

Flush-mounted pressure and level transmitter - Type KERAMESS 050 -



Version examples for various process connections



CHARACTERISTICS

- **ROBUST AND COMPACT FOR PROCESS PRESSURE AND FILLING LEVEL MEASUREMENTS, IN A FIELD CASING OF THE PROTECTION CLASS IP67 AND WITH "FR" PROTECTION**
- **ROBUST, OIL-FREE CERAMIC MEASURING CELL, OVERLOAD AND LOAD-CHANGE RESISTANT**
- **ABSOLUTE AND RELATIVE PRESSURE MEASUREMENT**
- **OPTIONALLY WITH PSI 050 DISPLAY MODULE OR FAM**

DESCRIPTION

The design of the flush-mounted **KERAMESS 050** pressure and level transducers, with their O-ring seals and welded adaptations for pressure and level measurements without dead spaces, renders them suitable for use under strict hygiene-controlled conditions, as well as for crystallising or viscous media. The robust stainless steel casing of the IP 67 protector design means that it is suitable for all extreme and remnant-free cleaning processes, such as those required for the food and pharmaceutical industries.

The design of the measuring transducers in the field housing protects them against water splashes, internal humidity and other adverse atmospheric influences.

The measuring element takes the form of a robust and corrosion-resistant ceramic membrane made from 96% or 99,9% aluminium oxide (depending on the application conditions). The imminent process pressure of the medium to be measured results in a slight mechanical displacement of the ceramic sensor membrane via the pressure connection. The resulting capacity change is in proportion to the pressure and is measured directly on the electrodes of the measuring membrane and the ceramic carrier. The devices require no maintenance.

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TECHNICAL DATA



General information								
Application	- Gases and liquids, including those that are aggressive and corrosive, if compatible with Al ₂ O ₃ (96% or 99.9%) - contaminated, highly viscous, stagnant and crystallising media							
Measuring principle/device type	pressure-related capacity change / pressure and level transmitter in Hengesbach field housing							
Input								
Type of pressure	Relative pressure (R)				Absolute pressure (A)			
Nominal measuring ranges (bar)	MB	Type of pressure / OSD	MB	Type of pressure / OSD	MB	Type of pressure / OSD	MB	Type of pressure / OSD
A = absolute pressure R = relative pressure OSD = overload safety device	0...0.05	R -0.3...4 bar	0...40	R 60 bar			0...1	A 10 bar
	0...0,10	R -0.3...4 bar	-0,10...+0,10	R 6 bar			0...2	A 18 bar
	0...0.40	R 6 bar	-1...+1	R 10 bar			0...4	A 25 bar
	0...1	R 10 bar	-1...+4	R 25 bar			0...5	A 25 bar
	0...2	R 18 bar	-1...+10	R 40 bar			0...10	A 40 bar
	0...4	R 25 bar	-1...+20	R 40 bar			0...20	A 40 bar
	0...10	R 40 bar	-1...+70	R 105 bar			0...40	A 60 bar
0...20	R 40 bar					0...70	A 105 bar	
Output								
Output signal	4... 20 mA, 2-wire technology							
Working resistance	R _b (2-wire) ≤ $\frac{U_s - 13 V}{0.02 A}$ U _s = input voltage R _b = working resistance							
Current limit	25 mA typ., 32 mA max.							
Attenuation	Integration time(t ₉₀) 0 ... 20 sec., infinitely adjustable							
Rise time	≤ 10 ms (without attenuation)							
Electrical Protection	Reverse polarity protected							
Test output	uninterruptible output current measurement							
Measuring accuracy								
Reference line	linear							
Linearity according to IEC 770	Reference line concordance with limit point setting ≤ 0.2% (sum of non-linearity, hysteresis, repeatability)							
Long-term drift	max. 0.2 % per annum							
Switch-on time	1 s							
Auxiliary energy								
Input voltage	13 ...36 VDC, max. permissible residual ripple 1 V _{ss}							
Power supply influence	≤ ± 3µA per volt of change in input voltage							
Conditions for use								
Medium temperature	-40°C... + 125°C, 140°C max. for 1 h							
Environmental temperature	-40°C... + 85°C							
Storage temperature	-40°C... + 85°C							
Temperature influence	Zero point and sensitivity: T _k ≤ 0.3% / 10K, with reference to max. measuring range in the compensation range -20°C...+80°C							
Protective class according to EN 60529	IP 67 IP 65 (with cable socket according to DIN EN 175301-803)							
Design configuration								
Materials	Field housing CrNiSt 1.4301 - Membrane material made of aluminium oxide Al ₂ O ₃ 96%, optionally Al ₂ O ₃ 99.9% ultrapure,							
Pressure seal	Standard: EPDM (with FDA authorisation) optional: VITON, CHEMRAZ, KALREZ, other on request							
Process connection	see dimensional drawing and order information							
Accessories	Display modules: PSI 050 or FAM (see relevant data sheets and housing construction for FAM)							
Electrical connection	- Standard: Cable connection M 16 x 1.5 - optional: Permanently connected reference cable (can be connected on the user side), PUR material, 5-wire - optional: Round plug M12 x 1							
Authorisations	EHEDG-certified, FDA-compatible							
Electromagnetic compatibility	EMV guidelines are met, CE-conformity							

ELECTRICAL CONNECTION

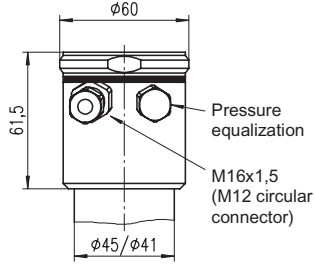
Electrical connection	Plug according to EN 175301-803 4... 20 mA, 2-wire	Standard version: Cable connection M16x1,5 4... 20 mA, 2-wire	M12 round plug, 4... 20 mA, 2-wire	Reference cable, 5-wire
GND	4	4	4	white
+ supply	1	1	1	red
- supply	2	2	3	black

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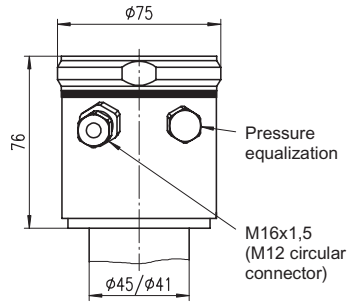
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DIMENSIONAL DRAWINGS

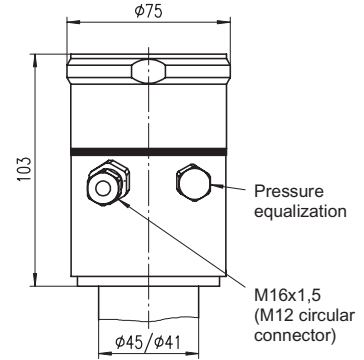
KERAMESS 050 ..._K(M)



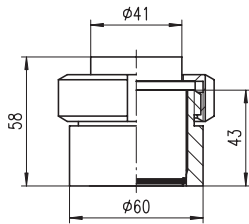
KERAMESS 060(070) ..._K(M)



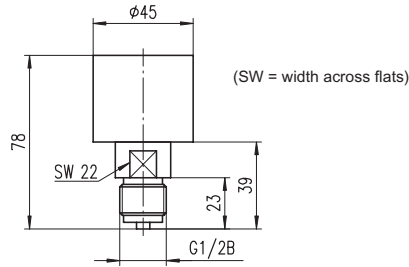
KERAMESS 090 ..._K(M)



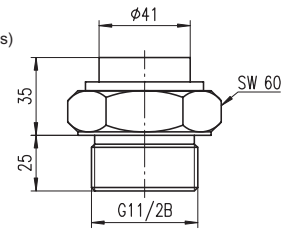
Process connection adapter : (other constructions on request)



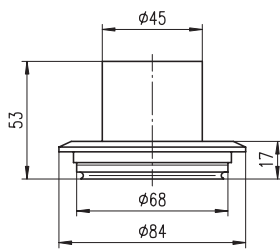
Aseptic process-connection (N3)
with welding socket (ZEN)



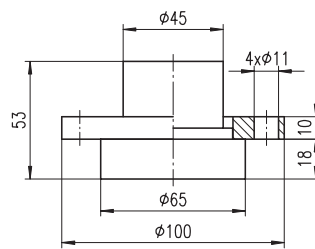
G1/2B EN 837 (G2)



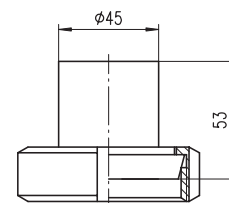
G11/2B ISO 228 (G5)



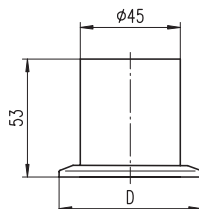
VARIVENT flange d=68mm (V6)



DRD flange d=65mm (D6)



Conical socket DIN 11851
DN40...DN100 (M4, M5)



Triclamp flange
ISO 2852 2"...4" (C5)
DIN 32676 DN50...DN100 (C5)

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ORDER INFORMATION

Electronics / output	
050	4-20 mA, 2-wire

Process connection		(material 1.4404, 316 L)
N3	aseptic connection with grooved union nut, ceramics, flush-mounted	
A4	Flange according to DIN 11864-1, A, DN 40, pipe DIN 11850	
A5	Flange according to DIN 11864-1, A, DN 50, pipe DIN 11850	
D6	DRD flange DN 65, ceramics, flush-mounted	
M4	DIN 11851, DN 40 / PN 40, ceramics, flush-mounted	
M5	DIN 11851, DN 50 / PN 25, ceramics, flush-mounted	
V6	VARIVENT flange d = 68, DN 40-125 / PN 40, ceramics, flush-mounted	
C5	Triclamp ISO 2852, DN 50 / 2", ceramics, flush-mounted	
S5	SMS DN 2" (DN 51) PN 40, ceramics, flush-mounted	
F5	Flange DN 50 / PN 10 – 40, B1, EN 1092-1 (DIN 2527 D), ceramics, flush-mounted	
F6	Flange DN 80 / PN 10 – 40, B1, EN 1092-1 (DIN 2527 D), ceramics, flush-mounted	
G5	Threaded connection ISO 228 G1½ B, ceramics, flush-mounted	
G4	Threaded connection M 44 x 1.25, PN 25, ceramics, flush-mounted	
S9	Other process connection	
99	Special material for process connection	

Type of pressure / measuring range		
(R = relative pressure or A = absolute pressure) all vacuum ranges also possible -		
0...0.05	bar R	max. overload -0.3 / 4 bar
0...0.10	bar R	max. overload -0.3 / 4 bar
0...0.40	bar R	max. overload 6 bar
0...1	bar R	max. overload 10 bar
0...2	bar R	max. overload 18 bar
0...4	bar R	max. overload 25 bar
0...10	bar R	max. overload 40 bar
0...20	bar R	max. overload 40 bar
0...40	bar R	max. overload 60 bar
-0,10...+0,10	bar R	max. overload 6 bar
-1...+1	bar R	max. overload 10 bar
-1...+4	bar R	max. overload 25 bar
-1...+10	bar R	max. overload 40 bar
-1...+20	bar R	max. overload 40 bar
-1...+70	bar R	max. overload 105 bar
0...1	bar A	max. overload 10 bar
0...2	bar A	max. overload 18 bar
0...4	bar A	max. overload 25 bar
0...5	bar A	max. overload 25 bar
0...10	bar A	max. overload 40 bar
0...20	bar A	max. overload 40 bar
0...40	bar A	max. overload 60 bar
0...70	bar A	max. overload 105 bar

Electrical connection	
K	Cable connection M 16 x 1.5
M	Round plug M 12 x 1, 4-pin
W	Right-angle plug connection acc. to EN 175301-803
R	Reference cable, 1 m, permanent connection other lengths to be specified in plain text (max. 80 m)

Measuring cell seal	
4	Viton (with FDA authorisation)
3	Viton (O-ring)
2	EPDM (with FDA authorisation)
5	Kalrez (O-ring)
9	Other

KERAMESS

accessories / add-on parts for KERAMESS – Series 050		(order reference)
Welding sleeve for process connection N3, 1.4404 (316 L)		ZEN
DRD welded block flange for D6 process connection, DRD, 1.4435 (316 L)		ZEB
Flat seal made from EPDM for DRD welding flange DN 50		ZDE
Flat seal made from Viton for DRD welding flange DN 50		ZDV
Flat seal made from Gore-Tex for DRD welding flange DN 50		ZDG
4 attachment screws for DRD welding flange DN 50		ZDS
Reference cable with pressure equalisation capillaries per metre or part thereof, made from PUR		ZKP
Pressure equalisation housing with ventilation filter (external installation)		ZDA

Our products are constantly in further development, therefore subjects to modifications.

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