

ILMK 358H

Separable Stainless Steel Probe with HART[®]-communication

Ceramic Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 60 cmH₂O up to 0 ... 100 mH₂O

Output signals

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

Special characteristics

- ▶ diameter 39.5 mm
- ▶ cable and sensor section separable
- ▶ HART[®] communication (setting of offset, span and damping)
- ▶ permissible temperatures up to 85 °C
- ▶ high long-term stability


Optional versions


- ▶ IS-version zone 0
- ▶ cable protection via corrugated pipe
- ▶ diaphragm 99.9 % Al₂O₃


The separable stainless steel probe ILMK358H 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



HART

Input pressure range ¹								
Nominal pressure gauge	[bar]	0.06	0.16	0.4	1	2	5	10
Level	[mH ₂ O]	0.6	1.6	4	10	20	50	100
Overpressure	[bar]	2	4	6	8	15	25	35

¹ 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 _S = 12 ... 36 V _{DC} with HART [□] communication	V _{S rated} = 24 V _{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V _S = 12 ... 28 V _{DC} with HART [□] communication	V _{S rated} = 24 V _{DC}

Performance				
Accuracy ²	P _N ≥ 160 mbar	TD ≤ 1:5	≤ ± 0.2 % FSO	TD _{max} = 1:10
		TD > 1:5	≤ ± [0.2 + 0.03 x TD] % FSO	
	P _N < 160 mbar		≤ ± [0.2 + 0.1 x TD] % FSO	TD _{max} = 1:3
	P _N ≥ 1 bar	TD ≤ 1:5	≤ ± 0.1 % FSO	TD _{max} = 1:10
		TD > 1:5	≤ ± [0.1 + 0.02 x TD] % FSO	
Permissible load	R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω load at HART [□] -communication: R _{min} = 250 Ω			
Long term stability	≤ ± (0.1 x turn-down) % FSO / year at reference conditions			
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / 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 ³) - electronic damping 0 ... 100 sec - offset: 0 ... 80 % FSO - turn-down of span: max. 1:10			

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

³ software, interface, and cable have to be ordered separately (software appropriate for Windows[®] 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) % FSO
TC, average	± (0.02 x turn-down) % FSO / 10 K
in compensated range	-20 ... 80 °C
Permissible temperatures	medium: -25 ... 85 °C electronic / environment: -25 ... 85 °C storage: -25 ... 85 °C

Electrical protection ⁴	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

⁴ 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 ⁵	PVC (-5 ... 70 °C) grey PUR (-25 ... 70 °C) black FEP (-25 ... 70 °C) black TPE (-25 ... 85 °C) blue

⁵ shielded cable with integrated air tube for atmospheric pressure reference

Materials (media wetted)	
Housing	stainless steel 1.4404 (316L)
Seals	FKM EPDM others on request
Diaphragm	standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 %
Protection cap	POM

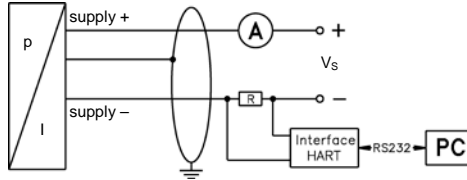
Explosion protection	
Approval DX15A-LMK 358H	IBExU 10 ATEX 1186 X Zone 0 ⁶ : II 1G Ex ia IIB T4 zone 20: II 1D Ex iaD 20 T85°C
Safety technical maximum values	U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i = 0 nF, L _i = 0 μH, the supply connections have an inner capacity of max. 27 nF opposite the enclosure
Permissible media temperature	in zone 0: -20 ... 60 °C with p _{atm} 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

⁶ for optional stainless steel pipe following designation is valid: "II 1G Ex ia IIC T4" (zone 0)

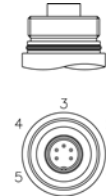
Miscellaneous	
Option cable protection	stainless steel pipe for probe in stainless steel: available as compact product (standard: stainless steel pipe with a total length up to 2 m possible; other lengths on request)
Current consumption	max. 21 mA
Weight	approx. 650 g (without cable)
Ingress protection	IP 68
CE-conformity	EMC Directive: 2004/108/EC

Wiring diagram

2-wire-system (current) HART®



connector

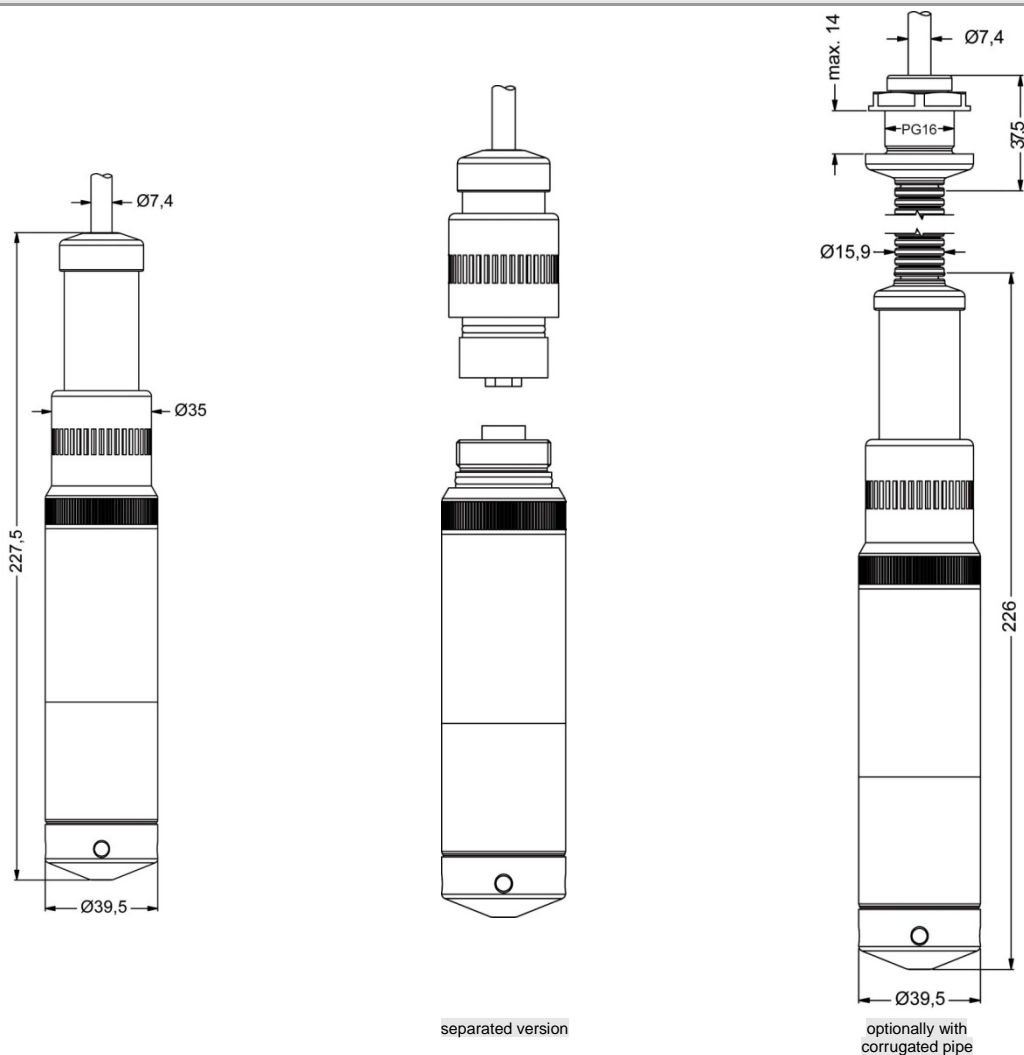


Pin configuration

Electrical connection	Binder series 723 ⁷ (5-pin)	cable colours (DIN 47100)
Supply +	3	wh (white)
Supply -	1	gn (brown)
Shield	5	gn/ye (yellow / green)

⁷ in separated version

Dimensions (in mm)



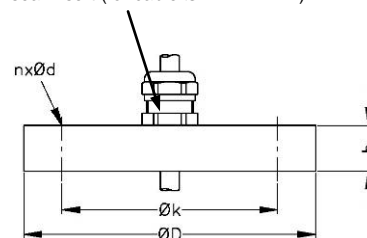
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Windows® is a registered trade mark of Microsoft Corporation

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

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



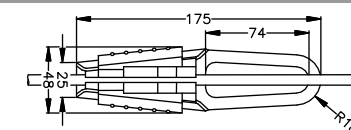
Ordering type

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

Terminal clamp

Technical Data

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	



Ordering type

Terminal clamp, steel, zinc plated	Z100528
Terminal clamp, stainless steel 1.4301 (304)	Z100527

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.ics-schneider.de>



