BD SENSORS®
pressure measurement

LMP 308i

Detachable Stainless Steel Probe Precision

Stainless Steel Sensor

accuracy according to EN IEC 62828-2:
0.1 % span

Nominal pressure

from 0 ... 4 mH_2O up to 0 ... 200 mH_2O

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V, others on request

Special characteristics

- diameter 35 mm
- cable and sensor section sdetachable
- excellent accuracy
- communication connection
- thermal error in compensated range
  -20 ... 70 °C: 0.2 % span
  TC 0.02 % span / 10K
- Turn-Down 10:1

Optional versions

- IS-version Ex ia= intrinsically safe for water and dust
- mounting accessories as cable gland and terminal clamp in stainless steel
- different kinds of cables
- different kinds of seal materials

The detachable precision stainless steel probe LMP 308i is designed for continuous level measurement in water and low-viscosity fluids. The signal processing of sensor signal is done by digital electronics with 16-bit analog digital converter. Consequently it is possible to conduct an active compensation of sensor intrinsic deviations from normal condions like nonlinearity and thermal error.

In order to facilitate stock-keeping and maintenance the transmitter body is plugged to the cable assembly with a connector and can be changed easily.

Preferred areas of use are

Water / filtrated Sewage
ground water level measurement
level measurement in wells and open waters / rain spillway basin
level measurement in container
water treatment plants
water recycling

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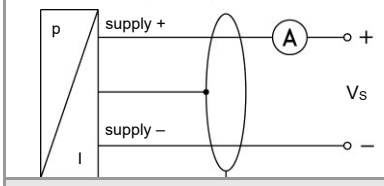
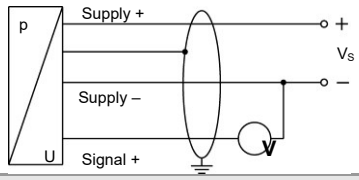
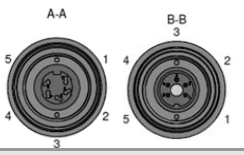
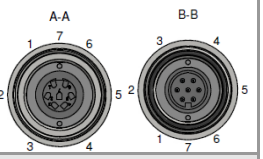
Input pressure range [1]						
Nominal pressure gauge [bar]	0.40	1	2	4	10	20
Level [mH_2O]	4	10	20	40	100	200
Overpressure [bar]	2	5	10	20	40	80
Burst pressure [bar]	3	7.5	15	25	50	120
max. ambient pressure (housing)	40 bar					
[1] On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.						
Output signal / Supply						
Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC} with RS-232 communication interface					
Option Exi, MINES – M1	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}					
Options	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC} with communication interface					
	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}					
	0 ... 10 V / V_S = 14 ... 36 V_{DC} with communication interface					
Performance						
Accuracy[2] Performance after turn-down (TD) - TD ≤ 5:1 - TD > 5:1	≤ ± 0.1 % span no change of accuracy [3] formula for accuracy calculating (for nominal pressure gauge ≤ 0.40 bar see note 3): ≤ ± [0.1 + 0.015 x turn-down] % span with turn-down = nominal pressure range / adjusted range e.g. follwing accuracy can be calculated for turn-down 10:1: ≤ ± (0.1 + 0.015 x 10) % span viz. the accuracy is ≤ ± 0.25 % span					
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ / voltage 3-wire: R_{min} = 10 kΩ					
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kΩ					
Long term stability	≤ ± (0.1 x turn-down) % span / year / Response time: ca. 200 msec					
Adjustability	following parameters can be adjusted (interface / software needed [4]) electronic damping: 0 ... 100 sec offset: 0 ... 90 % span turn-down of span: max. 10:1					
[2] accuracy according to EN IEC 62828-2– limit point adjustment (non-linearity, hysteresis, repeatability) *[3] nominal pressure gauges ≤ 0,40 bar are excluded; for these the calculation of accuracy is as follows:* *≤ ± (0.1 + 0.02 x turn-down) % span e.g. torn-down 3:1: ≤ ± (0.1 + 0.02 x 3) % span viz. the accuracy is ≤ ± 0.16 % span* *[4] 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 x turn-down) in compensated range -20 ... 70 °C					
TC [% span / 10 K]	± (0.2 x turn-down) in compensated range -20 ... 70 °C					
Permissible temperatures	Standard product: Medium/ electronics/ environment/ storage: -25 … 80 °C * Exi: in zone 0: -20 ... 60 °C with p_{atm} 0,8 bar up to 1,1 bar in zone 1 or higher: -20 ... 65 °C Ex (MINES - M1): Medium: -20…70 °C / transmitter: -20…65 °C / storage: -25…70 °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 [5]						
Short-circuit protection	permanent					
Reverse polarity protection	no damage, but also no function					
Lightning protection	2-wire: integrated 3-wire: without					
Electromagnetic compatibility	emission and immunity according to EN 61326					
[5] additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request						
Electrical connection						
Cable with sheath material [6]	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 [7] (-25 … 75 °C) black Ø 7,4 mm					
Bending radius	static installation: 10-fold cable diameter, dynamic application: 20-fold cable diameter					
[6] shielded cable with integrated air tube for atmospheric pressure reference *[7] 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)					
Seals	FKM, EPDM, others on request					
Diaphragm	stainless steel 1.4435 (316L)					
Cable sheath / Protection cap	PVC, PUR, FEP, others on request / POM-C					
Explosion protection (only for 4 ... 20 mA / 2-wire)						
Approvals DX9-LMP 308	**IBExU10ATEX1122 X** zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 135°C Da					
Approvals IBExU13ATEX1043X	I M1 Ex ia I Ma (MINES - M1)					
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ nF, $L_i \approx 0$ µH, the supply connections have an inner capacity of max. 27 nF to the housing					
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	signal output current: max. 25 mA					

Weight	approx. 250 g (without cable)
Ingress protection	IP 68
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagram / connector

<table>
<tr>
<td>2-wire-system (current)
 
</td>
<td>3-wire-system (voltage)
 
</td>
<td>Binder series 723 [8]
(5-pin)
 
</td>
<td>Binder series 723 [8]
(7-pin)
 
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</table>

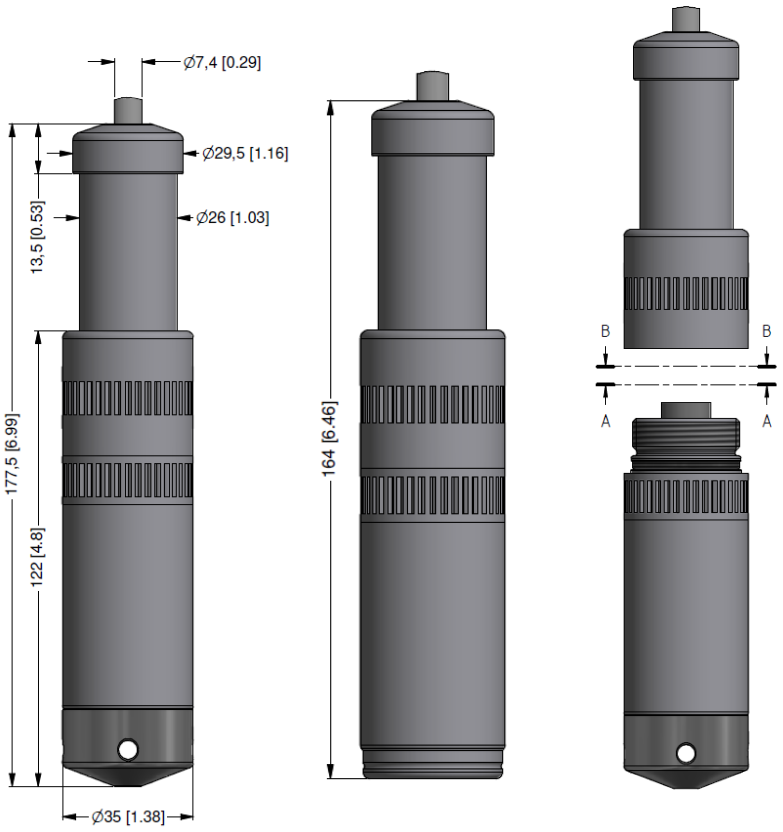
Pin configuration

Electrical connection	Binder series 723 [8] (5-pin) / 2-wire	Binder series 723 [8] (5-pin) / 3-wire	Binder series 723 [8] (7-pin) / 2-wire with communication interface	cable colours (DIN 47100)
Supply +	3	3	3 / wh (white)	wh (white)
Supply –	1	4	1 / bn (brown)	bn (brown)
Signal + (for 3-wire)	-	1	(6 / gn (green))	gn (green)
RxD	-	-	4 / ye (yellow)	-
TxD	-	-	5 / gr (gray)	-
GND	-	-	7 / gn (green)	-
Shield	5	5	2 / gn/ye (green / yellow)	gn/ye (green / yellow)

[8] in detached version

Dimensions (mm / in)

standard



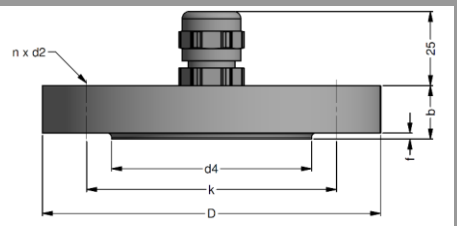
protection cap removable

detached probe head

Mounting flange with cable gland

Technical data

Suitable for	all probes
Flange material	stainless steel 1.4404 (316L)
Material of cable gland	standard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic
Seal insert	material: TPE (ingress protection IP 68)
Hole pattern	according to DIN 2507



Version	Size (in mm)	Weight
DN25 / PN40	D = 115, k = 85, b = 18, n = 4, d= 14	1.4 kg
DN50 / PN40	D = 165, k = 125, b = 20, n = 4, d= 18	3.2 kg
DN80 / PN16	D = 200, k = 160, b = 20, n = 8, d= 18	4.8 kg

Ordering type	Ordering code
DN25 / PN40 with cable gland brass, nickel plated	5000275
DN50 / PN40 with cable gland brass, nickel plated	5000278
DN80 / PN16 with cable gland brass, nickel plated	5000279

Terminal clamp

Technical data

Suitable for	all probes with cable ∅ 5.5 ... 10.5 mm
Material	standard: steel, zinc plated optionally: stainless steel 1.4301 (304)
Weight	approx. 160 g

Ordering type	Ordering code
Terminal clamp, steel, zinc plated	1003440
Terminal clamp, stainless steel 1.4301 (304)	1000278

Display program

CIT 200
Process display with LED display

CIT 250
Process display with LED display and contacts

CIT 300
Process display with LED display, contacts and analogue output

CIT 350
Process display with LED display, bargraph, contacts and analogue output

CIT 400
Process display with LED display, contacts, analogue output and Ex-approval

CIT 600
Multichannel process display with graphics-capable LC display

CIT 650
Multichannel process display with graphics-capable LC display and datalogger

CIT 700
Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts

PA 440
Field display with 4-digit LC display

For further information please contact our sales department or visit our homepage: http://www.bdsensors.com

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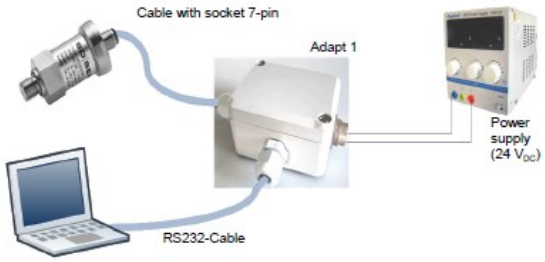
Programming kits for i-devices: CIS 510-RS232 and CIS 510-USB			
CIS 510-RS232		CIS 510-USB	
Supply V_S	**for CIS 510-RS232**: $24V_{DC}$ **for CIS 510-USB:** $24V_{DC}$		
Package contents	Programming software "Config 3.0" on CD operating manual **CIS 510-RS232:** Adapt 1 RS-232 connecting cable (for PC) 7-pin connecting cable (for measuring device) **CIS 510-USB**: Adapt 5 USB connecting cable (for PC) 7-pin connecting cable (for measuring device)		
System requirement	For the installation of the software, a Windows® PC (95, 98, ME, 2000, NT, XP) with serial interface (RS 232) or USB-interface is required		

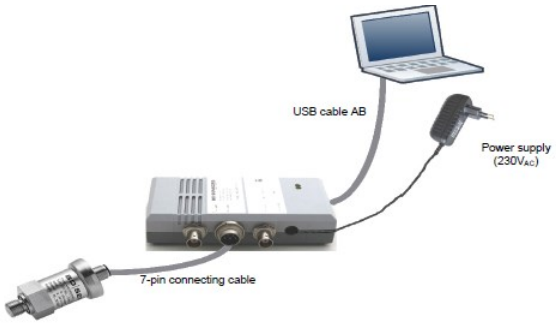
Please read the operating manual carefully before installing and starting up the programming kit.

Wiring diagrams

CIS 510-RS232:



CIS 510-USB interface:



Ordering codes

Version:	**Ordering code:**
Adapt 1 with RS232 connecting cable for PC	**CIS 510-RS232**
Adapt 5 with USB connecting cable for PC	**CIS 510-USB**

Windows® is a registered trade mark of Microsoft Corporation

Ordering code LMP 308i

23.08.2024

LMP 308i □□□ - □□□□ - □ - □ - □ - □ - □ - □ - □□□ - □□□

Pressure			
in bar			440
in m H_2O			441
Input	**[mH_2O]**	**[bar]**	
	0 … 4	0 … 0,4	4000
	0 … 10	0 … 1	1001
	0 … 20	0 … 2	2001
	0 … 40	0 … 4	4001
	0 … 100	0 … 10	1002
	0 … 200	0 … 20	2002
Customer			9999
Housing material			
Stainless steel 1.4404 (316 L)			1
Diaphragm material			
Stainless steel 1.4435 (316 L)			1
Output signal			
4 … 20 mA / 2-wire			1
0 … 10 V / 3-wire [4]			3
Intrinsic safety Ex ia 4 … 20 mA / 2-wire			E
Intrinsic safety M1 Ex ia 4 … 20 mA / 2-wire only with FEP cable (for mines)			F
Customer			9
Seals			
Viton (FKM)			1
EPDM			3
Customer			9
Electrical connection			
Without cable part			0
PVC - cable (grey, Ø 7,4 mm, price for 1 m)[1]			1
PUR - cable (black, Ø 7,4 mm, price for 1 m)[1]			2
FEP - cable with PTFE sheath (black, Ø 7,4 mm, price for 1 m)[1]			3
TPE-U - cable, up to 125 °C (blue, Ø 7.4 mm, price for 1 m)			4
Customer			9
Accuracy			
0,1 % - standard range[2]			1
0,1 % - standard range including Calibration Certificate			P
0,1 % - customer range			I
0,1 % - customer range including Calibration Certificate			H
0,2 % (P_N < 0,1 bar)			B
Customer			9
Cable length			
in m			999
Special versions			
Standard			111
Interface RS 232 (communication port inside the probe)[3]			121
Interface RS 232 (communication via cable, max. length 20 m)			630
Reduced power supply 9 … 36 V DC			028
Version with temperature sensor PT100			617
Customer			999

Accessories for submersible transmitter	
Cabel part + price for cabel in m	5000722
Terminal clamp - zinc plated	1003440
Terminal clamp - stainless steel 1.4301	1000278
Mounting screw PG16 - plastic	5002200
Accessories	
Adapt 1 with RS232 connecting cable for PC (CIS 510-RS232)	
Adapt 5 with USB connecting cable for PC (CIS 510-USB)	

0,- … without additional charge On request … in accordance with the producer

Surcharges for calibration are not subject to any discounts. Subject to change.

This document contains the specification for ordering the product; detailed technical parameters of the product and its possible variants are given in the data sheet

BD SENSORS reserves the right to change sensor specifications without further notice.

1 cable with integrated ventilation tube for atmospheric pressure reference

2 available on request: calibration of individual pressure range higher than 400 mbar with accuracy 0.1 %

3 software, interface and cable have to be order separately (ordering code: CIS-G; software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or newer and

4 maximum length of PVC cable – 25 m, PUR, FEP, TPE – 40 m