Electronic Pressure Switch

EDS 4100 Programmable ATEX Intrinsically Safe

Description:

The programmable pressure switch EDS 4100 in ATEX version has been specially developed for use in potentially explosive atmospheres and is based on the EDS 4000 series.

The switching point and switch-back point, the function of the switching outputs as N/C or N/O and the switching delay are user-programmable in conjunction with the HYDAC Programming Unit HPG 3000.

As with the industry model, the programmable EDS 4100 in ATEX version has a ceramic measurement cell with thick-film strain gauge for measuring absolute pressure in the low pressure range.

With approval for the following **Protection types and applications:**

I M1	Ex ia I
II 1G	Ex ia IIC T4, T5, T6
II 1/2G	Ex ia IIC T4, T5, T6
II 2G	Ex ia IIC T4, T5, T6
II 1 D	Ex iaD 20 T100 °C

almost all requirements are covered regarding ignition group, error class and temperature class.

Versions for other Protection types and applications are available on request.

Special features:

- Switching point and switch-back point user-programmable
- Accuracy ≤ ± 1 % FS
- Certificates:
  DEKRA EXAM BVS 07 ATEX E 041 X
- Very small temperature error
- Excellent EMC characteristics
- Excellent durability

Technical data:

Input data		
Measuring ranges	1; 2.5 bar	
Overload pressures	3; 8 bar	
Burst pressures	5; 12 bar	
Mechanical connection	G1/4 A DIN 3852	
Torque value	20 Nm	
Parts in contact with medium	Sensor: Mech. connection: Seal:	Ceramic 1.4301 FPM / EPDM
Output data		
Switch output	1 x PNP N/C or N/O	
Output load	during operation: I_{max} ≤ 34 mA	
Switching points	user-programmable with HYDAC Programming Unit HPG 3000	
Accuracy to DIN 16086, Max. setting	≤ ± 0.5 % FS typ. ≤ ± 1 % FS max.	
Repeatability (at 25 °C)	≤ ± 0.1 % FS max.	
Temperature drift	≤ ± 0.03 % FS / °C max. zero point ≤ ± 0.03 % FS / °C max. range	
Rising switch point and falling switch point delay	8 ms to 2000 ms; user-programmable with HYDAC Programming Unit HPG 3000	
Long-term drift	≤ ± 0.3 % FS typ. / year	
Environmental conditions		
Storage temperature range	-40 .. +100 °C	
Fluid temperature range	-20 .. +60 °C / +70 °C / +85 °C	
CE mark	EN 61000-6-1 / 2 / 3 / 4 EN 60079-0 / 11 / 26 EN 61241-0 / 11 EN 50303	
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g	
Protection class to IEC 60529	IP 67 (M12x1, when an IP 67 connector is used)	
Relevant data for Ex applications		
	I M1 II 1G, 1/2G, 2G	**II 1 D**
Supply voltage	14 .. 28 V DC	
Compensated temperature range	T6: -20 .. +60 °C T5, T4: -20 .. +70 °C T100: -20 .. +70 °C	
Operating temperature range	T6: -20 .. +60 °C T5, T4: -20 .. +70 °C T100: -20 .. +70 °C	
Max. ambient temperature T_a	T6: +60 °C T5, T4: +70 °C	T100: +70 °C
Max. input current	100 mA	93 mA
Max. input power	0.7 W	0.65 W
Max. internal capacitance	33 nF	33 nF
Max. internal inductance	0 mH	0 mH
Insulation voltage [1]	50 V AC, with integrated overvoltage protection EN 61000-6-2	
Approved intrinsic safety barriers	Pepperl & Fuchs: Telematic Ex STOCK:	Z 787 MTL 7087
Other data		
Residual ripple of supply voltage	≤ 5 %	
Life expectancy	> 10 million cycles 0 .. 100 % FS	
Weight	~ 150 g	

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided. **FS** (**F**ull **S**cale) = relative to complete measuring range

[1] 500 V AC on request

Setting options:

In conjunction with the HYDAC Programming Unit HPG 3000, all the settings are combined in an easy-to-follow menu.

Setting ranges for the switch outputs:

Measuring range in bar	Increment in bar
0 .. 1	0.002
0 .. 2.5	0.005

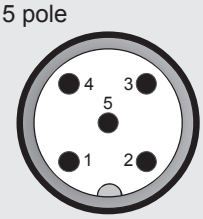
The switch point (upper switch value) on all instruments is between 5 % and 100 % of the measuring range and the switch-back point (lower switch value) is between 1 % and 96 % of the measuring range.

	Minimum value in ms	Maximum value in ms
Switch-on delay Ton1/Ton2	8	2040
Switch-off delay ToF1/ToF2	8	2040

The increment for all instruments is 8 ms.

Pin connections:

M12x1, 5 pole



Pin	Process connection	HPG connection
1	$+U_B$	$+U_B$
2	0 V	Comport 1 *
3	0 V	0 V
4	Out 1	n.c.
5	0 V	Comport 2 *

* Comport = programming connection

Areas of application:

Code No. for use in Model code	1	2	3	8
Protection Type	I M1 Ex ia I	II 1G Ex ia IIC T4, T5, T6	II 2G Ex ia IIC II 1/2G Ex ia IIC T4, T5, T6	II 1D Ex iaD 20 T100 °C
Certificate	DEKRA EXAM BVS 07 ATEX E 041 X	DEKRA EXAM BVS 07 ATEX E 041 X	DEKRA EXAM BVS 07 ATEX E 041 X	DEKRA EXAM BVS 07 ATEX E 041 X
Zones / Categories	Group I Category M1 Mining Protection class: intrinsically safe ia with barrier	Group II Category 1G Gases Protection class: intrinsically safe ia with barrier For use in Zone 0 T4, T5: T_a = 70 °C T6: T_a = 60 °C	Group II Category 2G, 1/2G Gases Protection class: intrinsically safe ia with barrier For use in Zone 1, 2 For mounting to Zone 0 T4, T5: T_a = 70 °C T6: T_a = 60 °C	Group II Category iD Dusts Protection class: intrinsically safe ia with barrier For use in Zone 20, 21, 22 For mounting to Zone 20 T100: T_a = 70 °C
Electrical Connection	8	8	8	8

Instruments for other Protection types and applications are available on request. Please contact our technical sales department for more information.

Model code:

EDS 4 1 4 8 – XXXX – P – A N X – 000 – X 1

Mechanical connection
4 = G1/4 A DIN 3852 (male)

Electrical connection
8 = Male M12x1, 5 pole (connector not supplied)

Pressure ranges in bar
01.0; 02.5

Switching output
P = Programmable

Approval
A = ATEX

Insulation voltage
N = 50 V AC

Protection types and applications (~~code~~)
1 = I M1 Ex ia I
2 = II 1G Ex ia IIC T4, T5, T6
3 = II 2G Ex ia IIC T4, T5, T6 / II 1/2G Ex ia IIC T4, T5, T6
8 = II 1D Ex iaD 20 T100 °C

Modification number
000 = Standard

Seal material (in contact with fluid)
F = FPM seal (e.g.: for hydraulic oils)
E = EPDM seal (e.g.: for refrigerants)

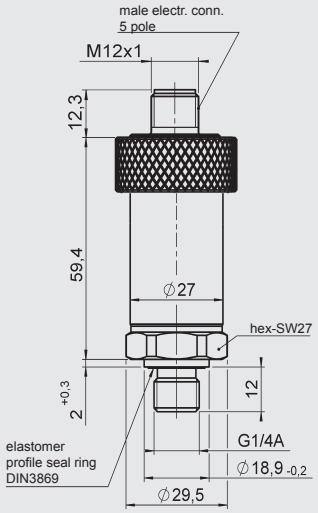
Material of connection (in contact with fluid)
1 = Stainless steel

Accessories:
Appropriate accessories, such as electrical connectors, can be found in the Accessories brochure.

Safety instructions:

- These units must only be programmed outside the potentially explosive location.
- When operating in potentially explosive locations, the programming cables may only be connected to the 0 V outside of the potentially explosive area.
- The switching output draws the switching energy from the power supply to the pressure switch. No additional energy is introduced into the electrical circuit through the switching output.
- Dual Zener barriers specified and approved in the technical data must be used to connect the pressure switch.
  These have a reverse polarity diode to decouple the signal.
  The signal path may only be passively loaded.
- Ensure that measured fluids in contact with the pressure switch are compatible with the materials used.

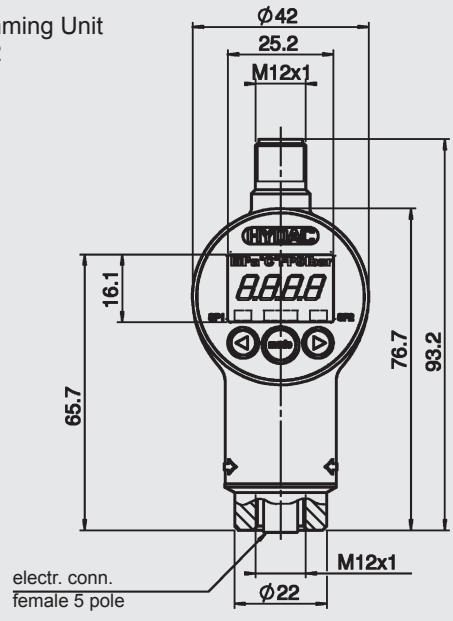
Dimensions:



Programming Unit:

(must be ordered separately)

HPG 3000 – 000
Portable Programming Unit
Part. No. 909 422



Caution:

The HPG 3000 Programming Unit may only be used outside the potentially explosive area.

Note:

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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