



# **UK** Flowtechnik

Specialists in flow metering, pumps, couplings  
and process measurement equipment

## **PRODUCT DATASHEET**

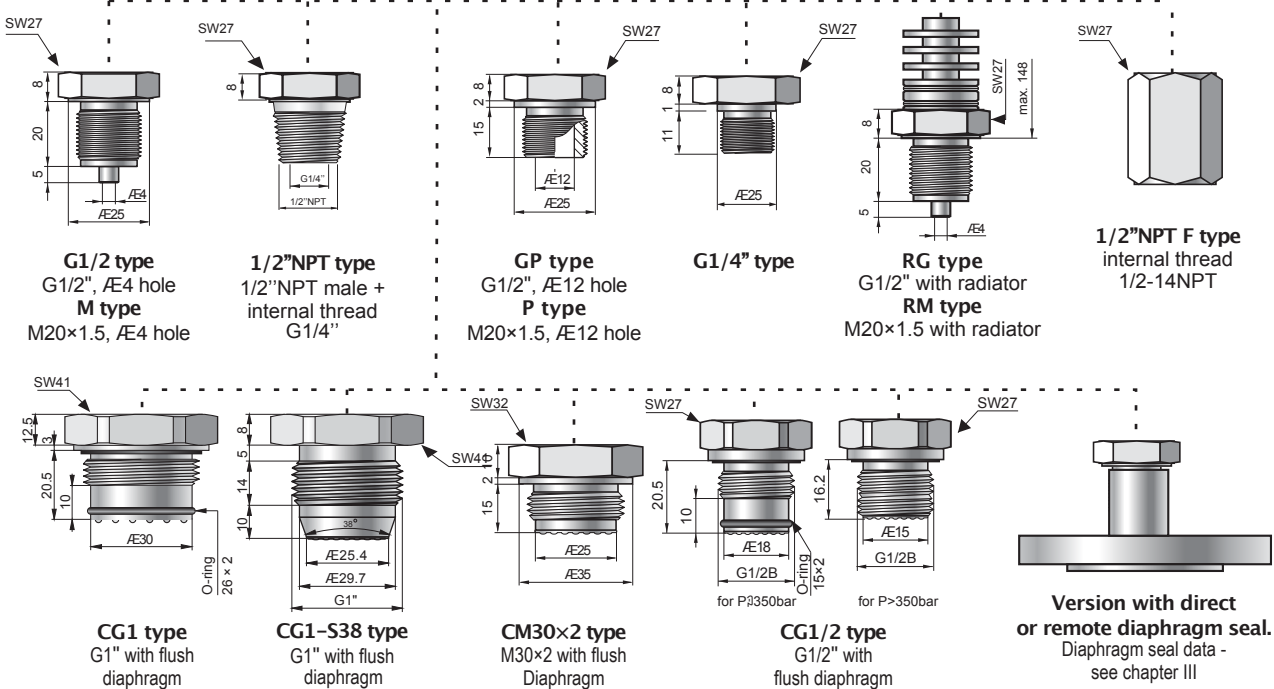
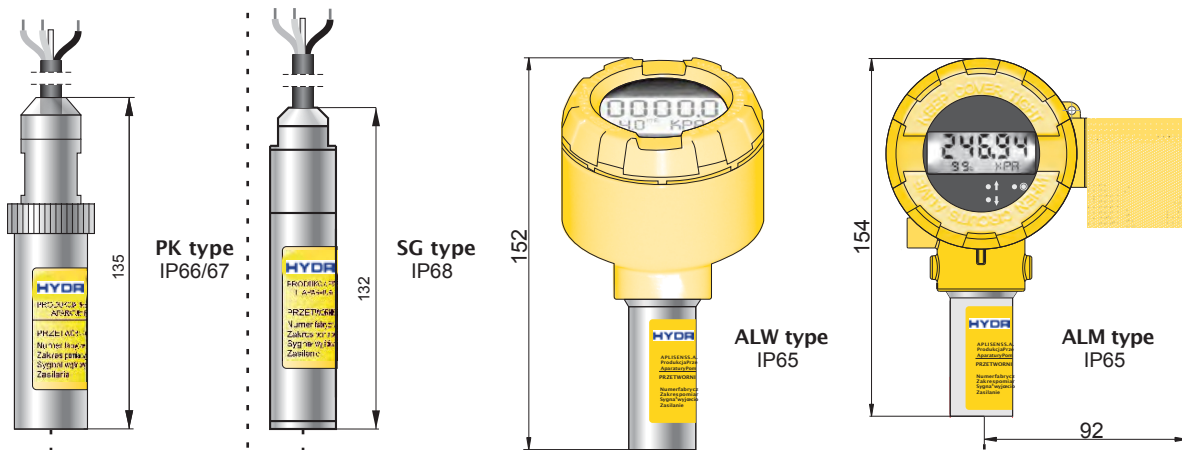
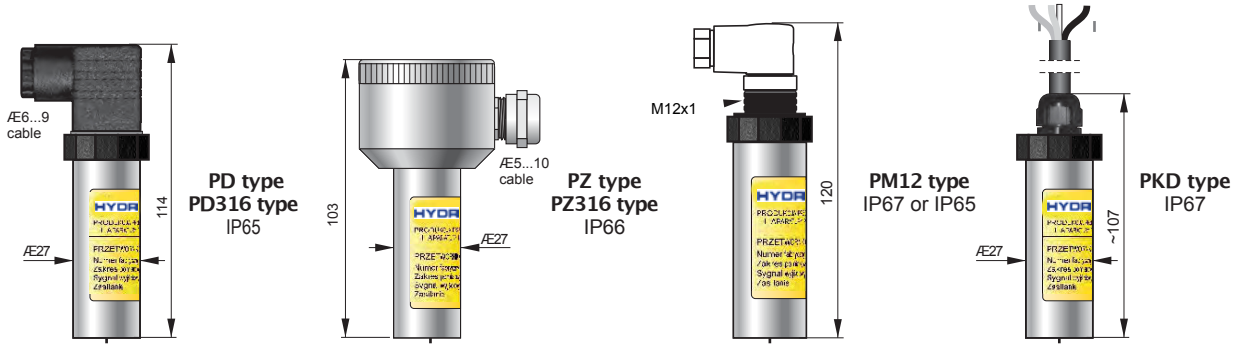
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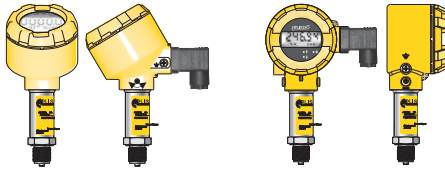
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## HPM-20 series pressure sensors

- ✓ Ranges from 0...25 mbar up to 0...1000 bar
- ✓ 2 wire 4-20 mA or 3 wire 0-10 V output
- ✓ Intrinsic safety certificate (ATEX, IECEx)
- ✓ ±0.2% typical accuracy
- ✓ Marine certificate - DNV, BV
- ✓ Communication protocol Modbus RTU
- ✓ SIL 1 certificate
- ✓ Version with local display





ALW type

ALM type

**ALW and ALM model**

Aluminium casing with programmable local display. The design of the casing enables the use of a local display, rotation of the display, rotation of the casing by 0°/45° relative to the sensor. Electrical connection DIN43650, IP65 (special version with cable electrical connection and IP67). Display with backlight allows reading of: measured pressure in user units or % of measuring range - current in output loop in mA

**Application and construction**

The HPM-20 pressure transmitter is applicable to the measurement of the pressure, under pressure and absolute pressure of gases, vapours and liquids. The active sensing element is a piezoresistant silicon sensor separated from the medium by a diaphragm and by specially selected type of manometric liquid. The electronics is placed in a casing with a degree of protection from IP 65 to IP 68, depending on the type of electrical connection applied.

**Calibration**

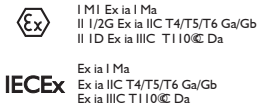
Potentiometers can be used to shift the zero position and the range by up to +/-10%, without altering the settings.

**Installation**

The light weight transmitter allows direct installation on the sensor. When the pressure of steam or other hot media is measured, a siphon or impulse line should be used. A needle valve placed upstream of the transmitter simplifies installation process and enables the zero point adjustment or the transmitter replacement. When special process connections are required for the measurement of levels and pressures (e.g. at food and chemical industries), the transmitter is provided with a diaphragm seal. Installing accessories and a full scope of diaphragm seals are described in detail in the further part of the catalogue.

**Measurements under explosion hazard**

ATEX Intrinsic safety version is available for taking measurements in zones under explosion hazard. The installation of the transmitter in a zone under explosion hazard requires the use of a Ex power supply. We recommend the use of the ZS-30Ex I, ZS-31Ex I power supply and separator (on request).



**Technical data**

Any measuring range of 0...25 mbar to 0...1000 bar (over pressure, under pressure); 400 mbar to 80 bar (absolute pressure). *Measurement of lower pressure ranges, possible using transmitter HDPM-50 with GP process connection.*

	Measuring range				
	25 mbar	100 mbar	400 mbar	0-1 Bar to 0-160 Bar	0-160 Bar to 0-1000 Bar
Overpressure Limit (repeated, without hysteresis)	1 bar	1 bar	2,5 bar	4 x range	2 x range; max. 1200 bar
Damaging Overpressure	2 bar	2 bar	5 bar	8 x range; max. 2000 bar	
Accuracy	0,6%	0,3%	0,2% (0,16% - special version)		
Long term stability	0,6% / year	0,2% / year	0,1% / year		
Thermal error	Typically 0,5% / 10°C Max 0,6% / 10°C	Typically 0,3% / 10°C Max 0,4% / 10°C		Typically 0,2% / 10°C Max 0,3% / 10°C	

**Hysteresis, repeatability Response time** 0,05%  
< 120 ms  
**Thermal compensation range** version TR: < 30 ms  
-10...80°C  
**Operating temperature range (ambient temp.)** -40...80°C  
**Medium temperature range** -40...130°C

**Output signals:** 4...20 mA, two wire transmission  
**Material of wetted parts:** 316Lss, Hastelloy C 276  
**Material of casing:** 304ss, 316Lss  
**Power supply:** output 4...20mA 8-36 V DC  
TR version: Ex 9-28 V DC  
Safety version: 10-36 V DC  
ALW - ALM version: 11-36V DC  
output 0...10V 13-30 VDC

over 130°C Ø measurement with use an impulse line or diaphragm seals CAUTION: the medium must not be allowed to freeze in the impulse line or close to the process connection of the transmitter

**Error due to supply voltage changes Load** 0,005%/V

**HPM-20 / Modbus - Technical data\***




**Metrological parameters**  
**Accuracy** ≤ 1 0,1%  
**Long-term stability** ≤ accuracy for 3 years  
(for nominal range)  
**Thermal error** < 1 0,1% (FSO) / 10°C max. 1 0,4% (FSO) in the whole compensation range  
**Thermal compensation range** -25...80°C  
**Additional electronic damping** 0...30s

**Electrical parameters**  
**Power supply** 4Ñ 28 V DC  
**Transmission range** 1200 m  
**Output** MODBUS RTU + 4...20 mA  
**Address space** 1Ñ 247 devices address  
**Transmission speed** 600Ñ 115200 bps  
**Parity transmission** no parity, odd, even  
**Frame transmission** 10Ñ 11 bits (1, 2 bit-stop)

\* more information about electrical parameters available in user's manual

**Communication**

Pressure transmitters with communication protocol Modbus RTU. The communication standard for data interchange with the transmitter is the Modbus RTU. Communication with the transmitter is carried out with PC using RS converter and special software.

Model	Code	Description
<b>HPM-20</b>		Pressure transmitter
Versions, certificates	/Exia.....	 I M1 Ex ia I Ma II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb II 1D Ex ia IIIC T110°C Da
	/Exia (IECEX).....	IECEX Ex ia I Ma Ex ia IIC T4/T5/T6 Ga/Gb Ex ia IIIC T110°C Da
more than one option is available	/MR.....	Transmitter with output signal (0...2,5V /0...3,3V) and ATEX certificate is supplied as mode number:
	/Tlen.....	 II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb I M1 Ex ia I Ma IECEX Ex ia IIC T4/T5/T6 Ga/Gb Ex ia I Ma
	/H.....	Transmitter with output signal (0...5V /0,5...4,5V) and ATEX certificate is supplied as model number:
	/PED.....	 II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb I M1 Ex ia I Ma IECEX Ex ia IIC T4/T5/T6 Ga/Gb Ex ia I Ma
	/0,16%.....	Marine certificate – DNV, BV
	/Modbus.....	For oxygen service (sensor filled with Fluorolube fluid), only M and G1/2 connection version with high overload capacity and integrated circuit offering excess voltage protection
	/SIL 1.....	European Pressure Equipment Directive N° 97/23/EC, category IV not available for transmitters with Hastelloy C 276 wetted parts
	/TR.....	Accuracy <0,16% (available for ranges >400mbar) Modbus communication protocol (ATEX not available)
Measuring range	/...+... [required units]	Measuring range
Analogue output signal	(without marking)	4...20mA / power supply 8...36VDC (Ex 9...28VDC)
	/0+10V.....	0...10VDC /power supply 13...30VDC
	/0+2,5V.....	0...2,5VDC / power supply 3,3VDC
	/0+3,3V.....	0...3,3VDC / power supply 4,5VDC
	/0+5V.....	0...5VDC / power supply 8...14VDC
	/0,5+4,5V.....	0,5...4,5VDC / power supply 8...14VDC
Casing, electrical connection	/PD.....	304SS housing, IP65, DIN43650 connector
	/PD316.....	316SS housing, IP65, DIN43650 connector
	/PZ.....	304SS housing, IP66, packing gland M20x1,5
	/PZ316.....	316SS housing, IP66, packing gland M20x1,5
	/PM12 (IP67).....	304SS housing, IP67 with thread M12x1 and connector with cable (3 m in standard)
	/PM12 (IP65).....	304SS housing, IP65 with thread M12x1 (without cable)
	/PK.....	304SS housing, IP66/67, cable electrical connection
	/PKD.....	304SS housing, IP67, cable electrical connection (3 m of cable in standard)
	/SG.....	316LSS housing, IP68, cable electrical connection (3 m of cable in standard)
	/SGM.....	316LSS housing, IP68, cable electrical connection (3 m of cable in standard)
	/ALW *.....	Aluminium housing, local display, IP65, DIN43650 connector
	/ALM *.....	Aluminium housing, local display, IP65, DIN43650 connector
Process connections	/M.....	Thread M20x1,5 (male) with Ø4 hole, wetted parts SS316L
	/M(Au).....	Thread M20x1,5 (male) with Ø4 hole, gold plated diaphragm (range no. 1, 2, 3, 4)
	/G1/2.....	Thread G1/2" (male) with Ø4 hole, wetted parts SS316L
	/G1/2(Au).....	Thread G1/2" (male) with Ø4 hole, gold plated diaphragm (range no. 1, 2, 3, 4)
	/G1/4.....	Thread G1/4" (male), wetted parts SS316L (Pressure limits: min. 10mbar / max. 400bar)
	/P.....	Thread M20x1,5 (male) with Ø12 hole, wetted parts SS316L
	/P(Hastelloy).....	Thread M20x1,5 (male) with Ø12 hole, wetted parts Hastelloy C 276
	/GP.....	Thread G1/2" (male) with Ø12 hole, wetted parts SS316L
	/GP(Hastelloy).....	Thread G1/2" (male) with Ø12 hole, wetted parts Hastelloy C 276
	/CM30x2.....	Thread M30x2 with flush diaphragm, wetted parts SS316L (Pressure limits: min. 0,1bar / max. 70bar)
	/CM30x2(Hastelloy).....	Thread M30x2 with flush diaphragm, wetted parts Hastelloy C 276 (Pressure limits: min. 0,1bar / max. 70bar)
	/CG1".....	Thread G1" with flush diaphragm, wetted parts SS316L (Pressure limits: min. 0,1bar / max. 70bar)
	/CG1"(Hastelloy).....	Thread G1" with flush diaphragm, wetted parts Hastelloy C 276 (Pressure limits: min. 0,1bar / max. 70bar)
	/CG1/2".....	Thread G1/2" with flush diaphragm, wetted parts SS316L (Pressure limits: min. 2,5bar / max. 300bar)
	/RM.....	Thread M20x1,5 with radiator, wetted parts SS316L (Pressure limits: min. 160mbar / max. 40bar, max. temperature up to 170°C)
	/RG.....	Thread G1/2" with radiator, wetted parts SS316L (Pressure limits: min. 160mbar / max. 40bar, max. temperature up to 170°C)
	/1/2"NPTM.....	Thread 1/2"NPT Male, wetted parts SS316L
	/1/2"NPTF.....	Thread M20x1,5 with adapter to 1/2"NPT Female, wetted parts SS316L
	/code of diaphragm seal...	Diaphragm seal (see chapter of diaphragm seals)
Accessories	/MT.....	Stainless Steel Tag plate mounted on wire
Other specification	/.....	Description of required parameters (e.g. non-standard pr. connection G3/4", M22x1,5)

\* - pushbuttons allows to change display settings only, version ALM without Zero and Span potentiometers

**Example:** Pressure transmitter, range 0...1 bar (absolute pressure), 2 wire 4-20mA signal output, housing PK with cable L=10m, process connection G1/2"

**Part code = HPM-20/0...1barABS/PK/K= I0m/G1/2**