

Pressure sensor F02 Safety

Sensors

KEY FEATURES

- Safety pressure transmitter for applications that require a Performance Level PL d according to EN ISO 13849-1:2015 or AgPLd according to ISO 25119:2010 respectively SIL 2 according to IEC 61508:2010
- For mobile hydraulics, alternative drives (H2, CNG, LPG) and industrial sectors
- Maximum flexibility through modular design, customization and individualization possible
- Designed for OEM needs
- With ECE type approval

TECHNICAL DATA

- Pressure measuring range 10 ... 1200 bar
- Operating temperature range -40 ... 85 °C / -40 ... 185 °F with media temperatures up to 125 °C / 257 °F
- Redundant inverse output signal (either analog current or ratiometric voltage)
- Protection class IP67
- Welded stainless steel measuring cell

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TECHNICAL DATA

Pressure range, gauge	0 ... 10 bar to 0 ... 1200 bar, other measuring ranges on request								
Standard pressure range	10 bar	25 bar	50 bar	100 bar	250 bar	400 bar	800 bar	1200 bar	
Overload to DIN EN 60770-1	50 bar	50 bar	100 bar	200 bar	500 bar	800 bar	1600 bar	2400 bar	
Burst pressure to DIN EN 60770-1	250 bar	250 bar	500 bar	1000 bar	2500 bar	4000 bar	> 4000 bar	> 4000 bar	
Linearity, pressure hysteresis and repeatability	< 0.5 % FS								
Overall accuracy under reference conditions ¹	± 1.0 % FS 0 ... +85 °C / 32 ... 185 °F								
	± 1.5 % FS -25 ... +0 °C / -13 ... 32 °F								
	± 2.5 % FS -40 ... -25 °C / -40 ... -13 °F								
Long-run stability	< 0.2 % FS p.a.								
Media temperature	-40 ... +125 °C / -40 ... 257 °F								
Operating temperature	-40 ... +85 °C / -40 ... 185 °F								
Storage temperature	-40 ... +100 °C / -40 ... 212 °F								
Voltage supply	9 ... 32 VDC, allowable ripple @ 50 Hz: 10 % (for current output), 5 V ±10 % (for ratiometric voltage output)								
Output signal	2 x 4 ... 20 mA (3-wire-technique) or 2 x 10 ... 90 % VCC, inverted								
Electrical protection	Short circuit protected (signal to GND/VCC) and inverse polarity protection (supply lines)								
Electrical connection	M12-connector, DT04-connector								
Pressure connection	G 1/4, 1/4 NPT, SAE4, SAE6, other pressure connections on request								
Protection class	IP67								
Installation torque	max. 35 Nm								
Material with medium contact	EN/DIN 1.4548 / FKM								
Material housing	EN/DIN 1.4301								
Material diaphragm	EN/DIN 1.4542								
Material connector	PBT-GF30, 1.4301 (M12 in stainless steel)								
Conformity	CE, E1: All vehicle types with a 12 V resp. 24 V - electrical wiring and battery (-) at the body.								
Dimensions (W x H x D)	Dependant on selected variant, e.g. F02 G 1/4 with M12x1 PBT: 54 x 22 x 26 mm (wrench size 22), F02 G 1/4 with M12x1 stainless steel: 62 x 22 x 26 (wrench size 22), technical drawing available on request								

¹ Load 100 Ω, temperature in steady state, accuracy valid for SIG1.

TECHNICAL DATA

Weight F02 G 1/4 with M12x1 PBT: ca. 50 g
F02 G 1/4 with M12x1 stainless steel: ca. 70 g

Functional safety

IEC 61508:2010	<ul style="list-style-type: none">• SIL 2• 1oo1 architecture• HFT 0• Safety-related subsystem Type B• SFF² 95.8 % / 93.1 % ratiometric• PFH 6.1×10^{-9} / 4.9×10^{-9} ratiometric
EN ISO 13849-1:2015	<ul style="list-style-type: none">• PL d• Category 2• DC medium⁴• CCF 70 points• MTTFd: high (> 100 years)
MTBF (acc. to SN 29500)	498 years / 1.060 years ratiometric
Safety function ³	Safe conversion of the measured pressure into two proportional inverted current / voltage signals

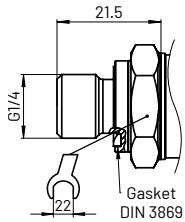
² Including control unit.

³ According to the safety handbook.

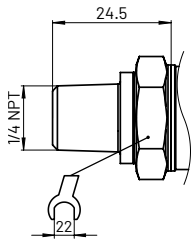
TECHNICAL DRAWINGS AND PIN ASSIGNMENTS

Pressure connection⁴

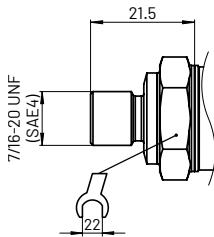
G 1/4, ISO 9974-2
(Form E)



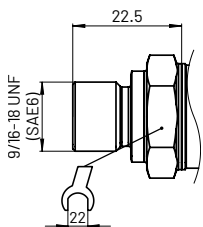
1/4 NPT per
„Nominal width
for US-standard
bevelled pipe thread
NPT“



SAE 4 - O-Ring

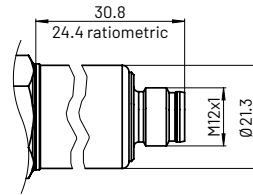


SAE 6 - O-Ring

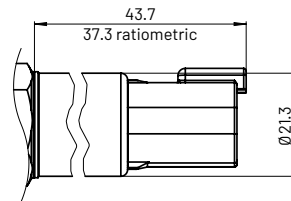


Electrical connection, protection class IP per IEC 60529

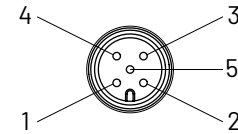
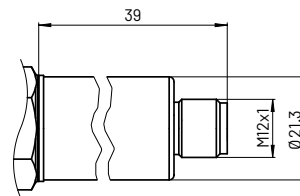
Connector, PBT-GF30,
M12x1, 5-pol, IP6K7



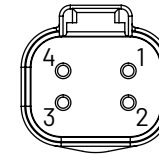
Connector
DT04-4P, 4-pole, IP6K7



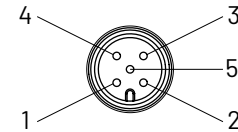
Connector, stainless steel,
M12x1, 5-pol, IP6K7



Pin	Name	Description
1	VCC	Power supply
2	SIG2	Inverse pressure signal output
3	GND	Common Ground
4	SIG1	Pressure signal output
5	-	Do not connect

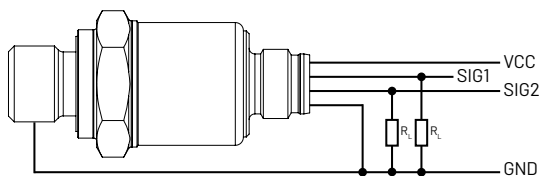


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Recommended terminal layout



⁴ OEM variants available.

Subject to change without notice

QUALIFICATIONS

Conformity

CE, E1: All vehicle types with a 12 V resp. 24 V - electrical wiring and battery (-) at the body.

EMC industrial (CE)

EMV	DIN EN 61326-1, DIN EN 61326-2-3 DIN EN 61326-3-1
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Climatic and mechanical tests

Shock 500 g	IEC 60068-2-27 (Shock mechanical)
Vibration 20 g	IEC 60068-2-6

ORDER CODES

model			pressure range				unit			reference	output		pressure connection		electrical connection		
F	0	2	-					-				-			-		
							b a r			R	0 6		0 1		0 1		
							p s i			gauge	10...90 % VCC		G 1/4"		M12 (PTB)		
											1 1		0 4		0 9		
											4-20 mA (3-wire- technique)		1/4" NPT		DT04 4-pole		
													1 0		1 1		
													SAE04 (7/16-20 UNF with o-ring)		M12 (stainless steel)		
													1 1				
													SAE06 (9/16-18 UNF with o-ring)				
													...				
													9 9				
													custom specific				