



Pressure Switch

HPS 2400

IO-Link interface

Relative pressure

Device temperature

Display



Features

- IO-Link interface
- Parameterisation and cyclic transmission of process and service data
- Simplification of installation and commissioning
- With rotatable display
- Any installation position possible
- Colour display
- Device temperature monitoring

Description

The HPS 2400 with IO-Link communication interface is a compact electronic pressure switch with integrated digital display for the measurement of relative pressures in the low and high-pressure range.

The device has an IO-Link or a switching output and one additional output which can be configured as switching or analogue output (4..20 mA or 0..10 V scalable).

IO-Link is a communication interface technology used between the sensor / actuator (IO-Link device) and an IO-Link master based on a point-to-point interface.

Process data, parameters and diagnostic information from the pressure switch can be transmitted via the standard cable (SDCI Mode). The integrated LED display provides information on the operating mode and on the switching statuses.

If IO-Link is not used, the sensor works as a pressure switch with two switching outputs or with one switching output and one analogue output (SIO mode), depending on the settings.

In order to create customised small series or to generate system wide duplications of sensor settings, the sensor can also be adjusted very conveniently outside of the system to suit the application using the HYDAC programming adapter ZBE P1-000 or via the portable measurement unit HMG 4000.

Fields of application

Typical application fields of the HPS 2400 IO-Link are in machine tools, handling and mounting automation, intra-logistics or in packaging industry. The bi-directional communication with sensors and actuators on the lowest field level via IO-Link enables services, such as remote diagnostics, remote maintenance and condition-based predictive maintenance.

Technical data

Input data															
Measuring ranges	bar	-1..1	2.5	6	10	16	25	40	100	160	250	400	600	1000	
Overload pressures	bar	5	5	12	20	32	50	80	200	320	500	800	1000	1600	
Burst pressure	bar	100	100	100	100	100	125	200	500	800	1250	2000	2000	3000	
Mechanical connection					G1/4 A ISO 1179-2; threaded hole DIN 3852-G1/4, each with orifice										
Tightening torque, recommended					20 Nm										
Parts in contact with fluid					Mech. connector: Stainless steel Seal: FKM										
Output data															
Output signal					Output 1: Switching output Output 2: configurable as switching output or analogue output										
Switching outputs					PNP, NPN and Push-Pull transistor switching outputs (switchable) Switching current: SP1: max. 0.25 A / SP2: max. 0.25 A switching cycles: > 100 million										
Analogue output, permitted load resistance					Selectable, scalable: 4..20 mA 0..10V				Load: max. 500 Ω Load: min. 2 kΩ						
Accuracy acc. to DIN 16086, Terminal based					≤ ± 0.5 % FS typ. ≤ ± 1.0 % FS max.										
Temperature compensation offset					≤ ± 0.015 % FS / °C typ. ≤ ± 0.025 % FS / °C max.										
Temperature compensation span					≤ ± 0.015 % FS / °C typ. ≤ ± 0.025 % FS / °C max.										
Repeatability					≤ ± 0.25 % FS max.										
Response time					< 10 ms										
Long-term drift					≤ ± 0.3 % FS typ. / year										
Environmental conditions / Approvals / Tests															
Compensated temperature range					-10..+70 °C										
Operating temperature range					-25..+80 °C (-25..+60 °C for UL specifications, <i>see below</i>)										
Storage temperature range					-40..+80 °C										
Fluid temperature range					-25..+80 °C										
EMC					EN 61000-6-1 / 2 / 3 / 4										
Vibration resistance					DIN EN 60068-2-6							≤ 10 g (10..500 Hz)			
Shock resistance					DIN EN 60068-2-27							≤ 50 g / 11 ms			
Protection type acc. to ¹⁾					DIN EN 60529							IP 67			
CE conformity					Available										
UKCA conformity					Available										
UL approval ²⁾					(in preparation)										
IO-Link specific data															
IO-Link revision					V1.1										
Transmission Rate, Baudrate ³⁾					38.4 kbit/s (COM2)										
Minimum Cycle Time					3 ms										
Process data width					32 bit										
SIO Mode supported					Yes										
Sensor profile					DMSS (Profile-ID 0x0010)										
M-Sequence capability					PREOPERATE = TYPE_1_V with 8 octets on-request data OPERATE = TYPE_2_V with 1 octet on-request data ISDU supported										
Download of the IO Device Description (IODD) at:					https://ioddfinder.io-link.com/#/										
Other data															
Supply voltage					9..35 V DC, if PIN 2 = SP2 18..35 V DC, if PIN 2 = Analogue output (respectively 18..30 V DC for communication operation) - limited energy – acc. to 9.3 UL 61010; Class 2 UL 1310/1585; LPS UL 60950										
when applied acc. to UL specifications (<i>see above</i>)															
Residual ripple of the supply voltage					≤ 5 %										
Current consumption					≤ 60 mA without switching point and analogue output currents										
Display					4 digits, LED, 7 segment, red / green (switchable), height of characters 8.4 mm										
Weight					~ 220 g										

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.

FS (Full Scale) = relative to complete measuring range

¹⁾ With mounted mating connector in corresponding protection type

²⁾ Environmental conditions acc. to 1.4.2 UL 61010-1; C22.2 no. 61010-1

³⁾ Connection with unscreened standard sensor line possible up to a max line length of 20 m.

Setting options

All the terms and symbols used for setting the HPS 2400 as well as menu structure comply with the specifications of the German Engineering Federation Standard (VDMA 24574-1) for pressure switches.

Setting ranges for the switching outputs

Measurement range in bar	Lower limit of RP / FL in bar	Upper limit of SP / FH in bar	Minimum distance betw. RP and SP, betw. FL and FH	Increment ¹⁾ in bar
-1..1	-0.98	1.00	0.02	0.01
0..2.5	0.025	2.500	0.025	0.005
0..6	0.06	6.00	0.06	0.01
0..10	0.10	10.00	0.10	0.02
0..16	0.20	16.00	0.20	0.05
0..25	0.25	25.00	0.25	0.05
0..40	0.4	40.0	0.4	0.1
0..100	1.0	100.0	1.0	0.2
0..160	2.0	160.0	2.0	0.5
0..250	2.5	250.0	2.5	0.5
0..400	4	400	4	1
0..600	6	600	6	1
0..1000	10	1000	10	2

¹⁾ All ranges listed in the table are adjustable within the grid of the increment.

SP = Switch point;

RP = Switch-back point;

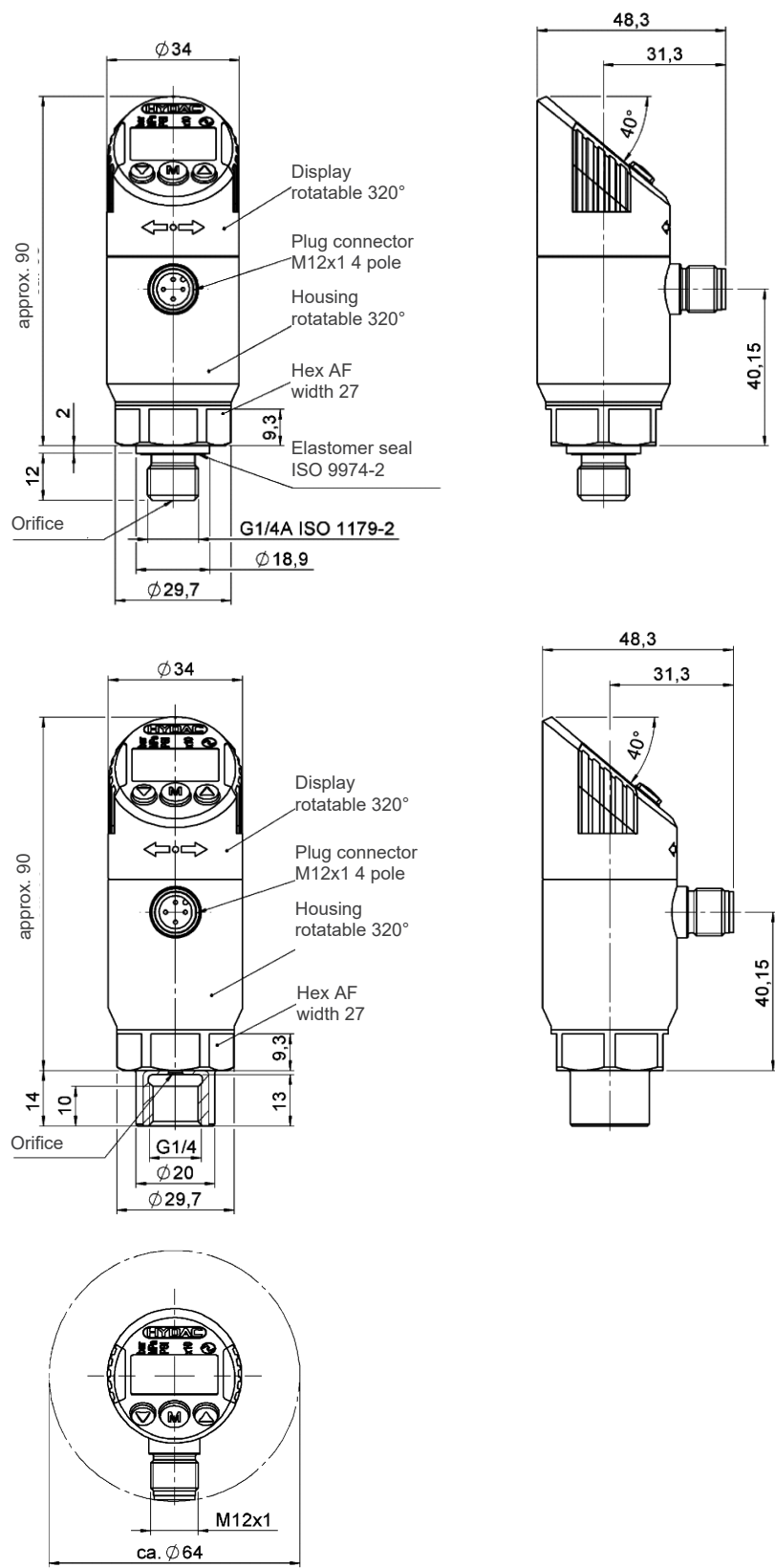
FL = Pressure window lower value;

FH = Pressure window upper value

Additional functions

- Switching mode of the switching outputs adjustable (switch point function or window function)
- Switching direction of the switching outputs adjustable (N/C or N/O)
- Switch-on and switch-back delay adjustable
- Analogue output adjustable to 4..20 mA or 0..10 V
- Scalable analogue output
- Pressure can be displayed in the units bar, MPa, psi
- Adjustable low-pass filter for the pressure value
- Offset calibration

Dimensions



Pin connections

M12x1, 4 pole		Output signal: F31	
	Pin	Signal	Description
	1	L+	+U _B
	2	Q2/QA	Switching output (SP2) / analogue output
	3	L-	0 V
	4	Q1/C	Switching output (SP1) / IO-Link communication

Model code

HPS 2 4 - - XXXX -

4 = G1/4 A ISO 1179-2 with orifice

9 = Threaded hole DIN 3852-G1/4 with orifice

6 = Plug connector M12x1, 4 pole (without mating connector)

F31 = IO-Link interface

0001 (-1..1); 02,5; 06.0; 0010; 0016; 0025; 0040; 0100; 0160; 0250; 0400; 0600; 1000

000 = Standard

Accessories:

Appropriate accessories, such as mating connectors for the electrical connection, can be found in the Accessories brochure.

Note

The information in this brochure relates to the operating conditions and applications described.

For applications and/or operating conditions not described please contact the relevant technical department.

Subject to technical modifications.