

Pressure transducer for hydraulic applications

Type HM20



HM20-2X

► 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
- Characteristic curve deviation <0.5%
- Non-repeatability $\pm 0.05\%$
- Ambient temperature range $-40 \dots +85 \text{ }^{\circ}\text{C}$
- Marine approval DNV for all variants with current output

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Ordering code

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

01	Pressure transducer	HM20
02	Component series 20 ... 29 (20 ... 29: unchanged installation dimensions and pin assignments)	2X

Measurement range

03	10 bar	10
	50 bar	50
	100 bar	100
	160 bar	160
	250 bar	250
	315 bar	315
	400 bar	400
	630 bar	630
04	Current output 4 ... 20 mA ¹⁾	C
	Voltage output 0.1 ... 10 V	H
05	Connector, 4-pole M12x1	K35
06	Throttle element (corresponds to 0.3 mm nozzle)	N

¹⁾ With DNV marine certification

Technical data

General				
Weight		kg	0.06	
Nominal temperature range		°C	−25 ... +80	
Ambient temperature range		°C	−40 ... +85	
Storage temperature range		°C	−40 ... +80	
Medium temperature range		°C	−40 ... +90	
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 g _{RMS} / 24 h / 3 axes	
Transport shock according to DIN EN 60068-2-27			15 g / 11 ms / 3 axes	
Pressure port ¹⁾			G1/4 threaded port according to DIN 3852 form E	
Housing materials			V4A (1.4404), PEI, HNBR	
Material process interface with measuring cell			1.4542 (17-4 PH / 630); seal ring NBR	
Throttle material			1.4305	
Throttle element			In the pressure channel of the process interface. It corresponds to a nozzle of 0.3 mm and reduces the risk of damage during highly dynamic effects such as pressure peaks or cavitation.	
Pressure media			HL, HLP, HFC, nitrogen ²⁾ , others upon request	
Tightening torque	► Hydraulic connection	<400 bar	Nm	20 ... 25
		≥400 bar	Nm	25 ... 30
	► Mating connector	Nm	0.6 ... 1.5 ³⁾	
Electrical connection			Device connector, 4-pole, M12 x 1 at the housing ⁴⁾	
Protection class according to EN 60529			IP65/IP67 (if suitable and correctly mounted mating connectors are used)	
Life cycle			60 million load cycles or 60000 h	
Conformity	► CE	according to the EMC directive		
	► UKCA	according to "UK EMC Regulations"		
Approvals			cULus-listed DNV marine certification (For marine applications within the scope of marine approval, additional surge protection is required! Based on IACS-Unified Requirements E 10)	
Electro-magnetic compatibility (EMC)	► EN 61000-6-2 / EN 61326-2-3			
	– EN 61000-4-2 ESD	kV	4 CD / 8 AD with BWK B	
	– EN 61000-4-3 HF radiated	V/m	10 (80 ... 2700 MHz) with BWK A	
	– EN 61000-4-4 Burst	kV	2 with BWK B	
	– EN 61000-4-5 Surge	kV	1 with BWK B	
	– EN 61000-4-6 HF conducted	V	10 (150 kHz ... 80 MHz) with BWK A	
	– EN 61000-4-8 Magnetic field 50/60 Hz	A/m	100 with BWK A	
	– EN61000-4-9 Magnetic field pulsed	A/m	1000 with BWK A	
	► EN 61000-6-3 / EN 61326-2-3			
	– EN 55016-2-1 Interference voltage	MHz	0.15 ... 30 (class B, EN 55022)	
– EN 55016-2-3 Radio interference field strength	MHz	30 ... 1000 (class B, EN 55022)		

¹⁾ Thorough bleeding must be ensured

²⁾ Maximum of 300 bar is admissible

³⁾ Recommended if no tightening torque specification exists.

⁴⁾ Mating connectors, separate order, see page 6.

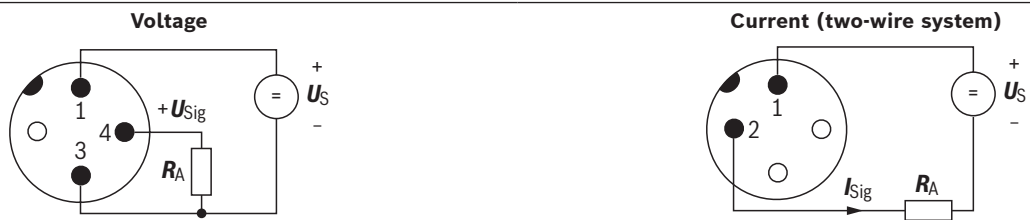
Technical data

Input										
Supply voltage	► Nominal voltage	VDC	24							
	► Lower limit value (U_S)	VDC	18							
	► Upper limit value (U_S)	VDC	36 ⁵⁾							
	► Maximum admissible residual ripple	Vss	2.5 (40 ... 400 Hz)							
Current consumption		mA	≤ 12 mA (with voltage output)							
Protection class			III							
Isolation resistance		MΩ	> 100 (500 VDC)							
Measurement range		bar	10	50	100	160	250	315	400	630
Overload protection		bar	20	100	200	320	500	630	800	1000
Bursting pressure		bar	200	200	400	640	1000	1260	1600	2520
Output										
Output signal and admissible load R_A	► Current (I_{Sig})	mA	4 ... 20; $R_A = (U_S - 8.5 \text{ V}) / 0.0215 \text{ A}$ with R_A in Ω and U_S in V							
	► Voltage (U_{Sig})	V	0.1 ... 10; $R_A > 2 \text{ k}\Omega$							
Setting time (10 ... 90%)		ms	<1							
Characteristic curve deviation (corresponds to the measuring deviation according to DIN EN 61298-2)		%	<0.5 (related to the complete measurement range, including non-linearity, hysteresis, zero point and end value deviation)							
Temperature coefficient (TC) for zero point and range	► Within nominal temperature range	%/10 K	<0.1							
	► Outside nominal temperature range	%/10 K	<0.2							
Non-repeatability		%	<±0.05 ⁶⁾							
Long-term drift (1 year) under reference conditions		%	< ±0.1							

⁵⁾ With cULus max. 30 VDC⁶⁾ Related to the nominal temperature range

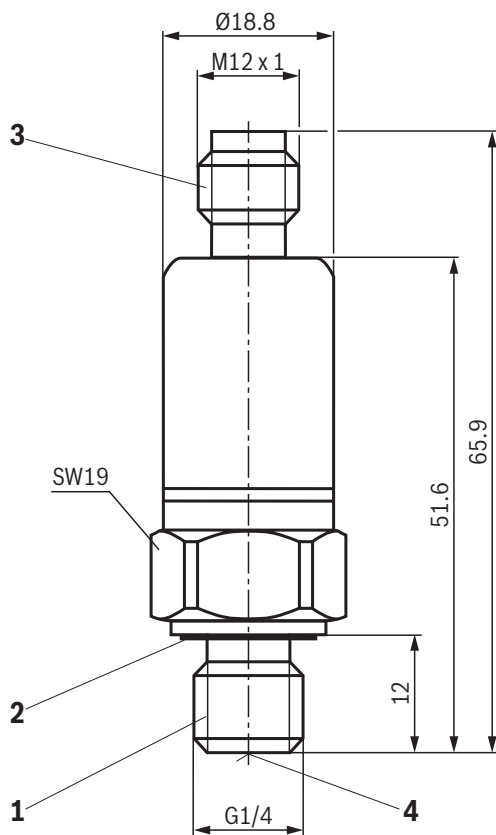
Electrical connection

Device connector, 4-pole, M12 x 1 (connection side)



Values for U_S , R_A and U_{Sig} see page 4

Dimensions (dimensions in mm)



- 1 Pressure port G1/4 male thread
- 2 Seal ring
- 3 Connector, 4-pole M12x1
- 4 Throttle element (corresponds to nozzle 0.3 mm)

Accessories (separate order)**Mating connectors and cable sets**

Designation	Design	Short designation	Material number	Data sheet
Cable sets; for sensors and valves with "K24", "K35" and "K72" connectors, 4-pole	M12 x 1, straight, 2.0 m	4PM12	R900773031	08006
	M12 x 1, straight, 5.0 m	4PM12	R900779498	
	M12 x 1, angled, 2.0 m	4PM12	R900779504	
	M12 x 1, angled, 5.0 m	4PM12	R900779503	
Mating connectors; for sensors and valves with "K24", "K35" and "K72" connectors, 4-pole	M12 x 1, straight, PG 7	4PZ24	R900773042	
	M12 x 1, angled, PG 7		R900779509	

Replacement seal ring

Designation	Material no.
Seal ring NBR	R900012467

Further information

- Mating connectors and cable sets for valves and sensors
- Hydraulic valves for industrial applications
- Information on available spare parts

Data sheet 08006

Operating instructions 07600-B