

MEASUREMENT SYSTEMS AND SENSORS
Sensors

TECHNICAL DATA digi**SENS**-F02



Safety Pressure Transmitter F02

The F02 is a safety-related pressure transmitter which can be used in applications that require a Performance Level d according to EN ISO 13849-1 and/or a Safety Integrity Level 2 according to IEC 61508.

Measure pressure with safety

The F02 supervises the signals of its measurement cell and provides the physical variable pressure as a 4 ... 20 mA signal on two outputs. The control unit can monitor the functionality of the F02 with the two inverted outputs.. This way the use in safety-related applications is possible.

Customers benefit from experience

The design has been derived from the experience with pressure transmitters, which STW manufactures for more than 30 years. The good price / performance ratio allows the economical use in all applications with PLd/SIL2 requirements.

Versatility

The F02 is designed for pressure ranges from 0 ... 10 bar to 0 ... 1200 bar. Intermediate measuring ranges can be produced on request. Wetted parts are made of stainless steel to perform together with the welded thin film measuring cell for high media compatibility. The operating voltage is designed for different supply systems.

TECHNOLOGY	CUSTOMER BENEFIT
<ul style="list-style-type: none"> ▶ Safety: PL d (according to EN ISO 13849-1) SIL 2 (according to IEC 61508) ▶ Standard components ▶ Robust design 	<ul style="list-style-type: none"> ▶ High MTTF₀ and MTBF values guarantee high availability and reliability when used in vehicles. Reliable reading of the physical variable pressure. Safe output as a redundant current signal. ▶ Inexpensive through the use of standard components for pressure transmitters. ▶ Compliant with the E1 standard. Compliant with the standards for automotive, agricultural and construction industry. Possible use in a temperature range from -40 °C to + 85 °C and a maximum media temperature of 125 °C.

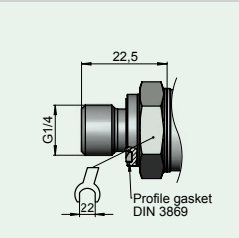
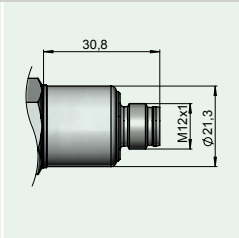
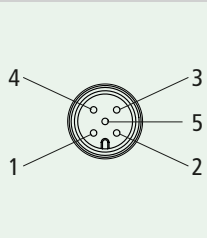
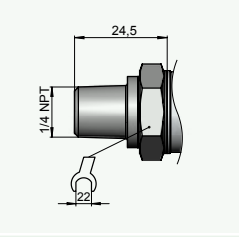
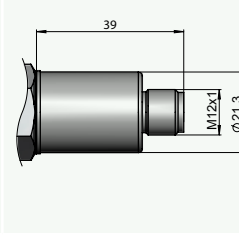
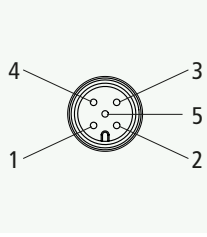
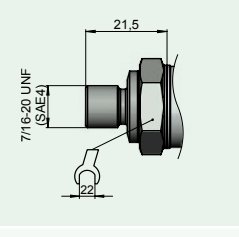
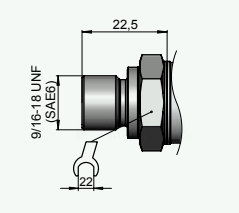
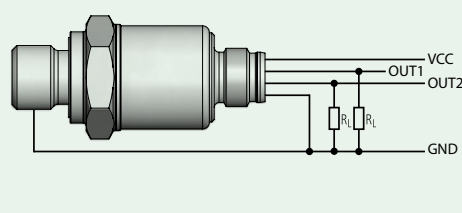
Technical Data

Pressure range, gauge		0 ... 10 bar to 0 ... 1200 bar, other measuring ranges on request								
Standard pressure range	bar	10	25	50	100	250	400	800	1200	
Overload to DIN EN 60770-1	bar	50	50	100	200	500	800	1600	2400	
Burst pressure to DIN EN 60770-1	bar	250	250	500	1000	2500	4000	> 4000	> 4000	
Linearity, pressure hysteresis and repeatability	% FS	< 0.5								
Overall accuracy under reference conditions	% FS	± 1.0 0 ... +85 °C ± 1.5 -25 ... +0 °C ± 2.5 -40 ... -25 °C								
Long-run stability	% FS p.a.	< 0.2								
Media temperature	°C	-40 ... +125								
Operating temperature	°C	-40 ... +85								
Storage temperature	°C	-40 ... +100								
Voltage supply	VDC	9 ... 32, allowable ripple @ 50 Hz: 10%								
Output signal	mA	2x4 ... 20 (3-wire-technique), opposing								
Electrical protection		Short circuit protected, signal on GND/VCC and inverse-polarity protection								
Electrical connection		M12-connector								
Pressure connection		G 1/4, other pressure connections on request								
Protection class		IP 67								
Installation torque	Nm	max. 35								
EMV		DIN EN 61326-1, DIN EN 61326-3-1								
Shock	g	500 IEC 60068-2-27 (Shock mechanical)								
Vibration	g	20 IEC 60068-2-6								
Material with medium contact		EN/DIN 1.4548 / FKM								

Technical Data

Material housing	EN/DIN 1.4301		
Material diaphragm	EN/DIN 1.4548		
Material connector	PBT-GF30 or 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)	mm	F02 G 1/4 with M12x1 PBT: F02 G 1/4 with M12x1 stainless steel:	54 x 22 x 26 (wrench size 22) 62 x 22 x 26 (wrench size 22)
Weight	g	F02 G 1/4 with M12x1 PBT: F02 G 1/4 with M12x1 stainless steel:	ca. 50 ca. 70

Functional Safety			
IEC 61508:2010	<ul style="list-style-type: none"> ▶ SIL 2 ▶ 1oo1 architecture ▶ HFT 0 	<ul style="list-style-type: none"> ▶ safety-related subsystem ▶ SFF 95 % *4 ▶ PFH 8.4 *10⁻⁹ 	
EN ISO 13849-1:2015	<ul style="list-style-type: none"> ▶ PL d ▶ Category 2 ▶ DC medium *4 	<ul style="list-style-type: none"> ▶ CCF 70 points ▶ MTTF_d: high (> 100 years) 	
MTBF (acc. to SN 29500)	420.7 years		
Safety function*2	Safe conversion of the measured pressure into two proportional opposing current signals		

Pressure Connections*3		Electrical connection*3 Protection class IP per IEC 60529															
G 1/4, ISO 9974-2 (Form E)		Connector, PBT, M12x1, 5-pol, IP 67			<table border="1"> <thead> <tr> <th>Pin</th> <th>3-wire technique</th> </tr> </thead> <tbody> <tr><td>1</td><td>VCC</td></tr> <tr><td>2</td><td>OUT2</td></tr> <tr><td>3</td><td>GND</td></tr> <tr><td>4</td><td>OUT1</td></tr> <tr><td>5</td><td>Do not connect!</td></tr> </tbody> </table>	Pin	3-wire technique	1	VCC	2	OUT2	3	GND	4	OUT1	5	Do not connect!
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SAE 4 - O-Ring																	
SAE 6 - O-Ring																	
Recommended terminal layout																	
																	

*1 Load 100 Ω, temperature in steady state, accuracy valid for OUT1.

*2 According to the safety handbook.

*3 OEM variants available.

*4 Including control unit

Order codes

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



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