OPERATING MANUAL - BA03.22

Precont PK4SH

Ultra-compact pressure sensor
with metallic measuring membrane

Index

1 Safety instructions

1.1 Authorized personnel

Installation, electrical connection, commissioning, operation, dismounting and disposal of the device must be made by a qualified and authorized expert according to the information's in the Operating manual and the relevant standards and rules. This expert must have read and understood the Operating manual and especially the safety notes. During work on and with the device, the required personal protective equipment must always be worn.
The Operating manual is part of the device and must be kept always accessible nearest its installation location. All statements within this document correspond to the information available at the time of printing. Subject to change without prior notice.
If the device is intended for use in explosion-hazardous areas, especially the safety instructions for electrical apparatus for explosion-hazardous areas must be observed.

1.2 Terms

- **NOTE:** Notes to prevent failures, malfunctions, damage to devices or plants.
- **WARNING:** Non-observance of the information may result in serious or fatal personal injury.

1.3 Appropriate use

The device is an electronic pressure transmitter / pressure switch for monitoring, control and continuous measurement of pressures in gases, vapors, liquids and dusts as well as for hydrostatic level measurement.
The operational reliability of the device is ensured only at the intended use. Inappropriate or incorrect use of this product can give rise to application specific hazards, e.g. vessel overfill through incorrect mounting or adjustment. Damage to property and persons or environmental contamination can result. Also, the characteristics of the instrument can be impaired.
An inappropriately use, disregarding the Operating manual and the technical rules, using under-qualified personnel, making unauthorized alterations as well as damage of the device releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

1.4 Operational safety

The device is safely built and tested according to state-of-the-art technology. The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for the trouble-free operation of the instrument.
The device may only be used within the permitted operation limits. Every use besides these limits as agreed can lead to serious dangers.
The materials of the device must be checked for compatibility with the respective application requirements before use. An unsuitable material can lead to damage, abnormal behavior or destruction of the device and to the resulting dangers.
The sensors may not be used as sole device for prevention of dangerous conditions in machines and plants.
For safety and warranty reasons, any invasive work on the device beyond that described in the Operating manual may be carried out only by personnel authorized by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.
For safety reasons, only the accessory specified by the manufacturer must be used.
The device meets the legal requirements of all relevant EU directives. This is confirmed by attaching the CE mark. The associated EU-Declaration of Conformity can be ordered or downloaded from the homepage.
This measuring device meets article 4 (3) of the EU directive 2014/68/EU (pressure equipment device directive) and is designed and produced in good engineer practice.
Devices with measurement end value > 200 bar are constructed for media of fluid group 2.

1.5 Operating supplies for explosive hazardous areas

If a device is installed and operated in explosive hazardous areas, the general Ex construction standards (EN/IEC 60079-14, VDE 0165), this operating manual as well as the EU type examination certificate resp. the IECEx certificate of conformity incl. supplements must be observed.
The installation of explosive hazardous systems must be carried out by specialist staff.

The devices are conceived for measuring of pressures in explosive hazardous areas, which requires devices of category 1 resp. 2. The measured medium may also be combustible liquids, gases, fogs or vapors.

Permitted maximum values of the intrinsically safe circuits:

Voltage	Ui	30 V
Current	Ii	300 mA
Power	Pi	900 mW
Effective internal capacitance	Ci	negligible small
Effective internal inductivity	Li	5 µH

The intrinsically safe signal and supply circuit is safe galvanically separated from parts, which can be connected with earthing potential.

CATEGORY 1
The device can be mounted in explosive hazardous areas, where devices of category 1 are required.
Devices of category 1 may be operated in hazardous explosive areas that require apparatus of category 1 only if atmospheric conditions are present (temperatures see tables below, pressure from 0,8 bar to 1,1 bar).
If the device is operated beyond these atmospheric conditions, the EU type examination certificate resp. the IECEx certificate of conformity can be used as a guide.
Additional tests for the special application conditions are recommended.
Devices of category 1 must be connected to intrinsically safe circuits of protection level ia.

CATEGORY 2
The device can be mounted in explosive hazardous areas, where devices of category 2 are required.
Devices of category 2 can be connected to intrinsically safe circuits of protection level ib.

For applications that require EPL Ga or Gb equipment, the following values apply:

(ATEX –) Marking	**Ambient temperature range at the electronic enclosure Tamb**	**Maximum surface temperature at the sensor Tmax**
(II 1 G) Ex ia IIC T6 Ga (II 2 G) Ex ib IIC T6 Gb	-40°C...+42°C	T_M (Medium temperature) + 8K The special requirements for installation and operation must be observed.
(II 1 G) Ex ia IIC T5 Ga (II 2 G) Ex ib IIC T5 Gb	-40°C...+57°C	
(II 1 G) Ex ia IIC T4 Ga (II 2 G) Ex ib IIC T4 Gb	-40°C...+92°C	
(II 1 G) Ex ia IIC T3...T1 Ga (II 2 G) Ex ib IIC T3...T1 Gb	-40°C...+97°C	

For applications that require EPL Da or Db equipment, the following values apply:

(ATEX –) Marking	**Ambient temperature range at the electronic enclosure Tamb**	**Maximum surface temperature at the sensor Tmax**
(II 1 D) Ex ia IIIC T80°C Da (II 2 D) Ex ib IIIC T80°C Db	-40°C...+42°C	T_M (Medium temperature) + 8K The special requirements for installation and operation must be observed.
(II 1 D) Ex ia IIIC T95°C Da (II 2 D) Ex ib IIIC T95°C Db	-40°C...+57°C	
(II 1 D) Ex ia IIIC T130°C Da (II 2 D) Ex ib IIIC T130°C Db	-40°C...+92°C	
(II 1 D) Ex ia IIIC T195°C Da (II 2 D) Ex ib IIIC T195°C Db	-40°C...+97°C	

A reverse heat flow from the process exceeding the permissible ambient temperature of the transmitter is not allowed and shall be avoided by a suitable thermal insulation or a suitable temperature decoupler.

CATEGORY 3
The device can be mounted in explosive hazardous areas, where devices of category 3 are required.
The device has a device protection due to increased safety (ec).
The maximum supply voltage is 30 V.
If the device has been used once acc. to category 3 (ec – increased safety) without intrinsically save supply, it may not more be used acc. to category 1 or 2 (i – intrinsically safe).
When using within zone 2, acc. to the warning marking at the device, the connection cable may not be disconnected when powered.

For applications that require EPL Gc equipment, the following values apply:

(ATEX –) Marking	**Ambient temperature range at the electronic enclosure Tamb**	**Maximum surface temperature at the sensor Tmax**
II 3 G Ex ec IIC T6 Gc	-40°C...+42°C	T_M (Medium temperature) + 8K The special requirements for installation and operation must be observed.
II 3 G Ex ec IIC T5 Gc	-40°C...+57°C	
II 3 G Ex ec IIC T4 Gc	-40°C...+92°C	
II 3 G Ex ec IIC T3...T1 Gc	-40°C...+97°C	

2 Product description

2.1 Product code

Precont PK4 [01][02][03][04][05][06][07][08][09][10][11][12][13][14][95][97][98][99]

01	Application type	S	Standard
02	Sensor / material diaphragm	H	Strain gauge (DMS) – internally / CrNi-steel
03	Approval	S	Standard
03		X	ATEX/IECEx: II 1 G Ex ia IIC Ga / II 1 D Ex ia IIIC Da / II 3 G Ex ec IIC
04	Process connection	3	Thread ISO 228-1 – G¼"A, DIN EN ISO 1179-2 E
05	Material process seal	1	FKM/FPM
		3	EPDM
06	Material process connection	V	CrNi-steel
07	Terminal enclosure / material	0	Compact / CrNi-steel
08	Measuring range pressure	10	0...10 bar
08		13	0...40 bar
08		19	0...100 bar
		24	0...600 bar
09	Electronic – Output	A	Current 4...20mA, FSK interface, 2-wire
10	Electronic – Function	S	Standard
11	Process temperature	0	-40°C...+125°C (-40°F... 257°F)
		1	-40°C...+200°C (-40°F... 392°F)
12	Pressure type	R	Gauge pressure
13	Measurement pressure - accuracy	9	0,5%
14	Electrical connection	S	Plug M12x1

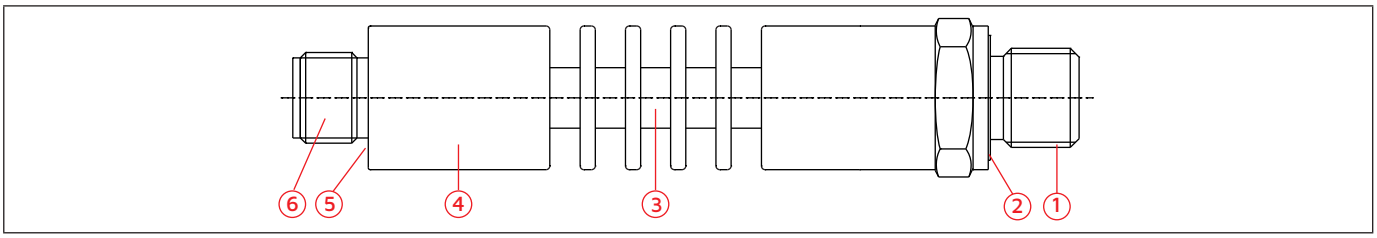
95	Additional option	-ML	Measurement point designation / TAG – Laser marking
97	Additional option	-WT	Factory certification – drink water suitability
98	Additional option	-KF	Configuration / Preset
99	Additional option	-WK	Factory calibration – calibration certificate

2.2 Function

The device is suitable for applications in virtually all industries. It is used for the measurement of the pressure type over pressure (gauge pressure), where the ambient pressure is used as reference pressure. Measured products are gases, vapours and liquids.
The device is especially suitable for applications with higher temperatures and high pressures.
The process pressure acts directly (dry system) on the thin film strain gauge sensor element via the process diaphragm. The process pressure causes a resistance change which is converted into a corresponding output signal.
The measuring system is completely welded and thus sealed against the process. The process fitting is sealed against the process by a suitable seal.
The parameterization and operation can be made by the integrated wired interface.

2.3 Configuration

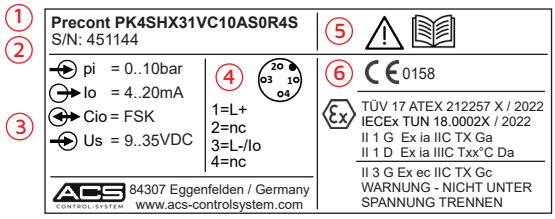
The device consists on the components:



① Process connector
② Process seal
③ Temperature decoupler – optional
④ Electronic enclosure
⑤ Ventilation/pressure compensation
⑥ Plug connector

2.4 Product label

The type label contains the most important data for identification and use of the instrument.



① Type code
② Serial number
③ Technical data
④ Assignment
⑤ Safety notes
⑥ Approvals

2.5 Packaging, transport, storage

The device is protected by packaging. It can handle normal loads during transport. Transport must be carried out in due consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device. The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.
Dispose of the packaging material via specialized recycling companies.
Up to the time of installation, the packages must be left closed and, unless otherwise indicated, must be stored only under the following conditions:

- Not in the open
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration
- Storage and transport temperature -20...+85°C
- Relative humidity 20...85%

3 Installation

3.1 Ambient and process conditions

The correct function of the device within the specific technical data can only be guaranteed, if the permitted ambient and process conditions at the installation place (see chapter Technical Data) will not be exceeded. Hence make sure before mounting that all parts of the instrument exposed to the process (e.g. measuring membrane, process fitting, process seal) are suitable for the existing process conditions (e.g. process pressure, process temperature, chemical properties of the medium, abrasion, mechanical influences).

3.2 Installation place

The installation of the device at locations where high pressure blows can occur should be avoided.
The installation of the device should be made if possible at temperature calmed places. High process temperature steps can produce short-time higher measuring signal deviations.
At high process temperatures a heat transfer to the terminal enclosure can be reduced by isolation of the medium carrying part of the plant or by the use of a temperature decoupler.

Pressure measurement in gases:
Install device above the tapping point, so that the condensate can flow into the process.
Use a blocking valve.

Pressure measurement in steams:
Install device after a siphon and a shut-off device below the tapping point. A protective accumulation of water is formed through condensation in the pipe bends. Even in applications with hot steam, a medium temperature < 100 °C on the transmitter is ensured.

Pressure measurement in liquids:
Install device after a shut-off device below or at the same level as the tapping point. Install device below the lowest measuring point. The effective pressure line is always filled with liquid and gas bubbles can bubble up to the process line.
Do not mount the device in the fill flow, in the suction area of a pump, in the tank outlet or at a point in the container which could be affected by pressure pulses from an agitator.

3.3 Installation notes

Do not remove packaging until just before mounting and check the device for any damage.
The protective cap, which is attached at the process connection resp. the diaphragm, must only be removed immediately before the installation. The diaphragm may not be damaged.

Pollution or damaging of the pressure compensation opening (Hole besides the electrical connection) can lead to faulty measuring results.

WARNING: Install the device only when the system is pressureless. There is a risk of fast escaping media resp. pressure blow.

WARNING: Let the system cool down sufficiently before installing the device. There is a risk of dangerous and hot media escaping.

Sealing faces on the device and at the mounting point must be clean and without damage.
Parallel threads must be sealed by a suitable O-ring, flat or profile gasket. An additional sealing material such as yam, hemp or PTFE tape should not be used. Tapered threads should be wound with additional sealing material, e.g. PTFE tape for sealing.

NOTE: The installation of the device into a closed off completely with process liquid filled connection can lead to destruction of the measuring diaphragm. The reduction of the volume of the liquid at screw-in leads to a very high pressure boosting, which can exceed the permitted maximum value by a multiple. Thus, before installation, the connection must be sufficiently emptied.

NOTE: The tightening of the thread process connection may only be done at the hexagon by a suitable spanner at most with the maximum permitted torque strength (≤ 50Nm).

4 Electrical connection

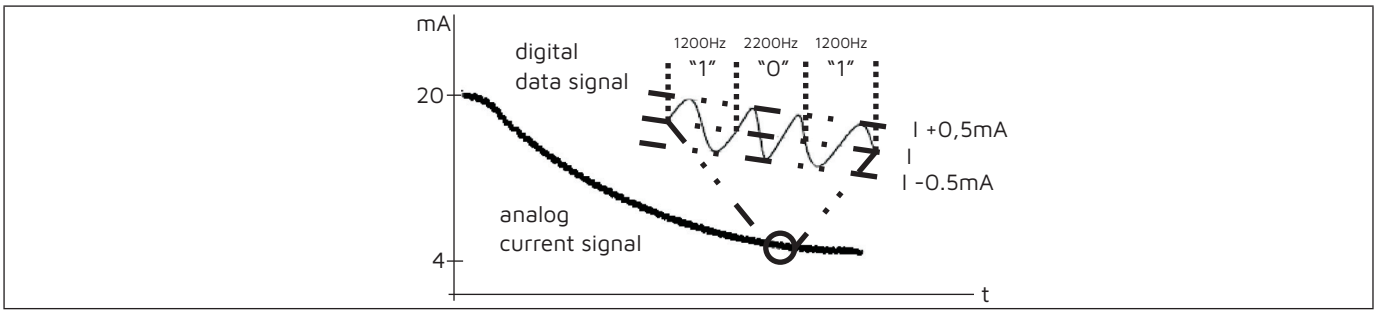
WARNING: Install the device only in de-energized state.

NOTE: For start-up deactivate all connected control devices, to avoid unwanted control reactions.

The device must be grounded, preferred by the metallic process connection, alternatively by the cable shield.
Install cable separated from power leading cables, if existing connect shield to earth.
Cable: M12 – A-coded, 1-BN = brown / 2-WH = white / 3-BU = blue / 4-BK = black

The digital communication protocol uses Frequency Shift Keying (FSK) technology and is superimposing onto the analogue sensor signal 4...20mA. This allows a two-way-communication with the field and thus allows the transmission of additional information's.

The communication protocol communicates with 1.200 Bit/s without interrupting the 4...20mA signal an thus allows the host application (master), to receive two or more digital actualizations per seconds from an intelligent field device. The digital signal does not disturb the 4...20mA.
The communication protocol offers two simultaneous communication channels: the analogue 4...20mA signal and a digital signal. The 4...20mA signal transmits the primary measuring value by the 4...20mA current loop, the fastest and most reliable industry standard. The digital signal transmits additional information's from the device like device state, diagnosis date, additional measuring values or calculated values, etc.
The combination of both principles in one installation allows a cost effective and especially robust comprehensive field communication solution, which can be simply uses and configured.



Use a cable 2-core, twisted, shielded.
Observe maximum permitted supply voltage Us at the terminals L+/L-:

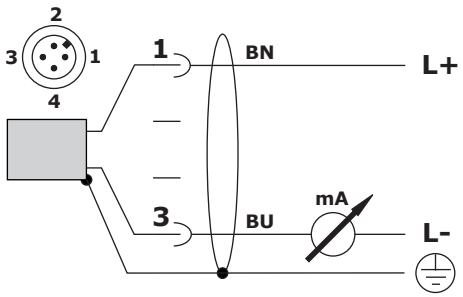
- Us = 9...35VDC
- Ex: Us = 9...30VDC

Observe maximum permitted load resistor RL of the analogue output:

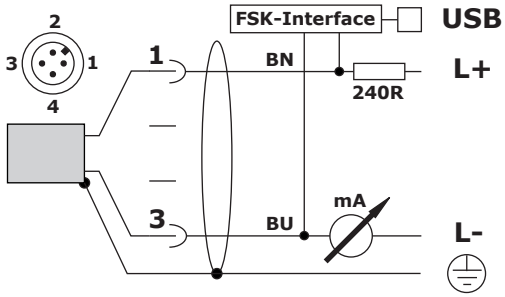
- RL ≤ (Us - 9V) / 22mA

4.1 Connection Ex-free area

Connection
Device within Ex-free area

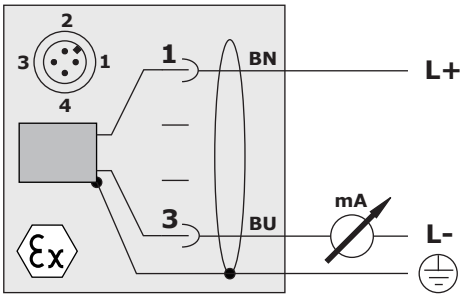
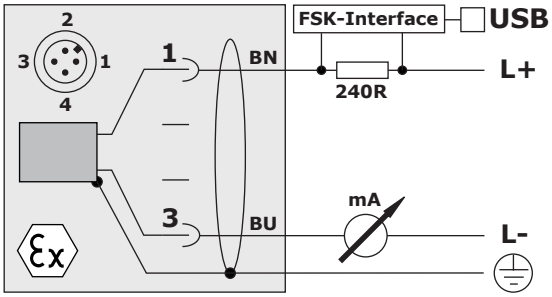


Connection FSK communication interface
Device within Ex-free area



Consider resistor 240Ω within wire +L for connection of the FSK-communication device.

4.2 Connection Ex area

Connection Device within Ex area	Connection FSK communication interface Device within Ex area
	

Consider resistor 240Ω within wire +L for connection of the FSK-communication device.

5 Operation

The parameterization and operation can be made by the integrated wired interface. Knowledge concerning the communication technology is provided.

Configuration and data transmission can be made per standard FSK interface (e.g. isHRT USB resp. isHRT USBeX) and operating software (e.g. PACTware). The use of the DTM isHRT CommDTM resp. ICS Generic HART DTM is recommended. Information's for installation resp. using the FSK interface resp. the operating software are not content of this manual.

Note: Damping:

- At a set damping 0s…<1s the communication is only active for 20s after power-up the supply voltage. After establishing the connection it will be stay active. While this, the damping is set to 1s. After 4 minutes of inactivity the connection will be terminated and the damping is reset to the set value.
- At a set damping of ≥ 1s the establishing of a communication connection is always possible.

Default settings [Adjustment range]:

	Default settings	**Description**
Address	0 [0…15]	
Damping	1s [0s…60s]	Time till a change at the input has been processed at the output by 100%.
Start value LRV	Nominal lower adjust value = 4mA	LRV < URV Span ≥ 25%
End value URV	Nominal upper adjust value = 20mA	LRV < URV Span ≥ 25%

6 Service

6.1 Maintenance

At appropriate use, the device is free of maintenance.
Solid coatings on the diaphragm can lead to faulty measurement results. In this case the diaphragm must be regularly cleaned. Don't use sharp resp. hard tools, pressured air or aggressive chemicals. For dismounting the device see chapter "Dismounting".

6.2 Dismounting

Use suitable protective clothing, e.g. goggles, gloves.

WARNING: Dismount the device only when power supply is off.

WARNING: Let the device and the system cool down sufficiently fore dismounting it. There is a risk of hot surfaces as well as dangerous and hot media escaping.

WARNING: Dismount the device only when the system is pressureless. There is a risk of fast escaping media resp. pressure blow.

After dismounting the diaphragm resp. the process connection as well as the electrical connection plug must be fitted with protective caps.

6.3 Troubleshooting / Repair

The operator of the system is responsible for taking suitable measures to rectify faults.
In case of malfunction check:

Component / area	Check	Rectification
Enclosure	Damage	Replace device or send in for repair
Pressure diaphragm	Pollution	Clean device or send in for repair
	Damage	Replace device or send in for repair
Process seal	Damage	Replace process seal Use other seal material if necessary
Compensation capillary	Pollution	Clean capillary resp. send device in for repair
Supply voltage	Operating voltage available	Switch-on resp. repair operating voltage
		Check terminals resp. repair
	Operating voltage too low / too high	Adapt resp. repair
	Load resistance too high	Reduce resistance
		Increase operating voltage
	Connection cable damaged	Change resp. repair cable

For dismounting the device see chapter "Dismounting".
If the malfunction cannot be eliminated, please contact the manufacturer.
A repair may only be carried out by the manufacturer.

6.4 Return

Enclose necessary information's for return:

- An exact description of the application.
- The chemical and physical characteristics of the product.
- A short description of the occurred error.

Before returning the device, the following measures must be performed:

- Adhesive product residues e.g. caustic, toxic, radioactive etc. must be removed.
- A returning must be refrained, if it is not possible by 100% to remove the unhealthily product completely.
- The device must be packed damage-proof.

6.5 Disposal

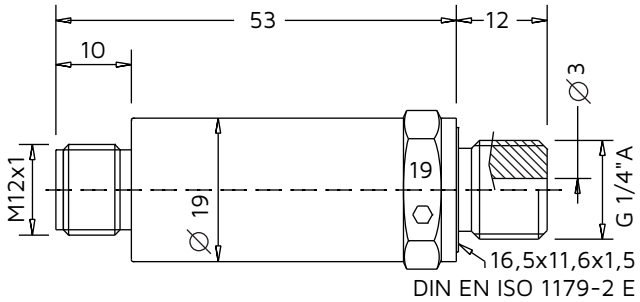
This instrument is not subject to the WEEE directive and the respective national laws. Hence, pass the instrument directly on to a specialized recycling company and do not use the municipal collecting points.

7 Technical Data

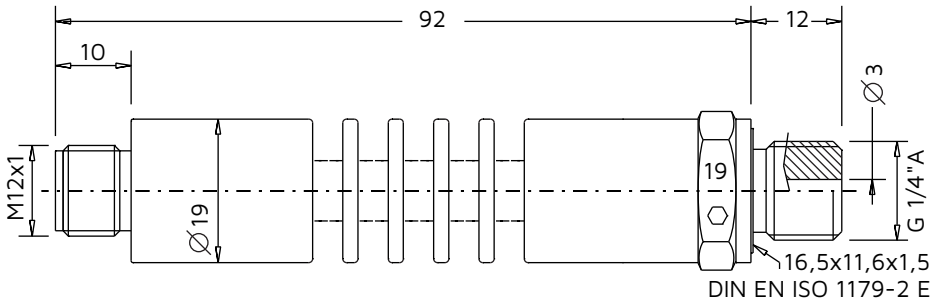
Input							
Reference conditions	EN/IEC 60770-1: Characteristic deviation – Limit value adjustment						
	15..25°C (59°F... 77°F) / 860..1060kPa / 45..75%r.F. / ton240s / 24VDC±0,1V / vertical, sensor downside						
Measurand pressure – pi							
Sensor type	Strain gauge, thin-film						
Type code	08-10	08-13	08-19	08-24			
Meas. range PN, gauge – FSI	0...10bar	0...40bar	0...100bar	0...600bar	-	-	-
Under-/Overload	-1/20 bar	-1/80 bar	-1/200 bar	-1/1220 bar	-	-	-
Burst pressure	300 bar	800 bar	2000 bar	3000 bar	-	-	-
Resolution	FSI ≥ 16 Bit						
Output							
Analogue output – Io							
Signal range	3,9...20,5mA / dI ≤ 1µA						
Permitted load	RL ≤ (Us - 9V) / 20,5mA						
Time behavior	t90 ≤ 2ms (t_d = 0s) / ton ≤ 0,1s (t_d = 0s)						
Characteristic deviation	≤ ±0,5%FSO (Nonlinearity ≤ ±0,4%FSO + Hysteresis ≤ ±0,15%FSO + Reproducibility ≤ ±0,05%FSO)						
Influence of auxiliary power	≤ ±0,5µA/V						
Influence of temperature Ta	≤ ±0,5µA/K						
Influence of temperature Tp	Tk Zero ≤ ±0,015%FSO/K						
	Tk Span ≤ ±0,015%FSO/K						
Long term drift zero value	≤ ±0,2%FSI/year (Tp=15...25°C) / ≤ ±0,5%FSI/year (Tpmax)						
Influence of mounting position	negligible						
Interface – Cio							
Interface type	FSK / 1200 Bit/s						
Communication resistor	≥ 240Ω, extern						
Auxiliary power							
Supply voltage Us Ripple voltage Ur Input current Is	[09-A]/[03-S]: 4...20mA: 9...35VDC reverse polarity protected / ≤ 2Vpp / ≤ 20,5mA [09-A]/[03-X]: 4...20mA Ex: 9...30VDC reverse polarity protected / ≤ 2Vpp / ≤ 20,5mA						
Process conditions							
Process temperature Tp	[11-0]: -40...+125°C (-40°F...+257°F)						
	[11-1]: -40...+200°C (-40°F...+392°F)						
	[05-1]: (FKM/FPM) -25°C...+200°C (-13°F...+392°F)						
	[05-3]: (EPDM) -40°C...+140°C (-40°F...+284°F)						
	[03-X]: ATEX/IECEx: see certificate						
Pressure cycles	≥ 100 Mio. (1,2xPN)						
Environmental conditions							
Ambient temperature Ta	[11-0]: -40°C...+125°C (-40°F...+257°F)						
	[11-1]: -40°C...+125°C (-40°F...+257°F) / Tp -40°C...+150°C (-40°F...+302°F)						
	[11-1]: -40°C...+100°C (-40°F...+212°F) / Tp -40°C...+175°C (-40°F...+347°F)						
	[11-1]: -40°C...+85°C (-40°F...+185°F) / Tp -40°C...+200°C (-40°F...+392°F)						
	[03-X]: ATEX/IECEx: see certificate						
Protection level	IP69K/IP67 (EN/IEC 60529)						
Climatic classification	4K4H (EN/IEC 60721-3-4)						
Shock classification	500g [1ms] (EN/IEC 60068-2-27)						
Vibration classification	20g [10...2000 Hz] (EN/IEC 60068-2-6)						
EM compatibility	Operation device class B / Industrial range (EN/IEC 61326)						
Insulation voltage	500Vac						
Protection class	III						
Pollution degree	4						
Altitude above sea level	5000m						
MTTF	463,4 years						
Tightening torque	≤ 50Nm						
Weight	[11-0]: 0,05kg						
	[11-1]: 0,07kg						
Materials							
Process wetted	Steel 2.4668/Inconel alloy 718, steel 1.4404/316L, [05-1]: FKM/FPM, [05-3]: EPDM						
Not process wetted	CrNi-steel, PUR, PTFE, FKM/FPM						

8 Dimensions

[04-3] / [11-0]



[04-3] / [11-1]



Dimensions in mm

9 Accessories

Accessories, optimal matched to the device are directly available from the manufacturer.

9.1 Installation material

Flat seal, FKM/FPM, G¼"A, DIN EN ISO 1179-2 E	Art.-No. 60010599
Flat seal, EPDM, G¼"A, DIN EN ISO 1179-2 E	Art.-No. 60010699
Reduction G1/2"AG-G1/4"IG, steel CrNi, hexagonal	Art.-No. 611000587
BEF-14: Welding socket G1/4", steel CrNi, seal surface, D24mm x L14mm	Art.-No. 611000586

9.2 Connection cable

Cable shielded, PUR halogen free, black-grey, connection: Jack M12-A-4pole / Strands	
LKZ0405PUR-AS: 5m, jack straight	Art.-No. 611000000
LKZ0410PUR-AS: 10m, jack straight	Art.-No. 611000001
LKZ0420PUR-AS: 20m, jack straight	Art.-No. 30380292
LKZ0430PUR-AS: 30m, jack straight	Art.-No. 30380306
LKW0405PUR-AS: 5m, jack angled	Art.-No. 30380395
LKW0410PUR-AS: 10m, jack angled	Art.-No. 30380453
LKW0420PUR-AS: 20m, jack angled	Art.-No. 611000243
LKW0430PUR-AS: 30m, jack angled	Art.-No. 611000362

Cable shielded, PUR halogen free, black-grey, connection: Jack M12-A-4pole / Plug M12-A-4pole	
LKZV405PUR-AS: jack straight	Art.-No: 611000589
LKZV410PUR-AS: 10m, jack straight	Art.-No. 611000590
LKZV420PUR-AS: 20m, jack straight	Art.-No. 611000591

9.3 Confectionable connection jacks

BKZ0412-VA: Jack M12, A-coded, 4-pole, straight, shield connection	Art.-No. 611000015
BKW0412-VA: Jack M12, A-coded, 4-pole, angled, shield connection	Art.-No. 30380388
BKZM412-VA: Plug M12, A-coded, 4-pole, straight, shield connection	Art.-No. 611000593

9.4 Signal processing

TVA-100-U0	Isolation amplifier, active, 20..253Vuc transmitter supply, In-Out: 0/4...20mA/0...10V adjustable switch cabinet assembly at standard mounting rail, width 22,5mm	Art.-No. 171000012
ExTVA-500-UC	Isolation amplifier, active, 20..253Vuc transmitter supply, In-Out: 4...20mA switch cabinet assembly at standard mounting rail, width 22,5mm	Art.-No. 171000014
GWA-250-U0	Limit value switch, 20..253Vuc transmitter supply, In: 0/4...20mA/0...10V, Out: 2x relay switch cabinet assembly at standard mounting rail, width 22,5mm	Art.-No. 171000015
DPA DPA Ex	Process indicator/Data logger, TFT display, 18...36Vdc/186...253Vac In: 0/4...20mA/0..10V, Out: 4...20mA/0...10V/4x relay Field-/panel- or switch cabinet assembly at standard mounting rail	Art.-No. 161000178
isHRT USB	Interface converter FSK - USB	Art.-No. 611000595
isHRT USBeX	Interface converter FSK – USB, intrinsically safe	Art.-No. 611000594

CONTROL-SYSTEM

FEEL FREE TO
CONTACT US

ACS-CONTROL-SYSTEM GmbH
Lauterbachstr. 57
84307 Eggenfelden - Germany
info@acs-controlsystem.de
www.acs-controlsystem.com
+49 (0) 8721-9668-0