Hydrocont® HP4SC

Hydrostatic filling level transmitter
with capacitive ceramic pressure measuring sensor,
temperature sensor and conductivity sensor

Technical Information TI12.25

Application

- Water and waste water sector
- Environmental technology
- Process industry e.g. for
- Long-term monitoring of water levels at hydroelectric power plants
- Weir control
- Stockpile management of storage tanks

Main features

- Various electronics available
  Current 4-20mA, FSK interface, 2-wire, overvoltage protection
  - RS485 Modbus®-RTU, 4-wire, overvoltage protection
- Characteristic deviation
  ≤ ±0,05%/±0,1%/±0,2%FSO

Description

The device is an electronic hydrostatic filling level transmitter for monitoring, control and continuous measurement of filling levels in liquids.
The device is suitable for applications in virtually all industries for filling and water level measurement, especially for fresh water, wastewater and salt water. The slim construction design allows the use especially at confined space conditions, e.g. at bore holes and wells with small diameter.
The high precise, long term stable and robust ceramic measuring cell, the stainless steel enclosure and the thick-walled, length stable extension cable with highly stressable steel core ensures reliable precise measuring values and allows the operation also at demanding environmental conditions, e.g. low temperatures, high shock and vibration loads or at problematic liquids.
The hydrostatic liquid pressure acts directly (dry system) via the process membrane on the capacitor attached to the rear and causes a change in capacity, which is further processed.
For optional measuring the temperature, an integrated long-term stable platinum temperature sensor is used. The measured temperature value can be read out at the version 09-V (RS485 Modbus-RTU) by the digital interface or the resistance signal can be evaluated at the version 09-A (current 4...20mA FSK) in parallel to the pressure conditioned analogue current signal per 3-wire-technology.
For optional measuring the conductivity, a 4-electrode-sensor is used, which ensures accurate and reliable temperature-compensated measurement over a wide conductivity range, even when dirty.
The parameterization and operation can be made by the integrated wired interface.

FEEL FREE TO
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TECHNICAL DATA

Input Pressure
Nom. pressure PN relative: 0...0,1bar up to 0...20bar
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)

Input Temperature
Sensor type: Resistor Pt1000 Pt1000 class A
Characteristic deviation: ≤ ±0,1K + 0,002 x [dt (25°C)]

Input conductivity
Sensor type: conductive 4-electrode-cell
Measuring range – FSI: ≤ 1... ≥ 10.000µS/cm
Resolution: ≤ 1µS/cm
Characteristic deviation: ≤ ±0,5% of measuring value (≥ ±1µS/cm)
Temp. compensation: -2%/K / -5...+45°C (+23°F... +113F)
Reference temperature: +25°C

Output RS485 Modbus®-RTU
Interface: RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800...38400 Baud)
Time behavior: Pressure/level signal T90 ≤ 2ms (td = 0s)

Auxiliary power
Supply voltage Us
polarity protected: RS485: 6...35VDC; Strom 4...20mA: 9...35VDC

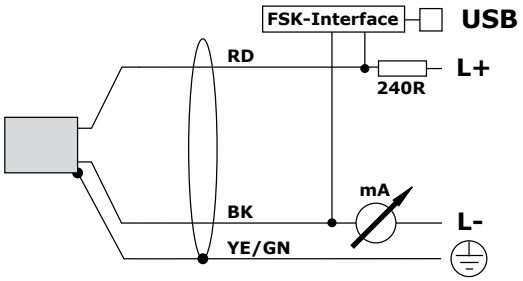
Environmental conditions
Environmental temperature: -20°C...+70°C / ATEX/IECEx: see certificate
Protection level: I P68 (EN/IEC 60529)

Materials
Process wetted: Ceramic Al_2O_3, 99,9%
Steel 1.4404/316L, Steel 1.4571/316Ti, Steel1.4462/318LN (Duplex)
FKM/FPM, EPDM, PE, PUR, Epoxyd

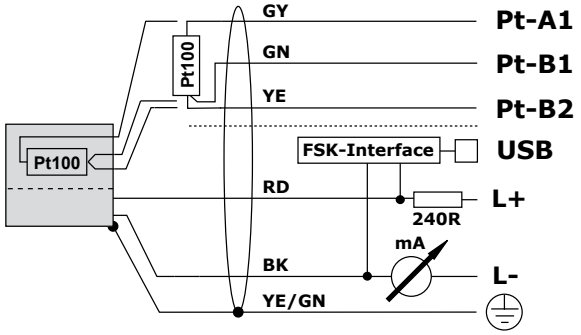
ELECTRICAL CONNECTION

Terminal assignment

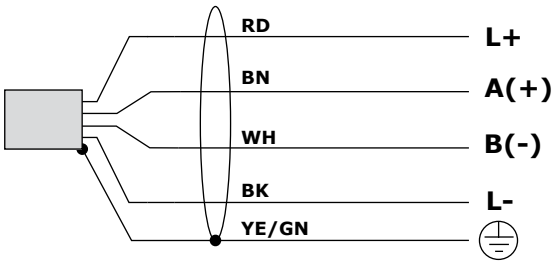
Current 4...20mA, FSK



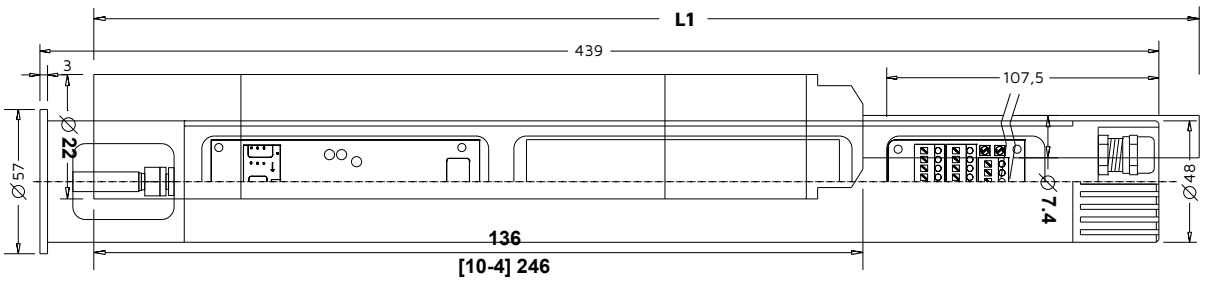
Current 4...20mA, FSK / Pt100 – 3-wire



RS485 Modbus-RTU



DIMENSIONS (MM) WITHOUT CONFECTION



ORDER CODE

Type
S Standard

Sensor / material diaphragm
C Capacitive – front-flush / ceramic Al2O3 96%/99,7%

Approval
S Standard
X ATEX/IECEx: II 1 G Ex ia IIC T6...T1 Ga / II 1 D Ex ia IIIC T200100°C Da
Z ATEX/IECEx: II 2 G Ex ib IIC T6...T1 Gb / II 2 D Ex ib IIIC T80°C Db

Process connection
0 without

Material process seal
1 FKM/FPM
3 EPDM, FDA listed

Material process connection
V CrNi-steel
D CrNi-steel, duplex, sea water resistant

Terminal enclosure
0 Without

Measuring range
01 0...100 mbar
02 0...200 mbar
03 0...400 mbar
04 0...600 mbar
05 0...1 bar
07 0...2 bar
08 0...4 bar
09 0...6 bar
10 0...10 bar
12 0...20 bar
0A 0...1 mWS
0B 0...2 mWS
0C 0...4 mWS
0M 0...5 mWS
0D 0...6 mWS
0E 0...10 mWS
0F 0...20 mWS
0L 0...25 mWS
0G 0...40 mWS
0J 0...50 mWS
0K 0...60 mWS
0H 0...100 mWS

Electronic – Output
A Current 4...20mA, FSK, 2-wire, over voltage protection
V RS485 Modbus-RTU, 4- wire, over voltage protection

Electronic – Function
0 Without
1 Temperature Pt100 class B, 3-wire – IEC 60751 (only with Electronic Output A)
3 Temperature *(SV) -20°C...+70°C (-4°F... +158°F) (only with Electronic Output V)
4 Temperature *(SV) -20°C...+70°C (-4°F... +158°F) (only with Electronic Output V)
Conductivity *(TV) 1...10.000µS/cm

Process temperature
0 -20°C...+70°C (-4°F... +158°F)

Pressure type
R Gauge pressure

Measuring accuracy
1 0,2%
3 0,1%, linearization protocol
6 Xcellence – 0,05% [08 ≥ 200mbar/2mWS], linearization 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 extension cable
A Cable sheath PE
B Cable sheath PUR

Length L1 (≤ 300.000mm)

Hydrocont® HP4	S	C	S	0			0				0	R				