HYDAC INTERNATIONAL

Pressure transmitter
HDA 4700

CAN interface
Temperature measurement as an option

Relative pressure | **Accuracy 0.25 %**

Features

- Accuracy ≤ ± 0.25 % FS typ.
- With CANopen or J1939 Protocol
- Excellent EMC characteristics
- Temperature measurement available as an option

Description

HDA 4700 with CAN interface is a digital pressure transmitter which is used to measure relative pressures in hydraulics and pneumatics. The measured temperature value is digitised and made available to the CAN field bus system via the CANopen protocol or SAE J1939 protocol. These parameters can be read out and configured by the operator using standard CAN software.

The pressure transmitter, based on the HDA 4700, has a highly precise and robust sensor cell with a thin-film strain gauge on a stainless steel membrane.

Thanks to exceptional temperature and EMC characteristics as well as its small and compact design, this device series can be used in a wide field of applications in the mobile or industrial sector.

The sensor is equipped with an additional externally mounted temperature probe, which measures directly in the system fluid which makes it suitable for control tasks. The extension of the sensor by temperature measurement enables saving additional measurement points and minimises the installation effort for the customer.

Fields of application

Applications are mainly found in the mobile or industrial sector in hydraulics and pneumatics.

Technical data

Input data												
Measurement ranges	bar	6	16	40	60	100	250	400	600	1000	1600	2000
Overload pressures	bar	12	32	80	120	200	500	800	1000	1600	2400	3000
Burst pressure	bar	100	100	200	300	500	1250	2000	2000	3000	3000	4000
Mechanical connection					G1/4 A ISO 1179-2 G1/2 A ISO 1179-2							
Tightening torque, recommended					20 Nm (G1/4); 45 Nm (G1/2)							
Parts in contact with fluid					Connector: Seal: Stainless steel: FKM							
Output data												
Output signal					CANopen or SAE J1939 protocol, depending on the version							
Accuracy acc. to DIN 16086, Terminal based [1]					≤ ± 0.25 % FS typ. ≤ ± 0.5 % FS max.							
Accuracy at minimum value setting (B.F.S.L.)					≤ ± 0.15 % FS typ. ≤ ± 0.25 % FS max.							
Temperature compensation zero point					≤ ± 0.008 % FS / °C typ. ≤ ± 0.015 % FS / °C max.							
Temperature compensation span					≤ ± 0.008 % FS / °C typ. ≤ ± 0.015 % FS / °C max.							
Rise time					≤ 1 ms							
Long-term drift					≤ ± 0.1 % FS typ. / year							
Environmental conditions / Approvals / Tests												
Compensated temperature range					-25 .. +85 °C							
Operating temperature range [2]					-40 .. +85 °C / -25 .. +85 °C							
Storage temperature range					-40 .. +100 °C							
Fluid temperature range [2]					-40 .. +100 °C / -25 .. +100 °C							
EMC					2014/30/EU EN 61006-6-1 / 2 / 3 / 4							
Vibration resistance					DIN EN 60068-2-6				≤ 200 m/s² (10 .. 500 Hz)			
Shock resistance					DIN EN 60068-2-27				≤ 100 g / 6 ms			
Protection type [3]					DIN EN 60529				IP 67			
CE / UKCA conformity					Provided							
cULus approval [4]					Provided							
Protocol data for CANopen												
Communication Profile					CiA 301 V4.2							
Layer Setting Services and Protocol					CiA 305 V2.2							
Device Profile					CiA 404 V1.3							
Automatic bit-rate detection					CiA AN 801							
Bit rates					10 kbit .. 1 Mbit acc. to 305 V2.2							
Node Id/Bit rate					adjustable via Manufacturer Specific Profile							
Default settings					Bit rate: 250 kbit/s Node ID: 1							
Protocol data for SAE J1939												
Data link layer					SAE J1939-21							
Network Layer					SAE J1939-31							
Network Management					SAE J1939-81							
Default settings					Bit rate: 250 kbit/s Address: 1							
Other data												
Supply voltage when applied acc. to UL specifications					9 .. 35 V DC -limited energy- acc. to 9.3 UL 61010; Class 2 UL 1310/1585; LPS UL 60950							
Residual ripple of supply voltage					≤ 5 %							
Current consumption					≤ 25 mA							
Life expectancy					> 10 million load cycles (0 .. 100 % FS)							
Weight					~ 150 g							

Note: Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection are provided.

FS (**F**ull **S**cale) = relative to complete measuring range

B.F.S.L. = **B**est **F**it **S**traight **L**ine

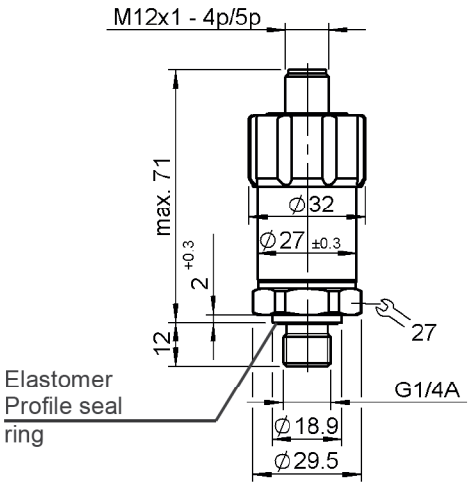
[1] Including non-linearity, hysteresis, offset and final value deviation

[2] In the standard up to -25 °C with FKM seal, -40 °C on request

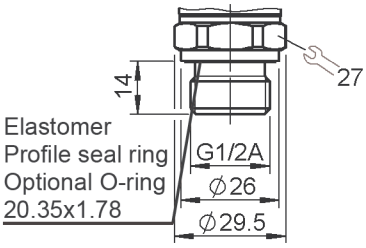
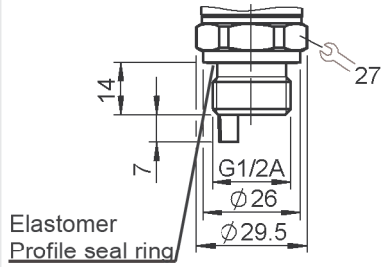
[3] With mounted mating connector in corresponding protection type

[4] Environmental conditions acc. to 1.4.2 UL 61010-1; C22.2 no. 61010-1

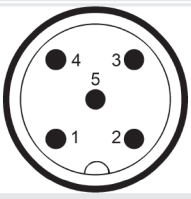
Dimensions



Mechanical connection variants

G1/2 A ISO 1179-2 External thread Tightening torque, recommended: 45 Nm	**With temperature measurement as an option:** G1/2 A ISO 1179-2 with measurement probe External thread tightening torque, recommended: 45 Nm
	

Pin connections

M12x1, 5 pole	Pin	Output signal: F1X	
		Signal	Description
	1	Housing	Shield/housing
	2	+U_B	Supply +
	3	0 V	Supply -
	4	CAN_H	Bus line dominant high
	5	CAN_L	Bus line dominant low

Model code

HDA 4 7 X 8 - FXX - XXXX - 000

Mechanical connection

2 = G1/2 A ISO 1179-2 (only for pressure ranges ≥ 1000 bar)
4 = G1/4 A ISO 1179-2

Electrical connection

8 = Plug connector M12x1, 5 pole (without mating connector)

Output signal

F11 = CANopen
F12 = CAN SAE J1939

Measuring ranges in bar

0006; 0016; 0040; 0060; 0100; 0250; 0400; 0600; 1000 (only with mech. connection type "4")
1600; 2000 bar (only with mech. connection type "2")

Modification number

000 = Standard

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

Additional technical data with temperature measurement option

Input data											
Measurement ranges					-25 .. +100 °C						
Probe length					7 mm						
Mechanical connection					G1/2 A ISO 1179-2 with measurement probe						
Tightening torque, recommended					45 Nm						
Measuring ranges bar	bar	6	16	40	60	100	250	400	600	1000	
Output data											
Output signal pressure					CAN protocol						
Output signal temperature					The temperature signal is available via the CANbus						
Accuracy at room temperature					≤ ± 1.0 % FS typ. ≤ ± 1.5 % FS max.						
Temperature drift (environment)					≤ ± 0.02 % FS / °C						
Rise time acc. to DIN EN 60751					t_{50}: ~ 4 s t_{90}: ~ 8 s						

Model code with optional temperature measurement

HDA 4 7 2 8 - FXX - XXXX - T - 007 - 000

Mechanical connection
2 = G1/2 A ISO 1179-2

Electrical connection
8 = Plug connector M12x1, 5 pole (without mating connector)

Output signal
F11 = CANopen
F12 = CAN SAE J1939

Measuring ranges in bar
0006; 0016; 0040; 0060; 0100; 0250; 0400; 0600; 1000

With temperature measurement

Rod length in mm
007 = 7 mm

Modification number
000 = Standard

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

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.