

Pressure transducer for hydraulic applications

Type HM20

RE 30272

Edition: 2018-04

Replaces: 2014-08



H8002

► 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

Contents

Features	1
Ordering code	2
Cable sets and mating connectors	3
Technical data	4, 5
Electrical connection	6
Unit dimensions	6

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

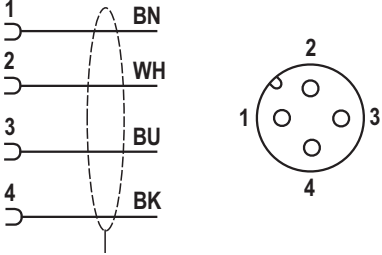
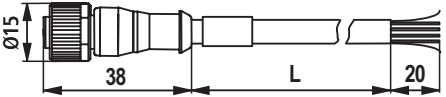
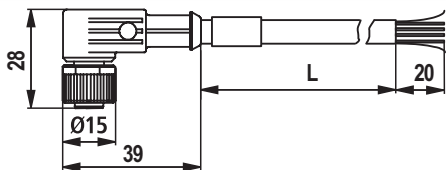
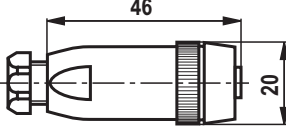
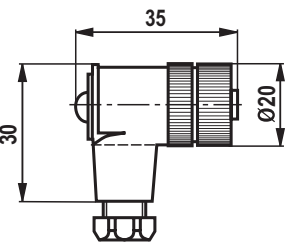
¹⁾ Only available with throttle element²⁾ With marine approval DNV-GL³⁾ Only available for versions with 250, 315, 400 and 630 bar**Replacement seal ring**

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		4PM12 (L = 2 m)	R900773031
Temperature range	-25 ... +85 °C		4PM12 (L = 5 m)	R900779498
Protection class	IP 67 according to EN 60529			
Cable sets, shielded				
Cable diameter	5.9 mm			
Jacket color	PUR-OB			
Line cross-section	4 x 0.34 mm ²			
Mating connectors				
Cable diameter	4 to 6 mm			
Line cross-section	4 x 0.75 mm ²			
Type of connection	Screw connection			
Connection diagram	Socket contacts, view to the socket side			
Cable set				
				
				
			4PM12 (L = 2 m) 4PM12 (L = 5 m)	R900779504 R900779503
			4PE11508	R900773042
			4PE11509	R900779509

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 – outside of the nominal temperature range			< 0.1 % / 10 K < 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							

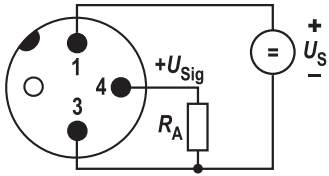
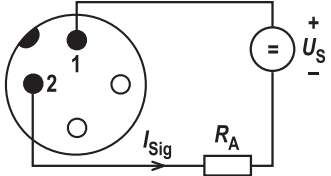
¹⁾ With cULus: max. of 30 VDC is admissible²⁾ Related to nominal temperature range³⁾ Thorough bleeding must be ensured⁴⁾ Only for device versions with throttle⁵⁾ Maximum of 300 bar is admissible⁶⁾ Recommendation: Use of shielded connection cable; see "Cable sets and mating connectors"

Technical data

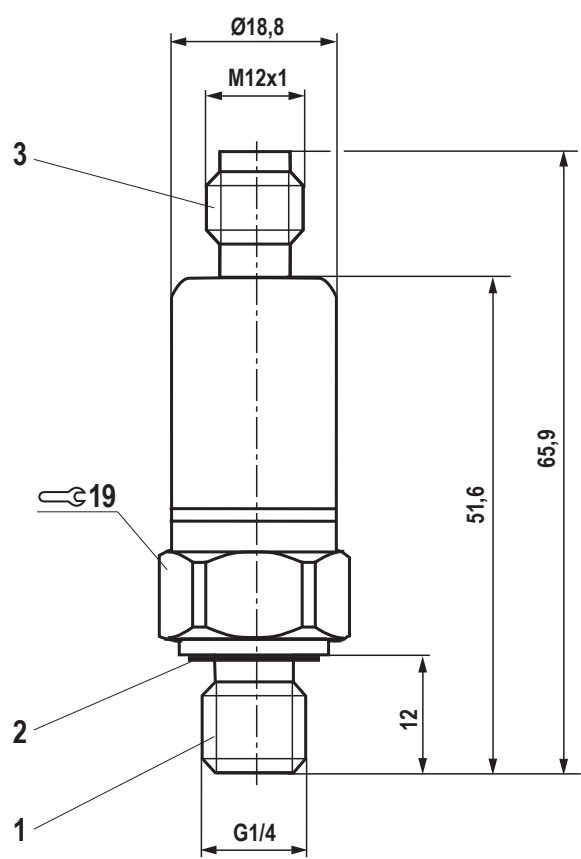
Electro-magnetic compatibility (EMC) EN 61000-6-2 / EN 61326-2-3 – EN 61000-4-2 ESD – EN 61000-4-3 HF radiated – EN 61000-4-4 Burst – EN 61000-4-5 Surge – EN 61000-4-6 HF conducted – EN 61000-4-8 Magnetic field 50/60 Hz – EN 61000-4-9 Impulse magnetic field EN 61000-6-3 / EN 61326-2-3 – EN 55016-2-1 Interference voltage – EN 55016-2-3 Radio interference field strength	4 kV CD / 8 kV AD with BWK B 10 V/m (80 ... 2700 MHz) with BWK A 2 kV with BWK B 1 kV / 42 Ω with BWK B 10 Veff (150 kHz ... 80 MHz) with BWK A 100 A/m with BWK A 1000 A/m with BWK A 0.15 ... 30 MHz, class A, EN 55022 30 ... 1000 MHz, class B, EN 55022
Conformity	CE according to the EMC directive
Approvals	cULus-listed Marine approval DNV-GL (For marine applications within the scope of marine approval, additional surge protection is required! Based on IACS-Unified Requirements E 10)

Electrical connection

4-pole M12 connector, view to connection side

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

Unit dimensions (dimensions in mm)



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