Automation, Connectivity and
Electrification of Mobile Machines

MEASUREMENT SYSTEMS AND SENSORS
Sensors

TECHNICAL DATA digiSENS-F01

E 1

SAFETY

TÜV SÜD

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Safety Pressure Switch F01

The Safety Pressure Swith F01 is qualified for applications that require a Performance Level (PL) d according to EN ISO 13849. EMC properties, shock and vibration characteristics enable the usage in rough environmental conditions. These conditions can be found in mobile hydraulics.

Benefits for the customer
The design is based on the experience with a safety pressure transmitter with PL e and standard pressure transmitters. These transmitters are produced by STW in large numbers. The excellent cost/performance ratio is a plus for the usage in series applications. In addition, OEM versions can be delivered.

Versatility
The F01 provides different switching points and a variety of pressure ranges. On request, specific measuring ranges can be provided. Parts in contact with the fluid or gas are manufactured in stainless steel. This guarantees a high media compatibility in combination with the thin-film measurement cell. The F01 is available in two variants: One variant with two switching outputs and one variant with combination of a switching and current output.

TECHNOLOGY	CUSTOMER VALUE
▶ Safety: PL d (per DIN EN ISO 13849-1)	▶ High $MTTF_d$ and MTBF. Hence high availability and reliability during the usage in vehicles Safe measurement of the physical unit pressure Safe output of analog and digital signals Safe detection of switching point Safe switching of outputs
▶ Standard components	▶ Economically priced due to usage of standard components for pressure transmitters.
▶ Robust design	▶ Compliance with the standards for E1 certifications. Compliance with the standards for automotive, agriculture and construction industry. Operating conditions for temperature between –40 °C and 85 °C and a media temperature up to 125 °C.

Technical data

Pressure range, gauge		50 … 1000 bar, other ranges available on request					
Standard pressure range	bar	50	100	250	400	800	1000
Maximum allowable pressure	bar	75	150	425	650	1200	1500
Linearity, pressure hysteresis and repeatability	%FS	< 0.5					
Overall accuracy under reference conditions*1	%FS	± 1.0 0 … +85 °C ± 1.5 –25 … +0 °C ± 2.5 –40 … –25 °C					
Long term stability	%FS p.a.	< 0.2					
Media temperature	°C	–40 … +125					
Operating temperature	°C	–40 … +85					
Storage temperature	°C	–40 … +100					
Voltage supply	VDC	8 … 36, allowable ripple @ 50 Hz: 10 %					
Output signal		Option 1: Two switching outputs (PNP or NPN)					
		Option 2: One switching output (PNP or NPN) and one current output (4 … 20 mA)					
Electrical protection		Short circuit protected, signal on GND/VCC and inverse-polarity protection					
Electrical connection		M12-connector with stainless steel thread					
Pressure connection		G 1/4, other connectors on request					
Protection class		IP 67					
Installation torque	Nm	max. 35					
EMV		DIN EN 61326-1, DIN EN 61326-2-3					
Shock	g	500 per IEC 60068-2-27 (Shock mechanical)					
Vibration	g	20 per IEC 60068-2-6					
Material with medium contact		EN/DIN 1.4548 / FKM					

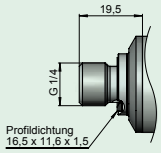
Technical data

Material housing		EN/DIN 1.4301	
Material diaphragm		EN/DIN 1.4548	
Material connector		PBT-GF30 oder 1.4301 (M12 metal design)	
Conformity		CE, E1: All vehicle types with a 12 V resp. 24 V - electrical wiring and battery (-) at the body.	
Dimensions (H x B x T)	mm	F01 G 1/4 with M12 x 1:	84 x 30 x 30 (wrench-size 19)
Weight	g	ca. 120	

Functional safety		
DIN EN ISO 13849-1	▶ PLd ▶ Cat 2 ▶ DC Low	▶ CCF 70 Points ▶ $MTTF_d$ high > 100 years
MTBF (per. SN 29500)	> 100 years	
Safety function*2	Safe measurement of pressure and redundant output	

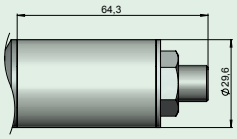
Pressure connection*3

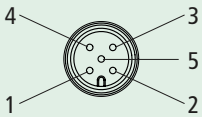
G 1/4, ISO 9974-2 (Form E)



Electrical connection*3 Protection class IP per IEC 60529

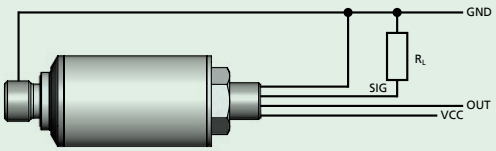
Circular plug-in connector M12x1, 5-pole, IP 67

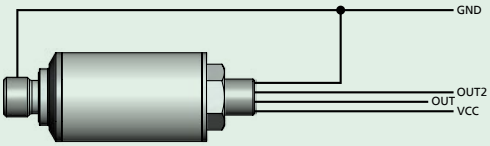




Pin	Option 1 Connection	Option 2 Connection
1	VCC	VCC
2	OUT2	SIG
3	GND	GND
4	OUT	OUT
5	do not connect	

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.

Order codes

model				pressure range					unit					reference		output			pressure connection			electrical connection	
F	0	1	-					-					-		-			-			-		

unit	reference	output	pressure connection	electrical connection
b a r	R	1 1	0 1	0 1
p s i	gauge	2 x PNP	G 1/4"	M12
		1 4	...	
		PNP +4...20mA	9 9	
		2 2	custom specific	
		2 x NPN		
		2 4		
		NPN +4...20mA		

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