BD|SENSORS
pressure measurement

DS 214

Electronic Pressure Switch for Very High Pressure

Thinfilm Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO

Nominal pressure

from 0 ... 600 bar up to 0 ... 2 200 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
- pressure sensor welded
- extremely robust and excellent long-term stability

Optional versions

- adjustability of span and offset (4 ... 20 mA / 3-wire)
- customer specific versions

The electronic pressure switch DS 214 for very high pressure up to 2 200 bar has been designed especially for use in plant and machine engineering as well as in mobile hydraulics.

The DS 214 has one 1 contact with standard version, this can optionally be upgraded up to four independent contacts.

Via the rotatable modul with an integrated 4-digit display the DS 214 can be programmed easily and comfortably.

Preferred areas of use are

- Plant and machine engineering
- Commercial vehicles and mobile hydraulics

CE ROHS REACH

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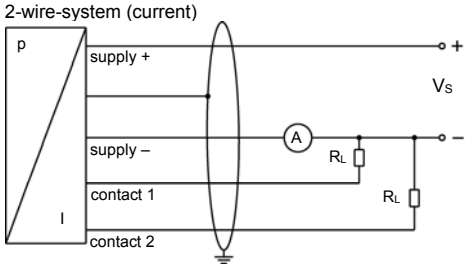
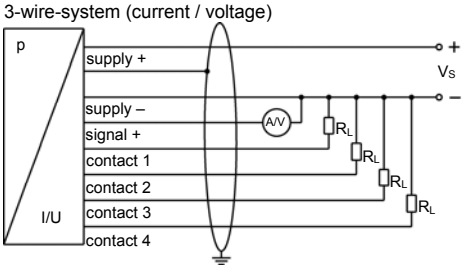
Input pressure range						
Nominal pressure gauge	[bar]	600 [1]	1000	1600	2000	2200
Overpressure	[bar]	800	1400	2200	2800	2800
[1] only available with pressure port G1/2" EN 837						
Contact [2]						
Standard	1 PNP contact					
Options	2 independent PNP contacts 4 independent PNP contacts (possible 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; $V_{switch} = V_S - 2V$ 0 ... 10 V / 3-wire: contact rating 125 mA, short-circuit resistant					
Accuracy of contacts [3]	≤ ± 0.35 % FSO					
Repeatability	≤ ± 0.1 % FSO					
Switching frequency	max. 10 Hz					
Switching cycles	> 100 x 10^6					
Delay time	0 ... 100 sec					
[2] max. 1 contact for 2-wire current signal with plug ISO 4400 *no contact possible with 3-wire in combination with plug ISO 4400*						
Analogue output (optionally) / Supply						
2-wire current signal	4 ... 20 mA / V_S = 13 ... 36 V_{DC} permissible load: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ response time: < 10 msec					
3-wire current signal	4 ... 20 mA / V_S = 19 ... 30 V_{DC} adjustable (turn-down of span 1:5) [4] permissible load: R_{max} = 500 Ω response time: < 3 sec					
3-wire voltage signal	0 … 10 V / V_S = 15 ... 36 V_{DC} permissible load: R_{min} = 10 kΩ response time: < 3 msec					
Without analogue output	V_S = 15 ... 36 V_{DC}					
Accuracy [3]	≤ ± 0.35 %FSO IEC 60770					
[3] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) *[4] with turn-down of span the analogue signal is adjusted automatically to the new measuring range*						
Thermal effects (Offset and Span)						
Thermal error	≤ ± 0.25 % FSO / 10 K					
in compensated range	-20 ... 85 °C					
Permissible temperatures						
Permissible temperatures	medium: -40 ... 140 °C electronics / environment: -25 ... 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)					
Shock	100 g / 11 msec					
Materials						
Pressure port	stainless steel 1.4542 (17-4 PH)					
Housing	stainless steel 1.4404 (316 L)					
Display housing	PA 6.6, polycarbonate					
Seals (media wetted)	none (welded version)					
Diaphragm	stainless steel 1.4542 (17-4 PH)					
Media wetted parts	pressure port, diaphragm					
Miscellaneous						
Display	4-digit, red 7-segment-LED display, digit height 7 mm, 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 3-wire signal output voltage: approx. 7 mA + signal current					
Ingress protection	IP 65					
Installation position	any					
Weight	min. 200 g (depending on mechanical connection)					
Operational life	p_N = 600 bar: 100 million load cycles p_N > 600 bar: 10 million load cycles					
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A)					

Wiring diagrams

2-wire-system (current)



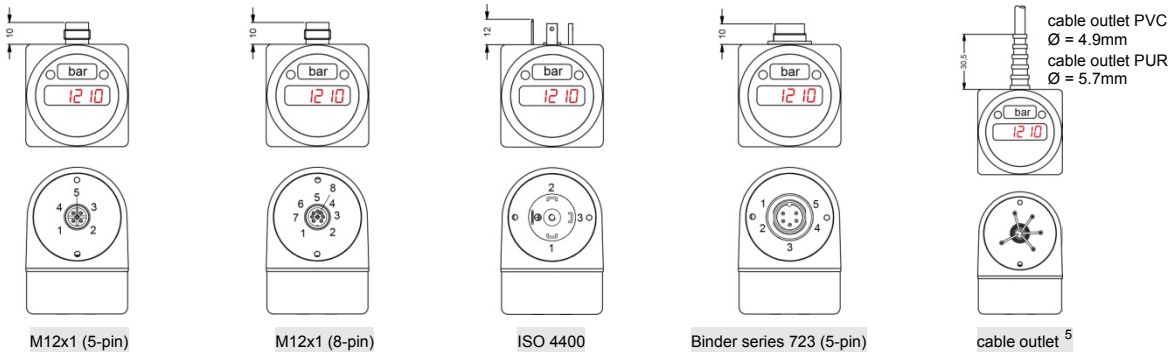
3-wire-system (current / voltage)



Pin configuration

Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	Binder series 723 (5-pin)	cable colours (IEC 60757)
Supply +	1	1	1	1	1	wh (white)
Supply –	3	3	3	2	3	bn (brown)
Signal + (only 3-wire)	2	2	2	3	2	gn (green)
Contact 1	4	4	4	3	4	gy (grey)
Contact 2	5	5	5	-	5	pk (pink)
Contact 3	-	-	6	-	-	bu (blue)
Contact 4	-	-	7	-	-	rd (red)
Shield	via pressure port	plug housing/ pressure port	via pressure port	ground contact	plug housing/ pressure port	gnye (green-yellow)

Electrical connections (dimensions in mm)

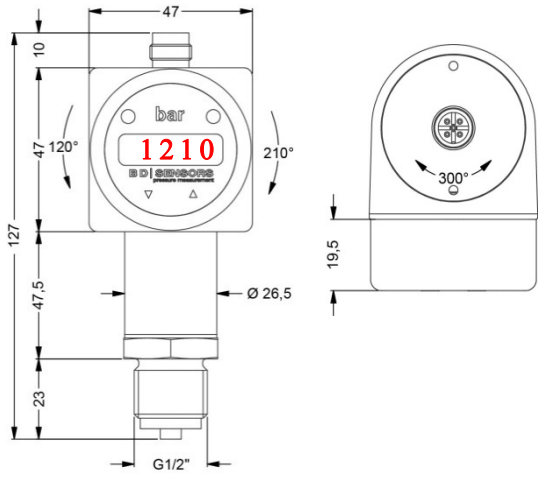


M12x1 (5-pin) | M12x1 (8-pin) | ISO 4400 | Binder series 723 (5-pin) | cable outlet [5]

[5] *different cable types and lengths available; standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)*

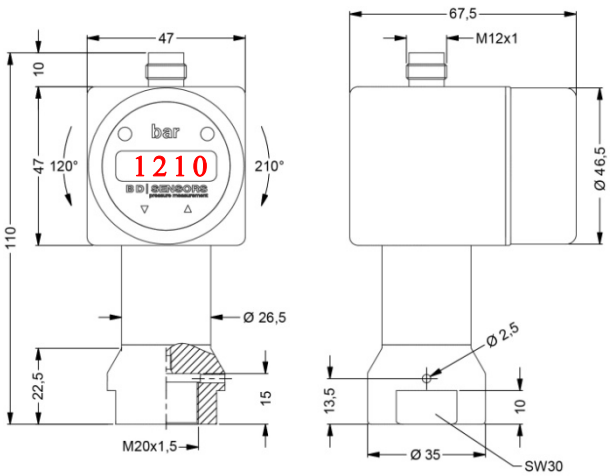
Mechanical connections (dimensions in mm)

standard



G1/2" EN 837

option



M20 x 1,5 internal thread

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Ordering code DS 214

DS 214 ☐☐☐-☐☐☐☐-☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure																			
gauge	7	8	B																
Input	**[bar]**																		
600 [1]				6	0	0	3												
1000				1	0	0	4												
1600				1	6	0	4												
2000				2	0	0	4												
2200				2	2	0	4												
customer				9	9	9	9												consult
Analogue output																			
without								0											
4 … 20 mA / 2-wire								1											
0 … 10 V / 3-wire								3											
4 … 20 mA / 3-wire, adjustable								7											
customer								9											consult
Contact																			
1 contact [2]									1										
2 contacts [2]									2										
4 contacts [3]									4										
Accuracy																			
0.35 %										3									
customer										9									consult
Electrical connection																			
Male plug M12x1 (5-pin) / plastic version											N	0	1						
Male plug M12x1 (8-pin) / [3] plastic version											M	5	0						
Male plug M12x1 (5-pin) / metal version											N	1	1						
Male and female plug ISO 4400 [2]											1	0	0						
Male plug Binder series 723 (5-pin)											2	0	4						
Cable outlet incl. cable [4]											T	A	0						
customer											9	9	9						consult
Mechanical connection																			
G1/2" EN 837 [5]														2	0	0			
M20x1.5 internal thread														D	2	8			
customer														9	9	9			consult
Seals																			
without (welded version)																	2		
customer																	9		consult
Special version																			
standard																		0 0 0	
customer																		9 9 9	consult

[1] only available with pressure port G1/2" EN 837

[2] with connector ISO 4400 and output 2-wire version only max. 1 contact possible; with 3-wire version no contact possible

[3] 4 contacts and M12x1, 8-pin only possible in combination and together with 4 ... 20 mA/3-wire; 0 ... 10 V/3-wire on request

[4] standard: 2 m PVC cable without ventilation tube, others on request

[5] According to EN 837, the pressure port and the complement, at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of R_p > 260 N/mm² in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!

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