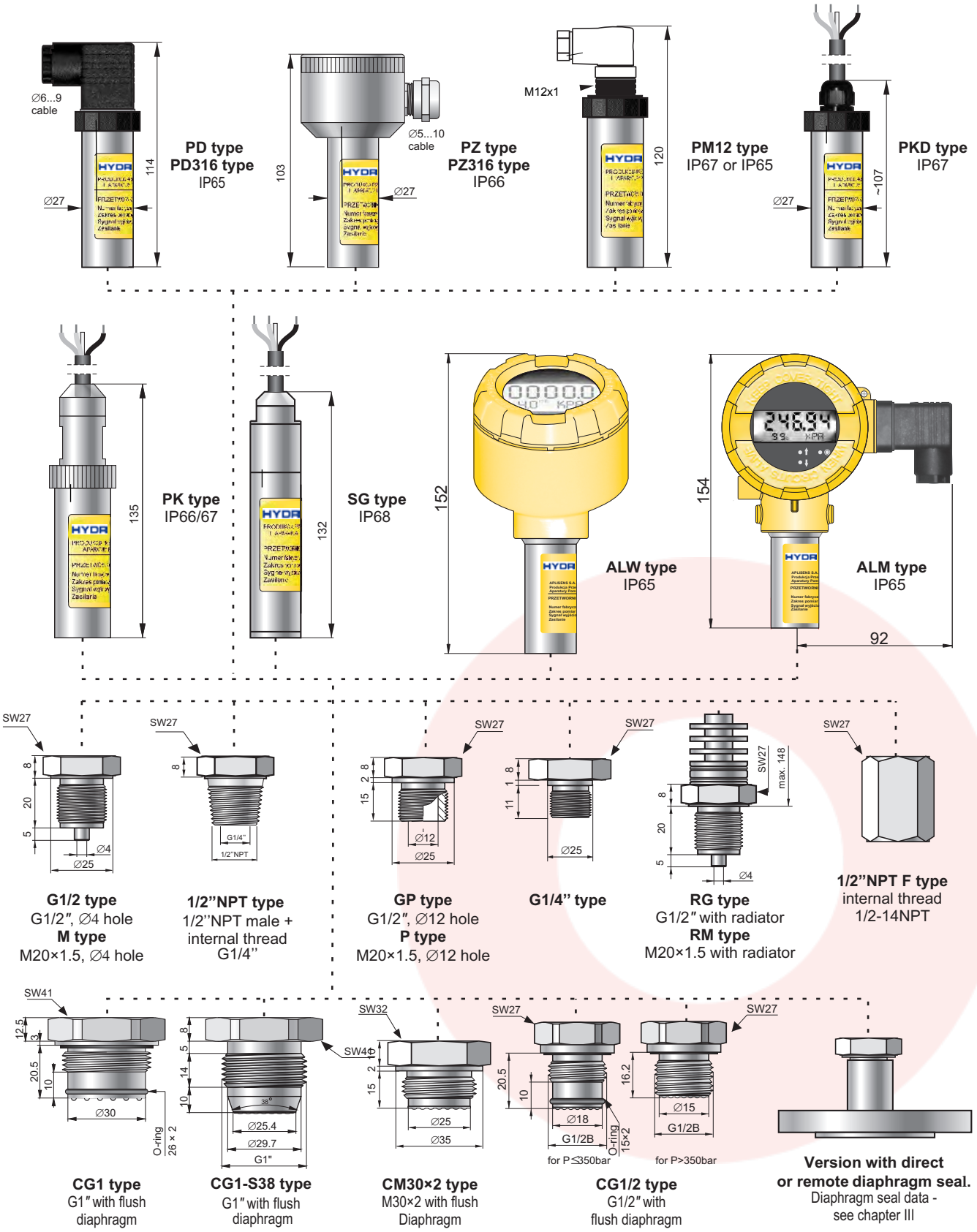
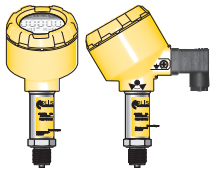
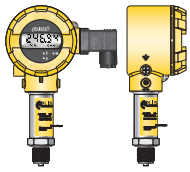
- ✓ Any range from 0...25 mbar up to 0...1000 bar
- ✓ 4 ÷ 20 mA two-wire or 0 ÷ 10 V output
- ✓ Intrinsic safety certificate (ATEX, IECEx)
- ✓ Low-voltage version with ATEX and IECEx
- ✓ ±0.2% typical accuracy
- ✓ Marine certificate – DNV, BV
- ✓ Communication protocol Modbus RTU
- ✓ Gold plated diaphragm
- ✓ SIL 1 certificate
- ✓ Version with local display NEW





ALW type



ALM type

ALW and ALM model

Aluminum casing with programable local display. The design of the casing enables the use of a local display, rotation of the display, rotation of the casing by 0–345° relative to the sensor. Electrical connection DIN43650, IP65 (special verison 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, underpressure 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 transmitter is not heavy, so it can be installed directly on the installation. 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-30Ex1, ZS-31Ex1 power supply and separator (on request).

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

IECEx Ex ia I Ma
Ex ia IIC T4/T5/T6 Ga/Gb
Ex ia IIIC T110°C Da

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 ÷ 160bar	0…160 bar ÷ 1000bar
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	0,05%
Response time	< 120 ms version TR: < 30 ms
Thermal compensation range	-10...80°C
Operating temperature range (ambient temp.)	-40...80°C
Medium temperature range	-40...130°C

over 130°C – 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

Output signals	4...20 mA, two wire transmission options from 0...2.5V to 0...10Vdc
Material of wetted parts	316Lss, Hastelloy C 276, Au
Material of casing	304ss, 316Lss
Power supply	output 4..20mA 8…36 V DC (Ex 9...28 V DC) version **TR**, version Safety: 10,5…36 V DC (Ex 12...28 V DC) ALW and ALM version: (11…36V DC) output 0..10V 13…30 VDC
Error due to supply voltage changes Load resistance	0,005%/ V $R[\Omega] \le \frac{U_{sup}[V]-8V}{0,02A}$

HPM-20 / Modbus - Technical data*

Metrological parameters

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

Electrical parameters

Power supply	4…28 V DC
Transmission range	1200 m
Output	MODBUS RTU + 4..20 mA
Address space	1…247 devices address
Transmission speed	600…115200 bps
Parity transmission	no parity, odd, even
Frame transmission	10…11bits (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.

Ordering procedure

Model	Code	Description
HPM-20		Pressure transmitter
Versions, certificates	/Exia	Ex: 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 IECEx: Ex ia I Ma; Ex ia IIC T4/T5/T6 Ga/Gb; Ex ia IIIC T110°C Da Only for transmitters with 4…20mA output For PM12, PKD version: • Ex II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb • **IECEx** Ex ia IIC T4/T5/T6 Ga/Gb For ALW version: • Ex II 1/2G Ex ia IIC T4 Ga/Gb • **IECEx** Ex ia IIC T4 Ga/Gb For ALM version: Exia not available
	/Exia (IECEx)	
		Transmitter with output signal (0...2,5V /0...3,3V) and ATEX certificate is supplied as mode number: HPM-29B/Exia — Ex: 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
		Transmitter with output signal (0...5V /0,5...4,5V) and ATEX certificate is supplied as model number: HPM-29A/Exia — Ex: 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
	/MR	Marine certificate – DNV, BV
	/Tlen	For oxygen service (sensor filled with Fluorolube fluid), only M and G1/2 connection
	/H	version with high overload capacity and integrated circuit offering excess voltage protection
	/PED	European Pressure Equipment Directive N° 97/23/EC, category IV not available for transmitters with Hastelloy C 276 wetted parts
more than one option is available	/0,16%	Accuracy <0,16% (available for ranges >400mbar)
	/Modbus	Modbus communication protocol (ATEX not available)
	/SIL 1	SIL 1 certificate; only 4..20mA output
	/TR	Response time <30ms; only 4..20mA output
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 *	Aluminum housing, local display, IP65, DIN43650 connector
	/ALM *	Aluminum 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 Pressure limits: min. 0,25bar max. 350bar
	/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 Pressure limit max. 690bar
	/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=10m/G1/2