IMPRESS
SENSORS & SYSTEMS
PO BOX 6076
Ashmore Green
Thatcham, Berkshire
England RG18 9ZN
Tel: 01635 872873 Fax: 01635 872873
e-mail: info@impress-sensors.co.uk
website: www.impress-sensors.co.uk

DS 200

Electronic Pressure Switch with Analogue Output

- piezoresistive stainless steel sensor
- 1 analogue output and up to 2 contacts
- display and housing rotatable
- nominal pressure ranges
  from 0 ... 40 mbar
  up to 0 ... 600 bar

The electronic pressure switch DS 200 is the successful combination of:

- precise pressure transmitter
- intelligent pressure switch
- digital display unit

Areas of application of the DS 200 range from pneumatics to hydraulics. It is suitable for a large variety of control applications – precise and stable in the long term.

The DS 200 can be used with any gases or liquids compatible with stainless steel and the O-ring material FKM.

The system pressure is shown on the 4-digit LED display. In addition the display supports programming the DS 200 using the foil keys. The software has several functions such as access protection, configuration of the display and the contacts, etc.

Set and reset points are freely configurable in the range 0 to 100 % of the nominal pressure.

Display and housing of the DS 200 are rotatable, so that the position of the display can be adapted to unusual installation positions.

Functions

- configuration of display, including
  - current value
  - decimal point
- contacts adjustable, including
  - switch on / switch off points
  - hysteresis / window mode
  - switch on / switch off delay
- special functions / administration
  - access protection
  - min. / max. value memory

CE Ex

DS 200 Electronic Pressure Switch

Company Registration number: 4346738, VAT Number: 786 6596 54, Registered Address: 12 Kimberley Close, Reading, Berkshire, RG1 6LA

IMPRESS SENSORS & SYSTEMS

PO BOX 6076
Ashmore Green
Thatcham, Berkshire
England RG18 9ZN
Tel: 01635 872873 Fax: 01635 872873
e-mail: info@impress-sensors.co.uk
website: www.impress-sensors.co.uk

Pressure - Temperature - Level - Flow - Analytical - Control - Indication - Logging

Input pressure range

Nominal pressure gauge	[bar]	-1 ... 0	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40
Nominal pressure abs.	[bar]				0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40
Permissible overpressure	[bar]	3	0.2	0.2	0.5	0.5	1	1	3	3	6	6	20	20	20	60	60	100
Nominal pressure gauge [1]	[bar]	60			100		160			250			400			600		
Nominal pressure abs.	[bar]	60			100		160			250			400			600		
Permissible overpressure	[bar]	140			340		340			600			600			1000		

Output signal / Supply

Analogue output

Standard	2-wire: 4 ... 20 mA / V_S = 18 ... 41 V_{DC}	Ex protection: V_S = 17 ... 28 V_{DC}	
Optional	3-wire: 0 ... 10 V / V_S = 15 ... 36 V_{DC}	4 ... 20 mA / V_S = 19 ... 30 V_{DC} (on request)	
Accuracy		IEC 60770 [2]	BFSL
	standard: nominal pressure > 0.4 bar:	≤ ± 0.35 % FSO	≤ ± 0.175 % FSO
	nominal pressure ≤ 0.4 bar:	≤ ± 0.5 % FSO	≤ ± 0.25 % FSO
	option: nominal pressure > 0.4 bar:	≤ ± 0.25 % FSO	≤ ± 0.125 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ		
Response time	< 5 msec [3]		

Contact [4,5]

Number, type	1 or 2 independent PNP outputs		
Switching performance	standard: contact rating max. 125 mA, short-circuit resistant Ex-protection: max. switching current [6]: 70 mA; max. permissible inductivity: 4.7 mH		
Accuracy of contacts		IEC 60770 [2]	BFSL
	standard: nominal pressure > 0.4 bar:	≤ ± 0.35 % FSO	≤ ± 0.175 % FSO
	nominal pressure ≤ 0.4 bar:	≤ ± 0.5 % FSO	≤ ± 0.25 % FSO
	option: nominal pressure > 0.4 bar:	≤ ± 0.25 % FSO	≤ ± 0.125 % FSO
Repeatability	≤ ± 0.1 % FSO		
Switching frequency	max. 10 Hz		
Switching cycles	> 100 x 10^6		
Delay time	0 ... 100 sec		

Thermal errors (Offset and Span)

Nominal pressure P_N	[bar]	-1 ... 0	≤ 0.1	≤ 0.25	≤ 0.4	≤ 1.0	> 1.0
Tolerance band	[% FSO]	≤ ± 0.75	≤ ± 2	≤ ± 1.5	≤ ± 1	≤ ± 1	≤ ± 0.75
TC, average	[% FSO / 10 K]	± 0.07	± 0.3	± 0,2	± 0.14	± 0.1	± 0.07
in compensated range	[°C]	0 ... 70	0 ... 50			0 ... 70	

Electrical protection

Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Option Ex protection AX11-DS 200	zone 1: II (1) 2 G EEx ia IIC T4 (only with 4 ... 20 mA / 2-wire) safety technical maximum values: V_i = 28 V, ΣI_i = 93 mA, ΣP_i = 660 mW

Display

Type	4-digit, red LED display, digit height 7 mm, digit width 4.85 mm (angle 10°)
Range	-1999 ... +9999
Accuracy	0.1 % ± 1 digit

[1] measurement starts with ambient pressure

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

[3] with 3-wire version 4 ... 20 mA the response time is 1 sec

[4] with connector DIN 43650 and output 4 ... 20 mA / 2-wire max. 1 contact possible; with 0 ... 10 V / 3-wire no contact possible

[5] with Ex-protection max. 1 contact possible

[6] the real switching current in the application depends on the power supply unit

IMPRESS SENSORS & SYSTEMS
PO BOX 6076
Ashmore Green
Thatcham, Berkshire
England RG18 9ZN
Tel: 01635 872873 Fax: 01635 872873
e-mail: info@impress-sensors.co.uk
website: www.impress-sensors.co.uk

Mechanical stability

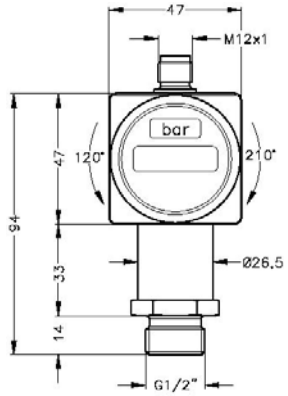
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec

Permissible temperatures

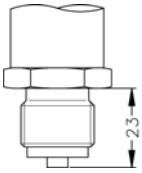
Medium	-25 ... 125 °C
Electronics / environment	-25 ... 85 °C
Storage	-40 ... 85 °C

Mechanical connection

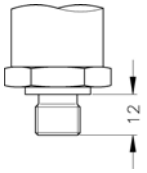
Standard



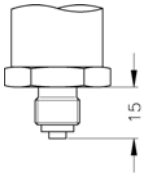
Optional



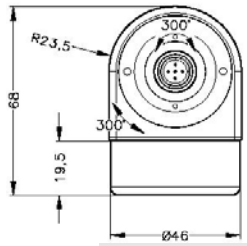
G1/2“ EN 837
M20 x 1.5



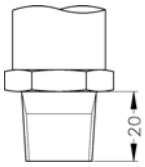
G1/4“ DIN 3852
M10 x 1
M12 x 1
M12 x 1.5



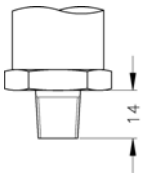
G1/4“ EN 837



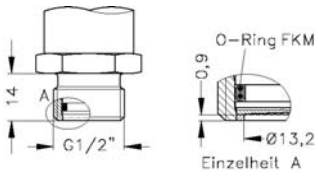
G1/2“ DIN 3852
M20 x 1.5



1/2“ NPT



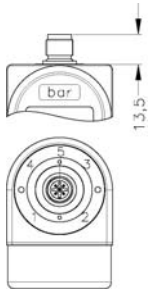
1/4" NPT



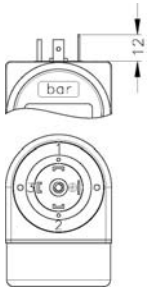
G1/2“ flush (DIN 3852 [7])

⇨ With pressure ranges P_N > 40 bar total length increases by 14 mm!
⇨ With Ex protection total length increases by 26.5 mm!

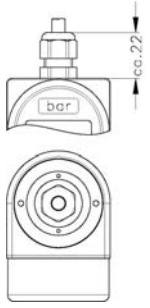
Electrical connection



M12x1 5-pin



DIN 43650 [4]



Cable gland [8]

[7] not possible for nominal pressure P_N < 0.1 bar and P_N > 40 bar; also not possible for vacuum ranges
[8] different cable types and lengths available; standard: 2 m PVC cable (without ventilation tube), optionally cable with ventilation tube

IMPRESS SENSORS & SYSTEMS
PO BOX 6076
Ashmore Green
Thatcham, Berkshire
England RG18 9ZN
Tel: 01635 872873 Fax: 01635 872873
e-mail: info@impress-sensors.co.uk
website: www.impress-sensors.co.uk

Materials

Pressure port	stainless steel 1.4571 (316Ti)
Housing	stainless steel 1.4301 (304)
Display housing	PA 6.6, Polycarbonate
Seals (media wetted)	standard: $P_N \leq 40$ bar: FKM / $P_N > 40$ bar: NBR optional: welded version [9]; others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous

Current consumption (without contacts)	signal output current: max. 25 mA signal output voltage: max. 18 mA
Weight	ca. 160 ... 250 g
Installation position	any [10]
Operational life	> 100 x 10^6 cycles
Ingress protection	IP 65

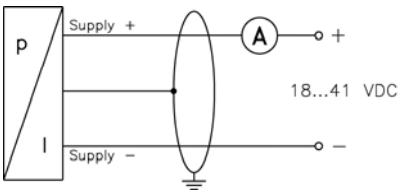
Pin configuration

Electrical connection		M12x1 plastic (5-pin)	M12x1 metal (5-pin)	DIN 43650	cable colours (DIN 47100)
2-wire-system	Supply +	1	1	1	white
	Supply –	3	3	2	brown
	Contact 1	4	4	3	grey
	Contact 2	5	5	-	pink
	Ground	via pressure port	plug housing	ground contact	cable shield
3-wire-system	Supply+	1	1	1	white
	Supply –	3	3	2	brown
	Signal +	2	2	3	green
	Contact 1	4	4	-	grey
	Contact 2	5	5	-	pink
	Ground	via pressure port	plug housing	ground contact	cable shield

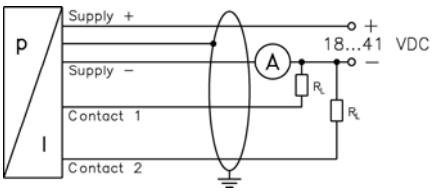
Wiring diagrams

2-wire-system (current) (for Ex protection: supply V_S = 17 ... 28 V_{DC}; max. 1 contact possible)

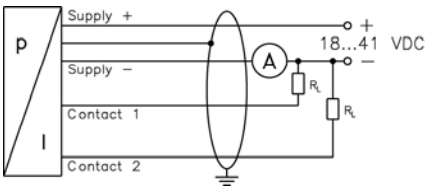
without contact



1 contact

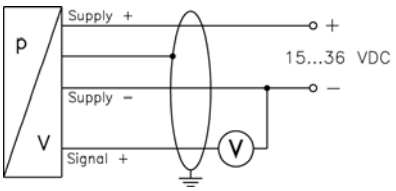


2 contacts

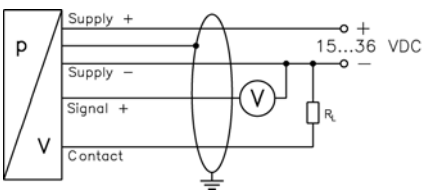


3-wire-system (current)

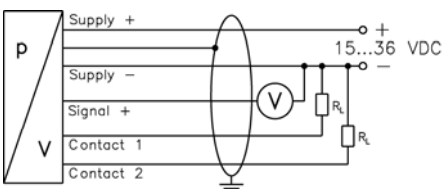
without contact



1 contact



2 contacts



[9] welded version only with pressure ports according to EN 837; not available with pressure ranges ≤ 0.16 bar and > 25 bar

[10] 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 < 1 bar.