

High Precision Pressure Transmitter

SHP

Main features

- Scalable measuring ranges from 0...10 mbar to 0...2000 bar
- Output signals 4...20 mA, 0...10 V, 0...5 V, digital and others
- Resetting and new zero adjustment
- Precision 0.15 % (optional 0.1 %)

Applications

- General industrial applications
- Hydraulics
- Pneumatics
- Test stands
- Mechanical engineering
- Medical engineering

Description

This SHP has been designed for challenging tasks of measuring and control. It has a total error of typically 0.1% (max. 0.15%) under RT referential conditions. By means of a contact controlled by a solenoid, the zero point of a transmitter allows for subsequent adjustment in order to correct errors caused by drift or the installation position, for example.

With the SHP-P version, various parameters of the transmitter can be altered by means of a handheld device or the PC. Apart from scaling the measuring range at a ratio of 4:1, it can also be shifted, which permits a transmitter of a nominal range of 0 to 10 bar to be set at a measuring range of 1 to 4 bar. Also the measuring rate and type of output filter, the characteristic curve (inverting, taking the root, or as a free characteristic curve on 11 nodes) and, in a wide range, the output signal can be adjusted.

Its robust design guarantees a high level of reliability and safety, also in rugged conditions. Its stainless steel diaphragm is fully vacuum-tight, extremely burst-resistant and applicable with all standard media in hydraulics, pneumatics, etc., as long as they are compatible with stainless steel.

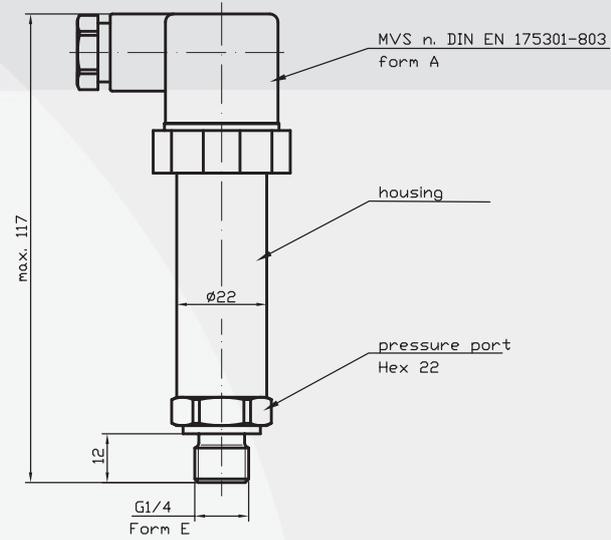


Specifications

| | | | | | | | | | | | |
|---|--|-----------------------------|------------------------------------|------|---|--------------------------|---------------------|--------------------------------------|-----|-----|------|
| Pressure range | | | | | | | | | | | |
| Silicon technology | | | | | | | | | | | |
| Measuring range* | p [mbar] | 10 | 16 | 20 | 25 | 40 | 60 | 100 | 250 | 600 | 1000 |
| Overload pressure | p [mbar] | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| Burst pressure | p [mbar] | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Stainless steel diaphragm | | | | | | | | | | | |
| Measuring range* | p [bar] | 1,6 | 2,0 | 2,5 | 4,0 | 6,0 | 10,0 | 16,0 | | | |
| Overload pressure | p [bar] | 6 | 6 | 6 | 10 | 20 | 20 | 40 | | | |
| Burst pressure | p [bar] | 9 | 9 | 9 | 15 | 30 | 30 | 60 | | | |
| Measuring range* | p [bar] | 20 | 25 | 40 | 60 | 100 | 160 | 200 | | | |
| Overload pressure | p [bar] | 40 | 100 | 100 | 200 | 200 | 400 | 400 | | | |
| Burst pressure | p [bar] | 60 | 150 | 150 | 300 | 300 | 600 | 600 | | | |
| Measuring range* | p [bar] | 250 | 400 | 600 | 1000 | 1600 | 2000 | | | | |
| Overload pressure | p [bar] | 750 | 750 | 840 | 1200 | 2400 | 2400 | (vacuum, relative pressure, + - | | | |
| Burst pressure | p [bar] | 1000 | 1000 | 1050 | 1500 | 3000 | 3000 | or absolute pressure are available) | | | |
| Electrical parameter | | | | | | | | | | | |
| | | signal | | | | U_s [V _{dc}] | R_i [k Ω] | RA [Ω] | | | |
| Output signal * and maximum acceptable burden | R_A in Ohm | 4...20 mA (2-wire, 3-wire) | | | | 9...32 | $> 5,0$ | acc. to $R_A = (U_s - 10V) / 0,02 A$ | | | |
| Response time * (10-90%) | t [ms] | 4 | 10...4000 | | | | | | | | |
| Withstand voltage | U [V _{dc}] | 33 | | | | | | | | | |
| EMC characteristics | | EN61000-4-2 | level 3 & 4 | | | | | | | | |
| | | EN61000-4-4 | level 4 | | | | | | | | |
| | | EN61000-4-5 | level 3 | | | | | | | | |
| | | EN61000-4-6 | level 3 | | | | | | | | |
| | | EN61000-4-16 | level 3 | | | | | | | | |
| Accuracy | | | | | | | | | | | |
| Accuracy @RT | % of the range | $\leq 0,15^{**}$ | option $\leq 0,1$ | | ** incl. nonlinearity, hysteresis, repeatability, zero-offset- and final-offset (acc. to IEC 61298-2) | | | | | | |
| | BFSL | $\leq 0,05$ | | | | | | | | | |
| Non-linearity | % of the range | $\leq 0,05$ | | | | | | | | | |
| Repeatability | % of the range | $\leq 0,00$ | | | | | | | | | |
| Stability/year | % of the range | $\leq 0,10$ | | | | | | | | | |
| Acceptable temperature ranges | | | | | | | | | | | |
| Measuring medium | T [°C] | -20...85 | | | | | | | | | |
| Ambience | T [°C] | -20...85 | | | | | | | | | |
| Storage | T [°C] | -40...105 | | | | | | | | | |
| Compensated range* | T [°C] | -10...80 | | | | | | | | | |
| Total error | % of the range | -40°C | 0,50% | | | | | | | | |
| | % of the range | 85°C | 0,50% | | | | | | | | |
| Mechanical parameter | | | | | | | | | | | |
| Parts in contact with the measuring medium* | stainless steel, silicon | | | | | | | | | | |
| Housing* | stainless steel | | | | | | | | | | |
| Shock resistance | g | 1000 | acc. to IEC 68-2-32 | | | | | | | | |
| Vibration resistance | g | 20 | acc. to IEC 68-2-6 and IEC 68-2-36 | | | | | | | | |
| Mass | m [g] | ~ 120 (depending on design) | | | | | | | | | |
| CE - conformity | EC Directive 89/336/EWG | | | | | | | | | | |
| IP system of protection | The IP system of protection as specified in the data sheets generally applies, with their mating plug connected. Relative pressure transmitters usually require a ventilated mating plug and/or cable to allow for pressure compensation. From a pressure range of 60bar, a ventilated mating plug and/or cable is not necessarily required. | | | | | | | | | | |
| * other upon request | | | | | | | | | | | |

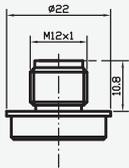
Configurations -examples-

SHP with MVS/A

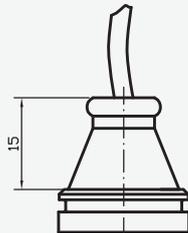


Connectors*

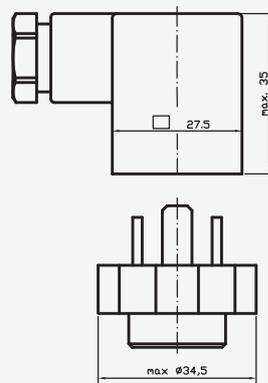
male socket
M12x1 (S 763)



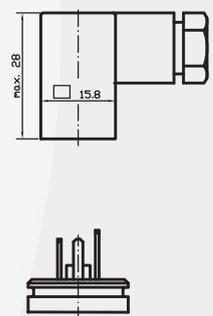
cable output



MVS/A
DIN EN 175301-803

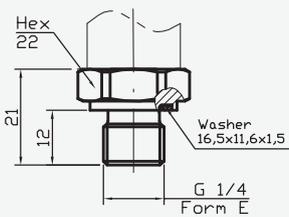


MVS/C
DIN EN 175301-803

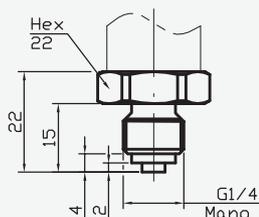


Pressure Connections*

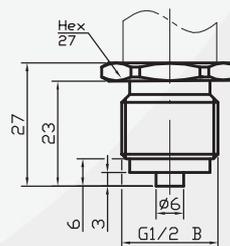
G 1/4 A; DIN 3852; Form E



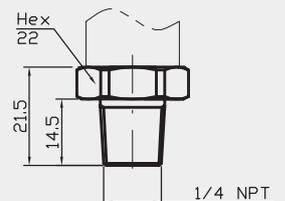
G 1/4 B



G 1/2 B



1/4 NPT



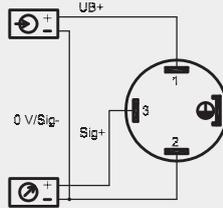
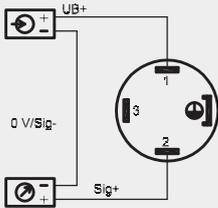
* custom-made adjustments acc. to pressure connections and connecting options are possible

SHP

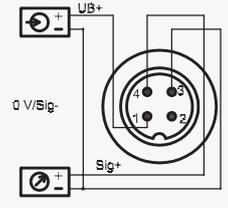
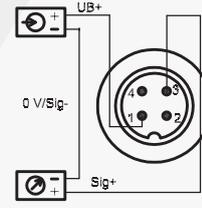
High Precision
Pressure Transmitter

Electrical Connections* (left: 2-wire, right: 3-wire)

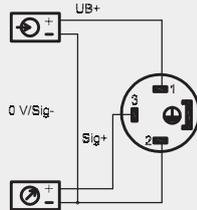
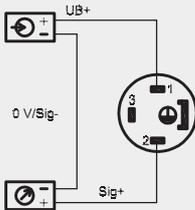
MVS/A
DIN EN
175301-803



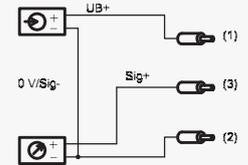
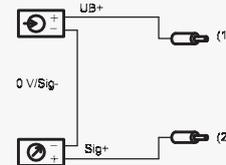
male
socket
M12x1
(S 763)



MVS/C
DIN EN
175301-803



cable
output



Legend

power supply
 consumer

red
 black
 white

* custom-made adjustments acc. to pressure connections and connecting options are possible

Product line

| | | | |
|--------|---|-----|--|
| DS4 | Electronic Pressure Switch | SMC | Pressure Transmitter with CANopen Interface |
| 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 | 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 | SMS | OEM Pressure Transmitter for Hydraulics and Pneumatics |
| SIL | Low Pressure Transmitter for Industrial Application | SMX | Intrinsically Safe Pressure Transmitter for Industrial Application |
| SKE | High Temperature Pressure Transmitter with Detached Electronics | TPS | Multi-Function Transmitter for Pressure and Temperature |
| SKL | High Temperature Pressure Transmitter with Cooling Fins | | |