4 mm (L1 max. 3000mm)
W 8 mm (L1 max. 3000mm)

Length L1 probe rod in mm

Length L2 insulation mm

Connection cable in m
(prive per 1000 mm)

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
ME Measuring point label as adhesive label

Order code

SBS		mm	mm	m

SBS probes are only available in 500 mm increments!
Probe rods should be shortened by oneself!

Leakage probe PUK | PUKK

for conductive leak detection of electrically conductive filling materials;
with seperated or compact electronics

1 / 01.22

Technical data

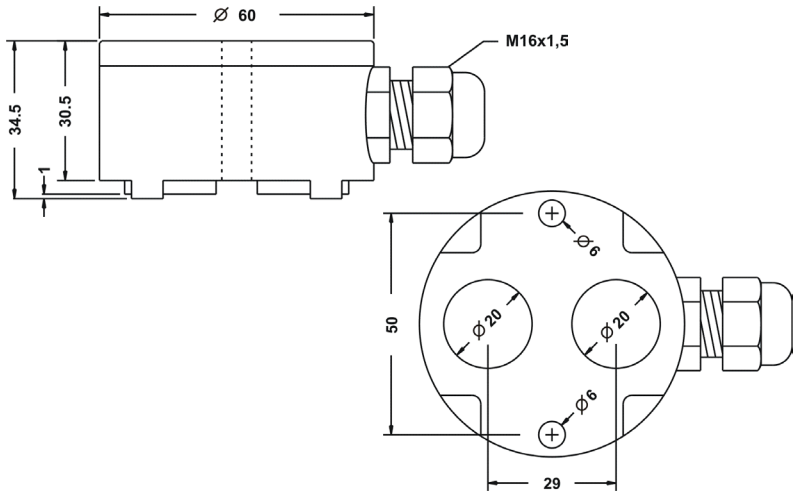
corrosion resistant | ground electrode in the head | easy installation

Operating pressure max:	pressureless
Medium temperature:	-20°C...60°C
Material connection head:	POM / polypropylenee (PP) / PTFE
Material probes:	Stainless steel 1.4571, 1.4404 / Hastelloy® C

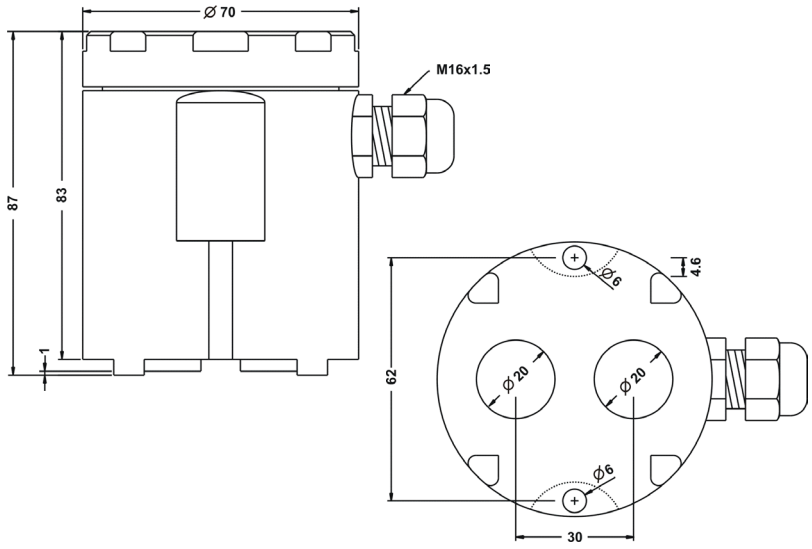
Leakage probe PUK

Leakage probe PUKK

PUK



PUKK



Application

The leakage probes of the series PUK / Pukk are used in conjunction with a suitable evaluation for conductive leakage monitoring of electrically conductive products.

The leak detector is designed for a wide range of applications. The conductivity, even of aggressive contents, from 1 µS/cm are recorded at process temperatures from -20 ° C to +60 ° C.

Once the electrically conductive filling material forms a connection between the electrodes, a measurable current is flowing, which causes a reaction of the connected evaluation unit.

By the use of an AC voltage the corrosion of the electrode and the electrolytic decomposition of the contents is avoided.

An additional module (diode module LBM) for line monitoring in the housing can be installed in the device. In the event of a line break between the leak probe and a suitable evaluation the evaluation may issue an alert.

Leakage probe PUK seperated version

for conductive leak detection of electrically conductive filling materials

1 / 01.22

Basic price . . . . . .

Model
0 Standard . . . . . .

number electrodes
2 2 electrodes . . . . . .

Material electrodes *(medium contact)*
A Steel 1.4404 (316L) / 1.4571 (316Ti) . . . . . .
Y Others. . . . . .

Material housing *(medium contact)*
D POM – polyoxymethylenee (Delrin®) . . . . . .
P PP – polypropylenee . . . . . .
Y others . . . . . .

Electrical connection
K Terminal box . . . . . .
V Cable 5 m - silicone . . . . . .
Y Cable others length . . . . . .

Circuit monitoring
A Without circuit monitoring . . . . . .
B With circuit monitoring (Diodenmodul LBM) . . . . . .

Order code

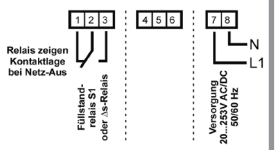
PUK	0	2				

Leakage probe PUKK compact version

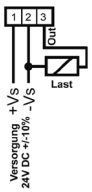
for conductive leak detection of electrically conductive filling materials

Connection

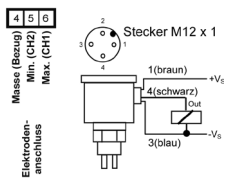
with relay output
terminal assignment



PNP-switch output
terminal assignment



PNP-switch output
plug M12x1



Basic price . . . . . .

electrical connection
K Terminal box . . . . . .
V Cable 5 m - silicone . . . . . .
Y Cable others length. . . . . .

auxiliary power
G DC voltage 24 V DC. . . . . .
U AC / DC voltage 20 ... 30V AC / DC . . . . . .

electronic output
A 1x PNP switch output (only at electronic supply type G) . . . . . .
B 1x relay output (only at electronic supply type U) . . . . . .

Model
2 2-electrodes 1x limit . . . . . .

Process connection
A screw fixing. . . . . .

Material electrodes *(medium contact)*
A Steel 1.4404 (316L) / 1.4571 (316Ti) . . . . . .
D Hastelloy® C 4 . . . . . .
Y Others. . . . . .

Material housing *(medium contact)*
D POM – polyoxymethylenee (Delrin®). . . . . .
P PP – polypropylenee. . . . . .
T PTFE – Polytetrafluoroethylene (Teflon®). . . . . .

Order code

PUKK					2	A

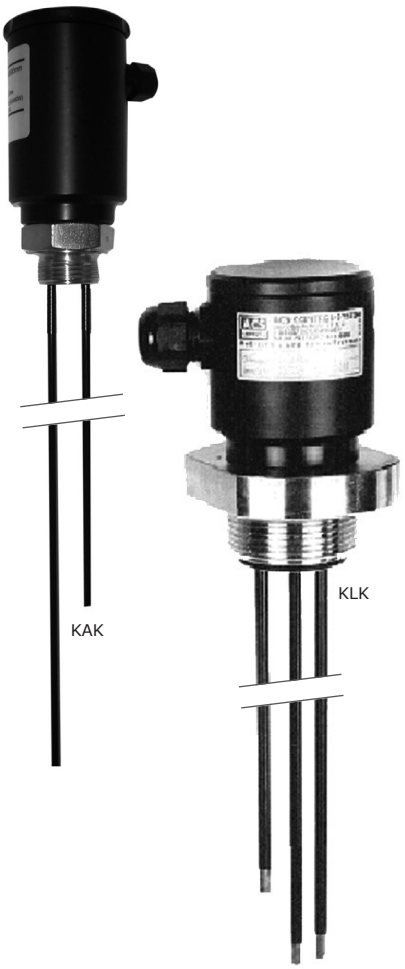
Conductive compact probes limit switch or two-position controller
KAK for standard application
KLK for food application

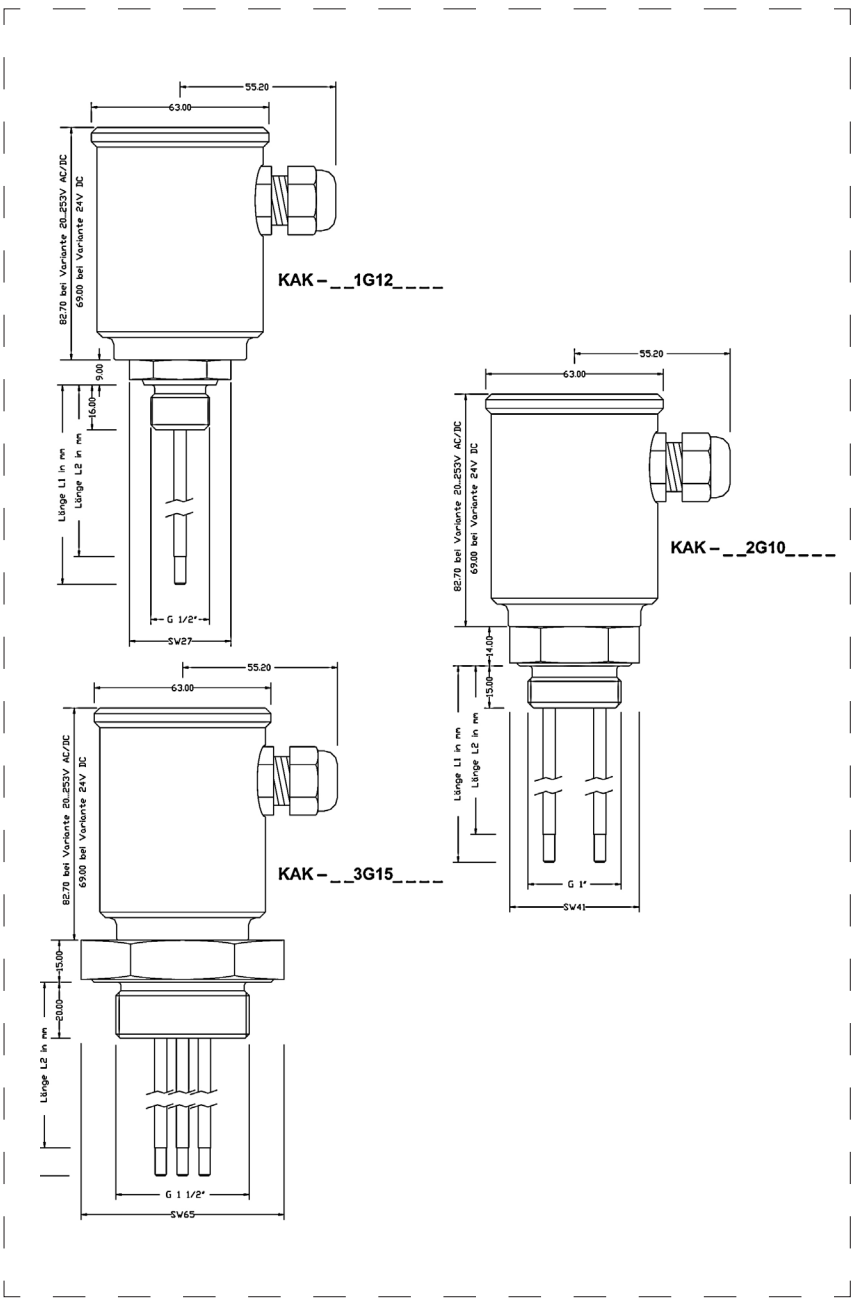
1 / 01.22

Technical data

up to 10 bar pressure | AC/DC | hygenic design | adjustable sensitivity | CIP SIP capable

Process pressure max:	-1...+10bar
Medium temperature:	-40°C...100°C
Protection:	IP65 DIN EN 60529
Material Gaskets:	KAK: FPM / KLK: EPDM, FDA-listed
Material Process connection:	Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti)
Material probe rod:	Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti) / Hastelloy C22 / Titan
Isolation probe rod:	KAK: PA / ETFE bzw. E-CTFE / KLK: ETFE, FDA-listed





Application

The filling level limit switch KAK resp. KLK is used, to evaluate one or two filling levels resp. limit levels in electrically conductive liquids with a conductivity of minimum 5µS/cm resp. a resistance of maximum 200kOhm.

The device is also useable as overflow protection in container with liquids, for the realization of a two-position-control e.g. for pump control or also as dry run protection.

The conductivity also of aggressive filling liquids can be detected, at process temperatures from -40 °C to +100 °C, at pressures from -1 bar to +10 bar.
The version KAK is the standard type for general applications, whereas the version KLK is especially conceived for food applications.

Conductive compact probes limit switch or two-position controller
KAK for standard application
KLK for food application

1 / 01.22

KAK - Standard application

KLK - Food resp. hygienic application

Equipment

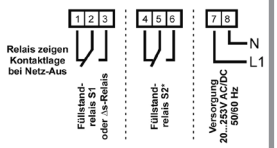
Einbaumuffen
page 64

Surcharge

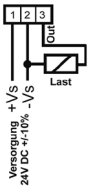
* each rod
over 1500 mm
25,50 € surcharge!

Connection

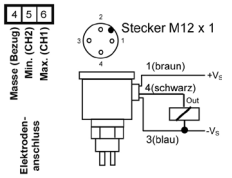
with relay output
terminal assignment



PNP-switch output
terminal assignment



PNP-switch output
plug M12x1



Electrical connection
- 0 Terminal box
- V Plug M12x1 only at auxiliary power direct voltage 24 V DC

Auxiliary power
- G DC voltage 24 V DC (only with output „A" - PNP)
- U Wide range power supply 20...253 V AC/DC

Output
- A 1 x PNP-switch output, only at auxiliary power DC voltage 24 V DC.
- B 1 x relay output, only at auxiliary power universal voltage 20...253 V AC/DC
- C 2 x relay output, only at auxiliary power universal voltage 20...253 V AC/DC

Model measurement system
- 1 1-rod, 1x limit, reference electrode over process connection
- 2 2-rod, 1x limit, reference electrode over longest rod - number 2
- 3 3-rod, 2x limit, reference electrode over longest rod - number 3
- 4 2-rod, 2x limit, reference electrode over process connection

Process connection material stainless steel 1.4404 *(medium contact)*
- D25 Dairy coupling DIN 11851 – DN25 *(only at KLK) (only for 1-rod)*
- D40 Dairy coupling DIN 11851 – DN40 *(only at KLK) (only up to 2-rod)*
- D50 Dairy coupling DIN 11851 – DN50 *(only at KLK) (only up to 3-rod)*
- G12 G½" connecting thread*(only for 1-rod)*
- G10 G1" connecting thread*(only up to 2-rod)*
- G15 G1½" connecting thread*(only up to 3-rod)*
- YYY Others

Material electrode rod
(price per 100mm)
- A4 Steel 1.4404, 4 mm
- A8 Steel 1.4404, 8 mm
- D Hastelloy® C22, rod diameter 3,2 mm oder 6 mm
- T4 Titan not for Ex-version, rod diameter 4 mm
- T8 Titan not for Ex-version, rod diameter 8 mm.
- E CrNi-steel, tip tantalum 50mm, on request
- Y Others

Material housing
- D POM – polyoxymethylenee Delrin®, *(standard)*
- P PP – polypropylenee
- L PTFE – Polytetrafluoroethylene Teflon®
- V CrNi-steel

Material probe insulation
(price per 100mm)
- R PA-Polyamid *(standard) (not at KLK)*
- H4 ETFE (KLK) resp. E-CTFE, rod diameter 4 mm
- H8 ETFE (KLK) resp. E-CTFE, rod diameter 8mm
  * at lengthn over 1 m

Diameter probe rod
- 0 4 mm
- W 8 mm

Length *L1/L2/L3 electrode rod in mm, max. 2500 mm*

+ Additional Options (optional)

- SF LABS-free, silicone-free / paint compatible version
- ML Measurement point designation / TAG – Laser marking
- ME Configuration / Preset
- KF Measuring point label as adhesive label.

Order code

KAK | KLK ____ mm

Please name every length if you order different probe lengths!
eg. rod 1: L1/L2, rod 2: L1/L2

Conductive electrode relay SRA-100-U0

evaluation unit for fill level measurement to connect on conductive probes

1 / 01.22

Technical data

Permitted supply voltage:	20...253 V AC / DC 48...62 Hz
Power consumption:	≤ 3,5 VA / 1,3 W
Isolation voltage:	4kV~ auxiliary power against relay outputs against signal inputs
Contact rating:	U~ maximal 250 V AC; I~ maximal 10 A AC; P~ maximal 2500 VA
Level sensor:	one resp. two level electrodes with common reference electrode
Measuring Range:	≤ 1kΩ resp. ≥ 1mS/cm / ≤ 10kΩ resp. ≥ 100µS/cm / ≤ 200kΩ resp. ≥ 5µS/cm
Line monitoring:	only with level sensor with built-in modul LBM
Housing:	modular housing, 22,5mm wide

Application

The electrode relay SRA-100-U0 works in conjunction with conductive probes as a level limit switch or a control in conductive liquids such as water, alkalis and acids. While a low voltage according to VDE 0100 Section 410 stands at the electrodes of about 9V, thereby touching the probes is completely safe.

As soon as the electrically conductive filling builds a connection between mass and eg the maximum electrode, a small alternating current flows which is implemented in the evaluation in a relay output.
As mass with metal vessel the wall of the vessel can be used, or an electrode with non-metallic container.
The use of AC avoids the corrosion of the probe rods and electrolytic destruction of the product.

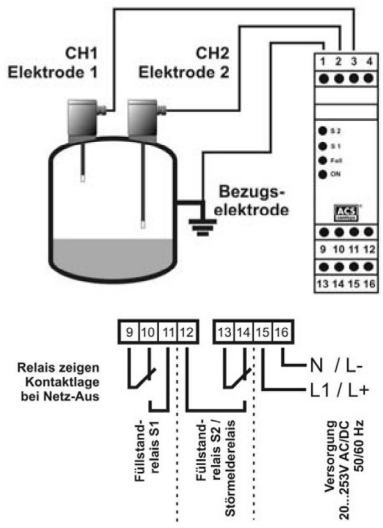
The device can be used with latching relay, Min and Max switching point work, as well as a double level detectors, with two separate outputs.

As a result, the number of applications, such as overflow, dry run protection, two-point control, moisture detection, etc. can be realized.

Via a coarse and fine tuning teh sensitivity can be adjusted on the conductivity of the liquid. With the adjustable trigger delay to approximately 8 seconds, possibly undulations in the container are hidden.

As further details the SRA-100-U0 offers a line break monitoring with fault relay and a wide range power supply of 20 ... 253V AC / DC.

Connection



Electrode relay SRA-100-U0

SRA-100-U0/20...253 V AC/DC Electrode relay, 22,5 mm . . . . . .

Surcharge *- special measuring range*

Special measuring range 0-1 MegaOhm . . . . . .
Special measuring range 0-8 MegaOhm . . . . . .

+ Additional Options (optional)

KF Configuration / Preset.....
KA Configuration setting as an adhesive label.....

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Conductive electrode relay ExSRA-100-U0

evaluation unit for fill level measurement to connect on conductive probes for Ex-area

1 / 01.22

Technical data

Permitted supply voltage:	20...253 V AC / DC 48...62 Hz
Power consumption:	≤ 3,5 VA / 1,3 W
Isolation voltage:	4kV~ auxiliary power against relay outputs against signal inputs
Contact rating:	U~ maximal 250 V AC; I~ maximal 10 A AC; P~ maximal 2500 VA
Level sensor:	one resp. two level electrodes with common reference electrode
Measuring Range:	≤ 1kΩ resp. ≥ 1mS/cm / ≤ 10kΩ resp. ≥ 100µS/cm / ≤ 200kΩ resp. ≥ 5µS/cm
Line monitoring:	only with level sensor with built-in modul LBM
Housing:	modular housing, 22,5mm wide

Application

The electrode relay ExSRA-100-U0 works in conjunction with conductive probes as a level limit switch or a control in conductive liquids such as water, alkalis and acids. While a low voltage according to VDE 0100 Section 410 stands at the electrodes of about 9V, thereby touching the probes is completely safe.

As soon as the electrically conductive filling builds a connection between mass and eg the maximum electrode, a small alternating current flows which is implemented in the evaluation in a relay output.
As mass with metal vessel the wall of the vessel can be used, or an electrode with non-metallic container.
The use of AC avoids the corrosion of the probe rods and electrolytic destruction of the product.

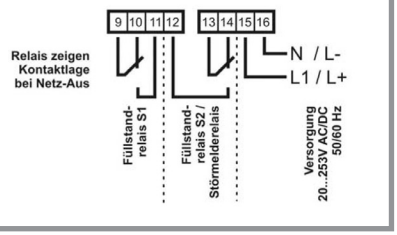
The device can be used with latching relay, Min and Max switching point work, as well as a double level detectors, with two separate outputs.

As a result, the number of applications, such as overflow, dry run protection, two-point control, moisture detection, etc. can be realized.

Via a coarse and fine tuning teh sensitivity can be adjusted on the conductivity of the liquid. With the adjustable trigger delay to approximately 8 seconds, possibly undulations in the container are hidden.

As further details the SRA-100-U0 offers a line break monitoring with fault relay and a wide range power supply of 20 ... 253V AC / DC.

Connection



Electrode relay ExSRA-100-U0 with Ex-licence ATEX

ExSRA-100-U0/20...253 V AC/DC	Electrode relay, 22,5 mm, 2 Wechsler, ... ATEX II (1) G [Ex ia Ga] IIB/IIC resp. ATEX II (1) D [Ex ia Da] IIIB/IIIC

Surcharge *- special measuring range*

Special measuring range	0-1 MegaOhm . . . . .
Special measuring range	0-8 MegaOhm . . . . .

+ Additional Options (optional)

KF Configuration / Preset.....
KA Configuration setting as an adhesive label.....

Vibrocont SCM-300

Vibration level limit switch for liquids;
Miniaturized small vibration fork
Screw-in thread G½" und G¾"

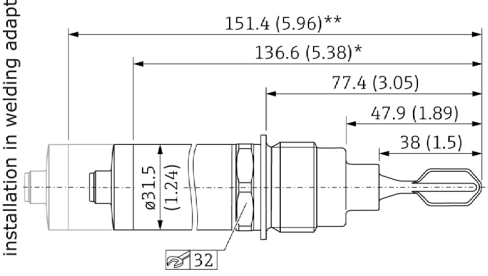
1 / 01.22

Technical data

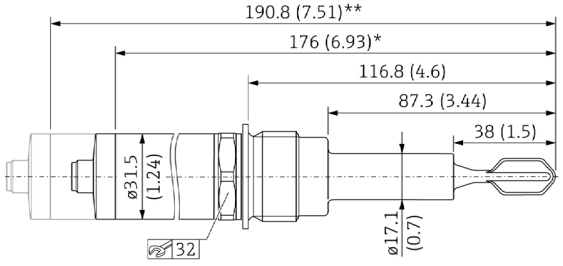
WHG licence | up to 40 bar pressure | corrosion resistant | compact design

Measuring Principle:	Vibration Liquids
Characteristic / Application:	Level switch for liquids and is used in tanks, vessels and pipes.
Supply / Communication:	20 ... 253V AC/DC, 2-wire; 10 ... 35V DC-PNP 3-wire
Ambient temperature:	40 °C ... 70 °C (-40 °F ... 158 °F)
Process temperature:	- 40 °C ... 150 °C (-40 °F ... 302 °F)
Process pressure absolute / max. overpressure limit:	Vacuum ... 40 bar (Vacuum ... 580 psi)
Min. density of medium:	>0,7g/cm³ (>0,5g/cm³ optional)
Main wetted parts:	316L
Process connection Threads:	G1/2, G3/4, G1, MNPT1/2, MNPT3/4, MNPT1, R1/2, R3/4, R1
Output:	AC/DC, DC-PNP
Certificates / Approvals:	WHG; EN10204-3.1 material; Final Inspection Report
Options:	Adjustment switching delay; Cleaned from oil+grease, PWIS free

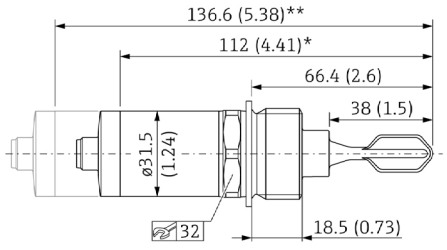
Compact version thread ISO 228 G1" for flush wall installation in welding adapter



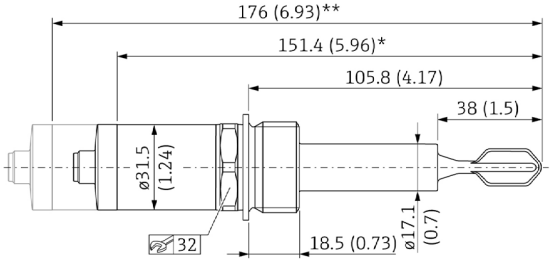
Short tube version thread ISO 228 G1" for flush wall installation in welding adapter



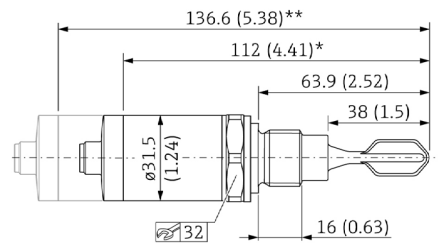
Compact version Thread ISO 228 G1"



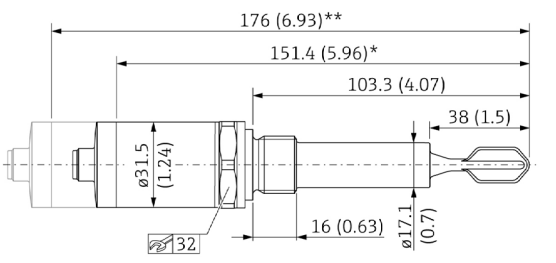
Short tube version Thread ISO 228 G1"



Compact version Thread ISO 228 G1/2", G3/4"



Short tube version Thread ISO 228 G1/2", G3/4"



* Dimensions for process temperature max. 100 ° C
** Dimensions for process temperature max. 150 ° C

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Vibrocont SCM-300

Vibration level limit switch for liquids;
Miniaturized small vibration fork
Screw-in thread G½" und G¾"

1 / 01.22

Basic price *(*scale prices)* . . . . . .

300 Standard admission 100°C. . . . . .
302 Overfill saftety WHG + leakage detection 100°C process temperature. . . . . .
350 Standard admission 150°C. . . . . .
352 Overfill saftety WHG + leakage detection 150°C process temperature. . . . . .

Construction form

K Compact version . . . . . .
R Probe extension: tube (= Switching point as VCL 200/202) . . . . . .
Y Special version . . . . . .

Process connection

2 Screw-in piece G½" . . . . . .
1 Screw-in piece G¾" . . . . . .
6 G1" B; DIN EN ISO228-1, flush mounting in welding socket BEFV-10
(= Process connection as VCL 200/202) . . . . . .
6 Screw-in piece G1" . . . . . .
Y Special version. . . . . .

Electronics

WA Electronic: 20...253V AC/DC . . . . . .
GA Electronic: 10...30V DC . . . . . .
Y Special version . . . . . .

Electrical connection

02 Model: valve plug. . . . . .
01 Model: plug M12 *(not for AC-Version)* . . . . . .
Y Special version . . . . . .

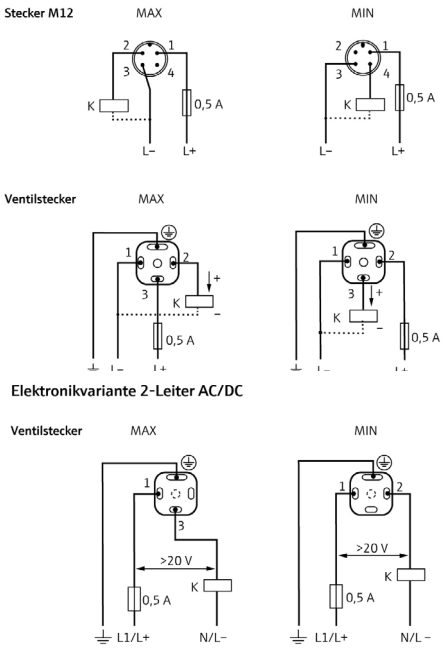
S Standard . . . . . .

Application

Vibrocont SCM-300 is a point level switch for liquids. The Vibrocont SCM-300 is designed for industrial applications in all industries, mainly the machinery industry. The Vibrocont SCM-300 is used for overfill prevention or pump dry-run protection in cleaning and filter systems as well as in cooling and lubrication vessels.

Compact:
- Smallest vibronic sensor
Safe:
- Continuous self-monitoring
- Reliable switching independent of media properties
Easy:
- No calibration or adjustment
- Plug & play

connection



Order code

Vibrocont SCM

Equipment

Order information	*Model*
BEF-SCM34	Welding socket G¾" . . . . .
LKW0405PUR	Connection cable 5 m . . . . .
LKWP405PUR	Connection cable LED 5 m . . . . .
BKZ0412-VA	Cable socket. . . . .

Vibrocont SHM-300

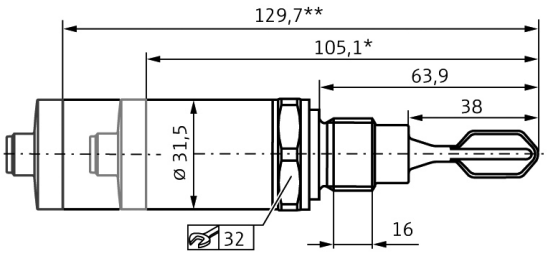
Vibration level limit switch for liquids in hygienic applications

1 / 01.22

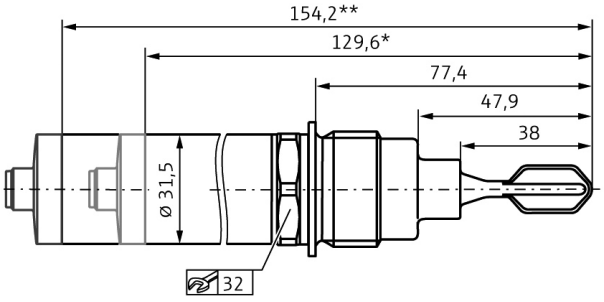
Technical data

Measuring Principle:	Vibration Liquids
Characteristic / Application:	Point level switch for liquids in the food sector
Supply / Communication:	20 ... 253V AC/DC, 2-wire; 10 ... 35V DC-PNP, 3-wire
Ambient temperature:	40 °C ... 70 °C (-40 °F ... 158 °F)
Process temperature:	-40 °C ... 150 °C (-40 °F ... 302 °F)
Process pressure absolute / max. overpressure limit:	Vacuum ... 40 bar (Vacuum ... 580 psi)
Min. density of medium:	>0,7g/cm³ (>0,5g/cm³ optional)
Main wetted parts:	316L
Process connection: Threads:	G1/2, G3/4, G1, MNPT1/2, MNPT3/4, MNPT1, R1/2, R3/4, R1
Process connection hygienic:	Flush mount by use of weld in adapter; DIN11851; Tri-Clamp
Output:	AC/DC, DC-PNP
Certificates / Approvals:	WHG; EN10204-3.1 material; EHEDG, 3A; Final inspection report
Options:	Switching delay; Cleaned from oil+grease, Surface finish measurement

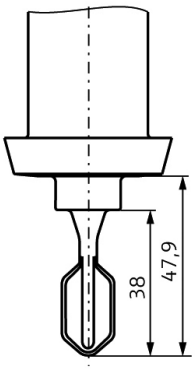
Gewinde ISO 228 G¾" für frontbündigen Einbau in Einschweißadapter



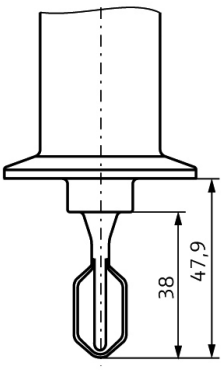
Gewinde ISO 228 G1" für frontbündigen Einbau in Einschweißadapter



DIN11851 DN25; DN32; DN40



Tri-Clamp ISO2852 DN25-38; DN40-51



* Abmessung für Prozesstemperatur max. 100 °C
** Abmessung für Prozesstemperatur max. 150 °C

Einbau gemäß Betriebsanleitung

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Vibrocont SHM-300

Vibration level limit switch for liquids in hygienic applications

1 / 01.22

Basic price *(*scale prices)*

300	Standard admission 100°C
302	Overfill saftety WHG + leakage detection 100°C process temperature
350	Standard admission 150°C
352	Overfill saftety WHG + leakage detection 150°C process temperature
Y	Special version

Process connection

GD	Screw-in piece G¾" flush mounted
GE	Screw-in piece G1" flush mounted
T1	Tri-Clamp ISO2852 DN25-38 (1..1-1/2"), 316L, DIN32676 DN25-40
TD	Tri-Clamp ISO2852 DN40-51 (2"), 316L, DIN32676 DN50
MN	DIN 11851 DN25 milk tube
MP	DIN 11851 DN32 milk tube
M4	DIN 11851 DN40 milk tube
Y	Special version

Electronics

WA	Electronic: 20...253V AC/DC
GA	Electronic: 10...30V DC
Y	Special version

Electrical connection

02	Model: valve plug
01	Model: plug M12 *(not for AC-Version)*
Y	Special version

Surface roughness

S	Surface roughness <1,5µm
H	Surface roughness <0,76µm
Y	Special version

S	Standard

Application

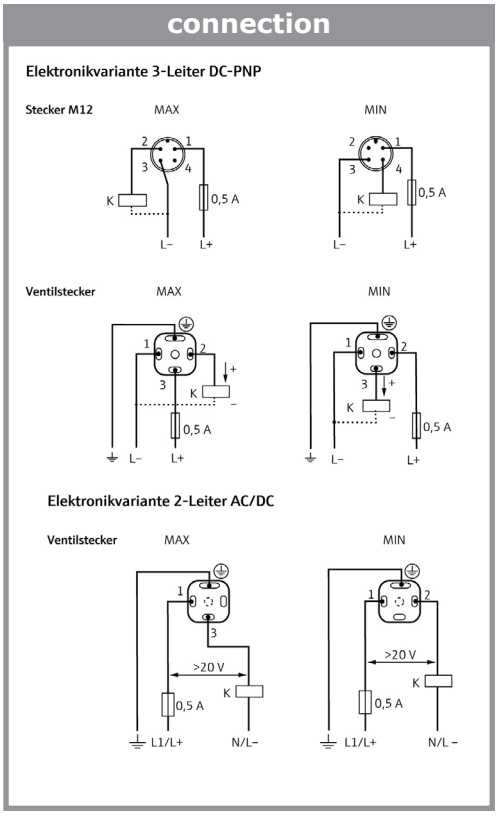
Vibrocont SHM-300 is a point level switch for liquids. The Vibrocont SHM-300 is especially designed for food & beverage applications where hygienic requirements are requested. The Vibrocont SHM-300 is used for overfill prevention or pump dry-run protection preferably in storage tanks, mixing vessels and pipes.

Compact:
- Smallest vibronic sensor

Safe:
- Continuous self-monitoring
- Reliable switching independent of media properties

Easy:
- No calibration or adjustment
- Plug & play

connection



Order code

Vibrocont SHM S

Equipment

Order information	*Model*
BEF-SCM34	Welding socket G¾" for process connection GD
BEFASCM10	Welding socket G1" for process connection GE
BEFBSCM10	Welding socket G1", ausrichtbar
LKW0405PUR	Connection cable 5 m
LKWP405PUR	Connection cable LED 5 m
BKZ0412-VA	Cable socket

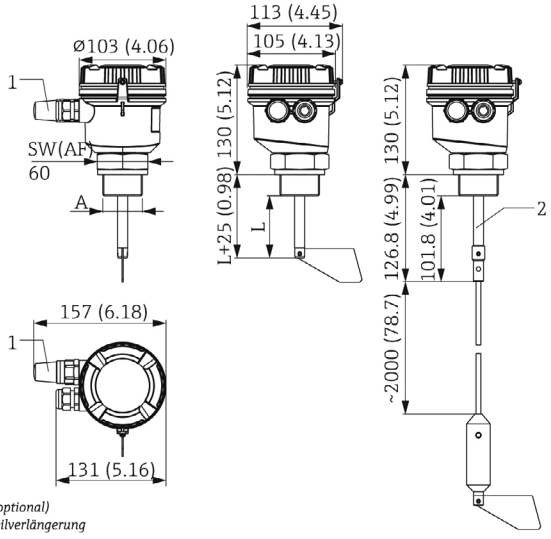
Silocont SIC-350

rotary paddle switch for solids;
simple mechanism, extremely robust and cost-effective;
medium temperature: -20...+80°C; pressure: 0,5...2,5 bar abs.

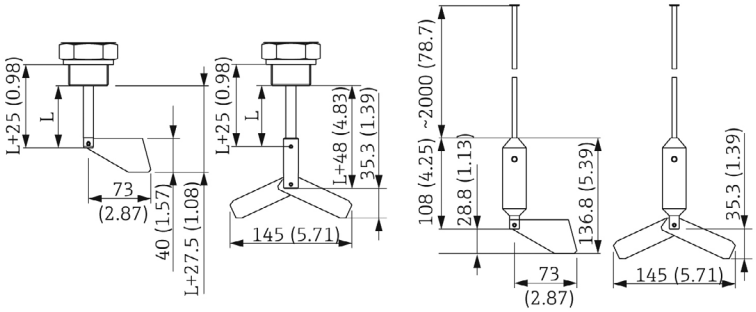
1 / 01.22

Technical data

Measuring Principle:	Paddle
Characteristic / Application:	Universally applicable as a full, empty and demand alarm on silos containing solids
Supply / Communication:	230 VAC 50/60 Hz; 115 VAC 50/60 Hz; 24 VAC 50/60 Hz; 20 bis 28 VDC
Ambient temperature:	-20 °C ... 60 °C (-4 °F ... 140 °F)
Process temperature:	-20 °C ... 80 °C (-4 °F ... 170 °F)
Process pressure absolute / max. overpressure limit: 0.5 bar to 1.8 bar (7 psi ... 25 psi)	
Min. density of medium:	>= 80 g/l
Main wetted parts:	1.4305
Max. tensile strength:	Rope version >1500N
Process connection:	NPT 1 1/2", PBT; NPT 1 1/4", PBT; G 1 1/2", PBT; NPT 1 1/2", 1.4305; NPT 1 1/4", 1.4305; G 1 1/2", 1.4305
Sensor length:	75 mm (3"); 100 mm (4"); 120 mm (4 3/4"); 200 mm (8"); 300 mm (12"); Rope length of approx 2000 mm (80"), can be shortened
Output: Micro switch with changeover contact max. 10 A/250 VAC	
Certificates / Approvals:	ATEX II 1/3 D; CSA DIP/ II, III/1/E-G (requested!); FM DIP/ II, III/1/E-G
Options:	Rotation Monitoring System; Signal Lamp; Fold-away paddle; Weather protection cover
Specialities:	Rotation Monitoring System; Fold-away paddle
Components:	HAW569 Surge arrester



1 *Signallampe (optional)*
2 *Version mit Seilverlängerung*



Abmessungen je nach Variante		
A	Prozessanschluss	NPT 1¼", NPT 1½", G 1½"
L	Länge der Welle	75...300 mm (2,95...11,81 in)

Application

The economical Solicont SIC-350 is a paddle switch for point level detection in bulk materials. Its robust polymer housing and compact design makes it an ideal sensor for full, empty and demand alarm in applications with bulk solids. The optimized polymers make the unit outstandingly robust and therefore suitable for use in dust explosive areas according the latest standards.

Advantages

- Safety comes first - Overfill prevention with an automatic rotation monitoring system
- Optical rotation control for a fast and easy check either for installation or for trouble shooting
- Extremely robust polymer housing with the latest dust Ex certification for ATEX, FM and CSA
- Cost savings over the whole life cycle: quick installation; fast trouble shooting concept without the need of demounting; best price performance ratio in the market
- Adjustment to weight of solids without the need for tools
- Housing can be rotated 360° to enable optimal alignment following installation.

Silocont SIC-350

rotary paddle switch for solids;
simple mechanism, extremely robust and cost-effective;
medium temperature: -20...+80°C; pressure: 0,5...2,5 bar abs.

1 / 01.22

Basic price . . . . . .

Licence

AA	Non-Ex-area
BI	ATEX II 1/2D Ex ta/tb IIIC Da/Db (signal lamp not possible with Ex)
CC	CSA DIP/ II, III/1/E-G
FC	FM DIP/ II, III/1/E-G

Process connection; material

11	Thread NPT 1-½", PBT
12	Thread NPT 1-¼", PBT
13	Thread G 1-½", PBT
14	Thread NPT 1-½", 303
15	Thread NPT 1-¼", 303
16	Thread G 1-½", 303
99	Special version

Model; length

AA	Spindle, 75mm
AB	Spindle, 100mm
AC	Spindle, 120mm
AD	Spindle, 200mm
AE	Spindle, 300mm
AF	rope, 2000mm, can be shortened
AY	Special version

power supply

1	20-28VDC
2	24VAC
3	115VAC
4	230VAC
9	Special version

Measuring blade; material

1	Standard; 304
2	Foldable; 304
3	Special version

NN . . . . . .

CA	Inklusive rotation monitoring (increased safety)
C0	Without rotation monitoring

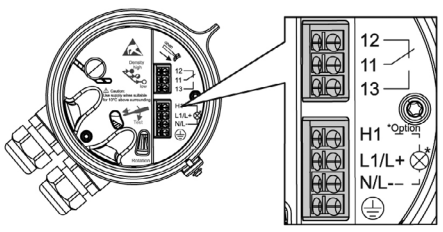
Equipment mounted

NA	Signal lamp (NOT WITH EX)
N9	Special version
00	Without equipment

Order code

SIC-350	NN

connection



⏚	protective conductor
N (AC), L- (DC)	auxiliary power
L1 (AC), L+ (DC)	auxiliary power
H1 N/L-	Connection for signaling the e mpty / full message (optional)
11	changeover
12	break contact
13	work contact

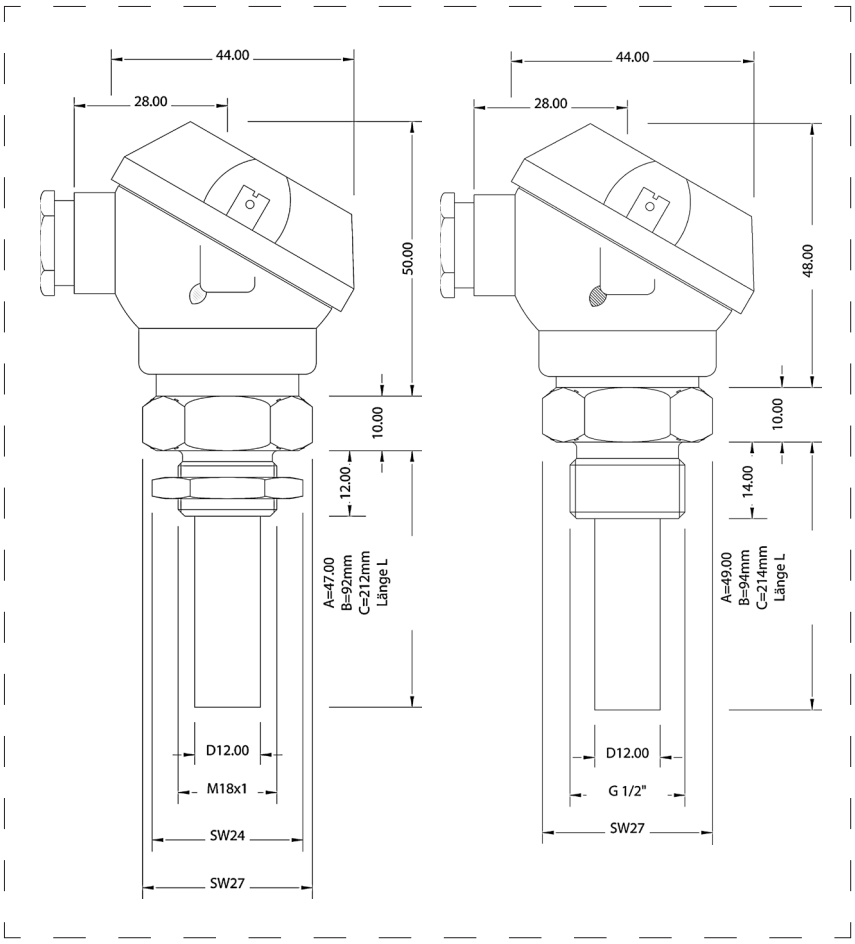
Capcont M

for capacitive fill level supervision in liquids and solid materials
medium temperature: -30...+125°C; pressure: -1...10 bar

1 / 01.22

Technical data

Power supply	
Supply voltage:	10 V bis 35 V DC protected against polarity reversal
Residual ripple :	≤ 2 VSS onlywithin the permissible voltage limits
Current consumption:	≤ 10mA switching outputs in idle mode
Isolation voltage:	75VDC
Switching output	
Function:	PNP-switching on +Vs, principle (NO/NC) invertible via jumper
Output voltage:	VS1 ≥ +Vs – 2 V
Output current:	≤ 250 mA current-limited, shortcircuit proof
Rise time:	≤ 30 µs RL ≤ 3 000 Ω resp. IL ≥ 4,5 mA
Delay time:	≤ 200 ms / ≥ 5 Hz
Switching cycles:	≥ 100.000.000
Switching hysteresis:	depends on the media
Sensitivity adjustment:	multi-start trimmer
Materials	
Rod isolation:	PTFE – polytetrafluoroethylene (Teflon®)
(medium contact)	
Process connection:	Steel 1.4404 (AISI 316L) resp. 1.4571 (AISI 316Ti)
(medium contact)	
Connection housing:	die-cast aluminium housing in powder-coated finish
Cable screw connection:	brass nickel-plated screw, sealing CR / NBR
Sealing:	medium-contact FPM – fluorelastomer (Viton®)
	EPDM – Etylen-P



Application

The devices of the series Capcont M with integrated evaluation electronic are compact fill level limit switches for supervision of fill levels in liquids and solid materials in containers or pipelins at process temperatures from -30°C to +125°C and process pressures from -1 up to 10 bar.

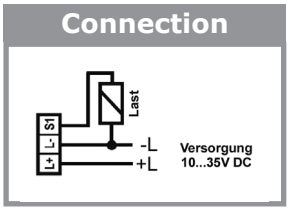
The device is suitable for limit value detection or also as dry run protection in liquids and viscous substances but also in powdery and fine-grained materials, like e.g. grain, flour, powdered milk, mixing food, cement, chalk or gypsum. It can be used in electrically conductive as well as non-conductive materials.

Capcont M

for capacitive fill level supervision in liquids and solid materials
medium temperature: -30...+125°C; pressure: -1...10 bar

1 / 01.22

Connection



Basic price . . . . . .

Model
M Standard . . . . . .

Material electrode rodisolation / length L *(medium contact)*
A PTFE Polytetrafluoroethylene (Teflon®) L=49 mm *(-2 mm at process connection 0 – M18x1)*. . . .
B PTFE Polytetrafluoroethylene (Teflon®) L=94 mm *(-2 mm at process connection 0 – M18x1)*. . . .
C PTFE Polytetrafluoroethylene (Teflon®) L=214 mm *(-2 mm at process connection 0 – M18x1)*. . .
Y Other isolation material / others length separate disclosure required . . . . . .

Process connection
0 M18 x 1 DIN ISO 724 . . . . . .
1 G½" B DIN EN ISO 228-1 . . . . . .
Y Others . . . . . .

Gaskets *(medium contact)*
1 FPM Fluoroelastomer *(Viton®)* . . . . . .
2 CR Chloroprene rubber *(Neoprene®)* . . . . . .
3 EPDM Ethylen-Propylen-Dinmonomer for food applications . . . . . .
4 FFKM Perfluoroelastomer *(Kalrez®)* . . . . . .

Material process connection (medium contact)
V Steel 1.4404 *(AISI 316L)* / 1.4571 *(AISI 316 Ti)*. . . . . .

Construction form / material Connection housing
3 Form F according to DIN 43729 Aluminium . . . . . .

electronic - output
A 1x PNP-switch output. . . . . .

Process temperature
0 -30°C up to +125°C . . . . . .

Electrical connection
K Terminal box. . . . . .

Length L in mm

+ Additional Option (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .

Order code

Capcont	M				V	3	A	0	K		mm

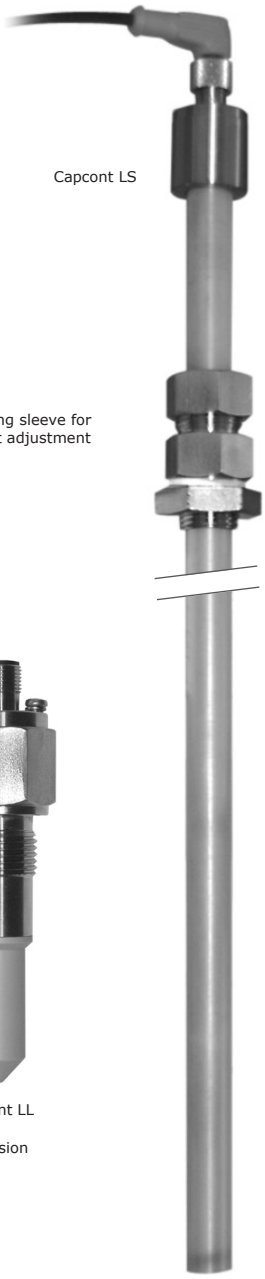
Capcont LS and LL

for capacitive filling level supervision in liquids and solids

1 / 01.22

Technical data

Power supply	
Supply voltage:	10 V bis 35 V DC protected against polarity reversal
Current consumption:	≤ 10mA switching outputs in idle mode
Switching output	
Function:	PNP-transistor output, on contact +L
Output current:	≤ 250 mA current-limited, shortcircuit proof
Sperrstrom:	≤ 100 µA current-limited, shortcircuit proof
Rise time:	≤ 30 µs RL ≤ 3 000 Ω resp. IL ≥ 4,5 mA
Delay time:	≤ 200 ms / ≥ 5 Hz
Switching hysteresis:	depends on the media
Sensitivity adjustment:	multi-start trimmer
Materials	
Rod isolation:	Capcont LS PTFE – polytetrafluoroethylene (Teflon®) Capcont LL PEEK
Process connection:	1.4404 (AISI 316L) / 1.4571 (AISI 316Ti)
Plug M12x1:	frame CrNi-steel, insert PUR, contact gold-coated
Sealing:	medium-contact (LS) FPM – fluorelastomer (Viton®) EPDM – ethylene-propylene-diene monomer other FPM – fluorelastomer (Viton®)



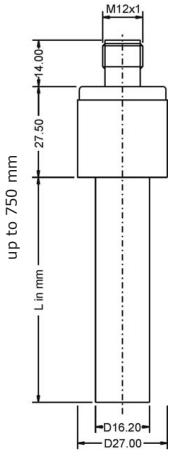
Capcont LS

Sliding sleeve for point adjustment

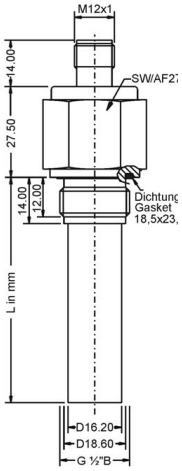
Capcont LL

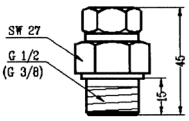
hygienic version

Capcont LS0



Capcont LS1

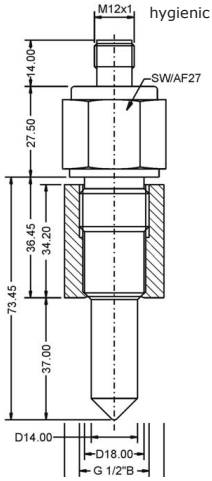


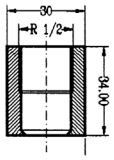


sliding sleeve
SAMV-63
for height adjustment of the switching point

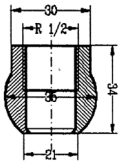
Capcont LL2

hygienic version





SEM-22



welding socket
SEM-42

Application

The device is suitable for limit value detection of also as dry run protection in liquids and viscous substances and also in powdery and fine granular substances, like e.g. grain, flour, powdered milk, mixing food, cement, chalk or gypsum.

It can be used in electrically conductive as well as in non-conductive materials.

The device is certificated for the use as overflow protection acc. to WHG.

Capcont L with integrated evaluation electronic is a compact filling level limit switch for supervision of filling levels in liquids and solids within container or pipes, also in explosive hazardous areas, at process temperatures from – 40°C to +140°C and process pressures from –1 up to 10 bar. Capcont LL with metallic gasket and rod isolation in PEEK is especially suitable for the use in hygienic applications

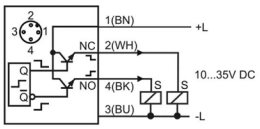
ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Capcont LS

for capacitive filling level supervision in liquids and solids

1 / 01.22

Connection



Model
L Standard
X2L ATEX II 3G Ex ic IIC T6 ...T1 Gc / ATEX II 3D Ex ic IIIC T98°C Dc.

Material electrode rodisolation *(medium contact)*
S PTFE Polytetrafluoroethylene *(Teflon®)*

Process connection
0 Without – mounting with sliding sleeve SAMV-63
1 G½" B; DIN EN ISO228-1; DIN 3852-11-E
Y Others.

Material gaskets *(medium contact)*
1 FPM Fluoroelastomer *(Viton®)*
3 EPDM Etylen-Propylen-Dienmonomer - for food applications.

Material process connection *(medium contact)*
V Steel 1.4404/316L or 1.4571/316Ti

Material Connection housing
C CrNi-Steel

Electronic - output
A DC voltage 24V_{DC}, 1x PNP switch output

Process temperature
0 Standard, -40°C ... +100°C.

Electrical connection
S Plug M12x1

Length L
A Length L = 150 mm
B Length L = 300 mm
C Length L = 500 mm
D Length L = 750 mm

Order code

Capcont-	S		V	C	A	0	S	

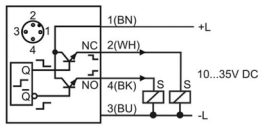
+ Additional Option (optional)

SF LABS-free, silicone-free / paint compatible version

Capcont LL2

for capacitive filling level supervision in liquids and solids
in hygienic applications

Connection



Model
L Standard.
X2L ATEX II 3G Ex ic IIC T6 ...T1 Gc / ATEX II 3D Ex ic IIIC T98°C Dc

Material electrode rodisolation *(medium contact)*
L PEEK

Process connection
2 G ½" B, DIN EN ISO228-1 – mounting with welding socket SEM-22 / SEM-42

Material gaskets
0 Without

Material process connection *(medium contact)*
V Steel 1.4404/316L or 1.4571/316Ti

Material Connection housing
C CrNi-Steel

Electronic - output
A DC voltage 24V_{DC}, 1x PNP switch output

Process temperature
1 Advanced, -40°C ... +140°C

Electrical connection
S Plug M12x1
0

Order code

Capcont-	L	2	0	V	C	A	1	S	0

+ Additional Option (optional)

SF LABS-free, silicone-free / paint compatible version

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded
BKZ0412-VA	Matching cable socket, VA-nut
SAMV-63	Sliding sleeve G½" DIN EN ISO228-1 / ø 16 mm, for Capcont LS- Steel 1.4404 / 1.4571 / gasket PTFE

Mycrocont MCN4

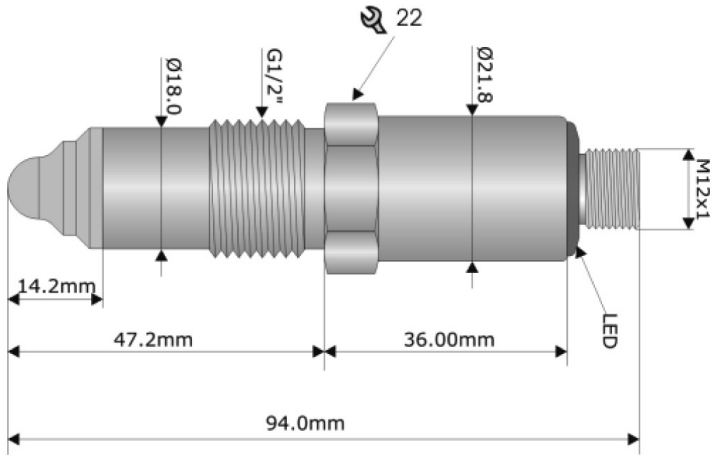
Microwave - limit switch for level detection or limit level monitoring in liquids and solids

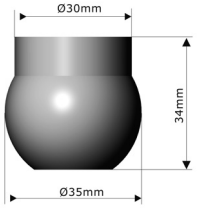
1 / 01.22

Technical data

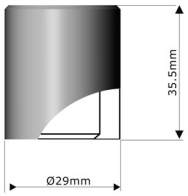
hygenic design | CIP SIP capable | Min/ Max | corrosion resistant | easy-to-use | V4A PEEK

Process connection	G1 / 2 "hygienic
Output signal	PNP, NPN or push-pull switchable
Materials (in process PB)	PEEK * 1
Materials Housing parts	316L
Protection class	IP67 according to DIN EN 60529
Switch-on delay	<0.3 sec
Response dynamics	<0.2sec
Supply voltage	Ub = 24V (12 ... 32VDC)
Permissible load	0ohm, 24VDC, 100mA
Setting	by PC software "MCN SOFT"
Electrical connection	M12 plug 5-pin. Pin 2 + 5 milled, for data communication

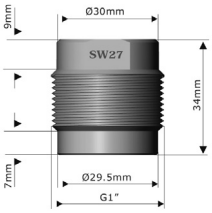




ball weld
BEFH-30



standard weld
BEFH-20



fork adapter 1"
HEM-10

BEFH-30

BEFH-20

Application

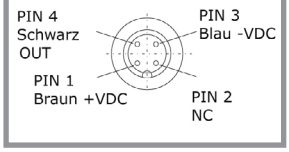
The level monitor Mycrocont MCN is used for easy and reliable level monitoring of liquids or solids. In addition to aqueous media, also e.g. oils, honey, chocolate, Emulsions and various fine-grained materials such as grain, sugar, milk powder, etc. can be recorded. Because of the elastomer-free seal between the tip and sleeve the Mycrocont MCN can also be used for hygienic applications. The medium can be balanced via DIP switches or an optional software. The control software can detect differences in media and the switching characteristics of this situation can be matched exactly. Suitable in the appropriate configuration for media with εr> 2, including chocolate, honey, vegetable oil, etc., and all aqueous media.

Mycrocont MCN4

Level Switch for level monitoring
with plug-in connection M12 or terminal connection
Option: Softwaretool

1 / 01.22

Connection



Type
00 Standard

Process connection
22 Standard G½" *(hygienic installation with socket BEFH; 55mm)*
YY Special version

Electronics
GA 24 V DC *(12...32 V DC)*

Connection
01 M12

Option
S Standard
Y Special version

Order code

MCN	GA	01

Equipment

Order information	*Model*
BEFH-20	Standard welding socket for hygienic installation (elastomer free) Ø 29 mm / L=36 mm
BEFH-20L	Welding socket for hygienic installation (elastomer free) with leakage hole Ø 29 mm / L=36 mm.
BEFH-30	ball-welding socket for hygienic installation (elastomer free) Ø 35 mm
BVFH-20	Thread adapter ½" for BEFH-20
Software MCN-Soft	
USB-programming adapter	
connection cable MCN	
HEM-10	Liquiphant adapter G 1 for Mycrocont

others adapter, sleeves ect. on request!

Equipment for Hydrocont®
Equipment for probes
Equipment for electrode relays

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Welded flanges for container for installation of Hydrocont®, Precont®, Vibrocont etc.

Order information	*Model/material 1.4571 (gasket Viton®, others gaskets on request)*
BEFV-10	Welding socket G1"
BEFV-34	Welding socket G¾", gasket FPM-Viton®
BEFE-34	Welding socket G¾", gasket EPDM
BEFK12	Welding socket G½", sealing attachment in the back.
BEFK60	Welding socket G1½" EG, sealing attachment in the back
BEFV-60	Welding flange Ø 65 mm with Viton® seal
BEFE-60	Welding flange Ø 65 mm with EPDM seal
BEF-61	Welding flange for DRD-connection 65 mm
BEFA-62	Welding flange milk tube connection DN50 n. DIN 11851 aus 1.4301
BEFB-62	Welding flange milk tube connection DN40 n. DIN 11851 aus 1.4301
BEFC-62	Welding flange milk tube connection DN25 n. DIN 11851 aus 1.4301
BEF-63	Welding flange Varivent® Ø 68 mm PN40
BEF-66	Welding flange for Coupling nut adapter

DIN-flanges with 1,5"-borehole

Order information	*Model/material 1.4571*
FL-4001	DN 40 / PN 16
FL-5001	DN 50 / PN 16
FL-8001	DN 80 / PN 16
FL-1001	DN 100 / PN 16
FL-2201	ANSI 2" / PSI 150
FL-3201	ANSI 3" / PSI 150
FL-4201	ANSI 4" / PSI 150

Reductions

Order information	*Model/material 1.4571*
RD-20Z15	Reduction G2" A auf G1½" I.
RD-20Z10	Reduction G2" A auf G1" I
RD-15Z10	Reduction G1½" A auf G1" I.
RD-15Z12	Reduction G1½" A auf G½" I

Tube nuts

Order information	*Model/material 1.4571*
RM-15GV	Tube nut DIN 431, G1½"
RM-10GV	Tube nut DIN 431, G1"
RM-20GV	Tube nut DIN 431, G2"
RM-38GV	Tube nut DIN G⅜"
RM-12GV	Tube nut DIN G½"

Weldinge sleeves for conductive probes in food applications

Order information	*Model/material 1.4571*
BEFA-62	Welding flange milk tube connection DN50 acc. to DIN 11851 from 1.4301 .
BEFB-62	Welding flange milk tube connection DN40 acc. to DIN 11851 from 1.4301 .
BEFC-62	Welding flange milk tube connection DN25 acc. to DIN 11851 from 1.4301 .
SEM-12	food application welding sleeve for probe SLK/KLK with G½"
SEM-10	food application welding sleeve for probe SLK/KLK with G1"
SEM-15	food application welding sleeve for probe SLK/KLK with G1½"
SEM-22	Welding socket metal-seatedG½"
SEM-42	Ball welding sleeve metal-seated G½"

Spacers for conductive probes

Order information	*Model*
AH-2	Spacers for 2-rod probes
AH-3	Spacers for 3-rod probes
AH-4	Spacers for 4-rod probes
AH-5	Spacers for 5-rod probes

Line break module for installation in the probe head

Order information	*Model*
LBM	For installation in STK, SLK, SST.
ExLBM	For installation in Ex-probes of type STK, SLK

Sealing screw for Hydrocont®-xtension cable montage

Order information	*Model*
VSM-1000	G1", cable strength 7,5 mm *(for Hydrocont® M + LK)*.
VS-1500	G1½", cable strength 10 mm *(for Hydrocont® B)*
VSM-1500	G1½", cable strength 7,5 mm *(for Hydrocont® M + LK)*

Straining clamps

Order information	*Model*
Straining clamp	Galvanized, for Extension cable 7,5 - 10,5 mm
Straining clamp	CrNi-Steel, for Extension cable 7,5 - 10,5 mm

Wall-mounted casing with pressure equalization

Order information	*Model*
Wall-mounted casing	For Hydrocont® B, M + LK without inscription
Wall-mounted casing	For Hydrocont® B, M + LK as an EX-variant

sliding sleeve for Capcont LS

Order information	*Model*
SAMV-63	Sliding sleeve G½" DIN EN ISO228-1 / ø 16 mm, for Capcont LS-Steel 1.4404 / 1.4571 / gasket PTFE

Marking measuring point

AS-50	Hang tag of VA with laser inscription

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2. Water level measurement, data transmission, battery powered

Contents

Data logger for water level measurement (hydrostatic)

What to use where

Function	Hydrocont HP4	Sonicont USP4	Datalogger DLF4	Hydrolog HLF4
Battery powered			●	●
External supply e.g. via PV modules			●	●
Data transmission			●	●
Data logger			●	●
Media				
Liquids	●	●	●	●
Solids		●		
Operating conditions				
Aggressive media	●	●		
Coat forming media	●	●		
Non conductive media	●	●		
Foaming	●			
Flood proof	●	●	●	●
Measuring principle				
Hydrostatic	●			
Ultrasonic		●		
application				
Groundwater measurement	●	●		●
Surface water measurement	●	●	●	●
Well measurement	●	●		●
Level measurement in containers	●	●	●	●
Rain overflow basin measurement	●	●	●	●

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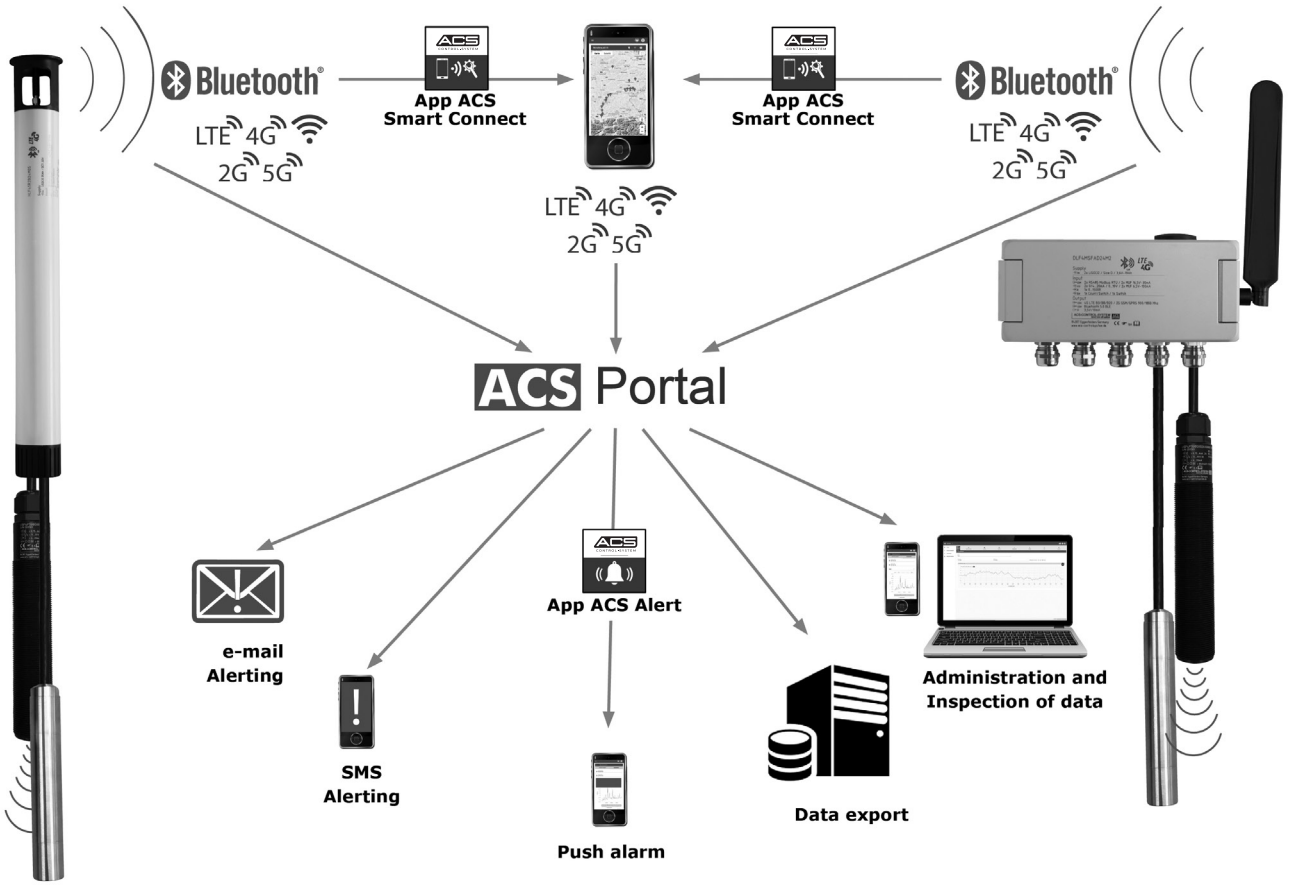
Water level measurement - transmission

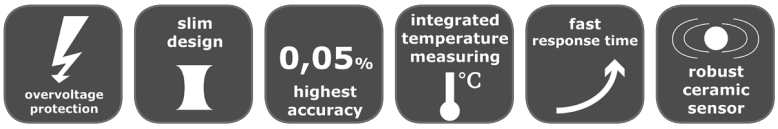


Hydocont® HP4SC

Levelsensor ø 22mm, for hydrostatic level measurement with capacitive ceramic measuring cell;
Output signal RS 485 Modbus RTU

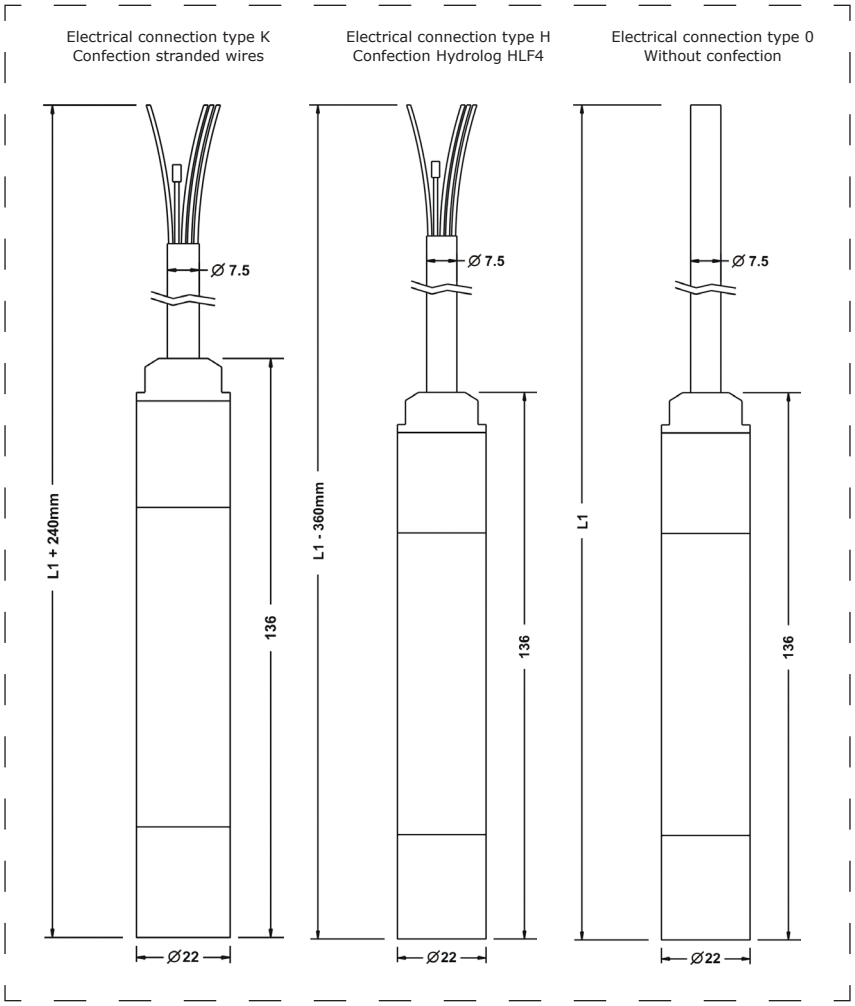
2 / 01.22

Technical data



Modbus

Input Pressure	
Nom. pressure PN relative:	0…0,1bar up to 0…10bar
Characteristic deviation:	≤ ±0,05%/±0,1%/±0,2%FSO
Temperature deviation:	Tk Zero ≤ ±0,015%FSO/K, ≤ ±0,75%FSO
	Tk Span ≤ ±0,015%FSO/K, ≤ ±0,5%FSO (≥0,4bar) / ≤ ±0,8%FSO (<0,4bar)
Time behavior:	T90 ≤ 2ms (td = 0s)
Input Temperature	
Sensor type:	Pt1000 class A
Characteristic deviation:	≤ ±0,1K + 0,002 x [dt (25°C)]
Time behavior:	T90 ≤ 4s
Output RS485 Modbus®-RTU	
Interface:	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior:	ton ≤ 250ms (td = 0s)
Auxiliary power	
Supply voltage Us	
polarity protected:	6…35VDC
Overvoltage protection	
Coarse protection:	75V / 10kA – wave 8/20µs / all lines to PE
Fine protection:	36V / all lines to -L
Environmental conditions	
Environmental temperature:	-20°C...+70°C
Protection level:	IP68 (EN/IEC 60529)
Materials	
Process wetted:	Ceramic Al2O3,CrNi-Steel, FPM, EPDM, PE, PUR



Application

The hydrostatic level probe Hydrocont HP4SC is suitable for monitoring, control and continuous measurement of levels and temperatures. Thanks to the capacitive ceramic measuring cell, the submersible probe offers maximum accuracy and long-term stability. Its slim design, with a diameter of 22mm, enables it to be used even in small dip tubes. Due to the possibility of combining different materials for sensors, cables and seals, the measuring system can be designed for a large number of, also aggressive, filling media.

The signal evaluation is based on RS485 Modbus-RTU. This also makes it possible to digitally adjust the sensor according to the respective circumstances.

In addition to level measurement, the Hydrocont HP4SC can also measure the temperature of the medium via a built-in sensor and also output it using the Modbus protocol.
To ensure safe operation, especially outdoors, the Hydrocont HP4SC has an integrated surge protection, which is designed as a coarse and fine protection.
A captive laser inscription on the nameplate ensures identifiability over the entire life of the device.

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Hydocont® HP4SC

Levelsensor ø 22mm, for hydrostatic level measurement with capacitive ceramic measuring cell;
Output signal RS 485 Modbus RTU

2 / 01.22

Basic price . . . . . .

Type
S Standard . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
C Ceramic Al2O3 96%/99,7% / capacitive . . . . . .

Approval
S Standard . . . . . .

Process connection
O without . . . . . .
Y others . . . . . .

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
Y others. . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .
V CrNi-steel, duplex, sea water resistant . . . . . .
Y others . . . . . .

Material terminal enclosure
0 without. . . . . .

Measuring range

01	0...100 mbar	07	0...2 bar . . . . .
02	0...200 mbar	08	0...4 bar . . . . .
03	0...400 mbar	09	0...6 bar . . . . .
04	0...600 mbar	10	0...10 bar . . . . .
05	0...1 bar		
YY	Sondermessbereich		

Electronic – output
V RS485 Modbus®-RTU, 4-wire . . . . . .

Electronic – function
0 without . . . . . .
3 Temperature sensor Pt1000. . . . . .
Y others. . . . . .

Process temperature
0 Standard –20°C...+70°C . . . . . .

Pressure type
R Gauge pressure . . . . . .

Measuring system – accuracy
1 0,2% . . . . . .
3 0,1%, linearization protocol. . . . . .
6 Xcellence – 0,05% (FS ≥ 200mbar), inearization protocol . . . . . .

Electrical connection
K Cable, confection stranded wires, length L1 +240mm. . . . . .
H Cable, confection Hydrolog HLF4, length L1 -360mm . . . . . .
0 Cable, without confection, incl. confection kit . . . . . .

Material Cable (process wetted)
A Cable sheath PE . . . . . .
B Cable sheath PUR . . . . . .
G Cable sheath PUR, increased diffusion-tightness .

Length L1 / mm (≤ 300.000mm). . . . . .

+ Additional options

SF	LABS-free, silicone-free / paint compatible version . . . .
ML	Measurement point designation / TAG – Laser marking. . .
MZ	Material test certificate – EN10204 3.1. . . . .
WT	Factory certification – drink water suitability. . . . .
KF	Configuration / Preset . . . . .
WK	Factory calibration – calibration certificate . . . . .

Order code

Hydrocont®HP4	S	C	S				0		V		0	R			mm

Equipment

Order designation	*execution*
65000399	Tension clamp, galvanized steel. . . . .
65001899	Tension clamp, CrNi-steel . . . . .
91982121	Screw G1" CrNi-steel . . . . .
91982124	Screw, G1 1/2" CrNi-steel. . . . .
	Junction box G1" . . . . .
	Junction box, G1 1/2" . . . . .
	Wall mounting housing made of plastic . . . . .
	Reduction kit cable . . . . .

Sonicont® USP4

Ultrasonic sensor for non-contact level measurement in liquids and bulk materials
Suspended version

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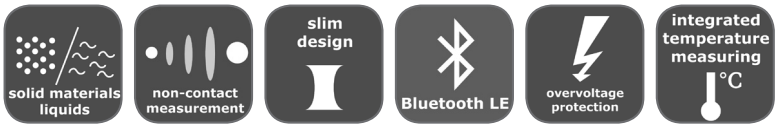
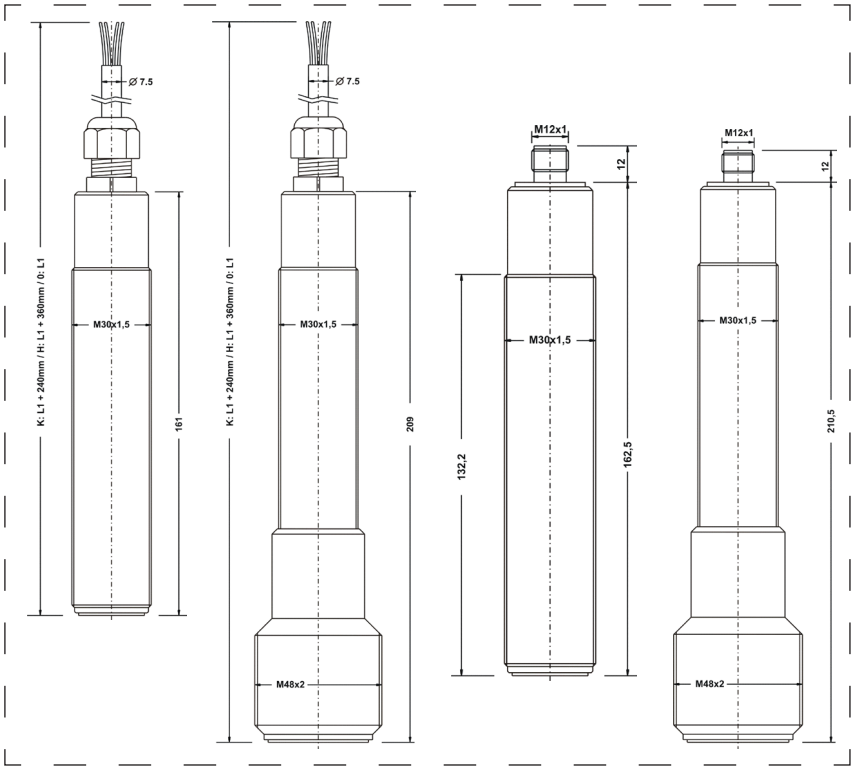
Technical data



Input Distance			
Measuring range:	MB-02: 0…≤ 2m	MB-05: 0…≤ 5m	MB-08: 0…≤ 8m
Blocking distance BD:	≤ 0,10m (typ. 0,06m)	≤ 0,15m (typ. 0,10m)	≤ 0,30m (typ. 0,19m)
Pulse rate tp			
(meas. cycle time):	≤ 10Hz / ≥ 100ms	≤ 4Hz / ≥ 250ms	≤ 2Hz / ≥ 500ms
Characteristic deviation:	≤ ±2mm or ±0,2%FSO		
Temperature deviation:	Tk Zero (mean value) ≤ ±0,006%FSO/K		
Output current 4…20mA Bluetooth® 5.0 LE			
Analogue output 4…20mA:	3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA		
Time behavior:	T90 ≤ Pulsrate tp (td = 0s) / ton ≤ 3s (td = 0s)		
Interface:	Bluetooth 5.0 LE (2Mbit/s)		
Auxiliary power			
Supply voltage Us			
polarity protected:	11…35VDC		
Overvoltage protection			
Coarse protection:	EL-K/H/0: 75V / 10kA – wave 8/20µs / +L/-L to cable shield		
	EL-S: 150V / 10kA – wave 8/20µs / +L to -L		
Fine protection:	36V / all lines to -L		
Environmental conditions			
Environmental temperature:	-20°C...+70°C		
Protection level:	EL-K/H/0: IP68 [≤3m/≤0,3bar] (EN/IEC 60529)		
	EL-S: IP65/IP67 (EN/IEC 60529)		
Materials			
Process wetted:	PVDF, POM, PA, NBR, FPM, PE, PUR		



Application

The Sonicont USP4 is an ultrasonic sensor for non-contact level measurement and monitoring in liquids and bulk solids.

The sensor is designed as a suspended version with a cable outlet or as a screw-in sensor with a cable or plug connection. Due to its slim design, the sensor can be inserted through small container bores or installed in thin water wells. The Sonicont USP4 can optionally be combined with measuring tubes made of PE. As a result, the ultrasound signal receives a defined measuring path, which influences, e.g. would affect the ultrasonic signal through oxidized and uneven level pipes or container walls.

The electronics are designed as 4… 20mA 2-wire signals. To ensure safe operation, especially outdoors, the Sonicont USP4 has an integrated surge protection.
Due to its high accuracy, the compact Sensor for various applications in Range of ground and surface water measurements, tank monitoring, wastewater area and distance measurements can be used. By means of a free app, the Sonicont USP4 can Bluetooth® 5.0 LE, can be adapted to the respective conditions of use.

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Sonicont® USP4

Ultrasonic sensor for non-contact level measurement in liquids and bulk materials
Suspended version

2 / 01.22

Basic price . . . . . .

Type
S Standard . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
P PVDF / Piezo . . . . . .

Approval
S Standard . . . . . .

Process connection
U Terminal enclosure, thread DIN 13 – M30x1,5 . . . . . .
Y others . . . . . .

0

Material process connection (process wetted)
G POM . . . . . .
Y others . . . . . .

0

Measuring range
02 0…2 m . . . . . .
05 0…5 m . . . . . .
08 0…8 m . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A Current 4…20mA, 2-wire, Bluetooth® 5.0 LE . . . . . .
Y others . . . . . .

Electronic – function
1 Standard. . . . . .
Y others. . . . . .

Process temperature
0 Standard –20°C…+70°C . . . . . .

0

0

Electrical connection
K Cable, confection stranded wires, length L1 +240mm . . . . . .
H Cable, confection Hydrolog HLF4, length L1 -360mm . . . . . .
0 Cable, without confection, incl. confection kit. . . . . .
S Plug M12 . . . . . .
Y others . . . . . .

Material Cable (process wetted)
0 without . . . . . .
A Cable sheath PE . . . . . .
B Cable sheath PUR . . . . . .
G Cable sheath PUR, increased diffusion-tightness. . . . . .
Y others . . . . . .

Length L1 / mm
(≤ 300.000mm) . . . . . .

+ Additional options

SF LABS-free, silicone-free / paint compatible version . . . .
ML Measurement point designation / TAG – Laser marking. . .
KF Configuration / Preset. . . . . .

Order code

Sonicont®USP4	S	P	S		0		0				0	0	0			mm

Equipment

Order designation	*execution*
65000399	Tension clamp, galvanized steel. . . . .
65001899	Tension clamp, CrNi-steel . . . . .
91982121	Screw G1" CrNi-steel . . . . .
91982124	Screw, G1 1/2" CrNi-steel. . . . .
	Junction box G1" . . . . .
	Junction box, G1 1/2" . . . . .
611000542	Measuring tube PE2m for ultrasonic sensor USP4-02 . . . . .
611000544	Measuring tube PE 2m basic module for ultrasonic sensor USP4-05 . . . . .
611000545	Measuring tube PE 2m extension for ultrasonic sensor USP4-05 . . . . .
611000559	Measuring tube PE 1m extension for USP4_05 . . . . .

Datalogger DLF4

Self-sufficient data logger with remote data transmission for wall and field mounting

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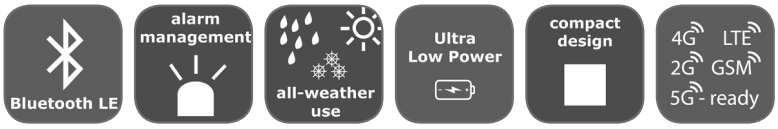
Technical data

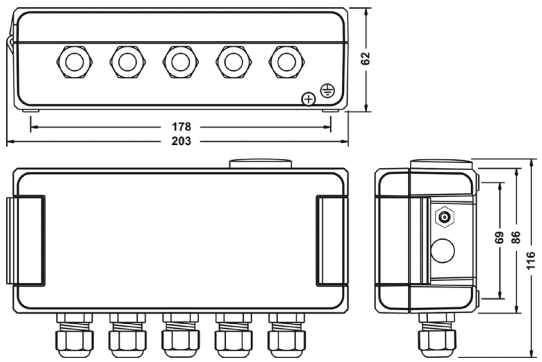


Auxiliary power
Battery: Lithium / 3,6V-19Ah / 3,6V-35Ah
Battery rechargeable: LiION / 4,2V-20Ah
Supply voltage DC: 7…32VDC / ≤ 350mA
PV module: 4,5…35VDC / ≤ 2A
Input COM CI1 / CI2
Interface: RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Input analogue Ai1 / Ai2 / Ai3
Operating range current I: Ai1 / Ai2: FSI 0…28mA / Ri 27R
Operating range voltage U: Ai1 / Ai2: FSI 0…19V / Ri ≥ 1,2MR
Operating range resistance R: Ai3: FSI 0…2200Ohm / Io = 340µA
Characteristic deviation: ≤ ±0,05% FSI
Temperature deviation: ≤ ±0,1% FSI / 10K
Input digital Di1 / Di2
Operating range: ≤ 20kOhm / ≤ 1kHz
Transmitter power supply
Output voltage Uo1 / Uo2: 16,6V ±0,3V (0mA) / 15,9V ±0,3V (30mA) / 0…30mA, max. 40mA
Output voltage Uo3 / Uo4: 6,7V ±0,2V (0mA) / 6,6V ±0,2V (100mA) / 0…100mA, max. 300mA
Output voltage Uo5: 3,8V ±0,2V (0mA) / 3,0V ±0,2V (100mA) / 0…100mA, max. 220mA
Interface Bluetooth
Version: Bluetooth 5.0 LE (2Mbit/s, Advertising Mode 2s)
Interface 4G/2G
Version: 4G LTE Cat. 1 (B3, B8, B20), 2G EDGE, GSM, GPRS (900MHz/1800MHz)
Data memory
Memory size : 8MB, ≥ 800.000 measuring values
Environmental conditions
Environmental temperature: -20°C...+60°C
Protection level: IP65/IP67 (EN/IEC 60529)
Materials
Process wetted: PA, aluminum, PUR, brass, nickel, silicone, NBR

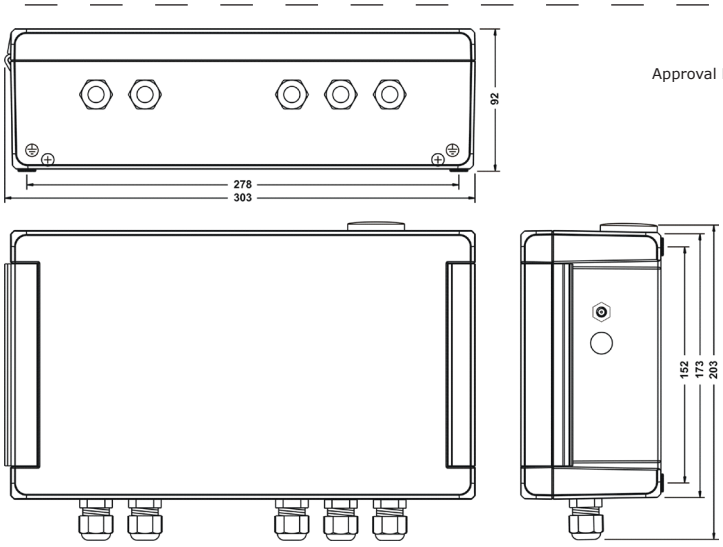
Approval DLF4

Approval DLF4 X5

Approval DLF4



Approval DLF4 X5



Application

The self-sufficient Datalogger DLF4 with remote data transmission is suitable with its robust and weatherproof aluminum housing for wall and field mounting.

Both analog and digital sensors can be connected via 7 sensor inputs. The input signals range from analog signals such as electricity, voltage, resistance, via Modbus RTU protocols to digital inputs, which can be used as counter or control signals. This results in a wide range of applications for the Datalogger DLF4. It can be used for level measurement in surface water, sewage treatment plants, landfills, for level measurement in tank systems, silos, containers, flow measurement on channels, temperature monitoring, etc.

Independent measurement verification is to be regarded as an absolute novelty in this area. Two different sensors with different measuring principles are connected to the Datalogger DLF4. The primary measured value of the hydrostatic level probe is compared cyclically by the measured value of an ultrasonic sensor. In the event of an adjustable deviation, the Datalogger DLF4 generates an alarm. This considerably minimizes the control effort at the level measuring point.

The Datalogger DLF4 is supplied with a wide range of options. These range from lithium batteries, which can have a service life of up to 10 years, depending on the application, batteries and the connection options for an external power supply or a PV module.

For data transmission of up to 800,000 measured values to the ACS portal, the Datalogger DLF4 is equipped with mobile radio modules that can operate both 2G, 4G and LTE networks. Preparations for the upcoming 5G network are already in place. An embedded SIM is installed in the data transmission, which independently uses the strongest mobile network and the strongest provider on site. The data transfer takes place according to the latest security standards such as Data encryption and VPN tunnel.

Datalogger DLF4

Self-sufficient data logger with remote data transmission for wall and field mounting

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Equipment

Equipment
page 262

Basic price . . . . . .

Type

DLF4 Standard

Approval

S Standard
X5 ATEX II (1) G/ ATEX II (1) D

Enclosure type

FA Field enclosure, aluminum
YY others

Electronic – Supply

B1 Battery lithium 19Ah / DC supply 7…32V
B2 Battery lithium 35Ah / DC supply 7…32V
A1 Accu Li-ION 20Ah / DC supply 7…32V / PV module
YY others

Electronic – Function

0 without
4 4G (LTE Cat-1) / 2G (EDGE, GSM, GPRS)
Y others

Electronic – Input

M 2x analogue 0/4…20mA-0…10V / 2x interface RS485 / 2x digital-In / 1x analogue 0…2200R
R 1x analogue 4…20mA – Ex, 1x analogue 0/4…20mA-0…10V / 2x interface RS485 / 2x digital-In / 1x analogue 0…2200R.
S 2x analogue 4…20mA – Ex 2x interface RS485 / 2x digital-In / 1x analogue 0…2200R.
T 1x analogue 4…20mA – Ex / 1x digital-In – Ex, 1x analogue 0/4…20mA-0…10V / 2x interface RS485 / 1x digital-In / 1x analogue 0…2200R
U 2x analogue 4…20mA – Ex / 2x Digital-In – Ex 2x interface RS485 / 1x analogue 0…2200R

Tariff

0 Separate billing
XS1B ACS DataComplete XS, Basic, 5 years
XS1S ACS DataComplete XS, Standard, 5 years
XS1P ACS DataComplete XS, Premium, 3 years.
S1B ACS DataComplete S, Basic, 5 years
S1S ACS DataComplete S, Standard, 3 years
S1P ACS DataComplete S, Premium, 3 years.
M1B ACS DataComplete M, Basic, 3 years
M1S ACS DataComplete M, Standard, 3 years
M1P ACS DataComplete M, Premium, 3 years
L1B ACS DataComplete L, Basic, 3 years
L1S ACS DataComplete L, Standard, 3 years.
L1P ACS DataComplete L, Premium, 3 years

S

+ Additional options

ML Measurement point designation / TAG – Laser marking. . .
KF Configuration / Preset. . . . .

Order code

Datalogger DLF4	S

Equipment

Order designation	*Antenna:*
611000539	Rod antenna, connection cable 5m & mounting bracket, for HLF4/DLF4
611000540	Dome antenna, connection cable 3m, for HLF4/DLF4
611000541	Flat antenna, adhesive mounting, connection cable 3m, for HLF4/DLF4.
911001827	Antenna cable extension, SMA, L=5m
	Spare batteries:
611000566	battery BAT19AH, Lithium 19Ah, for HLF4/DLF4
611000567	batteryBAT35AH, Lithium 35Ah, for HLF4/DLF4
611000569	Accu ACCU20AH, Li-ION 20Ah, for HLF4/DLF4
611000629	Charging unit 230Vac for Li-ION-Accu, for HLF4/DLF4
	External power supply and PV modules:
611000614	Switching Power supply, field housing 230Vac, to supply up to two DLF4 with battery, to supply up to one DLF4 with Li-ION Accu
611000581	External power supply 230Vac, to supply up to two DLF4 with battery, to supply up to one DLF4 with Li-ION Accu
911001822	Solar-PV-Module 10W, for HLF4/DLF4
	Mounting accessories, connection cables
611000571	Mast fixation for DLF4, Mounting bracket with worm screw strap for ø 50-90mm
611000578	Mast / wall fixation for PV-module, tiltable, for ø 30-63mm
611000582	Weather protection cover for DLF4.
611000630	Connection cable for PV-module, 2-wire, 5m.

Hydrolog® HLF4

Data logger for pipe installation
with battery or accumulator operation and cellular data transmission

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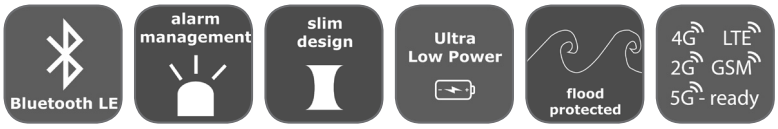
Technical data



Auxiliary power	
Battery:	Lithium / 3,6V-19Ah / 3,6V-35Ah
Battery rechargeable:	LiION / 4,2V-20Ah
Supply voltage DC:	7…32VDC / ≤ 350mA
PV module:	4,5…35VDC / ≤ 2A
Input COM Ci1 / Ci2	
Interface:	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Input analogue Ai1-I / Ai2-I	
Operating range:	0…28mA / Ri 27R
Characteristic deviation:	≤ ±0,05% FSI
Temperature deviation:	≤ ±0,1% FSI / 10K
Input digital Di1	
Operating range:	≤ 20kOhm / ≤ 1kHz
Transmitter power supply	
Output voltage Uo1 / Uo2:	16,6V ±0,3V (0mA) / 15,9V ±0,3V (30mA) / 0…30mA, max. 40mA
Output voltage Uo3 / Uo4:	6,7V ±0,2V (0mA) / 6,6V ±0,2V (100mA) / 0…100mA, max. 300mA
Interface Bluetooth	
Version:	Bluetooth 5.0 LE (2Mbit/s, Advertising Mode 2s)
Interface 4G/2G	
Version:	4G LTE Cat. 1 (B3, B8, B20), 2G EDGE, GSM, GPRS (900MHz/1800MHz)
Data memory	
Memory size:	8MB, ≥ 800.000 measuring values
Environmental conditions	
Environmental temperature:	-20°C...+60°C
Protection level:	IP68 [≤3m/≤0,3bar] (EN/IEC 60529)
Materials	
Process wetted:	PA, aluminum, PUR, brass, nickel, silicone, NBR

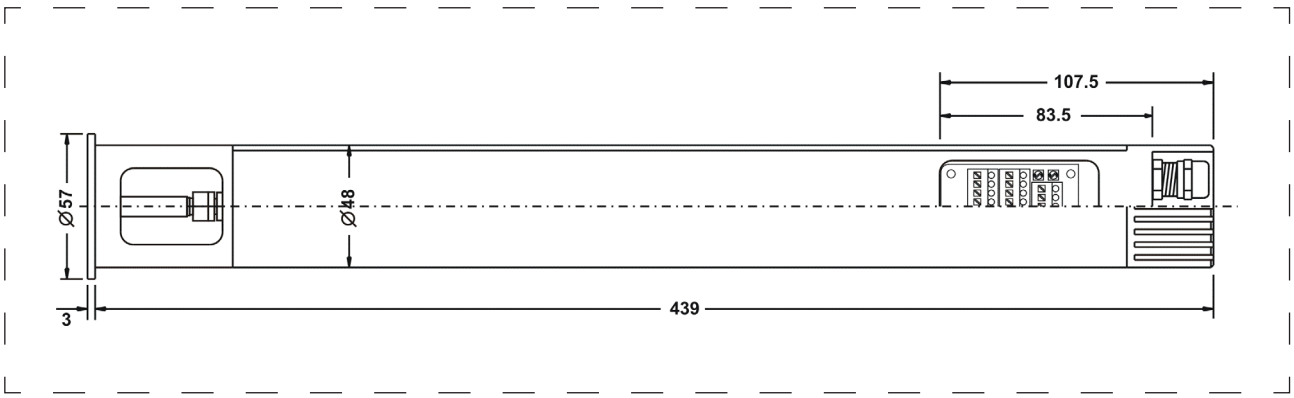
Application

The Hydrolog HLF4 is a data logger with remote data transmission for installation in water wells.
Both analog and digital sensors can be connected via 5 sensor inputs. In conjunction with the hydrostatic level probes Hydrocont HP4 and the ultrasonic sensors Sonicont USP4, the device is suitable for the measurement of surface waters such as rivers and lakes, groundwater levels, wells or landfill sites. Due to the slim design, installation in 2 '' level pipes is possible.

Independent measurement verification is to be regarded as an absolute novelty in this area. Two different sensors with different measuring principles are connected to the Hydrolog HLF4. The primary measured value of the hydrostatic level probe is compared cyclically by the measured value of an ultrasonic sensor. In the event of an adjustable deviation, the Hydrolog HLF4 generates an alarm. This considerably minimizes the control effort at the level measuring point.

The Hydrolog HLF4 is supplied with a wide range of options. These range from lithium batteries, which can have a service life of up to 8 years, depending on the application, batteries and the connection options for an external power supply or a PV module.

For data transmission of up to 800,000 measured values to the ACS portal, the Hydrolog HLF4 is equipped with mobile radio modules that can operate both 2G, 4G and LTE networks. Preparations for the upcoming 5G network are already in place. An embedded SIM is installed in the data transmission, which independently uses the strongest mobile network and the strongest provider on site. The data transfer takes place according to the latest security standards such as Data encryption and VPN tunnel.



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Hydrolog® HLF4

Data logger for pipe installation
with battery or accumulator operation and cellular data transmission

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Equipment

Equipment
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Basic price . . . . . .

Type
HLF4 Standard . . . . . .

Approval
S Standard . . . . . .

Enclosure type
R2 Tube enclosure 2" - Ø48mm . . . . . .
YY others . . . . . .

Electronic – Supply
B1 Battery lithium 19Ah / DC supply 7...32V . . . . . .
B2 Battery lithium 35Ah / DC supply 7...32V . . . . . .
A1 Li-ION rechargeable battery 20Ah / DC supply 7...32V / PV module . . . . . .
YY others . . . . . .

Electronic – Function
0 without
4 4G (LTE Cat-1) / 2G (EDGE, GSM, GPRS)
Y others

Electronic – Input
M 2x analogue 0/4...20mA / 2x interface RS485 / 1x digital-In

Tariff
0 Separate billing . . . . . .
XS1B ACS DataComplete XS, Basic, 5 years . . . . . .
XS1S ACS DataComplete XS, Standard, 5 years . . . . . .
XS1P ACS DataComplete XS, Premium, 3 years. . . . . .
S1B ACS DataComplete S, Basic, 5 years . . . . . .
S1S ACS DataComplete S, Standard, 3 years . . . . . .
S1P ACS DataComplete S, Premium, 3 years. . . . . .
M1B ACS DataComplete M, Basic, 3 years . . . . . .
M1S ACS DataComplete M, Standard, 3 years . . . . . .
M1P ACS DataComplete M, Premium, 3 years . . . . . .
L1B ACS DataComplete L, Basic, 3 years . . . . . .
L1S ACS DataComplete L, Standard, 3 years. . . . . .
L1P ACS DataComplete L, Premium, 3 years. . . . . .

S

+ Additional options

ML Measurement point designation / TAG – Laser marking. . .
KF Configuration / Preset. . . . . .

Order code

Hydrolog®HLF4	S				M		S

Equipment

Order designation	*Antenna:*
611000539	Rod antenna, connection cable 5m & mounting bracket, for HLF4/DLF4 . . . . .
611000540	Dome antenna, connection cable 3m, for HLF4/DLF4 . . . . .
611000552	Dome antenna for HLF4, connection cable short, specially for 2" caps . . . . .
611000599	Dome antenna for HLF4, connection cable short, specially for 3-4" caps . . . . .
611000600	Dome antenna for HLF4, connection cable short, specially for 5-6" caps . . . . .
611000541	Flat antenna, adhesive mounting, connection cable 3m, for HLF4/DLF4 . . . . .
911001827	Antenna cable extension, SMA, L=5m . . . . .
	Spare batteries:
611000566	battery BAT19AH, Lithium 19Ah, for HLF4/DLF4 . . . . .
611000567	batteryBAT35AH, Lithium 35Ah, for HLF4/DLF4. . . . .
611000569	Accu ACCU20AH, Li-ION 20Ah, for HLF4/DLF4 . . . . .
611000629	Charging unit 230Vac for Li-ION-Accu, for HLF4/DLF4 . . . . .
	External power supply and PV modules:
911001822	Solar-PV-Module 10W, for HLF4/DLF4 . . . . .
	Mounting accessories, connection cables
611000610	strain relief HLF4 for 1 or 2 sensores, required for total sensor weight >1kg . . . . .
611000549	Adapter plate 3" & 4", Level cap for installation HLF4 . . . . .
611000550	Adapter plate 4 1/2" & 5", Level cap for installation HLF4 . . . . .
611000551	Adapter plate 6", Level cap for installation HLF4. . . . .
611000578	Mast / wall fixation for PV-module, tiltable, for ø 30-63mm . . . . .
611000630	Connection cable for PV-module, 2-wire, 5m. . . . .

Tariffs - ACS DataComplete

Monthly fees ACS portal and data transfer

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ACS Portal – functions

	Basic	Standard	Premium
Unlimited use	✓	✓	✓
Device overview	✓	✓	✓
Logbook display		✓	✓
Device settings		✓	✓
Status information of the measuring points		✓	✓
Gallery function		✓	✓
Map display / position map		✓	✓
Data analysis		✓	✓
Advanced data analysis			✓
Manual data export		✓	✓
Reading memory	min. 14 days	min. 1 years	min. 3 years
Auto-export of the measured values to customer IT	optional	optional	✓
Extended self-diagnosis function (Heartbeat)		✓	✓
Alarm management		✓	✓
Alerting (AlertApp, text message, e-mail)			✓
Automatic software update of data logger	✓	✓	✓
Note functions		✓	✓
Grouping of measuring points		✓	✓
User	1	5	10
Add-on option per device			
AutoExport / month	on request	on request	included in tariff
Rain overflow calculation / month Measuring point	on request	on request	on request
Additional measured value memory	on request	on request	on request
Alarmierungskosten			
per text message			
E-mail	free	free	free
ACS Alter App	free	free	free
NOTE: Prepaid minimum amount 20,00 €			

Additional posting per client	
User management / 10 users / year	
Credit for alerting (Email, SMS)	

ACS Portal

Level data management - the easy way!

The ACS portal is the perfect solution for your countless level measurement data! Functional, flexible, interconnected and clear!
The comprehensive data management system automatically saves your measurement data and presents them in vivid tables and charts or in map view (based on Google Maps).

You also have control over the connected measurement technology. Not only a device overview, but also status information, device settings and an extended self-diagnosis function are possible in the ACS portal. In addition, the alarm function, the automatic data export and the extended data analysis facilitate the administration and processing of your level measurement data.

ACS Portal – Services

- ✓ Automatic data transfer to the ACS portal including mobile phone use the strongest network on site
- ✓ Use of the ACS portal and administration the measurement data
- ✓ Secure access to the data via the Internet
- ✓ Graphics and table views of the measured values, map view of the measuring points based on Google Maps
- ✓ Possibility to parameterize the measuring point via the platform
- ✓ Automatic update function of the devices
- ✓ Automatic data export in common Formats possible
- ✓ Free phone support
- ✓ Storage of data in a certified data center (ISO 27001) with weekly data backup

Tariffs - ACS DataComplete

Monthly fees ACS portal and data transfer

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ACS DataComplete - Monthly fees

ACS-Portal & data transmission GSM, LTE, LTE-M, NB-IOT

		DataComplete XS	DataComplete S	DataComplete M	DataComplete L
Max. Channels		1	2	6	12
Shortest transmission interval		24 h	3 h	30 min	5 min
Shortest measuring cycle		1 h	5 min	30 sec	5 sec
Max. readings / day		24	300	3 000	20 000
price per month	Basic				
	Standard				
	Premium				

Contractual conditions / term

Billing separately

- ✓ Billing takes place as a separate order item with monthly (> 20 measuring points) or
- ✓ billed annually
  Minimum contract term 1 year

Billing integrated in the device price

- ✓ The cost for 3 years is already in the Integrated device price
- ✓ An offer for a further 3 years is automatically created 6 months before the 3-year period expires

Discounts

Measuring points / platform	Discounts	Measuring points / platform	Discounts
to 10	0%	from 250	30%
from 10	10%	from 500	40%
from 100	20%	from 1000	50%

ACS DataComplete

Device class

XS
S
M
L

Data transfer

0 Without data transfer
1 With data transfer

scope of services

B Basic
S Standard
P Premium

Order code

ACS DataComplete DC

Equipment water level measurement & Training

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Equipment for Level pipes in general

ACS aluminium closure caps for level tubes with Whitworth-threads (pipe thread)

200 thread 2" - ISO 228-1 / DIN 259
300 thread 3" - ISO 228-1 / DIN 259
400 thread 4" - ISO 228-1 / DIN 259
412 thread 4 ½" - ISO 228-1 / DIN 259
500 thread 5" - ISO 228-1 / DIN 259
600 thread 6" - ISO 228-1 / DIN 259

0 Standard 6-socket-closure
S 5-socket-security-closure

VK –A

SCHVK-6 wrench for Standard 6-socket-closure
SCHVK-5 wrench for 5-socket-security-closure

Equipment for Hydrolog® 1000 Hydrolog® 3000 GSM-3000

Interface cable

STK-RSU-USB Interface transfer cable to connect Hydrolog®/GSM-Module with USB-Port on PC

Intermediate rings for the mounting of the level sensor in larger caps

ZR-2-3 intermediate ring 2" on 3"
ZR-2-4 intermediate ring 2" on 4"
ZR-2-412 intermediate ring 2" on 4 ½"
ZR-2-5 intermediate ring 2" on 5"
ZR-2-6 intermediate ring 2" on 6"

Replacement batteries Hydrolog®-1000/3000

SPB-1000 Service-Pack for battery change on Hydrolog® With battery and replacement seals for clipping
SPB-1001 Service-Pack for battery change on Hydrolog® With battery and replacement seals for soldering

Replacement batteries GSM-3000

BATGSM replacement battery for GSM-Module

Bluetooth adapter

STK-RSU-BT Bluetooth adapter for wireless communication between readout unit (Notebook, smartphone, tablet) and Hydrolog 3000/1000, or GSM-3000

Basic training

Commissioning & parameterization of the ACS level measurement technology

Duration about 3 hours

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3. Pressure measurement

Contents

Relative pressure (R), absolute (A), difference (D)

What to use where

Pressure type	Precont® PN4SC	Precont® PN4SM	Precont® PN4LM	Precont® S10	Precont® S20	Precont® S30	Precont® S40	Precont® S70	Precont® PS4SC	Precont® PS4SK	Precont® PS4SM	Precont® PS4LM	Precont® PU4SE	Precont® PU4SC	Precont® PU4SK	Precont® PU4SM	Precont® PU4LM	Precont® PK4SH	Precont® TM	Precont® MT	Precont® ML	Precont® KT	Precont® CT	Precont® HE5409
Relative pressure	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Absolute pressure	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●		●	●	●	●	●	
Differentail pressure																								●
Function																								
Pressure measurement	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
FIll level measurement			●			●	●	●	●			●					●		●		●		●	
FLow measurement	●	●	●																					
Limit transmitter with switching outputs	**4**	**4**	**4**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**												
Data logger	●	●	●																					
Media																								
Liquids	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Gases	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hydraulic oil / oils		●			●					●	●		●	●	●	●	●	●		●		●		
Viscose media		●	●		●	●	●	●	●		●	●							●	●	●		●	
Operating conditions																								
Hazardous area				⟨Ex⟩	⟨Ex⟩	⟨Ex⟩	⟨Ex⟩	⟨Ex⟩						⟨Ex⟩	⟨Ex⟩	⟨Ex⟩	⟨Ex⟩	⟨Ex⟩	⟨Ex⟩	⟨Ex⟩		⟨Ex⟩	⟨Ex⟩	⟨Ex⟩
Aggressive media	●			●			●		●	●									●				●	
Coat forming media		●	●		●	●	●	●	●		●	●		●					●	●	●		●	
Pressure blow resistive	●			●			●		●					●					●				●	
High temperature applications								●										●						
High pressure applications		●			●					●	●		●		●	●		●		●		●		
Hygienic sector			●			●	●	●				●					●				●			

Type	Precont® PN4SC	Precont® PN4SM	Precont® PN4LM	Precont® S10	Precont® S20	Precont® S30	Precont® S40	Precont® S70
Principle of operation	**Digital pressure sensor and pressure transmitter with internal ceramic membrane**	**Digital pressure sensor and pressure transmitter with metallic membrane up to 1000 bar**	**Digital pressure sensor and pressure transmitter for hygienic applications**	**Digital pressure sensor and pressure transmitter with internal ceramic membrane**	**Digital pressure sensor and pressure transmitter with metallic membrane up to 1000 bar**	**Digital pressure sensor and pressure transmitter for hygienic applications**	**Digital pressure sensor with flush capacitive ceramic cell**	**Digital pressure sensor for high temperature areas**
								
Design	compact	compact	compact	compact	compact	compact	compact	compact with diaphragm seal
Application areas	Liquids, vapors, gases, standard measurement	Liquids, vapors, gases, standard measurement	Hygienic applications, CIP, SIP, food technology	Liquids, vapors, gases, standard measurement	Liquids, vapors, gases, hydraulic oil, standard measurement	Hygienic applications, CIP, SIP, food technology	Liquids, gases, vapors standard measurement, hygienic areas, viscose media	Liquids, vapors, gases, high temperature, Hygienic applications
Measuring ranges	-1 up to 60 bar absolute/relative	-1 up to 1000 bar absolute/relative	-1 up to 25 bar absolute/relative	-1 up to 60 bar absolute/relative	-1...1000 bar absolute/relative	-1...+25 bar relative/ absolute	-1 up to 60 bar absolute/relative	-1 up to 400 bar absolute/relative
Measuring cell	Capacitive Ceramic	Metall Thin film - resp. piezoresistive DMS	Metall, front-flush piezoresistive DMS	Capacitive Ceramic	Metall Thin film - resp. piezoresistive DMS	Metall, front-flush piezoresistive DMS	Capacitive Ceramic	Metall capacitive ceramic thin film - DMS
Process connections	Thread G¼", G½"	Thread G¼", G½", G1"	Thread 1" Milk tube Varivent DRD	Thread G¼", G½"	Thread G¼", G½"	Thread 1" Milk tube Varivent DRD	Thread G¾", G1½", Milk tube, Varivent, DRD, Tri-Clamp, Flange	Thread G½", G¾" Thread G1½", G2" DIN-Flange Diaphragm seal
Process temperatures	-40 up to +125°C	-40 up to +125°C	-20 up to +150°C	-40 up to +125°C	-40 up to +125°C	-20...+150°C	-40 up to +125°C	-90 up to +400°C
Electronics	3-wire: 0/4...20 mA / 0...10 V	3-wire: 0/4...20 mA / 0...10 V	3-wire: 0/4...20 mA / 0...10 V	2-wire: 4...20 mA 3-wire: 0...10 V	2-wire: 4...20 mA 3-wire: 0...10 V	2-wire: 4...20 mA 3-wire: 0...10 V	2-wire: 4...20 mA 3-wire: 0...10 V	2-wire: 4...20 mA 3-wire: 0...10 V
Outputs can be calibrated	via display keys	via display keys	via display keys	via display keys	via display keys	via display keys	via display keys	via display keys
Switching points	40/2x PNP / 4x PNP	0/2x PNP / 4x PNP	0/2x PNP / 4x PNP	2x PNP	2x PNP	2 x PNP	2x PNP	2x PNP
Display	2" TFT-Display	2" TFT-Display	2" TFT-Display	4-digit LED	4-digit LED	4-digit LED	4-digit LED	4-digit LED
Certification				ATEX	ATEX	ATEX	ATEX	ATEX
Accuracy	< 0,05% / 0,10% / 0,20%	< 0,15% / 0,50%	< 0,15% / 0,50%	< 0,05% / 0,10% / 0,20%	< 0,15% / 0,50%	< 0,15% / 0,5%	< 0,05% / 0,10% / 0,20%	< 0,20% / 0,50%
Long term stability	0,1% / year	0,2% / year	0,2% / year	0,1% / year	0,2% / year	>0,2% / year	0,1% / year	0,2% / year

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Type	Precont® PS4SC	Precont® PS4SK	Precont® PS4SM	Precont® PS4LM	Precont® PU4SE	Precont® PU4SC	Precont® PU4SK	Precont® PU4SM
PPrinciple of operation	**Digital pressure sensor with capacitive ceramic cell**	**Digital pressure sensor with ceramic membrane**	**Digital pressure sensor with metallic membrane**	**Digital pressure sensor for hygienic applications**	**Pressure transmitter with Modbus-Option**	**Pressure transmitter with Modbus-Option**	**Pressure transmitter with Modbus-Option**	**Pressure transmitter with Modbus-Option**
								
Design	compact	compact	compact	compact	compact	compact	compact	compact
Application areas	Liquids, vapors, gases, standard measurements, pressure switch, oils	Liquids, vapors, gases, standard measurementen, pressure switch, oils	Liquids, vapors, gases, standard measurementen, pressure switch, oils	Hygienic applications, CIP, SIP, food technology	Liquids, vapors, gases, standard measurement	Liquids, vapors, gases, standard measurement	Liquids, vapors, gases, standard measurement	Liquids, vapors, gases, standard measurement
Measuring ranges	-1...60 bar relative/absolute	0...600 bar relative/absolute	-1...1000 bar relative/absolute	-1...+25 bar, relative/ absolute	0...+100 bar relative	50mbar...+20 bar relative/absolute	-1 mbar...+600 bar relative/absolute	-1 mbar...+1000 bar relative/absolute
Measuring cell	capacitive ceramic	Ceramic, thick film - DMS	Metall Thin film - resp. piezoresistive DMS	Metall, front-flush piezoresistive DMS	Ceramic, Thickfilm-DMS	capacitive ceramic	Ceramic, Thickfilm-DMS	Metall Thin film - resp. piezoresistive DMS
Process connections	Thread G¼", G½", G¾", G1", G1½" also front-flush	Thread G¼", G½", G1"	Thread G¼", G½", G1" also front-flush	Thread 1" Milk tube Varivent DRD	Thread G¼", G½"	Thread G¾", G1½", Milk tube, Varivent, DRD, Tri-Clamp, Flange	Thread G¼", G½", G¾", G1", also frint-flush	Thread G¼", G½", G1", also front-flush
Process temperatures	-40...+125°C	-40...+135°C	-40...+125°C	-20...+150°C	-40...+100°C	-40...+125°C	-40...+135°C	-40...+125°C
Electronics	3-wire: 4...20 mA	3-wire: 4...20 mA	3-wire: 4...20 mA	3-wire: 4...20 mA	2-wire: 4...20 mA, HART® 4-wire: Modbus RTU	2-wire: 4...20 mA, HART® 4-wire: Modbus RTU	2-wire: 4...20 mA, HART® 4-wire: Modbus RTU	2-wire: 4...20 mA, HART® 4-wire: Modbus RTU
Outputs can be calibrated	via display keys	via display keys	via display keys	via display keys	HART®	HART®	HART®	HART®
Switching points	2 x PNP	2 x PNP	2 x PNP	2 x PNP	-	-	-	-
Display	4-digit LED	4-digit LED	4-digit LED	4-digit LED	-	-	-	-
Certification	-	-	-	-	-	ATEX II 1 G / IECEx Ex ia IIC Ga bzw. ATEX II 1 D / IECEx Ex ia IIIC Da	ATEX II 1 G / IECEx Ex ia IIC Ga bzw. ATEX II 1 D / IECEx Ex ia IIIC Da	ATEX II 1 G / IECEx Ex ia IIC Ga bzw. ATEX II 1 D / IECEx Ex ia IIIC Da
Accuracy	< 0,2%	< 0,5%	< 0,5%	< 0,5%	< 0,50%	< 0,050%	< 0,150%	< 0,150%
Long term stability	0,1% / year	0,2%/year	0,2%/year	0,2%/year	0,2% / year	0,15% / year	0,2% / year	0,2% / year

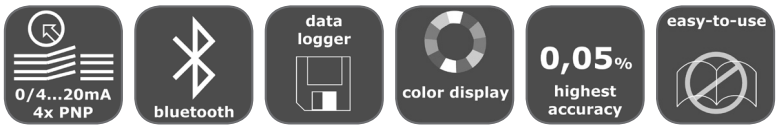
Type	Precont® PU4LM	Precont® PK4SH	Precont® HE5409	Precont® TM	Precont® MT	Precont® ML	Precont® KT	Precont® CT
PPrinciple of operation	Pressure transmitter with Modbus-Option	Pressure transmitter small design	Differential pressure transmitter	Pressure sensor with capacitive ceramic cell	Pressure sensor with metall membrane	Pressure sensor for hygienic applications	Pressure sensor with ceramic membrane	Pressure sensor with front-flush capacitive ceramic cell
								
Design	compact	compact	compact	compact	compact	compact	compact	compact
Application areas	Liquids, vapors, gases, standard measurement	Flüssigkeiten, Dämpfe, Gase, Standardmessung	air as well as dry, not aggressive gases	Liquids, vapors, gases, standard measurement	Liquids, vapors, gases, standard measurement	Hygienic applications, CIP, SIP, food technology	Liquids, vapors, gases, standard measurement	Liquids, vapors, gases, standard measurement
Measuring ranges	-1 mbar...+25 bar relative/absolute	-0...+600 bar relative	0...100 mbar	-1 up to 60 bar absolute/relative	-1...+1000 bar relative/absolute	-1...+25 bar relative/absolute	0...+600 bar relative/absolute	-1...+16 bar relative/absolute
Measuring cell	Metall, front-flush piezoresistive DMS	Metall, Thin film-DMS	semiconductor sensor	Capacitive Ceramic	Metall Thin film - resp. piezoresistive DMS	Metall, front-flush piezoresistive DMS	Ceramic Thickfilm-DMS	Capacitive Ceramic
Process connections	Thread 1" Milk tube Varivent DRD	Gewinde G¼"	quick coupling for 6 mm outer diameter	Thread G¼", G½" G¾", G1½" Milk tube also front-flush	Thread G¼", G½"	Thread 1" Milk tube Varivent DRD	Thread G¼", G½" also front-flush	Thread G½" front-flush
Process temperatures	-40...+150°C	-40...+200°C	-20...+55°C	-40 up to +125°C	-40...+125°C	-20...+150°C	-40...+125°C	-40...+125°C
Electronics	2-wire: 4...20 mA, HART® 4-wire: Modbus RTU	2-wire: 4...20 mA, HART®	2-wire: 4...20 mA	2-wire: 4...20 mA	2-wire: 4...20 mA 3-wire: 0...10 V	2-wire: 4...20 mA 3-wire: 0...10 V	2-wire: 4...20 mA 3-wire: 0...10 V	2-wire: 4...20 mA 3-wire: 0...10 V
Outputs can be calibrated	HART®	HART®	via keyboard	-	-	-	-	-
Switching points	-	-	-	-	-	-	-	-
Display	-	-	LCD	-	-	-	-	-
Certification	ATEX II 1 G / IECEx Ex ia IIC Ga bzw. ATEX II 1 D / IECEx Ex ia IIIC Da	AREX	ATEX	ATEX	ATEX	-	ATEX	ATEX
Accuracy	< 0,150%	< 0,50%	< ± 1 % from terminal value	< 0,10% / 0,20%	< 0,50%	< 0,50%	< 0,50%	< 0,10% / 0,25%
Long term stability	0,2% / year	0,2% / year	-	0,1% / year	0,2% / year	0,2% / year	0,15% / year	0,15% / year

Precont® PN4SC

Pressure transmitter / Pressure switch with data memory for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

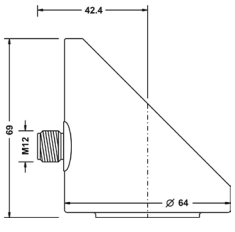
3 / 01.22

Technical data

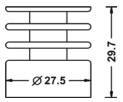


Supply voltage:	Setting output 0/4...20 mA: 9..30 VDC, reverse polarity protected Setting output 0...10 V: 14..30 VDC, reverse polarity protected
Analogue output	
Operating range:	current 0...20mA: 0...20,5mA, max. 22mA current 4...20mA: 3,8...20,5mA, min. 3,6mA, max. 22mA voltage 0...10V: 0 ... 10,5 V, max. 11 V
Permitted load:	current 0...20mA / current 4...20mA: ≤ (US - 9V) / 22mA voltage 0...10V: ≥ UOut / 3mA
Step response time:	≤ 15 ms (td = 0s)
Start-up time:	≤ 1s
Switch output PNP	S1 / S2 / S3 / S4
Function:	PNP switch to +L
Output current:	IL 0... ≤ 200mA, current limited, short circuit protected
Step response time:	≤ 25 ms (td = 0s)
Switch cycles:	≥ 100.000.000
Bluetooth Interface	
Version:	Bluetooth 2.1 + EDR
Specification:	Class 2
Transmit power:	≤ 2,5mW/4dBm
Range:	≤ 10m
Measuring accuracy	
Characteristic deviation:	≤ ±0,05% / ±0,1% / ±0,2% FS
Long term drift:	≤ ±0,15% FS / year
Temperature deviation:	Zero: ≤ ±0,015% FS / K / max. ±0,75 % (-20°C...+80°C) Span: ≤ ±0,015% FS / K / max. ±0,5 % (-20°C...+80°C / > 0,4 bar)/ max. ±0,8 % (-20°C...+80°C / ≤ 0,4 bar)
Materials	
Membrane (process wetted):	Measuring range ≤ 1bar: Ceramic Al_2O_3 – 99,7% (SIP suitable) Measuring range ≥ 1,6bar: Ceramic Al_2O_3 – 96% (SIP suitable) Process connection 1/2/4/6/7/A/N/M/P/L/S/T: Ceramic Al_2O_3 – 99,9% (CIP/SIP suitable)
Process connection (process wetted):	Steel 1.4404/316L / Steel 1.4571/316Ti
Terminal enclosure:	CrNi-steel
Control panel surface:	PES
Gaskets (process wetted):	FPM – fluorelastomere (e.g. Viton®) / EPDM – ethylene-propylene-dienmonomere, FDA-listed / FFKM – perfluorelastomere (e.g. Kalrez®) / FFKM hd – perfluorelastomere high density
Environmental conditions	
Environmental temperature:	– 20°C...+70°C
Process temperature:	– 40°C...+100°C resp. 125°C
Process pressure:	50 mbar up to 60 bar depending on type
Protection:	IP68 EN/IEC 60529

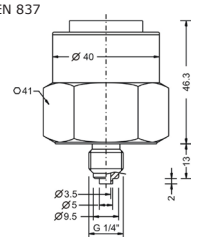
Terminal enclosure



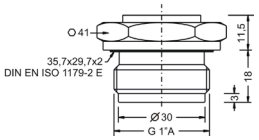
Temperature decoupler



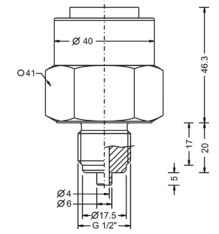
Type 6 – Thread ISO 228-1 – G¼"A, EN 837



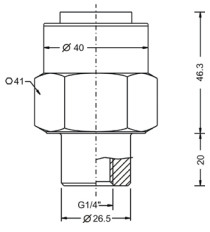
Type 5 – Thread ISO 228-1 – G1"A, front-flush



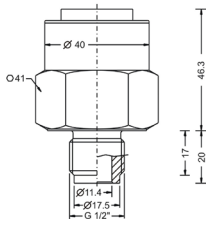
Type 1 – Thread ISO 228-1 – G½"A, EN 837



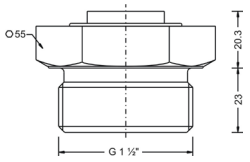
Type 4 – Thread ISO 228-1 – G¼"I, inner thread



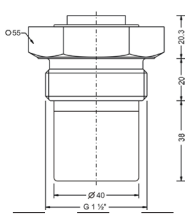
Type 2 – Thread ISO 228-1 – G½"A, inner bore



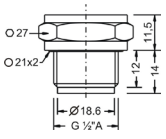
Type 7 – Thread ISO 228-1 – G1½"B, front-flush



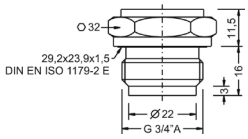
Type A – Thread ISO 228-1 – G1½"A



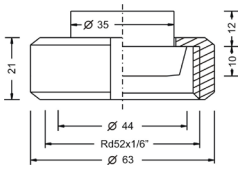
Type 9 – Thread ISO 228-1 – G½"B, front-flush



Type 8 – Thread ISO 228-1 – G¾"A, front-flush



Type R – Dairy coupling DIN 11851 – DN25, PN40



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Precont® PN4SC

Pressure transmitter / Pressure switch with data memory for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

3 / 01.22

Basic price . . . . . .

Model
PN4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
C Ceramic Al2O3 96%/99,7%/99,9% / capacitive . . . . . .

Approval
S Standard . . . . . .

Process connection
6 Thread ISO 228-1 – G¼"A, EN 837 manometer . . . . . .
1 Thread ISO 228-1 – G½"A, EN 837 manometer . . . . . .
4 Thread ISO 228-1 – G¼"I, inner thread . . . . . .
2 Thread ISO 228-1 – G½"A, inner bore . . . . . .
A Thread ISO 228-1 – G1½"A . . . . . .
9 Thread ISO 228-1 – G½"B, front-flush, ≤ 20 bar . . . . . .
8 Thread ISO 228-1 – G¾"A, front-flush, ≤ 20 bar . . . . . .
5 Thread ISO 228-1 – G1"A, front-flush, ≤ 20 bar . . . . . .
7 Thread ISO 228-1 – G1½"B, front-flush . . . . . .
R Dairy coupling DIN 11851 – DN25, PN40, ≤ 20 bar . . . . . .
N Dairy coupling DIN 11851 – DN40, PN40 . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
P Varivent® – Type N / tube DN40-162 / 1½"-6", PN40 . . . . . .
L DRD – DN50 / Ø65mm, PN25 . . . . . .
S Clamp ISO 2852 – DN25-38 / BS 4825 – 1"-1½" / DIN 32676 – DN25-38, PN25 . . . .
T Clamp ISO 2852 – DN40-51 / BS 4825 – 2" / DIN 32676 – DN50, PN25 . . . . . .
Y others . . . . . .

Material gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
4 FFKM - perfluorelastomere (e.g. Kalrez®) . . . . . .
6 FFKM hd - perfluorelastomere high density - gas applications . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range

26	0…50 mbar	10	0…10 bar . . . . .
01	0…100 mbar	11	0…16 bar . . . . .
02	0…200 mbar	12	0…20 bar . . . . .
03	0…400 mbar	13	0…40 bar . . . . .
04	0…600 mbar	14	0…60 bar . . . . .
05	0…1 bar	15	-100…0 mbar . . . . .
06	0…1,6 bar	16	-1…0 bar . . . . .
07	0…2,5 bar	17	-1…+1 bar . . . . .
08	0…4 bar	18	-100…+100 mbar . . . . .
09	0…6 bar		
YY	Special measuring range		

Electronic – output
M 1x signal 0/4…20mA-0…10V, supply 24VDC . . . . . .
K 1x signal 0/4…20mA-0…10V, 2x switch PNP, supply 24VDC . . . . . .
R 1x signal 0/4…20mA-0…10V, 4x switch PNP, supply 24VDC . . . . . .

Electronic – function
0 without . . . . . .
1 Bluetooth-Interface . . . . . .
2 Data logger with time stamp, battery powered . . . . . .
3 Bluetooth-Interface / Data logger with time stamp, battery powered . . . . . .
Y others . . . . . .

Process temperature
0 Standard –40°C…+100°C . . . . . .
1 Extended –40°C…+125°C, temperature decoupler

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure (FS ≥ 100mbar) . . . . . .

Measuring system – accuracy
1 0,2% . . . . . .
3 0,1% (FS ≥ 100 mbar), linearization protocol . . . . . .
6 Xcellence – 0,05% (FS ≥ 200mbar), linearization protocol . . . . . .

Electrical connection
S Plug M12x1 . . . . . .

Application

The device is an electronic pressure transmitter / pressure switch for monitoring, control as well as continuous measurement of pressures in gases, vapors, liquids and dusts.
Due to the device construction with measuring ranges from -1 bar to 60 bar (gauge), measuring ranges from 0 bar to 60 bar (absolute), measuring spans from 50 mbar to 60 bar, process temperatures from –40°C to +125°C, process materials Al2O3-ceramic / CrNi-steel as well as the availability of industrial standard process connections like thread ISO 228-1 (EN 837 manometer, Inner thread, front-flush), dairy coupling DIN 11851 (front-flush), Varivent® (front-flush), clamp ISO 2852 / BS 4825 / DIN 32676 (front-flush), DRD (front-flush) the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry, environmental technology, facility and building automation.
The device is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
Through its optimized design, the front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process.
The device is suitable for the use at CIP/SIP cleaning processes.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with frequently changing media.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether low temperatures when used outdoors, high shock and vibration or aggressive media.

Order code

Precont®	PN4S	C	S		V	C					S

Equipment

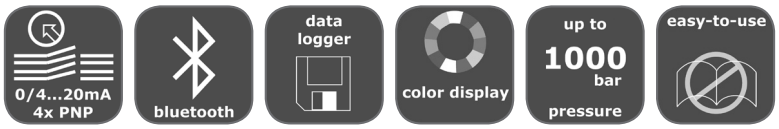
Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
LKZ0805PUR-AS	Connection cable 5 m, 8-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

Precont® PN4SM

Pressure transmitter / Pressure switch with data memory for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust up to 1000 bar

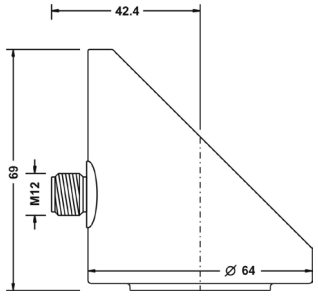
3 / 01.22

Technical data

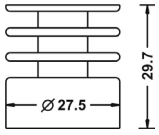


Supply voltage:	Setting output 0/4...20 mA: 9..30 VDC, reverse polarity protected Setting output 0...10 V: 14..30 VDC, reverse polarity protected
Analogue output	
Operating range:	current 0...20mA: 0...20,5mA, max. 22mA current 4...20mA: 3,8...20,5mA, min. 3,6mA, max. 22mA voltage 0...10V: 0 ... 10,5 V, max. 11 V
Permitted load:	current 0...20mA / current 4...20mA: ≤ (US - 9V) / 22mA voltage 0...10V: ≥ UOut / 3mA
Step response time:	≤ 15 ms (td = 0s)
Start-up time:	≤ 1s
Switch output PNP	S1 / S2 / S3 / S4
Function:	PNP switch to +L
Output current:	IL 0... ≤ 200mA, current limited, short circuit protected
Step response time:	≤ 25 ms (td = 0s)
Switch cycles:	≥ 100.000.000
Bluetooth Interface	
Version:	Bluetooth 2.1 + EDR
Specification:	Class 2
Transmit power:	≤ 2,5mW/4dBm
Range:	≤ 10m
Measuring accuracy	
Characteristic deviation:	≤ ±0,15% / ±0,5% FS
Long term drift:	≤ ±0,2% FS / year
Temperature deviation:	Measuring range ≤ 25 bar: ≤ ±0,02% FS / K (0...+80°C) / ≤ ±0,03% FS / K (-40...0°C / +80...+125°C) Measuring range ≥ 40 bar: ≤ ±0,02% FS / K (-40...+100°C) / ≤ ±0,03% FS / K (+100...+125°C)
Materials	
Membrane (process wetted):	Measuring range ≤ 1bar: Ceramic Al_2O_3 – 99,7% (SIP suitable) Measuring range ≥ 1,6bar: Ceramic Al_2O_3 – 96% (SIP suitable) Process connection 1/2/4/6/7/A/N/M/P/L/S/T: Ceramic Al_2O_3 – 99,9% (CIP/SIP suitable)
Process connection (process wetted):	Steel 1.4404/316L / Steel 1.4571/316Ti
Terminal enclosure:	CrNi-steel
Control panel surface:	PES
Gaskets (process wetted):	FPM – fluorelastomere (e.g. Viton®) / EPDM – ethylene-propylene-dienmonomere, FDA-listed / FFKM – perfluorelastomere (e.g. Kalrez®) / FFKM hd – perfluorelastomere high density
Environmental conditions	
Environmental temperature:	– 20°C...+70°C
Process temperature:	– 40°C...+100°C resp. 125°C
Process pressure:	400 mbar up to 1000 bar depending on type
Protection:	IP68 EN/IEC 60529

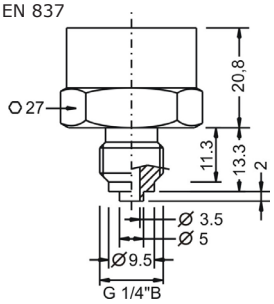
Terminal enclosure



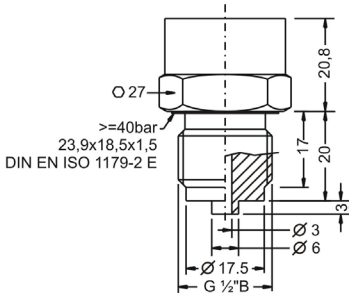
Temperature decoupler



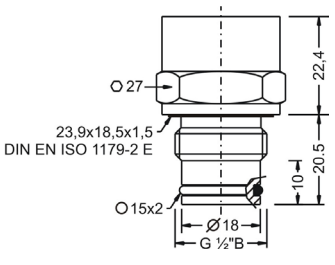
Type 6 – Thread ISO 228-1 – G¼"B, EN 837



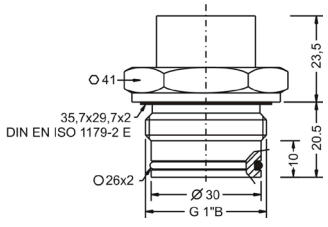
Type 1 – Thread ISO 228-1 – G½"B, EN 837



Type 0 – Thread ISO 228-1 – G½"B, front-flush



Type 5 – Thread ISO 228-1 – G1"B, front-flush



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Precont® PN4SM

Pressure transmitter / Pressure switch with data memory for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust up to 1000 bar

3 / 01.22

Basic price . . . . . .

Model
PN4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
M CrNi-steel / strain gauge . . . . . .

Approval
S Standard . . . . . .

Process connection
6 Thread ISO 228-1 – G¼"B, EN 837 manometer (without process gasket) . . . . . .
1 Thread ISO 228-1 – G½"B, EN 837 manometer (≥ 40 bar without process gasket). . .
0 Thread ISO 228-1 – G½"B, front-flush, O-ring gasket
not for measuring ranges 0…400 mbar / 0…1 bar / –1…0 bar / 0…1000 bar . . . . . .
5 Thread ISO 228-1 – G1"B, front-flush, O-ring gasket
for measuring ranges 0…400 mbar / 0…1 bar / –1…0 bar. . . . . .
Y others . . . . . .

Material gaskets (process wetted)
0 without / NBR – nitrile-butadiene-rubber . . . . . .
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
Y others. . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
03 0…400 mbar . . . . . .
05 0…1 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar. . . . . .
11 0…16 bar. . . . . .
12 0…20 bar. . . . . .
13 0…40 bar. . . . . .
14 0…60 bar. . . . . .
19 0…100 bar. . . . . .
20 0…160 bar. . . . . .
21 0…250 bar. . . . . .
22 0…320 bar. . . . . .
23 0…400 bar. . . . . .
24 0…600 bar. . . . . .
25 0…1000 bar,
only for process connection type 1, 6 – G½"B, G¼"B (EN 837) . .
16 –1…0 bar. . . . . .
17 –1…+1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
M 1x signal 0/4…20mA-0…10V, supply 24VDC . . . . . .
K 1x signal 0/4…20mA-0…10V, 2x switch PNP,
supply 24VDC. . . . . .
R 1x signal 0/4…20mA-0…10V, 4x switch PNP,
supply 24VDC. . . . . .

Electronic – function
0 without. . . . . .
1 Bluetooth-Interface . . . . . .
2 Data logger with time stamp, battery powered . . . . . .
3 Bluetooth-Interface / Data logger with time stamp,
battery powered . . . . . .
Y others. . . . . .

Process temperature
0 Standard –40°C…+100°C . . . . . .
1 Extended –40°C…+125°C, temperature decoupler

Pressure type
R Gauge pressure. . . . . .
A Absolute pressure (FS ≥ 100mbar) . . . . . .

Measuring system – accuracy
4 0,5% . . . . . .
8 Xcellence – 0,15%, linearization protocol

Electrical connection
S Plug M12x1 . . . . . .

Application

The device is an electronic pressure transmitter / pressure switch for monitoring, control as well as continuous measurement of pressures in gases, vapors, liquids and dusts.
Due to the device construction with measuring ranges from -1 bar to 1000 bar (gauge), measuring ranges from 0 bar to 1000 bar (absolute), measuring spans from 400 mbar to 1000 bar, process temperatures from –40°C to +125°C, process material CrNi-steel as well as the availability of industrial standard process connections like thread ISO 228-1 (EN 837 manometer, front-flush) the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry, environmental technology, facility and building automation.
The device is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
The front-flush diaphragm has been specifically designed for the measurement of viscous, pastelike, adhesive, crystallizing, particle-laden and contaminated media, which would clog the pressure channel of conventional process connections.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether low temperatures when used outdoors, high shock and vibration or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

Order code

Precont®	PN4S	M	S		V	C				S

Equipment

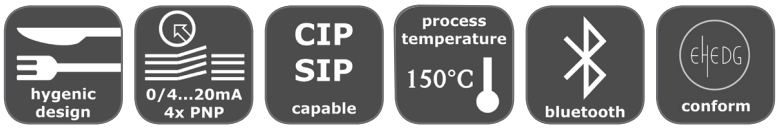
Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
LKZ0805PUR-AS	Connection cable 5 m, 8-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

Precont® PN4LM

Pressure transmitter / Pressure switch with data memory for hygienic applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

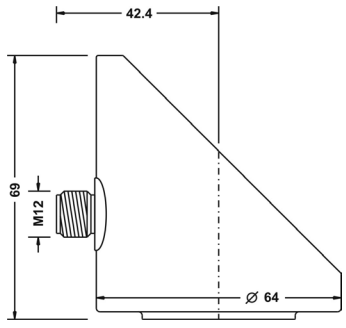
3 / 01.22

Technical data

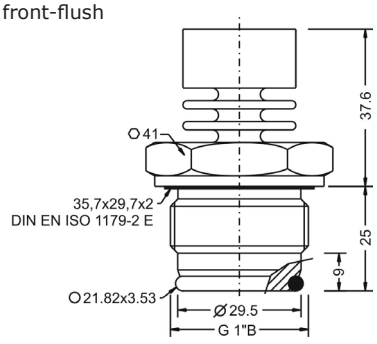


Supply voltage:	Setting output 0/4...20 mA: 9..30 VDC, reverse polarity protected Setting output 0...10 V: 14..30 VDC, reverse polarity protected
Analogue output	
Operating range:	current 0...20mA: 0...20,5mA, max. 22mA current 4...20mA: 3,8...20,5mA, min. 3,6mA, max. 22mA voltage 0...10V: 0 ... 10,5 V, max. 11 V
Permitted load:	current 0...20mA / current 4...20mA: ≤ (US - 9V) / 22mA voltage 0...10V: ≥ UOut / 3mA
Step response time:	≤ 15 ms (td = 0s)
Start-up time:	≤ 1s
Switch output PNP	S1 / S2 / S3 / S4
Function:	PNP switch to +L
Output current:	IL 0... ≤ 200mA, current limited, short circuit protected
Step response time:	≤ 25 ms (td = 0s)
Switch cycles:	≥ 100.000.000
Bluetooth Interface	
Version:	Bluetooth 2.1 + EDR
Specification:	Class 2
Transmit power:	≤ 2,5mW/4dBm
Range:	≤ 10m
Measuring accuracy	
Characteristic deviation:	≤ ±0,15% / ±0,5% FS
Long term drift:	≤ ±0,2% FS / year
Temperature deviation:	Measuring range ≤ 250 mbar: ≤ ±0,04% FS / K (0...+80°C) / ≤ ±0,06% FS / K (-20...0°C / +80...+150°C) Measuring range ≥ 400 mbar: ≤ ±0,02% FS / K (0...+80°C) / ≤ ±0,03% FS / K (-20...0°C / +80...+150°C)
Materials	
Membrane (process wetted):	Steel 1.4435/316L
Process connection (process wetted):	Steel 1.4435/316L
Terminal enclosure:	CrNi-steel
Control panel surface:	PES
Gaskets (process wetted):	FPM – fluorelastomere (e.g. Viton®), FDA-listed EPDM – ethylene-propylene-dienmonomere, FDA-listed
Environmental conditions	
Environmental temperature:	– 20°C...+70°C
Process temperature:	– 20°C...+150°C
Process pressure:	100 mbar up to 25 bar depending on type
Protection:	IP68 EN/IEC 60529

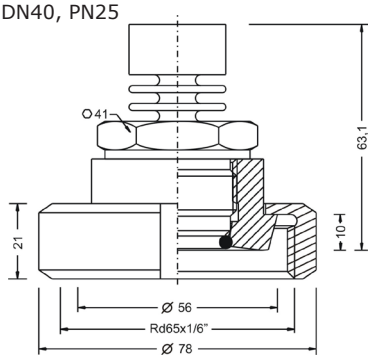
Terminal enclosure



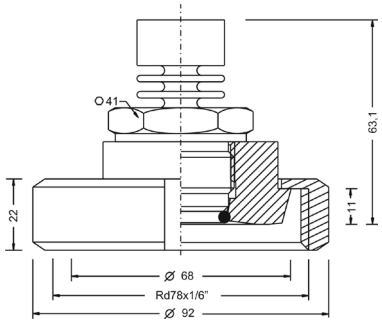
Type 5 – Thread ISO 228-1 – G1"B, front-flush



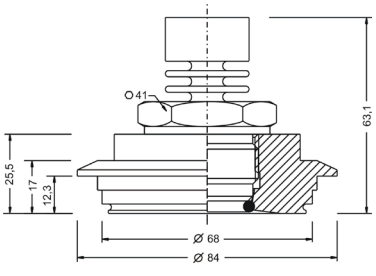
Type N – Dairy coupling DIN 11851 – DN40, PN25



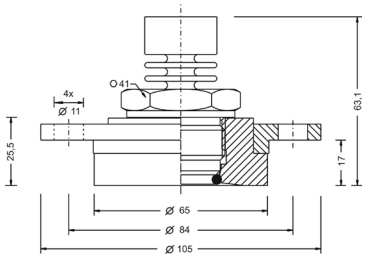
Type M – Dairy coupling DIN 11851 – DN50, PN25



Type P – Varivent® – Type N / tube DN40-162 / 1½"-6", PN40



Type L - DRD – DN50 / Ø65mm, PN25



ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Precont® PN4LM

Pressure transmitter / Pressure switch with data memory for hygienic applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

3 / 01.22

Basic price . . . . . .

Model
PN4L Hygienic applications . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
M CrNi-steel / strain gauge . . . . . .

Approval
S Standard . . . . . .

Process connection
5 Thread ISO 228-1 – G1"B, front-flush, O-ring gasket, EHEDG conformal, for welding socket BEFVE10 . . . . . .
N Dairy coupling DIN 11851 – DN40, PN40 . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
P Varivent® – Type N / tube DN40-162 / 1½"-6", PN40 . . . . . .
L DRD – DN50 / Ø65mm, PN25 . . . . . .
Y others . . . . . .

Material gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®), FDA-listed . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
01 0…100 mbar . . . . . .
02 0…250 mbar . . . . . .
03 0…400 mbar . . . . . .
04 0…600 mbar . . . . . .
05 0…1 bar . . . . . .
07 0…2,5 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar . . . . . .
11 0…16 bar . . . . . .
12 0…25 bar . . . . . .
16 -1…0 bar . . . . . .
17 -1…+1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
M 1x signal 0/4…20mA-0…10V, supply 24VDC . . . . . .
K 1x signal 0/4…20mA-0…10V, 2x switch PNP, supply 24VDC . . . . . .
R 1x signal 0/4…20mA-0…10V, 4x switch PNP, supply 24VDC . . . . . .

Electronic – function
0 without . . . . . .
1 Bluetooth-Interface . . . . . .
2 Data logger with time stamp, battery powered . . . . . .
3 Bluetooth-Interface / Data logger with time stamp, battery powered . . . . . .
Y others . . . . . .

Process temperature
1 Standard –20°C…+150°C . . . . . .

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure (FS ≥ 100mbar) . . . . . .

Measuring system – accuracy
4 0,5% . . . . . .
8 Xcellence – 0,15%, linearization protocol

Electrical connection
S Plug M12x1 . . . . . .

Application

The device is an electronic pressure transmitter / pressure switch for monitoring, control as well as continuous measurement of pressures in gases, vapors, liquids and dusts.
Due to the device construction with measuring ranges from -1 bar to 25 bar (gauge), measuring ranges from 0 bar to 25 bar (absolute), measuring spans from 100 mbar to 25 bar, process temperatures from –20°C to +150°C, process material CrNi-steel as well as the availability of a variety of hygienic EHEDG-conformal process connections like thread ISO 228-1 with front-flush O-ring gasket, dairy coupling DIN 11851, Varivent® and DRD the device is especially suitable for the use for food and beverage industry, pharmaceutical industry, biotechnology and sterile process engineering.
The device is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
The device with front-flush diaphragm has been specifically designed for the measurement of viscous, paste-like, adhesive, crystallizing, particle-laden and contaminated media, which would clog the pressure channel of conventional process connections.
Through its optimized design, the front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process.
The device is particularly suitable for the special conditions of CIP/SIP cleaning processes, such as chemical stability towards cleaning liquids and high temperatures.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with frequently changing media.
The front-flush diaphragm is completely welded with the process connection and supplied with a positive seal. A reliable, dead-space free sealing between the process connection and the process adapter resp. measuring medium is thus assured.

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
KF Configuration / Preset . . . . . .

Order code

Precont®	PN4L	M	S		V	C			1			S

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
LKZ0805PUR-AS	Connection cable 5 m, 8-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .
BEFVE10	Welding flange for process connection 5 . . . . .

Precont® S10

Digital pressure sensor with internal, dry, capacitive ceramic measuring cell up to 60 bar,
4-digit LED-display, 2 PNP-switching outputs, 2- or 3-wire electronics selectable

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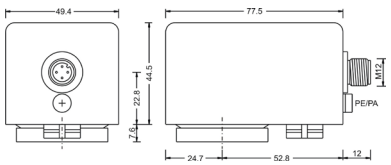
Technical data

auxiliary power supply			
14,5...45V DC at output signal 4...20mA		With display	Ex 14,5...30V DC
10,5...45V DC at output signal 4...20mA		Without display	Ex 10,5...30V DC
14,5...45V DC at output signal 0...10V		Ex 14,5...30V DC	
Supply current:	2-wire 4...20 mA	≤ 22 mA	PNP-switching outputs in neutral
	3-wire 0...10 V	≤ 10 mA	PNP-switching outputs in neutral
2xPNP-switching output			
Function:	PNP-switching on +Vs		
Output current:	≤ 250 mA current limited, short circuit protected		
Measurement accuracy			
Characteristics deviation:	≤ ±0,05 / 0,1% / 0,2% FS		
Long term drift:	≤ ± 0,1% FS / year not cumulative		
temperature deviation :	≤ ± 0,15% FS / 10 K (Zero / Span) (Zero / Span)		
Materials			
membrane (medium contact):	Ceramics AL_2O_3 99,9%		
process connection (medium contact):	Steel 1.4404 / 316L resp. 1.4571 / 316 Ti)		
Connection housing:	CrNi-steel / PBT polybutylene terephthalate / POM – polyoxymethylene (Delrin®)		
Gaskets:	FPM – fluoroelastomer (Viton®) (medium contact)		
(medium contact)	EPDM – ethylene-propylene-diene monomer		
	CR – chloroprene rubber (Neopren®)		
	FFKM – perfluorelastomere (Kalrez®)		
	NBR – nitrile-butadiene rubber		
Environmental conditions			
Ambient temperature:	– 40°C...+85°C		
Process temperatures:	– 40°C...+100°C resp. +125°C		
Process pressure ranges:	– 1 bar ...60 bar		
Turn down:	30:1		
Protection:	IP65 / IP67 EN/IEC 60529		

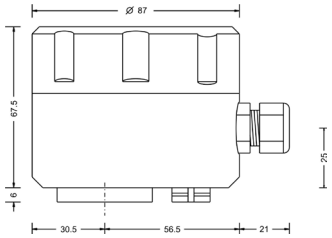
Plug M12

Terminal compartment housing

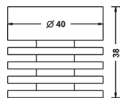
Connection housing
Electrical connection Type S - plug M12
Material connection housing Type A - PBT



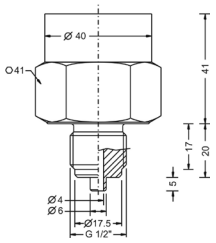
Connection housing
Electrical connection Type A - terminal compartment
Material connection housing Type C
CrNi-steel / Type D - POM



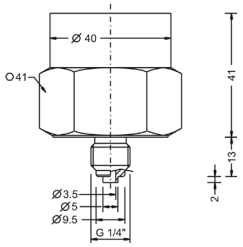
temperature decoupler



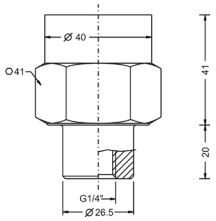
Type 0
G ½" ISO 228-1 - DIN 837-3



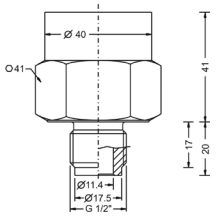
type 1
G ¼" ISO 228-1 - DIN 837-3



type 4
G ¼" ISO 228-1 – internal thread



Type 6
G ½" ISO 228-1 - inner bore 11,4mm



Application

The Precont® S10 is used in all fields of proceeding and process technique.

The excellent characteristics like pressure strength, high chemical resistance, corrosion protection and insensitivity against temperature shocks allows the use in the hardest applications for the measurement of gases, steams and liquids.

Precont® S10

Digital pressure sensor with internal, dry, capacitive ceramic measuring cell up to 60 bar,
4-digit LED-display, 2 PNP-switching outputs, 2- or 3-wire electronics selectable

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Pressure measurement

Basic price

Equipment

welding flanges
page 134

Model

- S10 Standard
- ExS10 ATEX II 1/2 G Ex ia IIC T4 Ga/Gb
- XDS10 ATEX II 1/2 D Ex ia IIIC T60°C/T102°C Da/Db
  only for material terminal enclosure type C – CrNi-steel

Process connection

- 0 G½" A DIN EN 837-3, DIN EN ISO228-1
- 6 G½" A with inner bore 11 mm, DIN EN ISO228-1
- 1 G¼" A, DIN EN 837-3, DIN EN ISO228-1
- 4 G¼" ISO 228-1 - internal thread

Transmitter electronics

- A 4...20 mA, 2-wire-electronics, with display, 2 PNP-switching outputs
- B 4...20 mA, 2-wire-electronics, with display
- C 4...20 mA, 2-wire-electronics, without display, adjustment via keys
- D 4...20 mA, 2-wire-electronics, preset, without display
- E 0...10 V 3-wire-electronics, with display, 2 PNP-switching outputs
- F 0...10 V 3-wire-electronics, with display
- G 0...10 V 3-wire-electronics, without display, adjustment via keys
- H 0...10 V 3-wire-electronics, preset, without display

Material connection

- V Stainless steel 1.4404

Material Connection housing *(for type XD only material steel possible)*

- A PBT *(polybutylene terephthalate) (not with terminal compartment)*
- C CrNi-steel
- D POM (Polyacetal - Delrin®) - only with terminal compartment housing

Measuring range

01	0…100 mbar	10	0…10 bar
02	0…200 mbar	11	0…16 bar
03	0…400 mbar	12	0…20 bar
04	0…600 mbar	13	0…40 bar
05	0…1 bar	14	0…60 bar
06	0…1,6 bar	15	-100…0 mbar
07	0…2,5 bar	16	-1…0 bar
08	0…4 bar	17	-1…1 bar
09	0…6 bar	18	-100…+100 mbar
		YY	Special measuring range

Material gaskets *(process wetted)*

- 1 FPM - fluoroelastomer (Viton®)
- 2 CR - chloroprene rubber (Neopren®)
- 3 EPDM - ethylene-propylene-diene monomer - food applications
- 4 FFKM - perfluorelastomere *(Kalrez®)*
- 6 FFKM hd - high density perfluorelastomere - gas applications

Process temperature

- 0 Standard -40°C up to +100°C
- 1 Extended, -40°C…+125°C, temperature decoupler

Pressure type

- R Gauge pressure
- A Absolute pressure

Measuring system - accuracy

- 1 Ceramics 99,9% high purity, capacitive / 0,2%
- 3 Ceramics 99,9%, capacitive / 0,1%, linearization protocol
- 6 Xcellence - ceramics 99,9% high purity, capacitive / 0,05%, linearization protocol.

Electrical connection

- S Plug M12x1
- K Cable 2 m
- A Terminal compartment housing.

+ Additional Options (optional)

- SF LABS-free, silicone-free / paint compatible version
- ML Measurement point designation / TAG – Laser marking
- KF Configuration / Preset
- MZ Material test certificate – EN10204 3.1

Order code

Precont®				V								

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded
BKZ0412-VA	Matching cable socket, VA-nut
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V)

Precont® S20

Digital pressure sensor with metal membrane, up to 1000 bar,
4-digit LED-display, 2 switching outputs, analog output

3 / 01.22

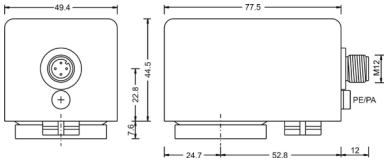
Technical data

Power supply:	
	14,5...45V DC at output signal 4...20mA / with display / Ex 14,5...30V DC
	10,5...45V DC at output signal 4...20mA / without display / Ex 10,5...30V DC
	14,5...45V DC at output signal 0...10V / Ex 14,5...30V DC
Supply current:	≤ 22 mA; at 2-wire 4...20mA PNP-switching outputs in neutral
	≤ 10 mA; at 3-wire 0...10V PNP-switching outputs in neutral
PNP-switching output	
Function:	PNP-switching on +Vs
Output current:	≤ 250 mA current limited, short circuit protected
Measurement accuracy	
Characteristics deviation:	≤ ±0,15 / 0,5% FS
Long term drift:	≤ ±0,2% FS / year not cumulative
Temperature deviation:	≤ ±0,20% FS / 10 K (Zero / Span)
Materials	
Membrane:	
(medium contact)	≥ 40 bar Steel 1.4571/316Ti
	< 40 bar Steel 1.4542/630 resp. 1.4534
Process connection:	
(medium contact)	Steel 1.4571/316Ti
Connection housing:	CrNi-steel / PBT polybutylene terephthalate / POM – polyoxymethylene (Delrin®)
Gaskets:	
(medium contact)	FPM – fluoroelastomer (Viton®)
	EPDM – ethylene-propylene-diene monomer
	NBR – nitrile-butadiene rubber
Environmental conditions	
Ambient temperature:	– 40°C...+85°C
Process temperatures:	– 40°C...+100°C resp. +125°C
Process pressure ranges:	– 1 bar ...1000 bar
Turn down:	30:1
Protection:	IP65 / IP67 EN/IEC 60529

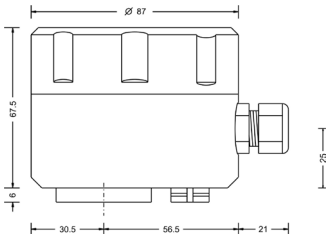
Plug M12

Terminal compartment housing

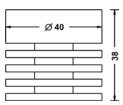
Connection housing
Electrical connection Type S - plug M12
Material connection housing Type A - PBT



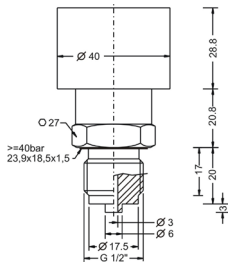
Connection housing
Electrical connection Type A - terminal compartment
Material connection housing Type C
CrNi-steel / Type D - POM



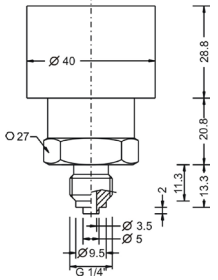
temperature decoupler



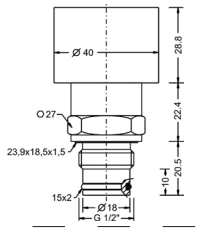
Type 0
G ½" ISO 228-1 - DIN 837-3



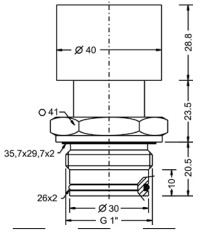
Type 6
G ¼" ISO 228-1 - DIN 837-3



Type 2
G ½" ISO 228-1 - front-flush



Type 5
G 1" ISO 228-1 – front-flush



Application

The Precont® S20 is used in all fields of proceeding and process technique.

The excellent characteristics like pressure strength, high chemical resistance, corrosion protection and insensitivity against temperature shocks allows the use in the hardest applications for the measurement of gases, steams and liquids.

The polysilicone resp. thin-film measurement sensor guarantees highest pressure ranges, good reproduceability and hysteresis, an up to 4 times overload resistance and a good long term stability.

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Precont® S20

Digital pressure sensor with metal membrane, up to 1000 bar,
4-digit LED-display, 2 switching outputs, analog output

3 / 01.22

Equipment

welding flanges
page 134

Basic price . . . .

Model

S20 Standard . . . .
ExS20 ATEX II 1/2 G Ex ia IIC T4 Ga/Gb. . . . .
XDS20 ATEX II 1/2 D Ex ia IIIC T60°C/T102°C Da/Db + ATEX II 1/2 G Ex ia IIC T4 Ga/Gb . . . .
only for material terminal enclosure type C – CrNi-steel

Process connection

0 G½" B, DIN EN ISO228-1 DIN EN 837-3, manometer connection . . . .
2 G½" B, DIN EN ISO228-1 front-flush, with radial O-ring
not for following ranges 0...400 mbar, 0..1 bar and -1...0 bar . . . .
5 G1" B, DIN EN ISO228-1 front-flush, with radial O-ring
for ranges 0...400 mbar, 0...1 bar and -1...0 bar . . . .
6 G¼" B, DIN EN ISO228-1 DIN EN 837-3, manometer connection . . . .

Electronics - output

A 4...20 mA, 2-wire-electronics, with display, 2 PNP-switching outputs . . . .
B 4...20 mA, 2-wire-electronics, with display . . . .
C 4...20 mA, 2-wire-electronics, without display, adjustment via keys . . . .
D 4...20 mA, 2-wire-electronics, preset, without display. . . . .
E 0...10 V 3-wire-electronics, with display, 2 PNP-switching outputs. . . . .
F 0...10 V 3-wire-electronics, with display. . . . .
G 0...10 V 3-wire-electronics, without display, adjustment via keys . . . .
H 0...10 V 3-wire-electronics, preset, without display . . . .

Material process connection *(medium contact)*

V Stainless steel 1.4571/*316Ti* / 1.4542 (AISI 630) / 1.4534. . . . .

Gaskets *(medium contact)*

0 NBR - nitrile-butadiene rubber. . . . .
1 FPM - fluoroelastomer *(Viton®)* . . . .
3 EPDM - ethylene-propylene-diene monomer, for food applications . . . .

Measuring range

03	0...400 mbar	19	0...100 bar. . . . .
05	0...1 bar	20	0...160 bar. . . . .
08	0...4 bar	21	0...250 bar. . . . .
09	0...6 bar	22	0...320 bar. . . . .
10	0...10 bar	23	0...400 bar. . . . .
11	0...16 bar	24	0...600 bar . . . .
12	0...25 bar	25	0...1000 bar (not for G½" B according to DIN EN837-3) . .
13	0...40 bar	16	-1...0 bar. . . . .
14	0...60 bar	17	-1...+1 bar. . . . .
		YY	Special measuring range. . . . .

Material Connection housing

(for type XD only material steel - C - possible)

A PBT polybutylene terephthalate
only with housing with plug M12x1 or cable . . . .
C CrNi-steel . . . .
D POM Polyacetal *(Delrin®)* - only with housing with terminal compartment

Process temperature

0 Standard -40...+100°C . . . .
1 Advanced, -40...+125°C, temperature decoupler . . . .

Pressure type

R Gauge pressure. . . . .
A Absolute pressure
≥ 40bar only with accuracy measuring system type 4 – 0,5% . . .

Measuring system - accuracy

4 Metall, DMS-thin-film/piezoresistive / 0,5% . . . .
8 Xcellence - metall, DMS-thin-film/piezoresistive /
0,15%, linearization protocol. . . . .

Electrical connection

S Plug M12x1 . . . .
K Cable 2 m . . . .
A Terminal compartment housing. . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . .
SF LABS-free, silicone-free / paint compatible version > 40 bar. .
ML Measurement point designation / TAG – Laser marking . . . .
KF Configuration / Preset . . . .

Order code

Precont®				V						4	

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . .

Precont® S30

Digital pressure sensor with metal membrane from -1 up to 25 bar
for hygienic applications, 4-digit LED-display, 2 switching outputs, analog output

3 / 01.22

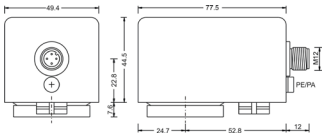
Technical data

Power supply:	
	14,5...45V DC at output signal 4...20mA / with display / Ex 14,5...30V DC
	10,5...45V DC at output signal 4...20mA / without display / Ex 10,5...30V DC
	14,5...45V DC at output signal 0...10V / Ex 14,5...30V DC
Supply current:	≤ 22 mA; at 2-wire 4...20mA PNP-switching outputs in neutral
	≤ 10 mA; at 3-wire 0...10V PNP-switching outputs in neutral
PNP-switching output	
Function:	PNP-switching on +Vs
Output current:	≤ 250 mA current limited, short circuit protected
Measurement accuracy	
Characteristics deviation:	≤ ±0,15 / 0,5% FS
Long term drift:	≤ ±0,2% FS / year not cumulative
Temperature deviation:	≤ ±0,20% FS / 10 K (Zero / Span)
Materials	
Membrane:	
(medium contact)	Steel 1.4435/316L
Process connection:	
(medium contact)	Steel 1.4435/316L
Connection housing:	CrNi-steel / PBT polybutylene terephthalate / POM – polyoxymethylene (Delrin®)
Gaskets:	
(medium contact)	FPM – fluoroelastomer (Viton®) EPDM – ethylene-propylene-diene monomer silicone
Environmental conditions	
Ambient temperature:	– 40°C...+85°C
Process temperatures:	– 20°C...+150°C
Process pressure ranges:	– 1 bar ...25 bar
Turn down:	30:1
Protection:	IP65 / IP67 EN/IEC 60529

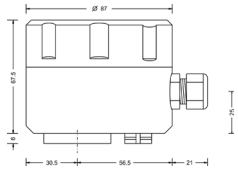
Plug M12

Terminal compartment housing

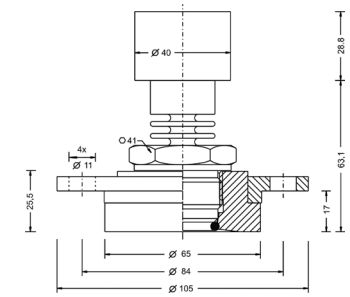
Connection housing
Electrical connection Type S - plug M12
Material connection housing Type A - PBT



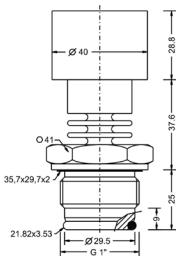
Connection housing
Electrical connection Type A - terminal compartment
Material connection housing Type C CrNi-steel / Type D - POM



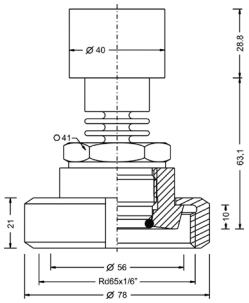
Type L
DRD DN50, Ø65 mm



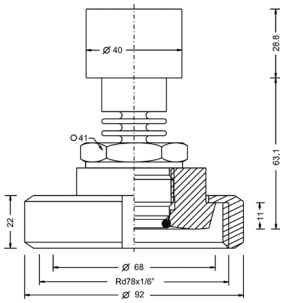
Type 5
G 1" ISO 228-1 – front-flush



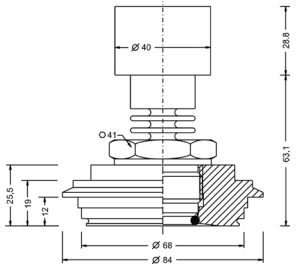
Type N
DN40 DIN 11851 – front-flush



Type M
DN50 DIN 11851 – front-flush



Type P
Varivent® N, Ø68 mm



Application

The Precont® S30 with EHEDG conform process connection for hygienic applications are used for supervision, control and also for continuous measurement of pressures from -1 up to +25 bar in gases, steams, liquids and dusts within closed containers or pipelines at process temperatures from -40°C to +150°C.
The pressure sensor Precont® S30 is expecially designed for the requirements in the food and semiluxory item industy, as well as the pharmaceutical industry and biotechnology. This is especially relavant for the extreme conditions like chemical resistance against cleaning agents as well as insensitiveness against increases temperatures in the case of CIP/SIP cleaning processes.
Due to the availability of adapters for the common process connections like varivent or connections acc. to DIN11851 with cone flange with nut groove for pipes acc. to DIN 11850, as well as a suitable weld-in sleeve the pressure transmitter can be installed in nearly hygienic application.
The use of a strain gauge with metallic membrane guarantees excellent characteristics like high pressuren and pressure blow strength, high resistance against chemicals and corrosion, very good insensitiveness against temperature shocks and EM interferences, high accuracy and long term stability as well as low temperature sensitiveness.

Precont® S30

Digital pressure sensor with metal membrane from -1 up to 25 bar
for hygienic applications, 4-digit LED-display, 2 switching outputs, analog output

3 / 01.22

Equipment

welding flanges
page 134

Basic price . . . . . .

Model

S30 Standard . . . . . .
ExS30 ATEX II 1/2 G Ex ia IIC T4 Ga/Gb . . . . . .
XDS30 ATEX II 1/2 D Ex ia IIIC T60°C/T102°C Da/Db + ATEX II 1/2 G Ex ia IIC T4 Ga/Gb . . . . . .
only for material terminal enclosure type C – CrNi-steel

Process connection

5 G1" B, DIN EN ISO228-1 front-flush, with radial O-ring, EHEDG conform . . . . . .
N Milk tube DN 40 DIN 11851 . . . . . .
M Milk tube DN 50 DIN 11851 . . . . . .
P Varivent® Ø 68 mm . . . . . .
L DRD-connection Ø 65 mm . . . . . .

Electronics - output

A 4...20 mA, 2-wire-electronics, with display, 2 PNP-switching outputs . . . . . .
B 4...20 mA, 2-wire-electronics, with display . . . . . .
C 4...20 mA, 2-wire-electronics, without display, adjustment via keys . . . . . .
D 4...20 mA, 2-wire-electronics, preset, without display. . . . . .
E 0...10 V 3-wire-electronics, with display, 2 PNP-switching outputs. . . . . .
F 0...10 V 3-wire-electronics, with display. . . . . .
G 0...10 V 3-wire-electronics, without display, adjustment via keys . . . . . .
H 0...10 V 3-wire-electronics, preset, without display . . . . . .

Material process connection *(medium contact)*

V Stainless steel 1.4571/*316Ti* / 1.4542/*630* resp. 1.4534 . . . . . .

0

Measuring range

01 0…100 mbar. . . . . .
02 0…250 mbar. . . . . .
03 0…400 mbar. . . . . .
04 0…600 mbar. . . . . .
05 0…1 bar. . . . . .
07 0…2,5 bar . . . . . .
08 0…4 bar. . . . . .
09 0…6 bar. . . . . .
10 0…10 bar. . . . . .
11 0…16 bar. . . . . .
12 0…25 bar. . . . . .
16 -1…0 bar . . . . . .
17 -1…+1 bar. . . . . .
YY Special measuring range . . . . . .

Material Connection housing
(for type XD only material steel-C possible)

A PBT polybutylene terephthalate
only with housing with plug M12x1 or cable . . . . . .
C CrNi-steel . . . . . .
D POM Polyacetal *(Delrin®)* - only with housing with terminal compartment

Process temperature

1 Standard, -20 up to +150°C . . . . . .

Pressure type

R Gauge pressure. . . . . .
A Absolute pressure . . . . . .

Measuring system - accuracy

4 Metall, DMS-thin-film/piezoresistive / 0,5% . . . . . .
8 Xcellence - metall, DMS-thin-film/piezoresistive /
0,15%, linearization protocol. . . . . .

Electrical connection

S Plug M12x1 . . . . . .
K Cable 2 m . . . . . .
A Terminal compartment housing. . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
SF LABS-free, silicone-free / paint compatible version > 40 bar. .
ML Measurement point designation / TAG – Laser marking . . . . . .
KF Configuration / Preset . . . . . .

Order code

Precont®		V	0			1		4	

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

Precont® S40

Digital pressure sensor with front-flush, dry,
capacitive ceramic measuring cell up to 60 bar,
4-digit LED-display, 2 PNP-switching outputs, 2- or 3-wire-electronics selectable

3 / 01.22

Technical data

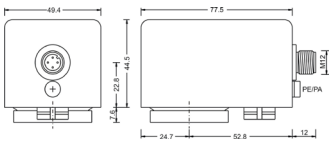
Power supply:	
	14,5...45V DC at output signal 4...20mA / with display / Ex 14,5...30V DC
	10,5...45V DC at output signal 4...20mA / without display / Ex 10,5...30V DC
	14,5...45V DC at output signal 0...10V / Ex 14,5...30V DC
Supply current:	≤ 22 mA; at 2-wire 4...20mA PNP-switching outputs in neutral
	≤ 10 mA; at 3-wire 0...10V PNP-switching outputs in neutral
PNP-switching output	
Function:	PNP-switching on +Vs
Output current:	≤ 250 mA current limited, short circuit protected
Measurement accuracy	
Characteristics deviation:	≤ ±0,05 / 0,1 / 0,2% FS
Long term drift:	≤ ±0,1% FS / year not cumulative
Temperature deviation:	≤ ±0,15% FS / 10 K (Zero / Span)
Materials	
Membrane:	
(medium contact)	Ceramics AL_2O_3 99,9%
Process connection:	
(medium contact)	Steel 1.4404/316L resp. 1.4571/316Ti
Connection housing:	CrNi-steel / PBT polybutylene terephthalate /
	POM – polyoxymethylene (Delrin®)
Gaskets:	
(medium contact)	FPM – fluoroelastomer (Viton®)
	EPDM – ethylene-propylene-diene monomer
	CR – chloroprene rubber (Neopren®)
	FFKM – perfluorelastomere (Kalrez®)
	NBR – nitrile-butadiene rubber
Environmental conditions	
Ambient temperature:	– 40°C...+85°C
Process temperatures:	– 40°C...+100°C resp. +125°C
Process pressure ranges:	– 1 bar ...60 bar
Turn down:	30:1
Protection:	IP65 / IP67 EN/IEC 60529

plug M12

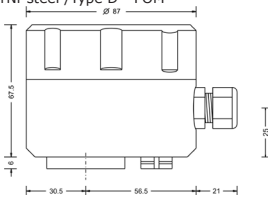
plug M12

terminal compartment
housing

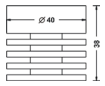
Connection housing
Electrical connection Type S - plug M12
Material connection housing Type A - PBT



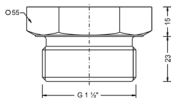
Connection housing
Electrical connection Type A - terminal compartment; Material connection housing Type C CrNi-steel /Type D - POM



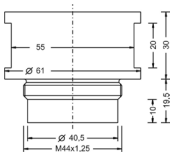
Temperature decoupler



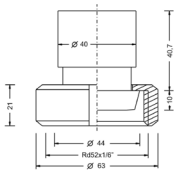
Type 7
G 1½" ISO 228-1 – front-flush



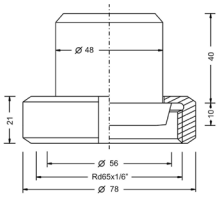
Type Z
M44x1,25 DIN 13 M



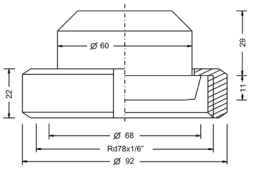
Type R
DN25 DIN 11851 – front-flush



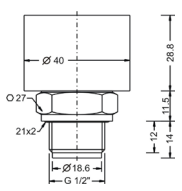
Type N
DN40 DIN 11851 – front-flush



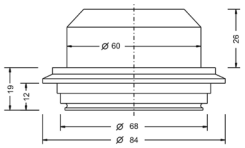
Type M
DN50 DIN 11851 – front-flush



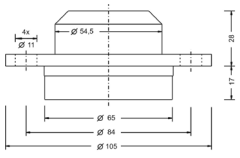
Type 9
G ½" ISO 228-1 – front-flush



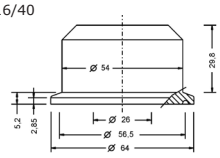
Type P
Varivent® N, Ø68 mm



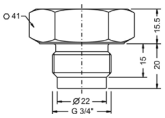
Type L
DRD DN50, Ø65 mm



Type T
Tri-Clamp 2"/DN51
PN16/40



Type 8
G ¾" ISO 228-1 – front-flush



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Precont® S40

Digital pressure sensor with front-flush, dry,
capacitive ceramic measuring cell up to 60 bar,
4-digit LED-display, 2 PNP-switching outputs, 2- or 3-wire-electronics selectable

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Equipment

welding flanges
page 134

Application

The Precont® S40 is used in all fields of proceeding and process technique.

The excellent characteristics like pressure strength, high chemical resistance, corrosion protection and insensitivity against temperature shocks allows the use in the hardest applications for the measurement of gases, steams and liquids.

Basic price . . . . . .

Model
S40 Standard
ExS40 ATEX II 1/2 G Ex ia IIC T4 Ga/Gb
XDS40 ATEX II 1/2 D Ex ia IIIC T60°C/T102°C Da/Db + ATEX II 1/2 G Ex ia IIC T4 Ga/Gb
only for material terminal enclosure type C – CrNi-steel

Process connection
7 G1½" B, ISO 228-1, front-flush
8 G¾" A, ISO 228-1, front-flush, ≤ 20 bar
9 G½" B, ISO 228-1, front-flush, ≤ 20 bar
R Milk tube DIN 11851, DN25, PN40, ≤ 20 bar
N Milk tube DIN 11851, DN40, PN40
M Milk tube DIN 11851, DN50, PN25
P Varivent® N, DN68, PN16
L DRD DN65, Ø 65 mm, PN25
T TriClamp 2"/DN51, PN16/40
G Flange DIN EN 1092-1, A (B - DIN 2527), DN50, PN10-40
F Flange DIN EN 1092-1, A (B - DIN 2527), DN40, PN10-40
Z M44x 1,25 DIN 13 M - paper industry
B Groove nut adapter Ø 44 mm

Transmitter electronics
A 4...20 mA, 2-wire-electronics, with display, 2 PNP-switching outputs
B 4...20 mA, 2-wire-electronics, with display
C 4...20 mA, 2-wire-electronics, without display, adjustment via keys
D 4...20 mA, 2-wire-electronics, preset, without display
E 0...10 V 3-wire-electronics, with display, 2 PNP-switching outputs
F 0...10 V 3-wire-electronics, with display
G 0...10 V 3-wire-electronics, without display, adjustment via keys
H 0...10 V 3-wire-electronics, preset, without display

Material connection
V Stainless steel 1.4404/316L resp. 1.4571/316Ti

Material Connection housing *(for type XD only material steel possible)*
A PBT *(polybutylene terephthalate) (not with terminal compartment)*
C CrNi-steel
D POM *(Polyacetal - Delrin®)* - only with terminal compartment housing

Measuring range
01 0…100 mbar
02 0…200 mbar
03 0…400 mbar
04 0…600 mbar
05 0…1 bar
06 0…1,6 bar
07 0…2,5 bar
08 0…4 bar
09 0…6 bar
10 0…10 bar
11 0…16 bar
12 0…20 bar
13 0…40 bar
14 0…60 bar
15 -100…0 mbar
16 -1…0 bar
17 -1…1 bar
18 -100…+100 mbar
YY Special measuring range

Material gaskets *(process wetted)*
1 FPM - fluoroelastomer (Viton®)
2 CR - chloroprene rubber (Neopren®)
3 EPDM - ethylene-propylene-diene monomer - food applications
4 FFKM - perfluorelastomere (Kalrez®)
6 FFKM - perfluorelastomere high density - gas applications

Process temperature
0 Standard -40°C up to +100°C
1 Advanced -40°C up to +125°C, temperature decoupler

Pressure type
R Gauge pressure
A Absolute pressure

Measuring system - accuracy
1 Ceramics 99,9%, capacitive / 0,2%
With process connection 8/9/R >> membrane
Ceramics 96%
3 Ceramics 99,9%, capacitive / 0,1%,
linearization protocol
With process connection 8/9/R >> membrane
Ceramics 96%
6 Xcellence - ceramics 99,9%, capacitive / 0,05%,
linearization protocol
Measuring span 0,2 bar
With process connection 8/R >> membrane
Ceramics 96%
not for process connection 9

Electrical connection
S Plug M12x1
K Cable 2 m
A Terminal compartment housing

Order code

Precont®	V																		

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded
BKZ0412-VA	Matching cable socket, VA-nut
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V)

Precont® S70

Digital pressure sensor with special diaphragm seal for all areas of process engineering for temperature applications from -90°C up to +400°C

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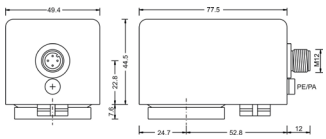
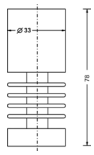
Technical data

Power supply:	14,5...45V DC at output signal 4...20mA / with display / Ex 14,5...30V DC 10,5...45V DC at output signal 4...20mA / without display / Ex 10,5...30V DC 14,5...45V DC at output signal 0...10V / Ex 14,5...30V DC
Supply current:	≤ 22 mA; at 2-wire 4...20mA PNP-switching outputs in neutral ≤ 10 mA; at 3-wire 0...10V PNP-switching outputs in neutral
PNP-switching output	
Function:	PNP-switching on +Vs
Output current:	≤ 250 mA current limited, short circuit protected
Measurement accuracy	
Characteristics deviation:	≤ ±0,2%/ 0,5% FS, depending on sensor element
Long term drift:	≤ ±0,2% year not cumulative
Temperature deviation:	depending on membrane diameter, sensor element, fill fluid and diaphragm seal
Materials	
Membrane:	
(medium contact)	Steel 1.4432 (316L) optional z.B. steel 1.4571/316Ti; Hastelloy; Titan; coating gold/rhodium etc. depending on used diaphragm seal
Process connection:	
(medium contact)	Steel 1.4432 (316L) optional z.B. steel 1.4571/316Ti; Hastelloy; Titan; depending on used diaphragm seal
Connection housing:	CrNi-steel / PBT polybutylene terephthalate / POM – polyoxymethylene (Delrin®)
Environmental conditions	
Ambient temperature:	– 40°C...+85°C
Process temperatures:	– 90°C...+400°C
Process pressure ranges:	– 1 bar ...400 bar
Turn down:	30:1
Protection:	IP65 / IP67 EN/IEC 60529

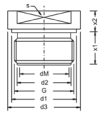
Connection housing
Electrical connection Type S - plug M12
Material connection housing Type A - PBT



Temperature decoupler
cooling fins up to 150°C

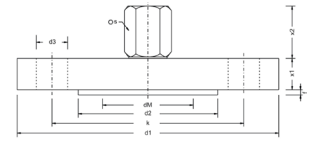


Type Gx
thread ISO 228-1



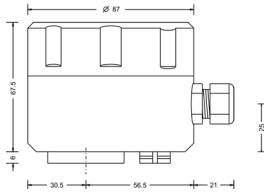
	G	PN	d1	d2	dM	x1	d3	x2	s
G1	G ½" B	600	-	18	16	20	-	35	27
G2	G ¾" B	600	32	22	20	20	-	36	32
G3	G 1" B	600	39	29	28	21	-	34	41
G4	G 1 ½" B	600	55	44	38	30	58	35	50
G5	G 2" B	600	68	56	46	30	78	40	65

Type Fx
Flange DIN EN 1092-1, B1

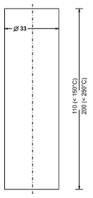


	DN	PN	d1	d2	dM	x1	f	k	d3	s	x2 ±2
F1	25	40	115	68	28	15	3	85	4xØ14	27	34,5
F3	50	40	165	102	52	17	3	125	4xØ18	27	34,5
F5	80	40	200	138	80	20,5	3,5	160	8xØ18	27	34
F6	100	16	220	158	80	16	4	180	8xØ18	27	33,5

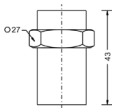
Connection housing
Electrical connection Type A - terminal compartment; Material connection housing Type C CrNi-steel / Type D - POM



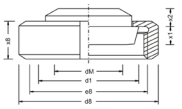
Temperature decoupler
standard up to 150°C/250°C



Temperature decoupler
adapter up to 100°C for
process connections Dx, Mx and Tx

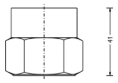


Type Mx
DIN 11851

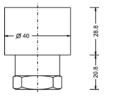


	DN	PN	d1	dM	x1	x2	d8	x8	e8
M2	25	40	44	26	10	10	63	21	Rd52x1/6"
M4	40	40	56	38	10	10	78	21	Rd65x1/6"
M5	50	25	68	48	11	9	92	22	Rd78x1/6"

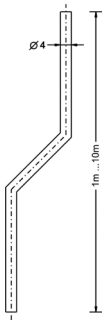
adapter ≤ 60 bar



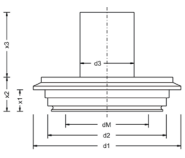
adapter ≥ 100 bar



Temperature decoupler
Long-distance line

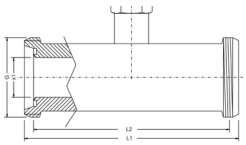


Type Vx
Varivent®



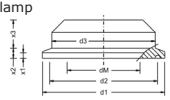
		DN	PN	d1	d2	dM	x1	x2	d3	x3
V1	N	68	16	84	68	46	12	19	30	36
V2	F	50	25	66	50	30	12	19	30	36

Type Rx
tube DIN 11851



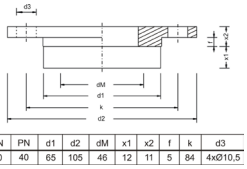
	DN	PN	L1	L2	x1	G
R1	25	40	140	126	26,2	Rd52x1/6"
R3	40	40	140	126	38	Rd65x1/6"
R4	50	25	114	100	50,7	Rd78x1/6"
R5	65	25	116	100	65,7	Rd95x1/6"
R6	80	25	116	100	79,7	Rd110x1/4"
R7	100	25	120	100	99,7	Rd130x1/4"

Type Tx
Tri-Clamp



	NPS	DN	PN	d1	d2	dM	x1	x2	d3	x3
T1	1"	25	16/40	64	50,5	21	2,85	5,2	25,6	14,8
T2	1 ½"	38	16/40	64	50,5	30	2,85	5,2	38,6	14,8
T3	2"	51	16/40	64	56,5	38	2,85	5,2	51,6	14,8

Type Dx
DRD



	DN	PN	d1	d2	dM	x1	x2	f	k	d3
D1	50	40	65	105	46	12	11	5	84	4xØ10,5

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Precont® S70

Digital pressure sensor with special diaphragm seal for all areas of process engineering for temperature applications from -90°C up to +400°C

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Equipment

welding flanges
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Application

The Precont® S70 is used in all fields of proceeding and process technique.

The excellent characteristics like pressure strength, high chemical resistance, corrosion protection and insensitivity against temperature shocks allows the use in the hardest applications for the measurement of gases, steams and liquids.

The process pressure is applied to the metallic membrane of the diaphragm seal and is transferred by vegetabe oil to the behind placed ceramic or metallic membrane of the respective measurement sensor. By this an essential extension of the permitted process temperature range up to -40...+370°C is achieved.

Basic price . . . . . .

Model

S70 Standard . . . . . .
ExS70 ATEX II 1/2 G Ex ia IIC T4 Ga/Gb . . . . . .
XDS70 ATEX II 1/2 D Ex ia IIIC T60°C/T102°C Da/Db + ATEX II 1/2 G Ex ia IIC T4 Ga/Gb
only for material terminal enclosure type C – CrNi-steel

Process connection

G1 G½" B, ISO 228-1, DIN 3852-A. . . . . .
G2 G¾" B, ISO 228-1, DIN 3852-A. . . . . .
G3 G1" B, ISO 228-1, DIN 3852-A . . . . . .
G4 G1½" B, ISO 228-1, DIN 3852-A. . . . . .
G5 G2" B, ISO 228-1, DIN 3852-A . . . . . .
F1 Flange DIN EN 1092-1, B1 (C/D - DIN 2527), DN25, PN10-40 . . . . . .
F3 Flange DIN EN 1092-1, B1 (C/D - DIN 2527), DN50, PN10-40 . . . . . .
F5 Flange DIN EN 1092-1, B1 (C/D - DIN 2527), DN80, PN10-40 . . . . . .
F6 Flange DIN EN 1092-1, B1 (C/D - DIN 2527), DN100, PN16 . . . . . .
M2 Milk tube DIN 11851, DN25, PN40. . . . . .
M4 Milk tube DIN 11851, DN40, PN40. . . . . .
M5 Milk tube DIN 11851, DN50, PN25. . . . . .
V1 Varivent® N, DN68, PN16. . . . . .
V2 Varivent® F, DN50, PN25 . . . . . .
D1 DRD DN50, Ø65 mm, PN25. . . . . .
T1 Tri-Clamp 1"/DN25, PN16/40 . . . . . .
T2 Tri-Clamp 1 ½"/DN38, PN16/40. . . . . .
T3 Tri-Clamp 2"/DN51, PN16/40 . . . . . .
R1 Pipe diaphragm seal milk tube DIN 11851, DN25, PN40 . . . . . .
R3 Pipe diaphragm seal milk tube DIN 11851, DN40, PN40 . . . . . .
R4 Pipe diaphragm seal milk tube DIN 11851, DN50, PN25 . . . . . .
R5 Pipe diaphragm seal milk tube DIN 11851, DN65, PN25 . . . . . .
R6 Pipe diaphragm seal milk tube DIN 11851, DN80, PN25 . . . . . .
R7 Pipe diaphragm seal milk tube DIN 11851, DN100, PN25 . . . . . .
YY Others . . . . . .

Process temperature

A Standard, -20°C...+100°C silicone oil . . . . . .
B Advanced, -10°C...+150°C, temperature decoupler, white oil (paraffin oil) {FDA} free of silicone .
C Advanced, -40°C...+250°C, temperature decoupler, silicone oil FA5 . . . . . .
D Advanced, 0°C...+400°C, capillary line, silicone oil FA5. . . . . .
Y Others (temperature range, reference temperatur, fill fluid). . . . . .

Transmitter electronics

A 4...20 mA, 2-wire-electronics, with display, 2 PNP-switching outputs. . . . . .
B 4...20 mA, 2-wire-electronics, with display . . . . . .
C 4...20 mA, 2-wire-electronics, without display, adjustment via keys . . . . . .
E 0...10 V 3-wire-electronics, with display, 2 PNP-switching outputs . . . . . .
F 0...10 V 3-wire-electronics, with display . . . . . .
G 0...10 V 3-wire-electronics, without display, adjustment via keys. . . . . .

Material connection

V Steel 1.4404/316L . . . . . .
Y Others . . . . . .

Material Connection housing

(for type XD only material steel possible)

A PBT *(polybutylene terephthalate) (not with terminal compartment)* . . . . . .
C CrNi-steel . . . . . .
D POM *(Polyacetal - Delrin®)* - only with terminal compartment housing . . . . . .

Measuring range

01	0...100 mbar	13	0...40 bar. . . . .
02	0...200 mbar	14	0...60 bar. . . . .
03	0...400 mbar	15	-100...0 mbar. . . . .
04	0...600 mbar	16	-1...0 bar . . . . .
05	0...1 bar	17	-1...1 bar . . . . .
06	0...1,6 bar	18	-100...+100 mbar . . . . .
07	0...2,5 bar	19	0...100 bar. . . . .
08	0...4 bar	20	0...160 bar. . . . .
09	0...6 bar	21	0...250 bar. . . . .
10	0...10 bar	22	0...320 bar. . . . .
11	0...16 bar	23	0...400 bar. . . . .
12	0...20 bar	YY	Special measuring range . . . . .

Pressure type

R Gauge pressure . . . . . .
A Absolute pressure. . . . . .

Measuring system - accuracy

2 Ceramics 96%, capacitive / 0,2% ≤ 60 bar . . . . . .
4 Metall, DMS-thin-film / 0,5% ≥ 100 bar. . . . . .

Electrical connection

S Plug M12x1 . . . . . .
K Cable 2 m . . . . . .
A Terminal compartment housing . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
KF Configuration / Preset . . . . . .

Order code

Precont®

Precont® PU4SE

Pressure switch for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

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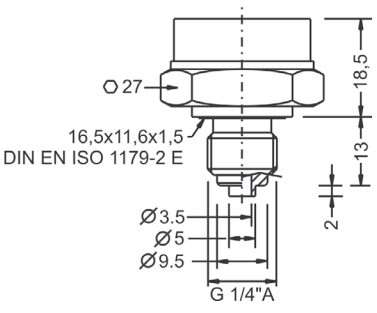
Technical data

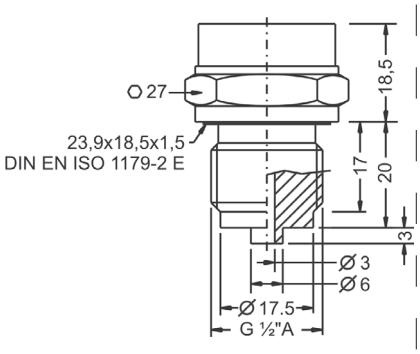
up to **100** bar pressure | process temperature 100°C | Protection **IP69K** | **0,5**% high accuracy | fast response time

Measuring range
Nominal pressure PN 0…1bar to 0…100bar
Output type A – Current 4…20mA HART®
Analogue output 4…20mA 3,9…20,5mA / ≥ 3,8mA / ≤ 22mA / dI ≤ 1µA
Time behavior T90 ≤ 5ms / ton ≤ 0,2s
Interface HART®-compliant (7.0) / 1200 Bit/s
Output type V – RS485 Modbus®-RTU
Interface RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior T90 ≤ 2ms (td = 0s) / ton ≤ 0,1s (td = 0s)
Output type L – IO-Link®
Interface IO-Link® V1.1 / Com2 (38400 Baud)
Analogue output 0…20mA: 0…20,5mA / ≤ 0,05mA / ≤ 22mA / dI ≤ 1µA
4…20mA: 3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA
Switch output 2x PP (Push-Pull), switch to +L/-L
Output Uout ≤ 0,2V, ≥ Us – 2V / Iout 0…200mA
(current limited ≤ 450mA, short circuit protected)
Time behavior T90 ≤ 2ms / ton ≤ 0,1s
Auxiliary power
Supply voltage Us
polarity protected Type A – 4…20mA HART®: 9…35VDC / Ex: 9…30VDC
Type V – RS485 Modbus®-RTU: 6…35VDC
Type L – IO-Link®: 9…35VDC, without IO-Link® / 18…30VDC, with IO-Link®
Measuring accuracy
Characteristic deviation ≤ ±0,5%FSO
Long term drift ≤ ±0,2%FSO/year
Temperature deviation Tk Zero+Span ≤ ±0,05%FSO/K
Process conditions
Process temperature -25°C...+100°C
Pressure cycles ≥ 10 Mio. (1,2xPN)
Environmental conditions
Environmental temperature -25°C...+100°C
Protection level IP69K/IP67 (EN/IEC 60529)
MTTF 463 years

Process connection type 6
Thread G¼"A, EN 837



Process connection type 1
Thread G½"A, EN 837



Application

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures.
Due to its high accuracy and the digital adjustability by HART®, RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

Precont® PU4SE

Pressure switch for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link®

3 / 01.22

Basic price . . . . . .

Type
PU4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
E Ceramic Al_2O_3 96%, DMS . . . . . .

Approval
S Standard . . . . . .

Process connection
6 Thread ISO 228-1 – G¼"A, EN 837 manometer . . . . . .
1 Thread ISO 228-1 – G½"A, EN 837 manometer . . . . . .

Material gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
05 0…1 bar . . . . . .
08 0…4 bar . . . . . .
10 0…10 bar . . . . . .
13 0…40 bar . . . . . .
19 0…100 bar . . . . . .

Electronic – output
A 4-wire, current 4…20mA, HART® compliant . . . . . .
V 4-wire, RS485, Modbus RTU . . . . . .
L IO-Link®, 1x current 0/4…20mA / 2x switch, 4-wire . . . . . .

Electronic – function
S Standard . . . . . .

Process temperature
0 Standard –25°C…+100°C . . . . . .
Y others . . . . . .

Pressure type
R Gauge pressure . . . . . .

Measuring system – accuracy
4 0,5% . . . . . .
Y others . . . . . .

Electrical connection
S Plug M12x1 . . . . . .

Order code

Precont® PU4S	E	S			V	C			S		R		S

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

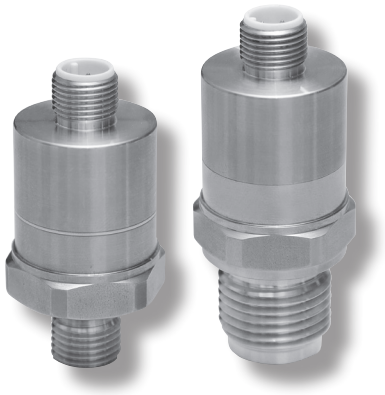
Precont® PU4SC

Pressure transmitter for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

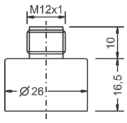
3 / 01.22

Technical data

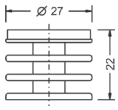
Measuring range
Nominal pressure PN -0,1…0bar / -0,1…0,1bar / -1…0bar / -1…1bar / 0…0,05bar to 0…20bar
Output type A – Current 4…20mA HART®
Analogue output 4…20mA 3,9…20,5mA / ≥ 3,8mA / ≤ 22mA / dI ≤ 1µA
Time behavior T90 ≤ 5ms / ton ≤ 0,2s
Interface HART®-compliant (7.0) / 1200 Bit/s
Output type V – RS485 Modbus®-RTU
Interface RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior T90 ≤ 2ms (td = 0s) / ton ≤ 0,1s (td = 0s)
Output type L – IO-Link®
Interface IO-Link® V1.1 / Com2 (38400 Baud)
Analogue output 0…20mA: 0…20,5mA / ≤ 0,05mA / ≤ 22mA / dI ≤ 1µA
4…20mA: 3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA
Switch output 2x PP (Push-Pull), switch to +L/-L
Output Uout ≤ 0,2V, ≥ Us – 2V / Iout 0…200mA
(current limited ≤ 450mA, short circuit protected)
Time behavior T90 ≤ 2ms / ton ≤ 0,1s
Auxiliary power
Supply voltage Us
polarity protected Type A – 4…20mA HART®: 9…35VDC / Ex: 9…30VDC
Type V – RS485 Modbus®-RTU: 6…35VDC
Type L – IO-Link®: 9…35VDC, without IO-Link® / 18…30VDC, with IO-Link®
Measuring accuracy
Characteristic deviation ≤ ±0,05%/±0,1%/±0,2%FSO
Long term drift ≤ ±0,15%FSO/year
Temperature deviation Tk Zero ≤ ±0,015%FSO/K, ≤ ±0,75%FSO (-20°C…+80°C)
Tk Span ≤ ±0,015%FSO/K
≤ ±0,5%FSO (-20°C…+80°C/≥0,4bar) / ≤ ±0,8%FSO (-20°C…+80°C/<0,4bar)
Process conditions
Process temperature Standard: -40°C...+100°C
Extended: -40°C...+125°C (+140°C – 1h)
Pressure cycles ≥ 100 Mio. (1,2xPN)
Environmental conditions
Environmental temperature -40°C...+100°C
Protection level IP69K/IP67 (EN/IEC 60529)
MTTF 463 years



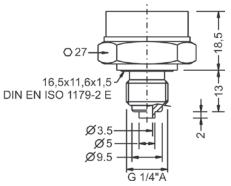
Terminal enclosure



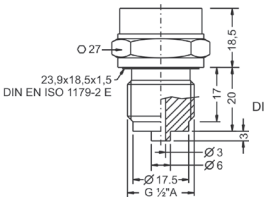
Temperature decoupler
Extended temperature range



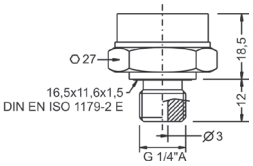
Process connection type 6
Thread G¼"A, EN 837



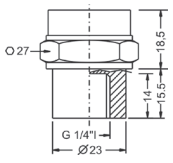
Process connection type 1
Thread G½"A, EN 837



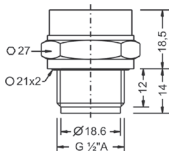
Process connection type 3
Thread G¼"A, DIN EN ISO 1179-2 E



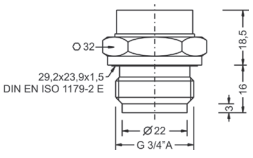
Process connection type 4
Thread G¼"I, inner thread



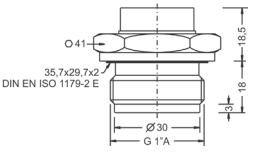
Process connection type 9
Thread G½"A, front-flush



Process connection type 8
Thread G¾"A, front-flush



Process connection type 5
Thread G1"A, front-flush



You will find further dimension drawings in the operating instructions.

Application

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures.
A high variety of versions of process connections and electronic types allows the use for a wide range of applications, also for demanding measuring requirements.
The front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process, also by CIP/SIP cleaning processes.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with viscose or also frequently changing media.
Due to its high accuracy and the digital adjustability by HART®, RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS- resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or a factory certifications for drink water suitability.
Customer specific special versions can be realized short-term on request, e.g. special designs for the process connection or other process materials.

Precont® PU4SC

Pressure transmitter for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

3 / 01.21

Basic price . . . . . .

Type
PU4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
C Ceramic Al_2O_3 96%/99,7%/99,9% / capacitive . . . . . .

Approval
S Standard . . . . . .
X ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIIC Da (Output type – A)

Process connection
6 Thread ISO 228-1 – G¼"A, EN 837 manometer . . . . . .
1 Thread ISO 228-1 – G½"A, EN 837 manometer . . . . . .
3 Thread ISO 228-1 – G¼"A, DIN EN ISO 1179-2 E . . . . . .
4 Thread ISO 228-1 – G¼"I, inner thread . . . . . .
9 Thread ISO 228-1 – G½"A, front-flush . . . . . .
8 Thread ISO 228-1 – G¾"A, front-flush, ...
5 Thread ISO 228-1 – G1"A, front-flush . . . . . .
R Dairy coupling DIN 11851 – DN25, PN40 . . . . . .
N Dairy coupling DIN 11851 – DN40, PN40 . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
P Varivent® – Type N / tube DN40-162 / 1½"-6", PN40 . . . . . .
L DRD – DN50 / Ø65mm, PN25 . . . . . .
S Clamp ISO 2852 – DN25-38 / BS 4825 – 1"-1½" / DIN 32676 – DN25-38, PN25 . . . .
T Clamp ISO 2852 – DN40-51 / BS 4825 – 2" / DIN 32676 – DN50, PN25 . . . . . .
Y others . . . . . .

Material gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
4 FFKM - perfluorelastomere (e.g. Kalrez®) . . . . . .
6 FFKM hd - perfluorelastomere high density - gas applications . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
26 0…50 mbar . . . . . .
01 0…100 mbar . . . . . .
02 0…200 mbar . . . . . .
03 0…400 mbar . . . . . .
04 0…600 mbar . . . . . .
05 0…1 bar . . . . . .
06 0…1,6 bar . . . . . .
07 0…2,5 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar . . . . . .
11 0…16 bar . . . . . .
12 0…20 bar . . . . . .
15 -100...0 mbar . . . . . .
16 -1...0 bar . . . . . .
17 -1…+1 bar . . . . . .
18 -100…+100 mbar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2-wire, current 4…20mA, HART® compliant . . . . . .
V 4-wire, RS485, Modbus RTU . . . . . .
L IO-Link®, 1x current 0/4…20mA / 2x switch, 4-wire . . . . . .

Electronic – function
S Standard . . . . . .

Process temperature
0 Standard –40°C…+100°C . . . . . .
1 Extended –40°C…+125°C, temperature decoupler

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure (FS ≥ 100mbar) . . . . . .

Measuring system – accuracy
1 0,2% . . . . . .
3 0,1% (FS ≥ 100mbar), linearization protocol . . . . . .
6 Xcellence – 0,05% (FS ≥ 200mbar), linearization protocol . . . . . .

Electrical connection
S Plug M12x1 . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
KF Configuration / Preset . . . . . .
MZ Material test certificate – EN10204 3.1 .

Order code

Precont® PU4S	C				V	C			S				S

Precont® PU4SK

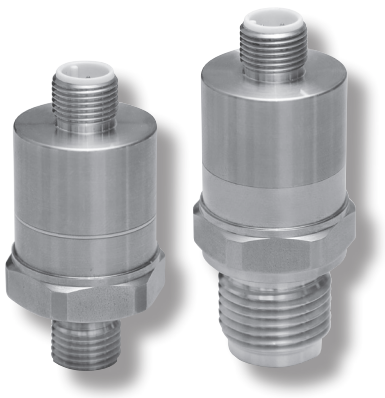
Pressure transmitter for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

3 / 01.22

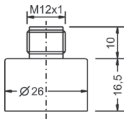
Technical data

up to **600** bar pressure | process temperature 135°C | certification | **Protection IP69K** | **0,15%** high accuracy | fast response time

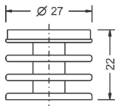
Measuring range
Nominal pressure PN -1…0bar / -1…1bar / 0…0,25bar to 0…600bar
Output type A – Current 4…20mA HART®
Analogue output 4…20mA 3,9…20,5mA / ≥ 3,8mA / ≤ 22mA / dI ≤ 1µA
Time behavior T90 ≤ 5ms / ton ≤ 0,2s
Interface HART®-compliant (7.0) / 1200 Bit/s
Output type V – RS485 Modbus®-RTU
Interface RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior T90 ≤ 2ms (td = 0s) / ton ≤ 0,1s (td = 0s)
Output type L – IO-Link®
Interface IO-Link® V1.1 / Com2 (38400 Baud)
Analogue output 0…20mA: 0…20,5mA / ≤ 0,05mA / ≤ 22mA / dI ≤ 1µA
4…20mA: 3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA
Switch output 2x PP (Push-Pull), switch to +L/-L
Output Uout ≤ 0,2V, ≥ Us – 2V / Iout 0…200mA
(current limited ≤ 450mA, short circuit protected)
Time behavior T90 ≤ 2ms / ton ≤ 0,1s
Auxiliary power
Supply voltage Us
polarity protected Type A – 4…20mA HART®: 9…35VDC / Ex: 9…30VDC
Type V – RS485 Modbus®-RTU: 6…35VDC
Type L – IO-Link®: 9…35VDC, without IO-Link® / 18…30VDC, with IO-Link®
Measuring accuracy
Characteristic deviation ≤ ±0,15%/±0,5%FSO
Long term drift ≤ ±0,2%FSO/year
Temperature deviation Tk Zero+Span ≤ ±0,05%FSO/K
Process conditions
Process temperature Standard: -40°C...+100°C
Extended: -40°C...+135°C (+140°C – 1h)
Pressure cycles ≥ 10 Mio. (1,2xPN)
Environmental conditions
Environmental temperature -40°C...+100°C
Protection level IP69K/IP67 (EN/IEC 60529)
MTTF 463 years



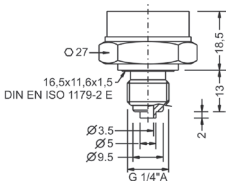
Terminal enclosure



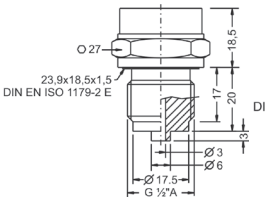
Temperature decoupler
Extended temperature range



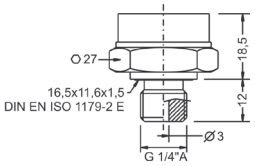
Process connection type 6
Thread G¼"A, EN 837



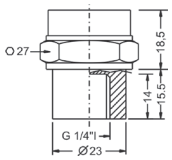
Process connection type 1
Thread G½"A, EN 837



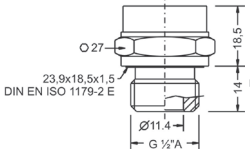
Process connection type 3
Thread G¼"A, DIN EN ISO 1179-2 E



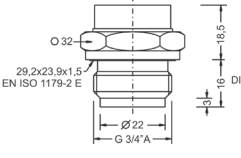
Process connection type 4
Thread G¼"I, inner thread



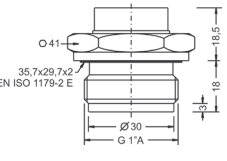
Process connection type 2
Thread G½"A, DIN EN ISO 1179-2 E



Process connection type 8
Thread G¾"A, front-flush



Process connection type 5
Thread G1"A, front-flush



Application

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures.
A high variety of versions of process connections and electronic types allows the use for a wide range of applications, also for demanding measuring requirements.
The front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process, also by SIP cleaning processes.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with viscose or also frequently changing media.
Due to its high accuracy and the digital adjustability by HART®, RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS- resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or a factory certifications for drink water suitability.
Customer specific special versions can be realized short-term on request, e.g. special designs for the process connection or other process materials.

Precont® PU4SK

Pressure transmitter for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

3 / 01.22

Basic price . . . . . .

Type
PU4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
K Ceramic Al_2O_3 96% / strain gauge . . . . . .

Approval
S Standard . . . . . .
X ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIIC Da (Output type – A)

Process connection
6 Thread ISO 228-1 – G¼"A, EN 837 manometer . . . . . .
1 Thread ISO 228-1 – G½"A, EN 837 manometer . . . . . .
3 Thread ISO 228-1 – G¼"A, DIN EN ISO 1179-2 E . . . . . .
4 Thread ISO 228-1 – G¼"I, inner thread . . . . . .
2 Thread ISO 228-1 – G½"A, DIN EN ISO 1179-2 E, inner bore . . . . . .
8 Thread ISO 228-1 – G¾"A, front-flush, ≤ 10 bar . . . . . .
5 Thread ISO 228-1 – G1"A, front-flush, ≤ 1 bar . . . . . .
Y others . . . . . .

Material gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
02 0…250 mbar . . . . . .
03 0…400 mbar . . . . . .
04 0…600 mbar . . . . . .
05 0…1 bar . . . . . .
06 0…1,6 bar . . . . . .
07 0…2,5 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar . . . . . .
11 0…16 bar . . . . . .
12 0…25 bar . . . . . .
13 0…40 bar . . . . . .
14 0…60 bar . . . . . .
19 0…100 bar . . . . . .
20 0…160 bar . . . . . .
21 0…250 bar . . . . . .
22 0…320 bar . . . . . .
23 0…400 bar . . . . . .
24 0…600 bar . . . . . .
16 -1…0 bar . . . . . .
17 -1…+1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2-wire, current 4…20mA, HART® compliant . . . . . .
V 4-wire, RS485, Modbus RTU . . . . . .
L IO-Link®, 1x current 0/4…20mA / 2x switch, 4-wire . . . . . .

Electronic – function
S Standard . . . . . .

Process temperature
0 Standard –40°C…+100°C . . . . . .
1 Extended –40°C…+135°C, temperature decoupler

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure, ≥ 1bar … ≤ 40bar . . . . . .

Measuring system – accuracy
4 0,5% . . . . . .
8 Xcellence – 0,15%, linearization protocol

Electrical connection
S Plug M12x1 . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
KF Configuration / Preset . . . . . .
MZ Material test certificate – EN10204 3.1 .

Order code

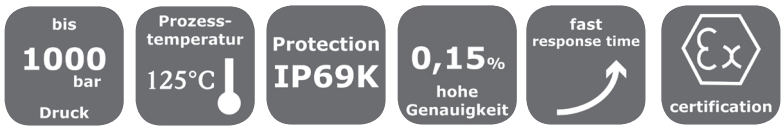
Precont® PU4S	K				V	C			S			S

Precont® PU4SM

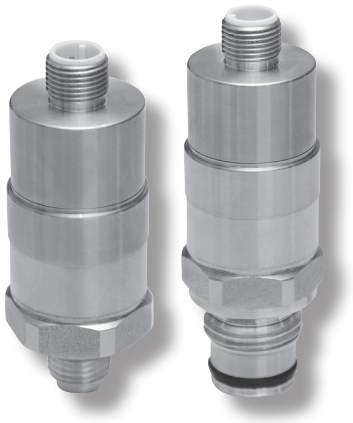
Pressure transmitter for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

3 / 01.22

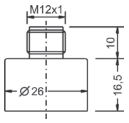
Technical data



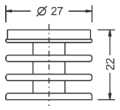
Measuring range	
Nominal pressure PN	-1…0bar / -1…1bar / 0…0,4bar bis 0…1000bar
Output type A – Current 4...20mA HART®	
Analogue output 4…20mA	3,9…20,5mA / ≥ 3,8mA / ≤ 22mA / dI ≤ 1µA
Time behavior	T90 ≤ 5ms / ton ≤ 0,2s
Interface	HART®-compliant (7.0) / 1200 Bit/s
Output type V – RS485 Modbus®-RTU	
Interface	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior	T90 ≤ 2ms (td = 0s) / ton ≤ 0,1s (td = 0s)
Output type L – IO-Link®	
Interface	IO-Link® V1.1 / Com2 (38400 Baud)
Analogue output	0…20mA: 0…20,5mA / ≤ 0,05mA / ≤ 22mA / dI ≤ 1µA 4…20mA: 3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA
Switch output	2x PP (Push-Pull), switch to +L/-L
Output	Uout ≤ 0,2V, ≥ Us – 2V / Iout 0…200mA (current limited ≤ 450mA, short circuit protected)
Time behavior	T90 ≤ 2ms / ton ≤ 0,1s
Auxiliary power	
Supply voltage Us polarity protected	Type A – 4…20mA HART®: 9…35VDC / Ex: 9…30VDC Type V – RS485 Modbus®-RTU: 6…35VDC Type L – IO-Link®: 9…35VDC, without IO-Link® / 18…30VDC, with IO-Link®
Measuring accuracy	
Characteristic deviation	≤ ±0,15%/±0,5%FSO
Long term drift	≤ ±0,2%FSO/year
Temperature deviation	Tk Zero Span ≤ ±0,02%FSO/K (-20°C…+85°C) ≤ ±0,03%FSO/K (-40…-20°C / +85…+125°C)
Process conditions	
Process temperature	Standard: -40°C...+100°C Extended: -40°C...+125°C
Pressure cycles	≥ 100 Mio. (1,2xPN)
Environmental conditions	
Environmental temperature	-40°C...+100°C
Protection level	IP69K/IP67 (EN/IEC 60529)
MTTF	463 years



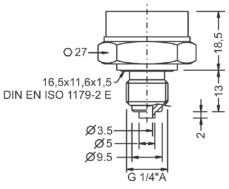
Terminal enclosure



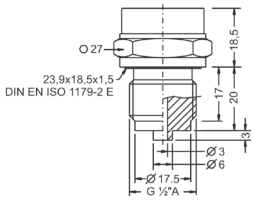
Temperature decoupler
Extended temperature range



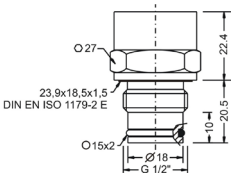
Process connection type 6
Thread G¼"A, EN 837



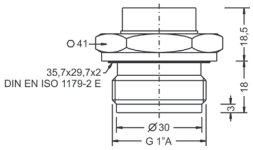
Process connection type 1
Thread G½"A, EN 837



Process connection type 0
Thread G½"A, front-flush



Process connection type 5
Thread G1"A, front-flush



Application

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures.
A high variety of versions of process connections and electronic types allows the use for a wide range of applications, also for demanding measuring requirements.
The front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with viscose or also frequently changing media.
Due to its high accuracy and the digital adjustability by HART®, RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS- resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like factory certifications for drink water suitability.
Customer specific special versions can be realized on request, e.g. special designs for the process connection or other process materials.

Precont® PU4SM

Pressure transmitter for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

3 / 01.22

Basic price . . . . . .

Type
PU4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
M CrNi-steel / strain gauge . . . . . .

Approval
S Standard . . . . . .
X ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIIC Da (Output type – A)

Process connection
6 Thread ISO 228-1 – G¼"B, EN 837 manometer (without process gasket) . . . . . .
1 Thread ISO 228-1 – G½"B, EN 837 manometer (≥ 40 bar without process gasket). . .
0 Thread ISO 228-1 – G½"B, front-flush, O-ring gasket
not for measuring ranges 0…400 mbar / 0…1 bar / –1…0 bar / 0…1000 bar . . . . . .
5 Thread ISO 228-1 – G1"B, front-flush, O-ring gasket
for measuring ranges 0…400 mbar / 0…1 bar / –1…0 bar. . . . . .
Y others . . . . . .

Material gaskets (process wetted)
0 without / NBR – nitrile-butadiene-rubber . . . . . .
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere . . . . . .
Y others. . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
03 0…400 mbar . . . . . .
05 0…1 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar. . . . . .
11 0…16 bar. . . . . .
12 0…25 bar. . . . . .
13 0…40 bar. . . . . .
14 0…60 bar. . . . . .
19 0…100 bar. . . . . .
20 0…160 bar. . . . . .
21 0…250 bar. . . . . .
22 0…320 bar. . . . . .
23 0…400 bar. . . . . .
24 0…600 bar. . . . . .
25 0…1000 bar, only for process connection type 1,
6 – G½"B, G¼"B (EN 837) . . . . . .
16 -1…0 bar . . . . . .
17 -1…+1 bar. . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2-wire, current 4…20mA, HART® compliant . . . . . .
V 4-wire, RS485, Modbus RTU . . . . . .
L IO-Link®, 1x current 0/4…20mA / 2x switch, 4-wire . . . . . .

Electronic – function
S Standard . . . . . .

Process temperature
0 Standard –40°C…+100°C . . . . . .
1 Extended –40°C…+125°C, temperature decoupler

Pressure type
R Gauge pressure. . . . . .
A Absolute pressure (≤ 25 bar) . . . . . .

Measuring system – accuracy
4 0,5% . . . . . .
8 Xcellence – 0,15%, linearization protocol

Electrical connection
S Plug M12x1 . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
KF Configuration / Preset . . . . . .

Order code

Precont® PU4S	M			V	C			S			S

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

Precont® PU4LM

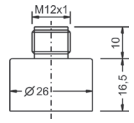
Pressure transmitter for hygienic applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

3 / 01.22

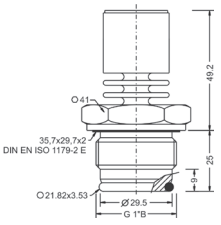
Technical data

Measuring range	
Nominal pressure PN	-1…0bar / -1…1bar / 0…0,1bar bis 0…25bar
Output type A – Current 4…20mA HART®	
Analogue output 4…20mA	3,9…20,5mA / ≥ 3,8mA / ≤ 22mA / dI ≤ 1µA
Time behavior	T90 ≤ 5ms / ton ≤ 0,2s
Interface	HART®-compliant (7.0) / 1200 Bit/s
Output type V – RS485 Modbus®-RTU	
Interface	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior	T90 ≤ 2ms (td = 0s) / ton ≤ 0,1s (td = 0s)
Output type L – IO-Link®	
Interface	IO-Link® V1.1 / Com2 (38400 Baud)
Analogue output	0…20mA: 0…20,5mA / ≤ 0,05mA / ≤ 22mA / dI ≤ 1µA 4…20mA: 3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA
Switch output	2x PP (Push-Pull), switch to +L/-L
Output	Uout ≤ 0,2V, ≥ Us – 2V / Iout 0…200mA (current limited ≤ 450mA, short circuit protected)
Time behavior	T90 ≤ 2ms / ton ≤ 0,1s
Auxiliary power	
Supply voltage Us polarity protected	Type A – 4…20mA HART®: 9…35VDC / Ex: 9…30VDC Type V – RS485 Modbus®-RTU: 6…35VDC Type L – IO-Link®: 9…35VDC, without IO-Link® / 18…30VDC, with IO-Link®
Measuring accuracy	
Characteristic deviation	≤ ±0,15%/±0,5%FSO
Long term drift	≤ ±0,2%FSO/year
Temperature deviation	Tk Zero ≤ 250mbar: ≤ ±0,04%FSO/K (0°C…+80°C)/≤ ±0,06%FSO/K (-20…0°C / +80…+150°C) ≥ 400mbar: ≤ ±0,02%FSO/K (0°C…+80°C)/≤ ±0,03%FSO/K (-20…0°C / +80…+150°C) Tk Span: ≤ ±0,02%FSO/K (0°C…+80°C)/≤ ±0,03%FSO/K (-20…0°C / +80…+150°C)
Process conditions	
Process temperature	-20°C...+150°C
Pressure cycles	≥ 100 Mio. (1,2xPN)
Environmental conditions	
Environmental temperature	-40°C...+100°C
Protection level	IP69K/IP67 (EN/IEC 60529)
MTTF	463 years

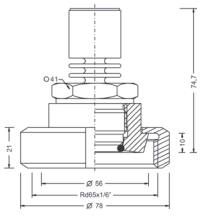
Terminal enclosure



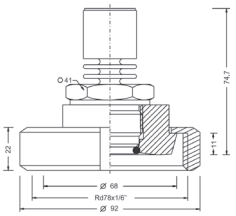
Process connection type 5
Thread G1"B, front-flush



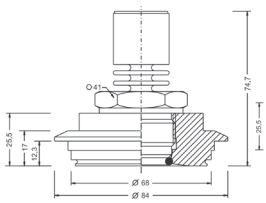
Process connection type N
Dairy coupling DIN 11851 – DN40, PN40



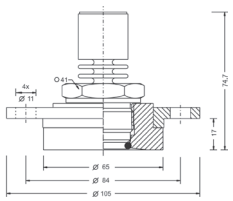
Process connection type M
Dairy coupling DIN 11851 – DN50, PN25



Process connection type P
Varivent® – Typ N / Ø68mm, PN40



Process connection type L
DRD – DN50 / Ø65mm, PN25



Application

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures.
A high variety of versions of process connections and electronic types allows the use for a wide range of applications, also for demanding measuring requirements.
The front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process, also by CIP/SIP cleaning processes.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with viscose or also frequently changing media.
The front-flush diaphragm is completely welded with the process connection and supplied with a positive seal. A reliable, dead-space free sealing is thus assured.
Due to its high accuracy and the digital adjustability by HART®, RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS- resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like factory certifications for drink water resp. food suitability.

Precont® PU4LM

Pressure transmitter for hygienic applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust,
HART® / RS485 Modbus®-RTU / IO-Link® and ATEX / IECEx

3 / 01.22

Basic price . . . . . .

Type
PU4L Hygienic applications . . . . . .

Measuring system – material diaphragm (process wetted) **/ sensor type**
M CrNi-steel / strain gauge . . . . . .

Approval
S Standard . . . . . .
X ATEX II 1 G / IECEx Ex ia IIC Ga resp. ATEX II 1 D / IECEx Ex ia IIIC Da (Output type – A)

Process connection
5 Thread ISO 228-1 – G1"B, front-flush, O-ring gasket, EHEDG conformal, for welding socket BEFVE10 . . . . . .
N Dairy coupling DIN 11851 – DN40, PN40 . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
P Varivent® – Type N / tube DN40-162 / 1½"-6", PN40 . . . . . .
L DRD – DN50 / Ø65mm, PN25 . . . . . .
Y others . . . . . .

Material gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®), FDA-listed . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
01 0…100 mbar . . . . . .
02 0…250 mbar . . . . . .
03 0…400 mbar . . . . . .
04 0…600 mbar . . . . . .
05 0…1 bar . . . . . .
07 0…2,5 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar . . . . . .
11 0…16 bar . . . . . .
12 0…25 bar . . . . . .
16 -1…0 bar . . . . . .
17 -1…+1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2-wire, current 4…20mA, HART® compliant . . . . . .
V 4-wire, RS485, Modbus RTU . . . . . .
L IO-Link®, 1x current 0/4…20mA / 2x switch, 4-wire . . . . . .

Electronic – function
S Standard . . . . . .

Process temperature
0 Standard –20°C…+150°C . . . . . .

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure . . . . . .

Measuring system – accuracy
4 0,5% . . . . . .
8 Xcellence – 0,15%, linearization protocol

Electrical connection
S Plug M12x1 . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
KF Configuration / Preset . . . . . .

Order code

Precont® PU4L	M			V	C			S	0			S

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

Precont® PK4SH

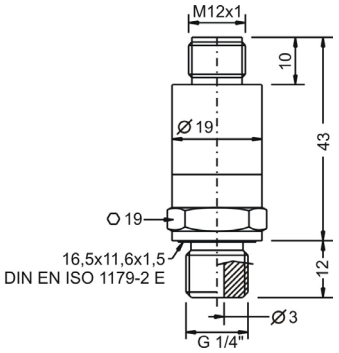
Pressure switch for high temperature applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

3 / 01.22

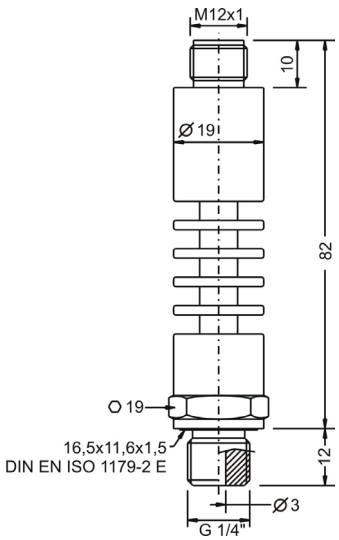
Technical data

Supply voltage:	9…35VDC, reverse polarity protected
Supply current:	≤ 22mA
Analogue output 4...20mA	
Operating range:	3,9…21mA, min. 3,8mA, max. 22mA
Permitted load:	≤ (US - 9V) / 22mA
Start-up time:	≤ 0,2s
Communication	FSK modulated current signal – HART® compliant (7.0)
Signal	0,5mASS – 1200Hz / 2200Hz
Communication resistor	≥ 250Ω, external
Activity	20s (td = 0…<1s) / ∞ (td = ≥1s)
Address	0 (0…15)
Transmission rate	1200 Bit/s
Measuring accuracy	
Characteristic deviation:	±0,5% FS
Long term drift:	Process temperature type 0 – Standard -40…+125°C: ≤ ±0,2% FS (1000h/+125°C) Process temperature type 1 – Extended -40…+200°C: ≤ ±0,5% FS (1000h/+200°C)
Temperature deviation:	Tk 4) Zero: ≤ ±0,015% FS / 10K Tk 4) Span: ≤ ±0,015% FS / 10K
Materials	
Diaphragm:	(process wetted) Process temperature type 0 – Standard -40…+125°C: Steel 1.4548 Process temperature type 1 – Extended -40…+200°C: Inconel 718
Process connection:	(process wetted) Steel 1.4404/316L
Terminal enclosure:	CrNi-steel
Electrical connection part	Device plug PUR
Pressure compensation element	Acrylic copolymer
Gaskets	FPM – fluorelastomere (Viton®)
Gaskets:	(process wetted) FPM – fluorelastomere (Viton®)
Environmental conditions	
Environmental temperature	Ta: Process temperature Type 0 - Standard -40…+125°C: Ta = -40°C...+125°C Process temperature Type 1 – Extended -40…+200°C: Ta = -40°C...+125°C, Tp = -40…+150°C / Ta = -40°C...+100°C, Tp = +150…+175°C / Ta = -40°C...+85°C, Tp = +175…+200°C
Process temperature Tp:	Process temperature type 0 - Standard: -40°C...+125°C Process temperature type 1 - Extended: -40°C...+200°C
Process pressure:	0…10 bar [R] / 0…40 bar [R] / 0…100 bar [R] / 0…600 bar [R]
Protection:	IP69K/IP67 (EN/IEC 60529)

Type 0 – Standard -40…+125°C
Process connection type 3 – Thread ISO 228-1 – G¼" – DIN EN ISO 1179-2 E



Type 1 – Extended -40…+200°C
Process connection type 3 – Thread ISO 228-1 – G¼" – DIN EN ISO 1179-2 E



Application

Due to the miniaturized device construction with small diameter and short length, with measuring ranges from 10 bar to 600 bar, gauge, adjustable, with process temperatures from –40°C to +125°C/+200°C, with process material and terminal enclosure CrNi-steel, fully welded, with environmental temperatures from –40°C to +125°C and as well as the availability of industrial standard process connections like thread ISO 228-1, DIN EN ISO 1179-2 E, like thread ISO 228-1, EN 837 manometer – on request or thread ANSI NPT – on request the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry, environmental technology and facility and building automation.

The pressure transmitter is suitable for demanding measuring requirements, especially at constricted installation situations and high temperature stress. Due to its high accuracy and the digital adjustability by HART® (7.0) , the device can be suited a wide variety of applications.

The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.

A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.

Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

A factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or factory certifications for drink water resp. food suitability.

Customer specific special versions can be realized on request.

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Precont® PK4SH

Pressure switch for high temperature applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

Basic price . . . . . .

Type
PK4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
H CrNi-steel / strain gauge . . . . . .

Approval
S Standard . . . . . .
X ATEX II 1 G Ex ia IIC T6…T1 Ga bzw. II 2G Ex ib IIC T6…T1 Gb
II 1 D Ex ia IIIC T80°C….T195°C Da bzw. II 2D Ex ib IIIC T80°C….T195°C Db. . . . . .

Process connection
3 Thread ISO 228-1 – G¼"A, DIN EN ISO 1179-2 E . . . . . .
Y others . . . . . .

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
Y others. . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
10 0…10 bar. . . . . .
13 0…40 bar. . . . . .
19 0…100 bar. . . . . .
24 0…600 bar. . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2-wire, current 4…20mA, HART® compliant . . . . . .

Electronic – function
S Standard. . . . . .

Process temperature
0 Standard –40°C…+125°C . . . . . .
1 Extended –40°C…+200°C . . . . . .

Pressure type
R Gauge pressure. . . . . .

Measuring system – accuracy
4 0,5% . . . . . .

Electrical connection
S Plug M12x1 . . . . . .

Order code

Precont®	PK4S	H				V	C		A	S		R		S

Equipment

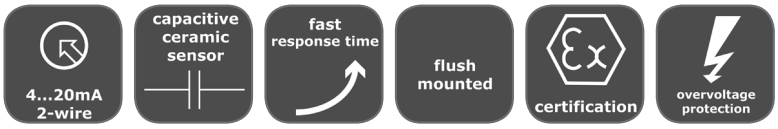
Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

Precont® TM

Pressure sensor with dry capacitive ceramic measuring cell for tough industrial applications, 2-wire electronics 4...20 mA, overvoltage protection

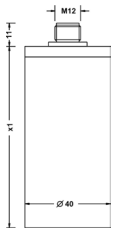
3 / 01.22

Technical data

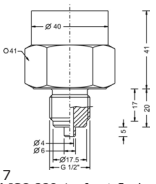


Power supply:	11,5...45 V DC	With EX-version 11,5...30 V DC
Analog output 4...20mA		
Min. delay time:	≤ ± 2 ms	
Overvoltage protection:		
Overvoltage protection:	not for Ex-version Ex0TM	
Category:	coarse protection / fine protection	
Signal voltage:	max. 30 V peak value, against PE-connection	
Nominal discharge current:	10 000 A - wave 8/20µs	
Measurement accuracy		
Characteristics deviation:	≤ ± 0,1% FS / 0,2% FS	
Long term drift:	≤ ± 0,1% FS / year	not cumulative
Temperature deviation:	≤ ± 0,10% FS / 10 K (Zero / Span)	
Materials		
Membrane:	(medium contact)	Ceramics AL2O3 99,9%
Process connection:	(medium contact)	Steel 1.4404/316L resp. 1.4571/316Ti
Housing pipe:	CrNi-steel	
Gaskets:	(medium contact)	
	FPM – fluoroelastomer (Viton®)	
	EPDM – ethylene-propylene-diene monomer	
	CR – chloroprene rubber (Neopren®)	
	FFKM – perfluorelastomere (Kalrez®)	
	NBR – nitrile-butadiene rubber	
Device plug:	DIN EN 175-301-803-A	
	housing PA polyamide, contacts tinned, gasket NBR	
	M12x1	
	socket CrNi-steel, inserted part PUR, contacts gold-plated	
Environmental conditions		
Ambient temperature:	– 40°C...+85°C	
Process temperatures:	– 40°C...+100°C resp. +125°C	
Process pressure ranges:	– 1 bar ...60 bar	
Protection:	Plug version according to DIN 175-301-803	
	IP65 DIN EN 60529	
	Plug version M12x1 and version with direct cable outlet	
	IP68 / 1mH2O for 1h DIN EN 60529	

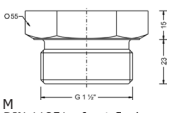
Connection housing
Electrical connection Type V - plug M12



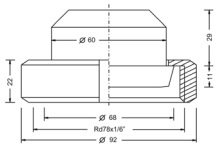
Type 0
G ½" ISO 228-1 - DIN 837-3



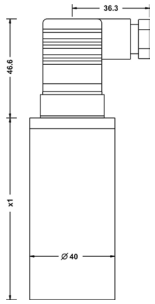
Type 7
G 1½" ISO 228-1 - front-flush



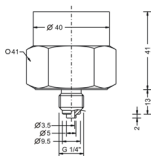
Type M
DN50 DIN 11851 - front-flush



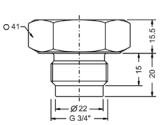
Connection housing
Electrical connection Type S
plug EN 175-301-803-A



type 1
G ¼" ISO 228-1 - DIN 837-3

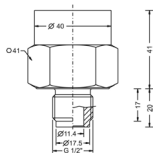


Type 8
G ¾" ISO 228-1 - front-flush

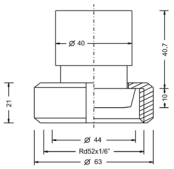


Temperature decoupler

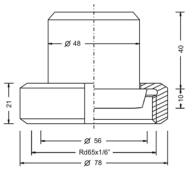
Type 6
G ½" ISO 228-1 - inner bore 11,4mm



Type R
DN25 DIN 11851 - front-flush



Type N
DN40 DIN 11851 - front-flush



Application

The Precont® TM is a very rugged overload resistive pressure transmitter for gases, steams, liquids and dusts in hard industrial applications. By use of a dry capacitive ceramic measurement sensor in combination with high-grade steel 1.4571 (V4A), this pressure transmitter can be also used in very aggressive substances. The ceramic membrane has also an extreme overload resistance, highest measurement precision, long life time and no need for maintenance.

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
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Precont® TM

Pressure sensor with dry capacitive ceramic measuring cell for tough industrial applications, 2-wire electronics 4...20 mA, overvoltage protection

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Equipment

welding flanges
page 134

Basic price . . . . . .

Model

TM Standard . . . . . .
Ex0TM ATEX II 1/2 G Ex ia IIC T4 Ga/Gb . . . . . .
Ex1TM ATEX II 2 G Ex ib IIC T4 Gb . . . . . .

Process connection

0 G½" A, ISO 228-1, DIN EN 837-3 (DIN 16288) manometer . . . . . .
1 G¼" A, ISO 228-1, DIN EN 837-3 (DIN 16288) manometer . . . . . .
6 G½" A, ISO 228-1, inner bore 11,4 mm . . . . . .
7 G1½" B, ISO 228-1, front-flush . . . . . .
8 G¾" A, ISO 228-1, front-flush, ≤ 20 bar . . . . . .
9 G½" B, ISO 228-1, front-flush, ≤ 20 bar . . . . . .
R Milk tube DIN 11851, DN25, PN40, ≤ 20 bar . . . . . .
N Milk tube DIN 11851, DN40, PN40 . . . . . .
M Milk tube DIN 11851, DN50, PN25 . . . . . .

Transmitter electronics

A 2-wire-electronics 4...20 mA . . . . . .

Material connection

V Stainless steel 1.4404/316L resp. 1.4571/316Ti . . . . . .

Over voltage protection

B With integrated overvoltage protection *(not for Ex0TM)* . . . . . .
0 Without overvoltage protection . . . . . .

Measurement ranges

01 0...100 mbar
02 0...200 mbar
03 0...400 mbar
04 0...600 mbar
05 0...1 bar
06 0...1,6 bar
07 0...2,5 bar
08 0...4 bar
09 0...6 bar
10 0...10 bar . . . . . .
11 0...16 bar . . . . . .
12 0...25 bar . . . . . .
13 0...40 bar . . . . . .
14 0...60 bar . . . . . .
15 -100...0 mbar . . . . . .
16 -1...0 bar . . . . . .
17 -1...1 bar . . . . . .
18 -100...+100 mbar . . . . . .
19 -1...+9 bar . . . . . .
YY Special measuring range . . . . . .

Material gasket

1 FPM - fluoroelastomer (Viton®) . . . . . .
2 CR - chloroprene rubber (Neopren®) . . . . . .
3 EPDM - ethylene-propylene-diene monomer - food applications . . . . .
4 FFKM - perfluorelastomere (Kalrez®) . . . . . .
6 FFKM hd - perfluorelastomere high density - gas applications . . . . . .

Process temperature

0 Standard -20°C...+100°C . . . . . .
H Extended –40°C...+125°C, temperature decoupler . . . . . .

Pressure type

R Gauge pressure . . . . . .
A Absolute pressure . . . . . .

Measuring system - accuracy

1 Ceramics 99,9%, capacitive / 0,2%
With process connection 8 / 9 / R >> membrane
Ceramics 96% . . . . . .
3 Ceramics 99,9%, capacitive / 0,1%,
linearization protocol
With process connection 8 / 9 / R >> membrane
Ceramics 96% . . . . . .

Connection

S Plug according to DIN EN 175-301-803-A *(DIN 43650-A)* . .
V M12 plug . . . . . .
K Direct cable outlet 2m . . . . . .
surcharge per meter *(at cable)*, PE . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
MZ Material test certificate – EN10204 3.1 . . . . . .

Order code

Precont®	A	V

Precont® MT

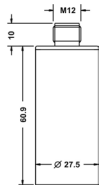
Analog pressure transmitter with metallic DMS-membrane up to 1000 bar
analog output 4...20 mA or 0...10 V

3 / 01.22

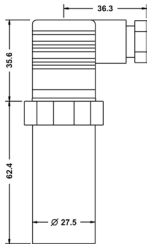
Technical data

Power supply:	Type A – 2-wire, current 4…20mA: 10…30VDC, reverse polarity protected Type B – 3-wire, voltage 0…10V: 14…30VDC, reverse polarity protected
Supply current:	Type A – 2-wire, current 4…20mA: ≤ 30mA Type B – 3-wire, voltage 0…10V: ≤ 6mA
Measurement accuracy	
Characteristics deviation:	≤ ±0,5% FS
Long term drift:	≤ ±0,2% FS / year not cumulative
Temperature deviation:	Measuring range ≤ 25 bar: ≤ ±0,02% FS / K (0…+80°C) / ≤ ±0,03% FS / K (-40…0°C / +80…+125°C) Measuring range ≥ 40 bar: ≤ ±0,02% FS / K (-40…+100°C) / ≤ ±0,03% FS / K (+100…+125°C)
Material	
Membrane (medium contact):	Process connection type 0 – front-flush / Process connection type 1 / type 6 – EN 837 / ≤ 25 bar: Steel 1.4571/316Ti Process connection type 1 / type 6 – EN 837 / ≥ 40 bar: Steel 1.4542/630 / Steel 1.4534/SI13800
Process connection (medium contact):	Steel 1.4571/316Ti
Terminal enclosure:	CrNi-steel
Gaskets (medium contact):	FPM – fluorelastomer (e.g. Viton®) EPDM – ethylene-propylene-diene monomer NBR – nitrile-butadiene rubber
Electrical connection part:	Electrical connection type V – Plug M12: Device plug PUR Electrical connection type S/T – Plug EN 175-301-803: Device plug PA / Gasket NBR Electrical connection type K – Cable: Cable gland PA / Gasket CR / NBR / Cable sheath PE
Environmental conditions	
Ambient temperature:	– 40°C...+85°C
Process temperatures:	– 40°C...+100°C resp. 125°C
Process pressure ranges:	– 1 bar ...1000 bar (depending on type)
Protection:	Electrical connection type V – Plug M12: IP69K/IP67 (EN/IEC 60529) Electrical connection type S/T – Plug EN 175-301-803: IP65 (EN/IEC 60529) Electrical connection type K – Cable: IP69K (EN/IEC 60529) / IP68 [≤ 10 mwc] (EN/IEC 60529)

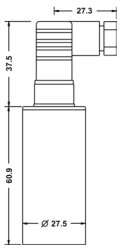
Terminal enclosure
Electrical connection type V - Plug M12



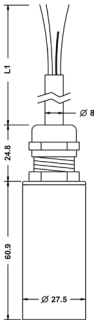
Terminal enclosure
Electrical connection type T - Plug EN 175-301-803-A



Terminal enclosure
Electrical connection type S - Plug EN 175-301-803-C

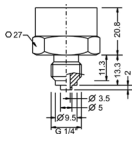


Terminal enclosure
Electrical connection type K - Cable

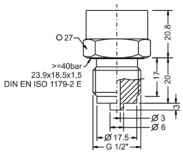


Temperature decoupler

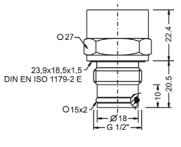
Process connection
Type 6 – Thread ISO 228-1 – G¼"B, EN 837



Process connection
Type 1 – Thread ISO 228-1 – G½"B, EN 837



Process connection
Type 0 – Thread ISO 228-1 – G½"B, front-flush



Application

The device is an electronic pressure transmitter for monitoring, control as well as continuous measurement of pressures in gases, vapors, liquids and dusts.
Due to the device construction with measuring ranges from -1 bar to 1000 bar, gauge, measuring ranges from 0 bar to 1000 bar, absolute, measuring spans from 400 mbar to 1000 bar, process temperatures from –40°C to +125°C, environmental temperatures from –40°C to +100°C, process material CrNi-steel as well as the availability of industrial standard process connections like thread ISO 228-1 (EN 837 manometer) and thread ISO 228-1 (front-flush) the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industrye, environmental technology and facility and building automation.
The device is suitable for demanding measuring requirements.
The front-flush diaphragm has been specifically designed for the measurement of viscous, pasty, adhesive, crystallizing, particle-containing and contaminated media, which would clog the pressure channel of conventional process connections.
The certification acc. to ATEX II 1 G Ex ia IIB/IIC Tx Ga allows the use in explosion hazardous areas.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device. Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS-free resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like factory certifications for drink water resp. food suitability.

Precont® MT

Analog pressure transmitter with metallic DMS-membrane up to 1000 bar
analog output 4...20 mA or 0...10 V

3 / 01.22

Basic price . . . . . .

Equipment

welding flanges
page 134

Type
0 Standard . . . . . .
Ex ATEX II 1 G Ex ia IIB/IIC Tx Ga . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
MT CrNi-steel / strain gauge . . . . . .

Process connection
6 Thread ISO 228-1 – G¼"B, EN 837 manometer (without process gasket) . . . . . .
1 Thread ISO 228-1 – G½"B, EN 837 manometer (≥ 40 bar without process gasket) . . . . . .
0 Thread ISO 228-1 – G½"B, front-flush, *O-ring gasket not for measuring range 0...1000 bar* . . .
Y others . . . . . .

Material process gaskets (process wetted)
0 without / NBR – nitrile-butadiene-rubber . . . . . .
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
05 0...1 bar . . . . . .
06 0..1,6 bar . . . . . .
07 0..2,5 bar . . . . . .
08 0...4 bar . . . . . .
09 0...6 bar . . . . . .
10 0...10 bar . . . . . .
11 0...16 bar . . . . . .
12 0...25 bar . . . . . .
13 0...40 bar . . . . . .
14 0...60 bar . . . . . .
19 0...100 bar . . . . . .
20 0...160 bar . . . . . .
21 0...250 bar . . . . . .
22 0...320 bar . . . . . .
23 0...400 bar . . . . . .
24 0...600 bar . . . . . .
25 0...1000 bar *only for process connection type 1, 6 – G½"B, G¼"B (EN 837).* . .
16 -1...0 bar . . . . . .
17 -1...+1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2-wire, current 4...20mA . . . . . .
B 3-wire, voltage 0...10V . . . . . .

Process temperature
0 Standard –40°C...+100°C. . . . . .
1 Extended –40°C...+125°C, temperature decoupler . . . . . .

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure (≤ 25 bar) . . . . . .

Measuring system – accuracy
4 0,5%. . . . . .

Electrical connection
V Plug M12x1. . . . . .
S Plug EN 175-301-803-C (DIN 43650-C) . . . .
T Plug EN 175-301-803-A (DIN 43650-A) . . . .
K Kabel, L1 = 2m . . . . . .
surcharge per meter *(at cable)*, PE . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
WK Factory calibration - calibration certificate
WK Factory calibration - calibration certificate > 60 bar . . . . . .

Order code

Precont®	MT		V	C			0		4	

Equipment

Ordering information	*Model*
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
REMO12	Weld-in socket G½" for Precont® MT . . . . .
BEFK12	Weld-in socket G½", sealing attachment at the back . . . . .

Precont® KT

Analog pressure transmitter with ceramic DMS-membrane up to 600 bar
analog output 4...20 mA or 0...10 V

3 / 01.22

Technical data

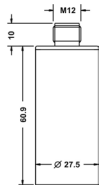
Power supply:	Type A – 2-wire, current 4…20mA: 10…30VDC, reverse polarity protected Type B – 3-wire, voltage 0…10V: 14…30VDC, reverse polarity protected
Supply current:	Type A – 2-wire, current 4…20mA: ≤ 30mA Type B – 3-wire, voltage 0…10V: ≤ 6mA
Measurement accuracy	
Characteristics deviation:	≤ ±0,5% FS
Long term drift:	≤ ±0,2% FS / year not cumulative
Temperature deviation:	Zero+ Span: ≤ ±0,05% FS / K
Material	
Membrane (medium contact):	Ceramic aluminum oxide Al2O3 – 96%
Process connection:	(medium contact) Steel 1.4404/316L
Terminal enclosure:	CrNi-steel
Gaskets (medium contact):	FPM – fluorelastomere (e.g. Viton®) EPDM – ethylene-propylene-dienmonomere, FDA-listed
Electrical connection part:	Electrical connection type V – Plug M12: Device plug PUR Electrical connection type S/T – Plug EN 175-301-803: Device plug PA / Gasket NBR Electrical connection type K – Cable: Cable gland PA / Gasket CR / NBR / Cable sheath PE
Environmental conditions	
Ambient temperature:	– 40°C...+85°C
Process temperatures:	– 40°C...+100°C resp. 135°C
Process pressure ranges:	– 1 bar ...600 bar (depending on type)
Protection:	Electrical connection type V – Plug M12: IP69K/IP67 (EN/IEC 60529) Electrical connection type S/T – Plug EN 175-301-803: IP65 (EN/IEC 60529) Electrical connection type K – Cable: IP69K (EN/IEC 60529) / IP68 [≤ 10 mwc] (EN/IEC 60529)

Application

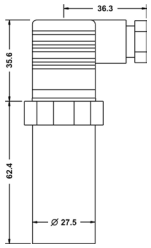
The device is an electronic pressure transmitter for monitoring, control as well as continuous measurement of pressures in gases, vapors, liquids and dusts.
Due to the device construction with measuring ranges from 0 bar to 600 bar (gauge), measuring ranges from 1 bar to 40 bar (absolute), measuring spans from 250 mbar to 600 bar, process temperatures from –40°C to +135°C, environmental temperatures from –40°C to +85°C, process materials Al2O3-ceramic / CrNi-steel as well as the availability of industrial standard process connections like thread connection ISO 228-1 (EN 837 manometer), thread connection ISO 228-1 (inner thread), thread connection ISO 228-1 (EN 1179-2 E), thread connection ISO 228-1 (inner bore) the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry, environmental technology and facility and building automation.

The pressure transmitter is suitable for cost sensitive as well as demanding measuring requirements. The certification acc. to ATEX II 1 G Ex ia IIB/IIC Tx Ga allows the use in explosion hazardous areas. The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS-free resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1.

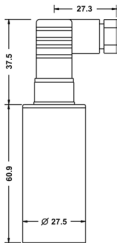
Terminal enclosure
Electrical connection type V - Plug M12



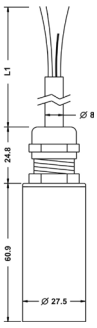
Terminal enclosure
Electrical connection type T - Plug EN 175-301-803-A



Terminal enclosure
Electrical connection type S - Plug EN 175-301-803-C

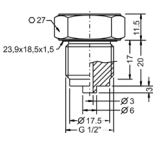


Terminal enclosure
Electrical connection type K - Cable

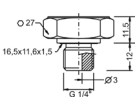


Temperature decoupler

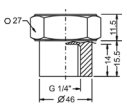
Process connection
Type 1 – Thread ISO 228-1 – G½"B, EN 837



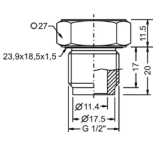
Process connection
Type 3 – Thread ISO 228-1 – G¼"B, DIN EN ISO 1179-2 E



Process connection
Type 4 – Thread ISO 228-1 – G¼" I, inner thread



Process connection
Type 2 – Thread ISO 228-1 – G½"B, inner bore



Precont® KT

Analog pressure transmitter with ceramic DMS-membrane up to 600 bar
analog output 4...20 mA or 0...10 V

3 / 01.22

Equipment

welding flanges
page 134

Basic price . . . . . .

Type
0 Standard
Ex ATEX II 1 G Ex ia IIB/IIC Tx Ga

Measuring system – material diaphragm (process wetted) / sensor type
KT Ceramic Al_2O_3 96% / strain gauge

Process connection
1 Thread ISO 228-1 – G½"B, EN 837 manometer
3 Thread ISO 228-1 – G¼"B, DIN EN ISO 1179-2 E
4 Thread ISO 228-1 – G¼"I, inner thread
2 Thread ISO 228-1 – G½"B, inner bore
Y others

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®)
3 EPDM – ethylene-propylene-dienmonomere
Y others

Material process connection (process wetted)
V CrNi-steel
L Aluminum (measuring range ≤ 0..16 bar)

Material terminal enclosure
C CrNi-steel

Measuring range
02 0...250 mbar
03 0...400 mbar
04 0...600 mbar
05 0...1 bar
06 0..1,6 bar
07 0..2,5 bar
08 0...4 bar
09 0...6 bar
10 0...10 bar
11 0...16 bar
12 0...25 bar
13 0...40 bar
14 0...60 bar
19 0...100 bar
20 0...160 bar
21 0...250 bar
22 0...320 bar
23 0...400 bar
24 0...600 bar
YY Special measuring range

Electronic – output
A 2-wire, current 4...20mA
B 3-wire, voltage 0...10V

Process temperature
0 Standard –40°C...+100°C.
1 Extended –40°C...+125°C, temperature decoupler

Pressure type
R Gauge pressure
A Absolute pressure (≤ 25 bar)

Measuring system – accuracy
4 0,5%.

Electrical connection
V Plug M12x1.
S Plug EN 175-301-803-C (DIN 43650-C)
T Plug EN 175-301-803-A (DIN 43650-A)
K Kabel, L1 = 2m
surcharge per meter *(at cable)*, PE

Order code

Precont®	KT		V	C			0		4	

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
WK Factory calibration – calibration certificate
WK Factory calibration – calibration certificate > 60 bar
MZ Material test certificate – EN10204 3.1

Equipment

Ordering information	*Model*
BKZ0412-VA	Matching cable socket, VA-nut
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded

Precont® CT

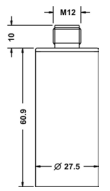
Analog pressure transmitter with **front-flush** ceramic capacitive membrane up to 16 bar
analog output 4...20 mA or 0...10 V

3 / 01.22

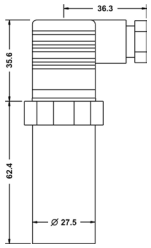
Technical data

Power supply:	Type A – 2-wire, current 4…20mA: 10…30VDC, reverse polarity protected Type B – 3-wire, voltage 0…10V: 14…30VDC, reverse polarity protected
Supply current:	Type A – 2-wire, current 4…20mA: ≤ 30mA Type B – 3-wire, voltage 0…10V: ≤ 6mA
Measurement accuracy	
Characteristics deviation:	≤ ±0,1% / ±0,25% FS
Long term drift:	≤ ±0,15% FS / year not cumulative
Temperature deviation:	Zero: ≤ ±0,015% FS / K / max. ±0,75 % (-20°C…+80°C) Span: ≤ ±0,015% FS / K / max. ±0,5 % (-20°C…+80°C / > 0,4 bar) / max. ±0,8 % (-20°C…+80°C / ≤ 0,4 bar)
Material	
Membrane (medium contact):	Measuring range ≤ 1bar: Ceramic Al2O3 – 99,7% (SIP suitable) Measuring range ≥ 1,6bar: Ceramic Al2O3 – 96% (SIP suitable)
Process connection (medium contact):	Steel 1.4404/316L / Steel 1.4571/316Ti
Terminal enclosure:	CrNi-steel
Gaskets (medium contact):	FPM – fluorelastomere (e.g. Viton®) EPDM – ethylene-propylene-dienmonomere, FDA-listed FFKM – perfluorelastomere (e.g. Kalrez®) FFKM hd – perfluorelastomere high density
Electrical connection part:	Electrical connection type V – Plug M12: Device plug PUR Electrical connection type S/T – Plug EN 175-301-803: Device plug PA / Gasket NBR Electrical connection type K – Cable: Cable gland PA / Gasket CR / NBR / Cable sheath PE
Environmental conditions	
Ambient temperature:	– 40°C...+85°C
Process temperatures:	– 40°C...+100°C resp. 125°C
Process pressure ranges:	– 1 bar ...16 bar (depending on type)
Protection:	Electrical connection type V – Plug M12: IP69K/IP67 (EN/IEC 60529) Electrical connection type S/T – Plug EN 175-301-803: IP65 (EN/IEC 60529) Electrical connection type K – Cable: IP69K (EN/IEC 60529) / IP68 [≤ 10 mwc] (EN/IEC 60529)

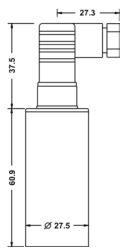
Terminal enclosure
Electrical connection type V - Plug M12



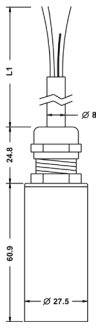
Terminal enclosure
Electrical connection type T - Plug EN 175-301-803-A



Terminal enclosure
Electrical connection type S - Plug EN 175-301-803-C

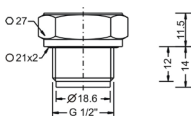


Terminal enclosure
Electrical connection type K - Cable

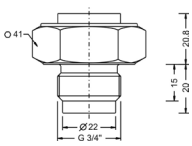


Temperature decoupler

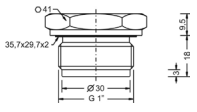
Process connection
Type 0 – Thread ISO 228-1 – G½"B, front-flush



Process connection
Type 8 – Thread ISO 228-1 – G¾"A, front-flush



Process connection
Type 5 – Thread ISO 228-1 – G1"A, front-flush



Application

The device is an electronic pressure transmitter for monitoring, control as well as continuous measurement of pressures in gases, vapors, liquids and dusts.
Due to the device construction with measuring ranges from -1 bar to 16 bar (gauge), measuring ranges from 0 bar to 16 bar (absolute), measuring spans from 100 mbar to 16 bar, process temperatures from –40°C to +125°C, environmental temperatures from –40°C to +85°C, process materials Al2O3-ceramic / CrNi-steel as well as the availability of industrial standard process connections like thread ISO 228-1 the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry, environmental technology, facility and building automation.
The device is suitable for demanding measuring requirements.
Through its optimized design, the front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process.
The device is suitable for the use at SIP cleaning processes.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with frequently changing media.
The certification acc. to ATEX II 1 G Ex ia IIB/IIC Tx Ga allows the use in explosion hazardous areas.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

Precont® CT

Analog pressure transmitter with **front-flush** ceramic capacitive membrane up to 16 bar
analog output 4...20 mA or 0...10 V

3 / 01.22

Equipment

welding flanges
page 134

Basic price . . . . . .

Type
0 Standard
Ex ATEX II 1 G Ex ia IIB/IIC Tx Ga

Measuring system – material diaphragm (process wetted) / sensor type
CT Ceramic Al_2O_3 96%/99,7% / capacitive

Process connection
0 Thread ISO 228-1 – G½"B, front-flush
8 Thread ISO 228-1 – G¾"A, front-flush
5 Thread ISO 228-1 – G1"A, front-flush
Y others

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®)
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed
4 FFKM - perfluorelastomere (e.g. Kalrez®)
6 FFKM hd - perfluorelastomere high density - gas applications
Y others

Material process connection (process wetted)
V CrNi-steel

Material terminal enclosure
C CrNi-steel

Measuring range
01 0...100 mbar
02 0...200 mbar
03 0...400 mbar
04 0...600 mbar
05 0...1 bar
06 0..1,6 bar
07 0..2,5 bar
08 0...4 bar
09 0...6 bar
10 0...10 bar
11 0...16 bar
17 -100...+100 mbar
18 -1...+1 bar
YY Special measuring range

Electronic – output
A 2-wire, current 4...20mA
B 3-wire, voltage 0...10V

Process temperature
0 Standard –40°C...+100°C.
1 Extended –40°C...+125°C, temperature decoupler

Pressure type
R Gauge pressure
A Absolute pressure (≤ 25 bar)

Measuring system – accuracy
2 0,25%
0 0,1%, linearization protocol

Electrical connection
V Plug M12x1
S Plug EN 175-301-803-C (DIN 43650-C)
T Plug EN 175-301-803-A (DIN 43650-A)
K Kabel, L1 = 2m
surcharge per meter *(at cable)*, PE

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
WK Factory calibration – calibration certificate
MZ Material test certificate – EN10204 3.1

Order code

Precont®	CT		V	C							

Equipment

Ordering information	*Model*
BKZ0412-VA	Matching cable socket, VA-nut
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded

Precont® ML

Pressure transmitter with metallic membrane
for hygienic applications

3 / 01.22

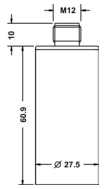
Technical data

Power supply:	Type A – 2-wire, current 4…20mA: 10…30VDC, reverse polarity protected Type B – 3-wire, voltage 0…10V: 14…30VDC, reverse polarity protected
Supply current:	Type A – 2-wire, current 4…20mA: ≤ 30mA Type B – 3-wire, voltage 0…10V: ≤ 6mA
Measurement accuracy	
Characteristics deviation:	≤ ±0,5% FS
Long term drift:	≤ ±0,2% FS / year not cumulative
Temperature deviation:	Measuring range ≤ 250 mbar: ≤ ±0,04% FS / K (0…+80°C) / ≤ ±0,06% FS / K (-20…0°C / +80…+150°C) Measuring range ≥ 400 mbar: ≤ ±0,02% FS / K (0…+80°C) / ≤ ±0,03% FS / K (-20…0°C / +80…+150°C)
Material	
Membrane (medium contact):	Steel 1.4435/316L
Process connection (medium contact):	Steel 1.4435/316L
Terminal enclosure:	CrNi-steel
Gaskets (medium contact):	FPM – fluorelastomere (e.g. Viton®), FDA-listed EPDM – ethylene-propylene-dienmonomere, FDA-listed
Electrical connection part:	Electrical connection type V – Plug M12: Device plug PUR Electrical connection type S/T – Plug EN 175-301-803: Device plug PA / Gasket NBR Electrical connection type K – Cable: Cable gland PA / Gasket CR / NBR / Cable sheath PE
Environmental conditions	
Ambient temperature:	– 40°C...+85°C
Process temperatures:	– 40°C...+150°C
Process pressure ranges:	– 1 bar ...25 bar (depending on type)
Protection:	Electrical connection type V – Plug M12: IP69K/IP67 (EN/IEC 60529) Electrical connection type S/T – Plug EN 175-301-803: IP65 (EN/IEC 60529) Electrical connection type K – Cable: IP69K (EN/IEC 60529) / IP68 [≤ 10 mwc] (EN/IEC 60529)

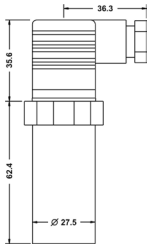
Application

The device is an electronic pressure transmitter for monitoring, control as well as continuous measurement of pressures in gases, vapors, liquids and dusts.
Due to the device construction with
Measuring ranges from -1 bar to 25 bar, gauge measuring ranges from 0 bar to 25 bar (absolute), measuring spans from 100 mbar to 25 bar, process temperatures from –20°C to +150°C, environmental temperatures from –40°C to +85°C, process material CrNi-steel as well as the availability of a variety of hygienic EHEDG-conformal process connections like thread ISO 228-1 with front-flush O-ring gasket, dairy coupling DIN 11851 and Varivent® the device is especially suitable for the use for food and beverage industry, pharmaceutical industry, biotechnology and sterile process engineering.
The device is suitable for demanding measuring requirements.
The device with front-flush diaphragm has been specifically designed for the measurement of viscous, paste-like, adhesive, crystallizing, particle-laden and contaminated media, which
would clog the pressure channel of conventional process connections.
Through its optimized design, the front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process.
The device is particularly suitable for the special conditions of CIP/SIP cleaning processes, such as chemical stability towards cleaning liquids and high temperatures.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with frequently changing media.
The front-flush diaphragm is completely welded with the process connection and supplied with a positive seal. A reliable, dead-space free sealing between the process connection and the process adapter resp. measuring medium is thus assured.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.

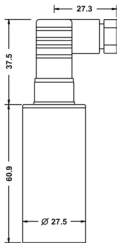
Terminal enclosure
Electrical connection type V - Plug M12



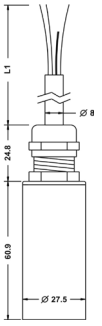
Terminal enclosure
Electrical connection type T - Plug EN 175-301-803-A



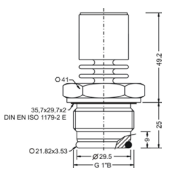
Terminal enclosure
Electrical connection type S - Plug EN 175-301-803-C



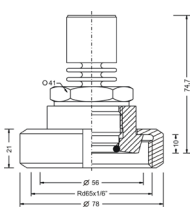
Terminal enclosure
Electrical connection type K - Cable



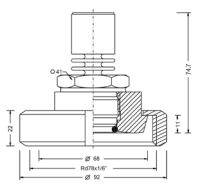
Proces connection
Type 5 – Thread ISO 228-1 – G1"B, front-flush



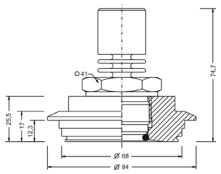
Proces connection
Type N – Dairy coupling DIN 11851 – DN40, PN25



Proces connection
Type M – Dairy coupling DIN 11851 – DN50, PN25



Proces connection
Type P – Varivent® – Type N / tube DN40-162 / 1½"-6", PN40



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www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Precont® ML

Pressure transmitter with metallic membrane
for hygienic applications

3 / 01.22

Equipment

welding flanges
page 134

Basic price . . . . . .

Type
0 Standard . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
ML CrNi-steel / strain gauge . . . . . .

Process connection
5 Thread ISO 228-1 – G1"B, front-flush, O-ring gasket, EHEDG conformal, for welding socket BEFVE10 . . . . . .
N Dairy coupling DIN 11851 – DN40, PN25 . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
P Varivent® – Type N / tube DN40-162 / 1½"-6", PN40 . . . . . .
Y others . . . . . .

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®), FDA-listed . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
01 0…100 mbar . . . . . .
02 0…250 mbar . . . . . .
03 0…400 mbar . . . . . .
04 0…600 mbar . . . . . .
05 0…1 bar . . . . . .
06 0..1,6 bar . . . . . .
07 0..2,5 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar . . . . . .
11 0…16 bar . . . . . .
12 0…25 bar . . . . . .
16 –1…0 bar . . . . . .
17 –1…+1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2-wire, current 4…20mA . . . . . .
B 3-wire, voltage 0…10V . . . . . .

Process temperature
0 Standard –40°C…+150°C . . . . . .

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure (≤ 25 bar) . . . . . .

Measuring system – accuracy
4 0,5% . . . . . .

Electrical connection
V Plug M12x1 . . . . . .
S Plug EN 175-301-803-C (DIN 43650-C) . . . .
T Plug EN 175-301-803-A (DIN 43650-A) . . . .
K Kabel, L1 = 2m . . . . . .
surcharge per meter *(at cable)*, PE . . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
WK Factory calibration - calibration certificate

Order code

Precont®	0	ML			V	C			0		4	

Equipment

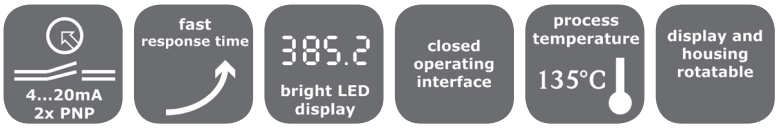
Ordering information	*Model*
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
BEFVE-10	Welding flange for process connection 5 . . . . .

Precont® PS4SK

Pressure switch for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

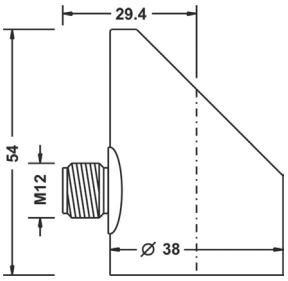
3 / 01.22

Technical data

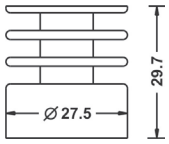


Supply voltage:	10,5…35VDC, reverse polarity protected
Supply current:	≤ 60mA Analogue output max. 22,5mA Switch output with no load
Switch output S1 / S2	
Function:	PNP switch to +L
Output current:	0… ≤ 200mA current limited, short circuit protected
Analogue output	4...20mA
Operating range:	3,9…21mA, min. 3,8mA, max. 22mA
Permitted load:	≤ (US - 10,5V) / 20mA
Start-up time:	≤ 1 s
Measurement accuracy	
Characteristic deviation:	≤ ± 0,5% FS
Long term drift:	≤ ± 0,2% FS / year not cumulative
Temperature deviation	Measuring range 0…250 mbar to 0…2,5 bar: ≤ ±0,05% FS / K Measuring range 0…4 bar to 0…600 bar: ≤ ±0,04% FS /K
Materials	
Diaphragm:	(process wetted) Ceramic aluminum oxide Al2O3 – 96%
Process connection:	(process wetted) Steel 1.4404/316L / Steel 1.4571/316Ti
Terminal enclosure:	CrNi-steel
Gaskets:	(process wetted) FPM – fluorelastomere (e.g. Viton®) EPDM – ethylene-propylene-dienmonomere, FDA-listed
Environmental conditions	
Environmental temperature:	– 40°C...+85°C
Process temperature:	– 40...+100°C (extended -40...+135°C)
Process pressure:	0 bar ...600 bar (depending on process connection)
Protection:	IP65/IP67 EN/IEC 60529

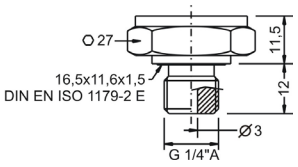
Terminal enclosure



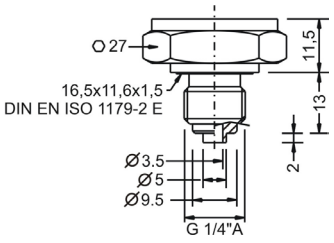
Temperature decoupler



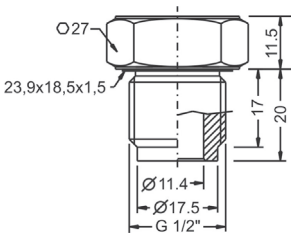
Type 3 – Thread ISO 228-1 – G¼"A, DIN EN ISO 1179-2 E2 E



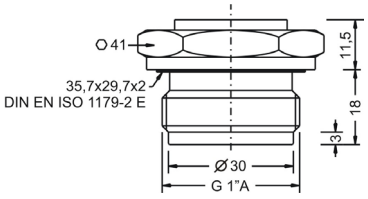
Type 6 – Thread ISO 228-1 – G¼"A, EN 837



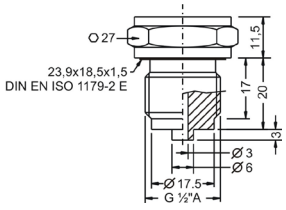
Type 2 – Thread ISO 228-1 – G½"B, inner bore



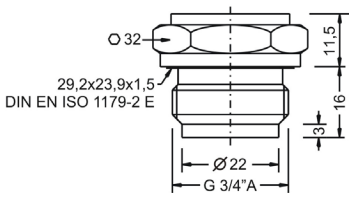
Type 5 – Thread ISO 228-1 – G1"A, front-flush



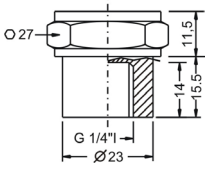
Type 1 – Thread ISO 228-1 – G½"A, EN 837



Type 8 – Thread ISO 228-1 – G¾"A, front-flush



Type 4 – Thread ISO 228-1 – G¼" I, inner thread



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www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Precont® PS4SK

Pressure switch for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

3 / 01.22

Equipment

welding flanges
page 134

Application

Due to the device construction with measuring ranges from -1 bar to 600 bar, gauge, measuring ranges from 1 bar to 40 bar, absolute, measuring spans from 250 mbar to 600 bar, process temperatures from –40°C to +135°C and process materials Al2O3-ceramic / CrNi-steel as well as the availability of industrial standard process connections like thread connection ISO 228-1, EN 837 manometer, thread connection ISO 228-1 (inner thread), thread connection ISO 228-1 (EN 1179-2 E), thread connection ISO 228-1 (inner bore) and thread connection ISO 228-1 (front-flush) the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry, environmental technology and facility and building automation.
The device is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

A LABS-free resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or factory certifications for drink water resp. food suitability.

Basic price *(*scale prices)*

Type
PS4S Standard

Measuring system – material diaphragm (process wetted) / sensor type
K Ceramic Al2O3 96% / strain gauge

Approval
S Standard

Process connection
6 Thread ISO 228-1 – G¼"A, EN 837 manometer
1 Thread ISO 228-1 – G½"A, EN 837 manometer
3 Thread ISO 228-1 – G¼"A, DIN EN ISO 1179-2 E
4 Thread ISO 228-1 – G¼"I, inner thread
2 Thread ISO 228-1 – G½"B, inner bore
8 Thread ISO 228-1 – G¾"A, front-flush, ≤ 10 bar
5 Thread ISO 228-1 – G1"A, front-flush, ≤ 1 bar
Y others

Material gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®)
3 EPDM – ethylene-propylene-dienmonomere
Y others

Material process connection (process wetted)
V CrNi-steel

Material terminal enclosure
C CrNi-steel

Measuring range
02 0...0,25 bar
03 0...0,4 bar
04 0...0,6 bar
05 0...1 bar
06 0...1,6 bar
07 0...2,5 bar
08 0...4 bar
09 0...6 bar
10 0...10 bar
11 0...16 bar
12 0...25 bar
13 0...40 bar
14 0...60 bar
19 0...100 bar
20 0...160 bar
21 0...250 bar
22 0...320 bar
23 0...400 bar
24 0...600 bar
16 -1...0 bar
17 -1...+1 bar
YY Special measuring range

Electronic – output
A 4-wire, 2x switch PNP
B 4-wire, 1x switch PNP, 1x signal 4...20mA
C 5-wire, 2x switch PNP, 1x signal 4...20mA
D 4-wire, 1x switch PNP, 1x signal 4...20mA, Desina

Electronic – function
S Standard

Process temperature
0 Standard –40°C...+100°C
1 Extended –40°C...+135°C, temperature decoupler

Pressure type
R Gauge pressure
A Absolute pressure, ≥ 1bar ... ≤ 40bar

Measuring system – accuracy
4 0,5%

Electrical connection
S Plug M12x1

Order code

Precont® PS4S	K	S			V	C			S			4	S

Equipment

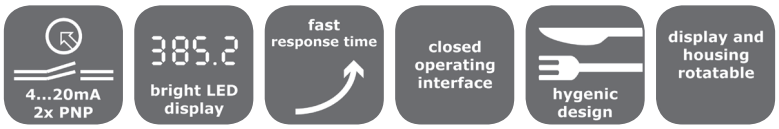
Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded
BKZ0412-VA	Matching cable socket, VA-nut
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V)

Precont® PS4SC

Pressure switch for hygienic and general applications:
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

3 / 01.22

Technical data



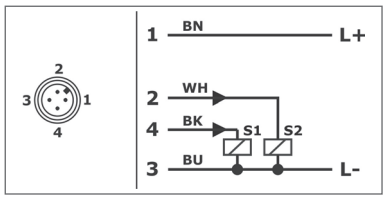
Supply voltage:	10,5…35VDC, reverse polarity protected
Supply current:	≤ 60mA Analogue output max. 22,5mA Switch output with no load
2xPNP-switch output	
Function:	PNP switch to +L
Output current:	0… ≤ 200mA current limited, short circuit protected
Analogue output	4...20mA
Operating range:	3,9…21mA, min. 3,8mA, max. 22mA
Permitted load:	≤ (US - 10,5V) / 20mA
Start-up time:	≤ 1 ms
Measuring accuracy	
Characteristic deviation:	≤ ± 0,2% FS
Long term drift:	≤ ± 0,1% FS / year not cumulative
Temperature deviation	Zero: ≤ ±0,015% FS / K, max. ±0,75% (-20°C…+80°C) Span: ≤ ±0,015% FS / K, max. ±0,5% (-20°C…+80°C / > 400mbar), max. ±0,8% (-20°C…+80°C / ≤ 400 mbar)
Materials	
Diaphragm: (process wetted)	Measuring range ≤ 1bar: Ceramic Al2O3 – 99,7% (SIP suitable) Measuring range ≥ 1,6bar: Ceramic Al2O3 – 96% (SIP suitable) Process connection 1/2/4/6/7/N/M/P/L/S/T: Ceramic Al2O3 – 99,9% (CIP/SIP suitable)
Process connection: (process wetted)	Steel 1.4404/316L / Steel 1.4571/316Ti
Terminal enclosure:	CrNi-steel
Gaskets: (process wetted)	FPM – fluorelastomere (e.g. Viton®) EPDM – ethylene-propylene-dienmonomere, FDA-listed FFKM – perfluorelastomere (e.g. Kalrez®) FFKM hd – perfluorelastomere high density
Environmental conditions	
Environmental temperature:	– 40°C...+85°C
Process temperature:	– 40°C...+100°C (extended -40...+125°C)
Process pressure:	– 1 bar ...60 bar (depending on process connection)
Protection:	IP65/IP67 EN/IEC 60529

Application

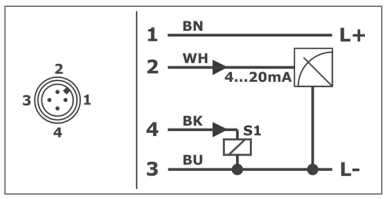
Due to the device construction with measuring ranges from -1 bar to 60 bar (gauge), measuring ranges from 0 bar to 60 bar (absolute), measuring spans from 100 mbar to 60 bar, process temperatures from –40°C to +125°C and process materials high purity Al2O3-ceramic / CrNi-steel as well as the availability of industrial standard process connections like thread ISO 228-1 (EN 837 manometer / inner thread / front-flush), dairy coupling DIN 11851 (front-flush), Varivent® (ront-flush), clamp ISO 2852 / BS 4825 / DIN 32676 (front-flush) and DRD (front-flush) the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry, environmental technology and facility and building automation.

The device is suitable for demanding measuring requirements. Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
Through its optimized design, the front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process.
The device is suitable for the use at CIP/SIP cleaning processes.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with frequently changing media.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.

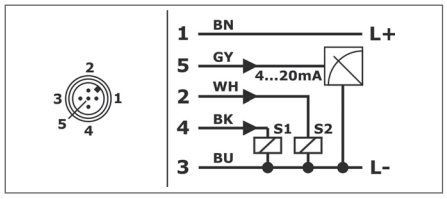
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS-free resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or factory certifications for drink water resp. food suitability.



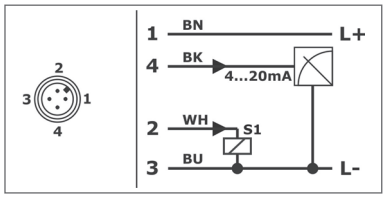
Signal 2x PNP
Conductor color standard connection cable M12 – A-coded: BN = brown, WH = white, BU = blue, BK = black



Signal 4...20 mA / 1x PNP
Conductor color standard connection cable M12 – A-coded: BN = brown, WH = white, BU = blue, BK = black



Signal 4...20 mA / 2x PNP
Conductor color standard connection cable M12 – A-coded: BN = brau brown n, WH = white, BU = blue, BK = black, GY = grey

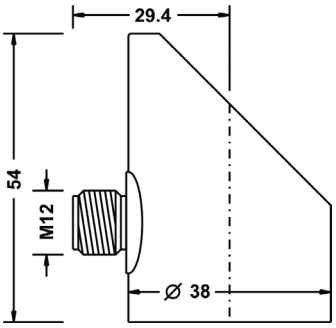


Signal 4...20 mA / 1x PNP / Desina
Conductor color standard connection cable M12 – A-coded: BN = brown, WH = white, BU = blue, BK = black

Precont® PS4SC

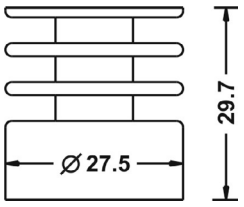
Pressure switch for hygienic and general applications:
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

Terminal enclosure



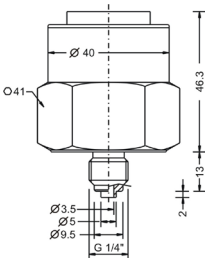
Type 1 – Thread ISO 228-1 – G½”A, EN 837

Temperature decoupler

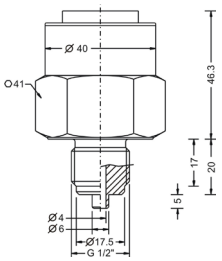


Type 4 – Thread ISO 228-1 – G¼”I, inner thread

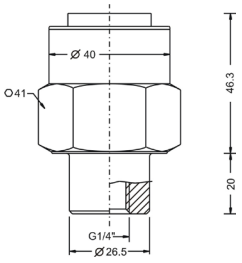
Type 6 – Thread ISO 228-1 – G¼”A, EN 837



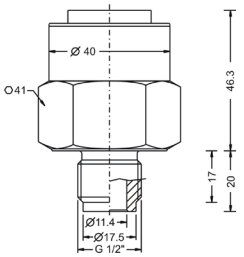
Type 2 – Thread ISO 228-1 – G½”A, inner bore



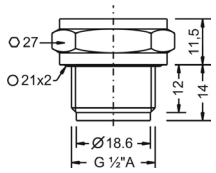
Type 9 – Thread ISO 228-1 – G½”B, front-flush



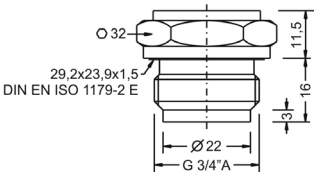
Type 8 – Thread ISO 228-1 – G¾”A, front-flush



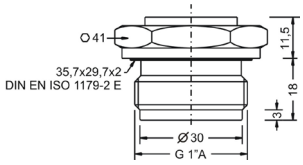
Type 5 – Thread ISO 228-1 – G1”A, front-flush



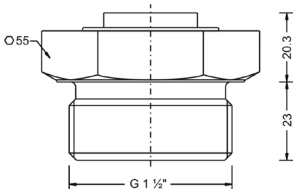
Type 7 – Thread ISO 228-1 – G1½”B, front-flush



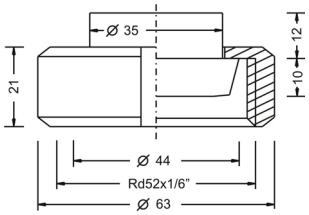
Type R – Dairy coupling DIN 11851 – DN25, PN40



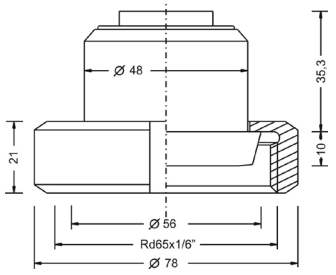
Type N – Dairy coupling DIN 11851 – DN40, PN25



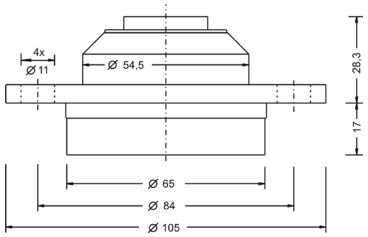
Type M – Dairy coupling DIN 11851 – DN50, PN25

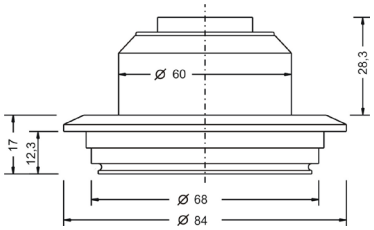


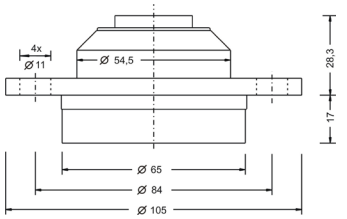
Type P – Varivent® – Type N / tube DN40-162 / 1½”-6”, PN40



Type L – DRD – DN50 / Ø65mm, PN25







Precont® PS4SC

Pressure switch for hygienic and general applications:
Monitoring of absolute or relative pressure in gases, vapors, liquids and dus

Basic price . . . . . .

Type
PS4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
C Ceramic Al2O3 96%/99,7%/99,9% / capacitive . . . . . .

Approval
S Standard . . . . . .

Process connection
6 Thread ISO 228-1 – G¼"A, EN 837 manometer . . . . . .
1 Thread ISO 228-1 – G½"A, EN 837 manometer . . . . . .
4 Thread ISO 228-1 – G¼"I, inner thread . . . . . .
2 Thread ISO 228-1 – G½"A, inner bore . . . . . .
9 Thread ISO 228-1 – G½"B, front-flush, ≤ 20 bar . . . . . .
8 Thread ISO 228-1 – G¾"A, front-flush, ≤ 20 bar . . . . . .
5 Thread ISO 228-1 – G1"A, front-flush, ≤ 20 bar . . . . . .
7 Thread ISO 228-1 – G1½"B, front-flush . . . . . .
R Dairy coupling DIN 11851 – DN25, PN40, ≤ 20 bar . . . . . .
N Dairy coupling DIN 11851 – DN40, PN40 . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
P Varivent® – Type N / tube DN40-162 / 1½"-6", PN40 . . . . . .
L DRD – DN50 / Ø65mm, PN25 . . . . . .
S Clamp ISO 2852 – DN25-38 / BS 4825 – 1"-1½" / DIN 32676 – DN25-38, PN25 . . . .
T Clamp ISO 2852 – DN40-51 / BS 4825 – 2" / DIN 32676 – DN50, PN25 . . . . . .
Y others . . . . . .

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .
4 FFKM - perfluorelastomere (e.g. Kalrez®) . . . . . .
6 FFKM hd - perfluorelastomere high density - gas applications . . . . . .
Y others . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
01 0…0,1 bar . . . . . .
02 0…0,2 bar . . . . . .
03 0…0,4 bar . . . . . .
04 0…0,6 bar . . . . . .
05 0…1 bar . . . . . .
06 0…1,6 bar . . . . . .
07 0…2,5 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar . . . . . .
11 0…16 bar . . . . . .
12 0…20 bar . . . . . .
13 0…40 bar . . . . . .
14 0…60 bar . . . . . .
15 -0,1…0 bar . . . . . .
16 -1…0 bar . . . . . .
17 -1…+1 bar . . . . . .
18 -0,1…+0,1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2x switch PNP, supply 24VDC . . . . . .
B 1x switch PNP, 1x signal 4…20mA , supply 24VDC . . . . . .
C 2x switch PNP, 1x signal 4…20mA, supply 24VDC . . . . . .
D 1x switch PNP, 1x signal 4…20mA, supply 24VDC, Desina . . .

Electronic – function
S Standard . . . . . .

Process temperature
0 Standard –40°C…+100°C . . . . . .
1 Extended –40°C…+125°C, temperature decoupler

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure, ≥ 1 bar . . . . . .

Measuring system – accuracy
1 0,2% . . . . . .

Electrical connection
S Plug M12x1 . . . . . .

Order code

Precont® PS4S	C	S			V	C			S			1	S

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .

ML Measurement point designation / TAG – Laser marking . . . . . .

KF Configuration / Preset . . . . . .

MZ Material test certificate – EN10204 3.1 . . . . . .

WK Factory calibration – calibration certificate. . . . . .

Equipment

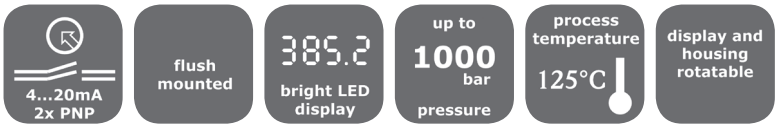
Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .

Precont® PS4SM

Pressure switch for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

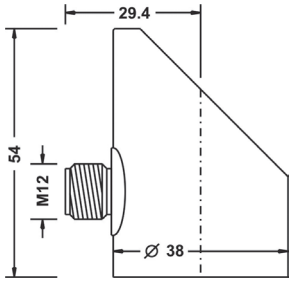
3 / 01.22

Technical data

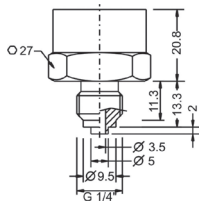


Supply voltage:	10,5…35VDC, reverse polarity protected
Supply current:	≤ 60mA Analogue output max. 22,5mA Switch output with no load
Switch output S1 / S2	
Function:	PNP switch to +L
Output current:	0… ≤ 200mA current limited, short circuit protected
Analogue output	4...20mA
Operating range:	3,9…21mA, min. 3,8mA, max. 22mA
Permitted load:	≤ (US - 10,5V) / 20mA
Start-up time:	≤ 1 s
Measuring accuracy	
Characteristic deviation:	≤ ± 0,5% FS
Long term drift:	≤ ± 0,2% FS / year not cumulative
Temperature deviation	Measuring range ≤ 25 bar: ≤ ±0,02% FS / K (0…80°C) / ≤ ±0,03% FS / K (-40…0°C / +80…+125°C) Measuring range ≥ 40 bar: ≤ ±0,02% FS / K (-40…100°C) / ≤ ±0,03% FS / K (+100…+125°C)
Materials	
Diaphragm: (process wetted)	Process connection type 0 / type 5 – front-flush / Process connection type 1 / type 6 – EN 837 / ≤ 25 bar: Steel 1.4571/316Ti Process connection type 1 / type 6 – EN 837 / ≥ 40 bar: Steel 1.4542/630 / Steel 1.4534/SI13800
Process connection:	(process wetted) Steel 1.4571/316Ti
Terminal enclosure:	CrNi-steel
Gaskets: (process wetted)	NBR – nitrile-butadiene-rubber FPM – fluorelastomere (Viton®) EPDM – ethylene-propylene-dienmonomere
Environmental conditions	
Environmental temperature:	– 40°C...+85°C
Process temperature:	– 40°C...+100°C (Expansion: -40°C...+125°C)
Process pressure:	-1 bar ...1000 bar (depending on process connection)
Protection:	IP65/IP67 EN/IEC 60529

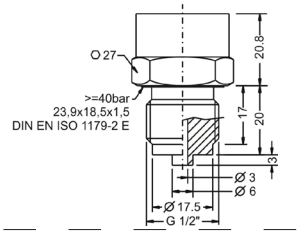
Terminal enclosure



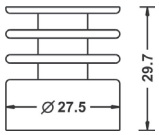
Type 6 – Thread ISO 228-1 – G¼"B, EN 837



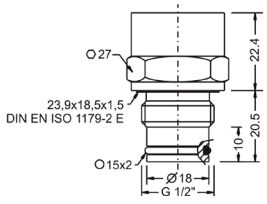
Type 1 – Thread ISO 228-1 – G½"B, EN 837



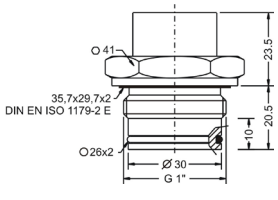
Temperature decoupler



Type 0 – Thread ISO 228-1 – G½"B, front-flush



Type 5 – Thread ISO 228-1 – G1"B, front-flush



Application

Due to the device construction as well as the availability of industrial standard process connections the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry and environmental technology.
The pressure switch is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
The pressure switch with front-flush diaphragm has been specifically designed for the measurement of viscous, paste-like, adhesive, crystallizing, particle-laden and contaminated media, which would clog the pressure channel of conventional process connections.
The front-flush diaphragm is completely welded with the process connection and supplied with a positive seal. A reliable, dead-space free sealing between the process connection and the process adapter resp. measuring medium is thus assured.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse Environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS-free resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or factory certifications for drink water resp. food suitability.

Precont® PS4SM

Pressure switch for general applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

3 / 01.22

Equipment

welding flanges
page 134

Basic price *(*scale prices)* . . . . . .

Type
PS4S Standard . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
M CrNi-steel / strain gauge . . . . . .

Approval
S Standard . . . . . .

Process connection
6 Thread ISO 228-1 – G¼"B, EN 837 manometer (without process gasket) . . . . . .
1 Thread ISO 228-1 – G½"B, EN 837 manometer (≥ 40 bar without process gasket). . .
0 Thread ISO 228-1 – G½"B, front-flush, O-ring gasket
not for measuring ranges 0…400 mbar / 0…1 bar / –1…0 bar / 0…1000 bar . . . . . .
5 Thread ISO 228-1 – G1"B, front-flush, O-ring gasket
for measuring ranges 0…400 mbar / 0…1 bar / –1…0 bar. . . . . .
Y others . . . . . .

Material process gaskets (process wetted)
0 without / NBR – nitrile-butadiene-rubber . . . . . .
1 FPM – fluorelastomere (e.g. Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere . . . . . .
Y others. . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
03 0…0,4 bar . . . . . .
05 0…1 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar. . . . . .
11 0…16 bar. . . . . .
12 0…25 bar. . . . . .
13 0…40 bar. . . . . .
14 0…60 bar. . . . . .
20 0…160 bar. . . . . .
21 0…250 bar. . . . . .
22 0…320 bar. . . . . .
19 0…100 bar . . . . . .
23 0…400 bar . . . . . .
24 0…600 bar . . . . . .
25 0…1000 bar,
only for process connection type 1, 6 – G½"B, G¼"B EN 837 . . .
16 -1…0 bar . . . . . .
17 -1…+1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2x switch PNP, supply 24VDC . . . . . .
B 1x switch PNP, 1x signal 4…20mA , supply 24VDC. . . . . .
C 2x switch PNP, 1x signal 4…20mA, supply 24VDC . . . . . .
D 1x switch PNP, 1x signal 4…20mA, supply 24VDC, Desina . .

Electronic – function
S Standard. . . . . .

Process temperature
0 Standard –40°C…+100°C . . . . . .
1 Extended –40°C…+125°C, temperature decoupler

Pressure type
R Gauge pressure. . . . . .
A Absolute pressure, (≤ 25 bar). . . . . .

Measuring system – accuracy
4 0,5% . . . . . .

Electrical connection
S Plug M12x1 . . . . . .

Order code

Precont® PS4S	M	S			V	C			S			4	S

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .
REMO12	weld-in socket, for connection 2 . . . . .
REMO10	weld-in socket, for connection 5 . . . . .
BEFK12	weld-in socket, for connection 0 . . . . .

Precont® PS4LM

Pressure switch for hygienic applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

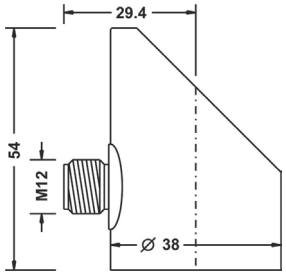
3 / 01.22

Technical data

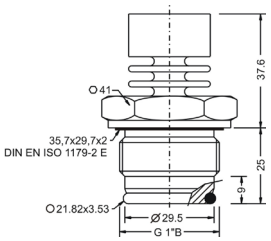
Supply voltage:	10,5…35VDC, reverse polarity protected	
Supply current:	≤ 60mA Analogue output max. 22,5mA Switch output with no load	
Switch output S1/S2		
Function:	PNP switch to +L	
Output current:	0… ≤ 200mA current limited, short circuit protected	
Analogue output	4...20mA	
Operating range:	3,9…21mA, min. 3,8mA, max. 22mA	
Permitted load:	≤ (US - 10,5V) / 20mA	
Start-up time:	≤ 1 ms	
Measuring accuracy		
Characteristic deviation:	≤ ± 0,5% FS	
Long term drift:	≤ ± 0,2% FS / year not cumulative	
Temperature deviation	Zero:	
	≤ ±0,02% FS / K (0…80°C) / ≤ ±0,03% FS / K (-20…0°C / +80…+150°C)	
	Zero - Measuring range 0…100 mbar / 0…250 mbar:	
	≤ ±0,04% FS / K (0…+80°C) / ≤ ±0,06% FS / K (-20…0°C / +80…+150°C)	
	Span:	
	≤ ±0,02% FS / K (0…80°C) / ≤ ±0,03% FS / K (-20…0°C / +80…+150°C)	
Materials		
Diaphragm:	(process wetted)	Steel 1.4435/316L
Process connection:	(process wetted)	Steel 1.4435/316L
Terminal enclosure:	CrNi-steel	
Gaskets: (process wetted)	FPM – fluorelastomere (e.g. Viton®)	
	EPDM – ethylene-propylene-dienmonomere, FDA-listed	
Environmental conditions		
Environmental temperature:	– 40°C...+85°C	
Process temperature:	– 20°C...+150°C	
Process pressure:	– 1 bar ...25 bar	
Protection:	IP65/IP67	EN/IEC 60529

process
connection 5

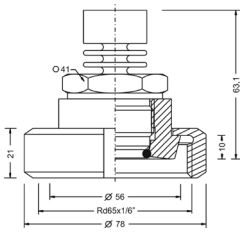
Anschlussgehäuse



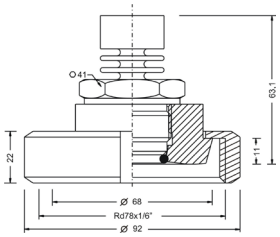
Type 5 – Thread ISO 228-1 – G1"B, front-flush



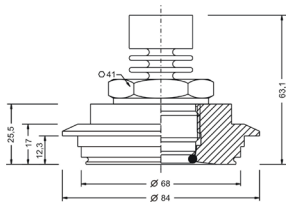
Type N – Dairy coupling DIN 11851 – DN40, PN40



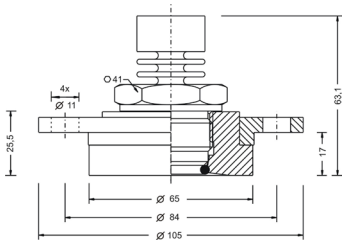
Type M – Dairy coupling DIN 11851 – DN50, PN25



Type P – Varivent® – Type N / tube DN40-162 / 1½"-6", PN40



Type L - DRD – DN50 / Ø65mm, PN25



Application

The device is an electronic pressure switch for monitoring, control as well as continuous measurement of pressures in gases, vapors, liquids and dusts.
The operational reliability of the device is ensured only at the intended use. Due to the device construction with measuring ranges from -1 bar to 25 bar (gauge), measuring ranges from 0 bar to 25 bar (absolute), measuring spans from 100 mbar to 25 bar, process temperatures from –20°C to +150°C, process material CrNi-steel as well as the availability of a variety of hygienic EHEDG-conformal process connections like thread ISO 228-1 with front-flush O-ring gasket dairy coupling DIN 11851, Varivent® and DRD the device is especially suitable for the use for food and beverage industry, pharmaceutical industry, biotechnology and sterile process engineering. The pressure switch is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications. The device with front-flush diaphragm has been specifically designed for the measurement of viscous, paste-like, adhesive, crystallizing, particle-containing and contaminated media, which would clog the pressure channel of conventional process connections.
Through its optimized design, the front-flush process connection enables the cleanability of the wetted diaphragm to be integrated into the process.
The device is particularly suitable for the special conditions of CIP/SIP cleaning processes, such as chemical stability towards cleaning liquids and high temperatures.
Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with frequently changing media.
The front-flush diaphragm is completely welded with the process connection and supplied with a positive seal. A reliable, dead-space free sealing between the process connection and the process adapter resp. measuring medium is thus assured.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.

Precont® PS4LM

Pressure switch for hygienic applications
Monitoring of absolute or relative pressure in gases, vapors, liquids and dust

3 / 01.22

Equipment

welding flanges
page 134

Basic price . . . . . .

Type
PS4L Hygienic applications . . . . . .

Measuring system – material diaphragm (process wetted) / sensor type
M CrNi-steel / strain gauge . . . . . .

Approval
S Standard . . . . . .

Process connection
5 Thread ISO 228-1 – G1"B, front-flush, O-ring gasket, EHEDG conformal, for welding socket BEFVE10 . . . . . .
N Dairy coupling DIN 11851 – DN40, PN40 . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
P Varivent® N tube – DN40…DN162 / 1½"…6", PN40 . . . . . .
L DRD – DN50 / Ø65mm, PN25 . . . . . .
Y others . . . . . .

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®), FDA-listed . . . . . .
3 EPDM – ethylene-propylene-dienmonomere, FDA-listed . . . . . .

Material process connection (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
01 0…0,1 bar . . . . . .
02 0…0,25 bar . . . . . .
03 0…0,4 bar . . . . . .
04 0…0,6 bar . . . . . .
05 0…1 bar . . . . . .
07 0…2,5 bar . . . . . .
08 0…4 bar . . . . . .
09 0…6 bar . . . . . .
10 0…10 bar . . . . . .
11 0…16 bar . . . . . .
12 0…25 bar . . . . . .
16 -1…0 bar . . . . . .
17 -1…+1 bar . . . . . .
YY Special measuring range . . . . . .

Electronic – output
A 2x switch PNP, supply 24VDC . . . . . .
B 1x switch PNP, 1x signal 4…20mA , supply 24VDC . . . . . .
C 2x switch PNP, 1x signal 4…20mA, supply 24VDC . . . . . .
D 1x switch PNP, 1x signal 4…20mA, supply 24VDC, Desina . . .

Electronic – function
S Standard . . . . . .

Process temperature
1 Standard -20°C…+150°C . . . . . .

Pressure type
R Gauge pressure . . . . . .
A Absolute pressure . . . . . .

Measuring system – accuracy
4 0,5% . . . . . .

Electrical connection
S Plug M12x1 . . . . . .

Order code

Precont® PS4L	M	S			V	C			S			4	S

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0…10 V) . . . . .
BEFVE10	Welding flange for process connection 5 . . . . .

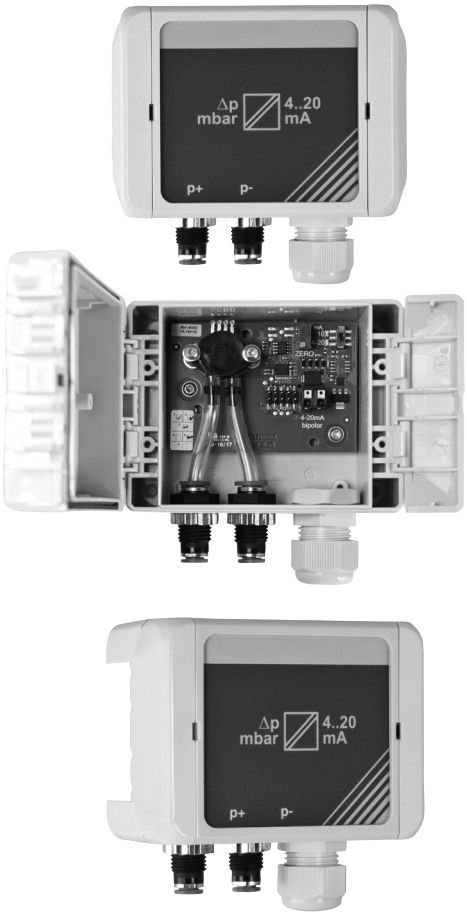
Precont® HE5409

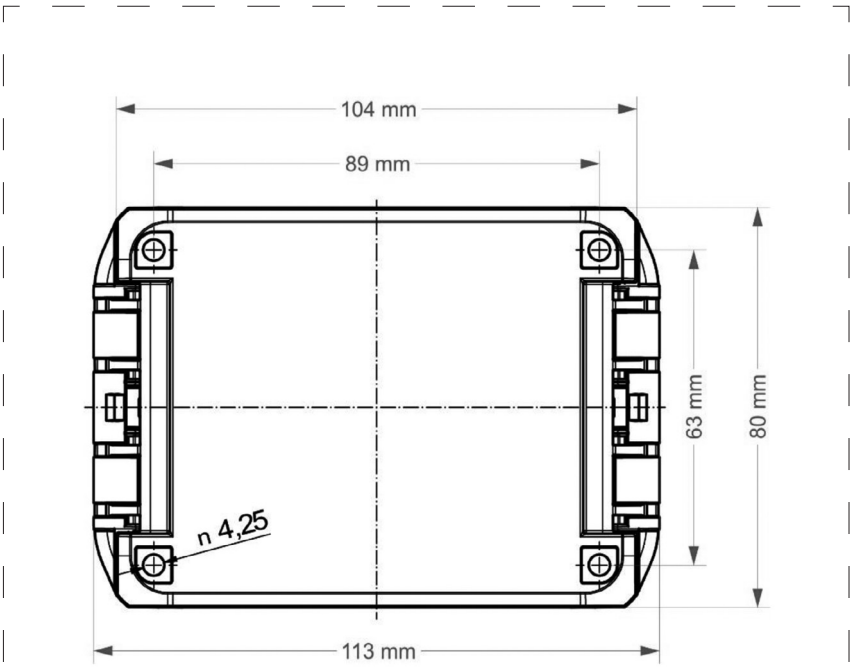
cost-effective differential pressure transmitter with hose connection for wall mounting, in two-wire technology

3 / 01.22

Technical data

Measuring range:	0-10 mbar; 0-25 mbar; 0-50 mbar; 0-100 mbar; 0-1000 mbar according to the data on the type plate
Max. Differential pressure:	750 mbar
Max. Pressure against ambient:	1000 mbar
Medium:	air, as well as dry, non-aggressive gases
Basic Accuracy:	± 1% of full scale
Temperature drift:	± 0.05% / K of final value
Hysteresis:	± 0.5% of full scale
Measuring system:	semiconductor sensor
Auxiliary energy:	Ub = 10 ... 36 V DC
Analog output:	4 ... 20 mA, 2-wire technology
Max. Permissible load:	RA ≤ (Ub - 9 V) / 0,02 A
Pressure connection:	Schott plug-in fittings for 6 mm hose outer diameter
Housing:	Dust-proof polycarbonate housing
Dimension:	113x80x60 (wxhxd)
Protection class:	IP 65
Mounting:	wall mounting, installation vertical
Connection:	cage clamps
Cable gland:	1 × M 16 × 1.5 N for cable diameters of 4 ... 8 mm





Application

The differential pressure transmitter is a transmitter Precont® HE5409 for small and medium pressures. Due to the layout with different pressure sensors measuring ranges between 0 and 2,5 mbar, 0 and 5 mbar, 0 and 10 mbar, 0 and 25 can mbar, 0 to 50 mbar and performed 0 to 100 mbar.
Two connecting cables are used for power supply. The supply current is the measurement signal of 4 .. 20 mA. The state is indicated by an LED.

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Precont® HE5409

cost-effective differential pressure transmitter with hose connection for wall mounting,
in two-wire technology

3 / 01.22

Basic price . . . . . .

mounting

W Wall mounting. . . . . .

Measuring range (difference)

A 0...2,5 mbar . . . . . .
B 0...5 mbar . . . . . .
C 0...10 mbar . . . . . .
D 0...25 mbar . . . . . .
G 0...50 mbar . . . . . .
I 0...100 mbar . . . . . .
Y Special measuring range . . . . . .

hose connection

6 push-in bulkhead connector for 6mm outer diameter . . . . . .

power supply

0 10...36 V DC. . . . . .

Output

0 4...20mA two-wire-technology. . . . . .

licence

Ex ATEX II 3D T135°C IP 65 zone 22. . . . . .

Order code

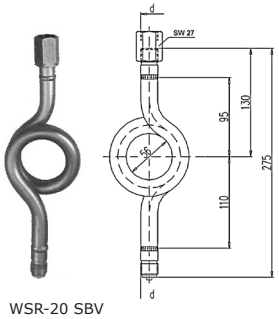
Precont® HE5409	W		6	0	0	Ex

Equipment for pressure sensors

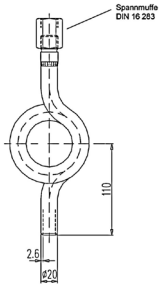
siphon for temperature decoupling

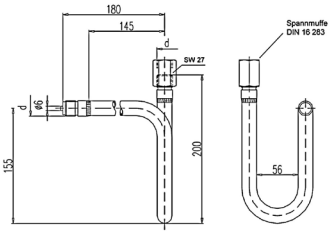
Ordering information	*Model*
WSR-20 SAV	siphon, horizontal pressure-taking, steel 1.4571
WSR-20 SBV	siphon, vertical pressure-taking, steel 1.4571

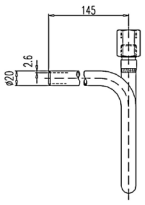
option: acceptance test certificate EN10204-3.1



WSR-20 SBV
vertical pressure-taking



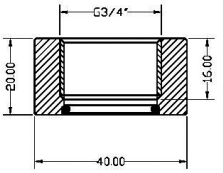




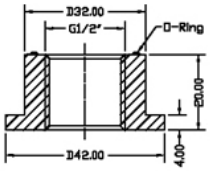
WSR-20 SAV
horizontal pressure-taking

welding flanges for container for installation of Precont®

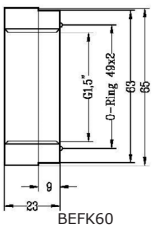
Ordering information	*Model/material 1.4571 (gasket Viton®, others gaskets on request)*
BEFV-34	weld-in socket G¾" Viton® seal
BEFK12	weld-in socket G½", sealing attachment at the back
BEFK60	weld-in socket G1½" EG, sealing attachment at the back
BEFV-60	welding flange Ø 65 mm with Viton® seal
BEFE-60	welding flange Ø 65 mm with EPDM seal
BEF-61	welding flange for DRD-connection Ø 65 mm
BEFVE-10	welding flange for Precont® PL, ML, and S30 process connection 5
BEFA-62	welding flange milk tube connection DN50 according to DIN11851/1.4301
BEFB-62	welding flange milk tube connection DN40 according to DIN11851/1.4301
BEFC-62	welding flange milk tube connection DN25 according to DIN11851/1.4301
BEF-63	welding flange Varivent® Ø 68 mm PN40
REMO12	weld-in socket G½" for Precont® MT
REMO10	weld-in socket G1" for Precont® MT
TEM-11	weld-in socket ½" for Precont® CT



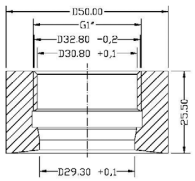
BEFV-34



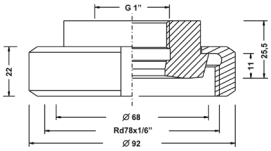
BEFK12



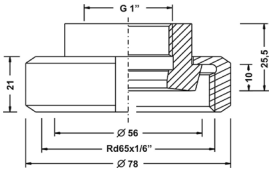
BEFK60



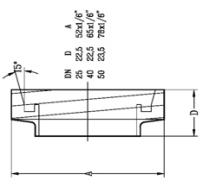
BEFVE10



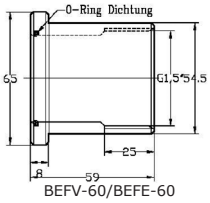
BEFA-62



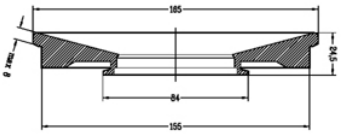
BEFB-62



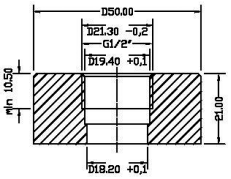
BEFC-62



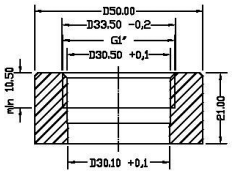
BEFV-60/BEFE-60



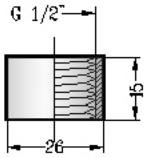
BEF-63



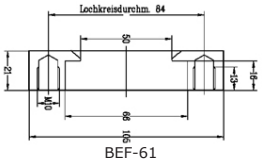
REMO12



REMO10



TEM-11



BEF-61

DIN-flanges with 1,5"-bore hole / reductions / tube nuts

Ordering information	*Model/material 1.4571*
FL-4001	DN 40 / PN 16
FL-5001	DN 50 / PN 16
FL-8001	DN 80 / PN 16
FL-1001	DN 100 / PN 16
FL-2201	ANSI 2" / PSI 150
FL-3201	ANSI 3" / PSI 150
FL-4201	ANSI 4" / PSI 150
RD-20Z15	reduction G2" A auf G1½" I
RD-20Z10	reduction G2" A auf G1" I
RD-15Z10	reduction G1½" A auf G1" I
RD-15Z12	reduction G1½" A auf G½" I
RM-15GV	tube nut DIN 431, 1½"
RM-10GV	tube nut DIN 431, 1"
RM-20GV	tube nut DIN 431, 2"
RM-38GV	tube nut DIN 3 / 8"
RM-12GV	tube nut DIN 1 / 2"

marking measurement point

AS-50	trailer plate made of VA with laser marking

4. Temperature measurement

Contents

What to use where

Function	Thermocont® ST	Thermocont® TS4S	Thermocont® TS4L	PTA	PTB	PTE	PTF	PTG	PTI	PTK	PTL	PTM	PTO	PTR	PTS	PTU	PTW	PTX	PTZ	Thermocont® TK	PTV
Pt100 signal				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Current output 0 ... 40mA	●	●	●																	●	●
Switching output	**2**	**2**	**2**																		
Current output 0 ... 10V	●																				●
Integrated display	●	●	●																		
V4A	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
CIP / SIP capable	●	●	●	●			●	●	●	●	●		●					●	●	●	
Self-monitoring		●	●																		
Housing rotatable		●	●																		
Measurement in pipelines / contact sensors					●											●					●
Screw-in thermometer	●	●	●	●				●	●	●	●							●		●	
with neck tube	●	●	●	●	●			●	●		●		●					●	●	●	
with handle						●															
Immersion thermometer						●	●		●						●						
with cable or plug						●				●		●			●	●					●
Bayonet lock												●									
Room/outside temperature														●							
Surface sensor																●					●
Air duct																	●				

Operating conditions

Hazardous area	⟨Ex⟩																	⟨Ex⟩			
Aggressive media								●											●		
Coat forming media	●	●	●	●		●	●	●	●	●	●		●						●	●	
Hygienic sector	●		●								●		●							●	●

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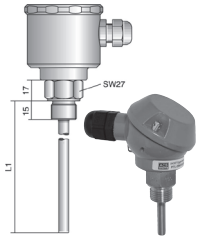
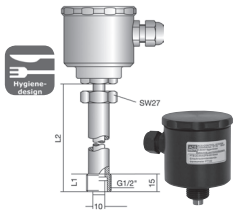
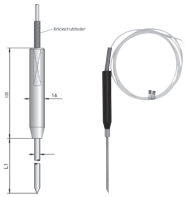
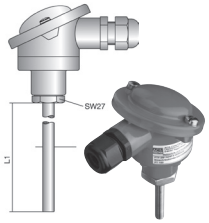
Type Operating principle	Thermocont® ST	Thermocont® TS4S	Thermocont® TS4L	PTA	PTB	PTE	PTF
							
Design	digital temperature sensor with display and switching points	digital temperature sensor with display and switching points	digital temperature sensor with display and switching points	standard - screw-in resistance thermometer measuring insert exchangeable	clamp-on sensor for front-flush welding sleeve measuring insert exchangeable	resistance thermometer zum grooving and immersion	standard- thermometer for sliding sleeve measuring insert exchangeable
Measure ranges	-99,9 up to +500°C	-99,9 up to +500°C	-99,9 up to +500°C	up to 300°C (600°C)	up to 200°C	up to 160°C	up to 300°C (600°C)
Areas of application:							
standard applications	X	X	X	X	X	X	X
Food applications / pharma industry	X	-	X	-	X	X	-
Heating, ventilation and air conditioning	X	X	X	X	X	X	X
Acid / bases	-	-	-	-	-	X	-
Ex-area	X	-	-	-	-	-	-
Process connections	thread G½", G⅜", G1", milk tube, Varivent, DRD, Tri-Clamp, DIN-flange	thread G½", G¼"	milk tube, Varivent, Tri-Clamp, for welding sleeve SEM-22, SEM-42	thread G½", G⅜", G1", DIN flange DN25, DN50	for welding sleeve TEM-10 TEM-11	grooving or immersion sensor	for sliding sleeve SEM and SEMT
Output/electronics	4...20 mA, 2-wire 0...10 V, 3-wire 2 PNP switching outputs	1 (2) PNP switching outputs 4...20 mA 3-wire	1 (2) PNP switching outputs 4...20 mA 3-wire	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	cable outlet, Pt100	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA
Output adjustable	X	X	X	-	-	-	-
multi-function output	-	-	-	-	-	-	-
output passive/active	-	-	-	-	-	-	-
Multi-function input	-	-	-	-	-	-	-
Operating voltage/ universal mains supply circuit	-	-	-	-	-	-	-
Transmitter power supply	-	-	-	-	-	-	-
Certifications	ATEX	-	-	-	-	-	-
Limit values	-	-	-	-	-	-	-
Other information	-	self-monitoring function	self-monitoring function	-	-	-	-

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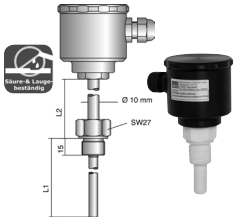
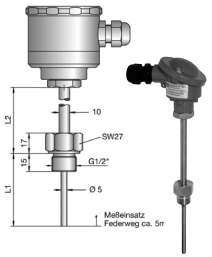
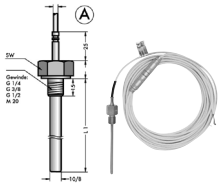
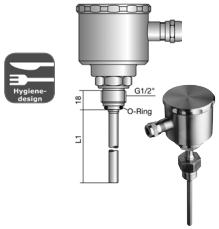
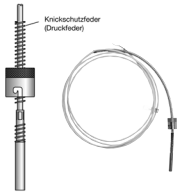
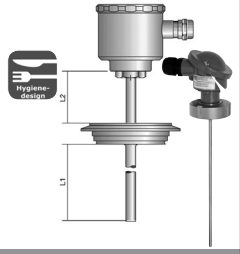
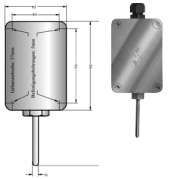
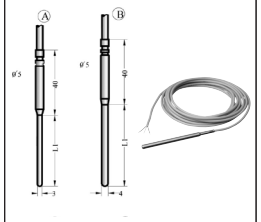
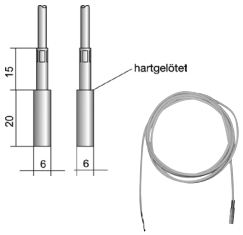
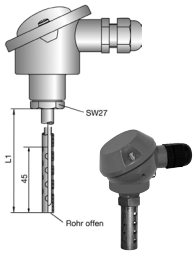
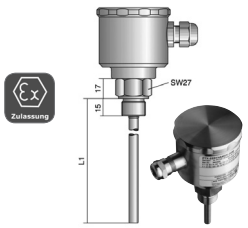
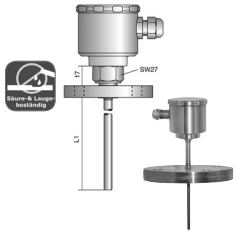
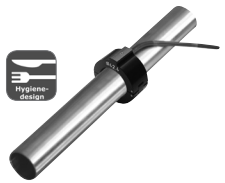
Type	PTG	PTI	PTK	PTL	PTM	PTO	PTR
Operating principle							
Design	screw-in-thermometer acid and alkali resistant measuring insert exchangeable	thermowell thermometer with spring-loaded measuring insert measuring insert exchangeable	screw-in thermometer with cable outlet	resistance thermometer for hygienic applications measuring insert exchangeable	resistance thermometer with bayonet joint	resistance thermometer for hygienic applications measuring insert exchangeable	room sensor with connection box
Measure ranges	up to 180°C	up to 300°C (600°C)	up to 200°C (300°C)	up to 300°C	up to 200°C (300°C)	up to 300°C	-35 up to +80°C
Areas of application:							
standard applications	-	X	X	-	X	-	-
Food applications / pharma industry	-	-	X	X	-	X	-
Heating, ventilation and air conditioning	-	X	X	-	X	-	X
Acid / bases	X	-	-	-	-	-	-
Ex-area	-	-	-	-	-	-	-
Process connections	thread G½", G⅜", M20	thread G½", G1"	thread G¼", G⅜", G½", M6, M8, M10, M20	for welding sockets SEM-12, SEM-32, SEM-42	bayonet 12,2	milk tube, Varivent flange, Tri-Clamp	wall mounting housing for drying room, humidor, refrigeration room
Output/electronics	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	cable outlet, Pt100	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	cable outlet, Pt100	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA
Output adjustable	-	-	-	-	-	-	-
multi-function output	-	-	-	-	-	-	-
output passive/active	-	-	-	-	-	-	-
Multi-function input	-	-	-	-	-	-	-
Operating voltage/ universal mains supply circuit	-	-	-	-	-	-	-
Transmitter power supply	-	-	-	-	-	-	-
Certifications	-	-	-	-	-	-	-
Limit values	-	-	-	-	-	-	-
Other information	PTFE coated or PTFE full material	-	-	-	-	-	-

Type	PTS	PTU	PTW	PTX	PTZ	Thermocont® TK	PTV
Operating principle							
Design	immersion thermometer with cable outlet	surface temperature sensor with cable outlet	air duct resistance thermometer measuring insert exchangeable	screw-in-thermometer for Ex-arease measuring insert exchangeable	flange-thermometer acid and alkali resistant measuring insert exchangeable	compact thermometer	clamp-on sensor for pipelines
Measure ranges	up to 200°C (300°C)	up to 200°C (300°C)	up to 180°C	-50 up to +400°C	up to 180°C	-50...+150°C	up to 200°C
Areas of application:							
standard applications	X	X	-	X	-	X	-
Food applications / pharma industry	-	-	-	-	-	X	X
Heating, ventilation and air conditioning	X	X	X	X	-	-	X
Acid / bases	-	-	-	-	X	-	-
Ex-area	-	-	-	X	-	-	-
Process connections	immersion sensor	clamp-on sensor	thread G½", G1", G⅜"	thread G½", G1" DIN flanges DN25, DN40, DN50	DIN flanges, DN25, DN 50	thread G½"; milk tube; Varivent; DRD; Tri-Clamp; DIN-flanges	-
Output/electronics	cable outlet, Pt100	cable outlet, Pt100	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	terminal socket, Pt100 head transmitter, 4...20 mA, 0...10 V, Profibus PA	4...20 mA 2-wire, Pt100	cable outlet, Pt100 4...20 mA with LTN-500
Output adjustable	-	-	-	-	-	-	-
multi-function output	-	-	-	-	-	-	-
output passive/active	-	-	-	-	-	-	-
Multi-function input	-	-	-	-	-	-	-
Operating voltage/ universal mains supply circuit	-	-	-	-	-	-	-
Transmitter power supply	-	-	-	-	-	-	-
Certifications	-	-	-	ATEX	-	-	-
Limit values	-	-	-	-	-	-	-
Other information	-	-	-	-	PTFE coated	-	-

ACS-CONTROL-SYSTEM GmbH | Lauterbachstr. 57 | 84307 Eggenfelden | Germany | Tel.:+49(0)8721/9668-0
www.acs-controlsystem.com | info@acs-controlsystem.de | Net prices exclusive of VAT | Subject to modifications!

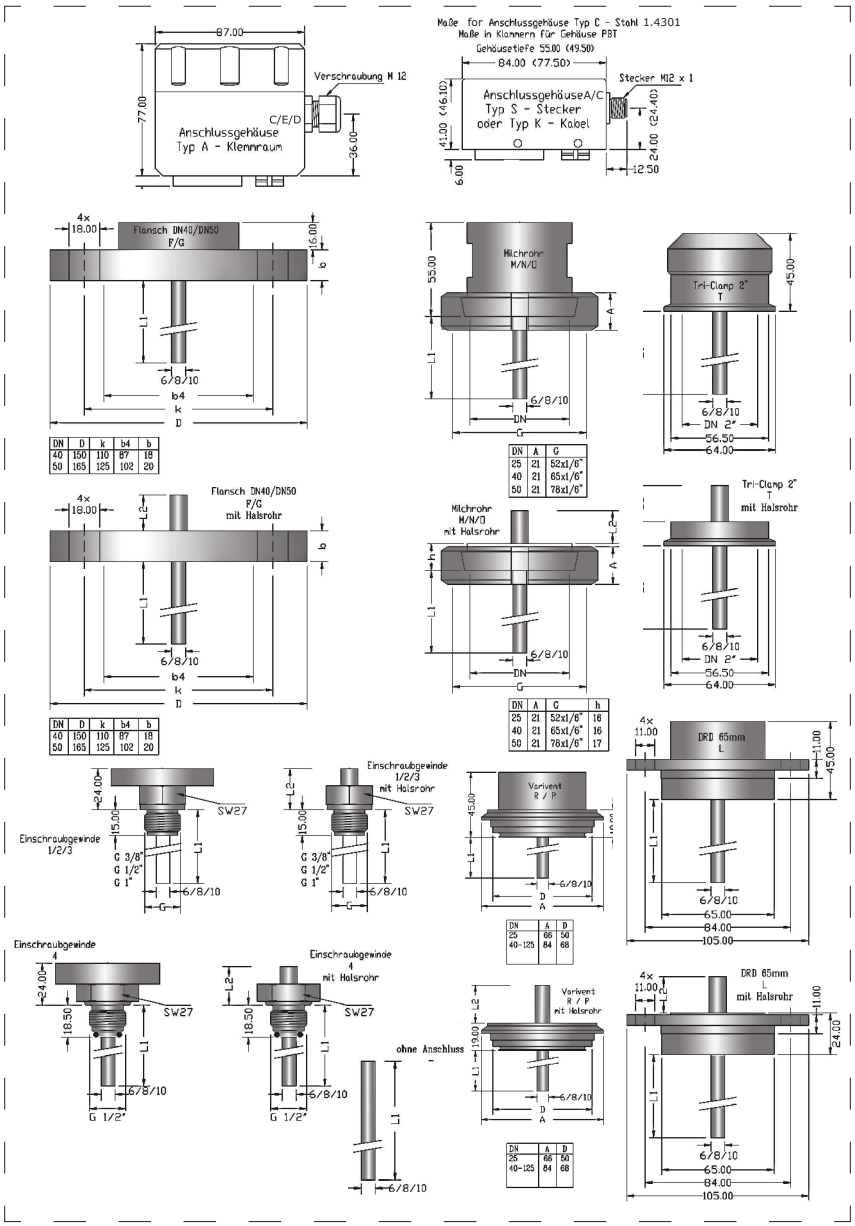
Thermocont® ST

digital temperature sensor with resistance thermometer Pt100, 4-digit LED-display, 2 PNP-switching outputs, 2- or 3-wire-electronics selectable

4 / 01.22

Technical data

output variations A/B:	4..20mA, 2-wire	
output variations E/F:	0...10 V, 3-wire	
permissible supply voltage:	variation A/B/E/F:	14,5 V up to 45 V DC
residual ripple:	≤ 2 Vss	
deviation Pt100:	class A:	0°C; ± 0,15K
	class B:	0°C; ± 0,30K
	class AA:	0°C; ± 0,10K
Characteristics deviation:	≤ ± 0,2K	
Resolution:	≤ 1 µA resp. 0,5 mV	
adjustment range damping:	0,3...30 seconds / 100 steps	
switching outputs (S1 / S2):	2xPNP-switching on +VS	
Output current:	> 250 mA, current limited, short circuit protected	
protection	IP65 / IP67 EN/IEC 60529	
material sensor tube:	Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316 Ti)	
material Process connection:	Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316 Ti)	
material Connection housing:	CrNi-steel / PBT / POM	
material connection cable:	PE - polyethylene	
process temperature:	-50°C...+200°C/100°C...500°C	
ambient- , storage temperature:	-40°C...+85°C	



Application

The device Thermocont® ST with integrated digital evaluation electronic is a compact sensor for measuring and monitoring of temperatures in the range from -100°C up to +500°C.
Because of the integrated four digit digital display and two implemented PNP-switching outputs, separate evaluation and display devices are not necessary in most cases.

Through the resistor Pt100, that is implemented in the sensor, flows a constant current.
This current leads to a voltage drop, that becomes higher or lower, dependent on the measured medium temperature. The resistance proportional signal that is produced at the Pt100 is recorded from a processor with high resolution, linearized and adjusted according to the settings and converted in to a high resolution output signal of 4...20mA or 0...10V.
By using 3 keys and an LED display the sensor measurement range, a zero correction in the range of -25,0 K to +25,0 K (e.g. for extraction of dissipation's in the measurement signal that is produced through the container wall), the PNP-switching outputs and the damping can be adjusted or the behaviour in the case of failure and the release of the fast adjustment can be set.
The switching state of the two PNP-switching output is signalled by one LED for every output.

Thermocont® ST

digital temperature sensor with resistance thermometer Pt100 4-digit
LED-display, 2 PNP-switching outputs, 2- or 3-wire-electronics selectable

Equipment

welding flanges
page 134

immersion pocket and
weld-in sockets
on page 170

Basic price . . . . . .

sensor type
- ST Standard. . . . . .
- ExST ATEX II 1/2 G Ex ia IIC T4 Ga/Gb . . . . . .
- XDST ATEX II 1/2 D Ex ia IIIC T85°C/T102°C Da/Db . . . . . .

temperature range
- 2 range -50°C up to +200,0°C freely programmable . . . . . .
- 3 range -99,9°C up to +500,0°C freely programmable. . . . . .
- Y preset according to customer requirements . . . . . .

class
- B class B . . . . . .
- A class A . . . . . .
- C class AA *(formerly class 1/3B)* . . . . . .
- Y calibration . . . . . .

Process connection
- 1 screw-in thread G½" . . . . . .
- 2 screw-in thread G1". . . . . .
- 3 screw-in thread G⅜" . . . . . .
- 4 G½" with O-ring-gasket Viton® for sleeve SEM-12 or SEM-32. . . . . .
- 5 G½" with O-ring-gasket EPDM for sleeve SEM-12 or SEM-32 . . . . . .
- 6 G½" metal-seated for sleeve SEM-22 or SEM-42. . . . . .
- M Milk tube connection DN50 DIN 11851 DN 50, PN 25. . . . . .
- N Milk tube connection DN40 DIN 11851 DN 40, PN 40. . . . . .
- O Milk tube connection DN25 DIN 11851 DN 25, PN 40. . . . . .
- R Varivent flange Ø 50 mm for tube DN 25 . . . . . .
- P Varivent flange Ø 68 mm for tubes DN 32 - 125 . . . . . .
- L DRD-connection Ø 65 mm DN 50, PN 25 . . . . . .
- F Flange DIN EN 1092-1, A (B - DIN 2527), DN40, PN10-40. . . . . .
- G Flange DIN EN 1092-1, A (B - DIN 2527), DN50, PN10-40. . . . . .
- T Tri-Clamp® 2" ISO 2852 . . . . . .
- Y Others . . . . . .
- 0 Without connection *(for sliding sleeves)* . . . . . .

Material, sensor diameter, process side
- K 1.4571 / 6 mm . . . . . .
- N 1.4571 / 8 mm . . . . . .
- L 1.4571 / 10 mm . . . . . .
- M 1.4571 / 8 mm, reduced tip 5 mm; 40 mm long . . . . . .
- O 1.4571 / 10 mm, reduced tip 6 mm; 40 mm long . . . . . .
- R 1.4571 / 8 mm, reduced tip 3 mm, 40 mm long . . . . . .
- Y Others . . . . . .

neck tube
- A Without neck tube. . . . . .
- B With neck tube *(standard L2 =100 mm)* . . . . . .
- Y With neck tube by choice in mm. . . . . .

Material Connection housing
(for type XD only material steel possible)
- A PBT *(polybutylene terephthalate) (not with terminal compartment)* . . . . . .
- C CrNi-steel . . . . . .
- D POM *(Polyacetal - Delrin®)* - only with terminal compartment housing . .

Electrical connection
- S Plug M12x1 . . . . . .
- K Cable 2 m . . . . . .
- A Terminal compartment housing . . . . . .

Transmitter electronics
- A 4...20 mA 2-wire-electronics with display, 2 PNP-switching output
- B 4...20 mA 2-wire-electronics with display. . . . . .
- E 0...10 V 3-wire-electronics with display, 2 PNP-switching output
- F 0...10 V 3-wire-electronics with display. . . . . .

length L1 sensor in mm
(price per commenced 100 mm) . . . . . .

length L2 neck tube in mm
(price per commenced 100 mm) . . . . . .

+ Additional Options (optional)

- SF LABS-free, silicone-free / paint compatible version . . . . . .
- ML Measurement point designation / TAG – Laser marking . . . . . .
- WK Factory calibration – calibration certificate
- MZ Material test certificate – EN10204 3.1 .
- KF Confi-guration / Preset. . . .

Order code

Thermocont®		mm	mm

Equipment

Ordering information	*Model*
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V) . . . . .
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .

Thermocont® TS4S

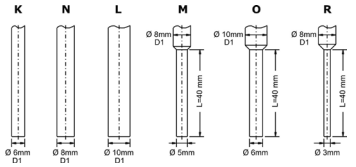
Temperature switch for general applications
Monitoring of temperatures in gases, vapors, liquids and dusts

4 / 01.22

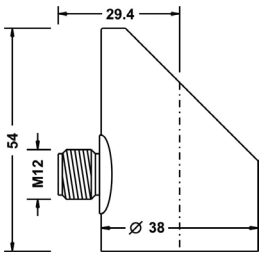
Technical data

Supply voltage:	10,5…35VDC, reverse polarity protected
Supply current:	≤ 60mA Analogue output max. 22,5mA
Switch output with no load	
2xPNP-switch output	
Function:	PNP switch to +L
Output current:	0… ≤ 200mA; current limited, short circuit protected
Analogue output 4...20mA	
Operating Range:	3,9…21mA, min. 3,8mA, max. 22mA
Permitted load:	≤ (US - 10,5V) / 20mA
Start-up time:	≤ 1 ms
Measuring accuracy	
Characteristic deviation:	Display / Switch output: ≤ ±0,6% FS Current output: ≤ ±0,9Kat ±100°C Type self-supervision: Display / Switch output: ≤ ±0,2K / Current output: ≤ ±0,4K / Drift monitoring: ≤ ±0,2K
Long term drift:	≤ ± 0,1% FS / year
Temperature deviation	Display / Switch output: ≤ ±0,003% FS/ K Current output: ≤ ±0,008% FS/ K
Sensor tube: (process wetted)	Steel 1.4404/316L / Steel 1.4571/316Ti
Process connection: (rocess wetted)	Steel 1.4404/316L / Steel 1.4571/316Ti
Surface quality:	Ra < 0,8µm
Neck tube:	CrNi-Steel
Terminal enclosure:	CrNi-Steel
Control panel surface:	PES
Electrical connection part:	Device plug PUR
Pressure compensation element:	Acrylic copolymer
Gaskets:	FPM – fluorelastomere (e.g. Viton®) / Type 4 / type 5 process wetted: FPM – fluorelastomere (e.g. Viton®) , EPDM, FDA-listet
Environmental temperature:	-40°C...+85°C
Process temperature:	depending on type: -50°C...+200°C/-99,9°C...+500°C/ -50°C...+175°C
Process pressure:	depending on type: ≤ 20 bar / ≤ 100 bar / ≤ 50 bar
Protection:	IP65/IP67 EN/IEC 60529

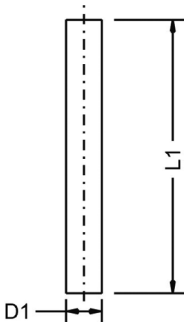
Sensor tube



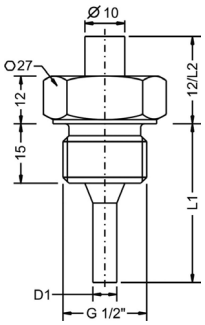
Terminal enclosure



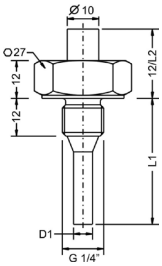
Type 0 – without thread



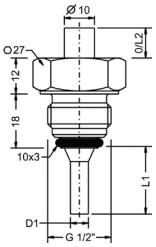
Type 1 – Thread ISO 228-1 – G½"



Type 3 – Thread ISO 228-1 – G¼" B



Type 4 / type 5 – Thread ISO 228-1 – G½" B – front-flush gasket



Application

The device is an electronic temperature switch for monitoring, control as well as continuous measurement of temperatures in gases, vapors, liquids and dusts.
Due to the device construction with porocess temperature from up to −99,9°C to +500°C, process pressures up to 100 bar, process contacting material stainless steel V4A as well as the availability of a variety of process connections like connection for compression fitting, thread connections ISO 228-1, thread connection ISO 228-1 with front-flush O-ring gasket the device is especially suitable for the use for machinery and plant engineering, air-conditioning and refrigeration plant engineering, hydraulic and pneumatic systems, process industry, environmental technology and paint and coating industry.
The temperature switch is suitable for demanding measuring requirements.

Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
Compared with temperature sensors, which are calibrated cyclic, the process safety increases when using the temperature switch with self-supervision. At cyclic calibration an occurring drift will be also detected, but an undefined time it has been produced with a drift affected sensor. Because the device generates a signal immediately at exceedance of the set drift limit, it must not be waited until to the end of the calibration interval. Thus the process safety and with this the product quality will be improved significantly.
Besides the increased process safety, the use of the temperature switch with self-supervision allows substantial cost savings. Due to the use of two redundantly working sensors, which are mutually monitored, the calibration intervals can be increased und thus calibrations can be saved.
The pressure switch with front-flush O-ring gasket has been specifically designed for the measurement of viscous, paste-like, adhesive, crystallizing, particle-laden and contaminated media. The process connection is supplied with a positive seal. A reliable, dead-space free sealing between the process connection and the process adapter resp. measuring medium is thus assured.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.

Thermocont® TS4S

Temperature switch for general applications
Monitoring of temperatures in gases, vapors, liquids and dusts

4 / 01.22

Equipment

immersion pocket and weld-in sockets
on page 170

Basic price *(*scale prices)*

Type
TS4S Standard

Measuring system
S Resistance sensor Pt100-A
D Resistance sensor Pt100-A / semiconductor sensor, self-supervision function

Approval
S Standard

Process connection
0 Without thread, for compression fitting
1 Thread ISO 228-1 – G½"B
3 Thread ISO 228-1 – G¼"B
4 Thread ISO 228-1 – G½", front-flush gasket FPM (e.g.Viton®) (socket SEM-12/SEM-32)
5 Thread ISO 228-1 – G½", front-flush gasket EPDM (FDA-listed) (socket SEM-12/SEM-32)
Y Others

Sensor tube material / diameter (process wetted)
K CrNi-steel, Ø6mm
N CrNi-steel, Ø8mm
L CrNi-steel, Ø10mm
M CrNi-steel, Ø8mm, Tip Ø5mm / L 40mm – only measuring system type S
O CrNi-steel, Ø10mm, Tip Ø6mm
R CrNi-steel, Ø8mm, Tip Ø3mm / L 40mm – only measuring system type S
Y Others

Neck tube
0 Without
1 Neck tube, Standard L2 = 100mm
Y Neck tube, other length L2.

Material terminal enclosure
C CrNi-steel

Measuring range
2 –99,9°C … +200°C – Measuring system type S
3 –99,9°C … +500°C – Measuring system type S
4 –50°C … +175°C – Measuring system type D

Electronic – output
A 2x switch PNP, supply 24VDC
B 1x switch PNP, 1x signal 4…20mA , supply 24VDC
C 2x switch PNP, 1x signal 4…20mA, supply 24VDC
D 1x switch PNP, 1x signal 4…20mA, supply 24VDC, Desina

Electronic – function
S Standard

Electrical connection
S Plug M12x1

Length L1 – Sensor tube / mm
(L1 ≤ 2000mm)
(price per commenced 100 mm)

Length L2 – Neck tube / mm
(L2 ≤ 200mm)
(price per commenced 100 mm)

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
WK Factory calibration – calibration certificate
MZ Material test certificate – EN10204 3.1
KF Configuration / Preset

Order code

Thermocont® TS4S	S			C			S	S	mm	mm

Equipment

Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded
BKZ0412-VA	Matching cable socket, VA-nut
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V)

Thermocont® TS4L

Temperature switch for hygienic applications
Monitoring of temperatures in gases, vapors, liquids and dusts

4 / 01.22

Technical data

Supply voltage:	10,5…35VDC, reverse polarity protected
Supply current:	≤ 60mA Analogue output max. 22,5mA Switch output with no load
Switch output S1 / S2	
Function:	PNP switch to +L
Output current:	0… ≤ 200mA; current limited, short circuit protected
Analogue output 4...20mA	
Operating Range:	3,9…21mA, min. 3,8mA, max. 22mA
Permitted load:	≤ (US - 10,5V) / 20mA
Start-up time:	≤ 1 ms
Measuring accuracy	
Characteristic deviation:	Display / Switch output: ≤ ±0,6% FS 2) Current output: ≤ ±0,9Kat ±100°C Type self-supervision: Display / Switch output: ≤ ±0,2K / Current output: ≤ ±0,4K / Drift monitoring: ≤ ±0,2K
Long term drift:	≤ ± 0,1% FS / year
Temperature deviation	Display / Switch output: ≤ ±0,003% FS/ K Current output: ≤ ±0,008% FS/ K
Sensor tube: (process wetted)	Steel 1.4404/316L / Steel 1.4571/316Ti
Process connection: (rocess wetted)	Steel 1.4404/316L / Steel 1.4571/316Ti
Surface quality:	Ra < 0,8µm
Neck tube:	CrNi-Steel
Terminal enclosure:	CrNi-Steel
Control panel surface:	PES
Electrical connection part:	Device plug PUR
Pressure compensation element:	Acrylic copolymer
Gaskets:	FPM – fluorelastomere (Viton®)
Environmental conditions	
Environmental temperature:	-40°C...+85°C
Process temperature:	dep. on type:-99,9°C...+200°C/-99,9°C...+500°C/-50°C...+175°C
Process pressure:	depending on type: ≤ 50 bar / ≤ 40 bar / ≤ 25 bar / ≤ 16 bar
Protection:	IP65/IP67 EN/IEC 60529

Application

The device is an electronic temperature switch for monitoring, control as well as continuous measurement of temperatures in gases, vapors, liquids and dusts.
Due to the device construction with process temperature from up to –99,9°C to +500°C, process pressures up to 50 bar, process contacting material stainless steel V4A as well as the availability of a variety of process connections like elastomer-free and free of dead space metallic sealing connection (EHEDG-/3A-/FDA-conformal), Varivent®, dairy coupling DIN 11851, clamp ISO 2852 / BS 4825 / DIN 32676 and aseptic tube coupling DIN 11864-1-A the device is especially suitable for the use for food and beverage industry, pharmaceutical industry, biotechnology and sterile process engineering.
The temperature switch is suitable for demanding measuring requirements.
Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
Compared with temperature sensors, which are calibrated cyclic, the process safety increases when using the temperature switch with self-supervision. At cyclic calibration an occurring drift will be also detected, but an undefined time it has been produced with a drift affected sensor. Because the device generates a signal immediately at exceedance of the set drift limit, it must not be waited until to the end of the calibration interval. Thus the process safety and with this the product quality will be improved significantly.
Besides the increased process safety, the use of the temperature switch with self-supervision allows substantial cost savings. Due to the use of two redundantly working sensors, which are mutually monitored, the calibration intervals can be increased und thus calibrations can be saved.

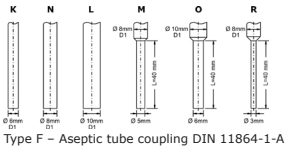
The process connection with metallic sealing has been specifically designed for the hygienic, deadspace and elastomer-free process adaption.

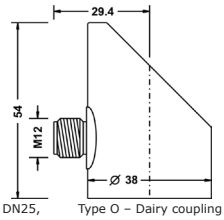
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.

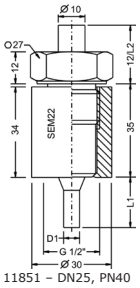
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

Terminal enclosure

Sensor tube



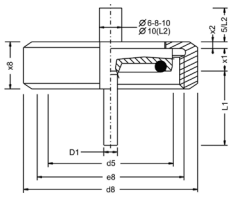




Type F – Aseptic tube coupling DIN 11864-1-A – DN25, PN40
Type G – Aseptic tube coupling DIN 11864-1-A – DN40, PN25

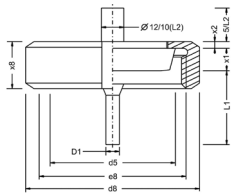
Type O – Dairy coupling DIN 11851 – DN25, PN40
Type N – Dairy coupling DIN 11851 – DN40, PN40
Type M – Dairy coupling DIN 11851 – DN50, PN25

Type 6 – Thread ISO 228-1 – G½", metallic/elastomer-free sealing



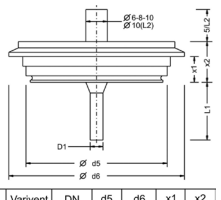
	DN	d5	x1	x2	d8	x8	e8
F	25	42,9	9	4	63	21	Rd52x1/6"
G	40	54,9	10	4	78	21	Rd65x1/6"

Type R – Varivent® F tube – DN25…DN32 / 1"…1¼", PN40
Type P – Varivent® N tube – DN40…DN162 / 1½"…6", PN40

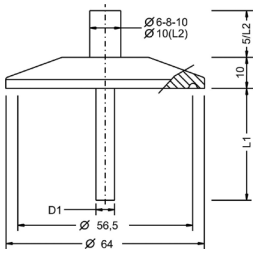


	DN	d5	x1	x2	d8	x8	e8
O	25	44	10	4	63	21	Rd52x1/6"
N	40	56	10	4	78	21	Rd65x1/6"
M	50	68	11	3	92	22	Rd78x1/6"

Type T – TClamp ISO 2852 – DN40-51 / BS 4825 – 2" / DIN 32676 – DN50, PN25



	Varivent	DN	d5	d6	x1	x2
R	F	25-32	50	66	12	19
P	N	40-162	68	84	12	19



ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
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Thermocont® TS4L

Temperature switch for hygienic applications
Monitoring of temperatures in gases, vapors, liquids and dusts

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Equipment

immersion pocket and weld-in sockets
on page 170

Basic price *(*scale prices)* . . . . . .

Type
TS4L Hygienic applications . . . . . .

Measuring system
S Resistance sensor Pt100-A . . . . . .
D Resistance sensor Pt100-A / semiconductor sensor, self-supervision function . . . . . .

Approval
S Standard . . . . . .

Process connection
6 Thread ISO228-1 – G½", metallic/elastomer-free sealing (socket SEM-22/SEM-42) . .
F Aseptic tube coupling DIN 11864-1-A – DN25, PN40 . . . . . .
G Aseptik-Rohrverschraubung DIN 11864-1-A – DN40, PN25. . . . . .
O Dairy coupling DIN 11851 – DN25, PN40 . . . . . .
N Dairy coupling DIN 11851 – DN40, PN40 . . . . . .
M Dairy coupling DIN 11851 – DN50, PN25 . . . . . .
R Varivent® F tube – DN25...DN32 / 1"...1¼", PN40 . . . . . .
P Varivent® N tube – DN40...DN162 / 1½"...6" , PN40 . . . . . .
T Clamp ISO 2852 – DN40-51 / BS 4825 – 2" / DIN 32676 – DN50, PN25 . . . . . .
Y Others . . . . . .

Sensor tube material / diameter (process wetted)
K CrNi-steel, Ø6mm . . . . . .
N CrNi-steel, Ø8mm . . . . . .
L CrNi-steel, Ø10mm . . . . . .
M CrNi-steel, Ø8mm, Tip Ø5mm / L 40mm – only measuring system type S . . . . .
O CrNi-steel, Ø10mm, Tip Ø6mm . . . . . .
R CrNi-steel, Ø8mm, Tip Ø3mm / L 40mm – only measuring system type S . . . . .
Y Others . . . . . .

Neck tube
0 Without . . . . . .
1 Neck tube, Standard L2 = 100mm . . . . . .
Y Neck tube, other length L2. . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Measuring range
2 –99,9°C ... +200°C – Measuring system type S . . . . . .
3 –99,9°C ... +500°C – Measuring system type S . . . . . .
4 –50°C ... +175°C – Measuring system type D . . . . . .

Electronic – output
A 2x switch PNP, supply 24VDC . . . . . .
B 1x switch PNP, 1x signal 4...20mA , supply 24VDC. . . . . .
C 2x switch PNP, 1x signal 4...20mA, supply 24VDC . . . . . .
D 1x switch PNP, 1x signal 4...20mA, supply 24VDC, Desina . .

Electronic – function
S Standard. . . . . .

Electrical connection
S Plug M12x1 . . . . . .

Length L1 – Sensor tube / mm
(L1 ≤ 2000mm)
(price per commenced 100 mm). . . . . .

Length L2 – Neck tube / mm
(L2 ≤ 200mm)
(price per commenced 100 mm). . . . . .

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version . . . . . .
ML Measurement point designation / TAG – Laser marking . . . . . .
WK Factory calibration – calibration certificate
MZ Material test certificate – EN10204 3.1 .
KF Confi-guration / Preset. . . .

Order code

Thermocont® TS4L	S				C			S	S	mm	mm

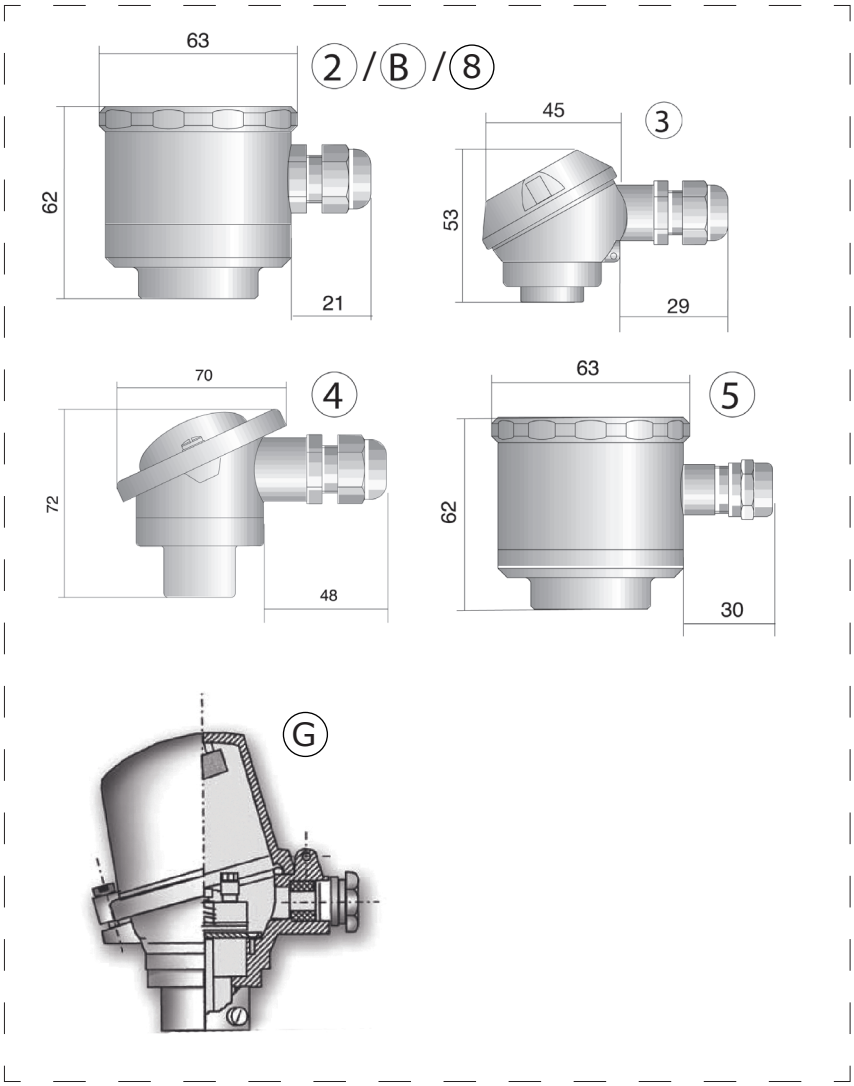
Resistance thermometer Pt100

universal temperature sensor for virtually all process conditions

4 / 01.22

Technical data

measuring element:	platinum resistance element Pt100/ Pt1000, others on request
temperature ranges:	at the measuring tip: -70°C...+300°C +500°C/ +600°C and low-temperature version on request
tolerace Class:	AA, A, B - according to IEC 60751
signal type:	- 1x Pt100: in 2-, 3-, 4-wire connection - 2x Pt100: in 2x 2-wire or 2x 3-wire connection - 3x Pt100: in 3x 2-wire connection - free skinner for self-installation of a head transmitter - head transmitter, 4...20 mA/ 0...10 V output, standard, Ex, Profibus; others on request
connection type:	- terminal compartment in Alu-, plastic- or stainless steel housing - fix connection cable - PTFE shielded, silicone, PVC, glass silk with steel mesh, others on request - Lemo-plug system, M12 plug system
materials (process side):	- protective tubes made of seamless stainless steel: 1.4571(AISI 316Ti) - flanges, process connections: 1.4571 (AISI 316 Ti) - special materials on request
materials (connection side):	- housing:aluminium, CrNi-steel, PP-polypropylene, POM-polyoxymethylene - cable material see „connection type"



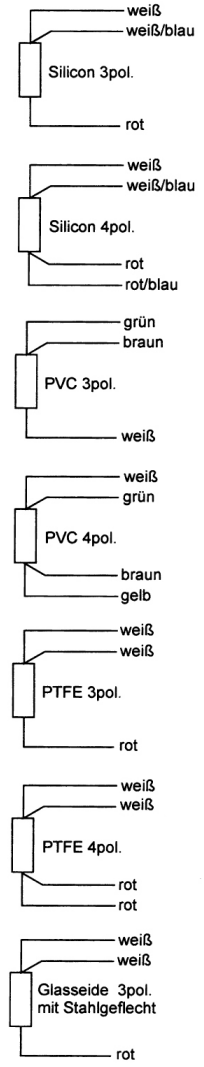
Application

Fundamentals of ACS Universal resistance thermometer are standardized, high-quality platinum RTDs of a nominal resistance of 100 ohms at 0 ° C, tolerance classes A, B, 1/3B (AA) - in accordance with DIN EN / IEC 60751st.
ACS Pt100 probes have a high accuracy and reproducibility are extremely reliable.
The sensing elements are embedded in the protective tube with magnesium oxide powder and are sealed hermisch.
Thus, a good heat transfer and vibration protection is achieved.

Standard measuring temperatures are -70 ° C. .. +300 ° C; High temperature versions +500 ° C / +600 ° C, low-temperature versions, special materials, special process connections and OEM versions are also available.
The given measuring temperature refers to an average temperature at the probe tip.
With cable versions, for example PTS / PTK and Pt100 sensors with connection head, possibly with integrated head transmitter, the respective maximum temperature of the cable, heads, etc. with on-site isolation, use of Pt100 must be considerated.
The measurement speed of the individual Pt100 sensor is highly dependent on operating conditions, the measured medium and the physical dimensions.
The immersion depth should not be less than 50 mm. Please clarify always shorter probe lengths with the ACS staff.

Connection

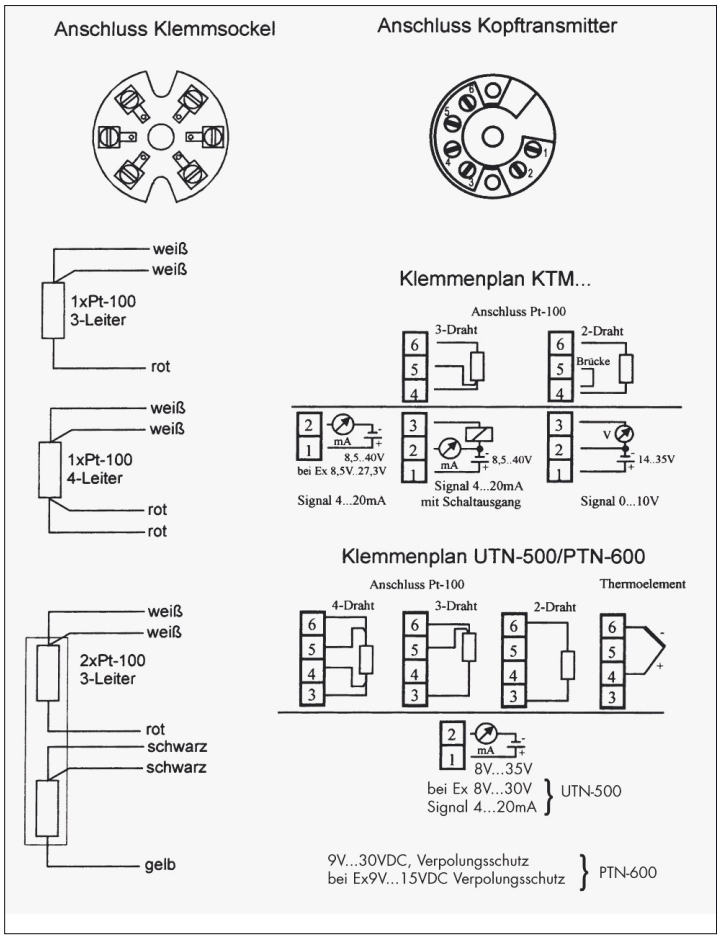
Pt-100 Kabelbelegung



error limits of the Pt-measurement resistors

	Klasse A		Klasse B	
°C	Ohm	entspr. °C	Ohm	entspr.°C
-200	±0.24	±0.55	±0.56	±1.3
-100	±0.14	±0.35	±0.32	±0.8
-60	-	-	-	-
0	±0.06	±0.15	±0.12	±0.3
100	±0.13	±0.35	±0.30	±0,8
180	-	-	-	-
200	±0.20	±0.55	±0.48	±1.3
300	±0.27	±0.75	±0.64	±1.8
400	±0.33	±0.95	±0.79	±2.3
500	±0.38	±1.15	±0.93	±2.8
600	±0.43	±1.35	±1.06	±3.3
650	±0.46	±1.45	±1.13	±3.6
700	-	-	±1.17	±3.8
800	-	-	±1.28	±4.3
850	-	-	±1.34	±4.6

1/3 DIN B (AA) ≙ ± 0,10°C at 0°C = 1/3 from class B



PTA-

standard-screw-in resistance thermometer Pt100 With and without neck tube

4 / 01.22

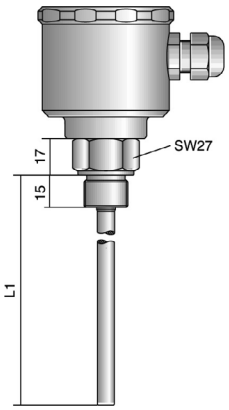
Equipment

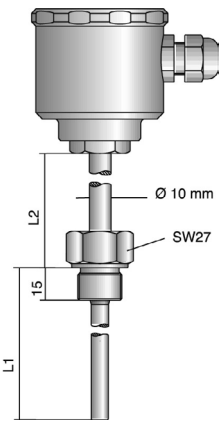
(1) please order head transmitter separately on page 236

immersion pocket and weld-in sockets on page 170

Connector heads

Attention!
Temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C
Please use neck tubes at higher process temperatures!





sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
5	2x Pt100, 3-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
6	1x Pt1000, 3-wire
7	3x Pt100, 2-wire *(3x Pt100 with exchangeable measuring insert, only from ø 8 mm)*

accuracy class *(with double Pt100 price x 2)*

B	**class B, up to +500°C** *(preferred type)*
A	class A, up to +300°C,
C	class AA *(formerly class 1/3B)*, up to +150°C
Y	Special version eg. high temperature etc.
P	class AA *(formerly class 1/3B)*, paired version, for eg. heat quantity measurement

Process connection

1	**screw-in thread G½"** *(preferred type)*
2	screw-in thread G1"
3	screw-in thread G⅜"
5	union nut G¾"
F	Flange DIN EN 1092-1, A (B - DIN 2527), DN50, PN10-40
E	Flange DIN EN 1092-1, A (B - DIN 2527), DN25, PN10-40
Y	Others process connections

Material, sensor diameter, process side

T	1.4571 / 3 mm
U	1.4571 / 5 mm
K	1.4571 / 6 mm
N	**1.4571/ 8 mm** *(preferred type)*
L	1.4571 / 10 mm
W	1.4571 / 12 mm
P	1.4571 / 6 mm, reduced tip 4 mm; 40 mm long
M	1.4571 / 8 mm, reduced tip 5 mm; 40 mm long
O	1.4571 / 10 mm, reduced tip 6 mm; 40 mm long
R	1.4571 / 8 mm, reduced tip 3 mm; 40 mm long
Y	Others

neck tube

A	**Without neck tube** *(preferred type)*
B	**With neck tube** *(standard L2 =100 mm)* *(preferred type)*
Y	With neck tube by choice in mm

connector head

A	PP-head small
B	PP-head big
1	plastic head made of Delrin® small
2	**plastic head made of Delrin® big** *(preferred type)*
3	aluminum head small *(not with sensor type-variation 5 and 7)*
4	aluminum head big
5	Stainless steel head big
7	PTFE-head small
8	PTFE-head big
G	aluminum head double size
Y	other designs

Measuring insert

F	**rigidly mounted** *(preferred type)*
W	exchangeable *(at high temperature version always mandatory)*

Connection type

	K	**connection with terminal socket** *(preferred type)*
signal converter only with connector head "big" possible	**M**	**connection for head transm.(1) 4-20mA/0-10V fixed value**
	X	connection head transmitter(1) UTN-500 software programmable.
	D	connection with skinner for self-installation of head transmitter*
	V	5-pole M12-plug
only with head "G"	G	connection for 2x head transmitter
	L	connection with 2x terminal socket
	Y	Special version

length L1 sensor in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred lengths: 50 | 100 | 150 mm)

length L2 neck tube in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred length 100 mm)

Order code

PTA											mm	mm

PTB-

resistance thermometer-clamp-on sensor Pt100 for front-flush weld-in socket

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Equipment

(1) please order head transmitter separately on page 236

immersion pocket and weld-in sockets on page 170

Connector heads

Attention!
Temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

Please use neck tubes at higher process temperatures!

sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire

accuracy class *(with double Pt100 price x 2)*

B	class B
A	**class A** *(preferred type)*

Process connection G½" *(weld-in sockets see page 170)*

A	**for weld-in socket TEM-10 or TEM-11** *(see drawing A)* *(preferred type)*
	(weld-in socket not not included)
Y	Others

Material measuring surface

N	**1.4571** *(preferred type)*
Y	Others

neck tube

A	**Without neck tube up to +85°C** *(preferred type)*
B	With neck tube made of VA *(standard L2 =100 mm)* up to +200°C adjustable
Y	With neck tube by choice in mm

construction type

B	PP-head big
2	**plastic head made of Delrin® big** *(preferred type)*
4	for valve plug DIN 43650
8	PTFE-head big
Y	other designs

Measuring insert

G	**rigidly mounted (version with neck tube made of VA or valve plug, exchangeable at Version without neck tube Version 2.0** *(preferred type)*

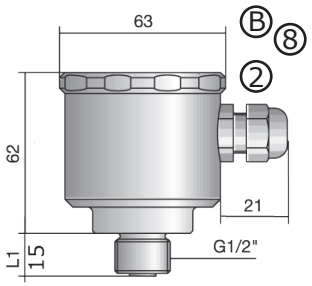
Connection type

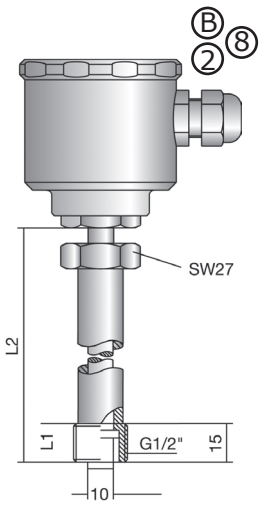
K	**connection with terminal socket** *(preferred type)*
M	**connection for head transmitter(1) 4-20mA/0-10V fixed value**
X	connection head transmitter(1) UTN-500 software programmable
D	connection with skinner for self-installation from head transmitter
U	With connection cable 1 m
Z	valve plug DIN 43650
Y	Special version

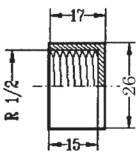
signal converter only with connector head "big" possible

length L1 sensor in mm *(clamp-on sensor)*
length 0015 mm

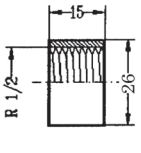
length L2 neck tube in mm
neck tube made of VA, adjustable 100mm
other lengths on request







TEM - 10
closed



TEM - 11
open

Order code

PTB		G	mm	mm

PTE-

resistance thermometer Pt100 with handle for insertion and immersion

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sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire
5	2x Pt100, 3-wire

accuracy class *(with double Pt100 price x 2)*

B	**class B** *(preferred type)*
A	class A
C	class AA *(formerly class 1/3B)*

mechanical design

A	**see drawing A** *(preferred type)*

Material, sensor diameter, process side

K	1.4571 / 6 mm
L	**1.4571 / 5 mm** *(preferred type)*
M	1.4571 / 4 mm
N	1.4571 / 3 mm
Y	Others

handle for insertion and immersion, handle piece

A	**PVC black, 100 mm length up to +90°C** *(preferred type)*
C	PTFE white, 100 mm length up to +160°C
Y	Special version

cable

A	PVC
B	**PTFE** *(preferred type)*
C	silicone *(4pol.)*
D	glass silk with steel mesh 300°C
Y	Special version

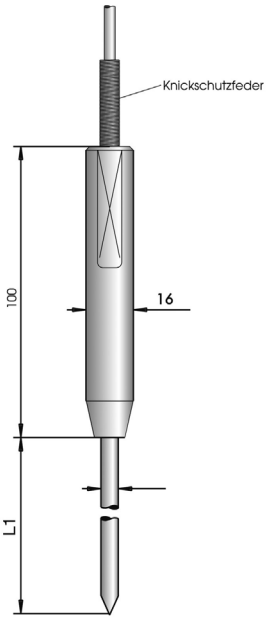
Cable length

1	**1000 mm**	**PVC** *(preferred type)*
A	1000 mm	PTFE / glass silk / silicone
2	2000 mm	PVC
B	2000 mm	PTFE / glass silk / silicone
Y	Special length	

strain relief

0	**squeezed (conditionally waterproof)** **break protection spring** *(preferred type)*
2	tightly rolled, IP 67, only with PTFE-cable sealing at handle for insertion and immersion via cable screw

length L1 sensor in mm . *(preferred lengths: 200 mm)*
(price per commenced 100 mm)



Order code

PTE	A	mm

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
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PTF-

standard-immersion-resistance thermometer Pt100 for sliding sleeve

4 / 01.22

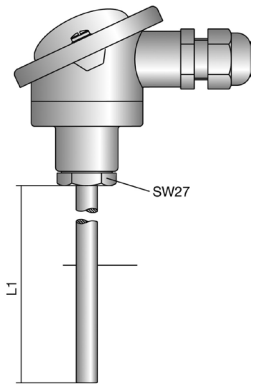
Equipment

(1) please order head transmitter separately on page 236

immersion pocket and weld-in sockets on page 170

Connector heads

Attention!
Temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C



sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
5	2x Pt100, 3-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
6	1x Pt1000, 3-wire
7	3x Pt100, 2-wire *(3x Pt100 with exchangeable measuring insert, only from ø 8 mm)*

accuracy class *(with double Pt100 price x 2)*

B	**class B, up to +500°C** *(preferred type)*
A	class A, up to +300°C
C	class AA *(formerly class 1/3B)*, up to +150°C
Y	Special version eg. high temperature etc.
P	class AA *(formerly class 1/3B)*, paired version, for eg. heat quantity measurement

Process connection, sensor diameter
(please order sliding sleeve sperately see page 170)

1	**8 mm tube diameter** *(preferred type)*
2	10 mm tube diameter
3	6 mm tube diameter
4	8 mm, reduced tip 5 mm, 40 mm length
6	10 mm, reduced tip 6 mm, 40 mm length
7	15 mm x 2 mm
Y	Others

Material process side

N	**1.4571** *(preferred type)*
O	heat-resistant steel 1.4841 up to 1100°C
Y	Others

0

connector head

A	PP-head small
B	PP-head big
1	plastic head made of Delrin® small
2	plastic head made of Delrin® big
3	aluminum head small *(not with sensor type-variation 5 and 7)*
4	**aluminum head big** *(preferred type)*
5	Stainless steel head big
7	PTFE-head small
8	PTFE-head big
G	aluminum head double size
Y	other designs

Measuring insert

F	**rigidly mounted** *(preferred type)*
W	exchangeable *(at high temperature version always mandatory)*

Connection type

	K **connection with terminal socket** *(preferred type)*
signal converter only with connector head "big" possible	**M** **connection for head transm.(1) 4-20mA/0-10V fixed value**
	X connection head transmitter(1) UTN-500 software programmable.
	D connection with skinner for self-installation from head transmitter
only with head "G"	G connection for 2x head transmitter
	L connection with 2x terminal socket
	Y Special version

length L1 sensor in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred lengths: 100 | 150 | 200 mm)

Order code

PTF				0			mm

PTG-

resistance thermometer Pt100, **acid and alkali resistant**

4 / 01.22

Equipment

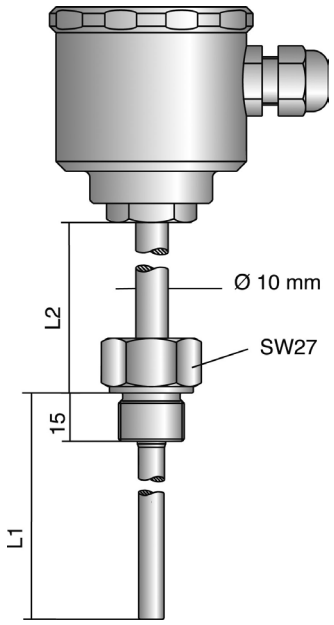
(1) please order head transmitter separately on page 236

immersion pocket and weld-in sockets on page 170

Connector heads

Attention!
temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

Please use neck tubes at higher process temperatures!



sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
5	2x Pt100, 3-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*

accuracy class *(with double Pt100 price x 2)*

B	**class B** *(preferred type)*
A	class A
C	class AA *(formerly class 1/3B)*

Process connection

1	**screw-in thread G½"** *(preferred type)*
2	screw-in thread G⅜"
3	screw-in thread M 20
Y	Special version

Material, sensor diameter, process side

L	**PTFE 12 mm** *(max. 150 mm = L1)* *(preferred type)*
H	1.4571 8 mm with ETFE-coating up to 1000 mm L1
P	PTFE 12 mm made of one piece up to 150 mm L1
Y	Special version eg. special coating

neck tube

A	**Without neck tube**
B	**With neck tube** *(standard L2 =100 mm)*
Y	With neck tube by choice in mm

connector head, design

1	PTFE-head small
2	**plastic head made of Delrin® big diameter 63 mm** *(preferred type)*
3	PTFE-head big
Y	Special version

Measuring insert

F	**rigidly mounted**
W	exchangeable

Connection type

K	**connection with terminal socket**
M	connection for head transmitter(1) 4-20 mA with festem Wert
X	connection head transmitter(1) UTN-500 software programmable
D	connection with skinner for self-installation from head transmitter
Y	Special version

signal converter only with connector head "big" possible

length L1 sensor in mm
(price per commenced 100 mm)
(price from 1000 mm length)

length L2 neck tube in mm
(price per commenced 100 mm)
(price from 1000 mm length)

Order code

PTG		mm	mm

Type of medium, temperature, concentration, etc. important!

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PTI-

immersion pocket - resistance thermometer Pt100 with spring-loaded measuring insert

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Equipment

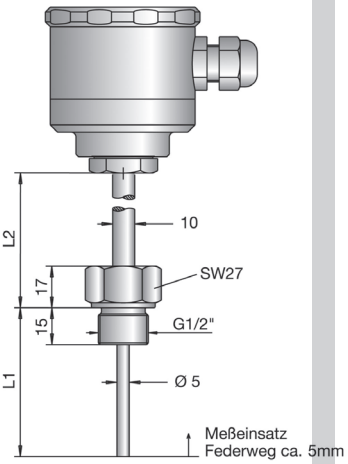
(1) please order head transmitter separately on page 236

Special matching immersion pocket STH-X06
page 171

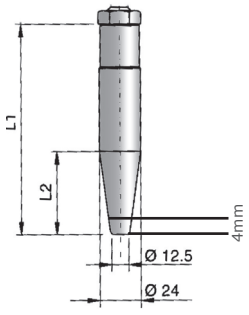
Connector heads

Attention!
temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

Please use neck tubes at higher process temperatures!



Pressure-tight only in connection with adapted immersion pocket!



sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
5	2x Pt100, 3-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
6	1x Pt1000, 3-wire
7	3x Pt100, 2-wire *(3x Pt100 with exchangeable measuring insert, only from ø 8 mm)*

accuracy class *(with double Pt100 price x 2)*

B	**class B, up to +500°C** *(preferred type)*
A	class A, up to +300°C
C	class AA *(formerly class 1/3B)*, up to +150°C
P	class AA *(formerly class 1/3B)*, paired version, for eg. heat quantity measurement
Y	Special version eg. high temperature version etc.

Process connection

1	**screw-in thread G½"** *(for immersion pocket STHA/STHB/STHX)* *(preferred type)*
2	screw-in thread G1"
Y	Special version.

Material, measuring insert diameter, process side

U	**1.4571 / 5 mm** *(for STH with 6 mm inner diameter)* *(preferred type)*
Y	Others

neck tube

A	**Without neck tube** *(preferred type)*
B	**With neck tube** *(standard L2 =100 mm)* *(preferred type)*
Y	With neck tube by choice in mm

connector head

B	PP-head big
2	**plastic head made of Delrin® big** *(preferred type)*
4	aluminum head big
5	Stainless steel head big
G	aluminum head double size
Y	other designs

Measuring insert

W	**exchangeable** *(preferred type)*

Connection type

	K	**connection with terminal socket** *(preferred type)*
	M	**connection for head transm.(1) 4-20mA/0-10V fixed value**
signal converter only with connector head "big" possible	X	connection head transmitter(1) UTN-500 software programmable.
	D	connection with skinner for self-installation from head transmitter
	V	5-pole M12-plug
only with head "G"	G	connection for 2x head transmitter
	L	connection with 2x terminal socket
	Y	Special version

length L1 sensor in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred lengths 50 | 100 | 150 mm)

length L2 neck tube in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred length 100 mm)

Order code

PTI		W		mm		mm

PTK-

screw-in resistance thermometer Pt100
with permanently attached cable or socket

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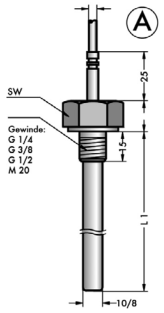

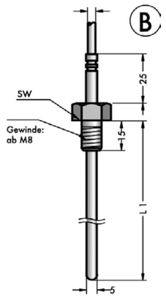

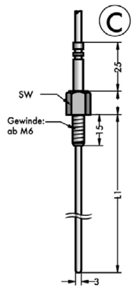

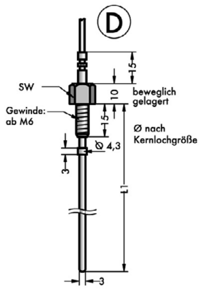

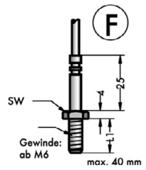

sensor type

1 1x Pt100, 2-wire
2 1x Pt100, 3-wire *(preferred type)*
3 1x Pt100, 4-wire
4 2x Pt100, 2-wire *(double Pt100 only from ø 5 mm)*
5 2x Pt100, 3-wire *(double Pt100 only from ø 5 mm)*

accuracy class *(with double Pt100 price x 2)*

B class B, up to +500°C *(preferred type)*
A class A, up to +300°C
C class AA *(formerly class ⅓B)*, up to +150°C
Y Special version eg. high temperature etc.

design

A see drawing A *(thread G¼"; G⅜"; G½" or M20)*
B see drawing B *(thread from M8)*
C see drawing C *(thread from M6)*
D see drawing D *(thread from M6)*
F see drawing F

thread

A screw-in thread M6
H screw-in thread M10 x 1
D screw-in thread M8
N screw-in thread G⅜"
F screw-in thread M8 x 1
O screw-in thread G½"
G screw-in thread M10
P screw-in thread G¼"
T screw-in thread M20
Y other connections

Material, sensor diameter, process side

T 1.4571/ 3 mm *(design C + D)*
U 1.4571/ 5 mm *(design B)*
V 1.4571/ 10 mm (design A)
Z 1.4571/ 8 mm *(design A)*
O 1.4571/ sensor diameter correspond to thread *(design F)*

cable

A PVC
B PTFE *(preferred type)*
C silicone *(4pol.)*
D glass silk with steel mesh up to +300°C
L socket LEMOSA 4-pole size 1 up to +80°C
Y Special version

Cable length

1 1000 mm PVC
A 1000 mm PTFE / glass silk / silicone
2 2000 mm PVC
B 2000 mm PTFE / glass silk / silicone
5 5000 mm PVC
C 5000 mm PTFE / glass silk / silicone
Y Special length
0 Without cable (plug version)

strain relief

0 squeezed *(conditionally waterproof)* *(preferred type)*
2 tightly rolled, IP 67, only with PTFE-cable
Y Special version.

length L1 sensor in mm *(preferred lengths: 50 | 100 | 150 mm)*
(price per commenced 100 mm)

Order code

PTK	mm

PTL-

screw-in resistance thermometer Pt100 for food industry with front-flush hygienic gasket or metal-seated

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Equipment

(1) please order head transmitter separately on page 236

immersion pocket and weld-in sockets on page 170

Connector heads

Attention!
temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

Please use neck tubes at higher process temperatures!

sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire (double Pt100 with exchangeable measuring insert only from ø 8 mm)
5	2x Pt100, 3-wire (double Pt100 with exchangeable measuring insert only from ø 8 mm)

accuracy class *(with double Pt100 price x 2)*

B	class B, up to +500°C
A	**class A, up to +300°C** *(preferred type)*
C	class AA *(formerly class 1/3B)*, up to +150°C
Y	Special version eg. high temperature etc.

Process connection for weld-in sockets
(please order weld-in socket separately see page 170)

4	G½" with O-ring-gasket Viton® for sleeve SEM-12 or SEM-32
5	**G½" with O-ring-gasket EPDM for sleeve SEM-12 or SEM-32** *(preferred type)*
X	G½" with other O-ring-gasket for sleeve SEM-12 or SEM-32
6	**G½" metal-seated for sleeve SEM-22 or SEM-42** *(preferred type)*
Y	Special version.

Material, sensor diameter, process side

K	1.4571/ 6 mm
N	**1.4571/8 mm (with exchangeable measuring insert)** *(preferred type)*
L	1.4571/ 10 mm.
P	1.4571/ 6 mm, reduced tip 4 mm; 40 mm long
M	1.4571/ 8 mm, reduced tip 5 mm; 40 mm long
O	1.4571/ 10 mm, reduced tip 6 mm; 40 mm long
R	1.4571/ 8 mm, reduced tip 3 mm; 40 mm long
Y	Others

neck tube

A	**Without neck tube** *(preferred type)*
B	**With neck tube (standard L2 =100 mm)** *(preferred type)*
Y	With neck tube by choice in mm

connector head

A	PP-head small
B	PP-head big
1	plastic head made of Delrin® small
2	plastic head made of Delrin® big
3	aluminum head small *(not with sensor type-variation 5)*
4	aluminum head big
5	**Stainless steel head big** *(preferred type)*
7	PTFE-head small
8	PTFE-head big
Y	other designs

Measuring insert

F	rigidly mounted
W	**exchangeable** *(at high temperature version mandatory) (preferred type)*

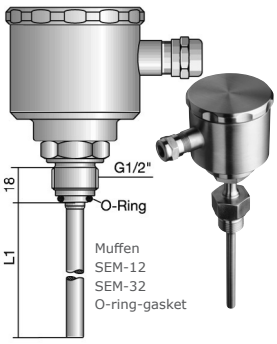
Connection type

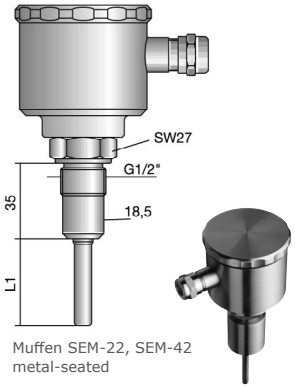
K	**connection with terminal socket** *(preferred type)*
M	**connection for head transmitter(1) 4-20mA/0-10V fixed value**
X	connection head transmitter(1) UTN-500 software programmable.
D	connection with skinner for self-installation of head transm.
Y	Special version.

signal converter only with connector head "big" possible

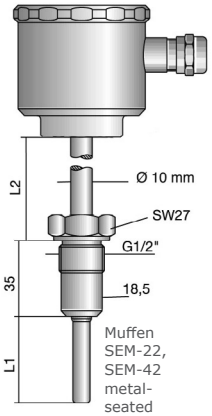
length L1 sensor in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred lengths: 50 | 100 | 150 mm)

length L2 neck tube in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred length 100 mm)





Muffen SEM-22, SEM-42 metal-seated



Order code

PTL		mm	mm

PTM-

resistance thermometer Pt100 with bayonet joint

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Equipment

please order thread nipple separately Seite 171

Sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire
5	2x Pt100, 3-wire

Accuracy class *(with double Pt100 price x 2)*

B	**class B, up to +500°C** *(preferred type)*
A	class A, up to +300°C
C	class AA *(formerly class 1/3B)*, up to +150°C
Y	Special version eg. high temperature etc.

Design, diameter

G	see drawing G	6 mm measuring surface plan
I	see drawing I	6 mm measuring surface 120°
Y	Special version	

Bayonet

A	**bayonet 12,2 mm** *(preferred type)*
0	Without bayonet

Material sensor

N	**1.4571** *(preferred type)*

Cable

B	**PTFE** *(preferred type)*
D	glass silk with steel mesh 300°C
Y	Special version

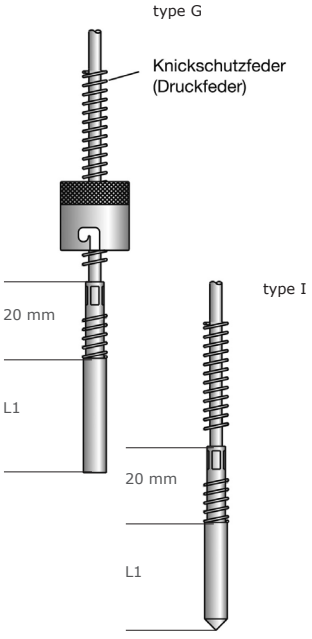
Cable length *(PTFE / glass silk)*

1	1000 mm
2	2000 mm
5	5000 mm
Y	Special length

Strain relief

0	**squeezed** *(conditionally waterproof)* **With break protection spring 250 mm** *(preferred type)*
2	tightly rolled, IP 67, only with PTFE-cable
Y	Special version

Length L1 sensor in mm *(preferred length 30 mm)*
(price per commenced 100 mm)



Order code

PTM			N		0	mm

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PTO-

resistance thermometer Pt100 for food applications- and pharma industry
with hygienic process connections

4 / 01.22

Equipment

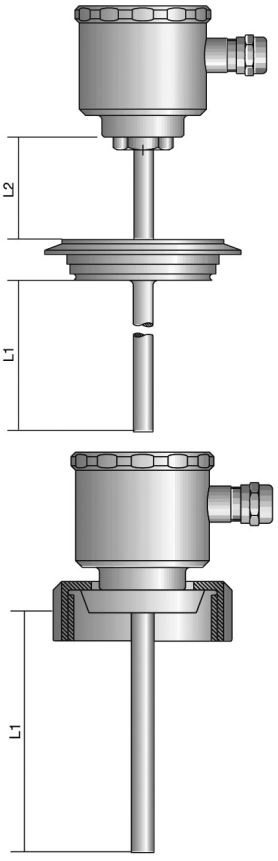
(1) please order head transmitter separately on page 236

immersion pocket and weld-in sockets on page 170

Connector heads

Attention!
temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

Please use neck tubes at higher process temperatures!



sensor type

1	1 x Pt100, 2-wire
2	**1 x Pt100, 3-wire** *(preferred type)*
3	1 x Pt100, 4-wire
4	2 x Pt100, 2-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
5	2 x Pt100, 3-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*

accuracy class *(with double Pt100 price x 2)*

B	class B, up to +500°C
A	**class A, up to +300°C** *(preferred type)*
C	class AA *(formerly class 1/3B)*, up to +150°C
Y	Special version eg. high temperature etc.

Process connection for weld-in sockets

F	DN 25 DIN 11864-1-A aseptic
G	DN 40 DIN 11864-1-A aseptic
M	**Milk tube DN 50 DIN 11851** *(preferred type)*
N	**Milk tube DN 40 DIN 11851** *(preferred type)*
O	Milk tube DN 25 DIN 11851
P	**Varivent flange 68 mm diameter for tubes DN 32 - 125** *(preferred type)*
R	Varivent flange 50 mm diameter for tube DN 25
T	Tri-Clamp® G2" ISO 2852
Y	Special version

Material, sensor diameter, process side

K	1.4571/	6 mm
N	**1.4571/**	**8 mm** *(with exchangeable measuring insert)* *(preferred type)*
L	1.4571/	10 mm
P	1.4571/	6 mm, reduced tip 4 mm; 40 mm long
M	1.4571/	8 mm, reduced tip 5 mm; 40 mm long
O	1.4571/	10 mm, reduced tip 6 mm; 40 mm long
R	1.4571/	8 mm, reduced tip 3 mm; 40 mm long
Y	Others	

neck tube

A	**Without neck tube** *(preferred type)*
B	**With neck tube** *(standard L2 =100 mm)* *(preferred type)*
Y	With neck tube by choice in mm

connector head

B	PP-head big
2	plastic head made of Delrin® big
3	aluminum head small *(not with sensor type-variation 5)*
4	aluminum head big
5	**Stainless steel head big** *(preferred type)*
8	PTFE-head big
Y	other designs

Measuring insert

F	rigidly mounted
W	**exchangeable** *(at high temperature version mandatory) (preferred type)*

Connection type

	K	**connection with terminal socket** *(preferred type)*
signal converter only	**M**	**connection for head transmitter(1) 4-20mA/0-10V fixed value**
with connector head "big" possible	X	connection head transmitter(1) UTN-500 software programmable.
	D	connection with skinner for self-installation of head transm.
	Y	Special version

length L1 sensor in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred lengths: 50 | 100 | 150 mm)

length L2 neck tube in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred length: 100 mm)

Order code

PTO										mm	mm

PTR-

room and outdoor temperature sensor Pt100 with connection box

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Equipment

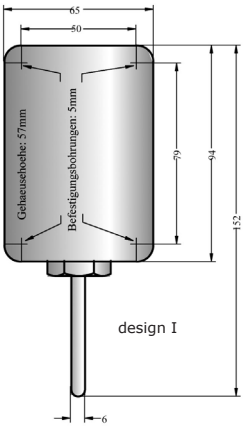
(1) please order head transmitter separately on page 236

Connector heads

Attention!
temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

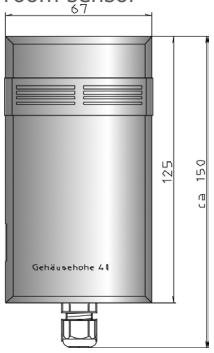
Please use neck tubes at higher process temperatures!

outdoor sensor



design I

room sensor



design II

sensor type

1	1 x Pt100, 2-wire
2	**1 x Pt100, 3-wire** *(preferred type)*
3	1 x Pt100, 4-wire
4	2 x Pt100, 2-wire
5	2 x Pt100, 3-wire

accuracy class *(with double Pt100 price x 2)*

B	**class B** *(preferred type)*
A	class A
C	class AA *(formerly class 1/3B)*

Wall housing

1	**Wall housing design I** *(preferred type)*
2	**Wall housing design II** *(preferred type)*

Material sensor

N	**1.4571** *(only at design I)* *(preferred type)*
T	**sensor in housing** *(design II)* *(preferred type)*
Y	Others

Material housing

K	**plastic** *(preferred type)*
Y	Others

0

Measuring insert

F	**sensor for humidor -20° up to +80°C** *(design. I)* *(preferred type)*
T	sensor for drying room 0° up to +80°C (perforated protection tube design I)
G	sensor for refrigeration room -35° C (design I)
H	**sensor for interior 0 up to +60°C** *(design II)* *(preferred type)*

Connection type

K	**connection with terminal socket** *(preferred type)*
M	**connection for head transmitter(1) 4-20mA/0-10V fixed value**
X	connection head transmitter(1) UTN-500 software programmable.
D	connection with skinner for self-installation of head transm.
Y	Special version

length L1 sensor in mm *(preferred length 50 mm at design. I)*
no length information is necessary at design II!
(price per commenced 100 mm)

Order code

PTR	0	mm

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PTS-

immersion resistance thermometer Pt100
with permanently attached cable or socket

4 / 01.22

sensor type

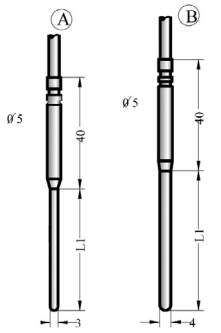
1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire *(double Pt100 only from ø 5 mm)*
5	2x Pt100, 3-wire *(double Pt100 only from ø 5 mm)*
6	1x Pt1000, 3-wire
7	2x Pt100, 4-wire *(double Pt100 only from ø 5 mm)*

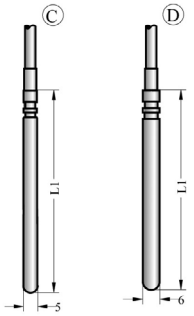
accuracy class *(with double Pt100 price x 2)*

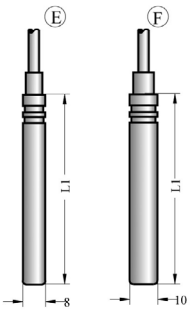
B	**class B, up to +500°C** *(preferred type)*
A	class A, up to +300°C
C	class AA *(formerly class 1/3B)*, up to +150°C
Y	Special version eg. high temperature etc.

design

A	see drawing A	3 x 0,3 mm
B	see drawing B	4 x 0,3 mm
C	see drawing C	5 x 0,5 mm
D	see drawing D	6 x 0,5 mm
E	see drawing E	8 x 1 mm
F	see drawing F	10 x 1 mm







Material sensor

N	**1.4571** *(preferred type)*
T	1.4571 with PTFE-coating
Y	Special version

cable

A	PVC	up to +80°C
B	**PTFE**	**up to +200°C** *(preferred type)*
C	silicone	up to +180°C *(4pol.)*
D	glass silk with steel mesh	300°C
L	socket LEMO type PCA 4-pole size 1	up to +80°C
Y	Special version	

Cable length

1	1000 mm,	PVC
A	1000 mm,	PTFE / glass silk / silicone
2	2000 mm,	PVC
B	2000 mm,	PTFE / glass silk / silicone
5	5000 mm,	PVC
C	5000 mm,	PTFE / glass silk / silikone
Y	Special length	
0	Without cable at plug version	

strain relief

0	**squeezed** *(conditionally waterproof)* *(preferred type)*
1	angled exit *(only at Ø 8mm)*
2	tightly rolled, IP 67, only with PTFE-cable
3	tightly rolled and shrink tubing, IP 67, only with PTFE-cable
4	tightly rolled, IP 67, with break protection spring

length L1 sensor in mm *(preferred lengths: 50 | 100 | 150 mm)*
(price per commenced 100 mm)

Order code

PTS	mm

Equipment

Ordering information	*Model*
LEM04	LEMO SA-socket 4-pole size 1
LEM08	LEMO SA-socket 8-pole size 2

PTU-

surface temperature sensor

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sensor type

1	1 x Pt100, 2-wire
2	**1 x Pt100, 3-wire** *(preferred type)*
3	1 x Pt100, 4-wire

class

B	**class B, up to +500°C** *(preferred type)*
A	class A, up to +300°C
Y	Special version eg. high temperature etc.

design

A	**6 x 6 x 20 mm** *(preferred type)*
B	**5 x 5 x 16 mm** *(only made of copper/PVC possible)* **up to +80°C** *(preferred type)*
C	6 x 10 x 20 mm
E	6 x 10 x 20 mm with bore hole
F	10 x 12 x 30 mm with custom radius, specify radius!

Material sensor

N	**1.4571** *(preferred type)*
C	**copper** *(preferred type)*
M	brass

Cable

A	PVC up to +80°C
B	**PTFE up to +200°C** *(preferred type)*
C	silicone up to +150°C
D	glass silk with steel mesh 300°C
Y	Special version

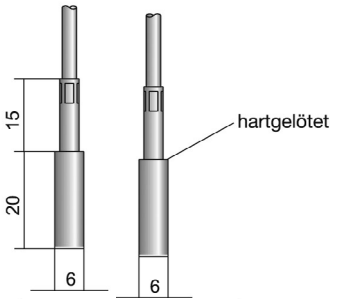
Cable length

1	1000 mm	PVC
A	1000 mm	PTFE / glass silk / silicone
2	2000 mm	PVC
B	2000 mm	PTFE / glass silk / silicone
5	5000 mm	PVC
C	5000 mm	PTFE / glass silk / silicone
Y	Special length	

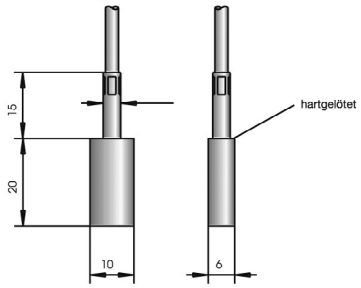
strain relief

0	**squeezed** *(conditionally waterproof)* *(preferred type)*

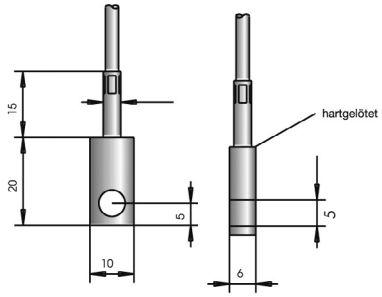
Bauform Ⓐ



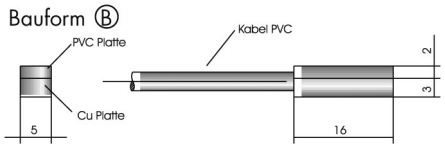
Bauform Ⓒ



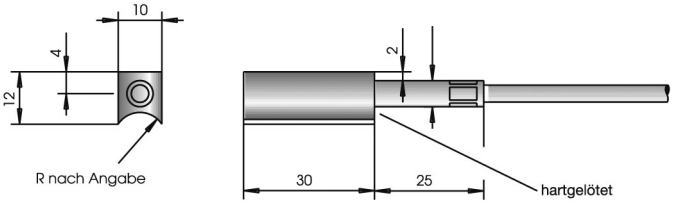
Bauform Ⓔ

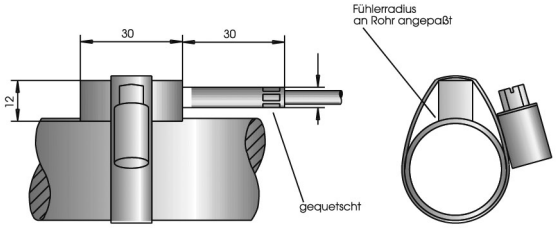


Bauform Ⓑ



Bauform Ⓕ





Order code

PTU

Equipment

Ordering information

tubular tapes

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PTW-

air duct - resistance thermometer Pt100

4 / 01.22

Equipment

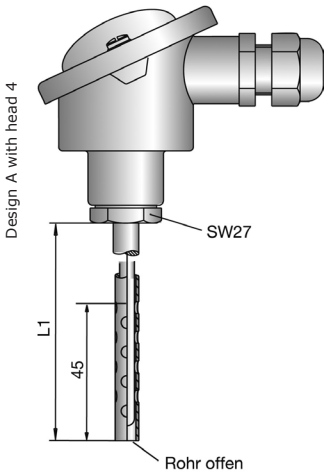
(1) please order head transmitter separately on page 236

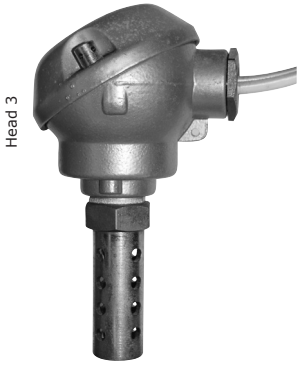
immersion pocket and weld-in sockets on page 170

Connector heads

Attention!
Temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

Please use neck tubes at higher process temperatures!





sensor type

1	1x Pt100, 2-wire
2	**1x Pt100, 3-wire** *(preferred type)*
3	1x Pt100, 4-wire
4	2x Pt100, 2-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
5	2x Pt100, 3-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
6	1x Pt1000, 3-wire
7	3x Pt100, 2-wire *(3x Pt100 with exchangeable measuring insert, only from ø 8 mm)*

accuracy class *(with double Pt100 price x 2)*

B	**class B, up to +180°C** *(preferred type)*
A	class A, up to +180°C
C	class AA *(formerly class 1/3B)*, up to +180°C
Y	Special version eg. high temperature version etc.

Process connection

1	**screw-in thread G½"** *(design A)* *(preferred type)*
2	screw-in thread G1" *(design A)*
3	screw-in thread G⅜" *(design A)*
0	Without thread for sliding sleeves *(design B)*
Y	Special version

Material, sensor diameter, process side

L	**1.4571 / 10 mm** *(preferred type)*
Y	Others

neck tube

A	**Without neck tube** *(preferred type)*
B	**With neck tube** *(standard L2 =100 mm)* only at design A *(preferred type)*
Y	With neck tube by choice in mm only at design A.

connector head

B	PP-head big
2	**plastic head made of Delrin® big** *(preferred type)*
3	aluminum head small *(not with sensor type-variation 5 and 7)*
4	**aluminum head big** *(preferred type)*
5	Stainless steel head big
G	aluminum head double size
Y	other designs

Measuring insert

W	**exchangeable** *(preferred type)*

Connection type

	K **connection with terminal socket** *(preferred type)*
signal converter only with connector head "big" possible	**M** **connection for head transmitter(1) 4-20mA/0-10V fixed value**
	X connection head transmitter(1) UTN-500 software programmable.
	D connection with skinner for self-installation of head transm.
	V 5-pole M12-plug
only with head "G"	G connection for 2x head transmitter
	L connection with 2x terminal socket
	Y Special version

length L1 sensor in mm
(price per commenced 100 mm)
(price from 1000 mm length)
(preferred lengths 100 | 150 | 200 mm)

length L2 neck tube in mm *(only design A)*
(preferred length 100 mm)
(price per commenced 100 mm)
(price from 1000 mm length)

Order code

PTW			W		mm	mm

PTZ-

resistance thermometer Pt100
acid and alkali resistant

4 / 01.22

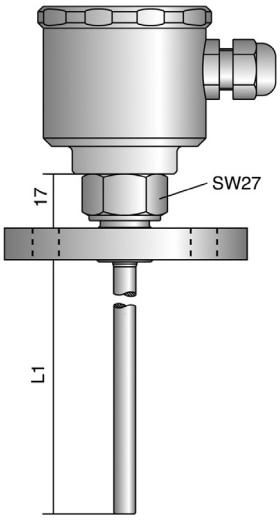
Equipment

(1) please order head transmitter separately on page 236

Connector heads

Attention!
temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

Please use neck tubes at higher process temperatures!



Order code

sensor type

1	1 x Pt100, 2-wire
2	**1 x Pt100, 3-wire** *(preferred type)*
3	1 x Pt100, 4-wire
4	2 x Pt100, 2-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
5	2 x Pt100, 3-wire *(double Pt100 with exchangeable measuring insert only from ø 8 mm)*
6	1 x Pt1000, 3-wire
7	3 x Pt100, 2-wire *(3x Pt100 with exchangeable measuring insert, only from ø 8 mm)*

accuracy class *(with double Pt100 price x 2)*

B	**class B, up to +500°C** *(preferred type)*
A	class A, up to +300°C
C	class AA *(formerly class 1/3B)*, up to +150°C
Y	Special version eg. high temperature etc.

Process connection

E	Flange DIN EN 1092-1, A (B - DIN 2527), DN25, PN10-40 with ETFE coating
F	Flange DIN EN 1092-1, A (B - DIN 2527), DN50, PN10-40 with ETFE coating
G	Flange DIN EN 1092-1, A (B - DIN 2527), DN40, PN10-40 with ETFE coating
Y	Special version eg. special coating

Material, sensor diameter, process side

K	1.4571	6 mm
N	1.4571	8 mm
L	**1.4571**	**10 mm** *(preferred type)*
W	1.4571	12 mm
P	1.4571	6 mm, reduced tip 4 mm; 40 mm long
M	1.4571	8 mm, reduced tip 5 mm; 40 mm long
O	1.4571	10 mm, reduced tip 6 mm; 40 mm long
R	1.4571	8 mm, reduced tip 3 mm; 40 mm long
Y	Others	

neck tube

A	Without neck tube
B	With neck tube *(standard L2 =100 mm)*
Y	**With neck tube by choice in mm** *(preferred type)*

connector head

B	PP-head big
2	plastic head made of Delrin® big
3	aluminum head small *(not with sensor type-variation 5 and 7)*
4	aluminum head big
5	Stainless steel head big
8	PTFE-head big
G	aluminum head double size
Y	other designs

Measuring insert

F	**rigidly mounted** *(preferred type)*
W	exchangeable *(at high temperature version always mandatory)*

Connection type

K	**connection with terminal socket** *(preferred type)*
signal converter only with connector head "big" possible **M**	**connection for head transmitter(1) 4-20mA/0-10V fixed value**
X	connection head transmitter(1) UTN-500 software programmable.
D	connection with skinner for self-installation of head transm.
V	5-pole M12-plug
only with head "G" G	connection for 2x head transmitter
L	connection with 2x terminal socket
Y	Special version

length L1 sensor in mm
(price per commenced 100 mm)
(price from 1000 mm length)

length L2 neck tube in mm
(price per commenced 100 mm)
(price from 1000 mm length)

PTZ											mm	mm

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PTV-

clamp-on sensor, temperature measurement of media in pipelines

4 / 01.22

Technical data

measuring element:	platinum resistance element Pt100
measuring temperature:	up to 140°C
tolerance Class:	class A, according to IEC 60751
signal type:	1x Pt100 in 4-wire-connection 4...20 mA / 20...4 mA with line transmitter LTN-500
mounting:	clamp-on sensor with special clamp
connection type:	silicone/PTFE cable with shielding Others on request
materials:	Measuring surface: silver Ag sensor housing: aluminium, anodized clamp: POM; others on request
Protection:	IP68

sensor

pipe clamp on*

tubular tape*

*not included

Application

- no dead room - 100% hygienic
- free of dubious heat sink compounds
- fast response
- smallest dimensions
- fast installation
- easy validation
- calibrateable
- measuring transducer 4...20mA optional

The sensor with integrated strain relief is produced with a contact plane of a silver basis (Ag) and is adapted to the radius of the respective pipeline. Besides the style adapted measuring plane an adjustable spring mechanism ensures best measuring results without the need for heat sink compounds. The technology of this miniaturezed 4-wire Pt100 sensor with a shielded silicone/PTFE cable is the core of our new development and meets the quality requirements that are demanded especially in the sterile technology in the fields food and pharmacy. Pipeline covering plastic clamps (POM) for the installation of the temperature sensor at the pipe outside diameter are deliverable at present fom DN8 to DN100. For replacing the sensor element the clamp must be opend only partially with a screw. The clamp remains meanwhile at the tube. By this an easy validation is ensured, where the „PTV" can be dipped directly into the testing liquid by the cable. For further pipeline diameters there can be delivered also tube band in high-grade steel. Furthermore a miniaturized measuring transducer that can be integrated into the measuring pipeline is available.

The mini-clamp-on temperature sensors „PTV" allows the measurement of the process temperature in the pipeline with only minor (unavoidable) temperature deviation.

For guarantee the long-term operational safety of our pipeline sensors every sensor is tested in a extensive test program before delivery.

Basic price . . . . . .

sensor type
3 4-wire Pt100 . . . . . .

class
A class A . . . . . .

Material sensor
K Aluminium with silver contact surface (Ag) . . . . . .

cable
C silicone/PTFE-cable with shielding . . . . . .

Electrical connection
0T 0,30m, cable with cast-on M8 plug (4 pol.) . . . . . .
YY Special version . . . . . .

protection
3 water proof IP68. . . . . .

diameter
mm diameter in mm. . . . . .

Order code

PTV	3	A	K	C		3	mm

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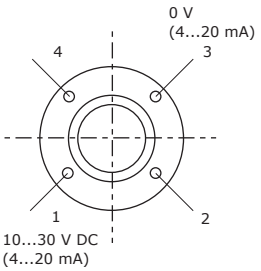
Equipment PTV

LTN-500 signal converter Pt100 on 4...20 mA for connecting in between in the sensor line

4 / 01.22

Connection



certifications
A variation for Ex-free range

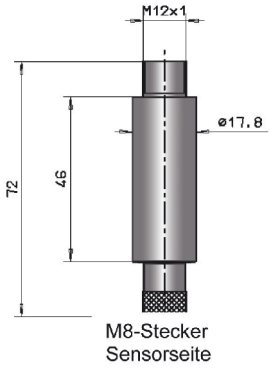
Connection type
Y Input (Pt100) M8-female; Output (4...20 mA) M12-female
S Others

sensor type
A Pt100 4-wire / 4...20 mA.

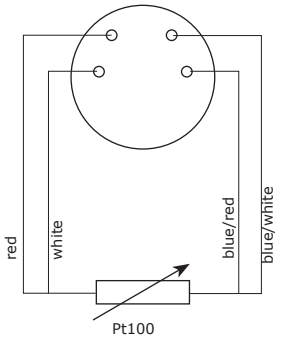
confuguration
A Standard factory setting Pt100 / 0...100°C.
B customer specific setting *(please specify measuring range!)*

Order code

LTN-500	A	A	S



pin assignment Pt100
plug M8



Equipment PTV/LTN

Ordering information / *Model*

RH-MM-? ? ?	Pipe clamp on aus POM up to 49 mm please specify outer tube diameter!
RH-MM-? ? ?	Pipe clamp on made of POM from 50 mm...80 mm please specify outer tube diameter!
SB-MM-? ? ?	tubular tape made of Inox with sensor holder for tube diameter 8 up to 150 mm please specify diameter in „mm"!
LKZO410PUR-AS	10 m PUR-cable, 4-pole, shielded, M12 plug, **for connection an LTN-500**
FKZO420SIL	20 m silicone-cable, 4-pole, M8 coupling, **for direct connection on PTV**

PTX-

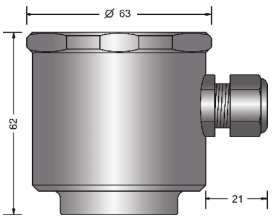
standard-screw-in resistance thermometer Pt100 with and without neck tube
for Ex-areas

4 / 01.22

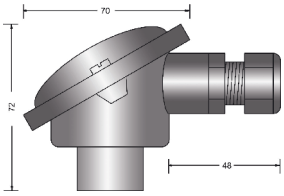
Technical data

ATEX classes	ATEX II 1 G Ex ia IIC T6...T1 Ga ATEX II 1 D Ex ia IIIC Tx°C Da
Measurement accuracy IEC 60751	
accuracy class B – type B	T= -50...400°C ≤ ±(0,3K +0,005 * |T|)
accuracy class A – type A	T= -50...250°C ≤ ±(0,15K +0,002 * |T|) T= 250...400°C ≤ ±(0,3K +0,005 * |T|)
accuracy class AA – type C	T= 0...100°C ≤ ±(0,1K +0,0017 * |T|) T= -50...0°C / 100...250°C ≤ ±(0,15K +0,002 * |T|) T= 250...400°C ≤ ±(0,3K +0,005 * |T|)
type S – accuracy class B	T= -200...600°C ≤ ±(0,3K +0,005 * |T|)
type S – accuracy class A	T= -200...600°C ≤ ±(0,15K +0,002 * |T|)
type S – accuracy class AA	T= -50...250°C ≤ ±(0,1K +0,0017 * |T|) T= -50...0°C / 250...600°C ≤ ±(0,15K +0,002 * |T|)
Materials	
protection tube: (medium contact)	Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti)
Process connection: (medium contact)	Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti)
neck tube:	CrNi-steel
Connection housing:	CrNi-steel / aluminium lackiert / PP – polypropylene / POM – polyoxymethylene (Delrin®)
Environmental conditions	
Ambient temperature:	– 40°C...+130°C (limitation through material see technical manual)
Process temperatures:	limitation through category / temperature class / electrical power; see EG type examination certificate max. – 50°C...+400°C / high temperature version – 200°C...+600°C
Process pressure ranges:	depending on process connection version, max. -1 bar ...60 bar
Protection:	IP67 (EN/IEC 60529)

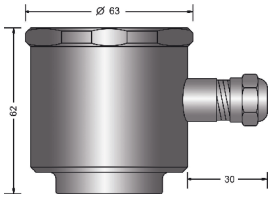
Connection housing type 2 / B



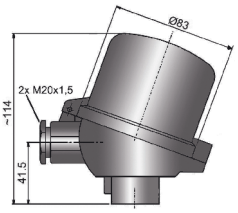
Connection housing type 4



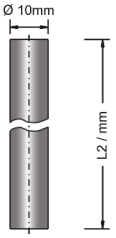
Connection housing type 5



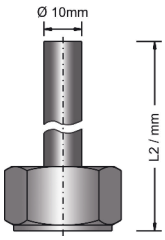
Connection housing type G



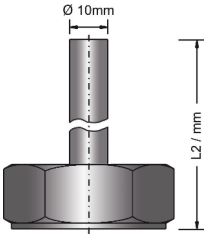
neck tube
process connection
type E / F



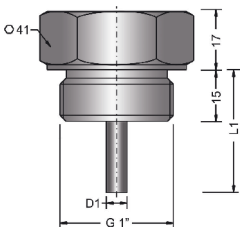
neck tube
process connection
type 1



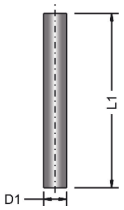
neck tube
process connection
type 2



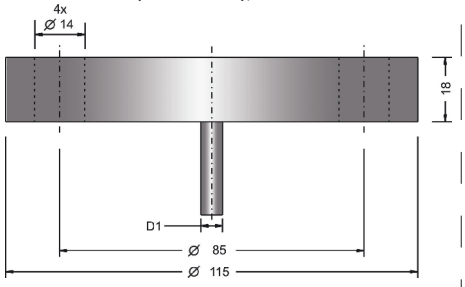
process connection
type 2 - G 1" ISO 228-1



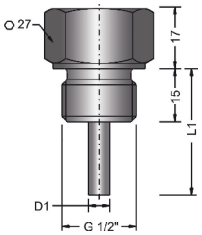
process connection
type 0 - without
(for sliding sleeve)



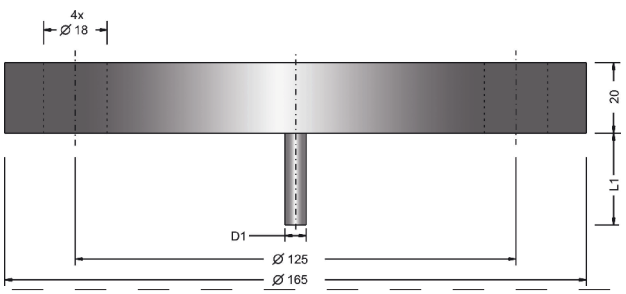
type E - flange DIN EN 1092-1, A
(B - DIN 2527), DN25



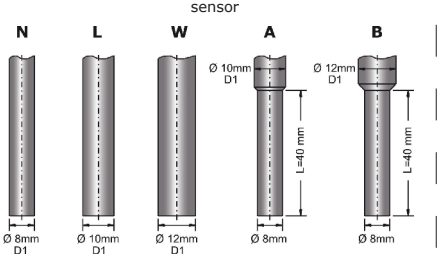
process connection
type 1 -
G ½" ISO 228-1



type F - flange DIN EN 1092-1, A
(B - DIN 2527), DN50



sensor



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PTX-

standard-screw-in resistance thermometer Pt100 with and without neck tube
for EX-range

4 / 01.22

Equipment

(1) please order head transmitter separately on page 236

immersion pocket and weld-in sockets on page 170

Connector heads

Attention!
temperature ranges of the connector heads:
with aluminum head: 130°C
plastic head: 100°C
head transmitter: -10°C up to 70°C

Please use neck tubes at higher process temperatures!

Application

Basis of the ACS ex-RTD Series PTX form standardized, high-grade platinum measuring resistors with a nominal resistance of 100 ohms at 0 ° C, the tolerance classes AA, A, B according to IEC 60751st ACS ex-Pt100 probes are characterized by high accuracy, repeatability and reliability.
PTX-resistance thermometers are approved for gas and dust explosion requirements, and are generally delivered with exchangeable measuring insert Pt100. Thus, the actual sensor may be removed from the probe tube and possibly replaced without draining the pipe or the container. This saves costs and avoids loss of production.

Type certificate
1 ATEX II 1 G Ex ia IIC T6...T1 Ga
2 ATEX II 1 G Ex ia IIC T6...T1 Ga / ATEX II 1 D Ex ia IIIC Tx°C Da
Only with connection type K / M; Only with material terminal enclosure type 4 / 5; Not with surface coating

Sensor type
1 1x Pt100 / 2-wire
2 1x Pt100 / 3- wire
3 1x Pt100 / 4- wire
4 2x Pt100 / 2- wire

Accuracy class / Process temperature
B Class B - IEC 60751 / -50°C...+400°C
A Class A - IEC 60751 / -50°C...+400°C not for sensor type 4
Y others *(e.g. high temperature type -200...+600°C, not for sensor type 4/ surface coating e.g. ETFE)*

Process connection
0 without
1 Thread ISO 228-1 – G½"B
2 Thread ISO 228-1 – G1"B
E Flange DIN EN 1092-1, A (B - DIN 2527), DN25, PN10-40
F Flange DIN EN 1092-1, A (B - DIN 2527), DN50, PN10-40
Y others

Material process connection/probe *(process wetted) - probe diameter D1*
N CrNi-steel – Ø8 mm
L CrNi-steel – Ø10 mm
W CrNi-steel – Ø12 mm
A CrNi-steel – Ø10 mm - reduced tip Ø8 mm/L=40 mm
B CrNi-steel – Ø12 mm - reduced tip Ø8 mm/L=40 mm
Y others

Neck tube
A without
B Neck tube L2=100mm
Y Neck tube L2/mm

Material terminal enclosure
B PP
2 POM
4 Aluminum form B – EN 50446
5 CrNi-steel
G Aluminum double size
Y others

Measuring insert
W Exchangeable measuring insert

Connection type
K Terminal socket
M Connection for head transmitter ExKTM-_A0 (4...20mA/fix adjusted) integrated
X Connection for head transmitter UTN500-B (4...20mA/programmable) integrated
D Loose wires
G 1x terminal socket / 1x head transmitter type M/X/T/ others terminal enclosure type G
L 2x terminal socket terminal enclosure type G
Y others

Sensor length L1 sensor in mm
(Price per started 100 mm
(Preferred length: 50 | 100 | 150 mm)

Halsrohrlänge L2 Halsrohr in mm
(Price per started 100 mm
(Preferred length 100 mm)

+ Additional Options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
WK Factory calibration – calibration certificate
MZ Material test certificate – EN10204 3.1

Order code

PTX			W		mm		mm

Thermocont® TK

compact thermometer class A according to IEC 60751
with 4...20 mA output or Pt100 direct, with standard- and
hygienic process connections for food applications

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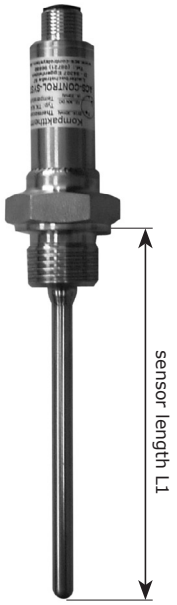
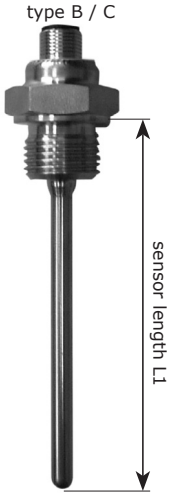
Technical data

sensor element:	Pt100 class A according to IEC 60751
output:	analog 4...20mA
Power supply:	10...35V DC, reverse polarity protected
accuracy (signal converter):	0,1K or 0,08%
Long term drift:	≤ ±0,1K or 0,05% FS / year - not cumulative
operating temperature:	-50...+150°C
Ambient temperature:	-40...+85°C
EMV compatibility:	operating material class B / industrial sector (EN/IEC 61326)

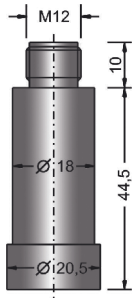
transmitter electronics
type A



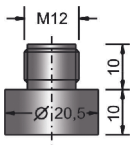
transmitter electronics
type B / C



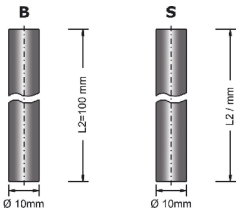
Connection housing
electronics output type A /
E – 2-wire, signal 4...20mA



Connection housing
electronics output type B /
C – Pt100, 4-wire



neck tube

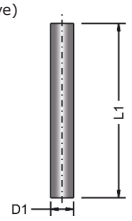


Application

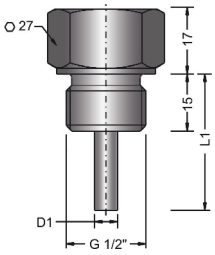
The compact thermometer Thermocont® TK is used to measure temperatures from -50 ... 150 ° C. Locations are for example Pipelines or containers.
The ACS is available Thermocont® TK on standard process connections, but also for use in hygienic areas.

Rapid installation with M12 connector with IP66/67, small and compact design in stainless steel, high quality, reliability and accuracy characteristics of this sensor. Besides the standard version with 4 .. 20 mA output and selectable ranges, can also direct Pt100 4-wire output to work (optional). Various process connections, sensor diameter, length or other versions with reduced peak, or with neck allow a flexible use for virtually all process conditions.

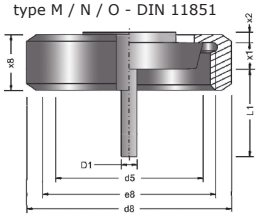
type 2 - without (for sliding
sleeve)



type 1 - G ½" ISO 228-1

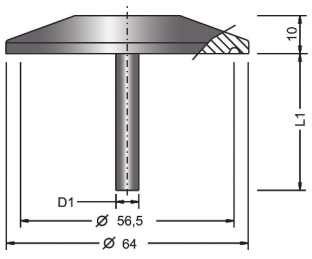


type M / N / O - DIN 11851

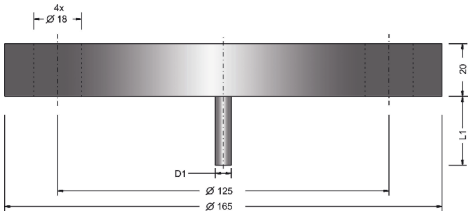


	DN	PN	d5	x1	x2	d8	x8	e8
O	25	40	44	10	4	63	21	Rd52x1/6"
N	40	40	56	10	4	78	21	Rd65x1/6"
M	50	40	68	11	3	92	22	Rd78x1/6"

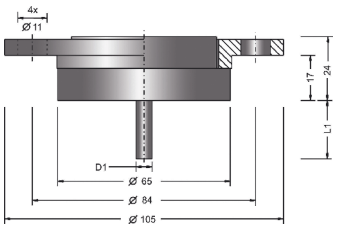
type T - Clamp ISO 2852 DN51
(2") / DIN 32676 DN50



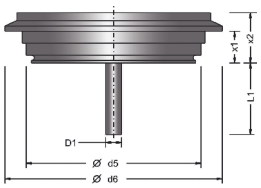
type G - flange DIN EN 1092-1,
A (B - DIN 2527), DN50



type L - DRD DN50, Ø65 mm

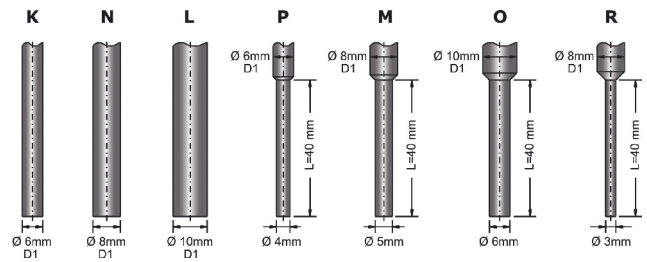


type R / P - Varivent®



	DN	PN	d5	d6	x1	x2
R	25-32	40	F 50	66	12	19
P	40-125	40	N 68	84	12	19

sensor



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Thermocont® TK

compact thermometer class A according to IEC 60751
with 4...20 mA output or Pt100 direct, with standard- and
hygienic process connections for food applications

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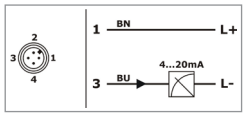
Equipment

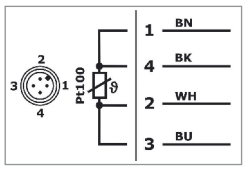
weld-in sockets
on Seite 170

Connection

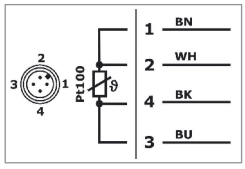
2-wire / 4...20 mA / type A/E
wire colors
standard connection cable M12:
BN = brown, BU = blue



4-wire / Pt100 / Type B
wire colors
standard connection cable M12:
BN = brown, WH = white,
BU = blue, BK = Schwarz



4-wire / Pt100 / type C
wire colors
standard connection cable M12:
BN = brown, WH = white,
BU = blue, BK = Schwarz



model
TK Standard

design
K compact – cylindric

sensor / class
A Pt100 class A - IEC 60751

Process connection
1 G½" B, ISO 228-1
2 Without
M Milk tube DIN 11851, DN50, PN25
N Milk tube DIN 11851, DN40, PN40
O Milk tube DIN 11851, DN25, PN40
R Varivent® F, Ø50 mm, DN25-32, PN 40
P Varivent® N, Ø68 mm, DN40-125, PN 40
L DRD DN50, Ø65 mm, PN25
G Flange DIN EN 1092-1, A (B - DIN 2527), DN50, PN10-40
T Tri-Clamp 2"/DN51, PN16/40
Y Others

Material process connection/sensor
(process wetted) – sensor diameter D1
K Steel 1.4571/316TI - Ø6 mm
N Steel 1.4571/316TI – Ø8 mm
L Steel 1.4571/316TI – Ø10 mm
P Steel 1.4571/316TI - Ø6 mm - reduced tip Ø4 mm/L=40 mm
M Steel 1.4571/316TI - Ø8 mm - reduced tip Ø5 mm/L=40 mm
O Steel 1.4571/316TI - Ø10 mm - reduced tip Ø6 mm/L=40 mm
R Steel 1.4571/316TI - Ø8 mm - reduced tip Ø3 mm/L=40 mm
Y Others

neck tube
A Without
B neck tube L2=100mm
Y neck tube L2/mm by choice

Material Connection housing
C CrNi-steel

Electrical connection
S Plug M12

Electronics - output
A 2-wire, signal 4...20mA
B Pt100, 4-wire, connection B
C Pt100, 4-wire, connection C
E 2-wire, signal 4...20mA, programmable

Measuring range
BA -50..+100°C
CA -40..+60°C
DA -30..+60°C
DB -30..+150°C
DC -30..+70°C
EA -20..+20°C
EB -20..+60°C
EN -10..+40°C
FC 0..+50°C
FE 0..+100°C.
FG 0..+150°C.
00 Pt100, 4-wire
XX Special measuring range *(poss. higher deviation accuracy)*

sensor length L1 / mm
B 50 mm
C 100 mm.
D 150 mm.
E 200 mm.
Y Others

length L2 neck tube in mm
(price per commenced 100 mm)

Order code

Thermocont® TK	K	A				C	S				

Equipment

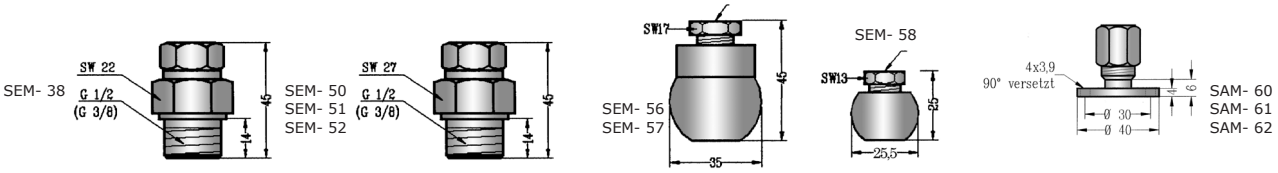
Order information	*Model*
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded
BKZ0412-VA	Matching cable socket, VA-nut
BKZ0512-VA	Matching cable socket, VA-nut (at 0...10 V)

Equipment for Pt100

sliding- and weld-in sockets

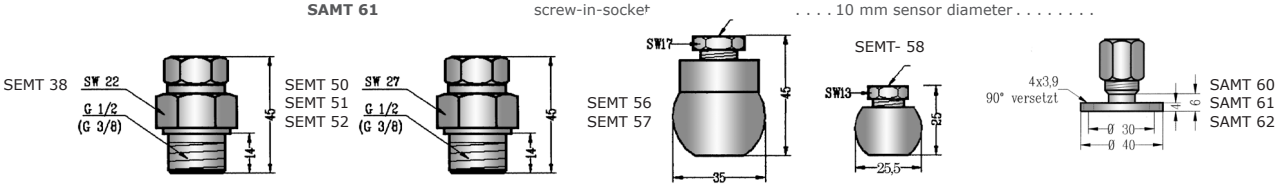
sliding sleeves for Pt100, press-ring made of 1.4571 / 1.4404 (pressure-resistant up to 20 bar), material 1.4571 / 1.4404

Ordering information	*Model*
SEM-38	G⅜" . . . . . 8 mm sensor diameter
SEM-50	G½" . . . . . 8 mm sensor diameter
SEM-51	G½" . . . . . 10 mm sensor diameter
SEM-52	G½" . . . . . 6 mm sensor diameter
SEM-56	ball-weld-in socket Ø 35 mm . . . . . 8 mm sensor diameter
SEM-57	ball-weld-in socket Ø 35 mm . . . . . 10 mm sensor diameter
SEM-58	ball-weld-in socket Ø 25,5 mm . . . . . 6 mm sensor diameter
SAM-62	screw-in-socket . . . . . 6 mm sensor diameter
SAM-60	screw-in-socket . . . . . 8 mm sensor diameter
SAM-61	screw-in-socket . . . . . 10 mm sensor diameter



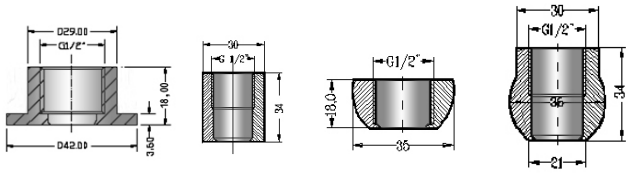
sliding sleeves for Pt100, with press-ring made of PTFE (Teflon®) movable (pressureless application), material 1.4571 / 1.4404

Ordering information	*Model*
SEMT 38	G⅜" . . . . . 8 mm sensor diameter
SEMT 50	G½" . . . . . 8 mm sensor diameter
SEMT 51	G½" . . . . . 10 mm sensor diameter
SEMT 52	G½" . . . . . 6 mm sensor diameter
SEMT 59	G½" . . . . . 4 mm sensor diameter
SEMT 56	ball-weld-in socket Ø 35 mm . . . . . 8 mm sensor diameter
SEMT 57	ball-weld-in socket Ø 35 mm . . . . . 10 mm sensor diameter
SEMT 58	ball-weld-in socket Ø 25,5 mm . . . . . 6 mm sensor diameter
SAMT 62	screw-in-socket . . . . . 6 mm sensor diameter
SAMT 60	screw-in-socket . . . . . 8 mm sensor diameter
SAMT 61	screw-in-socket . . . . . 10 mm sensor diameter



weld-in sockets (front-flush) for Pt100, material 1.4571 / 1.4404, for food applications and hygienic applications

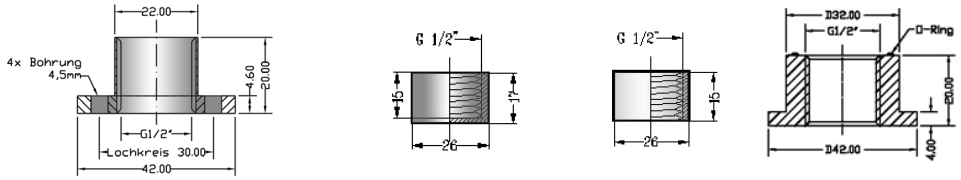
Ordering information	*Model*
SEM-12	G½" for PTL with O-ring gasket
SEM-22	G½" metal-seated
SEM-32	G½" ball-weld-in socket for PTL with O-ring gasket
SEM-42	G½" metal-seated, ball-weld-in socket



SEM-12 SEM-22 SEM-32 SEM-42

weld-in sockets for Pt100, material 1.4571 / 1.4404

Ordering information	*Model*
SAM-12	screw-in-socket for air ducts
TEM - 10	frontally closed
TEM - 11	frontally open
BEFK12	weld-in socket G½", sealing attachment at the back



SAM-12 TEM - 10 closed TEM - 11 open BEFK12

marking measurement point

Ordering information	*Model*
AS-50	hang tag made of VA with laser inscription

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Equipment for Pt100

immersion pocket and thread nipple for bayonet connector

STH- *immersion pocket for Pt100, material 1.4571 / 1.4404*

Basic price . . . . . .

immersion pocket sensor

0 design A, B with internal thread and design C, D, E
With press-ring made of steel 1.4571 . . . . . .
T -press-ring made of PTFE *(only with design C, D, E possible)* . . . . . .

design

A	design see drawing A	for Pt100 with G½" thread resp. type PTI . . . . .
B	design see drawing B	for Pt100 with G½" thread resp. type PTI . . . . .
C	design see drawing C	for Pt100 - sensor PTF, PTS . . . . .
D	design see drawing D	for Pt100 - sensor PTF, PTS . . . . .
E	design see drawing E	for Pt100 - sensor PTF, PTS . . . . .
X	design see drawing X	for Pt100 with G½" thread resp. type PTI . . . . .
Y	Special design	. . . . .

inner tube diameter

04 inner tube diameter 4 mm *(for ø 3 mm sensor)* . . . . . .
06 inner tube diameter 6 mm *(for Pt100 sensor type PTI) (for ø 5 mm sensor)* . . . . . .
07 inner tube diameter 7 mm *(for ø 6 mm sensor)* . . . . . .
09 inner tube diameter 9 mm *(with design E not possible) (for ø 8 mm sensor)* . . . . . .
11 inner tube diameter 11 mm *(with design E not possible) (for ø 10 mm sensor)* . . . . . .

Pressure stage

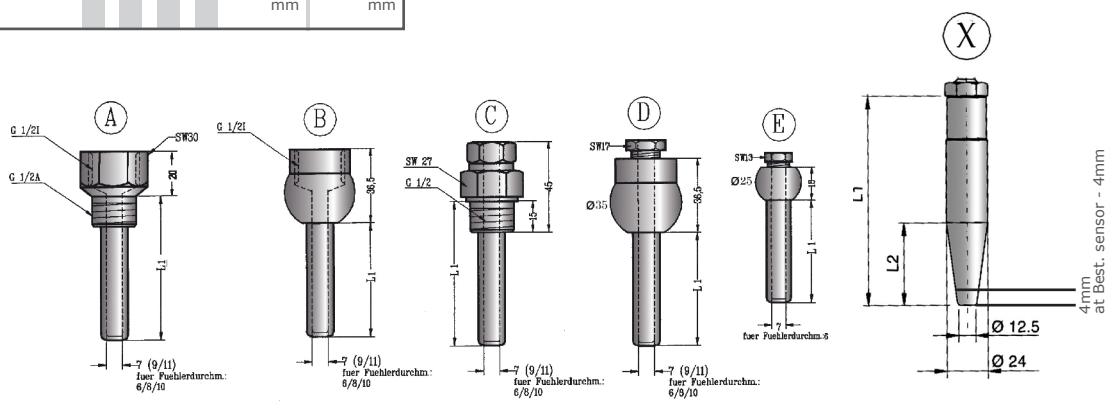
0 100 bar . . . . . .
D 500 bar . . . . . .

length L1 incl. process connection
(price per commenced 100 mm) . . . . . .

length L2 at STH--X
(price per commenced 100 mm) . . . . . .

Order code

STH-			mm	mm



GWN- thread nipple for bayonet joint (continuous or closed) **matching for PTM 1.4571 / 1.4404**

type

A **for 12,2 mm bayonet** *(only for PTM with 6 mm diameter)* . . . . . .

design

S design S (open) . . . . . .
T design T (closed) . . . . . .

Connection

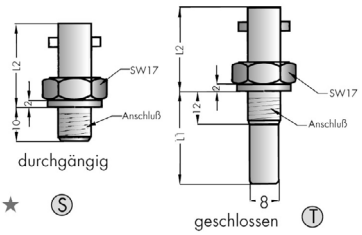
1 M10x1 . . . . . .
Y Special version . . . . . .

length L 2 in mm
20 mm . . . . . .

length L 1 in mm *(only at design T)* . . . . . .
(price per commenced 100 mm)

Order code

GWN-	A		mm	mm



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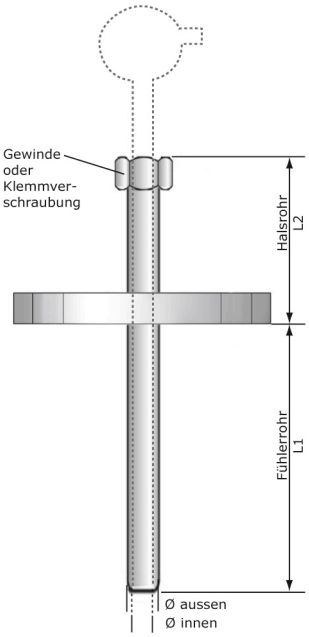
STF- *immersion sensor flanges for Pt100*

Basic price . . . . . .



design/process connection

E	Flange DIN EN 1092-1, A (B - DIN 2527), DN25, PN10-40, 316L	. . . . .
F	Flange DIN EN 1092-1, A (B - DIN 2527), DN50, PN10-40, 316L	. . . . .
J	Flange DIN EN 1092-1, A (B - DIN 2527), DN100, PN10-40, 316L	. . . . .
S	Flange 1 Zoll ANSI, 150 RF 316L	. . . . .
T	Flange 1 1/2 Zoll ANSI, 150 RF 316L	. . . . .

inner tube diameter/outer diameter

04	inner tube diameter 4 mm *(for ø 3 mm sensor)*	. . . . .
06	inner tube diameter 6 mm *(for Pt100 sensor type PTI) (for ø 5 mm sensor)*	. . . . .
07	inner tube diameter 7 mm *(for ø 6 mm sensor)*	. . . . .
09	inner tube diameter 9 mm *(at design E not possible) (for ø 8 mm sensor)*	. . . . .
11	inner tube diameter 11 mm *(at design E not possible) (for ø 10 mm sensor)*	. . . . .

neck tube

A	Without neck tube	. . . . .
B	With neck tube (standard L2 =100 mm)	. . . . .
Y	With neck tube by choice in mm	. . . . .

sensor mounting

A	1/2 Zoll thread	. . . . .
C	clamp screw connection	. . . . .

Pressure stage

0	100 bar	. . . . .
D	500 bar	. . . . .

length L1 Sensor
(price per commenced 100 mm) . . . . . .

length L2 neck tube
(price per commenced 100 mm). . . . . . .

Order code

STF-		mm	mm

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Thermohunter BA

contactless infrared temperature measurement device

4 / 01.22

Thermohunter *contactless infrared temperature measurement device*

BA-06 TA-S, 0-500°C 6 mm visual field / 200 mm; 4...20 mA output . . . . . .
BA-30 TA-S, 0-500°C 30 mm visual field / 1000 mm; 4...20 mA output . . . . . .

Technical data

temperature range	0 - 500 °C (display -20 °C / +520 °C)
min. measuring surface	Ø 6 / 200 mm
optics	silicone lens
sensor / wavelength	thermopile / 8 - 14 µm
response time	500 ms / 90%
accuracy	± 1% of the measured value or ± 2 °C ± 1-Digit (the higher value) (E = 1.0)
repetition time	± 1 °C of the measured value
resolution	1 °C
analog output	BA-06TA: 1 mV / °C BA-06TA: 4-20 mA
output resolution	0,2 °C
center	coaxial laser positioning
emission factor	0.10 - 1.20
delay	nominal 1 - 200 (0,05 - 10 seconds) variable
supply	12 - 24 VDC ± 10% / max. 150 mA
ambient temperature	0 - 50 °C
ambient moisture	35 - 85 % r.F. (not condensing)
storage temperature	-10 / 60 °C
vibrations	30G (20 - 50 Hz)
waterproof	IP65
weigth	350 g

Equipment for temperature sensors

limit switches, signal converter, signal duplicators, head transmitter and supply isolators

GWAP-250-UO
temperature limit switch for Pt100 input, 2 limit switch, universal mains supply circuit, snap-on-housing 22,5 mm

Transcont WTA-100-G0 and ExWTA-100-G0
Pt100 converter passive, with 2- or 3-wire connection preset, analog output 4...20 mA
2-wire technology or analog output 0...10 V 3-wire technology, 2 PNP-switching outputs,
snap-on-housing 22,5 mm

Transcont WTAU-100-UO
Pt100-signal converter active, galvanic isolation and conversion of a 2-wire or 3-wire- Pt100, free adjustable,
1 input / 1 output, 20...253 V AC/ DC long range supply (universal mains supply circuit), snap-on-housing 22,5 mm

Transcont WTAU-200-UO Pt100- signal duplicators
Pt100-signal converter active, galvanic isolation and conversion of a 2-wire or 3-wire Pt100, free adjustable,
1 input / 2 outputs, 20...253 V AC / DC long range supply (universal mains supply circuit), snap-on-housing 22,5 mm

Transcont WTAU-120-UO Pt100-signal converter, preset
Pt100-signal converter active, galvanic isolation and conversion of a 2-wire or 3-wire Pt100, preset,
1 output, 20...253 V AC / DC long range supply, universal mains supply circuit, snap-on-housing 22,5 mm, 1 input

Transcont WTAU-220-UO Pt100- signal duplicators, preset
Pt100-signal converter active, galvanic isolation and conversion of a 2-wire or 3-wire Pt100, preset,
1 input / 2 outputs, 20...253 V AC / DC long range supply (universal mains supply circuit), snap-on-housing 22,5 mm

Transcont UTN-500 temperature head transmitter, universal head transmitter, adjustable via PC

Transcont KTM and Transcont ExKTM
temperature head transmitter with 2- or 3-wire connection, preset, analog output 4...20 mA
2-wire technology or analog output 0...10 V, 3-wire technology, 1 PNP switching output

EXTVA-500-UC supply isolators Ex-version

Ex safety barriers, separating barriers

prices on page 229

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5. Flow measurement

Contents

Do you need vortex flow meters or coriolis flow meters?

Of course we also offer these flowmeters to you!

Our sales engineers are available for you:
+49 (0) 8721 9668 0.

What to use where

Function	Fluxicont FS4SK	Fluxicont FS4LK	Fluxicont FU4S	Fluxicont FU4L	Flowcont® F630	Flowcont® L630	Flowcont® UN	Flowcont® Magsmall	Flowgas TMS 300	Flowgas TMS 500
Flow measurement	●	●	●	●	●	●	●	●	●	●
Flow monitor	●	●	●	●						
Consumption meter compressed air / gases									●	●
Operating conditions										
Hazardous area					⟨Ex⟩	⟨Ex⟩				
Aggressive media									●	●
Non conductive media	●	●	●	●			●	●	●	●
Hygienic sector		●		●		●				

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Measurement principle Type Areas of application	**calorimetric flow switch Fluxicont FS4SK/ FS4LK** liquids	**magnetic-inductive Flowcont® F630** aggressive media, acid, alkaline solutions, drinking water, waste water	**magnetic-inductive Flowcont® L630** food applications, pharma	**cost-effective consumption sensor for compressed air and gases Flowgas TMS 200** gases	**consumption sensor for compressed air and gases with big outer tube diameter Flowgas TMS 400** gases	**cost-effective magnetic-inductive flow meter Flowcont® Magsmall** liquids	**contactless ultrasonic flow meter Flowcont® UN** liquids
							
Minimum conductivity	0	5µS/cm	5µS/cm	-	-	-	-
Nominal width	DN 40-125	DN 3-2000	DN 3-200	DN 15-50	universal	DN 10-25	DN 10-25
Process connection	thread G¼", G½",	DIN-flanges, ANSI-flanges	Flange, milk pipe screw connection, welded socket, TriClamp	connection thread G¼" up to G 2" connection flange	connection thread G½"	Thread G¼", G½", G¾", G1" and G2"	external pipe thread external thread NPT collar clamp adapter
Process temperature	-20...+110°C	up to 180°C	up to 180°C	-30...+80°C	-30 ... 110°C sensor tube; -30...+80°C housing	-10...+70°C	0...+80°C
Lining material	1.4404 /316L	PFA/PTFE, hard /soft rubber	PFA/PTFE, hard /soft rubber	1.4301 / 1.4404 stainless steel	1.4301 stainless steel	1.4404/316L	1PSU polysulfone (Ultrason S)
Flange material	-	steel 1.4571	steel 1.4571	-	-	1.4404/316L	-
Electrode material	-	1.4571, Hastelloy C4/B2, Titan, Tantal	1.4571, Hastelloy C4/B2, Titan, Tantal	-	-	1.4435/316L	-
Electronics compact or seperated with signal converter	X	X X	X X	X	X	X	X
Display	LED-Display	graphic display, adjustable	graphic Display, adjustable	LCD-Display	LCD-Display	LCD-Display	LCD-Display
Power supply	DC voltage 16...45VDC / universal voltage 20...253VAC/DC	100...230V AC/ 24V AC/DC	100...230V AC/ 24V AC/DC	24 VDC smoothed ± 15%	24 VDC	18 V DC ... 30 V DC	18 V DC ... 30 V DC
Outputs	relay output / PNP switching output	4...20mA, impulse output, switch output, frequency output	4...20mA, impulse output, switch output, frequency output	digital output analog output impulse output	digital output analog output impulse output	Digital output	analog output / PNP-transistor output
Communication	-	HART protocol	HART protocol	Modbus	Modbus	IO-Link, Bluetooth	-
Certifications	-	ATEX	ATEX	-	-	-	-

Measurement principle **Type** **Areas of application**	**calorimetric** **flow switch** **Fluxicont FU4S** liquids Modbus IO-Link 	**calorimetric** **flow switch** **Fluxicont FU4L** liquids Modbus IO-Link 
Minimum conductivity	0	0
Nominal width	DN 40-125	DN 40-125
Process connection	thread G¼", G½",	thread G½" metallic sealing
Process temperature	-20...+110°C	-20...+110°C
Lining material	1.4404 /316L	1.4404 /316L
Flange material	-	-
Electrode material	-	-
Electronics compact **or** **seperated with** **signal converter**	X	X
Display		
Power supply	Modbus RTU 6...35 VDC IO-Link 9...35 VDC	Modbus RTU 6...35 VDC IO-Link 9...35 VDC
Outputs	RS485 Modbus RTU / IO-Link 1x electricity 0(4)...20mA /2x switch	RS485 Modbus RTU / IO-Link 1x electricity 0(4)...20mA /2x switch
Communication	Modbus / IO-Link	Modbus / IO-Link
Certifications	- -	- -

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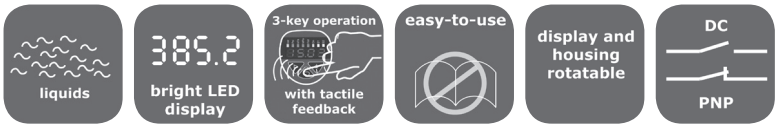
Fluxicont FS4SK

Flow switch for general applications
Monitoring of flow and temperature in liquids

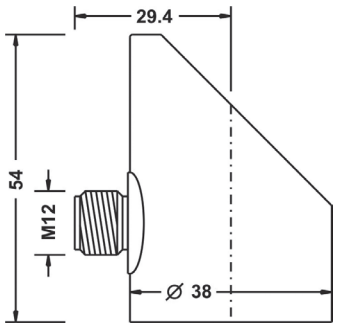
5 / 01.22

Technical data

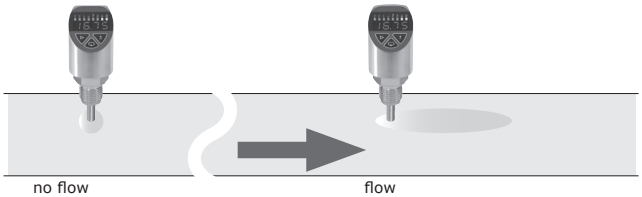


Technical Data	
Step response time	Flow: ≤ 6s (td = 0s / 0% >> 90% / 100% >> 10%); Temperature: ≤ 4s
Start-up time tOn	Flow: ≤ 10s; Temperature: ≤ 2s
Direct voltage	
Electronic output type	A / B / C / D
Supply voltage US	10,5…35VDC, reverse polarity protected
Residual ripple UPP	≤ 2VPP / USmin ≤ US ≤ USmax
Supply current IIn	≤ 100mA S1 / S2 = 0mA Iout = 22mA
Isolation voltage	500VAC (electrical connections – enclosure)
Universal voltage	
Electronic output type	W
Supply voltage US	20…253VAC – 48/62Hz 20…220VDC
Supply power PIn	≤ 4VA / 2W
Protection classification	I (EN 61140)
Overvoltage category	II (EN 60664-1)
Input	
Measurement parameter	Flow velocity
Measurement principle	calorimetric
Measurement medium	Liquids
Measurement range	3…300 cm/s / Greatest sensivity 3…100 cm/s / Factory setting 0…100 cm/s
Temperature gradient	≥ 300 K/min
Switch output PNP S1 / S2	
Electronic output type	A / B / C / D
Function	PNP switch to +L
Output voltage UOut	UOut ≥ US – 2V
Output current IL	0… ≤ 200mA, current limited, short circuit protected
Rise time T90	< 30µs (RL < 3kR / IOut > 4,5mA)
Switch cycles	≥ 100.000.000
Switch output relay S1	
Electronic output type	W
Function	Relay changeover contact - switch to L/+L
Switching values	≤ 2A / ≤ 62,5VA / 60W
Switch cycles	≥ 100.000.000
Analogue output Aout – Current 4…20mA	
Electronic output type	B / C / D
Operating range IOut	3,8…20,5mA, min. 3,6mA, max. 22mA
Permitted load RL	≤ (US - 10,5V) / 20mA
Measuring accuracy	
Accuracy	Flow: ≤ ±5% MEV14) (5…100cm/s) / (-20°C…+85°C) / ≤ ±10% MEV14) (100…175cm/s) / (-20°C…+85°C); Temperature: ≤ ±1,5K (≥ 20cm/s)
Long term drift	Flow: ≤ ±10% MV13) / year (-20°C…+85°C)
Temperature deviation	Flow: ≤ ±0,4cm/s / K (-20°C…+85°C)
Materials	
Probe	Steel 1.4571/316Ti (process wetted)
Process connection	Steel 1.4404/316L / Steel 1.4571/316Ti (process wetted)
Gaskets	process wetted: FPM – fluorelastomere (e.g. Viton®) / EPDM – ethylene-propylene-dienmonomere, FDA-listed
Environmental conditions	
Environmental temperature	-20°C...+85°C
Process temperature	-20°C...+110°C; maximum -30°C...+120°C; compensated -30°C...+125°C
Process pressure	≤ 40 bar
Schutzart:	IP65/IP67 (EN/IEC 60529

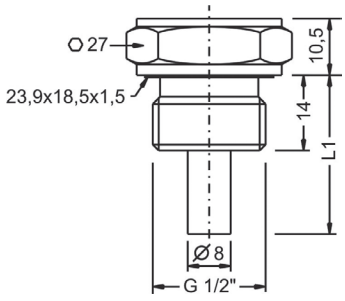
Connection housing



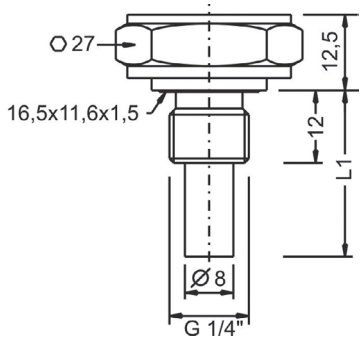
Fluxicont FS4SK installation



Type 0 – Thread ISO 228-1 – G½", DIN EN ISO 1179-2 E



Type 3 – Thread ISO 228-1 – G¼", DIN EN ISO 1179-2 E



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Fluxicont FS4SK

Flow switch for general applications
Monitoring of flow and temperature in liquids

5 / 01.22

Application

Due to the device construction with flow velocities from 3cm/s to 300cm/s, process temperatures from –20°C to +85°C, process pressures up to 40bar, process material stainless steel V4A as well as the availability of industrial standard process connections like thread ISO 228-1, thread ANSI NPT – on request and thread ISO 225-1 M18x1,5 for adapter – on request
the device is especially suitable for the use for monitoring cooling water circulation systems of pumps, turbines, compressors and heat exchangers, for monitoring pump functionality, for dry run protection for pumps, for leak monitoring in process lines, for monitoring lubrication systemsand for filter monitoring in the beverage industry.

The flow switch is suitable for demanding measuring requirements.

Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.

The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.

A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

A LABS-free resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or factory certifications for drink water resp. food suitability.

Customer specific special versions can be realized on request, e.g. software adaption (menu navigation, special functions, etc.), changed terminal assignment resp. connector orientation, design adaption of the user surface, special designs for the process connection.

Basic price . . . . . .

Type
FS4S Standard. . . . . .

Measuring system
K Calorimetric sensor . . . . . .

Approval
S Standard . . . . . .

Process connection
0 Thread ISO 228-1 – G½"B, DIN EN ISO 1179-2 E. . . . . .
3 Thread ISO 228-1 – G¼"B, DIN EN ISO 1179-2 E. . . . . .
Y others . . . . . .

Material gaskets (process wetted)
1 FPM – fluorelastomere (Viton®) . . . . . .
3 EPDM – ethylene-propylene-dienmonomere . . . . . .

Material process connection/Probe (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Sensor length L1
Process connection
Type 0 – G½" / Type 3 – G¼"
0 30 mm / 28mm . . . . . .
1 49 mm / 47mm . . . . . .
2 79 mm / 77mm . . . . . .
3 119 mm / 117mm . . . . . .

Electronic – output
A 2x switch PNP, supply 24VDC . . . . . .
B 1x switch PNP, 1x signal 4...20mA, supply 24VDC . . . . . .
C 2x switch PNP, 1x signal 4...20mA, supply 24VDC . . . . . .
D 1x switch PNP, 1x signal 4...20mA, Desina, supply 24VDC . . .
W 1x switch relay, supply 20...253VAC/DC . . . . . .

Electronic – function
S Standard . . . . . .

Process temperature
0 Standard –20°C...+110°C . . . . . .
0. . . . . .
0 . . . . . .

Electrical connection
S Plug M12 . . . . . .

Order code

Fluxicont	FS4S	K	S			V	C			S	0	0	0	S

Equipment

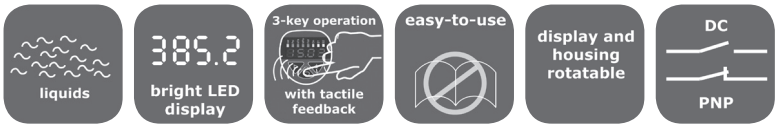
Ordering information	*Model*
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .

Fluxicont FS4LK

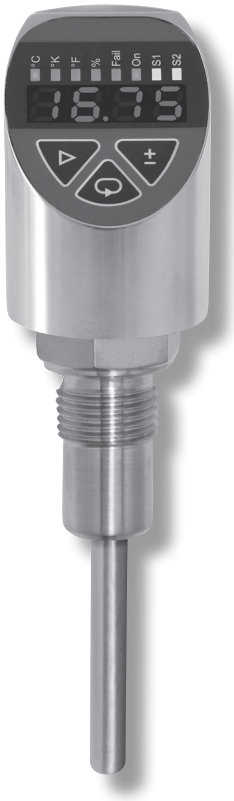
Flow switch for hygienic applications
Monitoring of flow and temperature in liquids

5 / 01.22

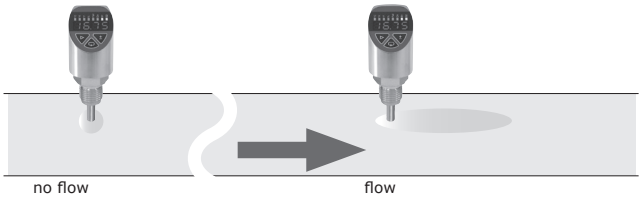
Technical data



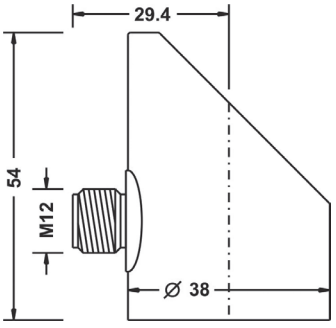
Technical Data	
Step response time	Flow: ≤ 6s (td = 0s / 0% >> 90% / 100% >> 10%); Temperature: ≤ 4s
Start-up time tOn	Flow: ≤ 10s; Temperature: ≤ 2s
Direct voltage	
Electronic output type	A / B / C / D
Supply voltage US	10,5…35VDC, reverse polarity protected
Residual ripple UPP	≤ 2VPP / USmin ≤ US ≤ USmax
Supply current IIn	≤ 100mA S1 / S2 = 0mA Iout = 22mA
Isolation voltage	500VAC (electrical connections – enclosure)
Universal voltage	
Electronic output type	W
Supply voltage US	20…253VAC – 48/62Hz 20…220VDC
Supply power PIn	≤ 4VA / 2W
Protection classification	I (EN 61140)
Overvoltage category	II (EN 60664-1)
Input	
Measurement parameter	Flow velocity
Measurement principle	calorimetric
Measurement medium	Liquids
Measurement range	3…300 cm/s / Greatest sensivity 3…100 cm/s / Factory setting 0…100 cm/s
Temperature gradient	≥ 300 K/min
Switch output PNP S1 / S2	
Electronic output type	A / B / C / D
Function	PNP switch to +L
Output voltage UOut	UOut ≥ US – 2V
Output current IL	0… ≤ 200mA, current limited, short circuit protected
Rise time T90	< 30µs (RL < 3kR / IOut > 4,5mA)
Switch cycles	≥ 100.000.000
Switch output relay S1	
Electronic output type	W
Function	Relay changeover contact - switch to L/+L
Switching values	≤ 2A / ≤ 62,5VA / 60W
Switch cycles	≥ 100.000.000
Analogue output Aout – Current 4…20mA	
Electronic output type	B / C / D
Operating range IOut	3,8…20,5mA, min. 3,6mA, max. 22mA
Permitted load RL	≤ (US - 10,5V) / 20mA
Measuring accuracy	
Accuracy	Flow: ≤ ±5% MEV14) (5…100cm/s) / (-20°C…+85°C) / ≤ ±10% MEV14) (100…175cm/s) / (-20°C…+85°C); Temperature: ≤ ±1,5K (≥ 20cm/s)
Long term drift	Flow: ≤ ±10% MV13) / year (-20°C…+85°C)
Temperature deviation	Flow: ≤ ±0,4cm/s / K (-20°C…+85°C)
Materials	
Probe	Steel 1.4571/316Ti (process wetted)
Process connection	Steel 1.4404/316L / Steel 1.4571/316Ti (process wetted)
Gaskets	not process wetted: FPM – fluorelastomere (e.g. Viton®) /
Environmental conditions	
Environmental temperature	-20°C...+85°C
Process temperature	-20°C...+110°C; maximum -30°C...+120°C; compensated -30°C...+125°C
Process pressure	≤ 40 bar
Schutzart:	IP65/IP67 (EN/IEC 60529



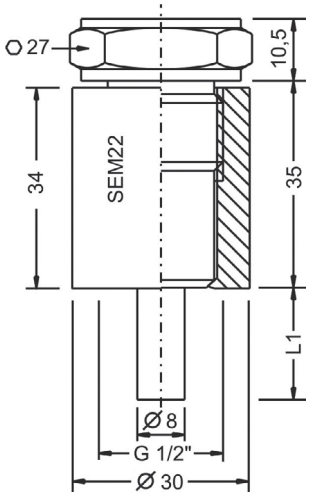
Fluxicont FS4LK installation



Connection housing



Type 2 – Thread ISO 228-1 – G½", metallic/elastomer-free sealing



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Fluxicont FS4LK

Flow switch for hygienic applications
Monitoring of flow and temperature in liquids

5 / 01.22

Application

Due to the device construction with flow velocities from 3cm/s to 300cm/s , process temperatures from –20°C to +85°C, process pressures up to 16bar, process material stainless steel V4A as well as the availability of a variety of process connections like elastomer-free and free of dead space metallic sealing connection, EHEDG-/3A-/FDA-conformal, Varivent® – on request, dairy coupling DIN 11851 – on request, Tri-Clamp® / Clamp DIN 32676 / Clamp ISO 2852 – on reques, aseptic tube coupling DIN 11864-1-A – on request, DRD, APV-Inline, BioControl®, SMS, flanges acc. to DIN and ISO – on request the device is especially suitable for the use for food and beverage industry, for pharmaceutical industry, for biotechnology and for sterile process engineering.

The flow switch is suitable for demanding measuring requirements.

Due to its high accuracy and the high flexibility of configuration, the device can be suited a wide variety of applications.
The process connection with metallic sealing has been specifically designed for the hygienic, dead-space and elastomer-free process adaption.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.

A LABS-free resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or factory certifications for drink water resp. food suitability.

Customer specific special versions can be realized on request, e.g. software adaption (menu navigation, special functions, etc.), changed terminal assignment resp. connector orientation, design adaption of the user surface and special designs for the process connection.

Basic price . . . . . .

Type
FS4L Hygienic applications . . . . . .

Measuring system
K Calorimetric sensor . . . . . .

Approval
S Standard . . . . . .

Process connection
2 Thread ISO 228-1 – G½"B, metallic/elastomer-free sealing (socket SEM-22/SEM-42) . . . . . .
Y others . . . . . .

0 . . . . . .

Material process connection/Probe (process wetted)
V CrNi-steel . . . . . .

Material terminal enclosure
C CrNi-steel . . . . . .

Sensor length L1
0 30 mm . . . . . .
1 50 mm . . . . . .
2 80 mm . . . . . .

Electronic – output
A 2x switch PNP, supply 24VDC . . . . . .
B 1x switch PNP, 1x signal 4...20mA, supply 24VDC . . . . . .
C 2x switch PNP, 1x signal 4...20mA, supply 24VDC . . . . . .
D 1x switch PNP, 1x signal 4...20mA, Desina, supply 24VDC . . . . . .
W 1x switch relay, supply 20...253VAC/DC . . . . . .

Electronic – function
S Standard . . . . . .

Process temperature
0 Standard –20°C...+110°C . . . . . .

0. . . . . .

0 . . . . . .

Electrical connection
S Plug M12 . . . . . .

Order code

Fluxicont	FS4L	K	S		0	V	C			S	0	0	0	S

Equipment

Ordering information	*Model*
BKZ0412-VA	Matching cable socket, VA-nut . . . . .
LKZ0405PUR-AS	Connection cable 5 m, 4-pole, shielded . . . . .
LKZ0410PUR-AS	Connection cable 10 m, 4-pole, shielded . . . . .

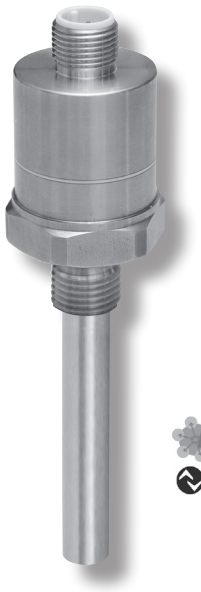
Fluxicont FU4S

Flow transmitter / flow switch
for general industrial applications

5 / 01.22

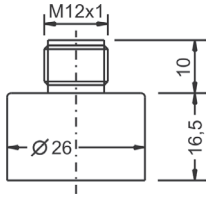
Technical data

Measuring range	
Measuring principle	Calorimetric flow measurement
Nominal measuring range	3…300 cm/s
Output type V – RS485 Modbus®-RTU	
Interface	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior	Flow: T90 ≤ 6s / ton ≤ 10s Temperature: T90 ≤ 4s / ton ≤ 2s
Output type L – IO-Link®	
Interface	IO-Link® V1.1 / Com2 (38400 Baud)
Analogue output	0…20mA: 0…20,5mA / ≤ 0,05mA / ≤ 22mA / dI ≤ 1µA 4…20mA: 3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA
Switch output	2x PP (Push-Pull), switch to +L/-L
Output	Uout ≤ 0,2V, ≥ Us – 2V / Iout 0…200mA (current limited ≤ 450mA, short circuit protected)
Time behavior	Flow: T90 ≤ 6s / ton ≤ 10s Temperature: T90 ≤ 4s / ton ≤ 2s
Auxiliary power	
Supply voltage Us polarity protected	Type V – RS485 Modbus®-RTU: 6…35VDC Type L – IO-Link®: 9…35VDC, without IO-Link® / 18…30VDC, with IO-Link®
Measuring accuracy	
Accuracy	Flow: ≤ ±5% Measuring end value (5…100cm/s) / (-20°C…+85°C) ≤ ±10% Measuring end value (100…175cm/s) / (-20°C…+85°C) Temperature: ≤ ±1,5K (≥ 20cm/s)
Long term drift	Flow: ≤ ±10% of measuring value / year (-20°C…+85°C)
Temperature deviation	Flow: ≤ ±0,4cm/s / K (-20°C…+85°C)
Process conditions	
Process temperature	-20°C...+110°C
Process pressure	≤ 40 bar
Environmental conditions	
Environmental temperature	-20°C...+100°C
Protection level	IP69K/IP67 (EN/IEC 60529)
MTTF	463 years

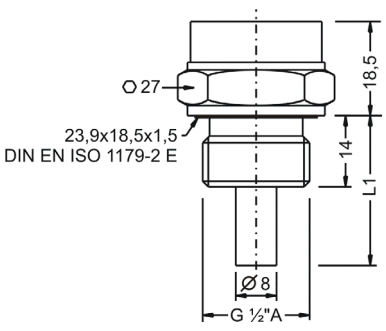


Modbus
IO-Link

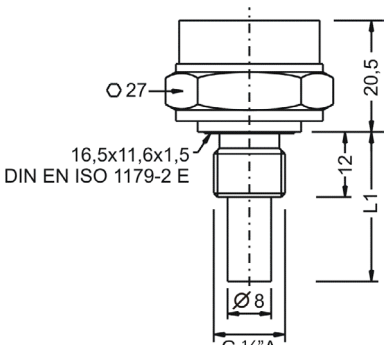
Terminal enclosure



Process connection type 0
Thread G½"A, DIN EN ISO 1179-2 E



Process connection type 3
Thread G¼"A, DIN EN ISO 1179-2 E



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Fluxicont FU4S

Flow transmitter / flow switch
for general industrial applications

5 / 01.22

Basic price

Application

The device is an electronic flow resp. temperature switch for monitoring, control and continuous measurement of flow and temperatures in liquids.
A high variety of versions of process connections and electronic types allows the use for a wide range of applications, also for demanding measuring requirements.
Due to its high accuracy and the digital adjustability by RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS- resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or a factory certifications for drink water suitability.
Customer specific special versions can be realized short-term on request, e.g. special designs for the process connection or other process materials.

Type
FU4S Standard

Measuring system
K Calorimetric sensor

Approval
S Standard

Process connection
0 Thread ISO 228-1 – G½"A, DIN EN ISO 1179-2 E
3 Thread ISO 228-1 – G¼"A, DIN EN ISO 1179-2 E
Y others

Material process gaskets (process wetted)
1 FPM – fluorelastomere (e.g. Viton®)
3 EPDM – ethylene-propylene-dienmonomere
Y others

Material process connection (process wetted)
V CrNi-steel

Material terminal enclosure
C CrNi-steel

Sensor length L1
Process connection
Type 0 – G½"/Type 3 – G¼"
0 30 mm / 28mm
1 49 mm / 47mm
2 79 mm / 77mm
3 119 mm / 117mm

Electronic – output
V RS485 Modbus®-RTU, 4-wire
L IO-Link®, 1x current 0/4...20mA / 2x Schalter, 4-wire

Electronic – function
S Standard

Process temperature
0 Standard –20°C...+110°C

0

0

Electrical connection
S Plug M12

+ Additional options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
WT Factory certification – drink water suitability
KF Configuration / Preset

Order code

Fluxicont	FU4S	K	S			V	C			S	0	0	0	S

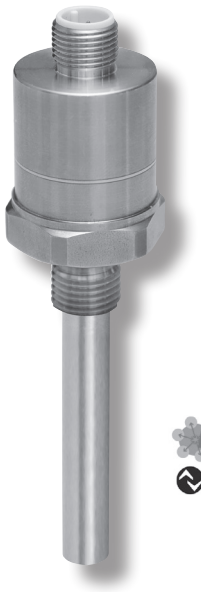
Fluxicont FU4L

Flow transmitter / flow switch
for general industrial applications

5 / 01.22

Technical data

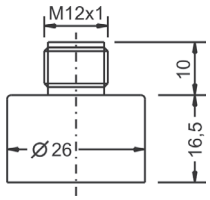
Measuring range	
Measuring principle	Calorimetric flow measurement
Nominal measuring range	3…300 cm/s
Output type V – RS485 Modbus®-RTU	
Interface	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Time behavior	Flow: T90 ≤ 6s / ton ≤ 10s Temperature: T90 ≤ 4s / ton ≤ 2s
Output type L – IO-Link®	
Interface	IO-Link® V1.1 / Com2 (38400 Baud)
Analogue output	0…20mA: 0…20,5mA / ≤ 0,05mA / ≤ 22mA / dI ≤ 1µA 4…20mA: 3,8…20,5mA / ≥ 3,6mA / ≤ 22mA / dI ≤ 1µA
Switch output	2x PP (Push-Pull), switch to +L/-L
Output	Uout ≤ 0,2V, ≥ Us – 2V / Iout 0…200mA (current limited ≤ 450mA, short circuit protected)
Time behavior	Flow: T90 ≤ 6s / ton ≤ 10s Temperature: T90 ≤ 4s / ton ≤ 2s
Auxiliary power	
Supply voltage Us polarity protected	Type V – RS485 Modbus®-RTU: 6…35VDC Type L – IO-Link®: 9…35VDC, without IO-Link® / 18…30VDC, with IO-Link®
Measuring accuracy	
Accuracy	Flow: ≤ ±5% Measuring end value (5…100cm/s) / (-20°C…+85°C) ≤ ±10% Measuring end value (100…175cm/s) / (-20°C…+85°C) Temperature: ≤ ±1,5K (≥ 20cm/s)
Long term drift	Flow: ≤ ±10% of measuring value / year (-20°C…+85°C)
Temperature deviation	Flow: ≤ ±0,4cm/s / K (-20°C…+85°C)
Process conditions	
Process temperature	-20°C...+110°C, +140°C/1h
Process pressure	≤ 40 bar
Environmental conditions	
Environmental temperature	-20°C...+100°C
Protection level	IP69K/IP67 (EN/IEC 60529)
MTTF	463 years



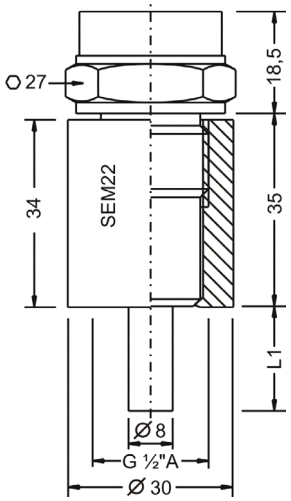
Modbus
IO-Link

Flow measurement

Terminal enclosure



Process connection type 2
Thread G½"A, metallic elastomer-free sealing



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Fluxicont FU4L

Flow transmitter / flow switch
for general industrial applications

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Application

The device is an electronic flow resp. temperature switch for monitoring, control and continuous measurement of flow and temperatures in liquids.
A high variety of versions of process connections and electronic types allows the use for a wide range of applications, also for demanding measuring requirements.
The process connection with metallic sealing has been specifically designed for the hygienic, dead-space and elastomer-free process adaption.
Due to its high accuracy and the digital adjustability by RS485 Modbus®-RTU or IO-Link® the device can be suited to a wide variety of applications.
The robust design and the high-quality workmanship turns the device into a very high quality product, which even the most adverse environmental conditions cannot affect, whether the lowest temperatures when used outdoors, extreme shock and vibration stress or aggressive media.
A captive laser marking of the type label ensures the identifiability throughout the entire lifetime of the device.
Obviously is the optional marking of a measurement point designation resp. TAG, a customer label or of a neutral type label, of course also per laser marking.
A LABS- resp. silicone-free version, a factory calibration with calibration certificate and a customer specific configuration resp. preset is also optionally available like a material test certificate EN10204 3.1 or a factory certifications for drink water resp. food suitability.

Customer specific special versions can be realized short-term on request, e.g. special designs for the process connection or other process materials.

Basic price

Type
FU4L Hygienic applications

Measuring system
K Calorimetric sensor

Approval
S Standard

Process connection
2 Thread ISO 228-1 – G½"A, metallic elastomer-free sealing (socket SEM-22/SEM-42)
Y others

0

Material process connection (process wetted)
V CrNi-steel

Material terminal enclosure
C CrNi-steel

Sensor length L1
0 30 mm
1 49 mm
2 79 mm

Electronic – output
V RS485 Modbus®-RTU, 4-wire
L IO-Link®, 1x current 0/4...20mA / 2x Schalter, 4-wire

Electronic – function
S Standard

Process temperature
0 Standard –20°C...+110°C

0

0

Electrical connection
S Plug M12

+ Additional options (optional)

SF LABS-free, silicone-free / paint compatible version
ML Measurement point designation / TAG – Laser marking
WT Factory certification – drink water suitability
KF Configuration / Preset

Order code

Fluxicont	FU4L	K	S		0	V	C			S	0	0	0	S

Flowcont® F630

compact or seperated magnetic inductive flow measurement device
application: water industry, waste water industry, chemical industry, plant engineering

5 / 01.22

Explosion protection

0	without
L	ATEX / IECEx zone 1 / 21 *(price up to DN150, from DN200 on request)*
M	ATEX / IECEx zone 2 / 22 *(price up to DN150, from DN200 on request)*

Design

K	compact	
G	separated	
H	separated, for Ex-Version	zone 1 / 21
		zone 2 / 21
T	High temperature design (max. 180°C)	

F630 - flange version process connection / nominal width

003	DN3	065	DN65
004	DN4	080	DN80 resp. 3"
006	DN6	100	DN100 resp. 4"
008	DN8	125	DN125
010	DN10	150	DN150 resp. 6"
015	DN15 resp. ½"	200	DN200 resp. 8"
020	DN20	250	DN250 resp. 10"
025	DN25 resp. 1"	300	DN300 resp. 12"
032	DN32	350	DN350 resp. 14"
040	DN40 resp. 1½"	400	DN400 resp. 16"
050	DN50 resp. 2"	500	DN500 resp. 20"

Process connection

1	flange DIN PN 10
2	flange DIN PN 16
3	flange DIN PN 25 *(price on request)*
4	flange DIN PN 40
7	flange ASME CL 150 B16.5 (only with flange in 1.4571)
8	flange ASME CL 300 B16.5 *(price on request)*
9	flange ASME CL 600 RF *(price on request)*

lining

H	hard rubber < 80°C
W	soft rubber < 60°C
G	ETFE < 130°C
P	PTFE < 130°C
E	PFA < 130°C (< 180°C with high temperature version)
F	thick PTFE < 180°C

Process connection, flange material

Z	steel ST 37.2
X	CrNi steel 316 Ti 1.4571 *(up to DN 15 standard)*

Electrode version

1	standard
5	pointed head (only for Alloy C-4 and 1.4571)

Measuring electrode material

4	Alloy C-4 (2.4610)
6	Titan *(Price up to DN200,> DN200 on request)*
5	Tantal *(Price up to DN100,> DN100 on request)*
3	Alloy B-3 (2.4600)
8	Platin-Iridium
2	CrNi-steel 316Ti (1.4571)

Earthing electrode / full tube detection

0	without grounding electrode / without full tube detection
1	without grounding electrode / with full pipe detection (from DN50)
2	with grounding electrode / without full tube detection
3	with grounding electrode / with full pipe detection (from DN50)

Grounding accessories

0	without
B	Grounding disc mounted on one side
C	Earthing disk mounted on both sides

Protection class transmitter / sensor

A	IP 67 / IP 67
B	IP 67 / IP 68 *(only at separate Version)* [1]

power supply

1	100...230 V AC, 50 Hz
2	24 V DC, 50 Hz
3	100...230 V AC, 60Hz
4	24 V DC, 60Hz

Outputs

2	1 current output (active or passive), 2 digital outputs (passive), HART

Order code

Flowcont® F630 2

[1] option: please order the casting compound seperately TYPE: VGM-D141B038U01

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Option card 1

0	without
1	1x digital input
2	1x digital output
3	24 V DC transmitter supply voltage output
4	1x passive analog output (4 ... 20mA)

Option card 2

0	without
1	1x digital input
2	1x digital output
4	1x passive analog output (4 ... 20mA)

Material certificates

A	Measuring tube with DGRL-approval
2	Material confirmation with acceptance test certificate 3.1 according to EN 10204 (for pipe and flanges)
3	Pressure test according to DIN

Calibration certificates

2	Standard calibration (0,4%, 2-point)	
3	Increased accuracy (0,2%, 3-point)	DN 10-80
		DN 100-300
		from DN 350
8	Certified calibration (0,4%, 2-point)	
9	Certified calibration (0,2%, 3-point)	
5	5 points DAkkS calibration (0,2%)	

language of the documentaries

M1	german
M5	english
MW	language pack Western Europe / Scandinavia
ME	language pack Eastern Europe

signal cable

0	Without cable
1	5 m
2	10 m
3	20 m
4	30 m
5	50 m
6	80 m
7	100 m
8	150 m

amount test points

(according to „calibration" see above)

P2	2 points
P3	3 points
P5	5 points

Order code / continuation

Flowcont® L630

compact magnetic inductive flow measurement device
application: food industry, pharma industry
diverse process connections

HART · hygenic design · certification

5 / 01.22

Explosion protection

0	without
L	ATEX / IECEx zone 1 / 21
M	ATEX / IECEx zone 2 / 22

Bauform

K	compact	
G	seperated	
H	separated, for Ex-Version	zone 1 / 21
		zone 2 / 21
T	High temperature design (max. 180°C)	

L630 - flange version process connection / nominal width

003	DN3	025	DN25 resp. 1"
004	DN4	032	DN32
006	DN6	040	DN40 resp. 1½"
008	DN8	050	DN50 resp. 2"
010	DN10	065	DN65
015	DN15 resp. ½"	080	DN80 resp. 3"
020	DN20	100	DN100 resp. 4"

Process connection

2	flange DIN PN 16	
4	flange DIN PN 40	
A	Male thread according to ISO 228	up to DN25
M	Milk tube screw connection after DIN 11851	DN3-32
		DN40-100
P	Welding socket according to ISO 2037	DN3-32
		DN40-100
Q	Welding socket according to DIN 2463	DN3-32
		DN40-100
R	Welding socket according to DIN 11850	DN3-32
		DN40-100
S	Welding socket according to OD Tubing	DN3-32
		DN40-50
T	Tri-Clamp according to DIN 32676	DN3-32
		DN40-100
Z	Intermediate flange	

lining

E	PFA < 130°C (< 180°C with high temperature version)

Process connection, flange material

U	steel 1.4571 *(only with fixed flange version)*
W	steel 1.4404 *(316L with EPDM seal)*
G	steel 1.4404 *(316L with silicone seal)*
Z	without process connection *(only with intermediate flange)*

Electrode version

1	standard
5	pointed head

Measuring electrode material

7	CrNi-steel 904 (1.4539)
4	Alloy C-4 (2.4610)
6	Titan
5	Tantal
3	Alloy B-3 (2.4600)
8	Platin-Iridium
2	CrNi-steel 316Ti (1.4571)

Earthing electrode / full tube detection

0	without grounding electrode / without full tube detection
2	with grounding electrode / without full tube detection

Protection class transmitter / sensor

A	IP 67 / IP 67
B	IP 67 / IP 68 (only with separate version) [1]

power supply

1	100...230 V AC, 50 Hz
2	24 V DC, 50 Hz
3	100...230 V AC, 60Hz
4	24 V DC, 60Hz

Outputs

2	1 current output (active or passive), 2 digital outputs (passive), HART

Order code

Flowcont® L630 E 2

[1] option: please order the casting compound seperately TYPE: VGM-D141B038U01

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Option card 1

0	without
1	1x digital input
2	1x digital output
3	24 V DC transmitter supply voltage output
4	1x passive analog output (4 ... 20mA)

Option card 2

0	without
1	1x digital input
2	1x digital output
4	1x analogue output passive (4 ... 20mA)

Material certificates

A	Measuring tube with DGRL-approval
2	Material confirmation with acceptance test certificate 3.1 according to EN 10204 (for pipe and flanges)
3	Pressure test according to DIN

Calibration certificates

2	Standard calibration (0,4%, 2-point)	
3	Increased accuracy (0,2%, 3-point)	DN 10-80
		DN 100
8	Certified calibration (0,4%, 2-point)	
9	Certified calibration (0,2%, 3-point)	
5	5 points DAkkS calibration (0,2%)	

Documentation language

M1	german
M5	english
MW	language pack Western Europe / Scandinavia
ME	language pack Eastern Europe

signal cable

0	Without cable
1	5 m
2	10 m
3	20 m
4	30 m
5	50 m
6	80 m
7	100 m
8	150 m

amount test points

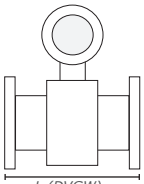
(according to „calibration" see above)

P2	2 points
P3	3 points
P5	5 points

Order code / continuation

Measuring range depending on nominal width
Flowcont® F630 and L630

5 / 01.22

nominal width		standard pressure stage PN	dimensions Flange version [1), 2)]	min. full-scale range [3)]	$Qmax_{DN}$
DN	inches	(amount of the holes)	L in mm	0,02 x Q_{max}DN *(≈ 0,2 m/s)*	0... ≈ 10 m/s
3	1/10	40 (4 hole)	200	0,08 l/min	4 l/min
4	5/32	40 (4 hole)	200	0,16 l/min	8 l/min
6	¼	40 (4 hole)	200	0,4 l/min	20 l/min
8	5/16	40 (4 hole)	200	0,6 l/min	30 l/min
10	3/8	40 (4 hole)	200	0,9 l/min	45 l/min
15	½	40 (4 hole)	200	2 l/min	100 l/min
20	¾	40 (4 hole)	200	3 l/min	150 l/min
25	1	40 (4 hole)	200	4 l/min	200 l/min
32	1 ¼	40 (4 hole)	200	8 l/min	400 l/min
40	1 ½	40 (4 hole)	200	12 l/min	600 l/min
50	2	40 (4 hole)	200	1,2 m³/h	60 m³/h
65	2 ½	10-16 (4 hole) / 25-40 (8 hole)	200	2,4 m³/h	120 m³/h
80	3	40 (8 hole)	200	3,6 m³/h	180 m³/h
100	4	16 (8 hole)	250	4,8 m³/h	240 m³/h
125	5	16 (8 hole)	250	8,4 m³/h	420 m³/h
150	6	16 (8 hole)	300	12 m³/h	600 m³/h
200	8	10 (8 hole) / 16 (12 hole)	350	21,6 m³/h	1.080 m³/h
250	10	10 (12 hole) / 16 (12 hole)	450	36 m³/h	1.800 m³/h
300	12	10 (12 hole) / 16 (12 hole)	500	48 m³/h	2.400 m³/h
350	14	10 (16 hole) / 16 (16 hole)	550	66 m³/h	3.300 m³/h
400	16	10 (16 hole) / 16 (16 hole)	600	90 m³/h	4.500 m³/h
450	18	-	686	120 m³/h	6.000 m³/h
500	20	10 (20 hole)	650	132 m³/h	6.600 m³/h
600	24	10 (20 hole)	780	192 m³/h	9.600 m³/h
700	28	10 (24 hole)	910	264 m³/h	13.200 m³/h
800	32	10 (24 hole)	1040	360 m³/h	18.000 m³/h
900	36	10 (28 hole)	1170	480 m³/h	24.000 m³/h
1000	40	10 (28 hole)	1300	540 m³/h	27.000 m³/h
1050	42			616 m³/h	30.800 m³/h
1100	44			660 m³/h	33.000 m³/h
1200	48			840 m³/h	42.000 m³/h
1400	54			1.080 m³/h	54.000 m³/h
1500	60			1.260 m³/h	63.000 m³/h
1600	66			1.440 m³/h	72.000 m³/h
1800	72			1.800 m³/h	90.000 m³/h
2000	80			2.280 m³/h	114.000 m³/h

L (DVGW)

1) If a grounding plate (one-sidedly mounted at the flange) is installed, the L dimension increases by: DN3-DN100: 3mm; DN125-400: 5mm.
2) If protection plates (one-sidedly mounted at the flange) are installed, the L dimension increases by: DN3-DN100: 6mm; DN125-400: 10mm.
3) The measuring range is adjustable between 0,02 x Q_{max}DN and 2 x Q_{max}DN.

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Flowcont® F630 - nominal width

basic price / lining

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Flowcont® F630 - pressure stage, process connection surcharge for material

Surcharge for grounding plates

without mounting option at the flange

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Grounding plate **material: 1.4571**

DN 3...DN 8	PN 10...PN 40	D374A165U21
DN 10	PN 10...PN 40	D374A165U22
DN 15	PN 10...PN 40	D374A165U23
DN 20	PN 10...PN 40	D374A165U24
DN 25	PN 10...PN 40	D374A165U25
DN 32	PN 10...PN 40	D374A165U26
DN 40	PN 10...PN 40	D374A165U27
DN 50	PN 10...PN 40	D374A165U28
DN 65	PN 10...PN 40	D374A165U29
DN 80	PN 10...PN 40	D374A165U30
DN 100	PN 10...PN 16	D374A165U31
DN 125	PN 10...PN 16	D374A165U32
DN 150	PN 10...PN 16	D374A165U33
DN 200	PN 10...PN 16	D374A165U34
DN 250	PN 10...PN 16	D374A165U35
DN 300	PN 10	D374A165U39
	PN 16	D374A165U44
DN 350	PN 10	D374A165U40
	PN 16	D374A165U45
DN 400	PN 10	D374A165U41
	PN 16	D374A165U46
DN 500	PN 10	D374A165U42
	PN 16	D374A165U47
DN 600	PN 10	D374A165U43
	PN 16	D374A165U48
> DN 600		

Grounding plate **material: Hastelloy C-4**

DN 3...DN 8	PN 10...PN 40	D374A166U21
DN 10	PN 10...PN 40	D374A166U22
DN 15	PN 10...PN 40	D374A166U23
DN 20	PN 10...PN 40	D374A166U24
DN 25	PN 10...PN 40	D374A166U25
DN 32	PN 10...PN 40	D374A166U26
DN 40	PN 10...PN 40	D374A166U27
DN 50	PN 10...PN 40	D374A166U28
DN 65	PN 10...PN 40	D374A166U29
DN 80	PN 10...PN 40	D374A166U30
DN 100	PN 10...PN 16	D374A166U31
DN 125	PN 10...PN 16	D374A166U32
DN 150	PN 10...PN 16	D374A166U33
DN 200	PN 10...PN 16	D374A166U34
DN 250	PN 10...PN 16	D374A166U35
DN 300	PN 10	D374A166U39
DN 350	PN 10	D374A166U40
	PN 16	D374A166U45
DN 400	PN 10	D374A166U41
	PN 16	D374A166U46
DN 500	PN 10	D374A166U42
	PN 16	D374A166U47
DN 600	PN 10	D374A166U43

Grounding plate **conductive PTFE**

DN10 / PN40	D377B106U01
DN15 / PN40	D377B106U02
DN20 / PN40	D377B106U03
DN25 / PN40	D377B106U04
DN32 / PN40	D377B106U05
DN40 / PN40	D377B106U06
DN50 / PN40	D377B106U07
DN65 / PN40	D377B106U09
DN80 / PN40	D377B106U10
D100 / PN16	D377B106U11

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Flange equipment **material 1.4571**

Nominal width	Protection plates	Earthing rings
DN003 - 032		
DN040 - 050		
DN065 - 080		
DN100		
DN125		
DN150		
DN200		
DN250		
DN300 - 350		
DN400		
DN500		
DN600		

Sealing ring **for aseptic screwed pipe joint**

DN004 - 010	D110A020U06
DN015	D110A004U08
DN020	D110A005U06
DN025	D110A006U07
DN032	D110A007U06
DN040	D110A008U08
DN050	D110A003U06
DN065	D110A009U06
DN080	D110A011U06
DN100	D110A012U06

Weld-in fitting

DN3 - 10	D413C470U01
DN15	D413C471U01
DN20	D413C472U01
DN25	D413C473U01
DN32	D413C474U01
DN40	D413C475U01
DN50	D413C488U03
DN65	D413C461U09
DN80	D413C496U03
DN100	D413C498U03

Marking measurement point

Ordering information	*Model*
AS-50hang tag made of VA with laser inscription	

Intermediate flange equipment for vortex flow

Material CrNi-steel (bolts, nuts, spring washers) centering elements, gaskets are not included in equipment

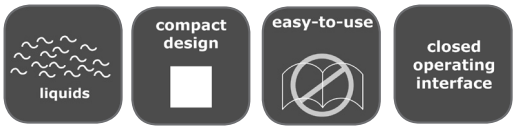
DN 15 / DN 25 /, PN 10-40	D614L384U01
DN 15, PN 64-100	D614L384U15
DN 25, PN 64 -100	D614L384U11
DN 40, PN 10-40	D614L384U02
DN 40, PN 64	D614L384U14
DN 50, PN 10-40	D614L384U03
DN 50, PN 64	D614L384U13
DN 80, PN 10-40	D614L384U04
DN 80, PN 64	D614L384U12
DN 100, PN 10-16	D614L384U05
DN 100, PN 25-40	D614L384U06
DN 100, PN 64	D614L384U16
DN 150, PN 10-16	D614L384U07
DN 150, PN 25-40	D614L384U08
DN 150, PN 64	D614L384U17

Flowcont® Magsmall

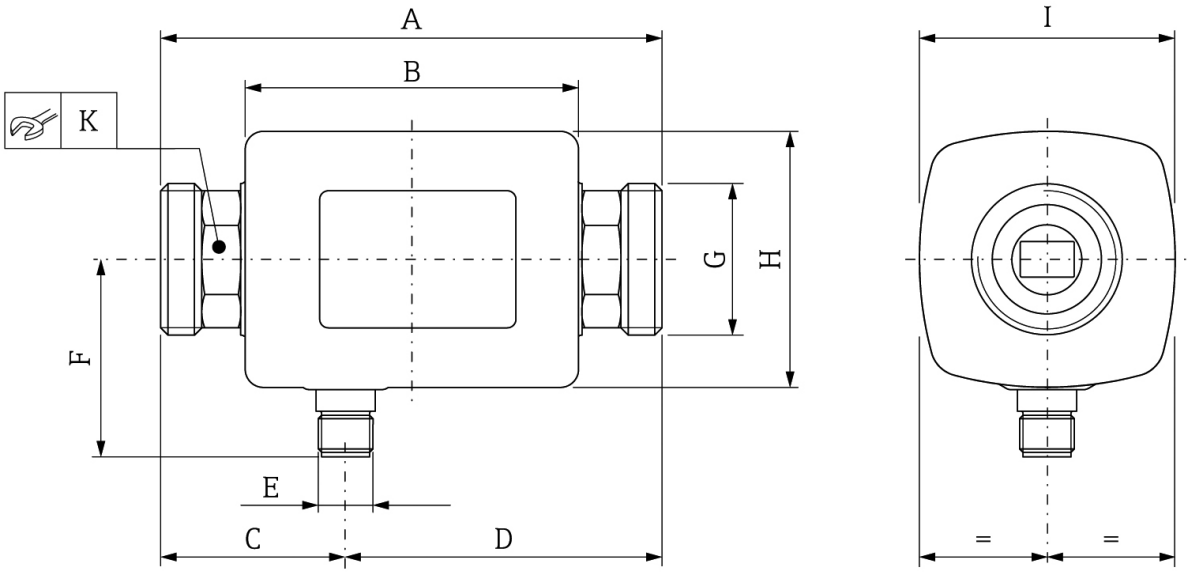
Smart magmeter for utilities – intuitive · convenient · multivariable

5 / 01.22

Technical data



Supply voltage range:	18 to 30 VDC (SELV, PELV, Class 2)
Power consumption:	Max. 3 W (w/o outputs IO1 and IO2, 120 mA (+ 2 x 250 mA with I/Os)
Measuring range:	DN 15 (½"): 0.4 to 25 l/min DN 20 (¾"): 0.75 to 50 l/min DN 25 (1"): 1.2 to 100 l/min DN 50 (2"):5 to 750 l/min
Maximum measured error:	Volume flow measurement: ±2 % o.r. and ±0.5 % o.f.s. Medium temperature measurement: ±2.5 °C
Repeatability:	Volume flow measurement: ±0.2 % o.r. Medium temperature measurement: ±0.5 °C
Environment	
Environment temperature:	in process: –10 … +60 °C (+14 … +140 °F) in storage: –25 … +85 °C (–13 … +185 °F)
Medium temperature range:	–10 to +70 °C (+14 to +158 °F) Permissible short-term temperature, maximum one hour: 85 °C (185 °F) Repetition after 4 hours at the earliest
Medium properties:	Liquid, conductivity > 20 µS/cm
Process pressure:	Max. 16 bar_{rel}
Degree of protection:	IP65/67, pollution degree 3



DN	A (mm)	B (mm)	C (mm)	D (mm)	E	F (mm)	G	H (mm)	I (mm)	K (mm)
15	110	73	40,5	69,5	M12 x 1	43	G½"	56	56	24
20	110	73	40,5	69,5	M12 x 1	43	G¾"	56	56	27
25	110	73	40,5	69,5	M12 x 1	43	G1"	56	56	27
50	200	113	80	120	M12 x 1	58	G2"	86	86	52

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Flowcont® Magsmall

Smart magmeter for utilities – intuitive · convenient · multivariable

5 / 01.21

Basic price . . . . . .

Type

DMA15	DN 15 flow min. 0,4 - 25 l/min
DMA20	DN 20 flow min. 0,75 - 50 l/min
DMA25	DN 25 flow min. 1,2 - 100 l/min
DMA50	DN 50 flow min. 5,0 - 750 l/min

Approval

AA	Non-hazardous area.

Output; Input:

A	IO-Link/4-20mA/pulse/switch output/ 2-10V; status input, configurable

Sensor; Housing:

A	PEEK, stainl. steel; stainl. steel

Device Model

A1	1

Application

Flowcont Magsmall is the economical magmeter for many applications in secondary circuits with conductive liquids in all industries. End customers, skid builders, equipment manufacturers and system integrators value the space-saving Flowcont Magsmall for its flexible installation capabilities. Additionally, its future-oriented, intuitive operation via SmartBlue app on every Bluetooth-enabled smartphone or tablet ensures fast, secure and simple commissioning.

Order code

Flowcont® Magsmall	AA	A	A	A1	

Equipment

Ordering information	*Model*
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded
LKZ0805PUR-AS	Connection cable 5 m, 8-pole, shielded
BKZ0512-VA	Cable socket M12 - Spol -straigth with VA-nut
BKW0512-VA	Cable socket M12 - Spol -angled with VA-nut

Flowgas TMS 300

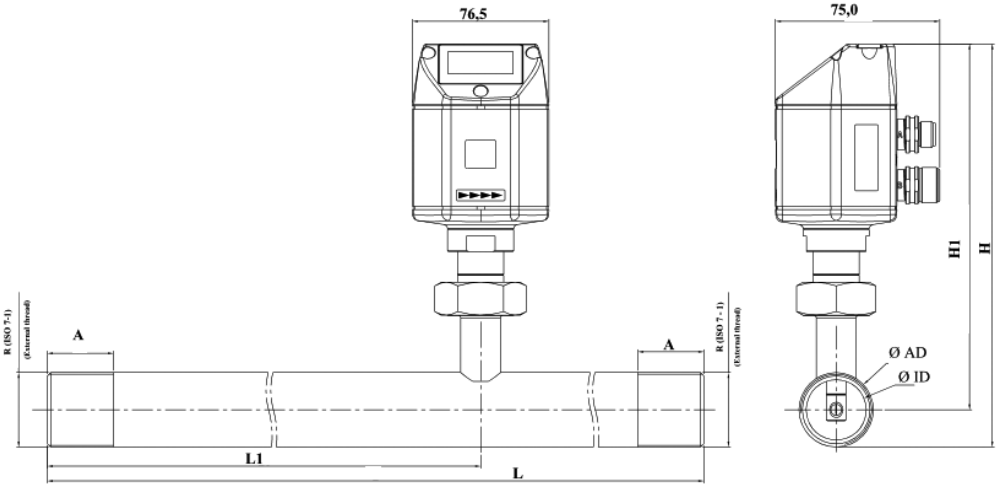
cost-effective consumption sensor for compressed air and gases including measurement section

5 / 01.22

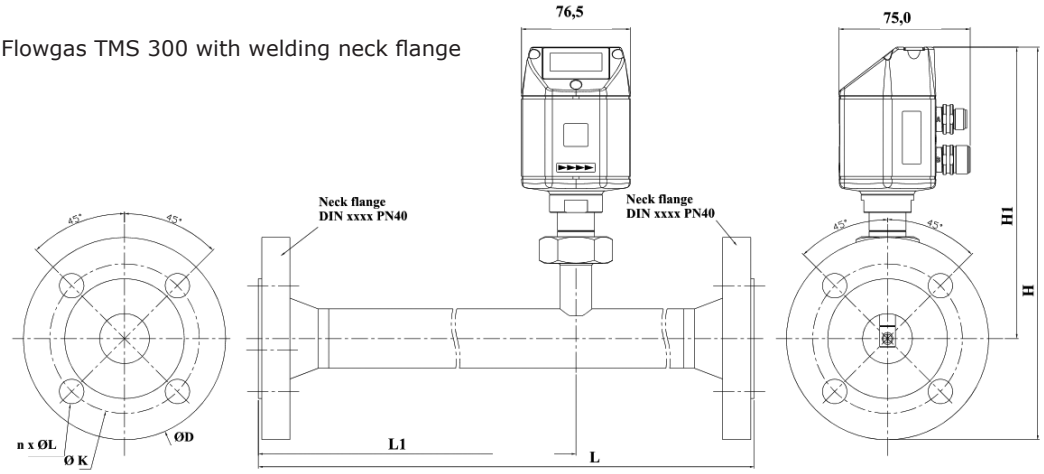
Technical data

measurement types:	m3/h, l/min (1000 mbar, 20°C) for compressed air resp. Nm3/h, Nl/min (1013 mbar, 0°C) for gases
measurement principle:	calorimetric measurement
sensor:	thermal mass flow sensor
measured medium:	air, gases
operating temperature:	-30 ... 80°C
operating pressure:	up to 16 bar, special version PN 40 (40 bar)
Power supply:	24 VDC smoothed ± 15%
Supply current:	max. 80 mA at 24 VDC
load:	< 500 Ohm
digital output:	RS485, Modbus RTU
analog output:	4...20 mA, for m3/h resp. l/min
impulse output:	1 impulse per m³ resp. per l, pulse output galvanically isolated; pulse value on display adjustable
accuracy:	± 1,5 % v.M., ± 0,3 % v. E.
mounting threads:	R ¼", R½", R¾", R1", R 1 ¼" R1 ½", R 2" DIN EN 10226 (ISO 7-1)
material:	Housing: polycarbonate Measuring Range: stainless steel 1.4301 / 1.4404; Version with flange DIN EN 1092-1: stainless steel 1.4404

Flowgas TMS 300 without flange with connection thread



Flowgas TMS 300 with welding neck flange



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Flowgas TMS 300

cost-effective consumption sensor for compressed air and gases including measurement section

5 / 01.22

Application

The affordable consumption counter TMS 300 works according to the proven calorimetric measuring principle. An additional pressure and temperature compensation is not necessary. The newly developed evaluation electronic detects, unlike the bridge circuits commonly used, all readings digitally. Thus very precise and fast measurements are possible.
Due to the new evaluation electronic all TMS 300 come with a Modbus output. Thus all measured variables can be transmitted via Modbus.

Due to its compact design it is possible the new cheap consumption meters TMS 300 are usable for all pressure air pipe lines, from production to consumption smallest unit („1/4 to 2 inches). For larger pipe diameters from DN 50 to DN 300 the consumption sensors TMS 500 are available.

In addition to pressure air, other gases can e.g. Nitrogen, oxygen, CO2 be measured, too.

The installation of the meter TMS 300 is simple and fast. A particular advantage is the removable measuring unit. This allows the unit of measurement for calibration or cleaning purposes be removed quickly and easily without removing the complete measuring section.

Basic price . . . . . .

Model
300 Standard . . . . . .

Process connection
0 connection thread ¼" . . . . . .
1 connection thread ½" . . . . . .
2 connection thread ¾" . . . . . .
3 connection thread 1" . . . . . .
5 connection thread 1 ½" . . . . . .
6 connection thread 2" . . . . . .
4 connection thread 1 ¼" . . . . . .
A connection flange DN15 . . . . . .
B connection flange DN20 . . . . . .
C connection flange DN25 . . . . . .
D connection flange DN32 . . . . . .
E connection flange DN40 . . . . . .
F connection flange DN50 . . . . . .
Y Special version . . . . . .

Material (medium contact)
V2 1.4301 stainless steel . . . . . .
V4 1.4404 stainless steel . . . . . .
Y Special version. . . . . .

Pressure stage
16 PN16 . . . . . .
40 PN40 . . . . . .
Y Special version . . . . . .

gas type standard measuring range
LUFT air - measuring range according to DIN 1945/ ISO 1217 .....please specify. .
11AR argon measuring range according to DIN 1343 .....please specify. .
1CO2 carbon dioxide CO2 measuring range according to DIN 1343 .....please specify. .
11O2 oxygen incl. cleaning oil and fat free
Measuring range according to DIN 1343 .....please specify . .
111N nitrogen measuring range according to DIN 1343 .....please specify . .
111Y Special medium .....please specify . .

accuracy calibration
A +/- 1,5% from measured value (standard). . . . . .
B +/- 1,0% from measured value. . . . . .
Y Special calibration via 5-point ISO-certificate . . . . . .

Output
AP analog output: 4 .. 20 mA for m³/h resp. l/min
impulse output: 1 impulse pro m³ resp. per liter galvanically isolated
digital output: RS 485 interface (Modbus-RTU)
5-pol. cable socket M12 included . . . . . .
Y Special version . . . . . .

supply
2 24 VDC smoothed +/- 15%
5-pol. cable socket M12 included . . . . . .
Y Special version. . . . . .

Order code

Flowgas TMS 300

Dimensions Flowgas TMS 300 with connecting thread
Flow measuring ranges Flowgas TMS 300 for compressed air (ISO 1217: 1000 mbar, 20°C)

Pipe size	AD / ID (mm)	L (mm)	L1 (mm)	H (mm)	H1 (mm)	R	A (mm)	A mm	Measuring range
DN 8	13,7 / 8,5	194	137	176,6	166,3	R 1/4"	15	165,7	0,8...90 l/min
DN 15	21,3 / 16,1	300	210	177,0	166,3	R 1/2"	20	165,7	0,2...90 m³/h
DN 20	26,9 / 21,7	475	275	179,8	166,3	R 3/4"	20	165,7	0,3...170 m³/h
DN 25	33,7 / 27,3	475	275	183,2	166,3	R 1"	25	165,7	0,5...290 m³/h
DN 32	42,4 / 36,0	475	275	187,5	166,3	R 1 1/4"	25	165,7	0,7...530 m³/h
DN 40	48,3 / 41,9	475	275	190,5	166,3	R 1 1/2"	25	165,7	1,0...730 m³/h
DN 50	60,3 / 53,1	475	275	196,5	166,3	R 2"	30	165,7	2,0...1195 m³/h

Dimensions Flowgas TMS 300 with weld neck						**Flange DIN EN 1092-1**			**Flow measuring ranges Flowgas TMS 300 for compressed air (ISO 1217: 1000 mbar, 20°C)**
Pipe size	AD/ID	L (mm)	L1 (mm)	H (mm)	H1 (mm)	Ø D (mm)	Ø K (mm)	nxØL (mm)	Measuring range from ... to
DN 15	21,3 / 16,1	300	210	213,8	166,3	95	65	4 x 14	0,2...90 m³/h
DN 20	26,9 / 21,7	475	275	218,8	166,3	105	75	4 x 14	0,3...170 m³/h
DN 25	33,7 / 27,3	475	275	223,8	166,3	115	85	4 x 14	0,5...290 m³/h
DN 32	42,4 / 36,0	475	275	263,3	166,3	140	100	4 x 18	0,7...530m³/h
DN 40	48,3 / 41,9	475	275	2 40,7	166,3	150	110	4 x 18	1,0...730 m³/h
DN 50	60,3 / 53,1	475	275	248,2	166,3	165	125	4 x 18	2,0...1195 m³/h

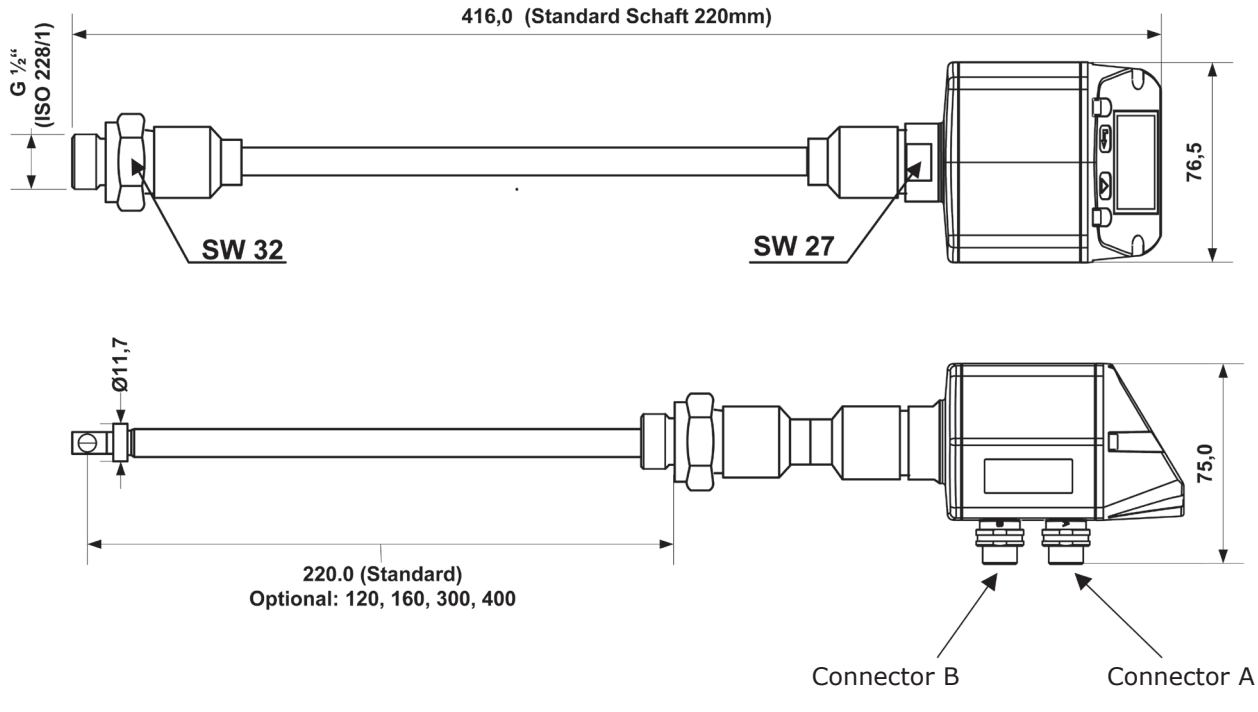
Flowgas TMS 500

consumption sensor for compressed air and gases

5 / 01.22

Technical data

measurement types:	m3/h, l/min (1000 mbar, 20°C) for compressed air resp. Nm3/h, Nl/min (1013 mbar, 0°C) for gases
measurement principle:	calorimetric measurement
sensor:	thermal mass flow sensor
measured medium:	air, gases
operating temperature:	-30 ... 80°C housing -30 ... 110 ° C probe tube
operating pressure:	up to 50 bar
Power supply:	24 VDC smoothed ± 15%
Supply current:	max. 80 mA at 24 VDC
load:	< 500 Ohm
digital output:	RS485, Modbus RTU
analog output:	4 ... 20 mA for m3 / h or l / min on request: scaling for cfm, m3 / min, l / s, ft / min, m / s
impulse output:	1 impulse per m³ resp. per l, pulse output galvanically isolated; pulse value on display adjustable
accuracy:	± 1,5 % v.M., ± 0,3 % v. E.
mounting threads:	G1/2"
material:	Housing: polycarbonate Sensor tube: stainless steel 1.4301 / 1.4301; length 220 mm, diameter 10 mm



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Flowgas TMS 500

consumption sensor for compressed air and gases

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Application

The affordable consumption counter TMS 500 works according to the proven calorimetric measuring principle. A heated sensor is cooled by the gas flowing around him. The flow-dependent cooling is utilized as a measuring scale while the degree of cooling is directly dependent on the passing air or gas mass. An additional pressure and temperature compensation is therefore not necessary.

For larger pipe diameters from DN 50 to DN 300 the consumption sensors TMS 500 are available. In addition to pressure air, other gases can be measured e.g. Nitrogen, oxygen, CO2.

The installation of the TMS 500 via a standard G 1/2 „ball valve under pressure. The retaining ring prevents the probe is thrown out uncontrollably during installation and removal by the operating pressure. For installation in different pipe diameters the TMS 500 can be associated with different probe lengths. The exact positioning of the sensor in the center of the pipe is possible via an engraved depth scale.

Basic price . . . . . .

Model

500 Standard . . . . . .

Connection thread

1 ½" . . . . . .
Y Special version . . . . . .

Material (medium contact)

V2 1.4301 stainless steel . . . . . .
Y Special version. . . . . .

probe length pipe

A 220 mm . . . . . .
B 120 mm . . . . . .
C 160 mm . . . . . .
D 300 mm . . . . . .
E 400 mm . . . . . .
F 500 mm . . . . . .
G 600 mm . . . . . .
H 700 mm . . . . . .
Y Special version . . . . . .

gas type standard measuring range

LUFT air - measuring range according to DIN 1945/ ISO 1217 .....please specify. .
11AR argon measuring range according to DIN 1343 .....please specify. .
1CO2 carbon dioxide CO2 measuring range according to DIN 1343 .....please specify. .
11O2 oxygen incl. cleaning oil and fat free
Measuring range according to DIN 1343 .....please specify . .
111N nitrogen measuring range according to DIN 1343 .....please specify .
111Y Special medium . . . . . .

accuracy calibration

A +/-1,5% of measured value (Standard). . . . . .
B +/-1,0% of measured value. . . . . .
Y on request: special calibration via 5-point ISO-certificate . . . . . .

Output

AP analog output: 4 .. 20 mA for m³/h resp. l/min
impulse output: 1 impulse pro m³ resp. per liter galvanically isolated
digital output: RS 485 interface (Modbus-RTU)
5-pol. cable socket M12 included. . . . . .
Y Special version . . . . . .

supply

2 24 VDC smoothed +/- 15%
5-pol. cable socket M12 included . . . . . .
Y Special version. . . . . .

Measuring range

S Standard measuring range up to 92,7m/s . . . . . .
M max version measuring range up to 185m/s. . . . . .
H High speed version measuring range up to 224m/s . . . . . .
Y Special version . . . . . .

display

S Without display . . . . . .
D LCD-Display . . . . . .
Y Special version . . . . . .

Order code

Flowgas TMS	500

Flow measuring ranges Flowgas TMS 500 for compressed air (ISO 1217: 1000 mbar, 20°C)

Pipe inner diameter			TMS 500 Standard (92,7 m/s)	TMS 500 Max. (185,0 m/s)	TMS 500 High-Speed (224,0 m/s)
Inch	mm		Measuring range from ... to	Measuring range from ... to	Measuring range from ... to
1/2"	16,1	DN15	2,5...760l/min	3,5...1516 l/min	6,0...1836 l/min
3/4"	21,7	DN20	0,3..89 m³/h	0,4...178 m³/h	0,7...215 m³/h
1"	27,3	DN25	0,5...148 m³/h	0,6...295 m³/h	1,1...357 m³/h
1 1/4"	36,0	DN32	0,9...280 m³/h	1,2...531 m³/h	2,5...644 m³/h
1 1/2"	41,9	DN40	1,2...366 m³/h	1,5...732 m³/h	3,0...886 m³/h
2"	53,1	DN50	2...600 m³/h	2,5...1198 m³/h	4,6...1450 m³/h
2 1/2"	71,1	DN65	3,5...1096 m³/h	5...2187 m³/h	7...2648 m³/h
3"	84,9	DN80	5...1570 m³/h	7...3133 m³/h	12...3794 m³/h
4"	110,0	DN100	9...2645 m³/h	12...5279 m³/h	16...6391 m³/h
5"	133,7	DN125	13...3912 m³/h	18...7808 m³/h	24...9453 m³/h
6"	159,3	DN150	18...5560 m³/h	25...11097 m³/h	43...13436 m³/h
8"	200,0	DN200	26...8786 m³/h	33...17533 m³/h	50...21230 m³/h
10"	250,0	DN250	40...13744 m³/h	52...27429 m³/h	80...33211 m³/h
12"	300,0	DN300	60...19815 m³/h	80...39544 m³/h	100...47881 m³/h

Flowcont® UN

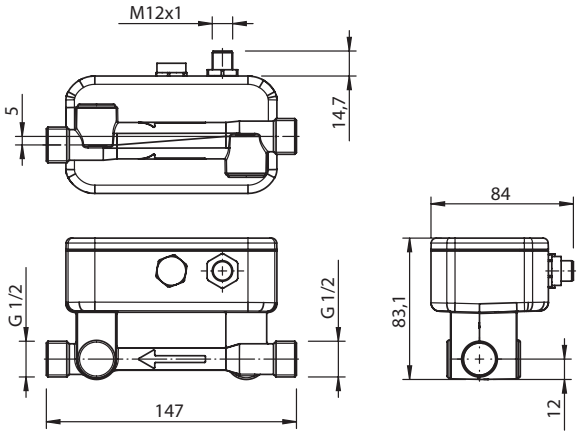
Ultrasonic flow meter Flowcont® UN
contactlessly flow measuring

5 / 01.22

Technical data

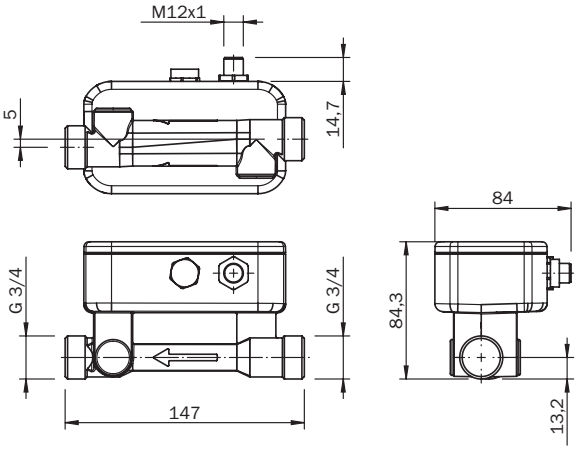
Power supply:	18 V DC ... 30 V DC protected against polarity reversal, short circuit and over load protected
Supply current:	≤ 180 mA
Measurement accuracy	≤ 2 % (vom end value)
Materials	
medium contact materials:	PSU polysulfone (Ultrason S)
housing:	PSU polysulfone (Ultrason S)
Environmental conditions	
Ambient temperature:	operating: 0°C...+60°C storage: – 20°C...+70°C
Process temperatures:	0°C...+80°C
Process pressure ranges:	DN 10 / DN 15: max. 10 bar; DN 20 / DN 25: max. 6 bar
Protection:	IP67
residual ripple	≤ 5 Vss
initialization time	≤ 5 s
protection	III
connection type	M12x1, 5-pol. / M12x1, 8-pol. (depending on the type)
impulse/frequency output	0 kHz ... 10 kHz; pulse width ≤ 1 s
signal voltage	HIGH UV - 2 V; LoW ≤ 2 V
output current	< 100 mA
load	inductive: 1 H; capacitive: 100 nF
response time	filter off 100 ms, filter low 300 ms, filter middle 1 s, filter strong 4,2 s
output load	< 500 ohm
signal level lower signal level: 3,8 mA ... 4 mA; upper signal level 20 mA ... 20,5 mA	

DN 10, Prozessanschluss G 1/2



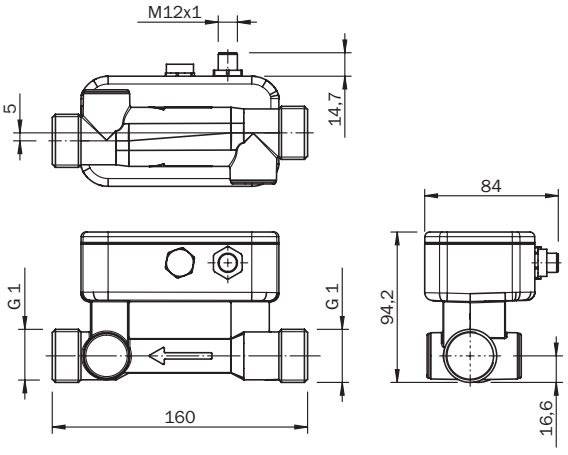
Alle Maße in mm

DN 15, Prozessanschluss G 3/4



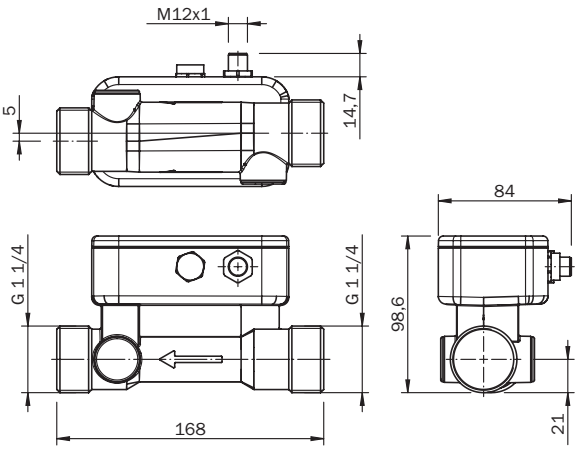
Alle Maße in mm

DN 20, Prozessanschluss G 1



Alle Maße in mm

DN 25, Prozessanschluss G 1 1/4



Alle Maße in mm

more dimension drawings see data sheet or Homepage www.acs-controlsystem.de

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Flowcont® UN

Utrasonic flow meter Flowcont® UN
contactlessly flow measuring

5 / 01.22

Basic price . . . . . .

Model

UN Standard ultrasonic flow measurement for non-conductive liquids. . . . . .

Measuring pipe nominal width

10 DN 10 flow min. 0,3 l/min...max. 21 l/min . . . . . .
15 DN 15 flow min. 0,9 l/min...max. 36 l/min . . . . . .
20 DN 20 flow min. 3,5 l/min...max. 60 l/min . . . . . .
25 DN 25 flow min. 5 l/min...max. 240 l/min. . . . . .

Sensor material

1 PSU polysulfone (Ultrason S) . . . . . .

Process connection

G1 External pipe thread G according to 228 (standard) . . . . . .
N1 External thread NPT . . . . . .
C1 Collar clamp adapter (DIN11864-3) BKS, Form A . . . . . .

Electronics

I0 Current output, 1 transistor output, M12x1, 5-pol. (standard). . . . . .
Electronics: 1 analog output: 4 mA ... 20 mA, 0 mA ... 20 mA for latest flow, 1 impulse/status output: PNP-transistor output for quantity counter, empty tube monitoring , flow limit value

SR Current output, 2 transistor output, 1 signal input M12x1, 5-pol.. . . . . .
Electronics: 1 analog output: 4 mA ... 20 mA, 0 mA ... 20 mA for latest flow, 2 impulse/status outputs: PNP-transistor output for quantity counter, empty tube monitoring , flow limit value, 1 digital input

Application

The non-contact, ultrasonic flow sensor Flowcont UN detects the flow volumes of conductive and non-conductive liquids.
Swimming against the current requires more strength than with the current – this is the simple fact on which ultrasonic flow measurement according to the phase difference process is based.
The device has a compact design, and its wide range of possible applications means it can also be used in restricted spaces.
The seal-free sensor design, with high-quality polysulfone (Ultrason S) combined with enclosure rating IP 67, not only makes it possible to use the device in harsh ambient conditions, but also guarantees high process reliability. The large text display also helps ensure simple, fast and problem-free commissioning.

Order code

Flowcont®	UN		1		

Equipment

Ordering information	*Model*
LKZ0505PUR-AS	Connection cable 5 m, 5-pole, shielded . . . . .
LKZ0510PUR-AS	Connection cable 10 m, 5-pole, shielded . . . . .
LKZ0805PUR-AS	Connection cable 5 m, 8-pole, shielded . . . . .
BKZ0512-VA	Cable socket M12 - Spol -straigth with VA-nut . . . . .
BKW0512-VA	Cable socket M12 - Spol -angled with VA-nut . . . . .

6. Visualization

Contents

What to use where

Messprinzip	Regicont RCE-300	Regicont RCD-450	DPA	DAL-401	DAL-101	DAL-111	DAL-311	DAP-101	DAP-311	DAM-311	DAK-101	DAK-111	MIR-401/411/421	MIR-491/492
Bildschirmschreiber	●	●												
Anzeigen	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Registrieren	●	●	●											
Fernübertragung	●	●												
Analyse	●	●	●											
Farbdisplay	●	●	●											
Digitaleingang	●	●	●											
LCD-Anzeige 4-Stellig					●			●			●		●	●
LCD-Anzeige 5-Stellig				●		●	●		●			●		
Bargraph	●	●	●							●				
Messumformerversorgung	●	●	●	●		●	●		●	●		●	●	●
Datenlogger	●	●	●											
Relaisausgang	●	●	●	●		●	●		●	●			●	●
Fronttafeleinbau	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ethernet	●	●												
USB	●	●	●											
Modbus	●	●											●	
Profibus		●												●
Bluetooth			●											
Feldgehäuse	●	●	●											
Tischaufbau	●	●												
Einsatzbedingungen														
Ex-Bereich			⟨Ex⟩											

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Type	RCE-300	RCD-450 paperless recorder
		
Model	paperless recorder	paperless recorder
Application	in all industries for displaying and registration of production processes	displaying, analyzing, monitoring and saving,industry and multi product systems
Design	front panel installation 144x144mm tabletop model field housing IP65	front panel installation tabletop model field housing IP65
Analog inputs	0 / 4 / 8 / 12	4 / 8 / 12 / 16 / 20
multifunction analog outputs	X	X
Impulse inputs	6x digital (max.)	up to 14
Measurement display	TFT 5,7" color display	TFT 7" color display
Switching outputs	6x relay	max. 12x relay
Analog outputs	-	2x analog output
Mathematical software	X	X
Internal memory	128MB	256 MB
Exchangeable memotry	SD memory card 1GB	SD memory card 1GB
Operating voltage	115...230V AC, 24V UC	115...230V AC, 24V UC
Transmitter power supply	X	X
Certifications	UL/CSA	ATEX; UL
Remotely controllable	-	-
Interfaces optional	Ethernet, RS232 / RS485, USB, OPC-Server, WEB-Server, Profibus, Modbus, RTU / TCP-Slave	Ethernet, RS232 / RS485, USB, OPC-Server, WEB-Server, Profibus, Modbus

Type	DPA	DAL-401	DAL-101
			
Design	front panel installation 96x96mm wall mounting housing, top-hat rail mounting	front panel installation 48x96mm horizontal format	front panel installation 96 x 48 x 41 mm horizontal format short design
Digital-display	5-digit	5-digit	4-digit
Bar graph display	1 bar graph	-	-
input U / I	1x 0...10V; 0(4)...20mA	1x 0...10V; 0(4)...20mA	1x 0...10V; 0(4)...20mA
Input Pt-100	-	2-, 3-, and 4-wire	2- and 3-wire
Input Thermoelemente	-	TC input	type L, J, U, B, S, N, E, T, R
Input sonstige	-	mV, potentiometer, Pt-100	R, Poti, frequenzy, U/I-AC
Multi-function input	-	multi-function input	-
Operating voltage	85...253V AC / 24 V DC	230V AC or 24V UC	230V AC; 24V DC 2-wire current loop supply
Output analog	1x 0...10V; 0(4)...20mA	1x 0...10V; 0(4)...20mA	-
Switch output	4x relay	2x relay NO	2 PhotoMos-outputs bei current loop version
Control output	-	2-point and constantly	-
Transmitter power supply	1x transmitter power supply 24V	transmitter power supply	-
Programming interface	Bluetooth	programming interface	-
Process interface	-	-	-
Certifications	ATEX	UL	-
Other information	Bluetooth-Interface data logger 500000 measured values	O2 input	-

Visualization

Type	DAL-111	DAL-311	DAP-101	DAP-311	DAM-311	DAK-101	DAK-111
							
Design	front panel installation 96 x 48 x 89 mm horizontal format	front panel installation 96 x 48 x 139 mm horizontal format	front panel installation 296 x 24 x 74 mm horizontal format	front panel installation 96 x 24 x 139 mm horizontal format	front panel installation 96 x 24 mm vertical and horizontal format	front panel installation 48 x 24 x54 mm horizontal format	front panel installation 48 x 24 x 101 mm horizontal format
Digital-display	5-digit	5-digit	4-digit	5-digit	30-points-bargraph (Tricolor) + Digital-display red	4-digit	5-digit
Bar graph display	-	-	-	-			
input U / I	1x 0...10V; 0(4)...20mA	1x 0...10V; 0(4)...20mA	1x 0...10V; 0(4)...20mA	1x 0...10V; 0(4)...20mA	0/4-20mA, 0-10V DC	1x 0...10V; 0(4)...20mA	1x 0...10V; 0(4)...20mA
Input Pt-100	2-, 3- and 4-wire	3- and 4-wire	2- and 3-wire	3- and 4-wire	-	2- and 3-wire	2- and 3-wire
Input Thermoelemente	type L, J, U, B, S, N, E, T, R	type L, J, U, B, S, N, E, T, R	type L, J, U, B, S, N, E, T, R	type L, J, U, B, S, N, E, T, R	-	type L, J, U, B, S, N, E, T, R	type L, J, U, B, S, N, E, T, R
Input sonstige	Poti, resistor, mV	R, Poti, frequenzy, U/I-AC	Poti, resistor, mV	R, Poti, frequenzy, U/I-AC	-	Poti, resistor, mV	Poti, resistor, mV
Multi-function input	-	-	-	-	-	-	-
Operating voltage	230V AC; 10...30 V DC	230V AC; 10...30 V DC	230V AC; 24V DC or current loop supply	115/230V AC; 24V DC	85-265VAC/10-30 VDC/230V AC with sensor supply 24V DC/50 mA	24V DC / 4...20mA, 2-wire	24V DC, 4...20mA, 2-wire
Output analog	1x 0...10V or 0/4...20 mA	1x 0...10V or 0/4...20mA	1x 0...10V or 0/4...20mA	1x 0...10V or 4...20mA	0/4-20mA, 0-10V	-	-
Switch output	2x SPDT relay	2x SPDT relay 4x relay outputs	2 PhotoMos-outputs at current loop version	2x SPDT relay	2 relay outputs possible	-	-
Control output	-	-	-	-	-	-	-
Transmitter power supply	transmitter power supply	transmitter power supply	-	transmitter power supply	-	-	-
Programming interface	-	-	-	-	-	-	-
Process interface	-	-	-	-	-	-	-
Certifications	-	-	-	-	-	-	-
Other information	-			-			

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Type	MIR-401/411/421	MIR-491/492
		
Design	front panel installation 48 x 96 mm front panel installation 96 x 96mm standing, lying	front panel installation 48 x 96 mm standing
Digital-display **Bar graph display**	2x 4-digit -	2x 4-digit -
input U / I	1x 0...10V; 0(4)...20mA 1x 0...50mA AC heating current	1x 0...10V; 0(4)...20mA 1x 0...50mA AC heating current
Input Pt-100 **Input Thermoelemente** **Input sonstige** **Multi-function input**	2-and 3-wire TC input KTY, Pt-100 multi-function input	2x 2-and 3-wire TC input KTY, Pt-100, mV, Poti multi-function input
Operating voltage	230V AC or 24V UC	230V AC or 24V UC
Output analog	1x 0...10V; 0(4)...20mA	2x 0...10V; 0(4)...20mA
Switch output	2x relay NO + 1x SPDT relay 1x logic	4x SPDT relay 2x logic
Control output	2-point , 3-point, constantly motor step	2-point , 3-point, constantly motor step + YP
Transmitter power supply	transmitter power supply	transmitter power supply
Programming interface	programming interface	programming interface
Process interface	Modbus RTU	Modbus RTU, Profibus
Certifications	DIN 3440, UL, GL	DIN 3440, UL
Other information		O2 input, DAC-function

Visualization

Regicont RCE-300

paperless paperless recorder for displaying, register and remotely transmitting
6 x digital input, 6x relay output, front panel installation 144 x 144 mm

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Basic price . . . . . .

signal input

A	Without
B	4x universal
C	8x universal
D	12x universal

power supply

1	100-230VAC (+/-10%)
2	24V (+/-10%; +15%) AC/DC

communication

A	Ethernet RJ45 + USB
B	RS232/485 + Ethernet RJ45 + USB
C	Modbus TCP Slave + Ethernet RJ45 + USB
D	Modbus RTU/TCP Slave + RS232/485 + Ethernet RJ45 + USB

0

Operating language display

AA	english
AB	german
AC	french
AD	spanish
AE	italian
AF	dutch
AG	portuguese
AH	polish
AI	russian
AK	chinese abbreviations
AL	japanese
AR	czech
AS	chinese traditional characters
AT	swedish

storage media

0	Without
C1	SD card industry standard, 1 GB

application package

0	Without
E1	mathematics

housing

0	Without
G1	field housing
G2	table top stand, cable with shock-proof plug
G3	table top stand, cable with US plug
G4	table top stand, cable with swiss plug

Order code

RCE-300	0

Equipment

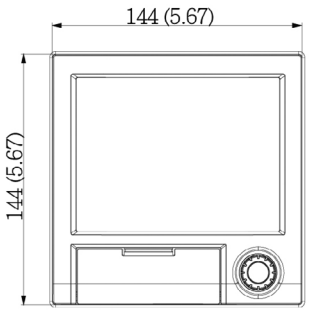
Model

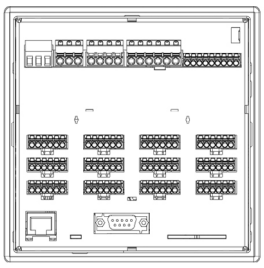
software FDM-Essential for data retrieval, saving in data base, visualization, pressure (included) . . . . . .

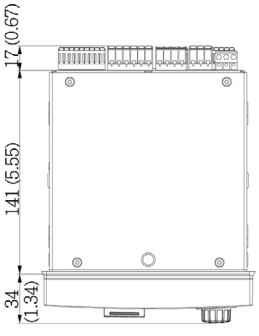
software FDM-Professional with 1/5/10 licences: saving and visualization historical data, read out via online interface or from mass memory, data export and data import, PDF file generation, creating reports and templates. . . . . .

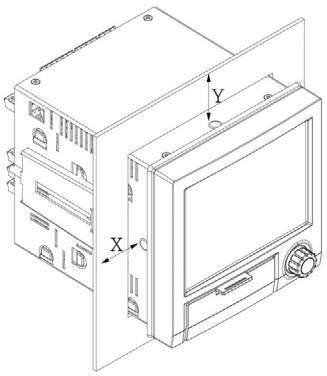
Application

The Regicont RCE-300 graphic display recorder records and visualizes relevant process values via analog or digital input signals. The measured values are securely saved and limit values are monitored. Furthermore the Regicont RCE-300 offers intuitive operation and simple system integration. Remote configuration and visualization of the current and recorded data is easy thanks to the integrated web server - no additional software needs to be installed. In addition the Essential Version of the Field Data Manager software is also supplied with the product as standard. This software can be used to export the recorded data, save the data to an SQL database in a way that the data cannot be manipulated, and visualize the data externally.









Visualization

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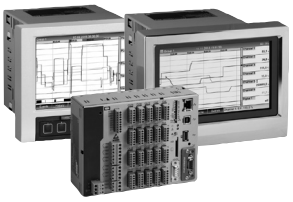
Regicont RCD-450

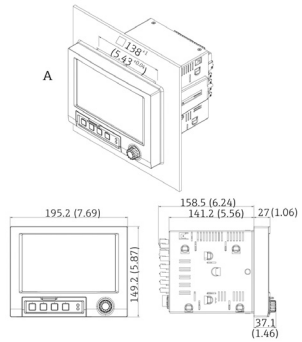
Paperless paperless recorder for recording, visualization and analyzing

6 / 01.22

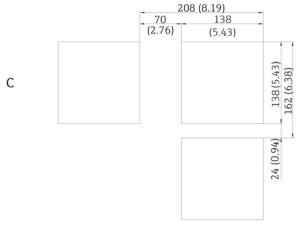


Application

The Advanced Data Manager RCD-450 is a flexible and powerful system for organizing process values. Thanks to its intuitive operation, the RCD-450 adapts quickly and easily to any application. The process values are clearly presented on the display and logged safely, limits are monitored and analyzed. Via communication protocols, the measured and calculated values can be easily transferred to higher-level systems and plant modules can be interconnected. Also available as DIN rail version without display.



A Version with navigator and front interfaces



C Grid dimensions of panel cutouts for multiple devices

Basic price . . . . . .

Approval
- AA Non-harzadous area
- BK ATEX II2G Ex px IIC, II2D Ex pD IIIC
- GR *Non-harzadous area + EAC marking

Power supply
- 1 100-230VAC (+/-10%).
- 2 24V (-10%, +15%) AC/DC

Slot 1
- A Not used
- B 4x universal U,I,TC,RTD, pulse-/frequency input 10kHz.
- C 4x HART®/4...20mA input, HART® transparency

Slot 2
- A Not used
- B 4x universal U,I,TC,RTD, pulse-/frequency input 10kHz
- C 4x HART®/4...20mA input, HART® transparency

Slot 3
- A Not used
- B 4x universal U,I,TC,RTD, pulse-/frequency input 10kHz
- C 4x HART®/4...20mA input, HART® transparency

Slot 4
- A Not used
- B 4x universal U,I,TC,RTD, pulse-/frequency input 10kHz.
- C 4x HART®/4...20mA input, HART® transparency

Slot 5
- A Not used.
- B 4x universal U,I,TC,RTD, pulse-/frequency input 10kHz
- C 4x HART®/4...20mA input, HART® transparency.
- D Add. 8x digital input, 25Hz, 6x relay, (6x SPST), 2x analogue output.

Front Bezel
- A Zink diecast, powder-coated, light grey, interfaces + SD card front side, panel 149x195mm, IP65, NEMA type 4 Encl.
- B Stainless steel, touchscreen, front interface + SD card unaccessible, panel 149x195mm, IP65, NEMA type 4 Encl.

Communication Master Functionality
- 1 None
- 2 Modbus RTU/TCP, Master, max. 40x analog.

Communication Slave Functionality
- A None
- B Modbus RTU/TCP, Slave, max. 40x analog, 20x digital
- C PROFIBUS DP, Slave, max. 40x analog, 20x digital.
- D PROFINET, Device, max. 40x analog, 20x digital
- E EtherNet/IP, Adapter, max. 40x Analog 20x Digital.

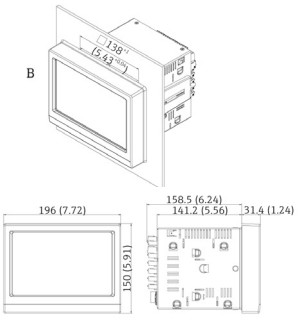
Application package
- 1 None
- 2 Mathematic
- 3 Telealarm + mathematic
- 4 Badge software + mathematic
- 5 Waste Water + storm overflow + telealarm + mathematic.
- 6 Energy software (water + steam) + mathematic
- 7 Telealarm + energy software (water + steam) + mathematic
- 9 Sonderausführung, TSP-Nr. zu spez.

Operation language display
- AB German
- AA English
- Y others

Order code

RCD-450 + _ _ _ _possibly additional options (see below)

Additional options



B Version with stainless steel front and touchscreen

Calibration
- F1 Werkskalibrierschein

Housing
- GA Terminal cover
- G1 Field, IP65, NEMA type 4 Encl.
- G2 Desk top, cable with European two-pin earthed plug
- G3 Desk top, cable with US plug
- G4 Desk top, cable with Swiss plug
- G9 Special version, TSP-no. to be spec.

Service
- HK IQ/OQ Template + software backup
- HL IQ/OQ Template for fieldbuses + Software backup
- H8 Customized pre-configured
- H9 Special version, TSP-no. to be spec.

Licence package for FDM Software MS20
- MA Professional 1x workplace licence

Accessory mounted
- N1 SD card industrial grade, 1GB

Marking
- Z1 Tagging (TAG), metal
- Z2 Tagging (TAG), on device.
- Z3 Commissioning label, paper
- Z6 Tagging (TAG), by customer.

Digital Process display, transmitter and control device DPA

1x input U/I, 1x output U/I, 4 relay-switching outputs, transmitter supply, data logger, Bluetooth-Interface
Easy and clear display and analysis, for display, processing, implementation and galvanic separation of electric standard signals - even from hazardous areas

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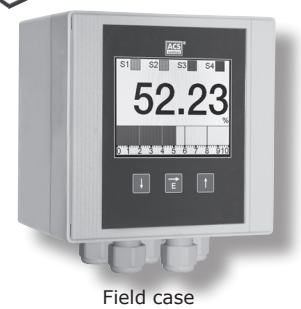
Technical data

auxiliary power	
power supply	
type A/B/D:	18..36V DC, reverse polarity protected
type S/T/U:	186..253V_{AC}
power consumption	
type A/B/D:	≤ 5 W
type S/T/U:	≤ 15 VA
galvanic isolation	
type A/B/D:	supply to relay input / output 2KV DC / 4KV AC supply input to output ≥ 500 V DC
type S/T/U:	supply to relay input/output 3KV AC supply input to output ≥ 500 V DC
input	0/4...20 mA max 50 mA 0...10 V max 30 V
transmitter supply	24 V DC / ≤30 mA, overload and short circuit protected
output signal U/I	
Work space:	(0)4...20mA / 0...10V, adjustable
Resolution:	≤ 1 µA / ≤ 1mV
Reaction time:	≤ 15 ms
switch output	
Amount:	0/2/4 depending on device version
Function:	potential-free switch contact
switching capacity:	max 253V AC / 220 V DC - 6A - 1500 VA / 180W
Reaction time:	≤ 25 ms
Measurement accuracy	
Characteristics deviation:	≤ 0,1% FS
Temperature deviation:	≤ 0,1% FS / 10K
Bluetooth Interface	
Version:	2.0 Full Speed
Function:	Host
Jack socket:	USB 2.0-A
Environmental conditions	
Ambient temperature:	-20°C...+70°C
protection	
top-hat rail mounting:	IP66 EN/IEC 60529
wall mounting housing:	IP66 EN/IEC 60529
front panel housing:	front side IP54 EN/IEC 60529 back side IP20 EN/IEC 60529
Materials	
top-hat rail mounting :	PC / PES / CrNi-steel / PA / CR-NBR
wall mounting housing:	PC / PES / PA / CR-NBR
front panel housing:	PPE / PES / steel verzinkt / PA / NBR-EPDM
certifications	ATEX II (1) G [Ex ia Ga] IIC resp. ATEX II (1) D [Ex ia Da] IIIC

Front panel housing



Field case

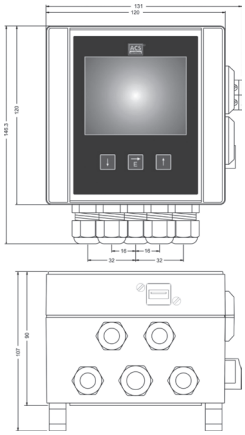
Application

he digital display unit DPA is designed for front panel mounting or on-site assembly or for mounting on a standard DIN rail. The electrical standard signal in the range of 0-10V or 0 to 20 mA is detected by the evaluatio , adjusted in accordance with the programmed settings and is transmitted and electrically isolated on the output signal 0 .. 10V or 0/4...20mA. Due to the possible entry of 40 breakpoints also non-linear input signals, eg of horizontal cylindrical tanks can be linearized for further processing. Up to 4 programmable relay switching points can be assigned to the input signal.

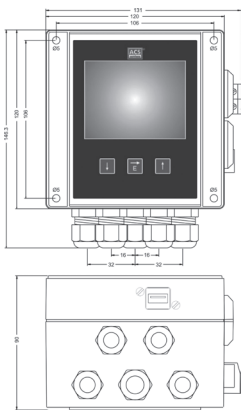
The modern transmitter has extensive diagnostic functions for system analysis and still allows easy setup and operation through the clear navigation. The digital process meter DPA is also suitable for the detection and measurement of flow rates and currents. The mathematical formulas for this are already stored in the device.

The TFT color display provides an excellent representation of the measured values and easy readability. Intelligent Data management is made possible with the digital display unit DPA by the Bluetooth interface and a built-in data logger function with a time stamp to record up to 500,000 readings.

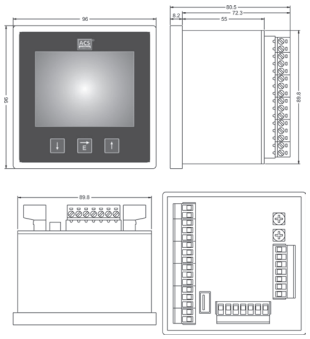
version top-hat rail mounting
type P



Connection housing
version wall mounting housing
type F - electronics type S / T / U



version front panel housing
type M



Visualization

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Digital Process display, transmitter and control device DPA

1x input U/I, 1x output U/I, 4 relay-switching outputs, transmitter supply, data logger, Bluetooth-Interface
Easy and clear display and analysis, for display, processing, implementation and galvanic separation of electric standard signals - even from hazardous areas

6 / 01.22

Basic price . . . . . .

Electronic – input

1 1x 0/4…20mA - 0…10V, transmitter power supply . . . . . .

Approval

0 Standard . . . . . .
X ATEX II (1) G / ATEX II (1) D . . . . . .

Enclosure type

F Field enclosure . . . . . .
M Front panel enclosure . . . . . .
P DIN-rail enclosure . . . . . .

Electronic – supply / output

A 18…36V DC / 1x 0/4…20mA - 0…10V . . . . . .
B 18…36V DC / 1x 0/4…20mA - 0…10V, 2x relay, 2x digital input . . . . . .
D 18…36V DC / 1x 0/4…20mA - 0…10V, 4x relay, 4x digital input . . . . . .
S 186…253V AC / 1x 0/4…20mA - 0…10V . . . . . .
T 186…253V AC / 1x 0/4…20mA - 0…10V, 2x relay, 2x digital input . . . . . .
U 186…253V AC / 1x 0/4…20mA - 0…10V, 4x relay, 4x digital input . . . . . .

Electronic - function

0 USB-Interface . . . . . .
1 USB+Bluetooth-Interface . . . . . .
2 USB-Interface / Data logger with time stamp, battery powered . . . . . .
3 USB+Bluetooth-Interface / Data logger with time stamp, battery powered . . . . . .
Y Others . . . . . .

Electronic - extras

0 Standard . . . . . .
1 USB device jack – Enclosure type F / P . . . . . .
2 Increased protection class IP65 – Enclosure type M . . . . . .

S Standard . . . . . .

+ Additional Options (optional)

KF Configuration / Preset . . . . . .

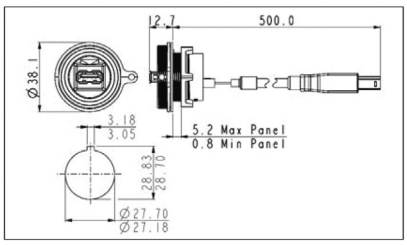
Order code

DPA	1				0	S

Equipment

Ordering information — *Model*

611000312 — USB socket for front panel installation, for installation of USB-socket in the switchboard door, incl. covering cap IP68 . . . . . .



911000482 — USB 2.0 adapter socket A on plug Micro-B . . . . . .

DAL-401

universal panel meter 96x48mm 5-digit

6 / 01.22

Basic price . . . .

Device version

0 90...250V AC without outputs. . . . .
2 90...250V AC, 2 relay NO + mA/V/logic. . . . .
1 24V AC / 18...30V DC without outputs. . . . .
3 24V AC / 18...30V DC, 2 relay NO + mA/V/logic. . . . .

Options

0 No options . . . .
1 RS422/485 + transmitter power supply + di2,di3 . . . .

Software settings

0 Standard configuration . . . .
1 Display with 2 limit values (turnkey). . . . .
2 Display with 2 limit values + analog output . . . .
9 Configuration as specified . . . .

Operating instructions

0 No operating instructions . . . .
D Operating instructions german . . . .
E Operating instructions english. . . . .

Order code

DAL-401 S

Equipment

Ordering information	*Model*
STW-407-50001	Heating current transformer 50A AC . . . .
STK-600-00003	PC-adapter USB/TTL for MIR-4xx, MIR-5xx. . . . .
9407-998-00061	DIN rail adapter . . . .
BCB-400-00002	BlueControl Basic . . . .
BCD-400-00003	BlueControl Expert. . . . .

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DAL-101

digital panel meter **96x48x41 mm** incl. plug-in terminal (short design), display colour red,
4-digit, without sensor supply, optional current loop supply

6 / 01.22

field mount
housing

Basic price . . . . . .

Power supply

0	230V AC
2	24V DC galvanic seperated
6	4...20 mA, 2-wire current loop display

Function input

0	0/4-20mA, 0-10VDC
1	0...50V DC, 0...100V DC (please specify)
2	Pt100 input, 2 + 3-wire up to 850 °C
3	Shunt 60/150 mV
4	Potentiometer measurement > 1 kOhm up to < 1000 kOhm
5	Resistance measurement 1K / 10K / 100K / 1MOhm
6	4...20mA 2-wire current loop display
8	Thermal element type L, J, K, B, S, N, E, T, R
Y	Other inputs

Function output

0	Display (230V AC + 24 V DC version)
B	Display (current loop)
C	Current loop with 2 PhotoMos outputs

0	Standard configuration
9	Dimension strips and configuration as specified

S	Standard, protection IP65
V	Field mount housing (plastic)

DAL-101

DAL-111

digital panel meter **96x48x89 mm** incl. plug-in terminal, display colour red,
5-digit, optional with analog output or sensor supply, 2 limit contacts and digital input

Anmerkung

[1] sensor supply
only with 0/4...20 mA,
0...10V DC input and without
analog output possible!

field mount
housing

Basic price . . . . . .

Power supply

0	230V AC
2	10...30V DC galvanic seperated
3	230V AC with sensor supply 24V DC/50 mA and digital input (no analog output possible)[1]
4	10...30V DC galvanic seperated with sensor supply 24V DC/ 50 mA and digital input (no analog output possible) [1]

Function input

0	0...10V, 0/4...20mA
2	Pt100 input, 2-, 3-, 4-wire, 850°C
3	600V / 300V / 100V / 1A DC
8	Thermal element type L, J, K, B, S, N, E, T, R
9	Weighing technology
F	Frequenzy; 0,01 Hz up to 999,99 kHz
Y	Other inputs

Function output

0	Display
A	Display + 2 relay outputs (changeover)
B	Display with analog output 0/4...20 mA, 0...10V DC [1]
C	Display with 2 relay and analog output [1]

0	Standard configuration
9	Dimension strips and configuration as specified

S	Standard, protection IP65
V	Field mount housing (metal housing)

DAL-111

DAL-311

digital panel meter **96x48x139 mm** incl. plug-in terminal, display colour red,
5-digit, optional with analog output and sensor supply and digital input, 2 or 4 limit contacts

6 / 01.22

Note

[1] sensor supply
only at 0/4...20 mA,
0...10V DC input

Basic price . . . . . .

Power supply

0	100-240V AC
2	10...40V DC galvanic seperated
3	100-240V AC with sensor supply 24V DC/50mA and digital input [1]
4	10...40V DC galvanic seperated with sensor supply 24V DC/50mA and digital input [1]
Y	other voltages

Function input

0	0/4...20 mA, 0...10V DC.
1	50/300/600V DC, 1A DC.
2	Pt100 input, 3 + 4-wire up to 850°C
3	60 / 150 / 300 / 1000 mV
4	10V / 50V AC / 1A / 5A AC
5	300/600V AC, 1A, 5A AC
6	Potentiometer measurement > 1 kOhm up to < 1000kOhm
7	Resistance measurement 1k, 10k, 100 kOhm
8	Thermal element type L, J, K, B, S, N, E, T, R
9	Weighing technology
F	Frequenzy 0,01Hz-999,99kHz
Y	Other inputs

Function output

A	Display + 2 relay outputs (changeover)
B	Display + 4 relay outputs
C	Display with analog output 0-10V/4-20mA, switchable
D	Display + 2 relay with analog output 0-10V/4-20mA, switchable.
E	Display + 4 relay with analog output 0-10V/4-20mA, switchable.
Y	Others outputs.

0	Standard configuration.
9	Dimension strips and configuration as specified

S	Standard, protection IP65
V	Field mount housing

DAL-311

DAP-101

digital panel meter **96x24x74 mm**, incl. plug-in terminal,
4-digit, optional with current loop supply

Basic price . . . . . .

Power supply

0	230V AC
2	24V DC galvanic seperated.
6	4...20 mA, 2-wire current loop display.

Function input

0	0/4...20mA, 0...10V DC
2	Pt100 input, 2 + 3-wire up to 850°C
3	Shunt 60 / 150 mV
4	Potentiometer measurement >1 kOhm up to < 1000kOhm.
5	Resistance measurement 1K / 10K / 100K / 1 MOhm.
6	4...20mA, 2-wire current loop display
8	Thermal element type L, J, K, B, S, N, E, T, R
Y	Other inputs

Function output

0	Display (230V AC + 24V DC Version)
B	Display (current loop)
C	Display current loop with 2 PhotoMos outputs

0	Standard configuration.
9	Dimension strips and configuration as specified

S	Standard, protection IP65

DAP-101 S

DAP-311

digital universal panel meter **96x24x145mm**, incl. plug-in terminal, 2 relay outputs,
5-digit, processor controlled, optional with analog output and sensor supply and digital input

6 / 01.22

Anmerkung

[1] sensor supply
only at 0/4...20 mA,
0...10V DC input

Basic price . . . . . .

Power supply

0	85-265VAC.
2	10...40V DC galvanic seperated
3	85-265VAC with sensor supply 24VDC/50mA and digital input
4	10-40VDC with sensor supply 24VDC/50mA and digital input
Y	Others

Function input

0	0/4...20 mA, 0...10V DC.
1	600VDC, 1ADC (only at AC-Version).
2	Pt100 input, 3 + 4-wire up to 850°C
3	60 / 150 / 300 / 1000 mV
4	10V / 50V AC / 1A / 5A AC
6	Potentiometer measurement > 1 kOhm up to < 1000kOhm
7	Resistance measurement 1k, 10k, 100 kOhm
8	Thermal element type L, J, K, B, S, N, E, T, R
F	Frequenzy 0,01Hz-999,99kHz
Y	Other inputs

Function output

0	No output
A	Display with 2 relay outputs (changeover).
C	Display with analog output 0/4-20mA, 0-10V, switchable
D	Display + 1 relay with analog output 0/4-20mA, 0-10V, switchable
Y	Others.

0	Standard configuration.
9	Dimension strips and configuration as specified

S	Standard, protection IP65

DAP-311 S

DAM-311

digital panel meter **96x24x144mm**, incl. plug-in terminal, 2 relay outputs,
30-points-bargraph (Tricolor) + digital-display red, vertikal or horizontal

Basic price . . . . . .

Power supply

0	100-240VAC.
2	10-40 VDC galvanic seperated
3	100-240 VAC with sensor supply 24V DC/40 mA and digital input *(no analog output possible)*[1]
4	10...40V DC galvanic seperated with sensor supply 24V DC/ 40 mA and digital input (no analog output possible) [1]

Function input

0	0/4-20mA, 0-10V DC

Function output

0	No output
A	Display with 2 relay outputs (changeover).
C	Display with analog output 0/4-20mA, 0-10V, switchable
D	Display + 1 relay with analog output 0/4-20mA, 0-10V, switchable

0	Standard configuration.
9	Dimension strips and configuration as specified

Model

0	Vertical model
1	Horizontal model

S	Standard, protection IP65

DAM-311 0 S

DAK-101

Display device **48x24x54 mm**, incl. plug-in terminal,
4-digit, processor controlled, optional current loop supply

6 / 01.22

Basic price . . . . . .

Power supply

2 24V DC galvanic seperated. . . . . .
6 4-20mA 2-wire, current loop display . . . . . .

Function input

0 0/4-20mA, 0-10V DC . . . . . .
2 Pt100 input, 2 + 3-wire up to 850°C . . . . . .
3 Shunt 60 / 150 mV . . . . . .
4 Potentiometer measurement > 1 kOhm up to < 1000 kOhm. . . . . .
5 Resistance measurement 1K / 10K / 100K / 1 MOhm (please specify measuring range!) . . . . . .
6 4...20 mA 2-wire (current loop display) . . . . . .
8 Thermal element type L, J, K, B, S, N, E, T, R . . . . . .
Y Other inputs . . . . . .

Function output

0 Display . . . . . .

0 Standard configuration. . . . . .
9 Dimension strips and configuration as specified . . . . . .

S Standard, protection IP65 . . . . . .

DAK-101		0		S

DAK-111

Display device **48x24x101 mm**, incl. plug-in terminal,
5-digit, processor controlled, with 2 PhotoMos outputs, optional analog output or sensor supply

annotation

[1] sensor supply
only at 0/4...20 mA,
0...10V DC input and without
analog output possible!

Basic price . . . . . .

Power supply

2 24V DC galvanic seperated. . . . . .
4 24V DC galvanic seperated with sensor supply [1]. . . . . .

Function input

0 0/4-20mA, 0-10V DC . . . . . .
2 Pt100 input, 2 + 3-wire up to 850°C . . . . . .
3 Shunt 60 / 150 mV . . . . . .
5 Resistance measurement 1K / 10K / 100K / 1 MOhm (please specify measuring range!) . . . . . .
6 Poti > 1kOhm up to < 1000 kOhm. . . . . .
8 Thermal element type L, J, K, B, S, N, E, T, R . . . . . .
Y Other inputs . . . . . .

Function output

B Display with 2 PhotoMos outputs . . . . . .
C Display with 2 PhotoMos outputs and analog output 0/4...20 mA, 0-10V [1] . . . . . .

0 Standard configuration. . . . . .
9 Dimension strips and configuration as specified . . . . . .

S Standard, protection IP65 . . . . . .

DAK-111				S

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MIR-401 Universal industrial controller 48x96mm
MIR-411 Universal industrial controller 96x48mm (horizontal format)
MIR-421 Universal industrial controller 96x96mm

MIR-401

MIR-411

MIR-421

MIR-401- ***Basic price*** . . . . . .

MIR-411- ***Basic price*** . . . . . .

MIR-421- ***Basic price*** . . . . . .

0 Connection via flat-pin terminal . . . . . .
1 Connection via screw terminals . . . . . .

0 90...250V AC, 3 relay . . . . . .
1 24V AC / 18...30V DC, 3 relay . . . . . .
2 90...250V AC, 2 relay + mA / V / logic . . . . . .
3 24V AC / 18...30V DC, 2 relay + mA / V / logic . . . . . .

0 No option . . . . . .
1 Modbus RTU + transmitter supply + di2, di3 . . . . . .

00

0 without configuration . . . . . .
9 Configuration as specified (standard) . . . . . .

0 No operating instructions . . . . . .
D Operating instructions german . . . . . .
E Operating instructions english . . . . . .
F Operating instructions french . . . . . .

0 Standard . . . . . .
U UL-certificated . . . . . .
D Certificated according to EN 14597 (formerly DIN 3440) . . . . . .

Order code

MIR-4_1-			00			S

Equipment

Ordering information	*Model*
STW-407-50001	Heating current transformer 50A AC . . . . .
STK-600-00003	PC-adapter USB/TTL for MIR-4xx, MIR-5xx . . . . .
9407-998-00061	DIN rail adapter . . . . .
BCB-400-00002	BlueControl Basic . . . . .
BCD-400-00003	BlueControl Expert . . . . .

MIR-491 Industry and process controller 48x96mm
MIR-492 Industry and process controller 96x96mm

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MIR-491

MIR-492

***MIR-491- Basic price** . . . . . .*

***MIR-492- Basic price** . . . . . .*

0 Connection via flat-pin terminal. . . . . .
1 Connection via screw terminals . . . . . .

0 90...250V AC, 4 relay . . . . . .
1 24V AC / 18...30V DC, 4 relay . . . . . .
2 90...250V AC, 3 relay + mA / V / logic . . . . . .
3 24V AC / 18...30V DC, 3 relay + mA / V / logic . . . . . .
4 90...250V AC, 2 relay + 2 x mA / V / logic . . . . . .
5 24V AC / 18...30V DC, 2 relay + 2 x mA / V / logic . . . . . .

0 No bus interface . . . . . .
1 RS422/RS485 + transmitter supply + di2, di3 + OUT5, OUT6 . . . . . .
2 PROFIBUS-DP + UT + di2/di3 + OUT5/OUT6 . . . . . .

0 INP1 and INP2. . . . . .
1 INP1, INP2 and INP3 . . . . . .

0 Controller. . . . . .
1 Program controller with 8 programs * 1) . . . . . .
2 Program controller with 16 programs * 1) . . . . . .

0 without configuration . . . . . .
9 Configuration as specified (standard) . . . . . .

0 No operating instructions. . . . . .
D Operating instructions german . . . . . .
E Operating instructions english . . . . . .
F Operating instructions french. . . . . .

0 Standard . . . . . .
U UL-certificated . . . . . .
D Certificated according to EN 14597 (ersetzt DIN 3440) . . . .

* 1) Attention!!! please use other operation instructions!
„program controller" instead of standard!
Please see addtitional equipment below.

Order code

MIR-49_- S

Equipment

Ordering information	*Model*
STK-600-00003	PC-adapter USB/TTL for MIR-4xx, MIR-5xx . . . . .
BCB-400-00002	BlueControl Basic . . . . .
BCD-400-00003	BlueControl Expert. . . . .

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Design
- L Design 48x96 mm horizontal
- N Design 72x72 mm
- G Design 48x48 mm
- V Design 96x96 mm

Function
- C Pulse counter
- P Pulse counter with forward/reverse flow detector
- B Bidirectional pulse counter
- F Rev counter and frequenzy meter
- T tTme counter with diverse functions
- H Impulse-pause counter

Software status
- M Standard software
- Y Special software
- R Forward/reverse flow detector

Output
- 0 Relay output *(standard)*
- S Transistor output *(on request)*

Number of digits
- 4 4-digit display
- 5 5-digit display
- 6 6-digit display
- 8 8-digit display

Contact output
- 0 Display
- 1 Display with 1 limit value
- 2 Display with 2 limit values

0

Power supply
- G Power supply 110V AC/24V DC; only design L, N, and G with plug-in terminals
- A Power supply 230/115/24V AC; only design V and LBM
- E Power supply 230V AC + 24V DC;
  Standard for design L and N, and G with plug-in terminals (not for LBM)
- B Power supply 24V DC; for design G with 11-pol. plug-in socket, for LBM plug-in terminals
- F Power supply 230V AC; for design G with 11-pol. plug-in socket
- D Power supply 24VDC/AC; for design L, N and G with plug-in terminals

Sensor supply
- E Sensor supply 12V DC
- 0 Sensor supply 24V DC *(standard)*

Special
- E Pluggable terminals *(standard)*
- Z 11-pol. plug-in socket *(only for design G)*

Order code

												0

Please complete your order after selection of the device version on page 222 with order code above.

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Digital pulse counter

48x96 mm

Ordering info	*Function*	*Number of digits*	*Limit values*	*Contacts*
LCM-60	Digital pulse counter	6	-	-
LCM-61	Digital pulse counter	6	1	1WE
LCM-62	Digital pulse counter	6	2	2WE
LBM-62	Digital pulse counter	6	2	2WE
LBM-62 S	Digital pulse counter	6	2	2WE
NCM-50	Digital pulse counter	5	-	-
NCM-51	Digital pulse counter	5	1	1WE
NCM-52	Digital pulse counter	5	2	2WE
GCM-50 1)	Digital pulse counter	5	-	-
GCM-51 1)	Digital pulse counter	5	1	1WE

72x72 mm

48x48 mm

Rev counter, frequency meter

48x96 mm

Ordering info	*Function*	*Number of digits*	*Limit values*	*Contacts*
LFM-40	Rev counter and frequency meter	4	-	-
LFM-41	Rev counter and frequency meter	4	1	1WE
LFM-42	Rev counter and frequency meter	4	2	2WE
LFM-50	Rev counter and frequency meter	5	-	-
LFM-40-AN	Rev counter and frequency meter	4	- analog output	-
NFM-40	Rev counter and frequency meter	4	-	-
NFM-41	Rev counter and frequency meter	4	1	1WE
NFM-42	Rev counter and frequency meter	4	2	2WE
NFM-50	Rev counter and frequency meter	5	-	-
GFM-41 1)	Rev counter and frequency meter	4	1	1WE
GFM-40 1)	Rev counter and frequency meter	4	-	-

72x72 mm

48x48 mm

Difference-, Drehzahl,- frequency meter

96x96 mm

Ordering info	*Function*	*Number of digits*	*Limit values*	*Contacts*
VFM-240 AN	Difference-, rev counter and frequency meter	4 + 3	- analog output	-

Digital time counter

48x96 mm

Ordering info	*Function*	*Number of digits*	*Limit values*	*Contacts*
LTM-60	Digital time counter	6	-	-
LTM-61	Digital time counter	6	1	1WE
LTM-62	Digital time counter	6	1	2WE
NTM-50	Digital time counter	5	-	-
NTM-51	Digital time counter	5	1	1WE
NTM-52	Digital time counter	5	1	2WE
NTMP-52	Digital time counter	5	1	2WE switched in parallel.
GTM-50 1)	Digital time counter	5	-	-
GTM-51 1)	Digital time counter	5	1	1WE

72x72 mm

48x48 mm

Impulse-pause-time-relay

48x96 mm

Ordering info	*Function*	*Number of digits*	*Limit values*	*Contacts*
LHM-61	Impulse-pause-time-relay	6	2	1WE
LHM-62	Impulse-pause-time-relay	6	2	2WE
NHM-51	Impulse-pause-time-relay	5	2	1WE
NHM-52	Impulse-pause-time-relay	5	2	2WE
GHM-51 1)	Impulse-pause-time-relay	5	2	1WE

72x72 mm

48x48 mm

1) available with 11-pole plug-in base

Visualization

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7. Signal converter, head transmitter, isolation amplifier, limit switch
Contents

What to use where

Function	Transcont CR-	Transcont WTA-100-G0	Transcont ExWTA-100-G0	Transcont WTAU-100-U0	Transcont WTAU-200-U0	Transcont WTAU-120-U0	Transcont WTAU-220-U0	Transcont TVA-120-U0	Transcont TVA-180-U0	Transcont TVA-220-U0	Transcont TVA-080-U0	Transcont TVA-100-U0	Transcont TVA-200-U0	ExTVA-500-UC	GWA -250-U0	GWAP-250-U0	Transcont KTM	Transcont ExKTM	Transcont UTN-500
Signal converter	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●
Temperature signal converter	●	●	●	●	●	●	●										●	●	●
Pt100-converter	●	●	●	●	●	●	●										●	●	●
Isolation amplifier								●	●	●	●	●	●	●					
Supply isolators	●							●		●		●	●	●					
Limit switch	●														●	●	●		
Head transmitter																	●	●	●
BluePort®-interface	●																		
Display	●																		
Universal input	●																		●
for 2-or 3-wire	●	●	●	●	●	●	●									●	●	●	●
Outpout	**2**	**1**	**1**	**1**	**2**	**1**	**2**	**1**	**1**	**2**	**1**	**1**	**2**	**2**	**2**	**2**	**1**	**1**	**1**
4...20 mA	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●
0...10V	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	
Switcjhing output	**2**														**2**	**2**	**1**		
Limit values	**2**														**2**	**2**	**1**		
Operating conditions																			
Hazardous area			⟨Ex⟩											⟨Ex⟩				⟨Ex⟩	⟨Ex⟩

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Type	Transcont-CR
	
Design	top hat rail device 22,5mm width
Digital-display **Bar graph display**	4-digit -
Input U / I	1x 0...10V; 0(4)...20mA
Input Pt100 **Input TC** **Input sonstige** **Multi-function input**	2-, 3-, and 4-wire TC input mV, potentiometer, Pt100 multi-function input
Operating voltage	230V AC or 24V UC
Output analog	1x 0...10V; 0(4)...20mA
Switch output	2x relay NO 1x logic
Control output	-
Transmitter power supply	transmitter power supply
Programming interface	programming interface
Process interface	-
Certifications	-
Other information	-

Type	WTAU 100-U0	WTAU 120-U0	WTAU 200-U0	WTAU 220-U0
				
Design	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm
Input	Pt100	Pt100	Pt100	Pt100
Multi-function input	-	-	-	-
Operating voltage	20...253V AC/DC	20...253V AC/DC	20...253V AC/DC	20...253V AC/DC
Universal mains supply circuit	universal mains supply circuit	universal mains supply circuit	universal mains supply circuit	universal mains supply circuit
Output	0...10V/ 0(4)...20mA active	0...10V/ 0(4)...20mA	0...10V/ 0(4)...20mA 2x seperated; active	0...10V/ 0(4)...20mA 2x seperated; active
Output adjustable	output adjustable	-	output adjustable	-
Multi-function output	multi-function input	-	multi-function input	-
Transmitter power supply	-	-	-	-
Certifications	-	-	-	-
Limit values	-	-	-	-
Other options	-	1 output, non-adjustable	2 separate multi-function outputs	2 separate outputs, non-adjustable

Type	TVA-120-U0	TVA-180-U0	TVA-220-U0	TVA-080-U0	TVA-100-U0	TVA-200-U0
						
Design	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm
Digital-display **Bar graph display**	0...10V/ 0(4)...20mA PFM input, 90...520Hz	0...10V/ 0(4)...20mA -5...+5V/ 0...1V	0...10V/ 0(4)...20mA	0...10V/ 0(4)...20mA -5...+5V/ 0...1V	0...10V/ 0(4)...20mA -5...+5V/ 0...1V	2x 0...10V/ 0(4)...20mA -5...+5V/ 0...1V
Input U / I	-	-	-	multi-function input	multi-function input	multi-function input
Input Pt100	20...253V AC/DC	20...253V AC/DC	20...253V AC/DC	20...253V AC/DC	20...253V AC/DC	20...253V AC/DC
Input TC	universal mains supply circuit	universal mains supply circuit	universal mains supply circuit	universal mains supply circuit	universal mains supply circuit	universal mains supply circuit
Input sonstige **Multi-function input** **Operating voltage**	0...10V/ 0(4)...20mA active	0...10V/ 0(4)...20mA active	0...10V/ 0(4)...20mA 2x seperated, active	0...10V/ 0(4)...20mA active	0...10V/ 0(4)...20mA active	0...10V/ 0(4)...20mA 2x seperated, active
Output analog	-	-	output adjustable	output adjustable	output adjustable	output adjustable
Switch output	-	-	-	multi-function output	multi-function output	multi-function output
	transmitter power supply	-	transmitter power supply	-	transmitter power supply	transmitter power supply
Control output	-	-	-	-	-	-
Transmitter power supply	-	-	-	-	-	-
Programming interface **Process interface** **Certifications**	1 output non-adjustable	1 output non-adjustable	2 separate in- and outputs non-adjustable	-	-	2 separate in- and outputs adjustable
Other information						

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Type	GWA-250-U0	GWAP-250-U0	UTN-500	KTM
				
Design	top hat rail 22,5x114,5x99mm	top hat rail 22,5x114,5x99mm	head transmitter 44x26,8 mm	head transmitter 44x26,8 mm
Input	0...10V/ 0(4)...20mA	Pt100	Pt100, TC	Pt100
Multi-function input	-	-	multi-function input	-
Operating voltage	20...253V AC/DC	20...253V AC/DC	24V	8,5...40 V DC / 4...20 mA 14,5...35 V DC / 0...10 V
Universal mains supply circuit	universal mains supply circuit	universal mains supply circuit	-	-
Output	2x relay	2x relay	4...20 mA passive	4...20mA, 0...10V Option passive
Output adjustable	output adjustable	output adjustable	-	-
Multi-function output	-	-	-	-
Transmitter power supply	transmitter power supply	-	-	-
Certifications	-	-	ATEX	ATEX
Limit values	2x SPDT relay	2x SPDT relay	-	1x PNP-Out
Other options	-	-	programable via software	-

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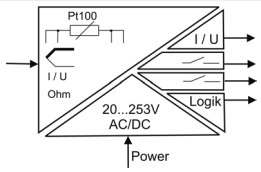
Universal-signal converter

Transcont CR- flexible universal temperature signal converter, 1 universal input, contact input with display and BluePort®-interface

7 / 01.22

Connection



Order code

Basic price . . . . . .

Transcont-CR	1					
		2	90...260 V AC, mA/V/logic + 1 relay			
		3	24 V AC / 18...31 V DC, mA/V/logic + 1 relay			
		4	90...260 V AC, mA/V/logic + 2 relay			
		5	24 V AC / 18...31 V DC, mA/V/logic + 2 relay			
			0	no option		
			1	RS 485 / MODBUS - protocol		
				0	no option	
				1	option package 1 *	
				2	option package 2 **	
					0	Standard configuration
					9	configuration as specified
						S Standard (CE-certification)
						U UL/cUL-certification

* option package 1: additional universal input INP2, additional:
O2-measurement, counter input, functions Tara, sample and hold amplifier, integrator

** option package 2: additional to option package 1:
digital input as optocoupler, frequency output

Equipment

Ordering information	*Model*
STK-600-00003	PC-adapter for BluePort-interface
USB-998-00081	USB Serial adapter
BCBR-400-00002	BlueControl Basic - rail line
BCDR-400-00002	BlueControl Expert - rail line
BAL-040-71718	operating instructions Transcont CR german
BAL-040-71711	operating instructions Transcont CR english
BAL-040-72018	interface description MODBUS rail line german
BAL-040-72011	interface description MODBUS rail line english

Transcont WTAU-100-U0

Pt100-signal converter active galvanic isolation and conversion of a 2-wire or 3-wire Pt100, free adjustable, 1 input / 1 output (0...10 V / 0...20mA / 4...20 mA); long range supply 20...253 V AC/ DC (universal mains supply circuit), snap-on-housing 22,5 mm

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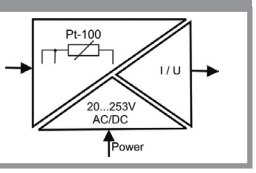
Connection



Order code

WTAU-100-U0 U0=universal current

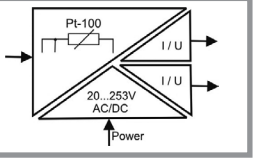
+ Additional Options (optional)

KF Configuration / Preset.....
KA Configuration setting as an adhesive label.....

Transcont WTAU-200-U0

Pt100- signal duplicators (2 output channels) **active** galvanic isolation and conversion of a 2-wire or 3-wire- Pt100, free adjustable, 1 input / 2 outputs; long range supply 20...253 V AC / DC (universal mains supply circuit), snap-on-housing 22,5 mm

Connection



Order code

WTAU-200-U0 U0=universal current

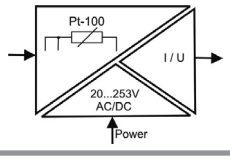
+ Additional Options (optional)

KF Configuration / Preset.....
KA Configuration setting as an adhesive label.....

Transcont WTAU-120-U0

Pt100-signal converter active galvanic isolation and conversion of a 2-wire or 3-wire Pt100, preset, 1 input / 1 output; long range supply 20...253 V AC / DC (universal mains supply circuit), snap-on-housing 22,5 mm

Connection



Basic price *(*scale prices)* . . . . . .

temperature range

A	0°C...+50°C	H	0°C...+400°C
B	0°C...+100°C	J	0°C...+500°C
C	0°C...+150°C	L	0°C...+600°C
E	0°C...+200°C	Q	-40°C...+60°C
F	0°C...+250°C	0	-50°C...+100°C
G	0°C...+300°C	N	-100°C...+50°C
		Y	Special range

signal output

1	0...10 V
2	0...20 mA
3	4...20 mA
Y	Special range

Order code

WTAU-120 U0=universal current: U0

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Transcont WTAU-220-U0

Pt100- signal duplicators (2 output channels) **active** galvanic isolation and conversion of a 2-wire or 3-wire Pt100, preset, 1 input / 2 outputs; long range supply 20...253 V AC / DC (universal mains supply circuit), snap-on-housing 22,5 mm

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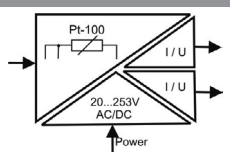
Connection



Basic price *(*scale prices)* . . . . . .

temperature range

A	0°C...+50°C	H	0°C...+400°C
B	0°C...+100°C	J	0°C...+500°C
C	0°C...+150°C	L	0°C...+600°C
E	0°C...+200°C	Q	-40°C...+60°C
F	0°C...+250°C	0	-50°C...+100°C
G	0°C...+300°C	N	-100°C...+50°C
		Y	Special range

signal output 1

1	0...10 V
2	0...20 mA
3	4...20 mA
Y	Special range

signal output 2

1	0...10 V
2	0...20 mA
3	4...20 mA
Y	Special range

Order code

U0=universal current

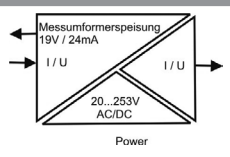
WTAU-220- U0

Isolation amplifier, signal converter

Transcont TVA-120-U0

isolation amplifier
active, 1-channel, universal mains supply circuit, non-adjustable, transmitter power supply

Connection



Basic price *(*scale prices)* . . . . . .

signal input

1	0...10 V
2	0...20 mA
3	4...20 mA
P	PFM input frequenzy 90-520 Hz
Y	Special range

signal output

1	0...10 V
2	0...20 mA
3	4...20 mA
Y	Special range

Order code

U0=universal current

TVA-120 U0

Transcont TVA-180-U0

universal-isolation amplifier
active, 1-channel, universal mains supply circuit, 22,5 mm

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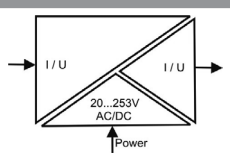
Connection



Basic price *(*scale prices)* . . . . . .

signal input

1	0...10 V
2	0...20 mA
3	4...20 mA
P	PFM input frequenzy 90-520 Hz
Y	Special range

signal output

1	0...10 V
2	0...20 mA
3	4...20 mA

Order code

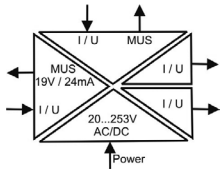
TVA-180		U0

U0=universal current

Transcont TVA-220-U0

universal-isolation amplifier
active, 2-channel, universal mains supply circuit, 22,5 mm, transmitter power supply

Connection



Basic price *(*scale prices)* . . . . . .

signal input 1

1	0...10 V
2	0...20 mA
3	4...20 mA
Y	Special range

signal input 2

1	0...10 V
2	0...20 mA
3	4...20 mA
Y	Special range

signal output 1

1	0...10 V
2	0...20 mA
3	4...20 mA
Y	Special range

signal output 2

1	0...10 V
2	0...20 mA
3	4...20 mA
Y	Special range

Order code

TVA-220		U0

U0=universal current

Signal converter

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Transcont TVA-080-U0

universal-isolation amplifier
active, universal mains supply circuit, 22,5 mm

design: top hat rail, 22,5x 114,5x 99 mm
input: 0...10 V/ 0(4)...20 mA, -5...+5 V/ 0...1 V
operating voltage: 20...253 V AC/DC universal mains supply circuit
output: 0...10 V/ 0(4)...20 mA
active, adjustable
multi-function output, multi-function input

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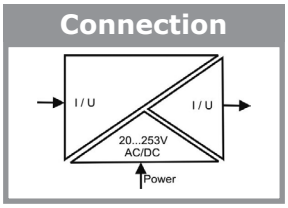
Connection



order code

TVA-080-U0 U0=universal current

+ Additional Options (optional)

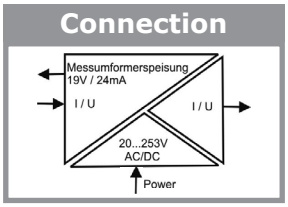
KF Configuration / Preset.....
KA Configuration setting
as an adhesive label.....

Transcont TVA-100-U0

universal-isolation amplifier
active, universal mains supply circuit, 22,5 mm
transmitter power supply

design: top hat rail, 22,5x 114,5x 99 mm
input: 0...10 V/ 0(4)...20 mA, -5...+5 V/ 0...1 V
operating voltage: 20...253 V AC/DC universal mains supply circuit
output: 0...10 V/ 0(4)...20 mA
active, adjustable
multi-function output, multi-function input, transmitter power supply

Connection



Order code

TVA-100-U0 U0=universal current

+ Additional Options (optional)

KF Configuration / Preset.....
KA Configuration setting
as an adhesive label.....

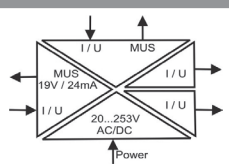
Transcont TVA-200-U0

universal-isolation amplifier
active, 2-channel, universal mains supply circuit, 22,5mm, transmitter power supply

design: top hat rail, 22,5x 114,5x 99 mm
input: 2x 0...10 V/ 0(4)...20 mA, -5...+5 V/ 0...1 V
operating voltage: 20...253 V AC/DC universal mains supply circuit
output: 0...10 V/ 0(4)...20 mA, 2x seperated, active, adjustable
multi-function input, multi-function output, transmitter power supply

7 / 01.22

Connection



Order code

TVA-200-U0

+ Additional Options (optional)

KF Configuration / Preset.....
KA Configuration setting as an adhesive label.....

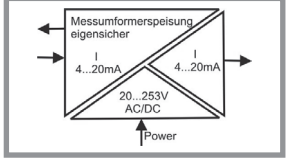
ExTVA-500-UC

supply isolators in Ex-version
active, 1-channel, universal mains supply circuit, 22,5mm, intrinsically safe transmitter power supply

design: mounting rail 35mm, housing 22,5mm
input: 4...20 mA eigensicher
operating voltage: 20...250 V AC/DC; Hart-compatible
output: 4...20 mA, active
certification: **ATEX II (1) GD [Ex ia] IIC**
Eigensichere transmitter power supply

certification

Connection

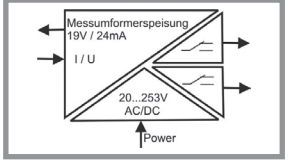


Order code

ExTVA-500-UC

Double-limit switch for standard signals / for Pt100 input

Connection



Order code

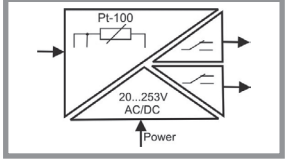
GWA-250-U0

double limit switch for standard signal; 2 limit values, universal mains supply circuit, 22,5 mm

GWAP-250-U0

double limit switch for Pt100 input; 2 limit values, universal mains supply circuit, 22,5 mm

Connection



+ Additional Options (optional)

KF Configuration / Preset.....
KA Configuration setting as an adhesive label.....

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Separating barriers

9002/13-252-121-04 Ex-speperating barrier for 4...20 mA signals. . . . . .
9002/77-220-146-00 Ex-speperating barrier for conductive probes . . . . . .

9002/22-032-300-11 Ex-speperating barrier for Pt100 . . . . . .
9001/02-016-150-11 Ex-speperating barrier for Pt100 . . . . . .

Attention: for one Pt100 in 3-wire connection both types are necessary !!!

BXT ML4 BE 24 mit BXT BAS

BXT M TT 2P 275

Overvoltage protection devices

BXT BAS Base part for standard module . . . . . .

BXT ML4 BE 24 DC24V Lightning protection module for 4 single wires . . . . . .

BXT ML4 BD 24 DC24V Lightning protection module for 2 double axes . . . . . .

DG M TT 2P 275 Network lightning protection - 2-pole . . . . . .

BXT-BAS-Ex Base part for Ex module . . . . . .

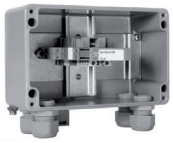
BXT ML4 BD Ex 24 DC24V Ex-lightning protection module for 2 double axes. . . . . .

ITAK EXI BXT 24 Ready-to-connect unit for 2x Ex circuits 160x100x81mm . . . . . .

IGA 24 IP54 Wall housing 2x 12 TE (295x458x129mm) . . . . . .

BXT ML4 BD 24 mit BXT BAS

BXT ML4 BD Ex 24 mit BXT BAS Ex



ITAK EXI BXT 24

IGA 24 IP54
Wandgehäuse

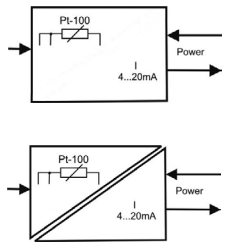
Transcont KTM / Transcont ExKTM

temperature head transmitter for 2- or 3-wire Pt100 preset, analog output 4...20 mA
in 2-wire technology or analog output 0 - 10 V in 3-wire technology, 1 PNP switching output

certification

7 / 01.22

Connection



Basic price *(*scale prices)* . . . . . .

certifications

KTM-	Without certificate. . . . .
ExKTM-	ATEX II 1 G Ex ia IIC T4 . . . . .

temperature range

A	0°C...+50°C	H	0°C...+400°C . . . . .
B	0°C...+100°C	J	0°C...+500°C . . . . .
C	0°C...+150°C	L	0°C...+600°C . . . . .
E	0°C...+200°C	Q	-40°C...+60°C. . . . .
F	0°C...+250°C	O	-50°C...+100°C. . . . .
G	0°C...+300°C	N	-100°C...+50°C. . . . .
		Y	custom specified measuring range. . . . .

Transmitter electronics

A0	4...20 mA, 2-wire-electronics. . . . .
AS	4...20 mA, 2-wire-electronics with one PNP switching output (not for Ex-version) . . . . .
AG	2-wire current, signal 4...20mA, galvanic seperated (not for Ex-version) . . . . .
B0	0...10 V, 3-wire-electronics (not for Ex-version) . . . . .

Order code

Transcont KTM

Signal converter

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Transcont UTN-500

temperature head transmitter
universal head transmitter, adjustable via PC

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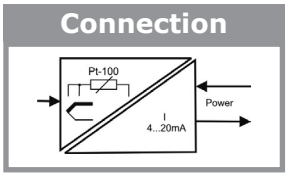
Connection



Basic price *(*scale prices)* . . . . . .

certifications

A	variation for Ex-free range
B	ATEX II 1 G EEx ia IIC T4/T5/T6
C	FM IS, Class I, Div. 1+2, Group A,B,C,D
D	CSA IS, Class I, Div. 1+2, Group A,B,C,D
E	ATEX II 3 G EEx nA IIC T4/T5/T6

Connection type

A	Standard factory setting 3-wire
2	configuration connection type RTD 2-wire
3	configuration connection type RTD 3-wire
4	configuration connection type RTD 4-wire
1	configuration connection type thermal element TC

configuration temperature sensor

A	Standard factory setting Pt100	
1	Pt100	(-200°C... 850°C, min.SP 10K) according to IEC 60751 (a=0,00385)
2	Ni100	(-60°C... 180°C, min.SP 10K)
3	Pt500	(-200°C...250°C, min.SP 10K)
4	Ni500	(-60°C...150°C, min.SP 10K)
5	Pt1000	(-200°C...250°C, min.SP 10K)
6	Ni1000	(-60°C...150°C, min.SP 10K)
7	resistiv sensor 10...400 ohm, min. span 10 ohm	
8	resistiv sensor 10...2000 ohm, min. span 100 ohm	
B	type B	(0°C...1820°C, min.SP 500K)
C	type C	(0°C...2320°C, min.SP 500K)
D	type D	(0°C...2495°C, min.SP 500K)
E	type E	(-200°C... 1000°C, min.SP 50K)
J	type J	(-200°C...1200°C, min.SP 50K)
K	type K	(-200°C...1372°C, min.SP 50K)
L	type L	(-200°C...900°C, min.Sp 50K)
N	type N	(-270°C...1300°C, min.Sp 50K)
R	type R	(-50°C...1768°C, min.Sp 500K)
S	type S	(-50°C...1768°C, min.Sp 500K)
T	type T	(-200°C... 400°C, min.Sp 50K)
U	type U	(-200°C... 600°C, min.Sp 50K)
V	configuration voltage transducer -10...100mV, min. span 5mV	

configuration

A	Standard-factory setting Pt100/3-wire/0-100°C
B	custom specified configuration measuring range
C	custom specified erweiterte configuration TC
D	custom specified erweiterte configuration RTD

Order code

UTN-500- S

Equipment

Ordering information	*Model*
KKN 500	configuration kit (incl. GM 500) + RS232-interface cable
GM 500	setup-programm
TTL/RS 232 C	PC-interface cable
KKN 501	configuration kit (incl. GM500 and USB-connection)

8. Sensoric

Contents

What are inductive sensors?

Inductive sensors work without contact. They detect metal objects that approach the sensor and switch at certain distances (proximity switches).

A standard measuring plate of steel St-37 with an edge length of the larger value than the coil diameter of the sensor is evaluated as a standard of the switching distance. The switching distance is also influenced by different materials.

Correction factor inductive sensors:

Material	Switching distance in%
Steel St-37	100
Stainless steel	70
Brass	50
Copper	45
Aluminum	40

What are capacitive sensors?

Capacitive sensors operate without contact. They recognize conductive materials and non-conductive materials with a dielectric constant of E> 1.

The switching distance depends on the material so that different distances can be reached depending on the dielectric constant. For a constant dimension, the switching distance is indicated for steel St-37. By means of adjustable sensitivity ranges of the sensors, it is also possible to penetrate the switching area in the case of plastic containers and plastic tubes, thus detecting liquids or objects.

Correction factor Capacitive sensors:

Material	E	Switching distance in%
Steel St-37		100
Salt water	80	100
Marble	4-5	50
Porcelain	2,3	10
Oil	?	?
Wood	2-7	10-60

What are ultrasonic sensors?

Ultrasonic sensors switch and measure without contact. A special sound transducer emits sound waves and these are received again by the measuring object. The speed of the sound is the measure of the switching distance or the measuring range.

Areas of application	Insensitivity to
Distance measurement	Material
Level measurement	Light
Object recognition	Color
Material	Smoke
Sagging control	Dust

Graduated prices

Quantity	Discount
1 - 3	List price
4 - 10	5%
11 - 35	7%
36 - 100	10 %

Inductive sensors DC version DC voltage standard



Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIN-0,6NGSPKSB	3mm Ø	0,6 mm flush		yes		Cable	Stainless Steel
SIN-01NGSPKSB	3mm Ø		1 mm flush	yes		Cable	Stainless Steel
SIE-0,6NGSPKSB	M4x0,5	0,6 mm flush		yes		Cable	Stainless Steel
SIAT0,8NGSPKSB	4mm Ø	0,8 mm flush		yes		M8 plug	Stainless Steel
SIAT0,8NG0PKSB	4mm Ø	0,8 mm flush		yes		M8 plug	Stainless Steel
SIAT1,5NGSPKSB	4mm Ø		1,5 mm flush	yes		M8 plug	Stainless Steel
SIA-0,8NGSPKSB	4mm Ø	0,8 mm flush		yes		M8 plug	Stainless Steel
SIA-0,8NG0PKSB	4mm Ø	0,8 mm flush		yes		M8 plug	Stainless Steel
SIA-1,5NGSPKSB	4mm Ø		1,5 mm flush	yes		M8 plug	Stainless Steel


Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIB-0,8NGSPKSB	M5x0,5	0,8 mm flush		yes		Cable	Stainless Steel
SIB-1,5NGSPKSB	M5x0,5		1,5 mm flush	yes		Cable	Stainless Steel
SIBT0,8NGSPKSB	M5x0,5	0,8 mm flush		yes		M8 plug	Stainless Steel
SIBT1,5NGSPKSB	M5x0,5	1,5 mm flush		yes		M8 plug	Stainless Steel
SID-1,5MGSPKSB	M8x1	1,5 mm flush		yes		Cable	Nickel-plated-brass
SID-1,5MG0PKSB	M8x1	1,5 mm flush		yes		Cable	Nickel-plated-brass
SID-02MGSPKSNB	M8x1	2 mm not flush		yes		Cable	Nickel-plated-brass
SID-02MG0PKSNB	M8x1	2 mm not flush		yes		Cable	Nickel-plated-brass
SIDT1,5MGSPKSB	M8x1	1,5 mm flush		yes		M8 plug	Nickel-plated-brass
SIDT1,5MG0PKSB	M8x1	1,5 mm flush		yes		M8 plug	Nickel-plated-brass
SIDT02MGSPKSNB	M8x1	2 mm not flush		yes		M8 plug	Nickel-plated-brass
SIDT02MG0PKSNB	M8x1	2 mm not flush		yes		M8 plug	Nickel-plated-brass
SIDV1,5MGSPKSB	M8x1	1,5 mm flush		yes		M12 plug	Nickel-plated-brass


Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIDV1,5MG0PKSB	M8x1	1,5 mm flush		yes		M12 plug	Nickel-plated-brass
SIDV02MGSPKSNB	M8x1	2 mm not flush		yes		M12 plug	Nickel-plated-brass
SIDV02MG0PKSNB	M8x1	2 mm not flush		yes		M12 plug	Nickel-plated-brass
SIF-02MGSPKSB	M12x1	2 mm flush		yes		Cable	Nickel-plated-brass

Inductive sensors DC version DC voltage standard increased switching distance

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIF-02MG0PKSB	M12x1	2 mm flush		yes		Cable	Nickel-plated-brass
SIF-04MGAPKSB	M12x1		4 mm flush	yes		Cable	Nickel-plated-brass
SIF-04MGSPKSNB	M12x1	4 mm not flush		yes		Cable	Nickel-plated-brass
SIF-04MG0PKSNB	M12x1	4 mm not flush		yes		Cable	Nickel-plated-brass
SIF-08MGAPKSNB	M12x1		8 mm not flush	yes		Cable	Nickel-plated-brass
SIFV02MGSPKSB	M12x1	2 mm flush		yes		M12 plug	Nickel-plated-brass
SIFV02MG0PKSB	M12x1	2 mm flush		yes		M12 plug	Nickel-plated-brass
SIFV04MGSPKSB	M12x1		4 mm flush	yes		M12 plug	Nickel-plated-brass
SIFV04MGAPKSNB	M12x1	4 mm not flush		yes		M12 plug	Nickel-plated-brass
SIFV04MG0PKSNB	M12x1	4 mm not flush		yes		M12 plug	Nickel-plated-brass
SIFV08MGAPKSNB	M12x1		8 mm not flush	yes		M12 plug	Nickel-plated-brass
SIG-05MGSPKSB	M18x1	5 mm flush		yes		Cable	Nickel-plated-brass
SIG-05MG0PKSB	M18x1	5 mm flush		yes		Cable	Nickel-plated-brass
SIG-08MGAPKSB	M18x1		8 mm flush	yes		Cable	Nickel-plated-brass
SIG-08MGSPKSNB	M18x1	8 mm not flush		yes		Cable	Nickel-plated-brass
SIG-08MG0PKSNB	M18x1	8 mm not flush		yes		Cable	Nickel-plated-brass
SIG-14MGAPKSNB	M18x1		14 mm not flush	yes		Cable	Nickel-plated-brass
SIGV05MGSPKSB	M18x1	5 mm flush		yes		M12 plug	Nickel-plated-brass

Inductive sensors DC version

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIGV05MG0PKSB	M18x1	5 mm flush		yes		M12 plug	Nickel-plated-brass
SIGV08MGAPKSB	M18x1		8 mm flush	yes		M12 plug	Nickel-plated-brass
SIGV08MGSPKSNB	M18x1	8 mm not flush		yes		M12 plug	Nickel-plated-brass
SIGV08MG0PKSNB	M18x1	8 mm not flush		yes		M12 plug	Nickel-plated-brass
SIGV14MGAPKSNB	M18x1		14 mm not flush	yes		M12 plug	Nickel-plated-brass
SIH-10MGSPKSB	M30x1	10 mm flush		yes		Cable	Nickel-plated-brass
SIH-10MG0PKSB	M30x1	10 mm flush		yes		Cable	Nickel-plated-brass
SIH-15MGAPKSB	M30x1		15 mm flush	yes		Cable	Nickel-plated-brass
SIH-15MGSPKSNB	M30x1	15 mm not flush		yes		Cable	Nickel-plated-brass
SIH-15MG0PKSNB	M30x1	15 mm not flush		yes		Cable	Nickel-plated-brass
SIH-20MGAPKSNB	M30x1		20 mm not flush	yes		Cable	Nickel-plated-brass
SIHV10MGSPKSB	M30x1	10 mm flush		yes		M12 plug	Nickel-plated-brass
SIHV10MG0PKSB	M30x1	10 mm flush		yes		M12 plug	Nickel-plated-brass
SIHV15MGAPKSB	M30x1		15 mm flush	yes		M12 plug	Nickel-plated-brass
SIHV15MGSPKSNB	M30x1	15 mm not flush		yes		M12 plug	Nickel-plated-brass
SIHV15MG0PKSNB	M30x1	15 mm not flush		yes		M12 plug	Nickel-plated-brass
SIHV20MGAPKSNB	M30x1		20 mm not flush	yes		M12 plug	Nickel-plated-brass
SID-1,5MGSPKKB	M8x1	1,5 mm flush		yes		Cable	Nickel-plated-brass

Inductive sensors DC voltage short design + increased switching distance

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SID-1,5MG0PKKB	M8x1	1,5 mm flush		yes		Cable	Nickel-plated-brass
SID-02MGSPKKB	M8x1		2 mm flush	yes		Cable	Nickel-plated-brass
SID-02MG0PKKB	M8x1		2 mm flush	yes		Cable	Nickel-plated-brass
SID-02MGSPKKNB	M8x1	2 mm not flush		yes		Cable	Nickel-plated-brass
SID-02MG0PKKNB	M8x1	2 mm not flush		yes		Cable	Nickel-plated-brass
SID-03MGSPKKNB	M8x1		3 mm not flush	yes		Cable	Nickel-plated-brass
SID-03MG0PKKNB	M8x1		3 mm not flush	yes		Cable	Nickel-plated-brass
SIDT1,5MGSPKKB	M8x1	1,5 mm flush		yes		M8 plug	Nickel-plated-brass
SIDT1,5MG0PKKB	M8x1	1,5 mm flush		yes		M8 plug	Nickel-plated-brass
SIDT02MGSPKKB	M8x1		2 mm flush	yes		M8 plug	Nickel-plated-brass
SIDT02MG0PKKB	M8x1		2 mm flush	yes		M8 plug	Nickel-plated-brass
SIDT02MGSPKKNB	M8x1	2 mm not flush		yes		M8 plug	Nickel-plated-brass
SIDT02MG0PKKNB	M8x1	2 mm not flush		yes		M8 plug	Nickel-plated-brass
SIDT03MGSPKKNB	M8x1		3 mm not flush	yes		M8 plug	Nickel-plated-brass
SIDT03MG0PKKNB	M8x1		3 mm not flush	yes		M8 plug	Nickel-plated-brass
SIDV1,5MGSPKKB	M8x1	1,5 mm flush		yes		M8 plug	Nickel-plated-brass
SIDV1,5MG0PKKB	M8x1	1,5 mm flush		yes		M8 plug	Nickel-plated-brass
SIDV02MGSPKKB	M8x1		2 mm flush	yes		M8 plug	Nickel-plated-brass
SIDV02MG0PKKB	M8x1		2 mm flush	yes		M8 plug	Nickel-plated-brass
SIDV02MGSPKKNB	M8x1	2 mm not flush		yes		M8 plug	Nickel-plated-brass
SIDV02MG0PKKNB	M8x1	2 mm not flush		yes		M8 plug	Nickel-plated-brass
SIDV03MGSPKKNB	M8x1		3 mm not flush	yes		M8 plug	Nickel-plated-brass
SIDV03MG0PKKNB	M8x1		3 mm not flush	yes		M8 plug	Nickel-plated-brass
SIF-02MGSPKKB	M12x1	2 mm flush		yes		Cable	Nickel-plated-brass
SIF-02MG0PKKB	M12x1	2 mm flush		yes		Cable	Nickel-plated-brass
SIF-04MGSPKKB	M12x1		4 mm flush	yes		Cable	Nickel-plated-brass
SIF-04MG0PKKB	M12x1		4 mm flush	yes		Cable	Nickel-plated-brass
SIF-04MGSPKKNB	M12x1	4 mm not flush		yes		Cable	Nickel-plated-brass
SIF-04MG0PKKNB	M12x1	4 mm not flush		yes		Cable	Nickel-plated-brass
SIF-08MGSPKKNB	M12x1		8 mm not flush	yes		Cable	Nickel-plated-brass
SIF-08MG0PKKNB	M12x1		8 mm not flush	yes		Cable	Nickel-plated-brass
SIFV02MGSPKKB	M12x1	2 mm flush		yes		M12 plug	Nickel-plated-brass

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Inductive sensors DC version



Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIFV02MG0PKKB	M12x1	2 mm flush		yes		M12 plug	Nickel-plated-brass
SIFV04MGSPKKB	M12x1		4 mm flush	yes		M12 plug	Nickel-plated-brass
SIFV04MG0PKKB	M12x1		4 mm flush	yes		M12 plug	Nickel-plated-brass
SIFV04MGSPKKNB	M12x1	4 mm not flush		yes		M12 plug	Nickel-plated-brass
SIFV04MG0PKKNB	M12x1	4 mm not flush		yes		M12 plug	Nickel-plated-brass
SIFV08MGSPKKNB	M12x1		8 mm not flush	yes		M12 plug	Nickel-plated-brass
SIFV08MG0PKKNB	M12x1		8 mm not flush	yes		M12 plug	Nickel-plated-brass
SIG-05MGSPKKB	M18x1	5 mm flush		yes		Cable	Nickel-plated-brass
SIG-05MG0PKKB	M18x1	5 mm flush		yes		Cable	Nickel-plated-brass
SIG-08MGSPKKB	M18x1		8 mm flush	yes		Cable	Nickel-plated-brass
SIG-08MG0PKKB	M18x1		8 mm flush	yes		Cable	Nickel-plated-brass
SIG-08MGSPKKNB	M18x1	8 mm not flush		yes		Cable	Nickel-plated-brass
SIG-08MG0PKKNB	M18x1	8 mm not flush		yes		Cable	Nickel-plated-brass
SIG-14MGSPKKNB	M18x1		14 mm not flush	yes		Cable	Nickel-plated-brass
SIG-14MG0PKKNB	M18x1		14 mm not flush	yes		Cable	Nickel-plated-brass
SIGV05MGSPKKB	M18x1	5 mm flush		yes		M12 plug	Nickel-plated-brass
SIGV05MG0PKKB	M18x1	5 mm flush		yes		M12 plug	Nickel-plated-brass
SIGV08MGSPKKB	M18x1		8 mm flush	yes		M12 plug	Nickel-plated-brass
SIGV08MG0PKKB	M18x1		8 mm flush	yes		M12 plug	Nickel-plated-brass
SIGV08MGSPKKNB	M18x1	8 mm not flush		yes		M12 plug	Nickel-plated-brass
SIGV08MG0PKKNB	M18x1	8 mm not flush		yes		M12 plug	Nickel-plated-brass
SIGV14MGSPKKNB	M18x1		14 mm not flush	yes		M12 plug	Nickel-plated-brass
SIGV14MG0PKKNB	M18x1		14 mm not flush	yes		M12 plug	Nickel-plated-brass
SIH-10MGSPKKB	M30x1	10 mm flush		yes		Cable	Nickel-plated-brass
SIH-10MG0PKKB	M30x1	10 mm flush		yes		Cable	Nickel-plated-brass
SIH-15MGSPKKB	M30x1		15 mm flush	yes		Cable	Nickel-plated-brass
SIH-15MG0PKKB	M30x1		15 mm flush	yes		Cable	Nickel-plated-brass
SIH-15MGSPKKNB	M30x1	15 mm not flush		yes		Cable	Nickel-plated-brass
SIH-15MG0PKKNB	M30x1	15 mm not flush		yes		Cable	Nickel-plated-brass
SIH-20MGSPKKNB	M30x1		20 mm not flush	yes		Cable	Nickel-plated-brass
SIH-20MG0PKKNB	M30x1		20 mm not flush	yes		Cable	Nickel-plated-brass
SIHV10MGSPKKB	M30x1	10 mm flush		yes		M12 plug	Nickel-plated-brass
SIHV10MG0PKKB	M30x1	10 mm flush		yes		M12 plug	Nickel-plated-brass
SIHV15MGSPKKB	M30x1		15 mm flush	yes		M12 plug	Nickel-plated-brass
SIHV15MG0PKKB	M30x1		15 mm flush	yes		M12 plug	Nickel-plated-brass
SIHV15MGSPKKNB	M30x1	15 mm not flush		yes		M12 plug	Nickel-plated-brass
SIHV15MG0PKKNB	M30x1	15 mm not flush		yes		M12 plug	Nickel-plated-brass
SIHV20MGSPKKNB	M30x1		20 mm not flush	yes		M12 plug	Nickel-plated-brass
SIHV20MG0PKKNB	M30x1		20 mm not flush	yes		M12 plug	Nickel-plated-brass

Inductive sensors DC voltage standard plastic material




Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIP-10KGSPKSNB	20 mm Ø	10 mm flush		yes		Cable	PBT
SIP-10K0SPKSNB	20 mm Ø	10 mm flush		yes		Cable	PBT
SIR-20KGSPKSNB	34 mm Ø	20 mm not flush		yes		Cable	PBT
SIR-20KG0PKSNB	34 mm Ø	20 mm not flush		yes		Cable	PBT
SISK15KGPPKSB	40x40x118 mm Ø	15 mm flush		yes		Terminals	PBT (RESIN)
SISK15KGPPKSNB	40x40x118 mm Ø	30 mm not flush		yes		Terminals	PBT (RESIN)
SIWK60KGSPKSNB	80x105x40	60 mm not flush		yes		Terminals	Plastic
SIZK15KGPPKSB	40x40x35	15 mm flush		yes		M12 plug	PBT (RESIN)

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Inductive sensors AC version metal

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIF-02MWS00SB	M12x1	2 mm flush			yes	Cable	Nickel-plated-brass
SIFV02MWS00SB	M12x1	2 mm flush			yes	M12 plug	Nickel-plated-brass
SIG-05MWS00SB	M18x1	5 mm flush			yes	Cable	Nickel-plated-brass
SIGV05MWS00SB	M18x1	5 mm flush			yes	M12 plug	Nickel-plated-brass
SIH-10MWS00SB	M30x1	10 mm flush			yes	Cable	Nickel-plated-brass
SIHV10MWS00SB	M30x1	10 mm flush			yes	M12 plug	Nickel-plated-brass

Inductive sensors AC version plastic material

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SISK15KAS00SB	40x40x118 mm Ø	15 mm flush			yes	Terminals	PBT (RESIN)
SISK15KA000SB	40x40x118 mm Ø	15 mm flush			yes	Terminals	PBT (RESIN)
SISK30KAS00SNB	40x40x118 mm Ø	30 mm not flush			yes	Terminals	PBT (RESIN)
SISK30KA000SNB	40x40x118 mm Ø	30 mm not flush			yes	Terminals	PBT (RESIN)
SIWK60KWP00SNB	80x105x40	60 mm not flush			yes	Terminals	Plastic

Special inductive sensors climate-resistant up to 120 °C DC voltage

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIFH-02NGSPKSB	M12x1	2 mm flush		yes		Cable	PTFE / Stainless steel 1.4571
SIFH-04NGSPKSNB	M12x1	4 mm not flush		yes		Cable	PTFE / Stainless steel 1.4572
SIGH-05NGSPKSB	M18x1	5 mm flush		yes		Cable	PTFE / Stainless steel 1.4573
SIGH-05NG0PKSB	M18x1	5 mm flush		yes		Cable	PTFE / Stainless steel 1.4574
SIGH-07NGSPKSNB	M18x1	7 mm not flush		yes		Cable	PTFE / Stainless steel 1.4575
SIGH-07NG0PKSNB	M18x1	7 mm not flush		yes		Cable	PTFE / Stainless steel 1.4576
SIHH-10NGSPKSB	M30x1	10 mm flush		yes		Cable	PTFE / Stainless steel 1.4577
SIHH-10NG0PKSB	M30x1	10 mm flush		yes		Cable	PTFE / Stainless steel 1.4578
SIHH-15NGSPKSNB	M30x1	15 mm not flush		yes		Cable	PTFE / Stainless steel 1.4577
SIHH-15NG0PKSNB	M30x1	15 mm not flush		yes		Cable	PTFE / Stainless steel 1.4578

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Inductive PTFE special sensors rolling oil resistant up to 120 °C DC voltage

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIHW-10KGSPKSB	M30x1	10 mm flush		yes		Cable	PTFE
SIHW-14KGSPKSNB	M30x1	14 mm not flush		yes		Cable	PTFE
SIRW-19NGSPKSNB	35 mm Ø	19 mm not flush		yes		Cable	PTFE

Inductive PTFE special sensors rolling oil resistant up to 120 °C alternating voltage AC version

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SIHW-10KWS00SB	M30x1	10 mm flush			yes	Cable	PTFE
SIHW-14KWS00SNB	M30x1	14 mm not flush			yes	Cable	PTFE
SIRW-19KWS00SNB	35 mm Ø	19 mm not flush			yes	Cable	PTFE

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Capacitive sensors DC voltage standard metal

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SGK-05MGAPKSB	M18x1	1-5 mm flush		yes		Cable	Nickel-plated-brass
SGK-10MGAPKSNB	M18x1	1-10 mm not flush		yes		Cable	Nickel-plated-brass
SKGV05MGAPKSB	M18x1	1-5 mm flush		yes		M8 plug	Nickel-plated-brass
SKGV10MGAPKSNB	M18x1	1-10 mm not flush		yes		M8 plug	Nickel-plated-brass
SKH-15MGAPKSB	M30x1,5	1-15 mm flush		yes		Cable	Nickel-plated-brass
SKH-25MGAPKSNB	M30x1,5	1-25 mm not flush		yes		Cable	Nickel-plated-brass
SKHV015MGAPKSB	M30x1,5	1-15 mm flush	CS-10	yes		M8 plug	Nickel-plated-brass
SKHV25MGAPKSNB	M30x1,5	1-25 mm not flush		yes		M8 plug	Nickel-plated-brass

Capacitive sensors DC voltage standard plastic material

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SKP-10KGSPKSNB	20 mm Ø	10 mm not flush		yes		Cable	PBT
SKPB10MGSPKSNB	20 mm Ø	10 mm not flush		yes		M12 plug	PBT
SKR-20KGSPKSNB	34 mm Ø	10 mm not flush		yes		Cable	PBT
SKR-20KG0PKSNB	34 mm Ø	10 mm not flush		yes		Cable	PBT
SKRB20KGSPKSNB	34 mm Ø	20 mm not flush		yes		M12 plug	PBT
SKRB20KG0PKSNB	34 mm Ø	20 mm not flush		yes		M12 plug	PBT

Capacitive special sensors DC voltage PTFE-housing (chemical-resistant)

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
SKHW-10KGSPKSB	M30x1,5	10 mm flush		yes		Cable	PTFE / PVDF
SKHW-10KG0PKSB	M30x1,5	10 mm flush		yes		Cable	PTFE / PVDF
SKHW-14KGSPKSNB	M30x1,5	14 mm not flush		yes		Cable	PTFE / PVDF
SKHW-14KG0PKSNB	M30x1,5	14 mm not flush		yes		Cable	PTFE / PVDF
SKRW-20KGSPKSNB	35 mm Ø	20 mm not flush		yes		Cable	PTFE / PVDF
SKRW-20KG0PKSNB	35 mm Ø	20 mm not flush		yes		Cable	PTFE / PVDF

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Capacitive sensors alternating voltage AC version

Name	Design	Rated operating distance	increased DC switching distance	AC	Connection	Housing Material
SKGV08MWS00SB	M18x1	2-8 mm flush		yes	M12 plug	Plastic (PBT)
SKGV15MWS00SNB	M18x1	2-15 mm not flush		yes	M12 plug	Plastic (PBT)
SKHV20MWS00SB	M30x1,5	2-20 mm flush		yes	M12 plug	Plastic (PBT)
SKHV30MW000NB	M30x1,5	2-30 mm not flush		yes	M12 plug	Plastic (PBT)
SKH-20MWR00SB	M30x1,5	2-20 mm flush		yes	Cable	Nickel-plated-brass
SKH-20MWRT0SB	M30x1,5	2-20 mm flush		yes	Cable	Nickel-plated-brass
SKH-30MWR00SNB	M30x1,5	2-30 mm not flush		yes	Cable	Nickel-plated-brass
SKH-30MWRT0SNB	M30x1,5	2-30 mm not flush		yes	Cable	Nickel-plated-brass

Capacitive PTFE special sensors alternating voltage AC version

Name	Design	Rated operating distance	increased DC switching distance	AC	Connection	Housing Material
SKHW-10KWS00SB	M30x1,5	10 mm flush		yes	Cable	PTFE / PVDF
SKHW-14KWS00SNB	M30x1,5	14 mm not flush		yes	Cable	PTFE / PVDF
SKRW-20KWS00SNB	35 mm Ø	20 mm not flush		yes	Cable	PTFE / PVDF

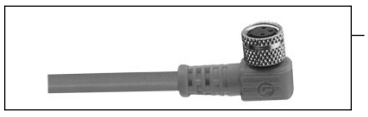
Ultrasonic sensors switch output, analog output 4-20mA/0-10V

Name	Design	Rated operating distance	increased switching distance	DC	AC	Connection	Housing Material
US18-PA-5-N03_OH	M18x1	axial digital		yes		M12 plug	Plastic (PBT)
US18-PR-5-N03_OH	M18x1	radial digital		yes		M12 plug	Plastic (PBT)
US18-PA-5-N03_IH	M18x1	axial analog		yes		M12 plug	Plastic (PBT)
US18-PR-5-N03_IH	M18x1	radial analog		yes		M12 plug	Plastic (PBT)
US18-PA-5-N03_VH	M18x1	axial analog		yes		M12 plug	Plastic (PBT)
US18-PR-5-N03_VH	M18x1	radial analog		yes		M12 plug	Plastic (PBT)
US50-PR-N43-OH	M50	digital		yes		M12 plug	Polycarbonates (ABS)
US50-PR-N43-IVH	M50	analog		yes		M12 plug	Polycarbonates (ABS)
US30-PR-5-N13-OH	M30x1	100…1000mm digital		yes		M12 plug	Plastic (PBT)
US30-PR-5-N13-IH	M30x1	100…1000mm 4-20mA		yes		M12 plug	Plastic (PBT)
US30-PR-5-N23-OH	M30x1	200…2000mm digital		yes		M12 plug	Plastic (PBT)
US30-PR-5-N23-IH	M30x1	200…2000mm 4-20mA		yes		M12 plug	Plastic (PBT)
US30-PR-5-N13-VH	M30x1	100…1000mm 0-10V		yes		M12 plug	Plastic (PBT)
US30-PR-5-N23-VH	M30x1	200…2000mm 0-10V		yes		M12 plug	Plastic (PBT)

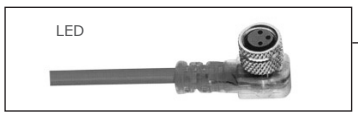
Connection cable and cable boxes

Oder code please see pageSeite 250

FKZO-02PUR 3 pole M8-plug. . . . . 2m . . . . . .
FKZO-05PUR 3 pole M8-plug . . . . . .5m *(Preferred type)* . . . . . .
FKZO-10PUR 3 pole M8-plug . . . . . .10m *(Preferred type)* . . . . . .
FKZO-20PUR 3 pole M8-plug . . . . . .20m *(Preferred type)* . . . . . .
FKZO-02PVC 3 pole M8-plug. . . . . 2m . . . . . .
FKZO-05PVC 3 pole M8-plug. . . . . 5m . . . . . .
FKZO-10PVC 3 pole M8-plug. . . . . 10m . . . . . .

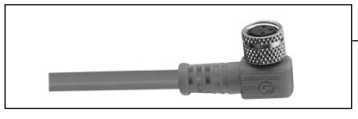


FKWO-02PUR 3 pole M8-plug . . . . . .2m *(Preferred type)* . . . . . .
FKWO-05PUR 3 pole M8-plug . . . . . .5m *(Preferred type)* . . . . . .
FKWO-10PUR 3 pole M8-plug . . . . . .10m *(Preferred type)* . . . . . .
FKWO-02PVC 3 pole M8-plug. . . . . 2m . . . . . .
FKWO-05PVC 3 pole M8-plug. . . . . 5m . . . . . .
FKWO-10PVC 3 pole M8-plug. . . . . 10m . . . . . .



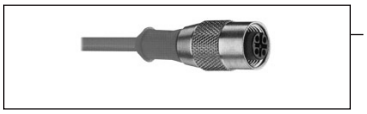
FKWP-02PUR 3 pole M8-plug. . . . . 2m . . . . . .LED/PNP
FKWP-05PUR 3 pole M8-plug. . . . . 5m . . . . . .LED/PNP
FKWP-10PUR 3 pole M8-plug. . . . . 10m . . . . . .LED/PNP
FKWP-02PVC 3 pole M8-plug. . . . . 2m . . . . . .LED/PNP
FKWP-05PVC 3 pole M8-plug. . . . . 5m . . . . . .LED/PNP
FKWP-10PVC 3 pole M8-plug. . . . . 10m . . . . . .LED/PNP

FKZO402PUR 4 pole M8-plug. . . . . 2m . . . . . .
FKZO405PUR 4 pole M8-plug . . . . . .5m *(Preferred type)* . . . . . .
FKZO410PUR 4 pole M8-plug . . . . . .10m *(Preferred type)* . . . . . .
FKZO402PVC 4 pole M8-plug. . . . . 2m . . . . . .
FKZO405PVC 4 pole M8-plug. . . . . 5m . . . . . .
FKZO410PVC 4 pole M8-plug. . . . . 10m . . . . . .

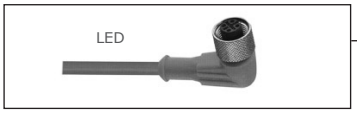


FKWO402PUR 4 pole M8-plug. . . . . 2m . . . . . .
FKWO405PUR 4 pole M8-plug . . . . . .5m *(Preferred type)* . . . . . .
FKWO410PUR 4 pole M8-plug. . . . . 10m . . . . . .
FKWO402PVC 4 pole M8-plug. . . . . 2m . . . . . .
FKWO405PVC 4 pole M8-plug. . . . . 5m . . . . . .
FKWO410PVC 4 pole M8-plug. . . . . 10m . . . . . .

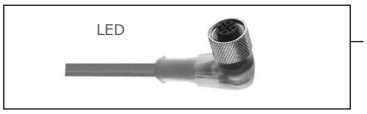
Connection cable and cable boxes
Isolation amplifier and power supply



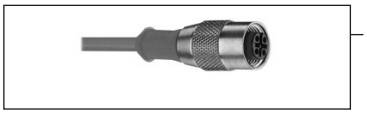
LKZO-02PUR 3 pole M12-plug . . . . . .2m *(Preferred type)* . . . . . .
LKZO-05PUR 3 pole M12-plug . . . . . .5m *(Preferred type)* . . . . . .
LKZO-10PUR 3 pole M12-plug . . . . . .10m *(Preferred type)* . . . . . .
LKZO-20PUR 3 pole M12-plug . . . . . .20m *(Preferred type)* . . . . . .
LKZO-02PVC 3 pole M12-plug. . . . . 2m . . . . . .
LKZO-05PVC 3 pole M12-plug. . . . . 5m . . . . . .
LKZO-10PVC 3 pole M12-plug. . . . . 10m . . . . . .



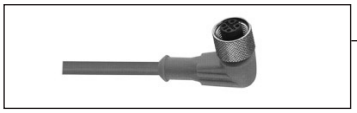
LKWO-02PUR 3 pole M12-plug . . . . . .2m *(Preferred type)* . . . . . .
LKWO-05PUR 3 pole M12-plug . . . . . .5m *(Preferred type)* . . . . . .
LKWO-10PUR 3 pole M12-plug . . . . . .10m *(Preferred type)* . . . . . .
LKWO-15PUR 3 pole M12-plug . . . . . .15m *(Preferred type)* . . . . . .
LKWO-02PVC 3 pole M12-plug. . . . . 2m . . . . . .
LKWO-05PVC 3 pole M12-plug. . . . . 5m . . . . . .
LKWO-10PVC 3 pole M12-plug. . . . . 10m . . . . . .



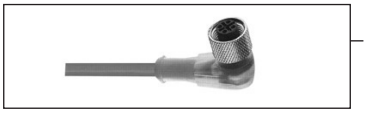
LKWP-02PUR 3 pole M12-plug . . . . . .2m *(Preferred type)* .LED/PNP
LKWP-05PUR 3 pole M12-plug . . . . . .5m *(Preferred type)* .LED/PNP
LKWP-10PUR 3 pole M12-plug. . . . . 10m . . . . . .LED/PNP
LKWP-02PVC 3 pole M12-plug. . . . . 2m . . . . . .LED/PNP
LKWP-05PVC 3 pole M12-plug. . . . . 5m . . . . . .LED/PNP
LKWP-10PVC 3 pole M12-plug. . . . . 10m . . . . . .LED/PNP



LKZO402PUR 4 pole M12-plug . . . . . .2m *(Preferred type)* . . . . . .
LKZO405PUR 4 pole M12-plug . . . . . .5m *(Preferred type)* . . . . . .
LKZO405PUR-AS 4 pole M12-plug . . . .5m *(Preferred type)* .Shielded
LKZO410PUR 4 pole M12-plug. . . . . 10m . . . . . .
LKZO410PUR-AS 4 pole M12-plug . . . .10m *(Preferred type)* Shielded
LKZO415PUR-AS 4 pole M12-plug . . . .15m *(Preferred type)* Shielded
LKZO425PUR 4 pole M12-plug . . . . . .25m *(Preferred type)* . . . . . .
LKZO420PUR-AS 4 pole M12-plug . . . .20m *(Preferred type)* Shielded
LKZO450PUR-AS 4 pole M12-plug . . . .50m *(Preferred type)* Shielded
LKZO402PVC 4 pole M12-plug. . . . . 2m . . . . . .
LKZO405PVC 4 pole M12-plug. . . . . 5m . . . . . .
LKZO410PVC 4 pole M12-plug. . . . . 10m . . . . . .
LKZO505PUR-AS 5 pole M12-plug . . . .5m *(Preferred type)* . . . . . .
LKZO510PUR-AS 5 pole M12-plug . . . .10m *(Preferred type)* . . . . . .
LKZO520PUR-AS 5 pole M12-plug . . . .20m *(Preferred type)* . . . . . .
LKZO805PUR-AS 8 pole M12-plug. . . . . 5m . . . . . .Shielded

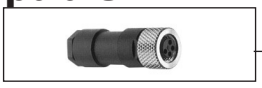


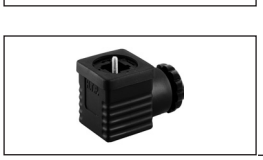
LKWO402PUR 4 pole M12-plug . . . . . .2m *(Preferred type)* . . . . . .
LKWO405PUR 4 pole M12-plug . . . . . .5m *(Preferred type)* . . . . . .
LKWO405PUR-AS 4 pole M12-plug . . .5m *(Preferred type)* .Shielded
LKWO505PUR-AS 5 pole M12-plug . . .5m *(Preferred type)* .Shielded
LKWO410PUR 4 pole M12-plug . . . . . .10m *(Preferred type)* . . . . . .
LKWO410PUR-AS 4 pole M12-plug . . .10m *(Preferred type)* Shielded
LKWO425PUR 4 pole M12-plug. . . . . 25m . . . . . .
LKWO510PUR-AS 5 pole M12-plug . . .10m *(Preferred type)* Shielded
LKWO402PVC 4 pole M12-plug. . . . . 2m . . . . . .
LKWO405PVC 4 pole M12-plug. . . . . 5m . . . . . .
LKWO410PVC 4 pole M12-plug. . . . . 10m . . . . . .



LKWP402PUR 4 pole M12-plug . . . . . .2m *(Preferred type)* . . . . . .
LKWP405PUR 4 pole M12-plug . . . . . .5m *(Preferred type)* . . . . . .
LKWP410PUR 4 pole M12-plug . . . . . .10m *(Preferred type)* . . . . . .
LKWP-15PUR 4 pole M12-plug . . . . . .15m *(Preferred type)* . . . . . .
LKWP-25PUR 4 pole M12-plug . . . . . .25m *(Preferred type)* . . . . . .
LKWP402PVC 4 pole M12-plug. . . . . 2m . . . . . .
LKWP405PVC 4 pole M12-plug. . . . . 5m . . . . . .
LKWP410PVC 4 pole M12-plug. . . . . 10m . . . . . .

Connection cable/ plugs clampable





DKZ0408 4 pole M8-plug. . . . . clampable. . . . . .
DKW0408 4 pole M8-plug. . . . . clampable . . . . . .
BKZ0412 4 pole M12-plug. . . . . clampable. . . . . .
BKZ0412-VA 4 pole M12-plug . . . . . .VA-nut *(Preferred type)* . . . .
BKZ0512-VA 5 pole M12-plug. . . . . VA-nut. . . . . .
BKW0412 4 pole M12-plug . . . . . .clampable *(Vorzugstype)*. . .
BKW0412-VA 4 pole M12-plug . . . . . .VA-nut *(Vorzugstype)* . . . . .
BKW0512-VA 5 pole M12-plug. . . . . VA-nut. . . . . .
NKW04-0 4 pole Valve plug . . . . . clampable. . . . . .
(matching for Vibrocont)
NKW0410 4 pole Valve plug . . . . . clampable . . . . . .
(matching for Precont KS)

Isolation amplifier for Ex-areas

Ordering info	Function/voltage
GE-90-Ex-1-230	amplifier 230V AC . . . . .
EGE-90-Ex-1-24	amplifier 24V DC . . . . .

Power supply - initiator relay

Ordering info	Function/voltage
NSP-2001	2 x 24V DC . . . . . altogether 200mA 2 relay outputs . . . . .

Order code for connection cable and cable boxes

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Connection cable

F M8 - with screw connection
L M12 - with screw connection
T M8 - old version - without screw connection

K Cable

W 90° angled
Z Central / straight

O Without LED
P LED for PNP
M Cable with plug (Male)

\- 3 pole
4 4 pole
5 5 pole
8 8 pole
F Connection cable 3-pole with 1x connector 3-pole and 1x connector 3-pole

02 2m Cable
05 5m Cable
10 10m Cable
15 15m Cable
20 20m Cable
25 25m Cable
30 30m Cable
YY ?? m Cable

PUR PUR-Material/Cable sheath
PVC PVC-Material/Cable sheath

Order code
Connection cable _ _ _ _ _ _ _ + _ _ possibly additional options

Additional options connection cable
AS Shielding
VA Stainless steel mounting nut

Cable sockets / plugs - clampable

B M12 plug coupling (female)
D M8 plug coupling (female)
N Valve connector (4-pin only)

K Cable box

W 90° angled
Z Central / straight

04 4 pole
05 5 pole

08 M8
12 M12
-0 Ventilstecker DIN EN 175-301-803-A/DIN43650-A
10 Ventilstecker DIN EN 175-301-803-C/DIN43650-C

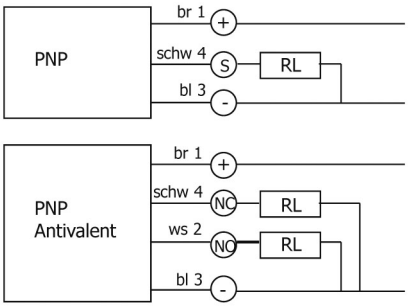
Order code
Cable boxes _ _ _ _ _ + _ possibly additional options

Additional options connection cable
-VA Stainless steel mounting nut

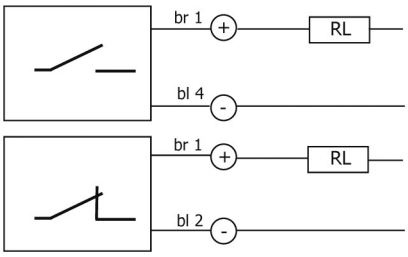
ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Connection diagrams and order code for initiators

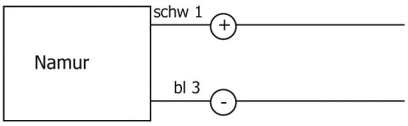
Gleichspannung DC 3-Draht



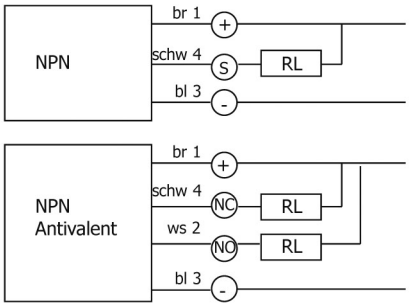
Gleichspannung DC 2-Draht



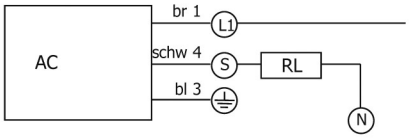
Namur nach DIN 19234



Gleichspannung DC 3-Draht



Wechselspannung AC 2-Draht



Order code for inductive and capacitive sensors

S_ _ design/type

- `-` Cable 2,5m
- `K` Terminal connection
- `T` Miniature plug connection M8 + LED
- `B` M12-plug connection plastic + LED
- `V` M12-plug connectiong metal
- `X` M18-plug connection + LED
- `5` Cable 5 m

`08` Switching distance in mm (St 37)

Material housing

- `N` Stainless steel 1.4571
- `M` Brass nickel-plated
- `A` Aluminium
- `K` Plastic

- `G` DC voltage
- `W` AC voltage
- `A` Universal current
- `N` Namur

- `S` Turnkey
- `O` Opener
- `A` Antivalent
- `R` Relay output

- `P` PNP output
- `M` NPN output
- `2` 2-wire DC voltage

- `K` Short-circuit protection
- `0` Without short-circuit protection

- `S` Standard
- `K` Short design
- `L` For food applications

- `B` Flush
- `NB` Not flush

Example Order code

S_ _ _ 08 N G S P K S NB

operating voltage U_b	5...25V DC
nominal voltage U_n	8,2V DC
residual ripple U_{ss}	≤5% from U_b
supply current damped	≤1,0mA
supply current undamped	≥2,5mA
self-capacitance	≤20...110nF
self-inductance	≤20...7µH
line resistance	≤50 Ω
hysteresis H	1%-10%
shortcircuit proof	ja
protected against reverse polarity protection	ja
according to DIN 40050	IP67
ambient temperature	-25...+70°C
EMV according to prEN 60 947-5-2	

9. IOT Solutions

Contents

IOT-Solutions from ACS-CONTROL-SYSTEM

The IOT-Solutions from ACS-CONTROL-SYSTEM open up many new possibilities for monitoring and measurement for a wide range of applications. Measurement data visualization, management of devices and much more - anytime and worldwide!

The clearly arranged web portal of ACS offers the possibility to manage all of your measurement points centrally. In combination with the autonomously operated Datalogger DLF4, it is now very easy to get the most accurate measured values – even from the most remote locations. Therefore the data is automatically, and with the highest standards of safety, transferred in the ACS portal.

A well thought-out alarm management with various escalation levels and modern alerting methods via ACS Alert, text message, e-mail, etc. offers you the possibility to react on an early stage to a change of state.

The specially developed apps ACS-SmartConnect, for mobile configuration of the devices on site and ACS-Alert, for a secure alerting and status overview of the measuring points via smartphone, complete the portfolio. So we can guarantee an easy handling and installation for your measuring device.

The Datalogger DLF4 has got different sensor inputs for standard sensors with analog signal, as well as digital sensors with Modbus protocol or puls signals, that function as count- or control inputs.

Your benefits at ACS

- ✓ all-around-carefree package
- ✓ in-house
  - ***conception***
  - ***installation***
  - ***maintenance***
- ✓ everything from a single source – from sensor to cloud!
- ✓ full cost control
- ✓ Simple operating system
- ✓ free telephone support

Examples of applications

- ✓ level monitoring in silos
- ✓ monitoring of rain overflow basins
- ✓ flow measuring in open flumes
- ✓ temperature monitoring in ripening cellars
- ✓ level measurement in waters

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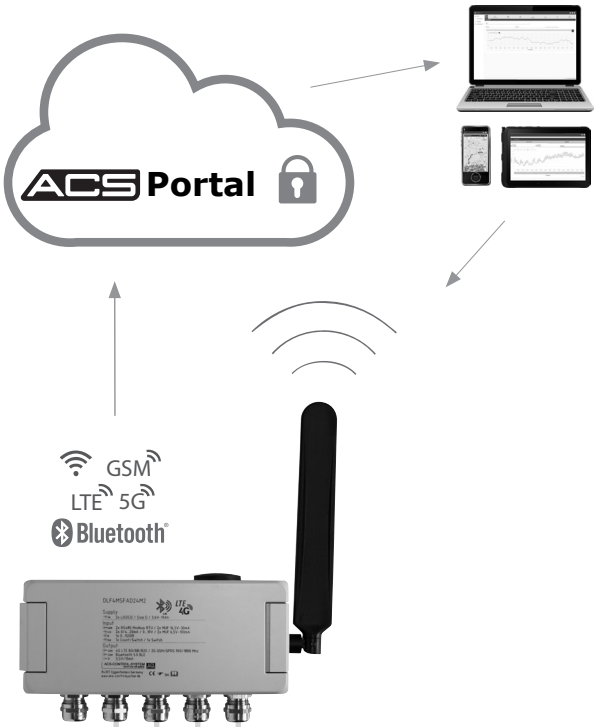
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

From sensor to cloud – everything from a single source!



CENTRAL DATA MANAGEMENT SYSTEM

- ✓ measurement data at any time and worldwide
- ✓ secure data transfer and storage
- ✓ central device management
- ✓ allerting
  - → ACS Alert App
  - → SMS
  - → e-mail
- ✓ reporting
- ✓ monitoring & visualisation
- ✓ data export

DATALOGGER & IOT GATEWAYS

- ✓ mobile radio transmission
- ✓ standardized sensor inputs
- ✓ ultra low Power
- ✓ lifetime up to 10 years
- ✓ solid and robust aluminum housing for wall or field mounting
- ✓ easy commissioning and configuration via ACS SmartConnect app
- ✓ Energy supply opportunities
  - → akku, battery, PV-module, external DC supply
- ✓ memory for 800.000 measured values

flow

Flowcont Magsmall

temperature

Thermocont ST

PTA

PTS

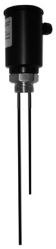
pressure

Precont PU4S

Precont S

fill level

Hydrocont M



Kond. Sonde KAK

Electrode probe PUKK

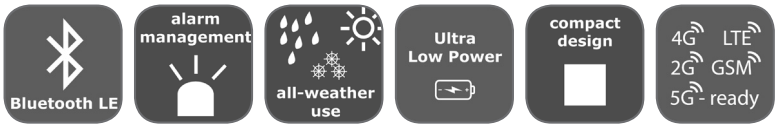
Sonicont USP4

Datalogger DLF4

Self-sufficient data logger with remote data transmission for wall and field mounting

2 / 01.22

Technical data

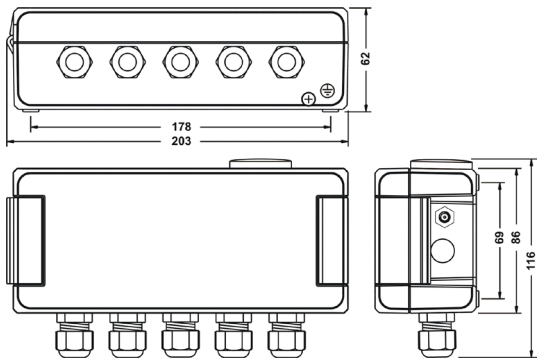


Auxiliary power
Battery: Lithium / 3,6V-19Ah / 3,6V-35Ah
Battery rechargeable: LiION / 4,2V-20Ah
Supply voltage DC: 7…32VDC / ≤ 350mA
PV module: 4,5…35VDC / ≤ 2A
Input COM CI1 / CI2
Interface: RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Input analogue Ai1 / Ai2 / Ai3
Operating range current I: Ai1 / Ai2: FSI 0…28mA / Ri 27R
Operating range voltage U: Ai1 / Ai2: FSI 0…19V / Ri ≥ 1,2MR
Operating range resistance R: Ai3: FSI 0…2200Ohm / Io = 340µA
Characteristic deviation: ≤ ±0,05% FSI
Temperature deviation: ≤ ±0,1% FSI / 10K
Input digital Di1 / Di2
Operating range: ≤ 20kOhm / ≤ 1kHz
Transmitter power supply
Output voltage Uo1 / Uo2: 16,6V ±0,3V (0mA) / 15,9V ±0,3V (30mA) / 0…30mA, max. 40mA
Output voltage Uo3 / Uo4: 6,7V ±0,2V (0mA) / 6,6V ±0,2V (100mA) / 0…100mA, max. 300mA
Output voltage Uo5: 3,8V ±0,2V (0mA) / 3,0V ±0,2V (100mA) / 0…100mA, max. 220mA
Interface Bluetooth
Version: Bluetooth 5.0 LE (2Mbit/s, Advertising Mode 2s)
Interface 4G/2G
Version: 4G LTE Cat. 1 (B3, B8, B20), 2G EDGE, GSM, GPRS (900MHz/1800MHz)
Data memory
Memory size : 8MB, ≥ 800.000 measuring values
Environmental conditions
Environmental temperature: -20°C...+60°C
Protection level: IP65/IP67 (EN/IEC 60529)
Materials
Process wetted: PA, aluminum, PUR, brass, nickel, silicone, NBR

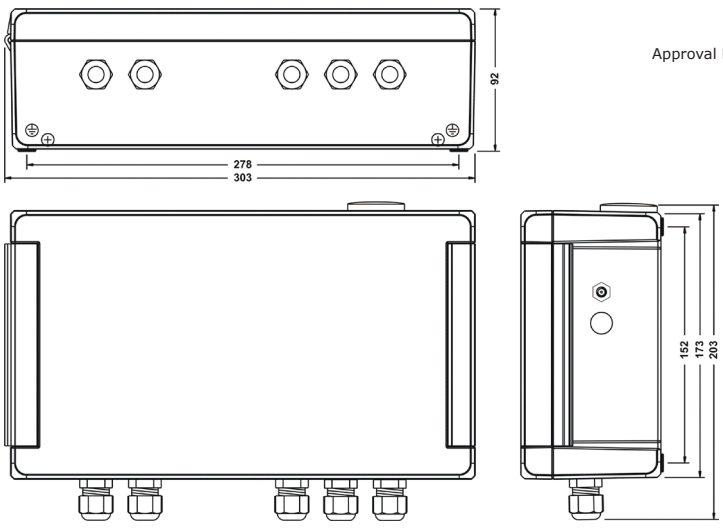
Approval DLF4

Approval DLF4 X5

Approval DLF4



Approval DLF4 X5



Application

The self-sufficient Datalogger DLF4 with remote data transmission is suitable with its robust and weatherproof aluminum housing for wall and field mounting.

Both analog and digital sensors can be connected via 7 sensor inputs. The input signals range from analog signals such as electricity, voltage, resistance, via Modbus RTU protocols to digital inputs, which can be used as counter or control signals. This results in a wide range of applications for the Datalogger DLF4. It can be used for level measurement in surface water, sewage treatment plants, landfills, for level measurement in tank systems, silos, containers, flow measurement on channels, temperature monitoring, etc.

Independent measurement verification is to be regarded as an absolute novelty in this area. Two different sensors with different measuring principles are connected to the Datalogger DLF4. The primary measured value of the hydrostatic level probe is compared cyclically by the measured value of an ultrasonic sensor. In the event of an adjustable deviation, the Datalogger DLF4 generates an alarm. This considerably minimizes the control effort at the level measuring point.

The Datalogger DLF4 is supplied with a wide range of options. These range from lithium batteries, which can have a service life of up to 10 years, depending on the application, batteries and the connection options for an external power supply or a PV module.

For data transmission of up to 800,000 measured values to the ACS portal, the Datalogger DLF4 is equipped with mobile radio modules that can operate both 2G, 4G and LTE networks. Preparations for the upcoming 5G network are already in place. An embedded SIM is installed in the data transmission, which independently uses the strongest mobile network and the strongest provider on site. The data transfer takes place according to the latest security standards such as Data encryption and VPN tunnel.

Datalogger DLF4

Self-sufficient data logger with remote data transmission for wall and field mounting

Basic price . . . . . .

Type

DLF4 Standard . . . . . .

Approval

S Standard . . . . . .
X5 ATEX II (1) G/ ATEX II (1) D . . . . . .

Enclosure type

FA Field enclosure, aluminum . . . . . .
YY others . . . . . .

Electronic – Supply

B1 Battery lithium 19Ah / DC supply 7…32V . . . . . .
B2 Battery lithium 35Ah / DC supply 7…32V . . . . . .
A1 Accu Li-ION 20Ah / DC supply 7…32V / PV module . . . . . .
YY others . . . . . .

Electronic – Function

0 without . . . . . .
4 4G (LTE Cat-1) / 2G (EDGE, GSM, GPRS) . . . . . .
Y others . . . . . .

Electronic – Input

M 2x analogue 0/4…20mA-0…10V / 2x interface RS485 / 2x digital-In / 1x analogue 0…2200R . . . . . .
R 1x analogue 4…20mA – Ex, 1x analogue 0/4…20mA-0…10V / 2x interface RS485 / 2x digital-In / 1x analogue 0…2200R. . . . . .
S 2x analogue 4…20mA – Ex 2x interface RS485 / 2x digital-In / 1x analogue 0…2200R. . . . . .
T 1x analogue 4…20mA – Ex / 1x digital-In – Ex, 1x analogue 0/4…20mA-0…10V / 2x interface RS485 / 1x digital-In / 1x analogue 0…2200R . . . . . .
U 2x analogue 4…20mA – Ex / 2x Digital-In – Ex 2x interface RS485 / 1x analogue 0…2200R. . . . . .

Tariff

0 Separate billing . . . . . .
XS1B ACS DataComplete XS, Basic, 5 years . . . . . .
XS1S ACS DataComplete XS, Standard, 5 years . . . . . .
XS1P ACS DataComplete XS, Premium, 3 years. . . . . .
S1B ACS DataComplete S, Basic, 5 years . . . . . .
S1S ACS DataComplete S, Standard, 3 years . . . . . .
S1P ACS DataComplete S, Premium, 3 years. . . . . .
M1B ACS DataComplete M, Basic, 3 years . . . . . .
M1S ACS DataComplete M, Standard, 3 years . . . . . .
M1P ACS DataComplete M, Premium, 3 years . . . . . .
L1B ACS DataComplete L, Basic, 3 years . . . . . .
L1S ACS DataComplete L, Standard, 3 years. . . . . .
L1P ACS DataComplete L, Premium, 3 years. . . . . .

S

+ Additional options

ML Measurement point designation / TAG – Laser marking. . .
KF Configuration / Preset. . . . . .

Order code

Datalogger DLF4 S

Equipment

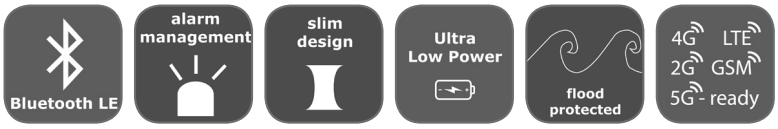
Order designation	*Antenna:*
611000539	Rod antenna, connection cable 5m & mounting bracket, for HLF4/DLF4 . . . . .
611000540	Dome antenna, connection cable 3m, for HLF4/DLF4 . . . . .
611000541	Flat antenna, adhesive mounting, connection cable 3m, for HLF4/DLF4. . . . .
911001827	Antenna cable extension, SMA, L=5m . . . . .
	Spare batteries:
611000566	battery BAT19AH, Lithium 19Ah, for HLF4/DLF4 . . . . .
611000567	batteryBAT35AH, Lithium 35Ah, for HLF4/DLF4. . . . .
611000569	Accu ACCU20AH, Li-ION 20Ah, for HLF4/DLF4 . . . . .
611000629	Charging unit 230Vac for Li-ION-Accu, for HLF4/DLF4 . . . . .
	External power supply and PV modules:
611000614	Switching Power supply, field housing 230Vac, to supply up to two DLF4 with battery, to supply up to one DLF4 with Li-ION Accu . . . . .
611000581	External power supply 230Vac, to supply up to two DLF4 with battery, to supply up to one DLF4 with Li-ION Accu . . . . .
911001822	Solar-PV-Module 10W, for HLF4/DLF4 . . . . .
	Mounting accessories, connection cables
611000571	Mast fixation for DLF4, Mounting bracket with worm screw strap for ø 50-90mm . . . . .
611000578	Mast / wall fixation for PV-module, tiltable, for ø 30-63mm . . . . .
611000582	Weather protection cover for DLF4. . . . .
611000630	Connection cable for PV-module, 2-wire, 5m. . . . .

Hydrolog® HLF4

Data logger for pipe installation
with battery or accumulator operation and cellular data transmission

2 / 01.22

Technical data



Auxiliary power	
Battery:	Lithium / 3,6V-19Ah / 3,6V-35Ah
Battery rechargeable:	LiION / 4,2V-20Ah
Supply voltage DC:	7…32VDC / ≤ 350mA
PV module:	4,5…35VDC / ≤ 2A
Input COM Ci1 / Ci2	
Interface:	RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800…38400 Baud)
Input analogue Ai1-I / Ai2-I	
Operating range:	0…28mA / Ri 27R
Characteristic deviation:	≤ ±0,05% FSI
Temperature deviation:	≤ ±0,1% FSI / 10K
Input digital Di1	
Operating range:	≤ 20kOhm / ≤ 1kHz
Transmitter power supply	
Output voltage Uo1 / Uo2:	16,6V ±0,3V (0mA) / 15,9V ±0,3V (30mA) / 0…30mA, max. 40mA
Output voltage Uo3 / Uo4:	6,7V ±0,2V (0mA) / 6,6V ±0,2V (100mA) / 0…100mA, max. 300mA
Interface Bluetooth	
Version:	Bluetooth 5.0 LE (2Mbit/s, Advertising Mode 2s)
Interface 4G/2G	
Version:	4G LTE Cat. 1 (B3, B8, B20), 2G EDGE, GSM, GPRS (900MHz/1800MHz)
Data memory	
Memory size:	8MB, ≥ 800.000 measuring values
Environmental conditions	
Environmental temperature:	-20°C...+60°C
Protection level:	IP68 [≤3m/≤0,3bar] (EN/IEC 60529)
Materials	
Process wetted:	PA, aluminum, PUR, brass, nickel, silicone, NBR

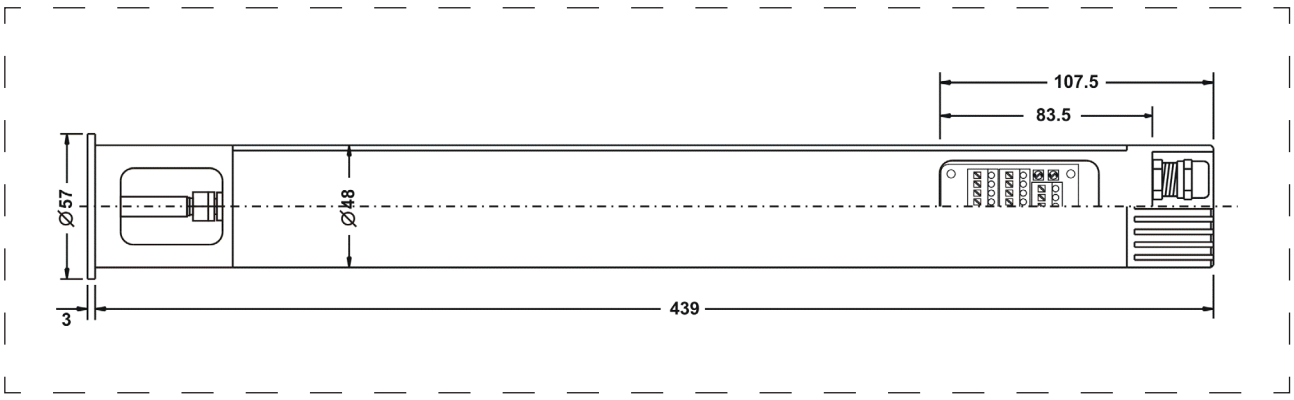
Application

The Hydrolog HLF4 is a data logger with remote data transmission for installation in water wells.
Both analog and digital sensors can be connected via 5 sensor inputs. In conjunction with the hydrostatic level probes Hydrocont HP4 and the ultrasonic sensors Sonicont USP4, the device is suitable for the measurement of surface waters such as rivers and lakes, groundwater levels, wells or landfill sites. Due to the slim design, installation in 2 '' level pipes is possible.

Independent measurement verification is to be regarded as an absolute novelty in this area. Two different sensors with different measuring principles are connected to the Hydrolog HLF4. The primary measured value of the hydrostatic level probe is compared cyclically by the measured value of an ultrasonic sensor. In the event of an adjustable deviation, the Hydrolog HLF4 generates an alarm. This considerably minimizes the control effort at the level measuring point.

The Hydrolog HLF4 is supplied with a wide range of options. These range from lithium batteries, which can have a service life of up to 8 years, depending on the application, batteries and the connection options for an external power supply or a PV module.

For data transmission of up to 800,000 measured values to the ACS portal, the Hydrolog HLF4 is equipped with mobile radio modules that can operate both 2G, 4G and LTE networks. Preparations for the upcoming 5G network are already in place. An embedded SIM is installed in the data transmission, which independently uses the strongest mobile network and the strongest provider on site. The data transfer takes place according to the latest security standards such as Data encryption and VPN tunnel.



IoT-Solutions

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.de I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

Hydrolog® HLF4

Data logger for pipe installation
with battery or accumulator operation and cellular data transmission

2 / 01.22

Basic price . . . . . .

Type
HLF4 Standard . . . . . .

Approval
S Standard . . . . . .

Enclosure type
R2 Tube enclosure 2" - Ø48mm . . . . . .
YY others . . . . . .

Electronic – Supply
B1 Battery lithium 19Ah / DC supply 7...32V . . . . . .
B2 Battery lithium 35Ah / DC supply 7...32V . . . . . .
A1 Li-ION rechargeable battery 20Ah / DC supply 7...32V / PV module . . . . . .
YY others . . . . . .

Electronic – Function
0 without
4 4G (LTE Cat-1) / 2G (EDGE, GSM, GPRS)
Y others

Electronic – Input
M 2x analogue 0/4...20mA / 2x interface RS485 / 1x digital-In

Tariff
0 Separate billing . . . . . .
XS1B ACS DataComplete XS, Basic, 5 years . . . . . .
XS1S ACS DataComplete XS, Standard, 5 years . . . . . .
XS1P ACS DataComplete XS, Premium, 3 years. . . . . .
S1B ACS DataComplete S, Basic, 5 years . . . . . .
S1S ACS DataComplete S, Standard, 3 years . . . . . .
S1P ACS DataComplete S, Premium, 3 years. . . . . .
M1B ACS DataComplete M, Basic, 3 years . . . . . .
M1S ACS DataComplete M, Standard, 3 years . . . . . .
M1P ACS DataComplete M, Premium, 3 years . . . . . .
L1B ACS DataComplete L, Basic, 3 years . . . . . .
L1S ACS DataComplete L, Standard, 3 years. . . . . .
L1P ACS DataComplete L, Premium, 3 years. . . . . .

S

+ Additional options

ML Measurement point designation / TAG – Laser marking. . .
KF Configuration / Preset. . . . . .

Order code

Hydrolog®HLF4	S				M		S

Equipment

Order designation	*Antenna:*
611000539	Rod antenna, connection cable 5m & mounting bracket, for HLF4/DLF4 . . . . .
611000540	Dome antenna, connection cable 3m, for HLF4/DLF4 . . . . .
611000552	Dome antenna for HLF4, connection cable short, specially for 2" caps . . . . .
611000599	Dome antenna for HLF4, connection cable short, specially for 3-4" caps . . . . .
611000600	Dome antenna for HLF4, connection cable short, specially for 5-6" caps . . . . .
611000541	Flat antenna, adhesive mounting, connection cable 3m, for HLF4/DLF4 . . . . .
911001827	Antenna cable extension, SMA, L=5m . . . . .
	Spare batteries:
611000566	battery BAT19AH, Lithium 19Ah, for HLF4/DLF4 . . . . .
611000567	batteryBAT35AH, Lithium 35Ah, for HLF4/DLF4. . . . .
611000569	Accu ACCU20AH, Li-ION 20Ah, for HLF4/DLF4 . . . . .
611000629	Charging unit 230Vac for Li-ION-Accu, for HLF4/DLF4 . . . . .
	External power supply and PV modules:
911001822	Solar-PV-Module 10W, for HLF4/DLF4 . . . . .
	Mounting accessories, connection cables
611000610	strain relief HLF4 for 1 or 2 sensores, required for total sensor weight >1kg . . . . .
611000549	Adapter plate 3" & 4", Level cap for installation HLF4 . . . . .
611000550	Adapter plate 4 1/2" & 5", Level cap for installation HLF4 . . . . .
611000551	Adapter plate 6", Level cap for installation HLF4. . . . .
611000578	Mast / wall fixation for PV-module, tiltable, for ø 30-63mm . . . . .
611000630	Connection cable for PV-module, 2-wire, 5m. . . . .

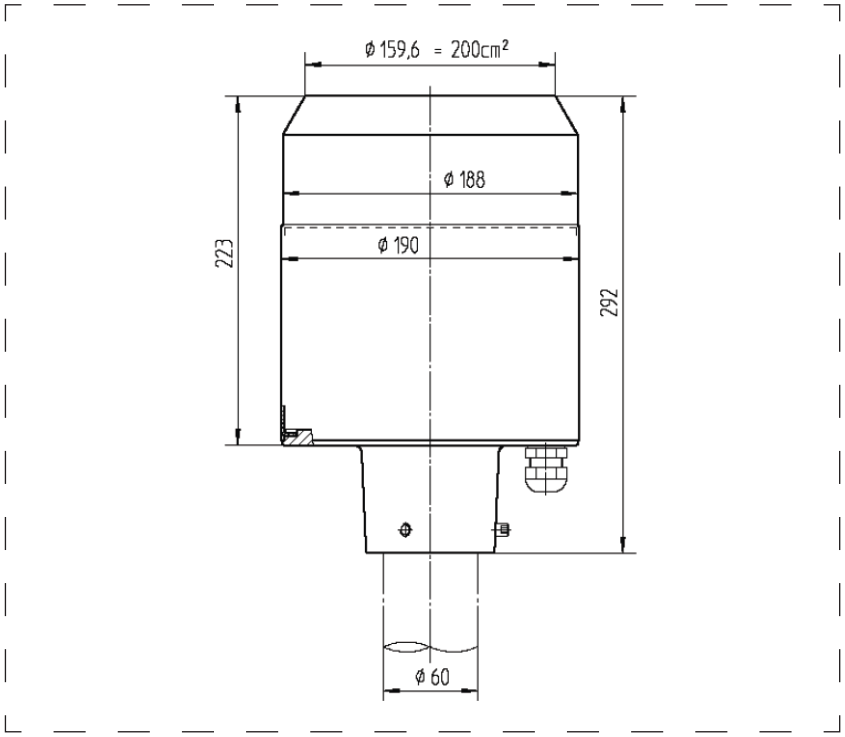
Precipitation sensor NR4M

Precipitation sensor for automatic weather stations

2 / 01.22

Technical data

Variation 1 with 2 cm³-rocker, unheated	
Measuring Principle	Tilting Scale with rocker design based on Joss-Tognini
Measuring range	2 cm³ (2 g water) – rocker volume 0…8 mm/min
Resolution	0,1 mm
Accuracy	± 2 % with intensity compensation
Application area	0...+70 °C measuring
Impulse output	Reed contact • reverse polarity protection • debounced signal
Maximum current consumption 100 µA • typically 50 µA	
Operation voltage	4…30 V DC
Switching load	max. 30 V DC / 0,5 A
Dimensions	see dimension drawing
Mounting diameter	60 mm
Weight	app. 3 kg
Norms	WMO-No. 8 • VDI 3786 Bl. 7 EN 50081/82 • VDE 0100
Variation 2 with 4 cm³-rocker, unheated	
Data like variation 1, but for higher amounts of rainfall	
Measuring range	4 cm³ (4 g water) – rocker volume 0…16 mm/min
Resolution	0,2 mm
Variation 3 with 2 cm³ / 4 cm³-rocker, heated	
Data like variation 1, but with regulated 2-circuits heating system	
Heating data	electronically controlled, 2 heating circuits
Accuracy	4 °C ± 2 °C control temperature in the range of -20…+4 °C
Heat output	80 W (drain funnel)
	70 W (drainpipe / rocker)
Supply voltage	24 V DC / 150 W
Application area	-20…+70 °C (no icing, no snow drifts)



Application

The weighing precipitation sensor NR4M operates with a low-friction mounted rocket, based on Joss-Tognini. With other tilting scales errors occur due to an incomplete drain of the precipitation because of its surface tension. The tilting scale based on Joss-Tognini is designed to compensate these deviations automatically. The rocket volume contains 2 cm³ (2 g) resp. 4 cm³ (4 g) water. This corresponds to a quantity of 0.1 mm resp. 0.2 mm precipitation per square meter. When the scale tilts, an integrated Reed contact is closed. The pulse rate can be electronically scanned, remotely transmitted or recorded.
The Precipitations sensor NR4M is mounted on a mast with a diameter of 60 mm. For the application in areas with snowfall, the variant with integrated heating allows a year-round use. Two separately controlled heating circuits guarantee a precise temperature regulation.
There are only used weather-resistant materials like aluminium and stainless steel. This ensures a long service live. The precipitation sensor NR4M complies with the WMO standards.

Precipitation sensor NR4M

Precipitation sensor for automatic weather stations

2 / 01.22

Basic price . . . . . .

Type
NR4M Standard. . . . . .

Measuring system – material / sensor type
W Weighing rocker – CrNi-steel / Tilting Scale, Joss-Tognini . . . . . .

Approval
S Standard . . . . . .

Mounting
R60 Pipe mounting Ø 60 mm . . . . . .

0

Material tilting scale
V CrNi-steel . . . . . .

Material housing
A Aluminium anodized. . . . . .

Rocker volume / measuring range
20 2cm3 rocker volume, 0…8mm/min . . . . . .
40 4cm3 rocker volume, 0…16mm/min . . . . . .

Electronics – output
I Impulse output, Reed contact . . . . . .

Electronics – function
0 Unheated . . . . . .
1 Heated, 2 cm³ rocker volume (separate power supply with 24V / 150W needed) . . . . . .
2 Heated, 4 cm³ rocker volume (separate power supply with 24V / 150W needed) . . . . . .

Operating temperature
0 Unheated 0…+70°C (frost-proof up to -20°C) . . .
1 Heated -20…+70°C. . . . . .

0

Measuring system – accuracy
1 ±2% with intensity compensation . . . .

Electronic connection
K Terminal box. . . . . .

Order code

Precipitation sensor **NR4M**	W	S	R60	0	V	A		I			0	1	K

Equipment

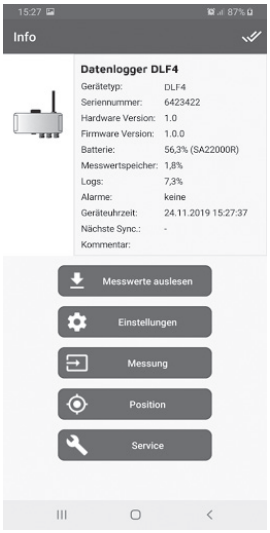
Order designation	*execution*
611000616	High-grade steel mast for concrete foundation with base plate, Ø 60 mm, length 650 mm . . . . .
611000617	High-grade steel mast for concrete foundation, Ø 60 mm, length 1,2 m, for measuring height up to 1 m. . . . .
611000618	Bird control ring . . . . .
611000619	Connection cable for sensor, 2-wire, 7m . . . . .
611000620	Mounting bracket for power supply unit . . . . .
611000621	Power supply unit for heating . . . . .
611000622	Dirt trap coil (spare part) . . . . .
611000623	Connection cable for the heating power supply unit, 4-wire, 1m . . . . .

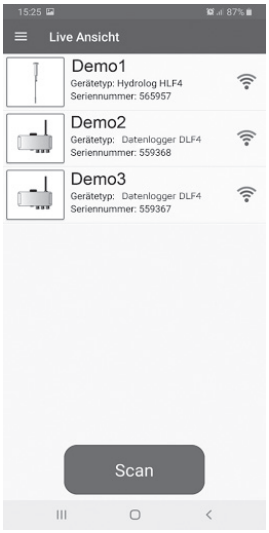
Equipment IOT-Solutions
APP ACS-Smart-Connect

A tool for wireless device configuration

2 / 01.22

android





Application

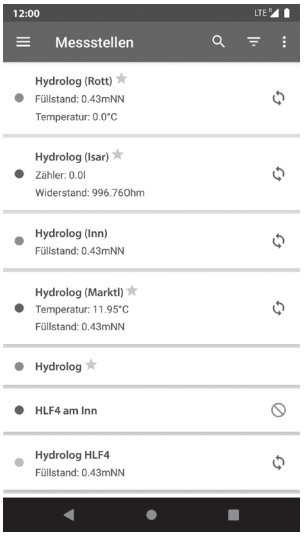
SmartConnect is an app developed by ACS for the wireless configuration of sensors and devices from ACS-CONTROL-SYSTEM.

Available in the playstore. . . . . . .

APP ACS-Alert

The current device status always in view; the free alarm function

android



Anwendung

With this application, customers of the ACS-CONTROL-SYSTEM company are informed about alarms from their ACS devices in a matter of seconds.
The app provides an overview of the purchased devices with lots of additional information.
The current device status, current measured values and an alarm history are therefore available at all times.

Available in the playstore . . . . . .

ACS-CONTROL-SYSTEM GmbH I Lauterbachstr. 57 I 84307 Eggenfelden I Germany I Tel:+49(0)8721/9668-0
www.acs-controlsystem.com I info@acs-controlsystem.de I Net prices exclusive of VAT I Subject to modifications!

ACS-Portal & Training

Data management - the easy way!

2 / 01.22

Applications

The ACS Portal is the perfect solution for all of your measured data!
Functional, flexible, interconnected and clear! The comprehensive data management system automatically safes your measured data and presents them in vivid tables and charts or in map view (based on GoogleMaps).

Furthermore you have control over the connected measurement device. Not only device overview, but also status information, device settings and enhanced self-diagnostic function are possible in Portal. Additionally the management and the processing of your data will be a lot easier through the alarm function, the automatically remote data transmission and the advanced data analysis.

Application examples

- ✓ Automatic data transfer to the ACS portal including mobile phone use with the strongest local network
- ✓ Use of the ACS portal and management of the measurement data
- ✓ Secure access to the data via the Internet
- ✓ Graphics and table views of the measured values. Map view of the measuring points, based on Google Maps, parameterization of the measuring point via the platform
- ✓ Automatic update function of the devices
- ✓ Automatic data export in common formats possible
- ✓ Free phone support

Tariffs . . . . . .

Basic training
Function and operation of the ACS portal . . . . . .
Duration about 4 hours

SAMSUNG Galaxy Tab Active Pro LTE

Robust and powerful tablet for wireless sensor parameterization and data analysis of everyone
SmartConnect compatible sensors

Technical data

ROBUST

Dimensions: 243.5 mm x 170.2 mm x 9.9 mm
Weight: 653 g
Screen size: 10.1 inches / 25.54 cm
Image quality: WUXGA
Screen type: TFT
Touchscreen

RAM / hard disk:	4 GB / 64 GB
Processor:	Octa-Core, 4x2 GHz, 4x 1.7 GHz
Connections:	1x USB Type-C, 1x3.5mm jack
WiFi:	802.11 ac
Bluetooth:	version 5.0
Mobile radio standard:	2G (GSM), 3G (UMTS), 4G (LTE)
operating system:	Android
Max. Memory card capacity:	512 GB
Memory card format:	Micro-SD
SIM card format:	Nano-SIM (4FF) / SIM card slot
Sensors:	acceleration sensor, barometer, fingerprint scanner, position sensor, Compass, Hall sensor, ambient light sensor, proximity sensor
Supported audio formats:	MP3, M4A, 3GA, AAC, OGG, OGA, WAV, WMA, AMR, AWB, FLAC, MID, MIDI, XMF, MXMF, IMY, RTTTL, RTX, OTA
Supported video formats:	MP4, M4V, 3GP, 3G2, WMV, ASF, AVI, FLV, MKV, WEBM
Camera:	4K @ 30fps, front camera 8 megapixels, rear camera 13 megapixels
Battery capacity:	7600 mAh, battery replaceable
Scope of delivery:	tablet, charging adapter, charging cable, quick guide, S Pen

Basic price SAMSUNG Galaxy Tab Active Pro . . . . . .

Resistant Galaxy Tab Active Pro • with IP68 certification • shock-absorbing design • robust cover

Tariffs - ACS DataComplete

Monthly fees ACS portal and data transfer

2 / 01.22

ACS Portal – functions

	Basic	Standard	Premium
Unlimited use	✓	✓	✓
Device overview	✓	✓	✓
Logbook display		✓	✓
Device settings		✓	✓
Status information of the measuring points		✓	✓
Gallery function		✓	✓
Map display / position map		✓	✓
Data analysis		✓	✓
Advanced data analysis			✓
Manual data export		✓	✓
Reading memory	min. 14 days	min. 1 years	min. 3 years
Auto-export of the measured values to customer IT	optional	optional	✓
Extended self-diagnosis function (Heartbeat)		✓	✓
Alarm management		✓	✓
Alerting (AlertApp, text message, e-mail)			✓
Automatic software update of data logger	✓	✓	✓
Note functions		✓	✓
Grouping of measuring points		✓	✓
User	1	5	10
Add-on option per device			
AutoExport / month	on request	on request	included in tariff
Rain overflow calculation / month Measuring point	on request	on request	on request
Additional measured value memory	on request	on request	on request
Alarmierungskosten			
per text message			
E-mail	free	free	free
ACS Alter App	free	free	free
NOTE: Prepaid minimum amount 20,00 €			

Additional posting per client	
User management / 10 users / year	
Credit for alerting (Email, SMS)	

ACS Portal

Level data management - the easy way!

The ACS portal is the perfect solution for your countless level measurement data! Functional, flexible, interconnected and clear!
The comprehensive data management system automatically saves your measurement data and presents them in vivid tables and charts or in map view (based on Google Maps).

You also have control over the connected measurement technology. Not only a device overview, but also status information, device settings and an extended self-diagnosis function are possible in the ACS portal. In addition, the alarm function, the automatic data export and the extended data analysis facilitate the administration and processing of your level measurement data.

ACS Portal – Services

- ✓ Automatic data transfer to the ACS portal including mobile phone use the strongest network on site
- ✓ Use of the ACS portal and administration the measurement data
- ✓ Secure access to the data via the Internet
- ✓ Graphics and table views of the measured values, map view of the measuring points based on Google Maps
- ✓ Possibility to parameterize the measuring point via the platform
- ✓ Automatic update function of the devices
- ✓ Automatic data export in common Formats possible
- ✓ Free phone support
- ✓ Storage of data in a certified data center (ISO 27001) with weekly data backup

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Tariffs - ACS DataComplete

Monthly fees ACS portal and data transfer

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ACS DataComplete - Monthly fees

ACS-Portal & data transmission GSM, LTE, LTE-M, NB-IOT

		DataComplete XS	DataComplete S	DataComplete M	DataComplete L
Max. Channels		1	2	6	12
Shortest transmission interval		24 h	3 h	30 min	5 min
Shortest measuring cycle		1 h	5 min	30 sec	5 sec
Max. readings / day		24	300	3 000	20 000
price per month	Basic				
	Standard				
	Premium				

Contractual conditions / term

Billing separately

- ✓ Billing takes place as a separate order item with monthly (> 20 measuring points) or
- ✓ billed annually
  Minimum contract term 1 year

Billing integrated in the device price

- ✓ The cost for 3 years is already in the Integrated device price
- ✓ An offer for a further 3 years is automatically created 6 months before the 3-year period expires

Discounts

Measuring points / platform	Discounts	Measuring points / platform	Discounts
to 10	0%	from 250	30%
from 10	10%	from 500	40%
from 100	20%	from 1000	50%

ACS DataComplete

Device class

XS
S
M
L

Data transfer

0 Without data transfer
1 With data transfer

scope of services

B Basic
S Standard
P Premium

Order code

ACS DataComplete DC

Maintenance - IOT Solutions

Monthly fees ACS portal and data transfer

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Service description

✓ **STANDARD**
✓ Half-yearly maintenance of the measuring points on site as well as functional control of the devices, for example battery levels, measured values, etc.
✓ Acquisition of the measured values by means of light plummet and calibration with probe
✓ Logging of the measured values
✓ Battery replacement if necessary
✓ Software update
✓ Repair or exchange of defective devices
✓ Logging damage and necessary Care measures (e.g. removal of wild growth)

✓ **PREMIUM**
✓ Immediate control of defective or conspicuously reported measuring points without additional costs
✓ Free repair or exchange of sensors, data loggers and remote data transmission modules from ACS (basic price includes 1 sensor and 1 logger; surcharge for several sensors on request)
✓ Installation and recommissioning of repaired devices
✓ Batteries and consumables such as Seals at no additional cost

Scope of services

STANDARD / PREMIUM
✓ Action radius:
The areas of application are divided into groups (up to 50km radius around the service base, 51-100km and 101-200km)

✓ Support:
Free phone support during our regular business hours

Contractual conditions / term

✓ **STANDARD**
✓ Cyclical activities (maintenance) are billed every six months according to the service provided power
✓ Unscheduled activities, for example repairs will be billed separately after the service has been performed
✓ The minimum contract term for maintenance is 1 year

✓ **PREMIUM**
✓ Billing takes place every six months
✓ Each measuring point including the setting parameters of the devices will be checked by ACS-CONTROL-SYSTEM approved on site
✓ The Premium maintenance contract is only offered in connection with new measuring points
✓ The installed probes and data loggers are and remain the property of the client
✓ The minimum contract term for maintenance is 1 year

To be charged extra:
- Device costs, installation and commissioning of new measuring points
- Measuring points which have been destroyed by flooding, high water, lightning, storm or other forces of nature
- Willfully damaged level measuring points
- Maintenance and repair work on level measuring places that were not caused by a device defect

Maintenance packages

	Standard	Premium	Comment:
Maintenance packages	✓	✓	
Check and log of the measured values	✓	✓	The measured values refer to water levels. Measured values such as conductivities and flow values cannot on site be checked.
Visual inspection of the measuring point for damage and necessary maintenance measures	✓	✓	Damage and necessary care measures such as removal of wild growth are documented and reported on.
Battery replacement	✓	✓	In the course of cyclical maintenance
Firmware updates	✓	✓	In the course of cyclical maintenance
Removal of defective devices	✓	✓	In the course of cyclical maintenance
Working hours for maintenance	✓	✓	Innocent waiting times will be charged separately.
Travel costs for maintenance	✓	✓	
Consumables like Batteries and seals	+	✓	
Repair service: Unscheduled visits to the measuring points by the customer or the ACS Portal are reported as "conspicuous" or "failed"	+	✓	
Reference alarm: unscheduled visits to the measuring points, the via "reference alarm" from the ACS Portal are reported as an "incorrect measured value"	+	✓	The response threshold of the reference alarm must be set by the customer to a practical value (usually> 3cm). If the alarm is not triggered by "device problems", the service calls are billed separately.
Disassembly of the measuring devices; Repair or replacement of defective devices with new devices and recommissioning of the measuring point	+	✓	The repairs only refer to ACS products. Increased workload, for example caused by third-party devices when restarting, will be charged separately according to effort.
First commissioning of new ones Measuring points	+	+	

✓ = included
\+ = billing

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Maintenance - IOT Solutions

Monthly fees ACS portal and data transfer

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Maintenance packages

	Standard	Premium
Maintenance module / Measuring point / year up to 50km		
Maintenance module / Measuring point / year up to 100km		
Maintenance module / Measuring point / year up to 200km		
Allowances and discounts		
1 piece		
2 piece		
3-5 piece		
6-10 piece		
11-25 piece		
26-50 piece		
51-100 piece		
101-250 piece		
from 251		
Note! Quantity discounts can only be granted for devices within a contiguous area.		
Prices for unscheduled activities		
Working hours technician per hour		-
Travel costs per km		-
Travel time per hour		-

Overview
Proprietary calibrations

- proprietary calibration of all ACS-devices and of third-party products
- traceable on established national standards
- documentation of the proprietary calibration according to ISO-9001
- safe measures values due to regular controlling

Pressure measurement devices, resp. hydrostatic fill level sensors

Calibration certificate (linearity protocol) of new devices ACS

version: linearity protocol for ACS-devices of the Hydrocont® and Precont® series.
Only possible in conjunction with an order of a new device.
measurement range: -1...700 bar
relative pressure, absolute pressure and vacuum
measuring points: standard linearity protocol with 11 measuring points
delivery contents: calibration certificate
device labelling via inspection tag

costs:

Factory test (re-examination)

version: recalibration of ACS pressure and hydrostatic measurment devices and of third-party products
measurement range: -1...700 bar
relative pressure, absolute pressure and vacuum
measuring points: standard linearity protocol with 11 measuring points
delivery contents: calibration certificate
device labelling via inspection tag

costs:
The costs may vary for thrid-party- products,
special process connections or for other output signals.

Temperature sensors

Calibration certificate at ACS-new devices

version: proprietary calibration for ACS Pt100 sensors or compact temperature sensors with integrated electronics,
like eg. Thermocont® TK, ST, TS or sensors with head transmitter.
Only possible in conjunction with an order of a new device,
devices from 100mm probe length.
measurement range: -30...+155°C
measuring points: standard calibration certificate with three measuring points to customer agreement
delivery contents: calibration certificate
device labelling via inspection tag

costs:
The costs may vary for special sensors
(eg. big clamp-on sensors).

Factory test (re-examination)

version: proprietary calibration for ACS-Pt100 sensors or compact temperature sensors with integrated electronics,
like eg. Thermocont® TK, ST, TS or sensors with head transmitter.
measurement range: -30...+155°C
measuring points: three measuring points and position of the measuring points to customer agreement
delivery contents: calibration certificate
device labelling via inspection tag

costs:
costs may vary with special sensors
(eg. big clamp-on sensor)

Temperature signal converter

Proprietary calibration

version:	calibration certificate for head transmitter and temperature signal converter, for which a separat, certificate is necessary (without Pt100 Fühler), also third-party products
measurement range:	-200...+850°C (temperatur is ohmically simulated)
measuring points:	standard linearity protocol with 5 measuring points, in the adjusted measurement range
delivery contents:	calibration certificate device labelling via inspection tag

costs:

Isolation amplifier, signal converter, display devices, recorder

Proprietary calibration

version:	calibration certificate for isolation amplifier, signal converter, display devices, etc.
measurement range:	standard signal inputs, eg. 0...10 V, 0(4)...20 mA
measuring points:	standard linearity protocol with 5 measuring points, in custom specified signal range
delivery contents:	calibration certificate device labelling via inspection tag

costs:

Test certificates according to EN 10204 2.1 factory certification according to EN 10204 2.1

What is to certify:
This is to certify that the products supplied comply with the order agreements. Test results are not documented.
version: One certificate for the whole order.
ordering process: Can also be issued retrospectively for an order.

costs:

Factory certification according to EN 10204 2.2

What is to certify:
This is to certify that the products supplied comply with the order agreements. In addition, it is confirmed that in the manufacture of those products, the internal ACS-tests were performed.
Test results are not documented. However, certain product characteristics, eg. the material used, probe length, etc. are confirmed.
version: Normally one certificate for the whole order.
ordering process: Can also be issued retrospectively for an order.

costs:

Acceptance test certificate according to EN 10204 3.1 material test certificate according to EN 10204 3.1

What is to certify:
It is confirmed that in the manufacture of those products the required material tests were performed. In addition, a list of medium-contacting materials is created.
version: One certificate per order number with identical devices.
ordering process: Must be ordered with order.

costs:

Acceptance test certificate according to EN 10204 3.1

What is to certify:
It is confirmed that in the manufacture of those products the required material tests and / or the additionally customer specified quality tests were performed and the necessary approvals have been granted.
The tests will be certified with expression of test results.
version: One certificate per order number with identical devices
ordering process: Must be ordered with order.

costs:

Test certificates according to EN 10204
Acceptance test certificate according to EN 10204 3.2

What is to certify:
It is confirmed that the ACS expert and commissioned expert (by the client or those mentioned in the official rules locations, eg. TÜV), certify that at the production of those products the prescribed and any additional agreed quality tests were performed and the necessary approvals have been created.
The tests will be certified with expression of test results.
version: One certificate per order number with identical devices
ordering process: Must be ordered with order.

costs:

EG - Declaration of conformity
CE - certification

What is to certify:
It is confirmed, accordingt to which s tandards and regulations the delivered product was manufactured wurde and that it matches with these.
version: One certificate per order number with identical devices
ordering process: Can also be issued retrospectively for an order.

costs:

EG - Examination certificate according to ATEX directive

What is to certify:
The notified body (eg. TÜV) certifies conformity of the device according to the ATEX Directive with the relevant standards.
version: One certificate for jedes Gerät
ordering process: Automatically attached at all Ex-devices.

costs:

General technical approval by WHG §19h

What is to certify:
The Deutsche Institut für Bautechnik DIBt confirms the approval of the respective devices as overfill protection according to WHG §19h.
version: One certificate for jedes Gerät
ordering process: Automatically attached at all WHG-devices.

costs:

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