



Electronic Pressure Transmitter HDA 4700 for Applications with Increased Functional Safety

Functional Safety
PL d



Description:

This version of the pressure transmitter series HDA 4700 has been specially developed for use in safety circuits / safety functions as part of the functional safety of machinery and equipment up to PL d - Cat 3 (in accordance with ISO 13849).

The pressure transmitters are designed with two channels. Each channel consists of a sensor element and evaluation electronics. As a result, the pressure transmitter develops two separate and independent output signals in proportion to the pressure.

The safety function is tested by evaluating and comparing the two analogue output signals in a higher-level system.

The main areas of application are as sensor elements in mobile, safety-oriented systems such as load torque displays or load torque limitation in truck-mounted cranes or working platforms.

Special features:

- Two-channel, redundant pressure measurement
- Two separate, independent output signals
- Accuracy $\leq \pm 0.25\%$ FS typ.
- Highly robust sensor cell
- Outstanding performance in terms of temperature effect and EMC
- Small, compact design
- PL d, Cat. 3 certification

Technical data:

Input data				
Measuring ranges signal 1 in bar	25	40	60	100
Measuring ranges signal 2 in bar	25 / 40	40 / 60	60 / 100	100 / 160
	160	250	400	600
	160 / 250	250 / 400	400 / 600	600 / 1000
Overload pressures in bar	80	80	120	200
	320	500	800	1200
Burst pressures in bar	200	200	300	500
	800	1250	2000	2000
Mechanical connection (Torque value)	G $\frac{1}{4}$ A DIN 3852 with 0.5 mm orifice (20 Nm)			
Parts in contact with medium ¹⁾	Mech. conn.: Stainl. steel (2 x thin-film strain gauge) Seal: FPM			
Output data				
Output signal 1 ²⁾	4 .. 20 mA, 3 conductor			
Output signal 2 ²⁾	4 .. 20 mA, 3 conductor			
Accuracy to DIN 16086	$\leq \pm 0.25\%$ FS typ.			
Max. setting	$\leq \pm 0.5\%$ FS max.			
Accuracy at minimum setting (B.F.S.L.)	$\leq \pm 0.15\%$ FS typ. $\leq \pm 0.25\%$ FS max.			
Temperature compensation	$\leq \pm 0.008\%$ / °C typ.			
Zero point	$\leq \pm 0.015\%$ / °C max.			
Temperature compensation	$\leq \pm 0.008\%$ / °C typ.			
Over range	$\leq \pm 0.015\%$ / °C max.			
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3\%$ FS max.			
Hysteresis	$\leq \pm 0.1\%$ FS max.			
Repeatability	$\leq \pm 0.05\%$ FS.			
Rise time	≤ 2 ms			
Long term stability	$\leq \pm 0.1\%$ FS typ. / year			
Environmental conditions				
Compensated temperature range	-25 .. +85 °C			
Operating temperature range (fail safe) ³⁾	-40 .. +85 °C / -25 .. +85 °C			
Storage temperature range	-40 .. +85 °C			
Fluid temperature range ³⁾	-40 .. +85 °C / -25 .. +85 °C			
CE mark	EN 61000-6-1 / 2 / 3 / 4			
Vibration resistance according to DIN EN 60068-2-6 at 5 .. 2000 Hz	≤ 20 g			
Protection class to IEC 60529 to ISO 20653	IP 67 (when female connector is fitted) IP 69K (when female connector is fitted)			
Other data				
Electrical connection	M12x1, 4 pole; DT04, 4 pole			
Supply voltage	7 .. 35 V DC (max. load resistance 250 Ω) 12 .. 35 V DC (max. load resistance 500 Ω)			
Life expectancy	> 10 million load cycles (0 .. 100 %)			
Weight	~ 180 g			
Safety-related data				
Performance level				
Based on	DIN EN ISO 13849-1:2008			
PL	d			
Architecture	Category 3			

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided
FS (Full Scale) = relative to the complete measuring range

¹⁾ Other seal materials on request

²⁾ Other output signals on request

³⁾ -25 °C with FPM seal, -40 °C on request

Model code:

HDA 4 7 4 X - C C - XXXX - XXXX - Pd- 000

Mechanical connection

4 = G1/4 ADIN 3852 (male)

Electrical connection

6 = Male M12x1, 4 pole

(connector not supplied)

V = Male Deutsch DT04, 4 pole

(connector not supplied)

Signal 1

C = 4 .. 20 mA, 3 conductor

Signal 2

C = 4 .. 20 mA, 3 conductor

Pressure ranges for Signal 1 in bar

(max. oper. pressure)

0025; 0040; 0060; 0100; 0160; 0250; 0400; 0600

Pressure ranges for Signal 2 in bar

0025; 0040; 0060; 0100; 0160; 0250; 0400; 0600; 1000

Press. range for signal 2 = Pressure range for signal 1
or max. 1 pressure level higher

Functional safety

Pd = PL d – Cat 3 according to DIN EN 13849-1

Modification number

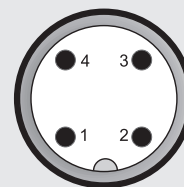
000 = Standard

Accessories:

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

Pin connections:

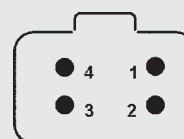
M12x1



Pin HDA 4746-CC

1	+U _B
2	Signal 2
3	0 V
4	Signal 1

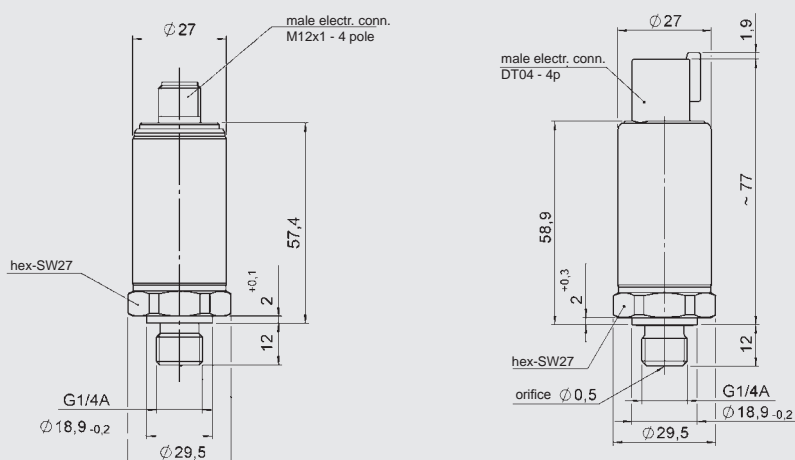
DT04



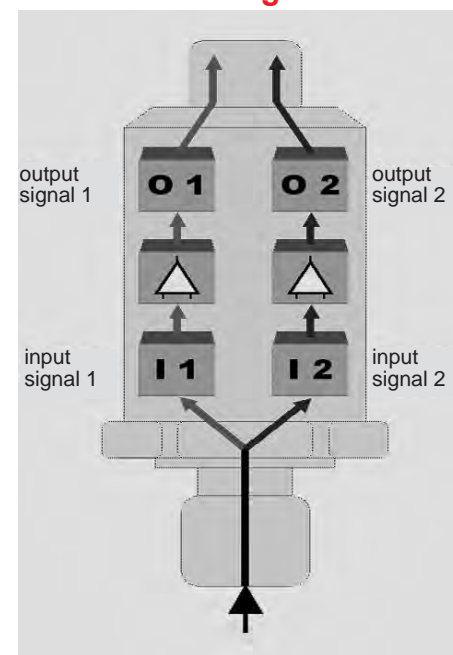
Pin HDA 474V-CC

1	+U _B
2	0 V
3	Signal 2
4	Signal 1

Dimensions:



Block circuit diagram:



Note:

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

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