



DS 350

Electronic Pressure Switch with IO-Link Interface

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.5 % FSO / 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 600 bar

Digital output signal

IO-Link according to specification V 1.1
smart sensor profile
data transfer 38.4 kbit/sec

Switchable output signal

PNP / NPN / 4 ... 20 mA / 0 ... 10 V

Special characteristics

- ▶ indication of measured values on a 4-digit LED display
- ▶ rotatable and configurable display module
- ▶ parameter settings via IO-Link or menu (VDMA-conform)
- ▶ additional information via IO-Link accessible

Optional versions

- ▶ different mechanical connections
- ▶ customer specific versions

The electronic pressure switch DS 350 is interesting for all users in plant and machine engineering, due to the integrated IO-Link interface to exchange process data, diagnostic reports and status messages with a superordinate control level, as standard. In addition, further information can be retrieved that allow conclusions to the application process.

Especially in mechanical engineering, great demand for flexible operating conditions have to be satisfied. Therefore the multi-rotatable display module offers best readability for the user by a quick and easy adjustment. Also, the switchability of the output signal as switching signal or analogue signal (mA / V) increases flexibility and integration in different applications.

Preferred areas of use are



Plant and machine engineering



Environmental engineering
(water – sewage – recycling)



Input pressure range											
Nominal pressure gauge	[bar]	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure (static)	[bar]	0.5	1	1	2	5	5	10	10	20	40
Burst pressure $\geq$	[bar]	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Input pressure range											
Nominal pressure gauge / absolute	[bar]	10	16	25	40	60	100	160	250	400	600
Overpressure (static)	[bar]	40	80	80	105	210	600	600	1000	1000	1000
Burst pressure $\geq$	[bar]	50	120	120	210	420	1000	1000	1250	1250	1800
Vacuum resistance	[bar]	$p_N \geq 1$ bar: unlimited vacuum resistant $p_N < 1$ bar: on request									

Supply	
Voltage supply	$V_S = 18 \dots 30 \text{ V}_{DC}$

Output signals	
Output signal 1	IO-Link / SIO (PNP / NPN) switchable
Output signal 2	4 ... 20 mA / 3-wire or 0 ... 10 V / 3-wire or PNP / NPN switchable

Signal characteristics switching signal	
Accuracy of switching points ¹	$\leq \pm 0.35 \% \text{ FSO}$
Repeatability	$\leq \pm 0.1 \% \text{ FSO}$
Max switching current	150 mA
Switching frequency	max. 170 Hz
Delay time	0.0 ... 50.0 sec
Response time	< 12 msec

Signal characteristics analogue signal	
Accuracy ¹	standard: nominal pressure < 0.4 bar: $\leq \pm 0.50 \% \text{ FSO}$ nominal pressure ≥ 0.4 bar: $\leq \pm 0.35 \% \text{ FSO}$ option: nominal pressure ≥ 0.4 bar: $\leq \pm 0.25 \% \text{ FSO}$
Long term stability	$\leq \pm 0.3 \% \text{ FSO} / \text{year}$ at reference conditions
Load (4 ... 20 mA / 3-wire)	$R_{\max} = 330 \Omega$
Load (0 ... 10 V / 3-wire)	$R_{\min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05% FSO load: $\leq 0.1 \% \text{ FSO}$
Adjustability	offset: $\pm 5 \%$ span: -10%

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span)	
Thermal error	$\leq \pm 0.3 \% \text{ FSO} / 10 \text{ K}$
in compensated range	$-25 \dots 85 \text{ }^\circ\text{C}$

Permissible temperatures	
Permissible temperatures	medium: $-40 \dots 125 \text{ }^\circ\text{C}$ electronics / environment / storage: $-40 \dots 85 \text{ }^\circ\text{C}$

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

IO-Link	
Interface	IO-Link 1.1; slave
Data transfer	38.4 kbit/sec (COM 2)
Mode	SIO / IO-Link
Standard	IEC 61131-2 IEC 61131-9

Mechanical stability		
Vibration	10 g / 25 Hz ... 2 kHz	according to DIN EN 60068-2-6
Shock	500 g / 1 msec	according to DIN EN 60068-2-27
Materials		
Display housing	PA 6.6	
Pressure port / housing	stainless steel 1.4404 (316L)	
Seal	standard: FKM options: EPDM welded version (only for pressure port according to EN 837 with p _N ≤ 40 bar) others on request	
Diaphragm	stainless steel 1.4435 (316L)	
Media wetted parts	pressure port, seal, diaphragm	
Miscellaneous		
Display	4-digit, 7-segment-LED display on black base body, white, blue foil digit height 7 mm range of indication -1999 ... +9999 visible range 22.5 x 10.5 mm 4 LEDs for unit switching (bar, mbar, PSI, MPa) LED status display for IO-Link and contacts	
Operation	2 buttons	
Featured	functions according to VDMA 24574-1	
Turn-on time	110 msec	
Weight	approx. 230 g	
Operational life	100 million load cycles	
Current consumption	< 50 mA (without contacts)	
Ingress protection	IP 67	
Installation position	any ²	
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ³	

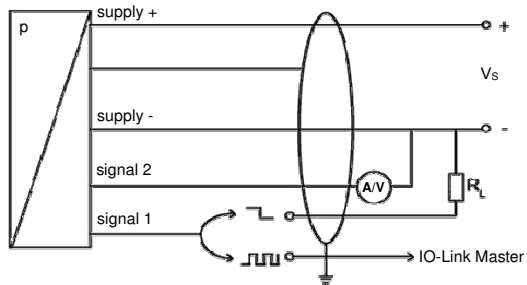
² Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1$ bar.

³ This directive is only valid for devices with maximum permissible overpressure > 200 bar.

Wiring diagrams

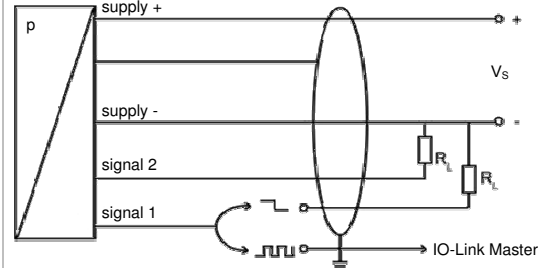
3-wire-system / configuration of analogue output:

signal 1: IO-Link or contact
signal 2: analogue output



3-wire-system / configuration of contact:

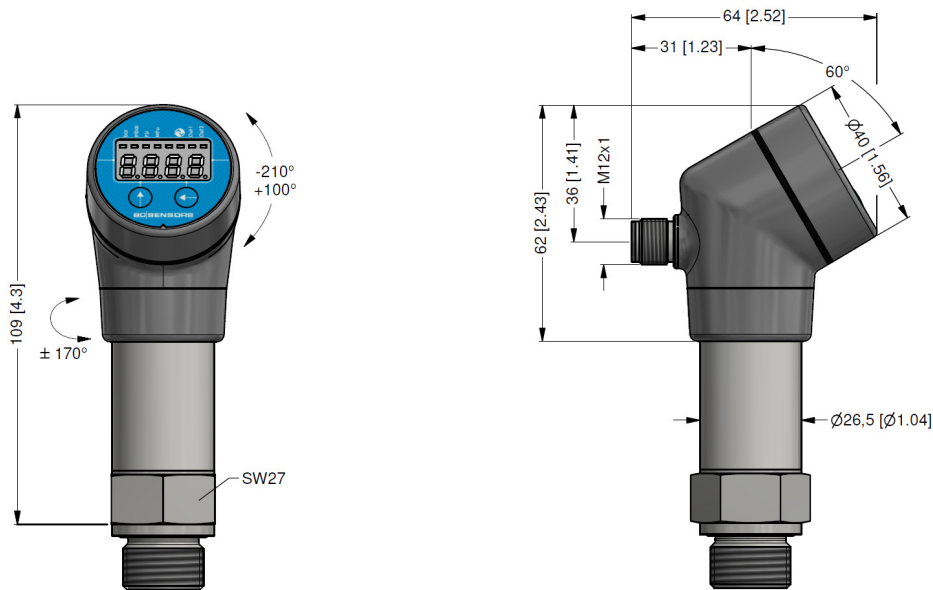
signal 1: IO-Link or contact
signal 2: contact



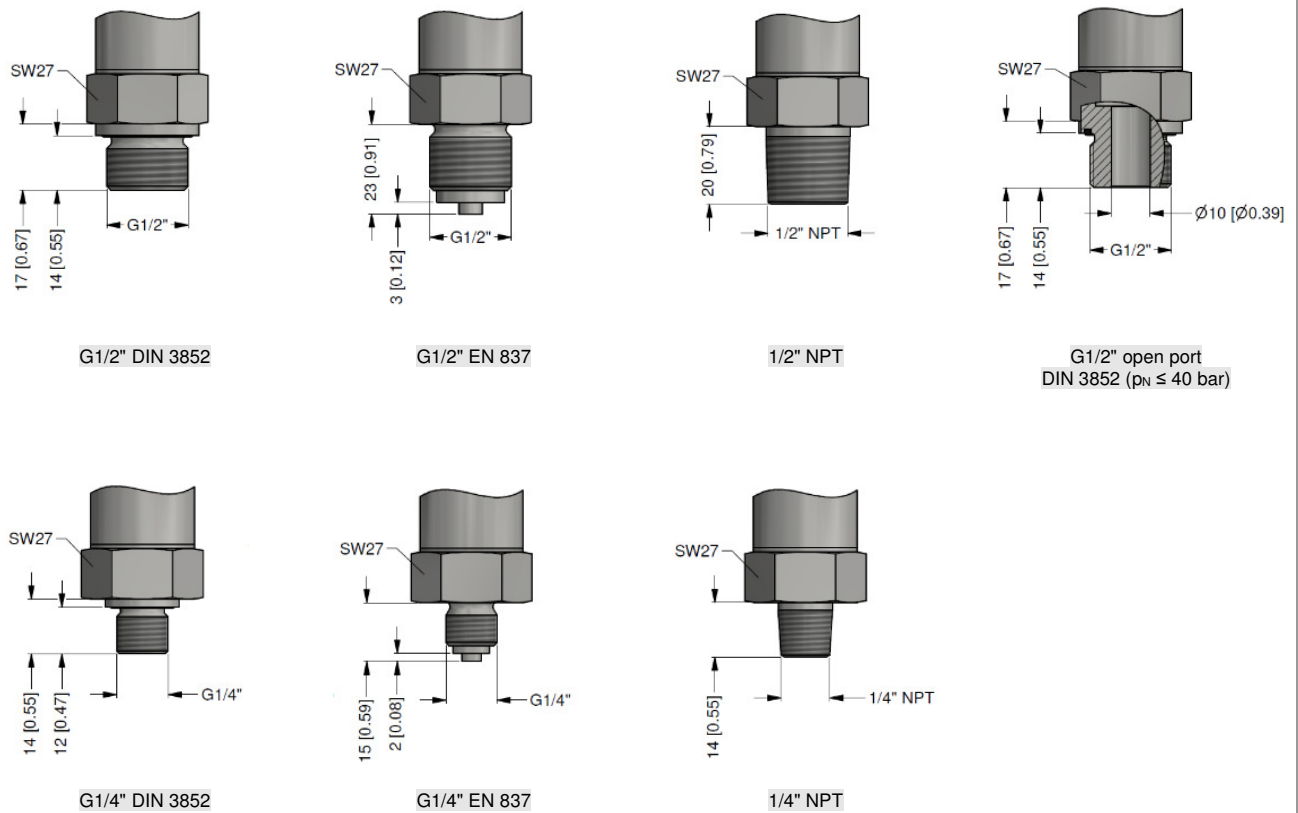
Electrical connection

Pin configuration	Description	M12x1 (4-pin), metal	
Supply +	supply	1	
Supply -	supply	3	
Output signal 1	IO-Link / SIO (PNP / NPN)	4	
Output signal 2	4 ... 20 mA – 3-wire / 0 ... 10 V – 3-wire (PNP / NPN)	2	
Shield	shielding	plug housing	

Dimensions (mm / in)



Mechanical connections (dimensions mm / in)



⇒ metric threads and other versions on request

Ordering code DS 350

DS 350

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[illegible]¹ absolute pressure possible from 0.4 bar

² contact PNP/NPN switchable; analogue output 0 ... 10 V / 4 ... 20 mA switchable

³ not possible for nominal pressure $p_N > 40$ bar

⁴ welded version only with pressure ports according to EN 837, possible for $p_N \leq 40$ bar