

Pressure transducer for hydraulic applications

Type HM20

RE 30272

Edition: 2018-04

Replaces: 2014-08



▶ Component series 2X



Features

- ▶ Measuring pressures in hydraulic systems
- ▶ 8 measurement ranges up to 630 bar
- ▶ Sensor with thin film measuring cell
- ▶ Components that are in contact with the media are made of stainless steel
- ▶ Operational safety due to high bursting pressure, reversed polarity, overvoltage and short-circuit protection
- ▶ Accuracy class 0.5
- ▶ Excellent non-repeatability < 0.05 %
- ▶ Wide operating temperature range -40 ... +85 °C
- ▶ Marine approval DNV-GL for all variants with current output

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Ordering code

01	02	03	04	05	06
HM20	-	2X	/	-	-
				K35	-

01	Pressure transducer	HM20
02	Component series 20 to 29 (20 to 29: unchanged installation dimensions and pin assignments)	2X
03	10 bar	10
	50 bar	50
	100 bar	100
	160 bar	160
	250 bar	250
	315 bar	315
	400 bar	400
	630 bar ¹⁾	630
04	Current output 4 to 20 mA ²⁾	C
	Voltage output 0.1 to 10 V	H
05	Connector, 4-pole, M12x1	K35
06	Without throttle element	No code
	Throttle element (corresponds to 0.3 mm nozzle) ³⁾	N

¹⁾ Only available with throttle element

²⁾ With marine approval DNV-GL

³⁾ Only available for versions with 250, 315, 400 and 630 bar

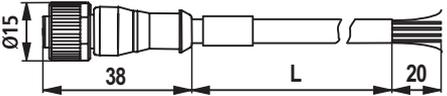
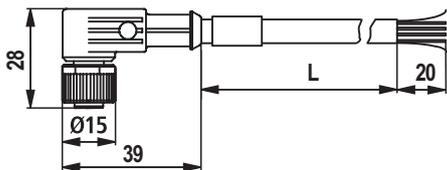
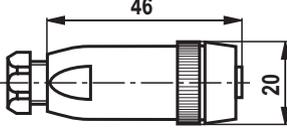
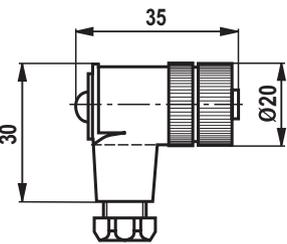
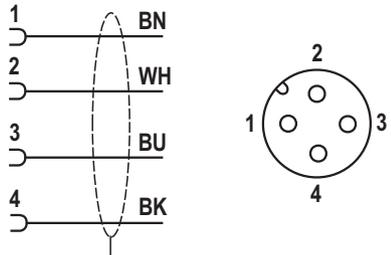
Replacement seal ring

Designation	Material no.
Seal ring NBR	R900012467

Cable sets or mating connectors are not included in the scope of delivery; please order separately

Cable sets and mating connectors

Cable sets and mating connectors

Technical data		Unit dimensions (in mm)	Designation	Material no.
general Current carrying capacity 4 A Temperature range -25 ... +85 °C Protection class IP 67 according to EN 60529			4PM12 (L = 2 m)	R900773031
			4PM12 (L = 5 m)	R900779498
Cable sets, shielded Cable diameter 5.9 mm Jacket color PUR-OB Line cross-section 4 x 0.34 mm ²			4PM12 (L = 2 m)	R900779504
			4PM12 (L = 5 m)	R900779503
Mating connectors Cable diameter 4 to 6 mm Line cross-section 4 x 0.75 mm ² Type of connection Screw connection			4PE11508	R900773042
Connection diagram Socket contacts, view to the socket side Cable set				4PE11509
				

Technical data

Input variables									
Operating voltage	U_S	18 ... 36 VDC ¹⁾							
Residual ripple	U_{PP}	2.5 V (40 to 400 Hz)							
Current consumption	I_{max}	≤ 12 mA (with voltage output)							
Protection class		III							
Isolation resistance	R	>100 MΩ (500 VDC)							
Measurement range	p_N [bar]	10	50	100	160	250	315	400	630
Overload protection	p_{max} [bar]	25	100	200	320	500	630	800	1000
Bursting pressure	p [bar]	200	200	400	640	1000	1260	1600	2520
Output parameters									
Output signal and admissible load R_A	I_{Sig}	4 ... 20 mA $R_A = (U_S - 8.5 \text{ V}) / 0.0215 \text{ A}$ with R_A in Ω and U_S in V							
	U_{Sig}	0.1 ... 10 V, $R_A > 2 \text{ k}\Omega$							
Setting time (10 to 90 %)	t	< 1 ms							
Accuracy (characteristic curve deviation)		< related to the complete measurement range, including non-linearity, 0.5 hysteresis, zero point and end value deviation (corresponds to the % measuring deviation according to IEC 61298-2)							
Temperature coefficient (TC) for zero point and range									
– within the nominal temperature range		< 0.1 % / 10 K							
– outside of the nominal temperature range		< 0.2 % / 10 K							
Hysteresis		< 0.15 % ²⁾							
Non-repeatability		< 0.05 % ²⁾							
Long-term drift (1 year) under reference conditions		< 0.1 %							
Environmental conditions									
Nominal temperature range	ϑ	–20 ... +80 °C							
Ambient temperature range	ϑ	–40 ... +85 °C							
Storage temperature range	ϑ	–40 ... +100 °C							
Hydraulic fluid temperature range	ϑ	–40 ... +90 °C							
Other characteristics									
Pressure port ³⁾		G1/4 according to DIN 3852 form E, seal ring according to DIN 3869-14							
Housing material		V4A (1.4404), PEI, HNBR							
Throttle material		1.4305							
Materials in contact with medium		1.4542, 1.4305, NBR							
Throttle element		See ordering code (Highly dynamic effects in like pressure peaks or cavitation in hydraulic systems may damage the measuring cell. For these applications, devices with integrated throttle element [version "-N"] in the process interface have to be used) ⁴⁾							
Pressure media		HL, HLP, HFC, nitrogen ⁵⁾ , others upon request							
Tightening torque		Measurement ranges < 400 bar	M_A 20 ... 25 Nm						
		Measurement ranges ≥ 400 bar	M_A 25 ... 30 Nm						
Electrical connection		4-pole M12 connector at the housing ⁶⁾							
Protection class according to EN 60529		IP65/IP67 with mating connector correctly mounted and locked							
Weight	m	0.06 kg							
Life cycle		60 million load cycles or 60000 h							
Vibration load:									
– Transport shock according to DIN EN 60068-2-27		15 g / 11 ms / 3 axes							
– Sine test according to DIN EN 60068-2-6		10 ... 2000 Hz / maximum of 10 g / 10 cycles / 3 axes							
– Noise test according to DIN EN 60068-2-64		20 ... 2000 Hz / 14 gRMS / 42 g peak / 24 h / 3 axes							

1) With cULus: max. of 30 VDC is admissible

2) Related to nominal temperature range

3) Thorough bleeding must be ensured

4) Only for device versions with throttle

5) Maximum of 300 bar is admissible

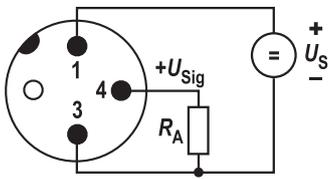
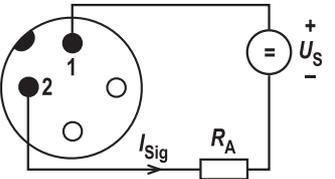
6) Recommendation: Use of shielded connection cable; see "Cable sets and mating connectors"

Technical data

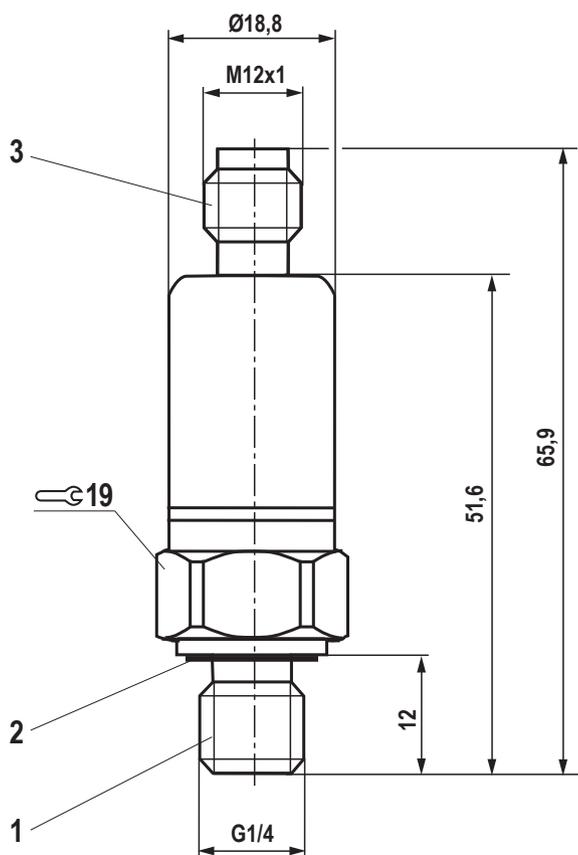
<p>Electro-magnetic compatibility (EMC)</p> <p>EN 61000-6-2 / EN 61326-2-3</p> <ul style="list-style-type: none"> - EN 61000-4-2 ESD - EN 61000-4-3 HF radiated - EN 61000-4-4 Burst - EN 61000-4-5 Surge - EN 61000-4-6 HF conducted - EN 61000-4-8 Magnetic field 50/60 Hz - EN 61000-4-9 Impulse magnetic field <p>EN 61000-6-3 / EN 61326-2-3</p> <ul style="list-style-type: none"> - EN 55016-2-1 Interference voltage - EN 55016-2-3 Radio interference field strength 	<p>4 kV CD / 8 kV AD with BWK B</p> <p>10 V/m (80 ... 2700 MHz) with BWK A</p> <p>2 kV with BWK B</p> <p>1 kV / 42 Ω with BWK B</p> <p>10 Veff (150 kHz ... 80 MHz) with BWK A</p> <p>100 A/m with BWK A</p> <p>1000 A/m with BWK A</p> <p>0.15 ... 30 MHz, class A, EN 55022</p> <p>30 ... 1000 MHz, class B, EN 55022</p>
<p>Conformity</p>	<p>CE according to the EMC directive</p>
<p>Approvals</p>	<p>cULus-listed</p> <p>Marine approval DNV-GL</p> <p>(For marine applications within the scope of marine approval, additional surge protection is required! Based on IACS-Unified Requirements E 10)</p>

Electrical connection

4-pole M12 connector, view to connection side

Voltage		Current (two-wire system)	
	<p>Values for U_S, R_A and U_{Sig}, see page 3</p>		<p>Values for U_S, R_A and I_{Sig}, see page 3</p>

Unit dimensions (dimensions in mm)



- 1 Pressure port G1/4 male thread
- 2 Seal ring
- 3 4-pole M12 connector

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 Please note that our products are subject to a natural process of wear and aging.

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