

## CPA-P-307i-RS



- hydrostatic level transmitter
- submersible probe, diameter 27 mm
- nominal range: from 0...4 mH<sub>2</sub>O up to 0...200 mH<sub>2</sub>O
- output signals: digital RS-485 / Modbus RTU or HART
- stainless steel probe and sensor
- accuracy 0.1 % span
- small thermal effect, excellent accuracy and long term stability
- optional: different kinds of cables and seals

The precision stainless steel probe **CPA-P-307i-RS** is designed for continuous fill level and level measurement of water and liquid mediums. Housing material is 1.4044; the sensor diaphragm is made of 1.4435. Standard sealing material is FKM; other materials are available on request. The CPA-P-307i-RS features high accuracy of 0.1 % span and a very small thermal error. Basic element is a high quality stainless steel sensor with a digital electronics with microprocessor and 16-bit analog/digital converter. Thus it's possible to compensate the sensor specific errors as non-linearity and thermal errors actively resulting in a level transmitter with excellent measuring properties at an unusual competitive price.

### PREFERRED AREAS OF USE ARE



#### Water / filtrated sewage

environmental engineering: water supply, sewage treatment  
 depth or level measurement in wells  
 ground water level measurement  
 level measurement in open tanks

### TECHNICAL DATA

Input pressure range		0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Nominal pressure gauge	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Level	[mH <sub>2</sub> O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Permissible overpressure	[bar]	0.2	0.2	0.5	0.5	1	1	3	3	6	6	20	20	20	60	60
Output signal / Supply																
Output signal RS 485	HART® Modbus RTU															
Supply	standard: V <sub>S</sub> = 10 ... 36 V <sub>DC</sub> options: V <sub>S</sub> = 3,3 ... 5 V <sub>DC</sub> (stabilized) V <sub>S</sub> = 8 ... 15 V <sub>DC</sub>															
Performance																
Accuracy	IEC 60770 <sup>1</sup> : ≤ ± 0.1 % span															
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kΩ															
Long term stability	≤ ± 0.1 % span / year															
Response time	200 msec															
Adjustability	following parameters can be adjusted (interface / software needed <sup>2</sup> ) electronic damping: 0 ... 100 sec (only for HART version) pressure and temperature unit															
<sup>1</sup> accuracy according to EN IEC 62828-2— limit point adjustment (non-linearity, hysteresis, repeatability; temperature range -10 ... 50 °C including thermal effects)																
<sup>2</sup> software, interface and cable must separate be ordered (software is compatible with Windows® 95, 98, 2000, NT from version 4.0 or higher and XP)																
Thermal effects (Offset and Span)																
Tolerance band	[% span]	≤ ± 0.2 in compensated range -20 ... 80 °C														
TC	[% span / 10 K]	± 0.02 in compensated range -20 ... 80 °C														
Permissible temperatures	Medium/ electronics/ environment/ storage: -20 ... 80 °C *															
*If the cable is intended for use in a smaller temperature range, the use of the probe is limited by this range.																
Electrical protection <sup>3</sup>																
Insulation resistance	> 100 MΩ															
Short-circuit protection	permanent															
Reverse polarity protection	no damage, but also no function															
Electromagnetic compatibility	emission and immunity according to EN 61326															
<sup>3</sup> additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request																



# Level transmitters

Electrical connection		
Cable with sheath material <sup>5</sup>	PVC (-5 ... 70 °C) grey (-25 ... 70 °C in fixed condition)	Ø 7,4 mm
	PUR (-25 ... 80 °C) black (with drinking water certificate)	Ø 7,4 mm
	FEP <sup>6</sup> (-25 ... 75 °C) black	Ø 7,4 mm
	others on request	
<sup>5</sup> cable with integrated air tube for atmospheric pressure reference		
<sup>6</sup> do not use freely suspended probes with an FEP cable if effects due to highly charging processes are expected		
Materials (media wetted)		
Housing	stainless steel 1.4404 (316L)	
Diaphragm	stainless steel 1,4435 (316L)	
Seals	FKM, others on request	
Protection cap	POM	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m	
Miscellaneous		
Current consumption	1,8 mA	
Weight	approx. 200 g (without cable)	
Ingress protection	IP 68	
CE-conformity	EMC Directive: 2004/108/EC	
Measurement mode (only HART®)	continuous on request	
Baud rate	HART® 1200 Bd 2400 Bd	
	ModbusRTU 4800 Bd 19200 Bd 9600 Bd 38400 Bd	

Map of Input registers (read only, function #4 – Read input registers)					
Address	Register	Description	Data type	Example	
0x0000	SerialNr	Serial Number	UInt32	0x0012	123456
0x0001				0xd687	
0x0002	CalDate	Date of last calibration	Date	0x07de	2014
0x0003				0x051b	27.5.
0x0004	PressUpperRange	Upper range of pressure channel	Float, IEEE754	0x4120	10,0
0x0005				0x0000	
0x0006	PressLowerRange	Lower range of pressure channel	Float, IEEE754	0x0000	0,0
0x0007				0x0000	
0x0008	Pressure	Actual pressure	Float, IEEE754	0x3f9e	1,2345
0x0009				0x0419	
0x000A	MaxPress	Maximal Pressure	Float, IEEE754	0x3f00	1,5
0x000B				0x0000	
0x000C	MinPress	Minimal Pressure	Float, IEEE754	0x3f00	0,5
0x000D				0x0000	
0x000E	TempUpperRange	Upper range of temperature channel	Float, IEEE754	0x42a0	80,0
0x000F				0x0000	
0x0010	TempLowerRange	Lower range of temperature channel	Float, IEEE754	0xc1a0	-20,0
0x0011				0x0000	
0x0012	Temperature	Actual temperature	Float, IEEE754	0x41a0	20,0
0x0013				0x0000	
0x0014	MaxTemp	Maximal temperature	Float, IEEE754	0x4270	60,0
0x0015				0x0000	
0x0016	MinTemp	Minimal temperature	Float, IEEE754	0x4170	15,0
0x0017				0x0000	

Map of Holding registers (read and write, function #3 - Read Holding Registers , fce #6 - Write Single Register)					
Address	Register	Description	Data type	Example	
0x0000	PressUnitsCode	Unit of pressure channel	UInt16	0x0006	bar
0x0001	TempUnitsCode	Unit of temperature channel	UInt16	0x0000	°C
0x0002	DeviceAddress	Device address (1..247)	UInt16	0x0001	1
0x0003	Baudrate	Baud rate	UInt16	0x0005	9600
0x0004	Parity	Parity	UInt16	0x0000	PA_none



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Pressure unit enumeration													
Code (Unit16)	0x0003	0x0004	0x0005	0x0006	0x0007	0x0008	0x0009	0x000A	0x000B	0x000C	0x000D	0x000E	0x000F
Unit	mmH2O	mmHG	psi	bar	mbar	g/cm <sup>2</sup>	kg/cm <sup>2</sup>	Pa	kPa	torr	atm	mH2O	MPa

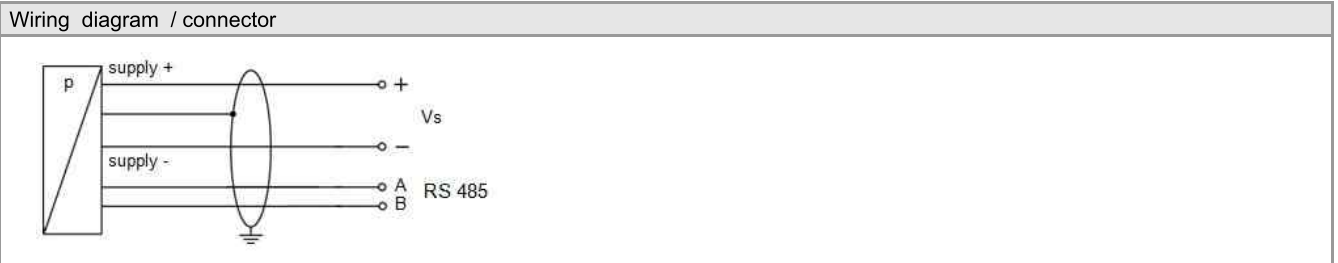
Temperature unit enumeration				
Code (Unit16)	0x0000		0x0001	0x0002
Unit	°C		°K	°F

Baud rate enumeration				
Code (Unit16)	0x0004	0x0005	0x0006	0x0007
Baud rate [Bd]	4800	9600	19200	38400

Parity enumeration			
Code (Unit16)	0x0000	0x0001	0x0002
Parity	None	Odd	Even

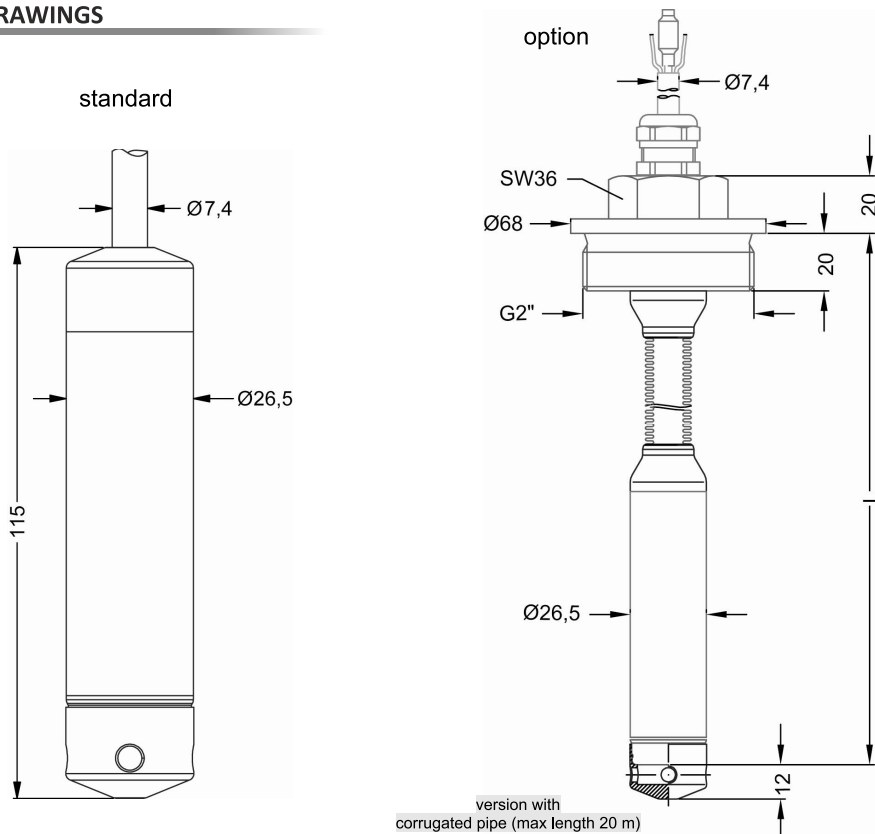
<sup>7</sup>It is necessary to make device reset (Power supply off and on) after changing Address, Baud rate or Parity (command #6).  
If reset is not performed, device uses old communication parameters.

## ELECTRICAL CONNECTION



Pin configuration		
Electrical connection		cable colours (DIN 47100)
Supply +		wh (white)
Supply -		bn (brown)
Shield		gn/ye (green / yellow)
Communication protocol	A	ye (yellow)
	B	pk (pink)

## DIMENSION DRAWINGS





## Level transmitters

Additional information for "1D" RS 485 / HART	
Measurement mode	
Continuous	A
Discontinuous	B
Baud Rate	
1200 Bd (standard)	1200
2400 Bd	2400
Temperature compensation	
0 ... 70°C (standard)	1
-20 ... 80°C	2
Additional information for "2D" RS 485 / ModBus RTU	
Parity	
Even	S
Odd	L
No Parity	O
Baud Rate	
4800 Bd	4800
9600 Bd	9600
19200 Bd	19200
38400 Bd	38400
Temperature compensation	
0 ... 70°C (standard)	1
-20 ... 80°C	2
Accessories for submersible transmitter	
Terminal clamp - zinc plated	1003440
Terminal clamp - Stainless Steel 1.4301	1000278
Mounting screw PG16 - plastic	5002200

Manufacturer reserves the right to change sensor specifications without further notice.

