



- ▶ **Pressure transducer for applications with Safety Integrated Level or Performance Level requirements**
- ▶ **Up to max. 5000 bar pressure range**
- ▶ **SIL 2, PL:d**
- ▶ **High accuracy $\leq 0.5\%$ F.S.**
- ▶ **High strength, rugged stainless steel design**
- ▶ **IP65 up to IP69K protection**

The SMO3100 PLd is a version of the SMO Series intended for applications with safety integrated level or performance level requirements.

This is a high quality all stainless steel pressure transducer for use in the measurement of gases and liquids compatible with stainless steel. The SMO series sensor has well proven use for high accuracy pressure sensing in mobile hydraulics, automotive and industrial equipment amongst others, and now offers ECU and other safety controlled applications compliance with DIN EN ISO 13849-1 and IEC 61508 and several other recognised safety accreditations.

The electronics in the SMO3100 PLd are fully enclosed in a high-strength stainless steel housing with IP67 protection as standard and up to IP69K on request. Shock and vibration and other environmental performance specifications are more than consistent with the high reliability and long life offered by these premium range sensors.

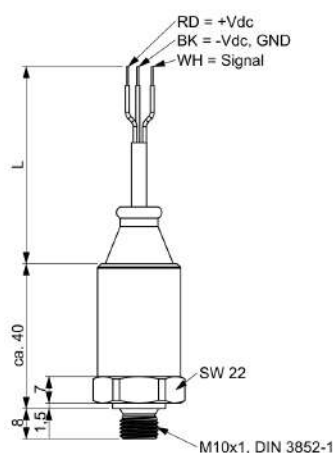


Specifications		
Performance		
Accuracy @ RT	% of the range (gauge and vacuum sensors) < 0.5 BFSL ≤ 0.125 % of the range (absolute sensors) < 1.0	(incl. nonlinearity, hysteresis, repeatability, zero-offset and final offset acc. to IEC 61298-2)
Non-linearity	% of the range ≤ 0.15	
Repeatability	% of the range ≤ 0.10	
Stability/year	% of the range ≤ 0.10	
For pressure ranges above 2000 bar:		
Accuracy @ RT	% of the range (gauge and vacuum sensors) < 1.0 BFSL ≤ 0.5 % of the range (absolute sensors) < 1.0	(incl. nonlinearity, hysteresis, repeatability, zero-offset and final offset acc. to IEC 61298-2)
Non-linearity	% of the range ≤ 0.30	
Repeatability	% of the range ≤ 0.20	
Stability/year	% of the range ≤ 0.20	
Response time	(10..90%) t(ms)l	
Overrange pressure	up to 2x rated pressure	
Burst pressure	up to 5x rated pressure	
Pressure cycles	> 10 million	
MTTFd	> 100 years	
Environment		
Temperature [°C]: Measuring medium Ambience Storage Compensated range	-40...125 -40...105 -40...125 -20...85	
Temperature coefficient within the compensated range: Mean TC offset % of the range ≤ 0,15 / 10K Mean TC range % of the range ≤ 0,15 / 10K		
Shock	1000 G, 11 msec., 1/2 Sine	
Vibration	25 G peak, 20 to 2000 Hz	
Sealing	IP65 up to IP69K	
Electronics		
Output -> Supply	4 - 20 mA -> 10 - 32 VDC	
Output impedance	< 100 Ω	
Current consumption	< 10 mA	
Reverse voltage protection	Yes	
Mechanics		
Housing	304 stainless steel or titanium >2000 bar	
Wetted parts	17-4PH stainless steel	
Pressure port	see select table	
Electrical connection	see select table	
Weight	ca. 80 g	

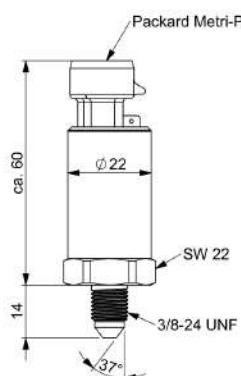


Gauge pressure dimensions

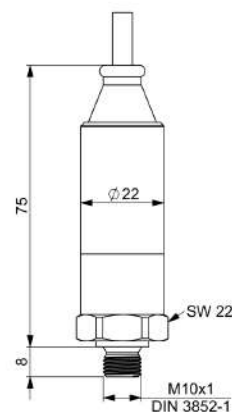
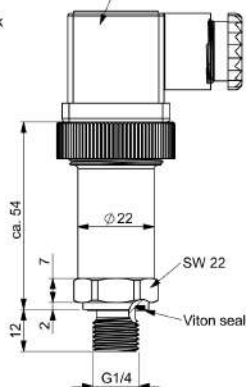
Cable assembly



Packard Metripac
Connector



DIN EN 175301-803
Connector



Type	Output	PIN 1	PIN 2	PIN 3	PIN 4
DIN EN 175301- 803-A and C	4..20mA	+ Supply	Current output -	N/A	-
Round connector M12x1 A	4..20mA	+ Supply	N/A	Current output -	N/A
Packard Metripac	Output	PIN A	PIN B	PIN C	-
	4..20mA	Current output -	+ Supply	N/A	-
Cable assembly	Output	Red	Black	White	Green
	4..20mA	+ Supply	Current output -	N/A	-





Ordering information

(Please use the characters in the chart below to create your product code)

Sample Code SMO3100PLd - A - 01000 - B - 2 - A

Port Configuration

A	G 1/4" E male
B	1/4 " NPT Male
C	1/8" NPT Male
D	7/16" 20 UNF Male
E	9/16" 18 UNF Male
F	M14x1.5 Male
G	1/4" SAE Female
H	3/8x24 UNF Male (Dash Size 3)
M10	M10 x 1

Pressure Range

See table below*

Pressure Unit

A	Absolute Pressure
B	Gauge Pressure
V	Vacuum Pressure

Output Signal

2	4...20mA
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Electrical Interface

A	600m cable
B	Miniature EN175301 - 803 - C Connector
C	Packard Metripack Connector
D	Standard EN175301 - 803 - A Connector
F	M12x1 Round Connector
K**	Moulded Cable

** Sealing IP69K

Pressure Range*

Bar	1.0	1.6	2.5	4	6	10	16	25	40	50	60	100	160	250	400	600	1000	1600	2000	4000	5000
Order Code	00100	00160	00250	00400	00600	01000	01600	02500	04000	05000	06000	10000	16000	25000	40000	60000	100000	160000	200000	400000	500000

The SMO3100 PLd series is backed by a 1 year Warranty. The purchaser is responsible for compatibility of the media, functional adequacy and correct installation of the transmitter.

If you require a customized solution for your program contact our sales team.

PITCH TECHNOLOGIES

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Pressure Sensor - SMO3100 PLd 03/25



EI-000089-A

Safety data sheet for SMO3100PLD

General	Value	Note
Applicable Standard	DIN EN 61508 EN ISO 13849-1 IEC TR 62380	
Device Type	Pressure Transducer	
Measurement range	Any	
Safety-related output signal	Output <3.85mA or >22mA	Signal interpretation: diagnostic mode, error
Device type	Type A	Acc. to DIN EN 61508-2:2011-02, 7.4.4.1.2
Control structure	Category 2	Acc. DIN EN ISO 13849-1, 6.2.5
Hardware architecture (HFT)	1oo1	
Number of operation mode	1	
Hardware safety integrity	Single channel, no redundancy	
Parameters	Value	
MTTF _d	228 (100*) Years	EN ISO 13849-1 is limiting MTTFd to 100 years
λ_{DU}	$0.1392 * 10^{-6} / H$	<i>Dangerous Undetected Failure Rate</i>
λ_{DD}	$0.3610 * 10^{-6} / H$	<i>Dangerous Detected Failure Rate</i>
λ_{SU}	$0.3320 * 10^{-6} / H$	<i>Safe Undetected Failure Rate</i>
λ_{SD}	$0.0000 * 10^{-6} / H$	<i>Safe Detected Failure Rate</i>
λ_F	$0.832310 * 10^{-6} / H$	<i>Failure Rate</i>
SFF	83.27%	<i>Safe Failure Fraction</i>
PFD**	$6.12 * 10^{-4} / H$	<i>Probability of Failure on Demand</i> T[Proof] = 1 YEAR **
PFH	$1.392 * 10^{-7} / H$	<i>Probability of Failure per Hour</i>
DC	72.17%	<i>Diagnostic Coverage</i>
CCF	65%	<i>Common Cause Failure</i>
Power-on time	< 40ms	
Diagnostic Interval	< 100ms	Defined by internal processing time
Fault Reaction Time	< 100ms	

For all related part numbers, the following regulations apply:

- The specified temperature range must not be exceeded.
- Overpressure may lead to an offset shift, which can not be detected by the sensor.
- The considered mission profile acc. IEC TR 62380 is "automotive, motor control"

** The test procedure for PFD can be defined by applying and increasing a defined pressure and monitoring the output signal. If the signal does not fall into the diagnostic modes, then the pressure transducers work normally.

** all calculated values are made assuming a high demand system. PFD value was calculated using "simple calculation" acc. VDI/VDE 2180, sheet 3 with $\lambda_{DU} = 0.1392 * 10^{-6} / H$ and $\beta = 10$ and 1oo1 single channel system.

Detected internal failures:

The following internal failures are detected by the signal conditioner and will actively lead to an output signal *below* or *above* the defined safety limits.

Broken bond wires (connections to the sensing element, in operation)	RESULT: >22mA
Broken bond wires (connection to the sensing element, before power on)	RESULT: <3,85mA
Internal EEPROM errors caused by CRC	RESULT: <3,85mA
Internal Watchdog (will trigger for different internal failures)	RESULT: <3,85mA