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TEMATEC
Temperature · Technology

LMP 308

Separable Stainless Steel Submersible Transmitter with Stainless Steel Sensor

- diameter: 35 mm
- transmitter head and cable assembly plugged
- nominal pressure ranges from 0 ... 1 mH_2O up to 0 ... 250 mH_2O (0 ... 100 mbar up to 0 ... 25 bar)

The submersible transmitter LMP 308 is suited for continuous level measurement for water and thin fluid media which are compatible with stainless steel and sealing materials.

A piezoresistive stainless steel sensor, which features a small thermal effect and a good long term stability is the basis of the LMP 308. It is possible to guarantee an accuracy up to 0.05 % FSO BFSL. In order to facilitate stock-keeping and maintenance the transmitter head is plugged to the cable assembly with a connector and can be changed easily.

In addition to the several cable materials (PVC, PUR and FEP) the customer has the possibility to consider different versions of cable protection. The submersible probe is suited for explosive area (zone 0).

Preferred areas of use are:

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

Characteristics

- small thermal effect
- excellent linearity
- good long term stability
- accuracy: 0.175 / 0.125 / 0.05 % FSO BFSL (0.35 / 0.25 / 0.1 % FSO IEC 60770)
- **option Ex version zone 0: II 1 G EEx ia IIC T4 (TÜV 03 ATEX 2006 X)**
- option cable protection with corrugated pipe
- customer specific versions: - special pressure ranges

LMP 308
Stainless Steel Level Transmitter

07. 2008

Input pressure range

Nominal pressure gauge [bar]	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25
Level [mH_2O]	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250
Permissible overpressure [bar]	1	1	1	1	3	3	6	6	20	20	60	60	60

Output signal / Supply

Standard	2-wire: 4 ... 20 mA / V_S = 12 ... 36 V_{DC}	Ex-protection:	V_S = 14 ... 28 V_{DC}

Performance

		IEC 60770 [1]	BFSL
Accuracy	standard: nominal pressure > 0.4 bar:	≤ ± 0.35 % FSO	≤ ± 0.175 % FSO
	nominal pressure ≤ 0.4 bar:	≤ ± 0.50 % FSO	≤ ± 0.250 % FSO
	option 1: nominal pressure > 0.4 bar:	≤ ± 0.25 % FSO	≤ ± 0.125 % FSO
	option 2: nominal pressure ≥ 0.16 bar	≤ ± 0.10 % FSO	≤ ± 0.050 % FSO
Permissible load	$R_{max} = [(V_S - V_{S\,min}) / 0.02]\ \Omega$		
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ		
Long term stability	≤ ± 0.1 % FSO / year		
Response time [2]	< 10 msec		

Thermal errors (Offset and Span)

Nominal pressure P_N [bar]	≤ 0.1	≤ 0.25	≤ 0.4	≤ 1	> 1
Tolerance band [% FSO]	≤ ± 2	≤ ± 1.5	≤ ± 1	≤ ± 1	≤ ± 0.75
TC, average [% FSO / 10 K]	± 0.3	± 0.2	± 0.14	± 0.1	± 0.07
in compensated range [°C]	0 ... 50			0 ... 70	

Electrical protection [3]

Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Option Ex protection only with 4 ... 20 mA / 2-wire DX13 - LMP 308	zone 0 [4]: II 1 G EEx ia IIC T4 safety technical maximum values: V_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \leq$ 1nF, $L_i \leq$ 10 µH

Permissible temperatures

Medium	-20 ... 70 °C	Ex-protection:	application in zone 0: -20 ... 60 °C application in zone 1 or higher: -20 ... 70 °C
Storage	-25 ... 70 °C		

[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

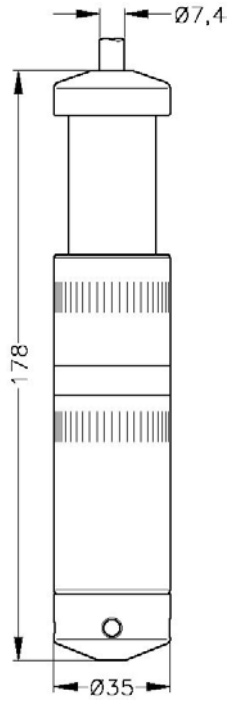
[2] with optional accuracy 0.1 % FSO the response time is 200 msec

[3] additional external overvoltage protection unit in terminal box KI1 and KL2 with atmospheric pressure reference available on request

[4] approved for atmospheric pressure from 0.8 bar up to 1.1 bar

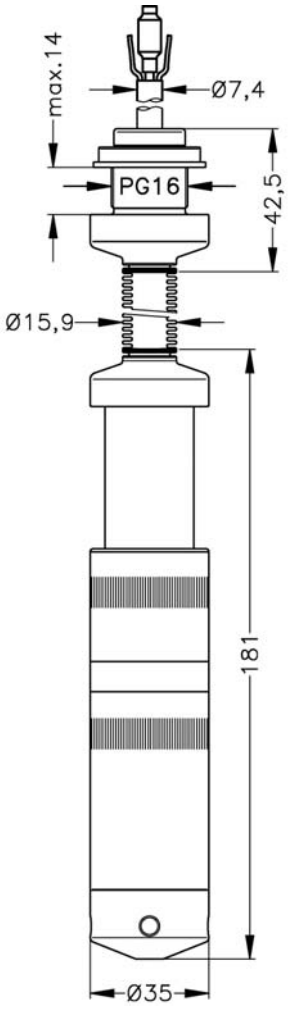
Dimensions (in mm)

Standard



separability of transmitter head and cable assembly

Option



version with corrugated pipe

➪ Total length of devices with accuracy 0.1 % FSO IEC 60770 increases by 16 mm! (standard and Ex-protection)

Electrical connection

Cable with sheath material [5]	PVC grey PUR black FEP black others on request

Materials

Housing	stainless steel 1.4571 (316Ti)
Seals	FKM, EPDM; others on request
Diaphragm	stainless steel 1.4435 (316L)
Cable sheath	PVC / PUR / FEP / others on request

Miscellaneous

Optionally SIL 2 application	according to IEC 61508 / IEC 61511
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: 1 µH/m
Current consumption	signal output current: max. 25 mA
Weight	approx. 250 g (without cable)
Ingress protection	IP 68

Mounting accessories (not part of delivery)

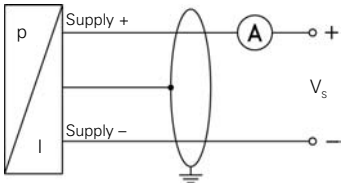
Screw fitting made of stainless steel 1.4571 (316Ti)
Terminal clamp made of stainless steel 1.4301 (304) or steel, zinc plated

Pin configuration

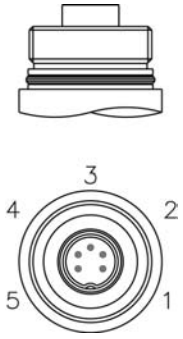
Electrical connection		Binder Series 723 [6] (5-pin)	cable colours (DIN 47100)
2-wire-system	Supply +	3	white
	Supply –	1	brown
	Ground	5	yellow / green (shield)

Wiring diagram

2-wire-system (current)



connector [6]



[5] cable with integrated air tube for atmospheric pressure reference

[6] in separated version

Ordering code LMP 308

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

Pressure		Code	
in bar		440	
in mH_2O		441	

Input [mH_2O]	[bar]	Code	
1,0	0,10	1000	
1,6	0,16	1600	
2,5	0,25	2500	
4,0	0,40	4000	
6,0	0,60	6000	
10	1,0	1001	
16	1,6	1601	
25	2,5	2501	
40	4,0	4001	
60	6,0	6001	
100	10	1002	
160	16	1602	
250	25	2502	
customer		9999	on request

Housing	Code	
Stainless steel 1.4571 (316Ti)	1	
customer	9	on request

Diaphragm	Code	
Stainless steel 1.4435 (316L)	1	
customer	9	on request

Output	Code	
4 ... 20 mA / 2-wire	1	
Intrinsic safety 4 ... 20 mA / 2-wire	E	
SIL2 4 ... 20 mA / 2-wire	1S	
SIL2 with Intrinsic safety 4 ... 20 mA / 2-wire	ES	
customer	9	on request

Seals	Code	
FKM	1	
EPDM	3	
customer	9	on request

Electrical connection	Code	
PVC-cable [1]	1	
PUR-cable [1]	2	
FEP-cable [1]	3	
customer	9	on request

Accuracy		Code	
standard for $P_N > 0,4$ bar	0,35 %	3	
standard for $P_N \leq 0,4$ bar	0,5 %	5	
option 1 for $P_N > 0,4$ bar	0,25 %	2	
option 2 for $P_N \geq 0,16$ bar	0,1 %	1	
customer		9	on request

Cable length	Code	
in m	999	

Version	Code	Pipe length	
standard	000		
prepared for mounting [2] with stainless steel pipe	106		
cable protection with stainless steel corrugated pipe with pipe length in m	103	999	on request
customer	999		on request

[1] cable with integrated air tube for atmospheric pressure reference
[2] stainless steel pipe is not part of the supply

This ordering code contains product specification; properties are not guaranteed. Subject to change without notice.