



# DS 202

## Electronic Pressure Switch

### Welded, oil-free Stainless Steel Sensor

accuracy according to IEC 60770:  
0.5 % FSO

Electronic Pressure Switch

#### **Nominal pressure**

from 0 ... 6 bar  
up to 0 ... 600 bar

#### **Contacts**

1, 2 or 4 independent PNP contacts,  
freely configurable

#### **Analogue output**

2-wire: 4 ... 20 mA  
3-wire: 4 ... 20 mA / 0 ... 10 V  
others on request

#### **Special characteristics**

- ▶ indication of measured values on a 4-digit LED display
- ▶ rotatable and configurable display module

#### **Optional versions**

- ▶ **IS-version**  
**Ex ia = intrinsically safe for gases**
- ▶ oxygen application
- ▶ customer specific versions



DS 202

The electronic pressure switch DS 202 is the successful combination of

- ▶ robust pressure transmitter
- ▶ digital display

and has been specially designed for numerous applications in various industrial sectors.

As standard the DS 202 offers a PNP contact and a rotatable display module with 4-digit LED display.

The transmitters are suitable for an unrestricted use in oxygen applications up to 600 bar and an intrinsically safe IS-Version.

#### **Preferred areas of use are**



Medical Technology



Plant and Machine Engineering



Refrigeration



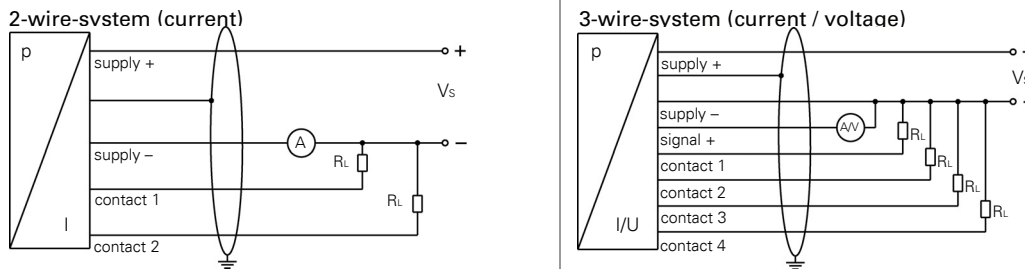
Oxygen application

Input pressure range												
Nominal pressure gauge [bar]	6	10	16	25	40	60	100	160	250	400	600	
Overpressure [bar]	14	35	35	70	140	140	350	350	700	1200	1200	
Burst pressure $\geq$ [bar]	35	85	85	175	350	350	850	850	1750	2800	2800	
Vacuum resistance	unlimited											
Contact <sup>1</sup>												
Number, type	standard: 1 PNP contact option: 2 independent PNP contacts 4 independent PNP contacts (possible with M12x1 8-pin for 4 ... 20 mA / 3-wire)											
Max. switching current	4 ... 20 mA / 2- and 3-wire: contact rating 125 mA, short-circuit resistant; $V_{\text{switch}} = V_s - 2V$ 0 ... 10 V / 3-wire: contact rating 500 mA, short-circuit resistant											
Accuracy of contacts	$\leq \pm 0.5$ % FSO											
Repeatability	$\leq \pm 0.1$ % FSO											
Switching frequency	max. 10 Hz											
Switching cycles	$> 100 \times 10^6$											
Delay time	0 ... 100 sec											
<sup>1</sup> with IS-protection max. 1 contact possible												
Analogue output (optionally) / Supply												
2-wire current signal	4 ... 20 mA / $V_s = 13 \dots 36 V_{\text{DC}}$ permissible load: $R_{\text{max}} = [(V_s - V_{s\text{min}}) / 0.02 \text{ A}] \Omega$ response time: $< 10$ msec											
2-wire current signal with IS-protection	4 ... 20 mA / $V_s = 13 \dots 28 V_{\text{DC}}$ permissible load: $R_{\text{max}} = [(V_s - V_{s\text{min}}) / 0.02 \text{ A}] \Omega$ response time: $< 10$ msec											
3-wire current signal	4 ... 20 mA / $V_s = 19 \dots 30 V_{\text{DC}}$ permissible load: $R_{\text{max}} = 500 \text{ k}\Omega$ adjustable (turn-down of span up to 1:5) <sup>2</sup>											
3-wire voltage signal without analogue output	$V_s = 15 \dots 36 V_{\text{DC}}$ permissible load: $R_{\text{min}} = 10 \text{ k}\Omega$											
Accuracy <sup>3</sup>	$\leq \pm 0.5$ % FSO											
<sup>2</sup> with turn-down of span the analogue signal is adjusted automatically to the new measuring range												
<sup>3</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)												
Thermal effects (Offset and Span)												
Thermal error	$\pm 0.3$ % FSO / 10 K											
in compensated range	0 ... 70 °C											
Permissible temperatures												
Permissible temperatures	medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °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 (25 ... 2000 Hz) according to DIN EN 60068-2-6											
Shock	500 g / 1 msec according to DIN EN 60068-2-27											
Materials												
Pressure port	stainless steel 1.4571 (316 Ti)											
Housing	stainless steel 1.4404 (316 L)											
Display housing	PA 6.6, polycarbonate											
Seals (media wetted)	none (welded)											
Diaphragm	stainless steel 1.4542 (17-4PH)											
Media wetted parts	pressure port, diaphragm											
Explosion protection (only for 4 ... 20 mA / 2-wire)												
Approval AX14-DS 202	IBExU 06 ATEX 1050 X Zone 1: II 2G Ex ia IIC T4 Gb (connector) / II 2G Ex ia IIB T4 Gb (cable)											
Safety technical maximum values	$U_i = 28 \text{ V}$ , $I_i = 93 \text{ mA}$ , $P_i = 660 \text{ mW}$ , $C_i \approx 0 \text{ nF}$ , $L_i \approx 0 \text{ }\mu\text{H}$											
Max. switching current <sup>4</sup>	70 mA (max. permissible inductivity: 4.7 mH)											
Permissible temperatures for environment	-20 ... 70 °C											
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$											
<sup>4</sup> the real switching current in the application depends on the power supply unit												

Miscellaneous	
Display	4-digit, red 7-segment-LED display, digit height 7 mm, digit width 4.85 mm (angle 10°); range of indication -1999 ... +9999; accuracy 0.1 % ± 1 digit; digital damping 0.3 ... 30 sec (programmable); measured value update 0.0 ... 10 sec (programmable)
Current consumption (without contacts)	2-wire signal output current: max. 25 mA 3-wire signal output current: approx. 45 mA + signal current 3-wire signal output voltage: approx. 45 mA
Ingress protection	IP 65
Installation position	any
Weight	min. 160 g (depending on mechanical connection)
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A) <sup>5</sup>

<sup>5</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar

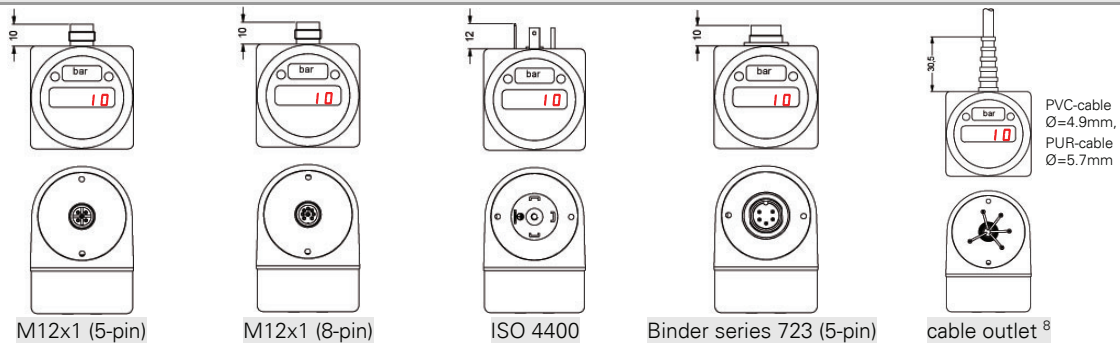
### Wiring diagrams



### Pin configuration

Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	cable colours (DIN 47100)
Supply +	1	1	1	1	wh (white)
Supply -	3	3	3	2	bn (brown)
Signal + (only 3-wire)	2	2	2	3	gn (green)
Contact 1	4	4	4	3	gr (grey)
Contact 2	5	5	5	-	pn (pink)
Contact 3	-	-	6	-	-
Contact 4	-	-	7	-	-
Shield	via pressure port	plug housing / pressure port	via pressure port	ground contact	gn/ye (green / yellow)

### Electrical connections (dimensions in mm)

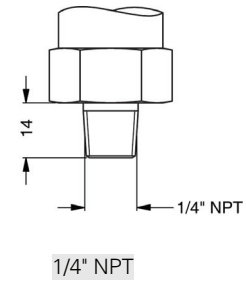
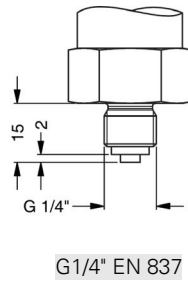
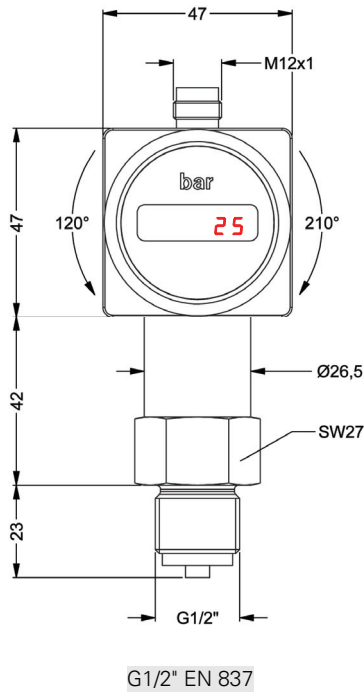


<sup>6</sup> different cable types and lengths available, permissible temperature depends on kind of cable;  
standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)

### Mechanical connections (dimensions in mm)

standard

option



⇨ metric threads and other versions on request

This data sheet contains product specification, properties are not guaranteed. Subject to change without notice.

