



- **MODULAR CONNECTION CONCEPT FOR MULTIPLE MEASURING TASKS**
=> MINIMISED VARIETY OF TYPES
=> REDUCED STORAGE TIMES
- **ROBUST PROTECTIVE TYPE IP 67, ALSO SUITABLE FOR EXTREME CONDITIONS**
- **NUMEROUS CONNECTION OPTIONS**
- **OPTIONALLY FOR HIGH TEMPERATURES UP TO 200°C**



DESCRIPTION

The design of the **PZM / VRM 050** pressure transducers, with their O-ring seals and welded adaptations for pressure and level measurements without dead spaces, render them suitable for use under strict hygiene-controlled conditions, as well as for crystallising or viscous media. The robust stainless steel housing 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.

PZM / VRM 050 consists of a basic device that can be combined with various application-specific add-on adaptors, e.g. DRD, VARIVENT, DIN 11851, Flansch DIN, etc. This translates into a significantly reduced need for storage space and spare parts, as well as into lower material administration costs.

The pressure screw makes it possible to position the device correctly and to connect the cables during installation; this means that the welding sockets no longer have to be marked and taken into account during the welding process, which is to the benefit of the user.

The pressure sensors **of the PZM 050 series** work according to the piezoresistive measuring principle and are separated from the measuring material by a stainless steel membrane. The pressure is transmitted via an oil filling that is safe for use with food. All parts that come into contact with the medium have been welded. The PZM type series has been specially designed for level measurements.

The pressure sensors **of the VRM 050 series** are robust and overload-protected ceramic membranes that work according to the capacitive method. The pressure to be measured acts on the sensor via the stainless steel membrane, which is welded flush with the front of the device, and the low-volume oil supply (white oil) to the sensor. The system has a high overload capacity due to its special design. It is intended for processing pressure measurements, where pressure surges and cavitations are common. All Hengesbach pressure transmitters are temperature-compensated.

Pressure/level transmitter PZM / VRM 050

Modular system PIEZOMESS PZM / VARIMESS VRM



TECHNICAL DATA

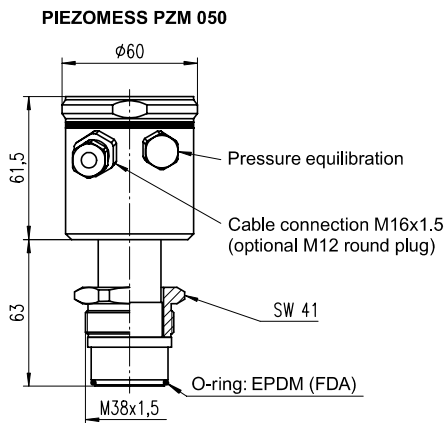
General information								
Manufacturer / device	Hengesbach / Pressure transmitter series 050							
Measuring principle / device type	PIEZOMESS PZM 050: piezoresistive - for level measurements VARIMESS VRM 050: ceramic-capacitive with pressure transmission membrane, reduced volume							
Input								
Measuring ranges (depending on type of device)	PZM 050				VRM 050			
Nominal measuring ranges (bar)	relative	OPS	absolute	OPS	relative	OPS	absolute	OPS
ÜSI = Overload safety	0.35 bar	1	0.35 bar	1	0... +1 bar	10	0... 2 bar	18
	1 bar	3	1 bar	3	-1/0... +1 bar	18	0... 10 bar	40
	2.5 bar	8	2.5 bar	8	-1/0... +4 bar	25	0... 20 bar	105
	5 bar	15	5 bar	15	-1/0... +10 bar	40		
	10 bar	30	10 bar	30	-1/0... +40 bar*	60		
	30 bar	90	30 bar	90	-1/0... +70 bar*	105		
	100 bar	250	100 bar	250				
*) = special								
Adjustable ranges (via potentiometer)	zero $\pm 10\%$ (FS) span $\pm 20\%$ (FS)							
Overload pressure safety (OPS)	-1 bar and triple final measuring value for PZM, higher overload safety on request up to 40 times overload safety for VRM							
Bursting pressure	10 times the max. measuring value, depending on the type of device and the nominal measuring range							
Output								
Output signal	4... 20 mA, 2-wire				Working resistance: $\leq \frac{VB - 12 V}{0.02 \text{ mA}}$			
	0...20 mA, 3-wire (on request)							
	4...20 mA, 3-wire (on request)							
Influence of working resistance	$\leq \pm 0.15\%$ max							
Current limit	25 mA typ., 32 mA max.							
Integration time	0 ... 20 s							
Test output	uninterruptible output current measurement							
Measuring accuracy								
Reference conditions	According to. DIN 16086 and DIN IEC 770							
Linearity, incl. hysteresis and repeatability according to limit point method DIN IEC 770	for PZM 050: $\leq \pm 0.3\%$ of the max. value for the nominal measuring range, optional $< \pm 0.2\%$ for VRM 050: $\leq \pm 0.4\%$ of the max. value for the nominal measuring range, optional $< \pm 0.2\%$ * special linearity information is required for small absolute pressure measuring ranges							
Warm-up time	1 s							
Adjustment time (without attenuation)	320 ms (supply frequency 50 Hz selected) or 266 ms (supply frequency 60 Hz selected)							
Long-term drift	$\leq 1\%$ of max. value							
Repeatability	$\leq 0.05\%$ of max. value							
Hysteresis	$\leq 0.1\%$ of max. value							
Thermal hysteresis	Zero point and measuring range within the compensated temperature range 0 ... 80°C $\leq \pm 0.2\%$ of max. value / 10 K for nominal measuring range from 4 bar onwards $\leq \pm 0.3\%$ of max. value / 10 K for nominal measuring range up to 0.6 bar							
Nominal position	> 1 bar optional							
Auxiliary energy								
Supply voltage	13-36 VDC, max. permissible residual ripple 1 V _{ss}							
Effect of supply voltage	$\leq \pm 0.03\%$ change in supply voltage							
Conditions for use								
Medium temperature	-30°C... +125°C, 140°C max. for 1 h (=> take environmental temperature into account) for high temperature: -30°C... +200°C							
Environmental temperature	-40°C... + 80°C							
Storage temperature	-40°C... + 80°C							
Protection type EN 60529	IP 67 (pressure equalisation via Gore-Tex membrane) IP 67 with fixed reference cable connection IP 69 K with M12 x 1 plug and specified socket cable IP 65 with contact box							
Electromagnetic compatibility	CE conformity							
Design configuration								
Electrical connection	- Threaded cable connection M16 x 1.5 terminal strip (standard) or with a fixed reference cable connection (can be connected on the user side) - Round plug M12 x 1							
Process connections	Modular system with loose pressure screw M 38 x 1.5 and an EPDM O-ring (standard), Viton on request, FDA membrane welded flush in front, CrNiSt 1.4435, 316 L							
Materials	Field housing CrNiSt 1.4301 Process connection and adaptor 1.4571, process membrane 1.4435/1.4404							
Filling liquid	PZM = silicon oil (food quality) / VRM = vegetable oil, glycerine, silicon oil White oil (standard), FDA-certified version							
Weight	1.2 kg (without adaptor)							
Authorisation								
	EHEDG certificate, FDA certificate							

PD/PZM-VRM Series 050/D-e-08-1/2

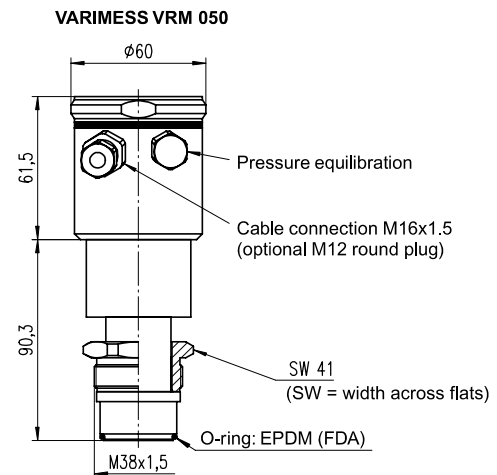
Pressure/level transmitter PZM / VRM 050

Modular system PIEZOMESS PZM / VARIMESS VRM

DIMENSIONAL DRAWINGS

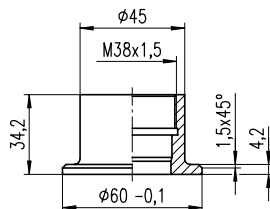


Field housing (stainless steel, IP67 EN 60529)

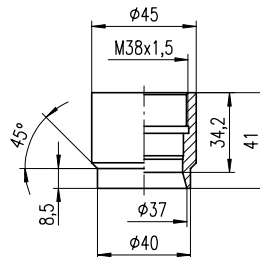


Field housing (stainless steel, IP67 EN 60529)

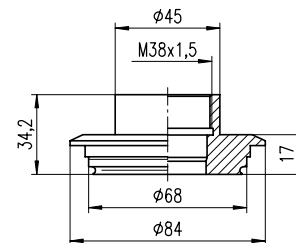
Process connection adapter for modular system PZM / VRM 050: (other constructions on request)



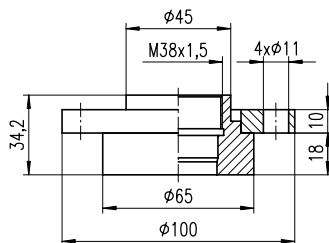
zem / VPMT
Welding socket VPM (tank)



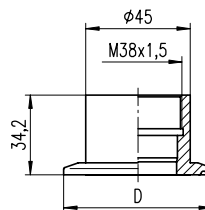
zem / VPMR4
Welding socket VPM (pipe)



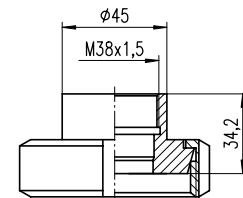
zfl / VA
VARIVENT flange d=68mm



zfl / DRD
DRD flange d=65mm



zfl / Cl...
Triclamp flange
ISO 2852 2"...4"
DIN 32676 DN50...DN100



zfl / MG...
Conical socket and groove nut DIN 11851
DN40...DN100

ELECTRICAL CONNECTION

The electrical connection is made via screw clamps after the screw-type lid has been removed. The cable insertion usually takes place via an M 16x1.5 threaded connection, or optionally by means of an M 12x1 round plug. The test circuit connection ensures an uninterrupted output current measurement. The cable equipped with an air-equalisation tube is recommended for areas with high humidity levels.

Electrical connection	Reference cable 4-20 mA (2-wire)	M 16 x 1.5 Cable connection	M 12 round plug 4-20 mA (2-wire)
GND	white	GND	4
+ supply	red	1	1
- supply	black	2	3

Pressure/level transmitter PZM / VRM 050

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ORDER INFORMATION

Electronics	
050	4-20 mA, 2-wire

Pressure type / measuring range (A = absolute pressure)		
- all vacuum ranges also possible -		
0.35	bar	max. overload 1 bar
1	bar	max. overload 3 bar
2.5	bar	max. overload 8 bar
5	bar	max. overload 15 bar
10	bar	max. overload 30 bar
30	bar	max. overload 90 bar
100	bar	max. overload 250 bar
0.35	bar A	max. overload 1 bar
1	bar A	max. overload 3 bar
2.5	bar A	max. overload 8 bar
5	bar A	max. overload 15 bar
10	bar A	max. overload 30 bar
30	bar A	max. overload 90 bar
100	bar A	max. overload 250 bar
Adjusted measuring range (in the case of a deviation from the nominal measuring range: please specify in bar)		

Electrical connection	
K	Cable connection M 16 x 1.5
M	Round plug M 12 x 1
W	Right-angle plug connection EN 175301-803 (not for 100)
R	Reference cable, 1 m, fixed connection (standard), other lengths to be specified in plain text (max. 80 m)

Accessories	
T1	Normal temperature version
T2	High-temperature version up to 200°C

PZM	050			
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Accessories / add-on parts	(please order separately)
External operating module OPUS for electronics 101	OPUS
EPDM O-ring for PZM / VRM (with FDA authorisation)	ZOR
DRD welded block flange for PD6 process connection, DRD, 1.4435 (316 L)	ZEB
Flat seal made from EPDM for DRD welded block flange	ZDE
Flat seal made from Viton for DRD welded block flange	ZDV
Flat seal made from GORE-TEX for DRD welded block flange	ZDG
4 fastening screws for DRD welded block flange	ZDS
Welding dummy for PZM / VRM, Ms 58	ZEP
Sealing stopper for PZM / VRM, 1.4404 (316 L)	ZVP
Reference cable with pressure equalisation capillaries per metre or part thereof, made from PUR	ZKP
Pressure equalisation housing with ventilation filter	ZDA
- Wall mounting, can be used for all pressure transducers -	

Process connection adaptor	(please order separately)
zem / VPM T	Welding socket for tank insertion *
zem / VPM R4	Welding socket for pipe
zfl / VA	VARIVENT flange d=68 mm
* optionally with zfl / MG...	Tapered connection with groove nut DIN 11851, from DN 40 to DN 100
WAZ 3.1B (EN10204)	zfl / PZM-CL... Tri-clamp ISO 2852, 2" - 4"
	zfl / DRD DRD flange d=65 mm with loose pressure ring d=100 mm

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

PD/PZM-VRM Series 050/D-e-08-1/4