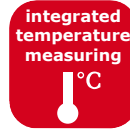


Hydrocont® HP4SC

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
 $\leq \pm 0,05\% / \pm 0,1\% / \pm 0,2\% \text{FSO}$



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.



TECHNICAL DATA

Input Pressure

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

Characteristic deviation: $\leq \pm 0,05\% / \pm 0,1\% / \pm 0,2\% \text{FSO}$

Temperature deviation: Tk Zero $\leq \pm 0,015\% \text{FSO/K}$, $\leq \pm 0,75\% \text{FSO}$

Tk Span $\leq \pm 0,015\% \text{FSO/K}$, $\leq \pm 0,5\% \text{FSO}$ ($\geq 0,4\text{bar}$) / $\leq \pm 0,8\% \text{FSO}$ ($< 0,4\text{bar}$)

Input Temperature

Sensor type: Resistor Pt1000 Pt1000 class A

Characteristic deviation: $\leq \pm 0,1\text{K} + 0,002 \times [\text{dt } (25^\circ\text{C})]$

Input conductivity

Sensor type: conductive 4-electrode-cell

Measuring range – FSI: $\leq 1... \geq 10.000\mu\text{S/cm}$

Resolution: $\leq 1\mu\text{S/cm}$

Characteristic deviation: $\leq \pm 0,5\%$ of measuring value ($\geq \pm 1\mu\text{S/cm}$)

Temp. compensation: $-2\%/K$ / $-5...+45^\circ\text{C}$ ($+23^\circ\text{F}... +113^\circ\text{F}$)

Reference temperature: $+25^\circ\text{C}$

Output RS485 Modbus®-RTU

Interface: RS485, bidirectional / Modbus®-RTU / 9600 Baud (4800...38400 Baud)

Time behavior: Pressure/level signal $T_{90} \leq 2\text{ms}$ ($t_d = 0\text{s}$)

Auxiliary power

Supply voltage U_s

polarity protected: RS485: 6...35VDC; Strom 4...20mA: 9...35VDC

Environmental conditions

Environmental temperature: $-20^\circ\text{C}...+70^\circ\text{C}$ / ATEX/IECEX: see certificate

Protection level: I P68 (EN/IEC 60529)

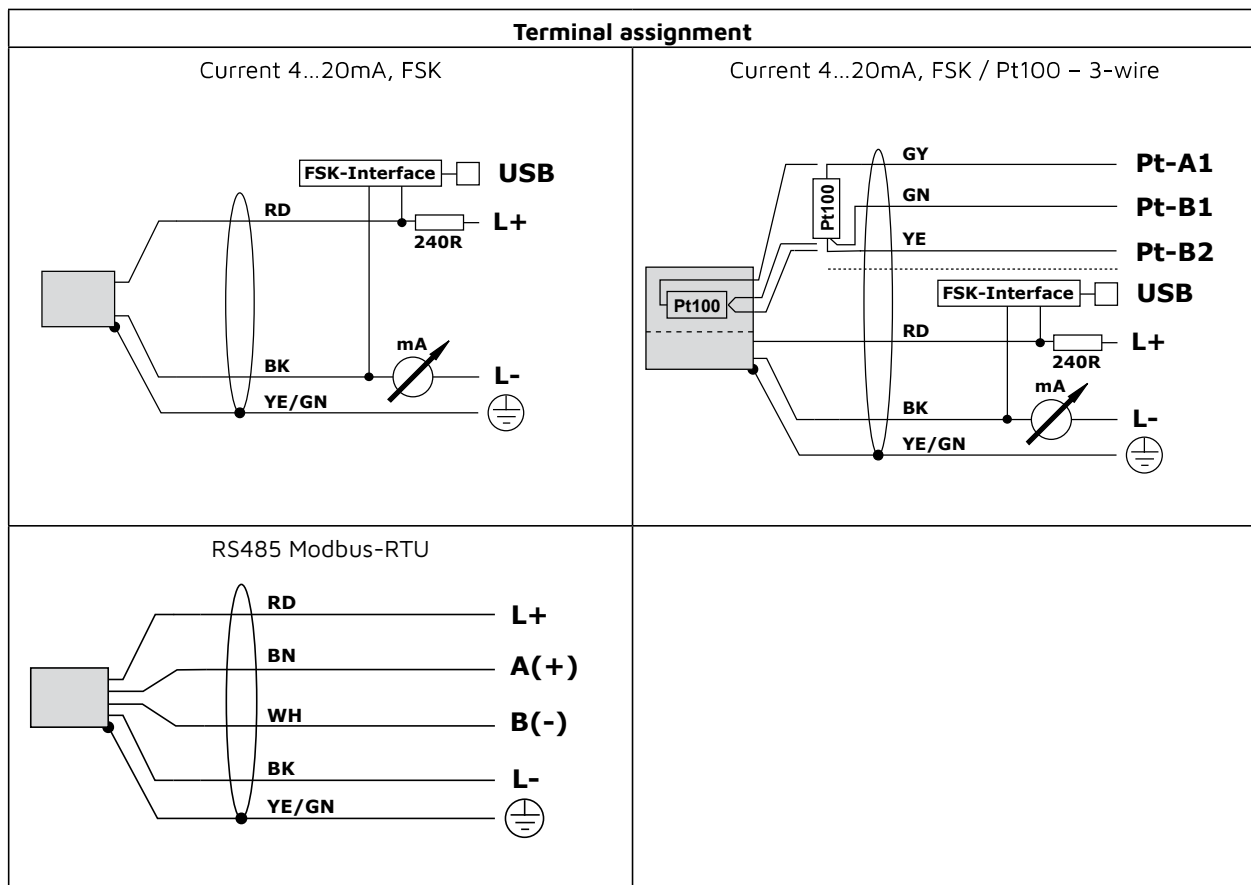
Materials

Process wetted: Ceramic Al_2O_3 , 99,9%

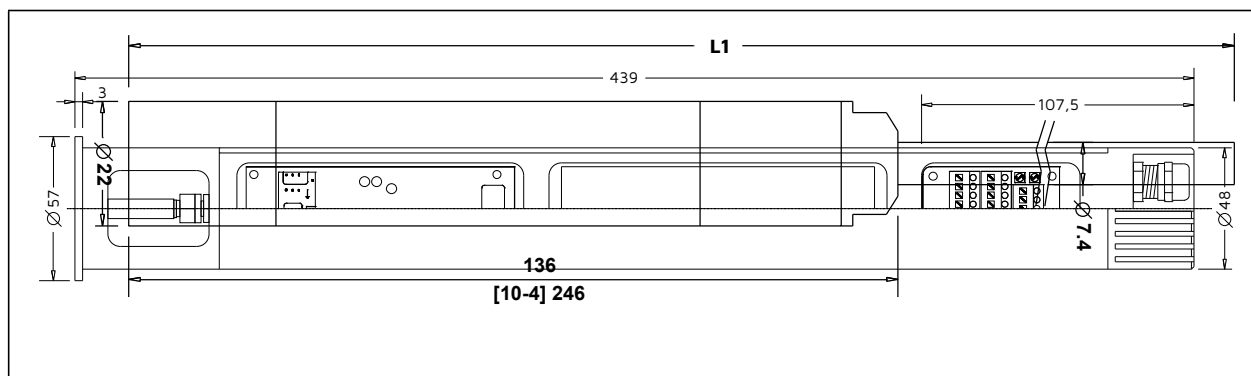
Steel 1.4404/316L, Steel 1.4571/316Ti, Steel 1.4462/318LN (Duplex)

FKM/FPM, EPDM, PE, PUR, Epoxyd

ELECTRICAL CONNECTION



DIMENSIONS (MM) WITHOUT CONFECTION



ORDER CODE

S	Type Standard
C	Sensor / material diaphragm Capacitive – front-flush / ceramic Al2O3 96%/99,7%
S	Approval Standard
X	ATEX/IECEX: II 1 G Ex ia IIC T6...T1 Ga / II 1 D Ex ia IIIC T200/100°C Da
Z	ATEX/IECEX: II 2 G Ex ib IIC T6...T1 Gb / II 2 D Ex ib IIIC T80°C Db
O	Process connection without
1	Material process seal FKM/FPM
3	EPDM, FDA listed
V	Material process connection CrNi-steel
D	CrNi-steel, duplex, sea water resistant
O	Terminal enclosure Without
O1	Measuring range 0...100 mbar
O2	0...200 mbar
O3	0...400 mbar
O4	0...600 mbar
O5	0...1 bar
O7	0...2 bar
O8	0...4 bar
O9	0...6 bar
10	0...10 bar
12	0...20 bar
OA	0...1 mWS
OB	0...2 mWS
OC	0...4 mWS
OM	0...5 mWS
OD	0...6 mWS
OE	0...10 mWS
OF	0...20 mWS
OL	0...25 mWS
OG	0...40 mWS
OJ	0...50 mWS
OK	0...60 mWS
OH	0...100 mWS
A	Electronic – Output Current 4...20mA, FSK, 2-wire, over voltage protection
V	RS485 Modbus-RTU, 4- wire, over voltage protection
O	Electronic – Function 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
O	Process temperature -20°C...+70°C (-4°F... +158°F)
R	Pressure type Gauge pressure
1	Measuring accuracy 0,2%
3	0,1%, linearization protocol
6	Xcellence – 0,05% [08 ≥ 200mbar/2mWS], linearization protocol
K	Electrical connection Cable, confection stranded wires (length L1 +240mm)
H	Cable, confection Hydrolog HLF4 (length L1 -360mm)
O	Cable, without confection (incl. confection kit)
A	Material extension cable Cable sheath PE
B	Cable sheath PUR
	Length L1 (≤ 300.000mm)

Hydrocont® HP4

S C S O O O R