



LMK 358 LMK 358 H

Stainless Steel Submersible Transmitter

- ▶ capacitive ceramic sensor
- ▶ diameter: 39,5 mm
- ▶ transmitter head and cable assembly plugged
- ▶ H-version: HART® communication
- ▶ nominal pressure ranges from 0 ... 40 mbar up to 0 ... 10 bar (0 ... 40 cmWC up to 0 ... 100 mWC)

The submersible level transmitter LMK 358 has been designed for continuous level measurement. Basic element is a capacitive ceramic sensor.

Use in more viscous media such as slurries is possible – removing the protective cap makes the transmitter flush.

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, without expensive electrical and mechanical installation work.

On type LMK 358 H thermal errors and non-linearity of the sensor are actively compensated by the microprocessor electronics. Then a D/A converter creates the standard output signal 4 ... 20 mA which is overlaid with a signal according to HART® protocol. Thus measurement specific parameters (offset, span, and damping) can be adjusted individually.

Preferred areas of use are:

- ▶ level monitoring in open tanks with low filling heights
- ▶ depth or level measurement in wells and open waters
- ▶ ground water level measurement
- ▶ sewage and water treatment plants
- ▶ chemical and pharmaceutical industries

- ▶ good long term stability
- ▶ **accuracy LMK 358:**
0.175% / 0.125% FSO BFSL
(0.35% / 0.25% FSO IEC 60770)
- ▶ **accuracy LMK 358 H:**
0.05% FSO BFSL
(0.1% FSO IEC 60770)
- ▶ LMK 358 H:
HART® communication
(adjustment of offset, span, and damping)
- ▶ **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
 - other versions on request

Characteristics

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Technical Data

Input pressure range														
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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	
Level [mWC]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	
Permissible overpressure [bar]	1	1	2	2	4	4	4	7	7	15	25	25	40	
LMK 358 H														
Nominal pressure gauge [bar]	0.06		0.16		0.4		1		2		5		10	
Level [mWC]	0.6		1.6		4		10		20		50		100	
Setting gauge [bar]	0.02 ... 0.06		0.06 ... 0.16		0.15 ... 0.4		0.35 ... 1		0.7 ... 2		1.7 ... 5		3.4 ... 10	
Permissible overpressure [bar]	2		4		6		8		15		25		35	
on customer request we adjust the devices on the popular pressure ranges : 0.1 / 0.25 / 0.6 / 1.6 / 2.5 / 4 / 6 bar; special pressure ranges, e.g. 0.2...1.8 bar with additional charge possible														

Output signal / Supply	
LMK 358	
Standard	2-wire: 4 ... 20 mA / $V_s = 9 \dots 36 V_{DC}$ Ex-protection: $V_s = 12 \dots 28 V_{DC}$
LMK 358 H	
Standard	2-wire: 4 ... 20 mA / $V_s = 12 \dots 36 V_{DC}$ (with modulated HART® signal) digital interface for adjusting following parameters (interface / software necessary): Offset: 0 ... 80 % FSO Span: 1:3 Damping: 0 ... 99.9 s

Performance	
LMK 358	
Accuracy ¹	standard: $\leq \pm 0.35 \% \text{ FSO}$ (BFSL: $\leq \pm 0.175 \% \text{ FSO}$) option: $\leq \pm 0.25 \% \text{ FSO}$ (BFSL: $\leq \pm 0.125 \% \text{ FSO}$)
Permissible load	$R_{max} = [(V_s - V_{smin}) / 0.02] \Omega$
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω
Long term stability	$\leq \pm 0.1 \% \text{ FSO} / \text{year}$
LMK 358 H	
Accuracy ¹	$\leq \pm 0.1 \% \text{ FSO}$ relating to nominal range (BFSL: $\leq \pm 0.05 \% \text{ FSO}$ relating to nominal range)
Permissible load	min. 250 Ω
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω
Long term stability	$\leq \pm (0.1 \times \text{nominal range} / \text{adjusted range}) \% \text{ FSO} / \text{year}$
Damping	response time: 300 ms additional electronic damping is adjustable up to 99.9 s

Thermal effects	
LMK 358	
Thermal error for offset and span in compensated range	$\leq \pm 0.1 \% \text{ FSO} / 10 \text{ K}$ 0 ... 70 °C
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Tolerance band	$\leq \pm (0.2 \times \text{nominal range} / \text{adjusted range}) \% \text{ FSO}$
TC, average in compensated range	$\pm (0.02 \times \text{nominal range} / \text{adjusted range}) \% \text{ FSO} / 10 \text{ K}$ 0 ... 70 °C

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

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Technical Data

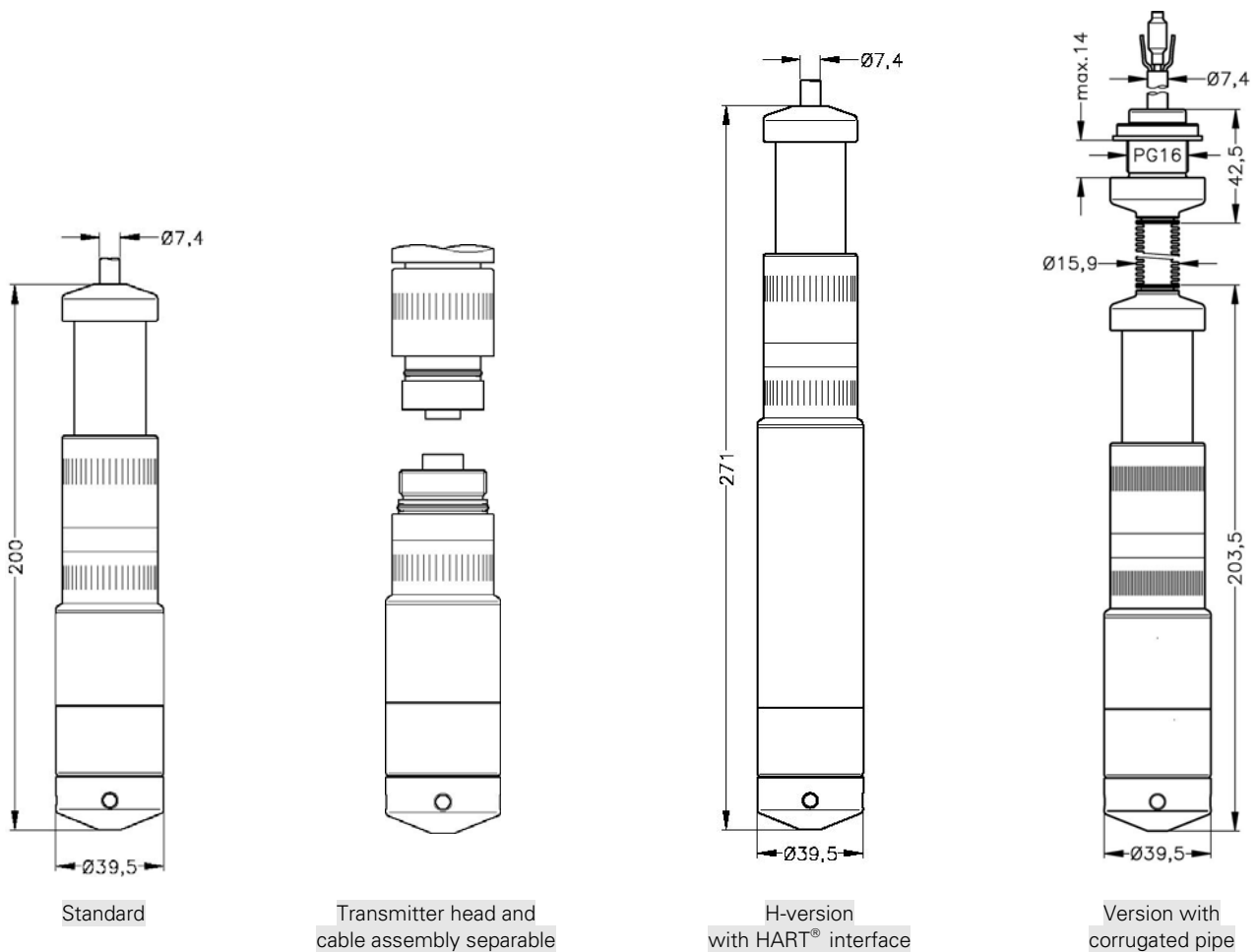
Electrical protection ²

Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Option Ex-protection DX13-LMK 358 DX13-LMK 358 H	II 1 G EEx ia IIC T4 safety technical maximum values: $V_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$

Permissible temperatures

Medium	-10 ... 70 °C
Storage	-25 ... 70 °C

Dimensions



² additional external overvoltage protection unit in terminal box KL1 or KL2 with atmospheric pressure reference available on request (please ask for data sheet)

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Electrical connection

Cable with sheath material ³	PVC grey PUR black FEP black
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Materials

Housing	stainless steel 1.4571 (316Ti)
Seals	FKM, others on request
Diaphragm	Standard: ceramics Al ₂ O ₃ 96 % Option: ceramics Al ₂ O ₃ 99.9 % (possible for pressure ranges from 0.1 bar up to 1 bar)
Cable sheath	PVC / PUR / FEP

Miscellaneous

Current consumption	max. 21 mA
Ingress protection	IP 68
Weight	approx. 650 g (without cable)

Mounting accessories (not part of delivery)

Screw fitting made of stainless steel 1.4571 (316Ti)

Mounting flange for transmitter fixing made of stainless steel 1.4571 (316Ti):

DN25 / PN40 (Ø115, 18 thick, 4 drill holes Ø14 at Ø85)

DN50 / PN16 (Ø165, 18 thick, 4 drill holes Ø18 at Ø125)

DN80 / PN16 (Ø200, 20 thick, 8 drill holes Ø18 at Ø160)

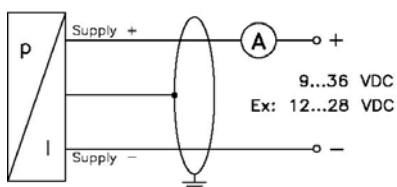
Terminal clamp made of stainless steel 1.4301 (304) or steel, zinc plated

Pin configuration

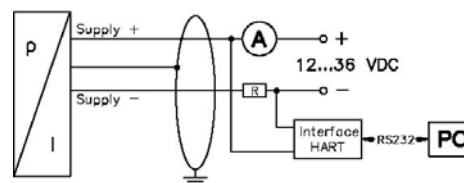
Electrical connection	cable colours (DIN 47100)	
2-wire-system	Supply +	white
	Supply -	brown
	Ground	yellow / black

Wiring diagrams

2-wire-system (current)



2-wire-system (current) HART



³ cable with integrated air tube for atmospheric pressure reference

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Ordering code LMK 358H

LMK 358H

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Pressure													
	in bar												
	in mWC												
		4	4	5									
		4	4	6									
Input													
	[mWC]	[bar]											
	0,60	0,06			0	6	0	0					
	1,60	0,16			1	6	0	0					
	4,00	0,40			4	0	0	0					
	10	1,0			1	0	0	1					
	20	2,0			2	0	0	1					
	50	5,0			5	0	0	1					
	100	10			1	0	0	2					
	customer				X	X	X	X					
Pressure port													
	Stainless steel 1.4571 (316Ti)									1			
	customer									X			
Diaphragm													
	Ceramics Al ₂ O ₃ 96%									2			
	Ceramics Al ₂ O ₃ 99,9% ¹									C			
	customer									X			
Output													
	HART®-communication 4 ... 20 mA / 2-wire									H			
	HART®-communication Intrinsic safety for zone 1 / 4 ... 20 mA / 2-wire									I			
	customer									X			
Seals													
	FKM									1			
	EPDM									3			
	customer									X			
Electrical Connection													
	PVC-cable ²									1			
	PUR-cable ²									2			
	FEP-cable ²									3			
	customer									X			
Accuracy													
	0,1 %									1			
	customer									X			
Cable length													
	in m									X	X	X	
Special version													
	standard									0	0	0	
	prepared for mounting ³									1	0	6	
	with stainless steel pipe									1	0	6	
	cable protection with									1	0	3	
	stainless steel corrugated pipe									1	0	3	
	customer									X	X	X	

¹ ceramics Al₂O₃ 99.9% only possible with pressure ranges

² cable with integrated air tube for atmospheric pressure reference

³ stainless steel pipe is not part of the supply

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