

# LMK 358H



## Detachable Stainless Steel Probe with HART<sup>®</sup>-communication

Ceramic Sensor

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

### Nominal pressure

from 0 ... 60 cmH<sub>2</sub>O up to 0 ... 100 mH<sub>2</sub>O

### Output signals

2-wire: 4 ... 20 mA  
others on request

### Special characteristics

- ▶ diameter 39.5 mm
- ▶ cable and sensor section detachable
- ▶ HART<sup>®</sup> communication (setting of off-set, span and damping)
- ▶ permissible temperatures up to 85 °C
- ▶ high long-term stability


### Optional versions


- ▶ IS-version  
Ex ia = intrinsically safe for gas and dust
- ▶ cable protection on request
- ▶ diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub>  
accessories e.g. mounting flange with cable gland and terminal clamp


The detachable stainless steel probe LMK 358H has been designed for level measurement in waste water, waste and higher viscosity media. Basic element is a capacitive ceramic sensor.

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.

### Preferred areas of use are

Water  
 ground water level measurement  
rain spillway basin

Sewage  
 waste water treatment  
water recycling

Fuel / Oil  
 level monitoring in open tanks  
with low filling heights  
fuel storage  
tank farms  
biogas plants



Input pressure range <sup>1</sup>								
Nominal pressure gauge	[bar]	0.06	0.16	0.4	1	2	5	10
Level	[mH <sub>2</sub> O]	0.6	1.6	4	10	20	50	100
Overpressure	[bar]	2	4	6	8	15	25	35
max. ambient pressure (housing)		40 bar						

<sup>1</sup> On customer request we adjust the devices by software on the required pressure ranges, within the turn-down-possibility (starting at 0.02 bar)

Output signal / Supply			
Standard	2-wire: 4 ... 20 mA	/	V <sub>S</sub> = 12 ... 36 V <sub>DC</sub> with HART <sup>®</sup> communication
Option IS-protection	2-wire: 4 ... 20 mA	/	V <sub>S</sub> = 12 ... 28 V <sub>DC</sub> with HART <sup>®</sup> communication

Performance			
Accuracy <sup>2</sup>	P <sub>N</sub> ≥ 160 mbar	TD ≤ 5:1	≤ ± 0.2 % span
		TD > 5:1	≤ ± [0.2 + 0.03 x TD] % span
	P <sub>N</sub> < 160 mbar		≤ ± [0.2 + 0.1 x TD] % span
	P <sub>N</sub> ≥ 0.6 bar	TD ≤ 5:1	≤ ± 0.1 % span
		TD > 5:1	≤ ± [0.1 + 0.02 x TD] % span
Permissible load	R <sub>max</sub> = [(V <sub>S</sub> - V <sub>Smin</sub> ) / 0.02 A] Ω load at HART <sup>®</sup> -communication: R <sub>min</sub> = 250 Ω		
Long term stability	≤ ± (0.1 x turn-down) % span / year at reference conditions		
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kΩ		
Turn-on time	850 msec		
Mean response time	140 msec – without consideration of electronic damping		measuring rate 7/sec
Max. response time	380 msec		
Adjustability	configuration of following parameters possible (interface / software necessary <sup>3</sup> ) - electronic damping 0 ... 100 sec - offset: 0 ... 80 % span - turn-down of span: max. 10:1		

<sup>2</sup> accuracy according to EN IEC 62828-2 – limit point adjustment (non-linearity, hysteresis, repeatability)

<sup>3</sup> software, interface, and cable have to be ordered separately (software appropriate for Windows<sup>®</sup> 95, 98, 2000, NT Version 4.0 or higher, and XP)

Thermal effects (Offset and Span) / - permissible temperatures	
Tolerance band	≤ ± (0.2 x turn-down) % span
TC, average	± (0.02 x turn-down) % span / 10 K
in compensated range	-20 ... 80 °C
Permissible temperatures	Medium/ electronics/ environment/ storage: -20 ... 85 °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>4</sup>	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Lightning protection	integrated
Electromagnetic compatibility	emission and immunity according to EN 61326

<sup>4</sup> additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request

Mechanical stability	
Vibration	4 g (according to: DIN EN 60068-2-6)

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
	TPE-U	(-25 ... 125 °C) blue	Ø 7,4 mm
Bending radius	static installation: 10-fold cable diameter, dynamic application: 20-fold cable diameter		

<sup>5</sup> shielded 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

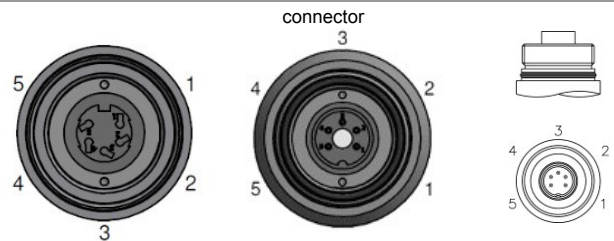
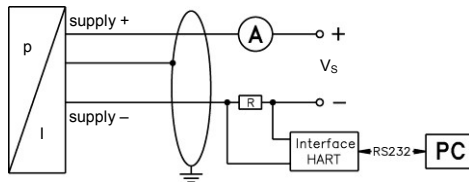
Materials (media wetted)	
Housing	stainless steel 1.4404 (316L)
Seals	FKM EPDM others on request
Diaphragm	standard: ceramics Al <sub>2</sub> O <sub>3</sub> 96 % option: ceramics Al <sub>2</sub> O <sub>3</sub> 99.9 %
Protection cap	POM-C
Cable sheath	PVC, PUR, FEP, TPE-U

Explosion protection	
Approval DX5A-LMK 358H	IBExU10ATEX1185 X Zone 0 <sup>7</sup> : II 1G Ex ia IIB T4 zone 20: II 1D Ex iaD 20 T85°C
Safety technical maximum values	U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> = 13,2 nF, L <sub>i</sub> = 0 μH, C <sub>iGND</sub> = 27 nF the supply connections have an inner capacity of max. 27 nF opposite the enclosure
Permissible media temperature	in zone 0: -20 ... 60 °C with p <sub>atm</sub> 0.8 bar up to 1.1 bar zone 1 or higher: -25 ... 70 °C
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

Miscellaneous	
Current consumption	max. 21 mA
Weight	approx. 650 g (without cable)
Ingress protection	IP 68
CE-conformity	EMC Directive: 2014/30/EU
Směrnice ATEX	2014/34/EU

### Wiring diagram

2-wire-system (current) HART®

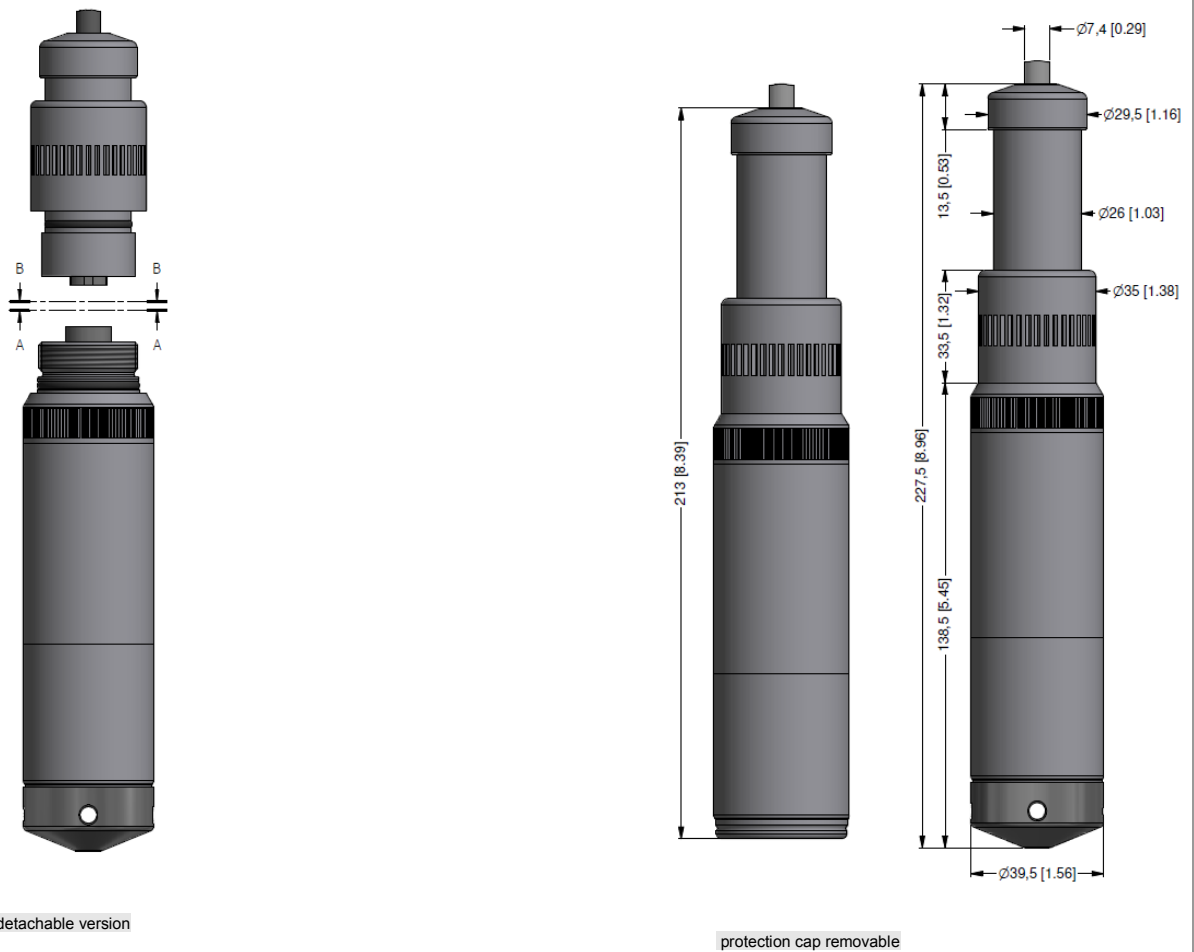


### Pin configuration


Electrical connection	Binder series 723 <sup>8</sup> (5-pin)	cable colours (DIN 47100)
Supply +	3	WH (white)
Supply -	1	BN (brown)
Shield	5	GN/YE (green / yellow)

<sup>8</sup> in detached version

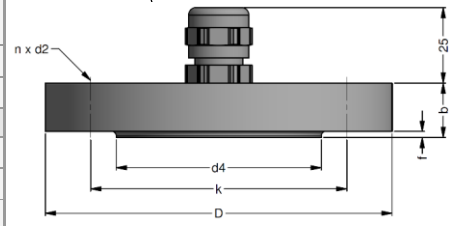
### Dimensions (mm / in)



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 Windows® is a registered trade mark of Microsoft Corporation Windows® is a registered trade mark of Microsoft Corporation

Mounting flange with cable gland	
<b>Technical data</b>	
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
<b>Version</b>	<b>Size (in mm)</b>
DN25 / PN40	D = 115, k = 85, b = 18, n = 4, d = 14
DN50 / PN40	D = 165, k = 125, b = 20, n = 4, d = 18
DN80 / PN16	D = 200, k = 160, b = 20, n = 8, d = 18
<b>Weight</b>	
DN25 / PN40	1.4 kg
DN50 / PN40	3.2 kg
DN80 / PN16	4.8 kg
<b>Ordering type</b>	<b>Ordering code</b>
DN25 / PN40 with cable gland brass, nickel plated	ZMF2540
DN50 / PN40 with cable gland brass, nickel plated	ZMF5040
DN80 / PN16 with cable gland brass, nickel plated	ZMF8016
<b>Terminal clamp</b>	
<b>Technical Data</b>	
Suitable for	all probes with cable $\varnothing$ 5.5 ... 10.5 mm
Material	standard: steel, zinc plated optionally: stainless steel 1.4301 (304)
Weight	approx. 160 g
<b>Ordering type</b>	<b>Ordering code</b>
Terminal clamp, steel, zinc plated	1003440
Terminal clamp, stainless steel 1.4301 (304)	1000278
<b>Display program</b>	
<b>CIT 200</b> Process display with LED display	
<b>CIT 250</b> Process display with LED display and contacts	
<b>CIT 300</b> Process display with LED display, contacts and analogue output	
<b>CIT 350</b> Process display with LED display, bargraph, contacts and analogue output	
<b>CIT 400</b> Process display with LED display, contacts, analogue output and Ex-approval	
<b>CIT 600</b> Multichannel process display with graphics-capable LC display	
<b>CIT 650</b> Multichannel process display with graphics-capable LC display and datalogger	
<b>CIT 700</b> Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts	
<b>PA 440</b> Field display with 4-digit LC display	
For further information please contact our sales department or visit our homepage: <a href="http://www.bdsensors.com">http://www.bdsensors.com</a>	

cable gland M16x1.5 with seal insert (for cable- $\varnothing$  4 ... 11 mm)





1 shielded cable with integrated ventilation tube for atmospheric pressure reference



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