

## iS 4

### Electronic OEM Pressure Switch Pneumatics with IO-Link Interface



#### Applications:

- ▶ Pneumatics
- ▶ Vacuum technology

#### Characteristics:

- ▶ nominal pressure ranges from 0 ... 1 bar up to 0 ... 10 bar also -1 ... 0 bar
- ▶ compact design
- ▶ IO-Link according to specification V 1.1

#### Technical Data



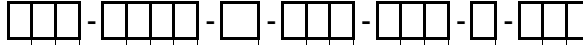
Input pressure range					
Nominal pressure gauge	[bar]	-1 ... 0	1	3.5	10
Overpressure	[bar]	2	2	7	13
Output signal / Supply					
Standard	IO-Link (measured value and status transmission) / $V_S = 18 \dots 30 V_{DC}$ SIO (switching output), status indication via LED (green)				
IO-Link	V 1.1 / Slave / Smart Sensor Profile				
Data transfer	COM2 38.4 kbit/s				
Mode	SIO / IO-Link (COMx)				
Standard	IEC 61131-2, IEC 61131-9				
Performance					
Accuracy <sup>1</sup>	$\leq \pm 0.5 \% \text{ FSO}$				
Switching current (SIO-Mode)	max. 200 mA				
Switching frequency	max. 200 Hz				
Switching cycles	$> 100 \times 10^6$				
Long term stability	$\leq \pm 0.3 \% \text{ FSO} / \text{year}$ at reference conditions				
Turn-on time	SIO-Modus: ca. 20 ms				
Response time	SIO-Modus: < 4 ms				
Measuring rate	400 Hz				
<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)					
Thermal effects (Offset and Span) / Permissible temperatures					
Tolerance band	$\leq \pm 2 \% \text{ FSO}$		in compensated range 0 ... 50 °C		
TC, average	$\leq \pm 0.4 \% \text{ FSO} / 10 \text{ K}$		in compensated range 0 ... 50 °C		
Permissible temperatures	medium / electronics / environment: -25 ... 85 °C			storage: -40 ... 85 °C	
Electrical protection					
Short-circuit protection	permanent				
Reverse polarity protection	no damage, but also no function				
Electromagnetic compatibility	emission and immunity according to EN 61326				

Mechanical stability		
Vibration	10 g RMS (20 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 msec	according to DIN EN 60068-2-27
Materials		
Pressure port	aluminium	
Housing	PA 6.6 black	
Seal (media wetted)	NBR	
Sensor	silicon, RTV	
Media wetted parts	pressure port, seal, sensor	
Miscellaneous		
Media	compressed air, non-aggressive gases	
Weight	approx. 25 g	
Operational life	100 million load cycles	
Installation position	any	
Ingress protection	IP 54	
CE-conformity	EMC Directive: 2014/30/EU	
Wiring diagram		
Pin configuration		
Electrical connection		M8x1 / metal (4-pin)
(L+) Supply +		1
(L-) Supply -		3
C/Q IO-Link (COMx) / SIO		4
	Shield	housing
Dimensions (mm / in)		

IO-Link interface								
<b>1. General device information</b>			<b>4. Process data</b>					
Baud rate	COM2 (38.4 kbit/s)		The process data length of the sensor is 16 bits. The switch state (BCD1) as well as the current measured values are transmitted. The 14 bits of the measured value are scaled according to the measuring range.					
Input process data length	2 byte							
Minimum cycle time	5 ms							
IO-Link version	V 1.1							
SIO mode	yes	Signed Bit	14 ... 2 measurement	1	0	BDC1 / output 1		
<b>2. SIO mode (standard IO mode)</b>			<b>5. Error message</b>					
In this mode the sensor operates like a normal pressure sensor with standard output signals. The digital output is always on Pin 4 of the connector plug.			<b>Error Codes</b>			<b>Description</b>		
			0x8011			Index not available		
			0x8012			Subindex not available		
			0x8023			Access Denied		
			0x8030			Parameter Value out of Range		
			0x8033			Parameter length overrun		
0x8034			Parameter length underrun					
<b>3. IO-Link mode (communication mode)</b>			<b>6. Event codes</b>					
The pressure sensor switches into IO-Link communication mode when operating under an IO-Link master. IO-Link communication is only possible via Pin connector.				<b>Event-Codes IO-Link 1.1</b>	<b>Event-Codes IO-Link 1.0</b>	<b>Device status</b>	<b>Type</b>	
			No malfunction	0x0000	0x0000	0	Notification	
			General malfunction-unknown error	0x1000	0x1000	4	Error	
			Process variable range over-run - Process Data uncertain	0x8C10	0x8C10	2	Warning	
			Process variable range under-run. Process Data uncertain	0x8C30	0x8C10	2	Warning	
<b>7. Parameter data</b> (The parameter data for the pressure sensor correspond to the Smart Sensor profile.)								
<b>Index hex</b>	<b>Subindex hex</b>	<b>Object name</b>	<b>Single Value</b>			<b>Default</b>	<b>Comment</b>	
0x02	0x00	System Commands	0x81 = delete Min-/Max-Wert 0x82 = res 0xA0 = Set0				The action is executed by writing in the subindex	
0x03	0x00	Data Storage Index	0x01: Upload Start 0x02: Upload End 0x03: Download Start 0x04: Download End 0x05: Datastorage Break					
0x0C	0x00	Device Access Lock	0x00: Unlocked 0x01: IO-Link Lock 0x02: Datastorage Lock 0x04: Parameterization Lock 0x08: User Interface Lock 0x03: IO-Link Lock + Datastorage Lock 0x05: IO-Link Lock + Parameterization Lock 0x09: IO-Link Lock + User Interface Lock 0x06: Datastorage Lock + Parameterization Lock 0x0A: Datastorage Lock + User Interface Lock 0x07: Datastorage Lock + IO-Link Lock + Parameterization Lock 0x0B: Datastorage Lock + IO-Link Lock + User Interface Lock			0x00: Unlocked		
0x24	0x00	Device Status	0x00 Device is operating properly 0x02 Out-of-Specification 0x04 Failure					
0x3D	0x02	Switch Point mode	0x80: Hysteresis NO 0x81: Hysteresis NC 0x82: Window NO 0x83: Window NC			0x80: HNo		
<b>Index hex</b>	<b>Subindex hex</b>	<b>Object name</b>	<b>Access</b>	<b>Length</b>	<b>Value Range</b>	<b>Gradient</b>	<b>Unit</b>	<b>Default</b>
0x3C	0x01	SetPoint 1 = SP	R/W	2 Byte	Process Data			100%
0x3C	0x02	SetPoint 2 = rP	R/W	2 Byte	Process Data			0%
0xD0	0x00	Delay Switching Time	R/W	2 Byte	0 ... 500	0.1	sec	0
0xD1	0x00	Delay Back Switching Time	R/W	2 Byte	0 ... 500	0.1	sec	0
0xD5	0x00	Min Pressure Value	R	2 Byte	Process Data			
0xD6	0x00	Max Pressure Value	R	2 Byte	Process Data			
0xD7	0x00	Measure damping	R/W	2 Byte	0...1000 in 10 ms steps	1	ms	0

## Ordering code iS 4

iS 4



<b>Pressure</b>											
gauge	6	8	S								
<b>Input</b>											
[bar]											
1.0			1	0	0	1					
3.5			3	5	0	1					
10			1	0	0	2					
-1 ... 0			X	1	0	2					
customer			9	9	9	9				consult	
<b>Signal output</b>											
IO-Link / SIO							IO				
<b>Electrical connection</b>											
M8x1 (4-pin) / metal							Q	0	0		
customer							9	9	9	consult	
<b>Mechanical connection</b>											
G1/8" internal thread							Q	0	0		
M5 internal thread with slot for O-ring <sup>1</sup>							R	0	0		
customer							9	9	9	consult	
<b>Seals</b>											
NBR									5		
customer									9	consult	
<b>Special version</b>											
standard									0	0	0
customer									9	9	9
											consult

<sup>1</sup> suitable for flange installation