

Pressure transmitter in mobile hydraulics

S M O

Main features

- Measuring ranges 0...10 mbar and to 0...5000 bar
- Output signals 4-20 mA; 0-5 V; 0.5-4.5 V ratiometric
- Temperature range of media -60°C bis 150°C
- Shock and vibration resistance > 1000 g shock, > 30 g vibration
- Protection class IP67 (special version up to IP69K)
- Compact and rugged model in stainless steel
- High flexibility for options thanks to modular design
- Highly reliable

Applications

- Automotive industry
- Diesel and natural gas engines
- Braking systems
- Hydraulics
- Pneumatics
- Industrial Equipment and Automation technology

Description

Thanks to its stainless steel membrane and to its semiconductor thin-film technology, the transducer has excellent properties regarding its long-term stability, medium compatibility and pressure peaks that suggest its advantageous use in most industrial applications. Also its robustness even in very rugged ambient conditions in the field of mobile hydraulics is guaranteed by its welded stainless steel housing. The EMC properties of the SMO series permit its application also in sophisticated environments. Its ratiometric model has been successfully tested up to 300V/m.

With a performance level d, the SMO also offers safety-critical applications the highest level of reliability (cf. EI-000024).

ADZ NAGANO GmbH has been certified acc. to ISO/TS 16949, among others.



Specifications

PRESSURE RANGE

Measuring range*	p [mbar]	10	40	100	160	200	250	400	600
Overload pressure	p [mbar]	50	200	500	800	1000	1250	1200	1800
Burst pressure	p [mbar]	150	600	1500	2000	2000	2000	2000	3000
Measuring range*	p [bar]	400	1000	1600	2000	2500	4000	5000	
Overload pressure	p [bar]	750	1200	2400	2400	3600	4800	6000	
Burst pressure	p [bar]	1000	1500	3000	3000	4500	6000	7000	

(other pressure range as -1...0 bar, -1...9/24 bar etc. or absolute pressure are available)

ELECTRICAL PARAMETER

		2-wire	3-wire	3-wire
Output signal*		4...20 mA	0...5 V	0,5...4,5 V ratiometric
Supply voltage	$U_s [V_{DC}]$	10...32**	8...32	$5 \pm 10\%$
Load resistor	R_A in Ohm	$R_A = (U_s - 10V) / 0,02A$	$\geq 4,7k\Omega$	$\geq 4,7k\Omega$
Response time	t [ms]	≤ 2	≤ 1	≤ 1
Maximum supply current	I [mA]	23	10	7,5
Isolation voltage*	$U [V_{DC}]$	50	option 500/710	

** > AppNote to EI-000024 (see www.adz.de)

ACCURACY

		for pressure range ≤ 2000 bar	for pressure range > 2000 bar	for pressure range < 250 mbar
Accuracy @ RT	% of the range	$\leq 0,50^{***}$	$\leq 1,00^{***}$	$\leq 1,00^{***}$
Non-linearity	BFSL	$\leq 0,15$	$\leq 0,30$	$\leq 0,30$
Stability/year	% of the range	$\leq 0,15$	$\leq 0,20$	$\leq 0,20$

*** incl. nonlinearity, hysteresis, repeatability, zero-offset-and final-offset

(acc. to IEC 61298-2)

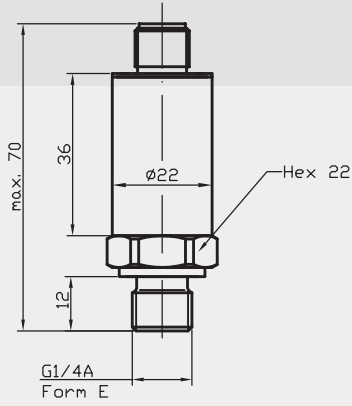
ACCEPTABLE TEMPERATURE RANGES

Measuring medium	T [°C]	-40...125	option -60...150
Ambience	T [°C]	-40...105	
Storage	T [°C]	-40...125	
Compensated range	T [°C]	-20...85	
Mean TC offset	% of the range	$\leq 0,15 / 10K$	
Mean TC range	% of the range	$\leq 0,15 / 10K$	
Total error	% of the range	-40°C 2,00%	
	% of the range	105°C 2,00%	

MECHANICAL PARAMETER

Parts in contact with the measuring medium		stainless steel, titanium, silicon	
Housing		stainless steel	
Weight	m [g]	80-120	depending on design
Shock resistance/drop	g	1000	acc. to DIN EN 60068-2-32 – free fall
Vibration resistance	g	30	acc. to DIN EN 60068-2-6 – vibration sinusoidal
Shock resistance/constant	g	50	acc. to DIN EN 60068-2-27 – shock
Approvals		CE Declarations of conformity 2014/30/EU, 2014/68/EU, E1 R10, ISO 7637, ISO 16750 and ISO 11452	
Options		additional EMC protection, high vibration resistance, with restrictor	
IP system of protection (IEC 60529) up to IP69K		The IP system of protection as specified in the data sheets generally applies, with appropriate mating plug connected.	

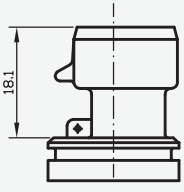
Configurations -examples- **SMO (M12 connector)**



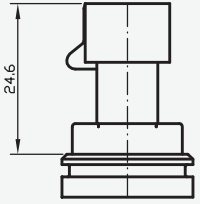
Packard cable Superseal M12x1 (S763) DIN 72585

Electrical connections* -examples-

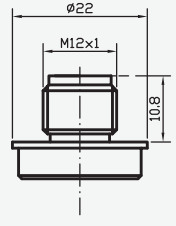
Packard connector



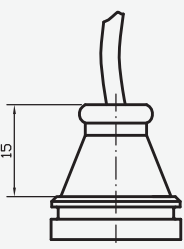
Superseal connector



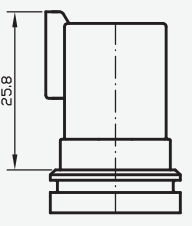
male socket M12x1 (S763)



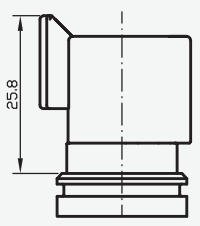
cable output



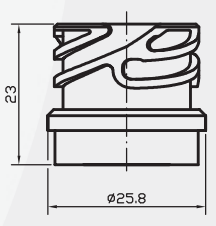
Deutsch-connector 4-pin



Deutsch-connector 3-pin

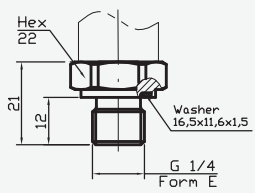


round-connector DIN 72585

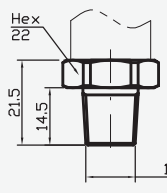


Pressure Connections* -examples-

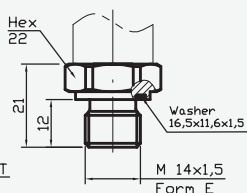
G 1/4 A; DIN 3852; Form E



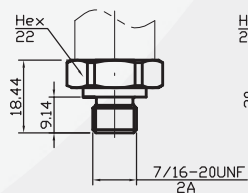
1/4 NPT



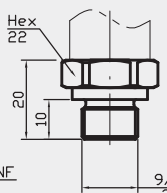
M 14x1,5; DIN 3852; Form E



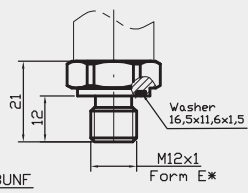
7/16-20UNF-2A SAE 514



9/16-18UNF-2A

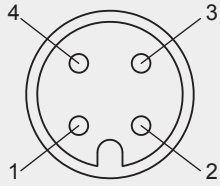
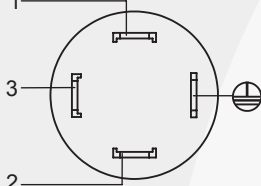



M12x1,5



* customer specific configurations available

Electrical Configuration*

Plug M12x1	Cable port	DIN EN 175301-803-A	DIN EN 175301-803-C
			
2-wire 1: UB+ 2: nc 3: out 4: nc	2-wire red: UB+ black: out white: nc	2-wire 1: UB+ 2: out 3: nc ⊕: nc	2-wire 1: UB+ 2: out 3: nc ⊕: nc
3-wire 1: UB+ 2: nc 3: UB- 4: out	3-wire red: UB+ black: UB- white: out	3-wire 1: UB+ 2: UB- 3: out ⊕: nc	3-wire 1: UB+ 2: UB- 3: out ⊕: nc

nc =
not connected

The electrical connection must be made in accordance with the respective connection diagram unless otherwise agreed upon.

* custom-made adjustments are possible

Product line

DS5	Electronic Pressure Switch	SMC	Pressure Transmitter with CANopen Interface and J1939
DPSX9I	Intrinsically Safe Electronic Pressure Switch for Current	SME	Pressure Transmitter in Miniature Design
DPSX9U	Intrinsically Safe Electronic Pressure Switch for Voltage	SMF	Pressure Transmitter with Flush Diaphragm
PS1/17	Level Sensor	SMH	High Pressure Transmitter
PSX2	Intrinsically Safe Level Sensor	SML	Pressure Transmitter for Industrial Application
SHP	High Precision Pressure Transmitter	SMO	Pressure Transmitter in Mobile Hydraulics
SIS	Low Pressure Transmitter in Short and Compact Design	SMX2	Intrinsically Safe Pressure Transmitter for Industrial Application
SIL	Low Pressure Transmitter for Industrial Application	TPSE	Multi-Function Transmitter for Pressure and Temperature – external sensor
SKE	High Temperature Pressure Transmitter with Detached Electronics	TPSI	Multi-Function Transmitter for Pressure and Temperature – internal sensor
SKL	High Temperature Pressure Transmitter with Cooling Fins		

