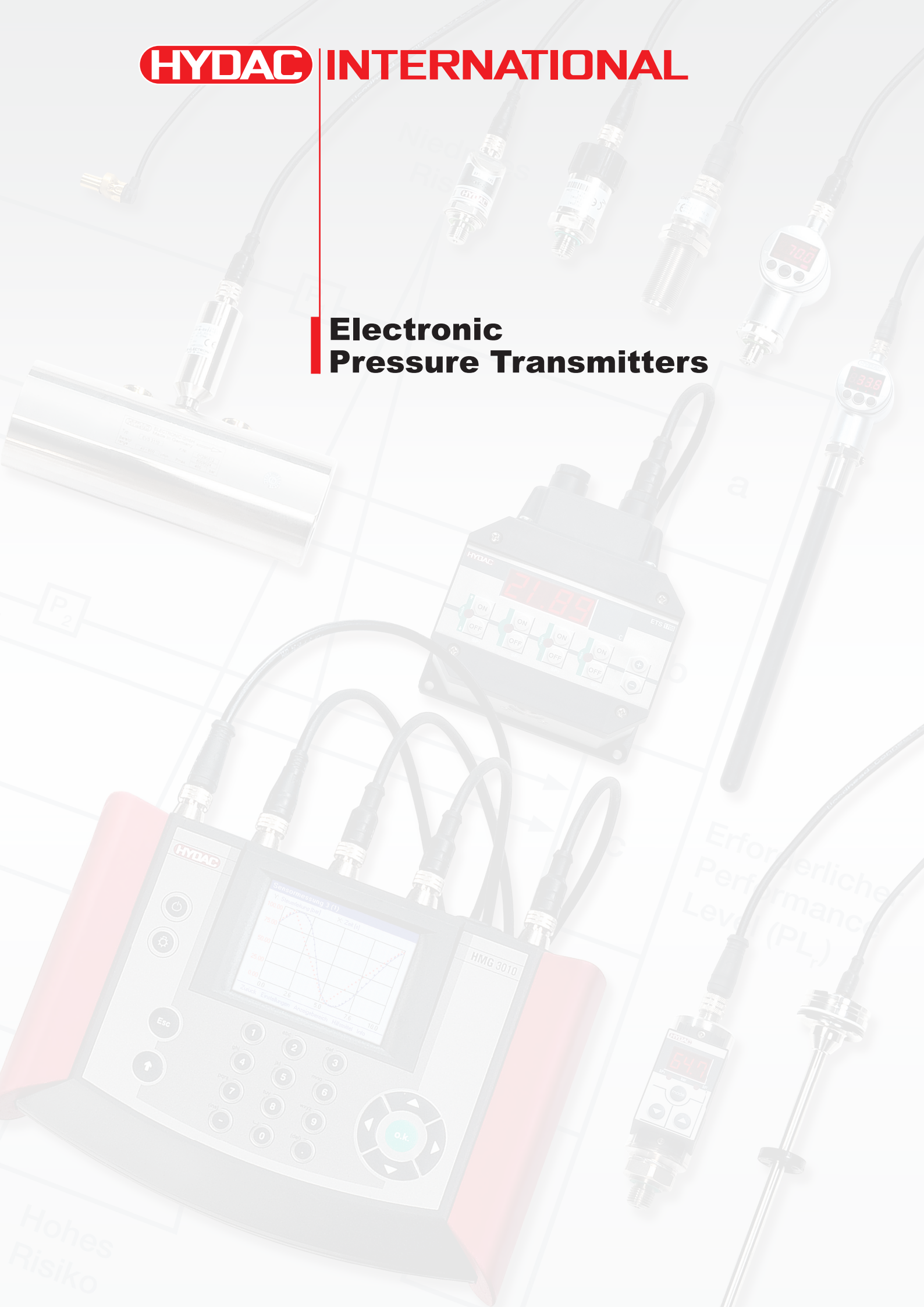


Electronic Pressure Transmitters



ELECTRONIC PRESSURE TRANSMITTERS











The right pressure transmitter for every application! The wide ranging product choice from HYDAC offers solutions for all industries, whether systems or machinery manufacture, mobile technology or for laboratory applications.

The pressure transmitters are available with a variety of output signals, connectors and fluid port connection options.

Pressure transmitters for general applications:

HDA 4800
HDA 4800 Iron and steel works
HDA 4700
HDA 4700 Approvals for shipping
HDA 4700 CANopen
HDA 4400
HDA 4400 Approvals for shipping
HDA 4300
HDA 4300 Approvals for shipping
HDA 4100
HDA 4100 Approvals for shipping
HDA 7476
HDA 7400 CANopen

Further pressure transmitters for special applications can be found in the sections "Pressure Sensors with Flush Membrane", "Service Instruments", "Sensors for Potentially Explosive Atmospheres" and "OEM Products for Large Volume Production".

Electronic Pressure Transmitters	HDA 4800 	HDA 4700 	HDA 4400 	HDA 4300 	HDA 4100 	HDA 3800 	HDA 7400 	HDA 8700 	HDA 8400 	HDA 9000 
Accuracy (max. error)	0.25	0.5	1.0	1.0	1.0	0.3	1.0	0.5	1.0	1.0
Low pressure (up to 500 psi)	✓	✓	✓	✓	✓	✓				✓
High pressure (from 500 psi)	✓	✓	✓			✓	✓	✓	✓	✓
Relative pressure	✓	✓	✓	✓		✓	✓	✓	✓	✓
Absolute pressure					✓					
Available as individual units	✓	✓	✓	✓	✓	✓	✓			
OEM product for large volume production							✓	✓	✓	✓
Flush membrane		✓	✓	✓			✓			
CANopen Version		✓					✓			
ECE type authorisation (approved for road vehicles)									✓	
Approval for potentially explosive atmospheres		✓	✓	✓	✓					
Approvals for Shipping		✓	✓	✓	✓					
UL Approval	✓	✓	✓	✓	✓		✓	✓	✓	
Increased functional safety		✓						✓		

Note:
Not all feature combinations are possible. For precise information, please consult the relevant data sheet.



Electronic Pressure Transmitter HDA 4800

Description:

The pressure transmitter series HDA 4800 has a very accurate and robust sensor cell with a thin-film strain gauge on a stainless steel membrane.

Outstanding technical specifications and robust construction make the HDA 4800 particularly suited to the field of test rig and diagnostic technology. It is also suitable for a broad range of industrial applications.

Since the accuracy of a pressure transmitter varies greatly with the temperature of the fluid, the instrument has excellent characteristics in this respect. The output signals 4 .. 20 mA, and 0 .. 10V are available as standard.

Special features:

- Accuracy $\leq \pm 0.125\%$ FS B.F.S.L.
- Highly robust sensor cell
- Very small temperature error
- Excellent EMC characteristics
- Excellent long term stability

Technical data:

Input data	
Measuring ranges	150, 500, 750, 1000, 1500, 3000, 5000, 6000, 9000 psi
Overload pressures	290, 1160, 1740, 2900, 2900, 7250, 11600, 11600, 14500 psi
Burst pressures	1450, 2900, 4350, 7250, 7250, 14500, 29000, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)
Torque value	15lb-ft (20 Nm)
Parts in contact with medium	Mech. connection: Stainless steel Seal: FPM
Output data	
Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{L,max.} = (U_B - 10 V) / 20 \text{ mA} [\text{k}\Omega]$ 0 .. 10 V, 3 conductor $R = 2 \text{ k}\Omega$
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.125\%$ FS typ. $\leq \pm 0.25\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.06\%$ FS typ. $\leq \pm 0.125\%$ FS max.
Temperature compensation	$\leq \pm 0.003$ FS/°F typ.
Zero point	$\leq \pm 0.006$ FS/°F max.
Temperature compensation Over range	$\leq \pm 0.003$ FS/°F typ. $\leq \pm 0.006$ FS/°F max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.15\%$ FS max.
Hysteresis	$\leq \pm 0.1\%$ FS max.
Repeatability	$\leq \pm 0.05\%$ FS
Rise time	≤ 1 ms
Long-term drift	$\leq \pm 0.1\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range ¹⁾	-40..+185°F/-13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range ¹⁾	-40..+212°F/-13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark ²⁾	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (M12x1, when an IP 67 connector is used)
Other data	
Supply voltage	10 .. 30 V DC 2-conductor 12 .. 30 V DC 3 conductor
for use acc. to UL spec.	- limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	$\leq 5\%$
Current consumption	≤ 15 mA
Life expectancy	> 10 million cycles 0 .. 100 % FS
Weight	~ 145 g

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

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ 13 °F with FPM seal, -40 °F on request

²⁾ Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

Model code:

HDA 4 8 7 X - X - XXXX - 000 (PSI)

Mechanical connection

7 = 9/16-18 UNF2A (SAE 6 male)

Electrical connection

5 = Male, 3 pole+ PE, EN175301-803 (DIN 43650) (connector supplied)

6 = Male M12x1, 4 pole (connector not supplied)

Signal

A = 4 .. 20 mA, 2 conductor

B = 0 .. 10 V, 3 conductor

Pressure ranges in psi

0150, 0500, 0750, 1000, 1500, 3000, 5000, 6000, 9000

Modification number

000 = Standard

Version

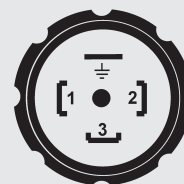
PSI = Pounds per square inch

Accessories:

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

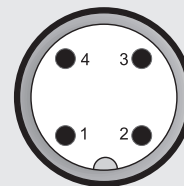
Pin connections:

EN175301-803 (DIN 43650)



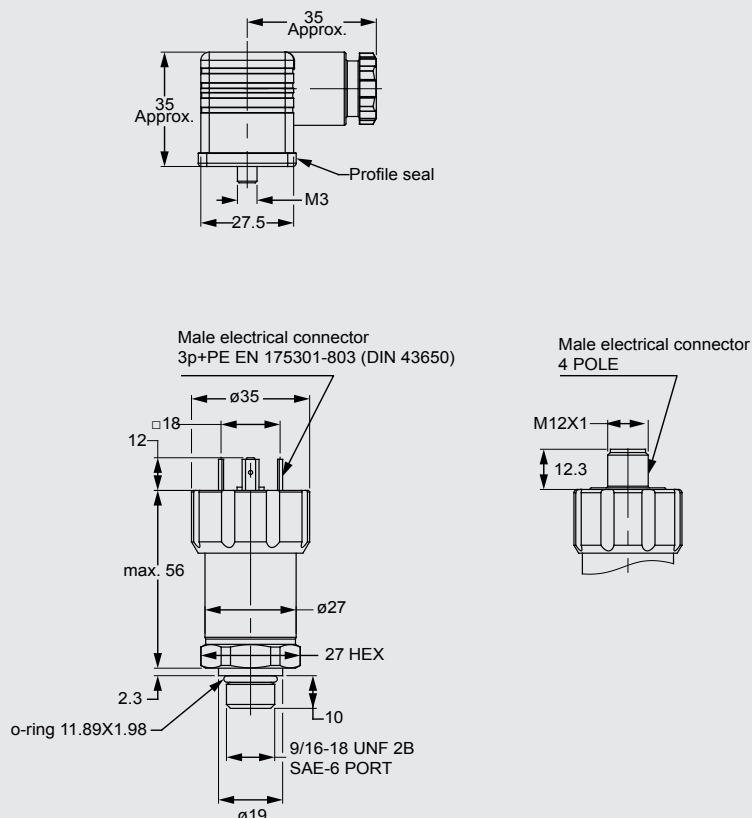
Pin	HDA 4875-A	HDA 4875-B
1	Signal+	+U _B
2	Signal-	0 V
3	n.c.	Signal
⊥	Housing	Housing

M12x1



Pin	HDA 4876-A	HDA 4876-B
1	Signal+	+U _B
2	n.c.	n.c.
3	Signal-	0 V
4	n.c.	Signal

Dimensions:



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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107

Telephone: 610.266.0100

E-mail: electronics@hydacusa.com

Website: www.hydac-na.com



Electronic Pressure Transmitter HDA 4800 for Iron and Steelworks Applications

Description:

This high-precision pressure transmitter was specially developed and adapted for the sophisticated measurement demands of steelworks technology.

The instrument has a very robust sensor cell with a thin-film strain gauge on a stainless steel membrane. Its outstanding specifications in respect of temperature effect (temperature drift for zero point and range are in each case max. $\leq \pm 0.006$ % FS / °F) and accuracy ($\leq \pm 0.125$ % FS B.S.F.L.) make it ideally suited for use in the environmental conditions found in steelworks. The excellent EMC characteristics guarantee signal stability during the harshest high-frequency, electro-magnetic interference.

Additional protection against humidity and vibrations is achieved by encapsulation. By using a shrink-on sleeve, the sensor is protected against bending.

Special features:

- Accuracy $\leq \pm 0.125$ % FS B.F.S.L.
- Specially designed for the use in steel and rolling mills
- Very robust sensor cell
- Very low temperature errors
- Excellent EMC characteristics
- Excellent long-term stability
- Additional protection against humidity and vibration

Technical Data:

Input data							
Measuring ranges ¹⁾	psi	150	500	750	1000	1500	3000
		5000	6000	9000	15000		
Overload range	psi	290	1160	1740	2900	2900	7250
		11600	11600	14500	23200		
Burst pressure	psi	1450	2900	4350	7250	7250	14500
		29000	29000	29000	43500		
Mechanical connection ¹⁾	9/16-18 UNF 2A (SAE 6 male) with 0.5 mm orifice (15lb-ft (20Nm))						
(Torque value)	7/16-20 UNF 2B (SF 250 CX20, Autoclave) with 0.5mm orifice (30lb-ft (40Nm))						
Parts in contact with medium	Mech. conn.:		Stainless steel				
	Seal:		FPM				
Output data							
Output signal, permitted load resistance	4 ..20 mA, 2 conductor						
	$R_{Lmax} = (U_B - 10 V) / 20 \text{ mA}$ [k Ω]						
	0 ..20 mA, 3 conductor source						
	$R_{Lmax} = (U_B - 4 V) / 20 \text{ mA}$ [k Ω]						
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.125$ % FS typ.						
	$\leq \pm 0.25$ % FS max.						
Accuracy at minimum setting B.F.S.L. (Best Fit Straight Line)	$\leq \pm 0.06$ % FS typ.						
	$\leq \pm 0.125$ % FS max.						
Temperature compensation, zero point	$\leq \pm 0.003$ % FS / °F typ.						
	$\leq \pm 0.006$ % FS / °F max.						
Temperature compensation, over range	$\leq \pm 0.003$ % FS / °F typ.						
	$\leq \pm 0.006$ % FS / °F max.						
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.15$ % FS max.						
Hysteresis	$\leq \pm 0,1$ % FS max.						
Repeatability	$\leq \pm 0.05$ % FS						
Rise time	≤ 1.5 ms						
Long-term drift	$\leq \pm 0.1$ % FS typ./ year						
Ambient conditions							
Compensated temperature range	-13 .. +185 °F						
Operating temperature range ²⁾	-13 .. +185 °F / -40 .. +185 °C						
Storage temperature range	-40 .. +212 °F						
Fluid temperature range ²⁾	-13 .. +212 °F / -40 .. +212 °C						
CE - mark	EN 61000-6-1 / 2 / 3 / 4						
e - Marked ³⁾	Certificate No.: E318391						
Vibration resistance to DIN EN 60068-2-6 at 10...500Hz	≤ 20 g						
Protection class to IEC 60529	IP 68						
Other data							
Supply voltage	10 .. 30 V DC 2 conductor / 3 conductor						
	- limited energy -						
	according to 9.3 UL 61010;						
	Class 2; UL 1310/1585; LPS UL 60950						
when applied according to UL the specifications							
Residual ripple of supply voltage	$\leq 5\%$						
Current consumption	≤ 15 mA						
Additional protection against water, humidity and vibration	Encapsulation of the device, cable outlet with strain relief, shrink sleeve						
Life expectancy	> 10 million cycles (0 ..100% FS)						
Weight	~ 180 g plus 90 g/m cable						

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

FS (Full Scale) = relative to the full measuring range

1) 15000 psi only with mechanical connection SF 250 CX20, Autoclave and vice versa

2) -13 °F with FPM seal, -40 °F on request

3) Environmental conditions according to 1.4.2 UL 61010-1; C22.2 no. 61010-1

Model Code:

HDA 4 8 X 0 - X - XXXX - 424 (PSI) XXM

Mechanical connection

7 = 9/16-18 UNF 2A male (SAE 6 male)
 C = SF 250 CX20, Autoclave (only for "15000 psi" press. range)

Electrical connection

0 = Open ended cable (Teflon cable, silicone free) with cable gland

Signal

A = 4 .. 20 mA, 2 conductor
 E = 0 .. 20 mA, 3 conductor

Pressure ranges in psi

0150; 0500; 0750; 1000; 1500; 3000; 5000; 6000; 9000;
 15000 psi (only in conjunction with mechanical connection type "C")

Modification Number

424 = Iron and Steel Works Applications

Version

PSI = Pounds per square inch

Cable length in meters

06; 10; 15; 20; 25; 30

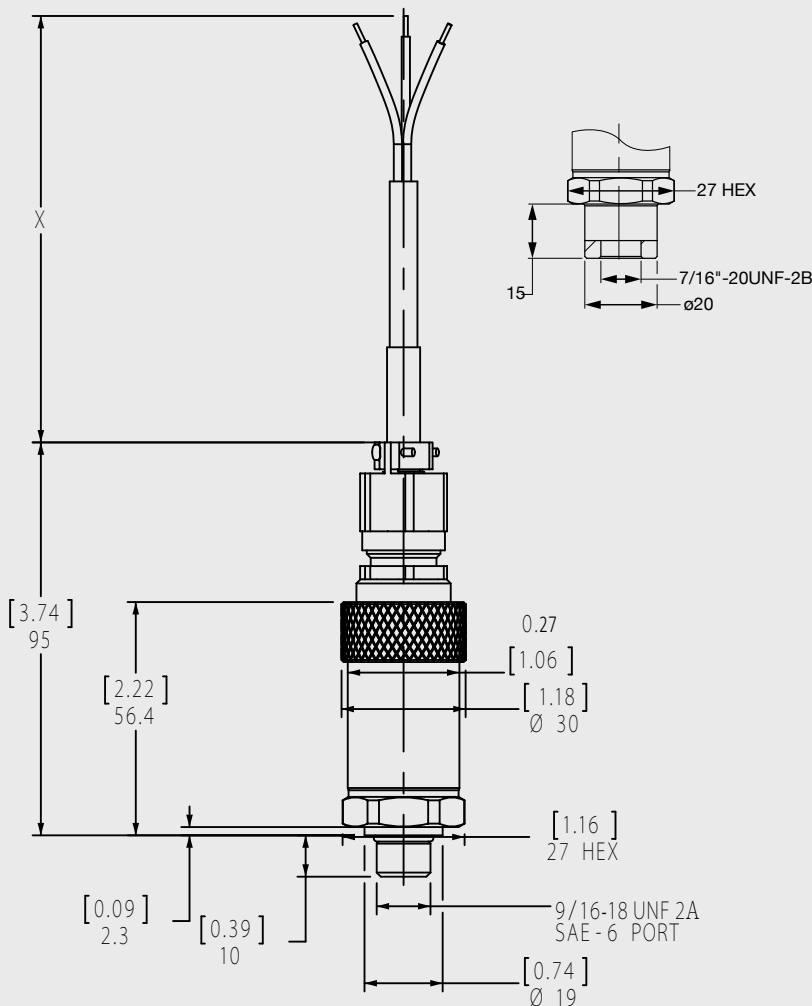
Cable assignment:

Lead	HDA 48X0-A	HDA 48X0-E
black	n.c.	+U _B
brown	signal +	signal
blue	signal -	0 V

Cable type:

Ölfon cable 3 x 0.75 mm² shielded.
 Outer sheath FEP black
 Outer diameter 5.9 ± 0.15mm

Dimensions:



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.**

For European mechanical connection and bar ranges see European Catalog.

HYDAC ELECTRONICS
 90 Southland Dr. Bethlehem, PA 18107
 Telephone: 610.266.0100
 E-mail: electronics@hydacusa.com
 Website: www.hydac-na.com



Electronic Pressure Transmitter HDA 4700

Description:

The pressure transmitter series HDA 4700 has a very accurate and robust sensor cell with a thin-film strain gauge on a stainless steel membrane.

The 4 .. 20 mA or 0 .. 10 V output signals enable connection to all measurement and control devices of HYDAC ELECTRONIC GMBH as well as standard evaluation systems (e.g. PLC controls).

The main areas of application are in the mobile or industrial sectors of hydraulics and pneumatics, particularly in applications with restricted installation space.

Special features:

Accuracy $\leq \pm 0.25\%$ FS B.F.S.L.

Highly robust sensor cell

Very small temperature error

Excellent EMC characteristics

Very compact design

Competitive price / performance ratio

Technical data:

Input data	
Measurement ranges ¹⁾	150, 500, 750, 1000, 1500, 3000, 5000, 6000, 9000, 15000 psi
Overload pressures	290, 1160, 1740, 2900, 2900, 7250, 11600, 11600, 14500, 23200 psi
Burst pressures	1450, 2900, 4350, 7250, 7250, 14500, 29000, 29000, 29000, 43500 psi
Mechanical connection ¹⁾	9/16-18 UNF 2A (SAE 6 male) 7/16-20-UNF 2B (SF 250 CX20, Autoclave)
Torque value	15lb-ft(20Nm) - SAE 6 30lb-ft(40Nm) - SF 250 CX20
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM
Output data	
Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{max} = (U_s - 8 V) / 20 \text{ mA} [k\Omega]$ 0 .. 10 V, 3 conductor $R_{min} = 2 k\Omega$
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.15\%$ FS typ. $\leq \pm 0.25\%$ FS max.
Temperature compensation Zero point	$\leq \pm 0.0045\%$ FS/°F typ. $\leq \pm 0.0085\%$ FS/°F max.
Temperature compensation Over range	$\leq \pm 0.0045\%$ FS/°F typ. $\leq \pm 0.0085\%$ FS/°F 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	$\leq 1 \text{ ms}$ ($\leq 1.5 \text{ ms}$ for 15000 psi range)
Long-term drift	$\leq \pm 0.1\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range ²⁾	-40..+185°F/-13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range ²⁾	-40..+212°F/-13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark ³⁾	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 \text{ g}$
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (M12x1, when an IP 67 connector is used)
Other data	
Supply voltage	8 .. 30 V DC 2 conductor 12 .. 30 V DC 3 conductor
for use acc. to UL spec.	- limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	$\leq 5\%$
Current consumption	$\leq 25 \text{ mA}$
Life expectancy	> 10 million cycles 0 .. 100 % FS
Weight	~ 145 g

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

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ 15000 psi only with mechanical connection SF 250 CX20, Autoclave and vice versa

²⁾ -13 °F with FPM seal, -40 °F on request

³⁾ Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

Model code:

HDA 4 7 X X - X - XXXX - 000 PSI

Mechanical connection

- 7 = 9/16-18 UNF 2A male (SAE 6 male)
- C = SF 250 CX20, Autoclave
(only for „15000 psi“ press. range)

Electrical connection

- 5 = Male, 3 pole + PE, EN175301-803
(DIN 43650)
(connector supplied)
- 6 = Male M12x1, 4 pole
(connector not supplied)

Signal

- A = 4 .. 20 mA, 2 conductor
- B = 0 .. 10 V, 3 conductor

Pressure ranges in psi

0150, 0500, 0750, 1000, 1500, 3000, 5000, 6000, 9000
15000 (only in conjunction with mechanical connection type "C")

Modification number

- 000 = Standard
- 188 = Only for 15000 psi pressure range

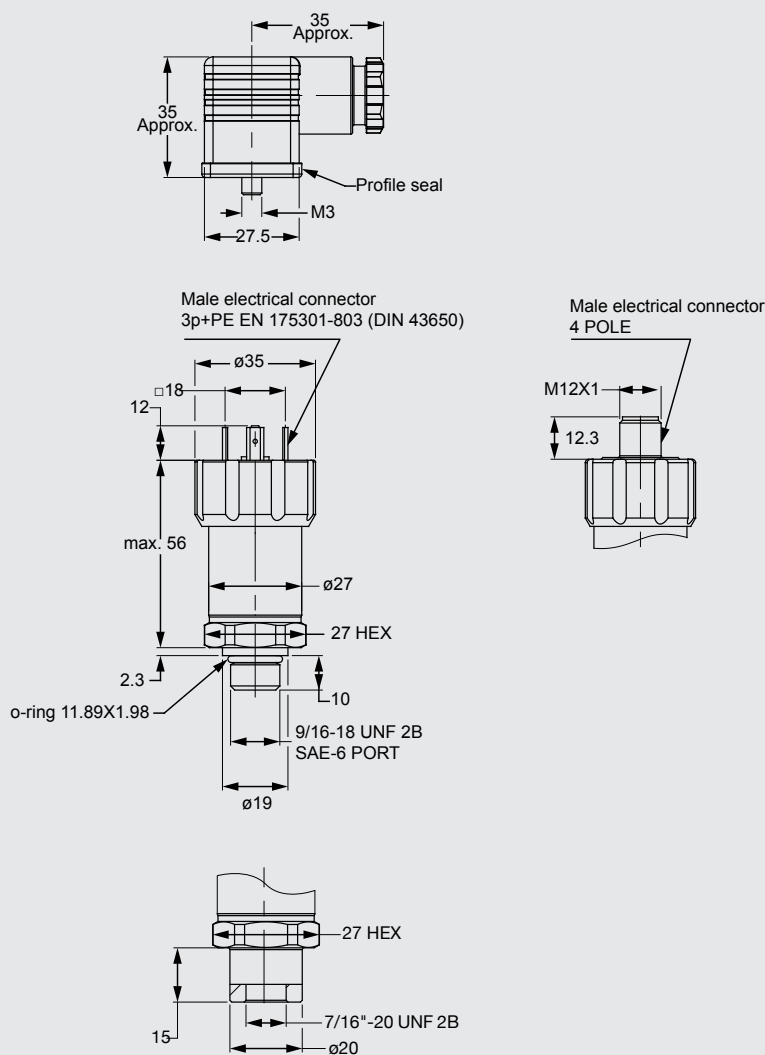
Version

PSI = Pounds per square inch

Accessories:

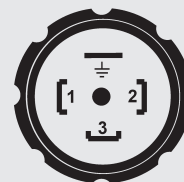
Appropriate accessories, such as electrical connectors, can be found in the Accessories brochure.

Dimensions:



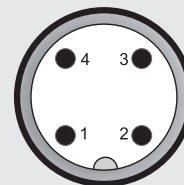
Pin connections:

EN175301-803 (DIN 43650)



Pin	HDA 47X5-A	HDA 47X5-B
1	Signal+	+U _B
2	Signal-	0 V
3	n.c.	Signal
⊥	Housing	Housing

M12x1



Pin	HDA 47X6-A	HDA 47X6-B
1	Signal+	+U _B
2	n.c.	n.c.
3	Signal-	0 V
4	n.c.	Signal

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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107

Telephone: 610.266.0100

E-mail: electronics@hydacusa.com

Website: www.hydac-na.com



Electronic Pressure Transmitter HDA 4700 with Approvals for Shipping

Description:

This pressure transmitter has been specially developed for shipbuilding applications and is based on the HDA 4000 series.

With its stainless steel measurement cell and thin-film strain gauge, the HDA 4700 is designed to measure relative pressures in the high pressure range.

The evaluation electronics converts the measured pressure into a proportional analog signal of 4 .. 20 mA.

The electronic module is completely potted to protect it against humidity, vibrations and shock, and is enclosed in a solid stainless steel housing.

For use in the shipping industry, these pressure transmitters have been approved by the following organizations.

Approvals:

- American Bureau of Shipping



- Lloyds Register of Shipping



- Det Norske Veritas



- Germanischer Lloyd



- Bureau Veritas



Other approvals on request

Technical data:

Input data

Measurement ranges	150, 500, 750, 1000, 1500, 3000, 5000, 6000, 9000 psi
Overload pressures	290, 1160, 1740, 2900, 2900, 7250, 11600, 11600, 14500 psi
Burst pressures	1450, 2900, 4350, 7250, 7250, 14500, 29000, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)
Torque value	15lb-ft (20Nm)
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM

Output data

Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{Lmax} = (U_B - 10 V) / 20 \text{ mA} [k\Omega]$
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.25 \% \text{ FS typ.}$ $\leq \pm 0.5 \% \text{ FS max.}$
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.15 \% \text{ FS typ.}$ $\leq \pm 0.25 \% \text{ FS max.}$
Temperature compensation Zero point	$\leq \pm 0.0045\% \text{ FS}/^\circ\text{F typ.}$ $\leq \pm 0.0085\% \text{ FS}/^\circ\text{F max.}$
Temperature compensation Range	$\leq \pm 0.0045\% \text{ FS}/^\circ\text{F typ.}$ $\leq \pm 0.0085\% \text{ FS}/^\circ\text{F max.}$
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3 \% \text{ FS max.}$
Hysteresis	$\leq \pm 0.1 \% \text{ FS max.}$
Repeatability	$\leq \pm 0.05 \% \text{ FS}$
Rise time	$\leq 1 \text{ ms}$
Long-term drift	$\leq \pm 0.1 \% \text{ FS typ. / year}$

Environmental conditions

Compensated temperature range	-13..+185°F
Operating temperature range ¹⁾	-40..+185°F / -13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range ¹⁾	-40..+212°F / -13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 \text{ g}$
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (for M12x1 male, when an IP 67 connector female is used)

Other data

Supply voltage	10 .. 32 V DC
Residual ripple of supply voltage	$\leq 5 \%$
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 (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾-13 °F with FPM seal, -40 °F on request

Model code:

HDA 4 7 7 X - A - XXXX - S00 (PSI)

Mechanical connection

7 = 9/16-18 UNF2A (SAE 6 male)

Electrical connection

5 = Male, 3 pole + PE, EN175301-803 (DIN 43650)
(connector supplied)

6 = Male M12x1, 4 pole
(connector not supplied)

Signal

A = 4 .. 20 mA, 2 conductor

Pressure ranges in psi

0150, 0500, 0750, 1000, 1500, 3000, 5000, 6000, 9000

Modification number

S00 = With approvals for shipping

Version

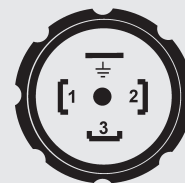
PSI = Pounds per square inch

Accessories:

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

Pin connections:

EN175301-803 (DIN 43650)



Pin HDA 4775-A

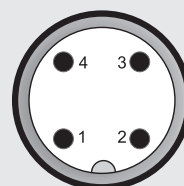
1 Signal+

2 Signal-

3 n.c.

⊥ Housing

M12x1



Pin HDA 4776-A

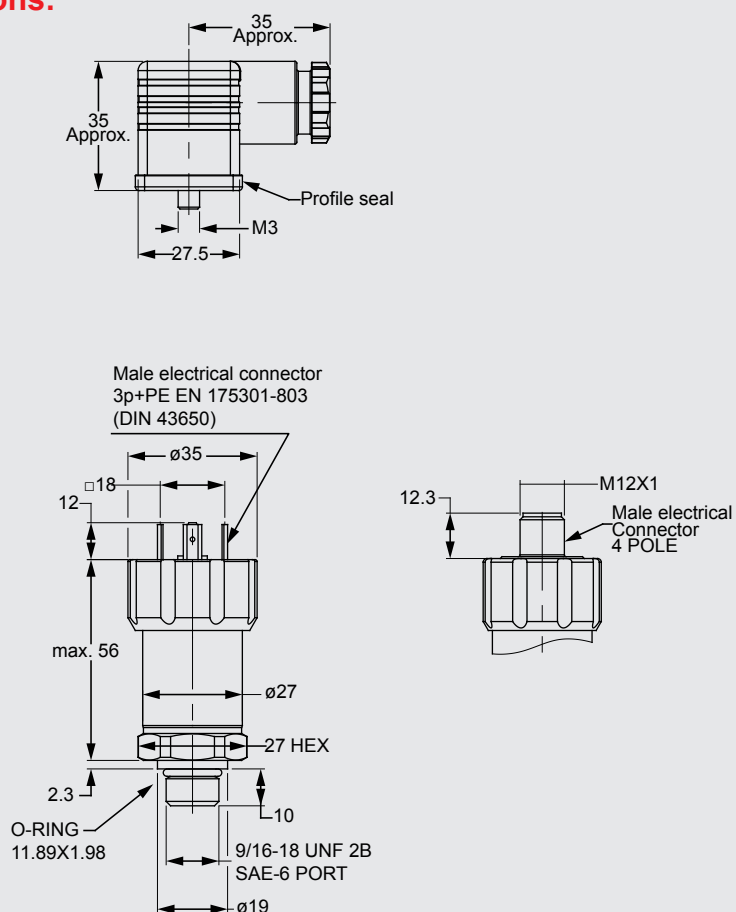
1 Signal+

2 n.c.

3 Signal-

4 n.c.

Dimensions:



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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107

Telephone: 610.266.0100

E-mail: electronics@hydacusa.com

Website: www.hydac-na.com



Electronic Pressure Transmitter

HDA 4700

CANopen

Description:

The HDA 4700 CAN is a digital pressure transmitter which is used to measure relative pressures in hydraulics and pneumatics. The measured pressure value is digitized and made available to the CAN field bus system via the CANopen protocol. The instrument parameters can be viewed and configured by the user via the CANopen object directory using standard CAN software.

This pressure transmitter, which is based on the HDA 4700, has a very accurate and robust sensor cell with a thin-film strain gauge on a stainless steel membrane.

Due to their outstanding temperature and EMC characteristics, together with their compact dimensions, these instruments can be used in a wide range of applications in the mobile and industrial sectors.

Special features:

- CANopen interface
- Accuracy $\leq \pm 0.25\%$ FS B.F.S.L
- Robust thin-film cell
- Excellent EMC characteristics
- Very compact design

Technical data:

Input data	
Measuring ranges ¹⁾	500, 750, 1000, 1500, 3000, 5000, 6000, 9000, 15000 psi
Overload pressures	1160, 1740, 2900, 2900, 7250, 11600, 11600, 14500, 23200 psi
Burst pressures	2900, 4350, 7250, 7250, 14500, 29000, 29000, 29000, 43500 psi
Mechanical connection ¹⁾	9/16-18 UNF 2A (SAE 6 male) 7/16-20-UNF 2B (SF 250 CX20 Autoclave)
Torque value	15lb-ft(20Nm) - SAE 6 30lb-ft(40Nm) - SF 250 CX20
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM
Output data	
Output signal	CANopen protocol
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.15\%$ FS typ. $\leq \pm 0.25\%$ FS max.
Temperature compensation	$\leq \pm 0.0045\%$ FS/°F typ.
Zero point	$\leq \pm 0.0085\%$ FS/°F max.
Temperature compensation	$\leq \pm 0.0045\%$ FS/°F typ.
Over range	$\leq \pm 0.0085\%$ FS/°F max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3\%$ FS max.
Hysteresis	$\leq \pm 0.1\%$ FS max.
Repeatability	$\leq \pm 0.08\%$ FS
Rise time	≤ 1.5 ms
Long-term drift	$\leq \pm 0.1\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range ²⁾	-40..+185°F / -13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range ²⁾	-40..+212°F / -13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark ³⁾	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g
Protection class to IEC 60529	IP 67
Other data	
Supply voltage for use acc. to UL spec.	10 .. 35 V DC - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	$\leq 5\%$
Current consumption	≤ 25 mA
Life expectancy	> 10 million cycles 0 .. 100 % FS
Weight	approx. 150 g

Note: Reverse polarity protection of the supply voltage and excess voltage protection are provided.

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

Special models available on request.

¹⁾ 15000 psi only with mechanical connection SF 250 CX20, Autoclave and vice versa

²⁾ -13 °F with FPM seal, -40 °F on request

³⁾ Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

Model code:

HDA 4 7 X 8 - F11 - XXXX - 000 (PSI)

Mechanical connection

7 = 9/16-18 UNF 2A (SAE 6 male)
 C = 7/16-20-UNF 2B (SF 250 CX20, Autoclave and only for „15000 psi“ pressure range)

Electrical connection

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

Signal

F11 = CANopen

Pressure ranges in psi

0500, 0750, 1000, 1500, 3000, 5000, 6000, 9000
 15000 psi (only in conjunction with mechanical connection type “C”)

Modification number

000 = Standard (Baud Rate: 250k Node Id: 1)
 188 = Only for 15000 psi pressure transducer

Version

PSI = Pounds per square inch

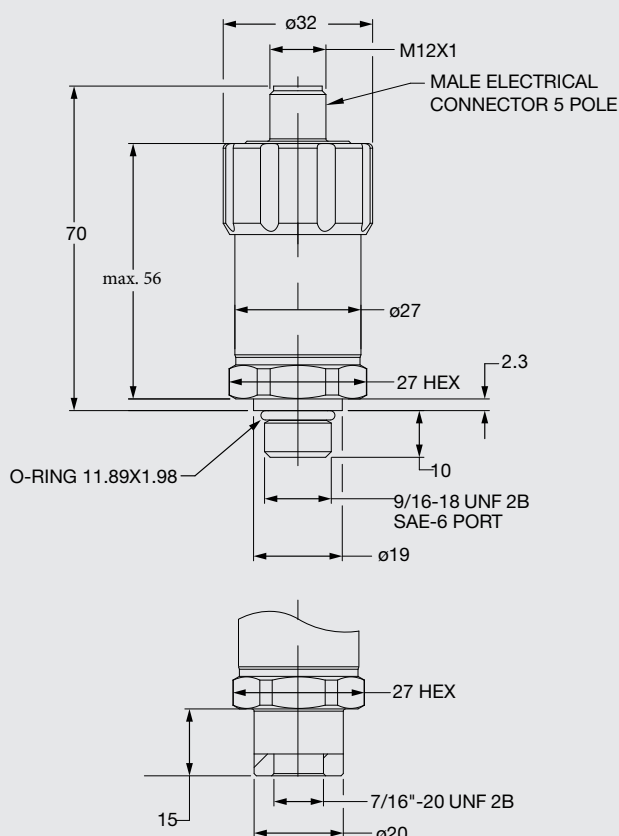
Accessories:

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

Protocol data for CANopen:

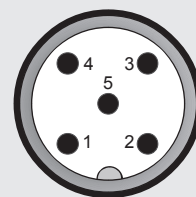
Communication profile	CiA DS 301 V4.2
Device profile	CiA DS 404 V1.3
Layer setting services and protocol	CiA DSP 305 V2.2
Automatic bit-rate detection	CiA AN 801
Baud rates	10 kbit .. 1 Mbit corresp. to DS305 V2.2
Transmission services	
- PDO	Measured value as 16/32 bit, float status
- Transfer	synchronous, asynchronous, cyclical, measured value change, exceeding boundaries
Node ID/Baud rate	Can be set via Manufacturer Specific Profile

Dimensions:



Pin connections:

M12x1



Pin	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

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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107
 Telephone: 610.266.0100

E-mail: electronics@hydacusa.com
 Website: www.hydac-na.com



Electronic Pressure Transmitter HDA 4400

Description:

The pressure transmitter series HDA 4400 has a pressure measurement cell with thin-film strain gauge on a stainless steel membrane. The 4 .. 20 mA or 0 .. 10 V output signals enable connection to all HYDAC ELECTRONIC GMBH measurement and control devices as well as connection to standard evaluation systems (e.g. PLC controls).

The main areas of application are in the mobile or industrial sectors of hydraulics and pneumatics, particularly in applications with restricted installation space.

Special features:

- Accuracy $\leq \pm 0.5\%$ FS B.F.S.L.
- Highly robust sensor cell
- Very small temperature error
- Excellent EMC characteristics
- Very compact design
- Competitive price / performance ratio

Technical data:

Input data	
Measuring ranges ¹⁾	150, 500, 750, 1000, 1500, 3000, 5000, 6000, 9000, FI €€€ psi
Overload pressures	290, 1160, 1740, 2900, 2900, 7250, 11600, 11600, 14500, 23200 psi
Burst pressures	1450, 2900, 4350, 7250, 7250, 14500, 29000, 29000, 29000, 43500 psi
Mechanical connection ¹⁾	9/16-18 UNF 2A (SAE 6 male) 7/16-20 UNF 2B (SF 250 CX20, Autoclave)
Torque value	15lb-ft(20Nm) - SAE 6 30lb-ft (40Nm) - SF 250 CX20
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM
Output data	
Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{max} = (U_B - 8 V) / 20 \text{ mA} \text{ [k}\Omega\text{]}$ 0 .. 10 V, 3 conductor $R_{min} = 2 \text{ k}\Omega$
Accuracy to DIN 16086	$\leq \pm 0.5\%$ FS typ.
Max. setting	$\leq \pm 1\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.
Temperature compensation	$\leq \pm 0.0085\%$ FS/°F typ.
Zero point	$\leq \pm 0.014\%$ FS/°F max.
Temperature compensation Over range	$\leq \pm 0.0085\%$ FS/°F typ. $\leq \pm 0.014\%$ FS/°F max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3\%$ FS max.
Hysteresis	$\leq \pm 0.4\%$ FS max.
Repeatability	$\leq \pm 0.1\%$ FS
Rise time	$\leq 1 \text{ ms}$ ($\leq 1.5 \text{ ms}$ for 15000 psi range)
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range	-13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range ²⁾	-40..+212°F / -13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
ULus mark ³⁾	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 \text{ g}$
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (for M12x1, when an IP 67 connector is used)
Other data	
Supply voltage	8 .. 30 V DC, 2 conductor 12 .. 30 V DC, 3 conductor
for use acc. to UL spec.	- limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	$\leq 5\%$
Current consumption	$\leq 25 \text{ mA}$
Life expectancy	> 10 million cycles 0 .. 100 % FS
Weight	~ 145 g

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

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ 15000 psi only with mechanical connection SF 250 CX20, Autoclave and vice versa

²⁾ -13 °F with FPM seal, -40 °F on request

³⁾ Environmental conditions in accordance with 1.4.2 UL 61010-1; C22.2 No 61010-1

Model code:

HDA 4 4 X X - X - XXXX - 000 (PSI)

Mechanical connection

7 = 9/16-18 UNF2A (SAE 6 male)

C = SF 250 CX20, Autoclave
(Only for "1500 psi" press. range)

Electrical connection

5 = Male, 3 pole + PE, EN175301-803
(DIN 43650) (connector supplied)

6 = Male M12x1, 4 pole
(connector not supplied)

Signal

A = 4 .. 20 mA, 2 conductor

B = 0 .. 10 V, 3 conductor

Pressure ranges in psi

0150, 0500, 0750, 1000, 1500, 3000, 5000, 6000, 9000,
15000 (Only in conjunction with mechanical connection type "C")

Modification number

000 = Standard

188 = Only for 15000 psi pressure range

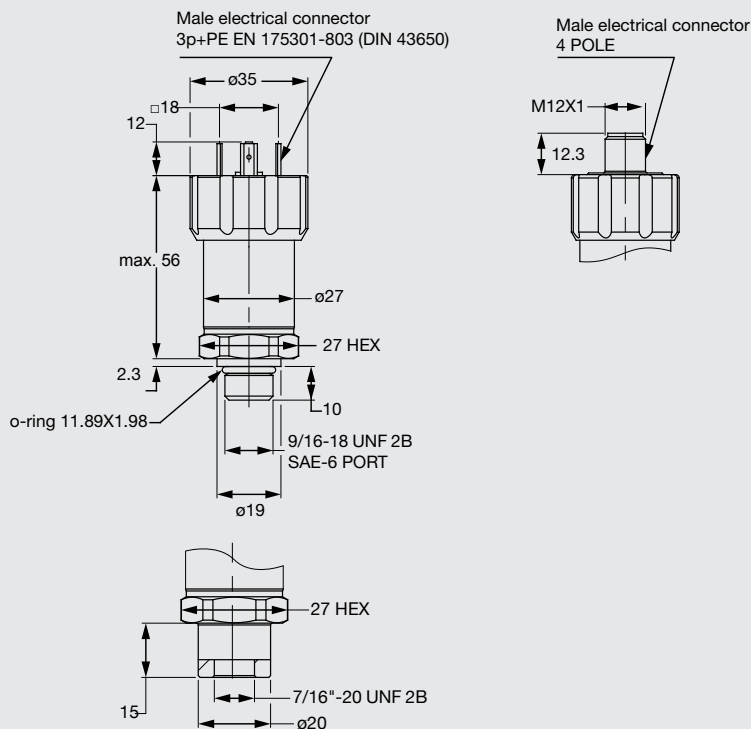
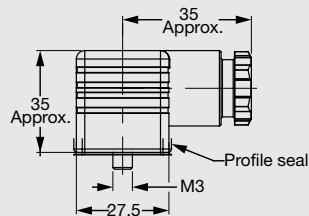
Version

PSI = Pounds per square inch

Accessories:

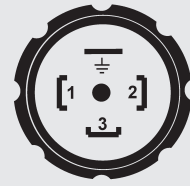
Appropriate accessories, such as electrical connectors, can be found in the Accessories brochure.

Dimensions:



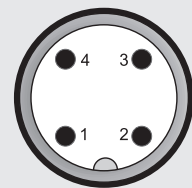
Pin connections:

EN175301-803 (DIN 43650)



Pin	HDA 44X5-A	HDA 44X5-B
1	Signal+	+U _B
2	Signal-	0 V
3	n.c.	Signal
⊥	Housing	Housing

M12x1



Pin	HDA 44X6-A	HDA 44X6-B
1	Signal+	+U _B
2	n.c.	n.c.
3	Signal-	0 V
4	n.c.	Signal

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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107

Telephone: 610.266.0100

E-mail: electronics@hydacusa.com

Website: www.hydac-na.com



Electronic Pressure Transmitter HDA 4400 with Approvals for Shipping

Description:

This pressure transmitter has been specially developed for shipbuilding applications and is based on the HDA 4000 series. With its stainless steel measurement cell and thin-film strain gauge, the HDA 4400 is designed to measure relative pressures in the high pressure range. The evaluation electronics converts the measured pressure into a proportional analog signal of 4 .. 20 mA.

The electronic module is completely potted to protect it against humidity, vibrations and shock, and is enclosed in a solid stainless steel housing.

For use in the shipping industry, these pressure transmitters have been approved by the following organizations.

Approvals:

- American Bureau of Shipping



- Lloyds Register of Shipping



- Det Norske Veritas



- Germanischer Lloyd



- Bureau Veritas



Other approvals on request

Technical data:

Input data

Measuring ranges	150, 500, 750, 1000, 1500, 3000, 5000, 6000, 9000 psi
Overload pressures	290, 1160, 1740, 2900, 2900, 7250, 11600, 11600, 14500 psi
Burst pressures	1450, 2900, 4350, 7250, 7250, 14500, 29000, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)
Torque value	15lb-ft(20Nm)
Parts in contact with medium	Mech. connector: Stainless steel Seal: FPM

Output data

Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{Lmax} = (U_B - 10 V) / 20 \text{ mA} [k\Omega]$
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.5 \% \text{ FS typ.}$ $\leq \pm 1 \% \text{ FS max.}$
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.25 \% \text{ FS typ.}$ $\leq \pm 0.5 \% \text{ FS max.}$
Temperature compensation Zero point	$\leq \pm 0.0085\% \text{ FS} / ^\circ\text{F typ}$ $\leq \pm 0.014\% \text{ FS} / ^\circ\text{F max.}$
Temperature compensation Range	$\leq \pm 0.0085\% \text{ FS} / ^\circ\text{F typ.}$ $\leq \pm 0.014\% \text{ FS} / ^\circ\text{F max.}$
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3 \% \text{ FS max.}$
Hysteresis	$\leq \pm 0.4 \% \text{ FS max.}$
Repeatability	$\leq \pm 0.1 \% \text{ FS}$
Rise time	$\leq 1 \text{ ms}$
Long-term drift	$\leq \pm 0.3 \% \text{ FS typ.} / \text{ year}$

Environmental conditions

Compensated temperature range	-13..+185 °F
Operating temperature range ¹⁾	-40..+185 °F / -13..+185 °F
Storage temperature range	-40..+212 °F
Fluid temperature range ¹⁾	-40..+212 °F / -13..+212 °F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 \text{ g}$
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (for M12x1 male when an IP 67 connector is used)

Other data

Supply voltage	10 .. 32 V DC
Residual ripple of supply voltage	$\leq 5 \%$
Life expectancy	$> 10 \text{ million cycles}$ 0 .. 100 % FS
Weight	$\sim 150 \text{ g}$

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

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ -13 °F with FPM seal, -40 °F on request



Electronic Pressure Transmitter HDA 4300

Description:

The pressure transmitter series HDA 4300 has a ceramic pressure measurement cell with a thick-film strain gauge which has been specially developed for measuring relative pressure in the low pressure range.

The output signals 4 .. 20 mA or 0 .. 10 V allow connection of all HYDAC ELECTRONIC GMBH measurement and control devices as well as industry standard control and monitoring instruments.

The main areas of application are low-pressure applications in hydraulics and pneumatics, particularly in refrigeration and air-conditioning technology, the food and pharmaceutical industries.

Special features:

- Accuracy $\leq \pm 0.5\%$ FS B.F.S.L.
- Very small temperature error
- Excellent EMC characteristics
- Very compact design
- Competitive price / performance ratio

Technical data:

Input data	
Measuring ranges	-14.5 to 135.5, 15, 30, 50, 100, 150, 250, 500 psi
Overload pressures	450, 45, 100, 150, 290, 450, 725, 1500 psi
Burst pressures	650, 70, 150, 250, 400, 650, 1000, 2500 psi
Mechanical connection	1/4-18 NPT male
Torque value	30lb-ft(40Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)
Output data	
Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{L,max} = (U_B - 8 V) / 20 \text{ mA} \text{ [k}\Omega\text{]}$ 0 .. 10 V, 3 conductor $R_{L,min} = 2 \text{ k}\Omega$
Accuracy to DIN 16086	$\leq \pm 0.5\%$ FS typ.
Max. setting	$\leq \pm 1\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.
Temperature compensation	$\leq \pm 0.012\%$ FS/°F typ..
Zero point	$\leq \pm 0.017\%$ FS/°F max.
Temperature compensation	$\leq \pm 0.012\%$ FS/°F typ.
Over range	$\leq \pm 0.017\%$ FS/°F max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.5\%$ FS max.
Hysteresis	$\leq \pm 0.4\%$ FS max.
Repeatability	$\leq \pm 0.1\%$ FS
Rise time	$\leq 1 \text{ ms}$
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185 °F
Operating temperature range	-13..+185 °F
Storage temperature range	-40..+212 °F
Fluid temperature range ¹⁾	-40..+212 °F / -13..+212 °F
CE mark	EN 61000-6-1 / 2 / 3 / 4
eULus mark ²⁾	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 \text{ g}$
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (M12x1, when an IP 67 connector is used)
Other data	
Supply voltage	8 .. 30 V DC 2 conductor 12 .. 30 V DC 3 conductor
for use acc. to UL spec.	- limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	$\leq 5\%$
Current consumption	$\leq 25 \text{ mA}$
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 (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ -13 °F with FPM or EDPM seal, -40 °F on request

²⁾ Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

Model code:

HDA 4 3 8 X - X - XXXX - 000 - X 1 (PSI)

Mechanical connection

8 = 1/4-18 NPT male

Electrical connection

5 = Male, 3 pole + PE,
DIN EN175301-803 (DIN 43650)
(connector supplied)

6 = Male M12x1, 4 pole,
(connector not supplied)

Signal

A = 4 .. 20 mA, 2 conductor

B = 0 .. 10 V, 3 conductor

Pressure ranges in psi

0135(-14.5 to 135.5psi), 0015, 0030,
0050, 0100, 0250, 0500 psi

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

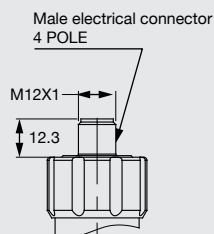
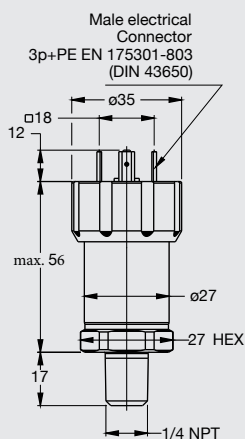
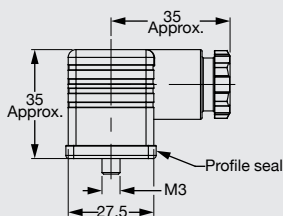
Version

PSI = Pounds per square inch

Accessories:

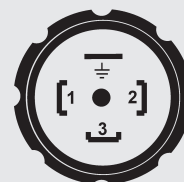
Appropriate accessories, such as electrical connectors can be found in the Accessories brochure.

Dimensions:



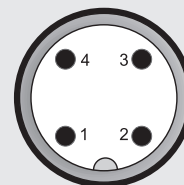
Pin connections:

EN175301-803 (DIN 43650)



Pin	HDA 43X5-A	HDA 43X5-B
1	Signal+	+U _B
2	Signal-	0 V
3	n.c.	Signal
⊥	Housing	Housing

M12x1



Pin	HDA 43X6-A	HDA 43X6-B
1	Signal+	+U _B
2	n.c.	n.c.
3	Signal-	0 V
4	n.c.	Signal

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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107

Telephone: 610.266.0100

E-mail: electronics@hydacusa.com

Website: www.hydac-na.com



Electronic Pressure Transmitter HDA 4300 with Approvals for Shipping

Description:

This pressure transmitter has been specially developed for shipbuilding applications and is based on the HDA 4000 series.

The HDA 4300 has a ceramic measurement cell with thick-film strain gauge for measuring relative pressure in the low pressure range.

The evaluation electronics converts the measured pressure into a proportional analog signal of 4 .. 20 mA.

The electronic module is completely potted to protect it against humidity, vibrations and shock, and is enclosed in a solid stainless steel housing.

For use in the shipping industry, these pressure transmitters have been approved by the following organizations.

Approvals:

- American Bureau of Shipping



- Lloyds Register of Shipping



- Det Norske Veritas



- Germanischer Lloyd



- Bureau Veritas



Other approvals on request

Technical data:

Input data

Measuring ranges	15, 30, 50, 100, 150, 250, 500 psi
Overload pressures	45, 150, 150, 290, 450, 725, 1500 psi
Burst pressures	70, 250, 250, 400, 650, 1000, 2500 psi
Mechanical connection	1/4-18 NPT male
Torque value	30lb-ft(40Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)

Output data

Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{L,max} = (U_B - 10 V) / 20 \text{ mA} [\text{k}\Omega]$
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.5 \% \text{ FS typ.}$ $\leq \pm 1 \% \text{ FS max.}$
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.25 \% \text{ FS typ.}$ $\leq \pm 0.5 \% \text{ FS max.}$
Temperature compensation Zero point	$\leq \pm 0.012\% \text{ FS}/^\circ\text{F typ.}$ $\leq \pm 0.017\% \text{ FS}/^\circ\text{F max.}$
Temperature compensation Over range	$\leq \pm 0.012\% \text{ FS}/^\circ\text{F typ.}$ $\leq \pm 0.017\% \text{ FS}/^\circ\text{F max.}$
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.5 \% \text{ FS max.}$
Hysteresis	$\leq \pm 0.4 \% \text{ FS max.}$
Repeatability	$\leq \pm 0.1 \% \text{ FS}$
Rise time	$\leq 1 \text{ ms}$
Long-term drift	$\leq \pm 0.3 \% \text{ FS typ. / year}$

Environmental conditions

Compensated temperature range	-13..+185°F
Operating temperature range ¹⁾	-22..+185°F / -13..+185°F
Storage temperature range	-22..+212°F
Fluid temperature range ¹⁾	-22..+212°F / -13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 \text{ g}$
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (for M12x1 male, when an IP 67 connector is used)

Other data

Supply voltage	10 .. 32 V DC
Residual ripple of supply voltage	$\leq 5 \%$
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 (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ -13 °F with FPM or EPDM seal, -22 °F on request

Model code:

HDA 4 3 8 X - A - XXXX - S00 - X 1 (PSI)

Mechanical connection

8 = 1/4-18 NPT male

Electrical connection

5 = Male, 3 pole + PE,
EN175301-803 (DIN 43650)
(connector supplied)

6 = Male M12x1, 4 pole
(connector not supplied)

Signal

A = 4 .. 20 mA, 2 conductor

Pressure ranges in psi

0015, 0030, 0050, 0100, 0150, 0250, 0500

Modification number

S00 = With approvals for shipping

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

Version

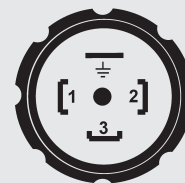
PSI = Pounds per square inch

Accessories:

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

Pin connections:

EN175301-803 (DIN 43650)



Pin HDA 43X5-A

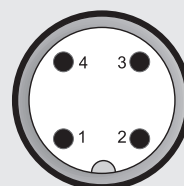
1 Signal+

2 Signal-

3 n.c.

⊥ Housing

M12x1



Pin HDA 43X6-A

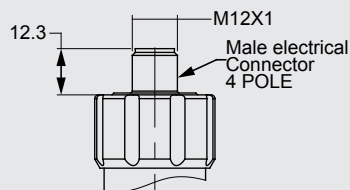
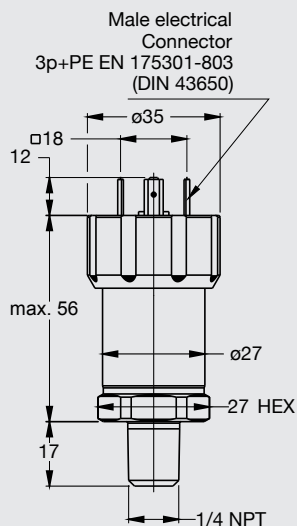
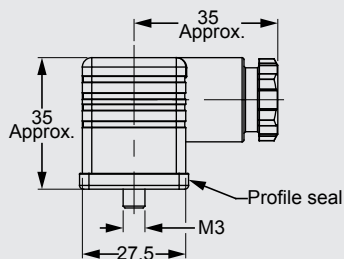
1 Signal+

2 n.c.

3 Signal-

4 n.c.

Dimensions:



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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107

Telephone: 610.266.0100

E-mail: electronics@hydacusa.com

Website: www.hydac-na.com



Electronic Absolute Pressure Transmitter HDA 4100

Description:

The pressure transmitter series HDA 4100 has a ceramic pressure measurement cell with thick-film strain gauge which has been specially developed for measuring absolute pressure in the low-pressure range.

The 4 .. 20 mA or 0 .. 10 V output signals enable connection to all HYDAC ELECTRONIC GMBH measurement and control devices as well as standard control and evaluation systems.

The main areas of application are low-pressure applications in hydraulics and pneumatics, particularly in refrigeration and air-conditioning technology, the food and pharmaceutical industries.

Special features:

- Accuracy $\leq \pm 0.5\%$ FS B.F.S.L.
- Very small temperature error
- Excellent EMC characteristics
- Very compact design
- Competitive price / performance ratio

Technical data:

Input data	
Measuring ranges	15, 50 psia
Overload pressures	45, 100 psia
Burst pressures	70, 150 psia
Mechanical connection	1/4-18 NPT male
Torque value	30 lb-ft(40Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)
Output data	
Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{L,max.} = (U_B - 8 V) / 20 \text{ mA} [\text{k}\Omega]$ 0 .. 10 V, 3 conductor $R_{L,min.} = 2 \text{ k}\Omega$
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.5\%$ FS typ. $\leq \pm 1.0\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.
Temperature compensation	$\leq \pm 0.012\%$ FS/°F typ.
Zero point	$\leq \pm 0.017\%$ FS/°F max.
Temperature compensation	$\leq \pm 0.012\%$ FS/°F typ.
Over range	$\leq \pm 0.017\%$ FS/°F max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.5\%$ FS max.
Hysteresis	$\leq \pm 0.4\%$ FS max.
Repeatability	$\leq \pm 0.1\%$ FS
Rise time	$\leq 1 \text{ ms}$
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range	-13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range ¹⁾	-40..+212°F/-13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark ²⁾	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 \text{ g}$
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (for M12x1, when an IP 67 connector is used)
Other data	
Supply voltage	8 .. 30 V DC 2 conductor 12 .. 30 V DC 3 conductor
for use acc. to UL spec.	- limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	$\leq 5\%$
Current consumption	$\leq 25 \text{ mA}$
Life expectancy	> 10 million cycles 0 .. 100 % FS
Weight	~ 145 g

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

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ -13 °F with FPM seal, -40 °F on request

²⁾ Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

Model code:

HDA 4 1 8 X - X - XXXX - 000 - X 1 (PSI)

Mechanical connection

8 = 1/4-18 NPT male

Electrical connection

5 = Male, 3 pole + PE,
EN175301-803 (DIN 43650)
(connector supplied)

6 = Male M12x1, 4 pole
(connector not supplied)

Signal

A = 4 .. 20 mA, 2 conductor

B = 0 .. 10 V, 3 conductor

Pressure ranges in psia

0015, 0050

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

Version

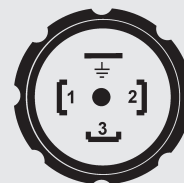
PSI = Pounds per square inch

Accessories:

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

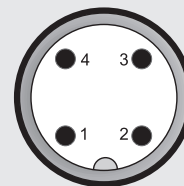
Pin connections:

EN175301-803 (DIN 43650)



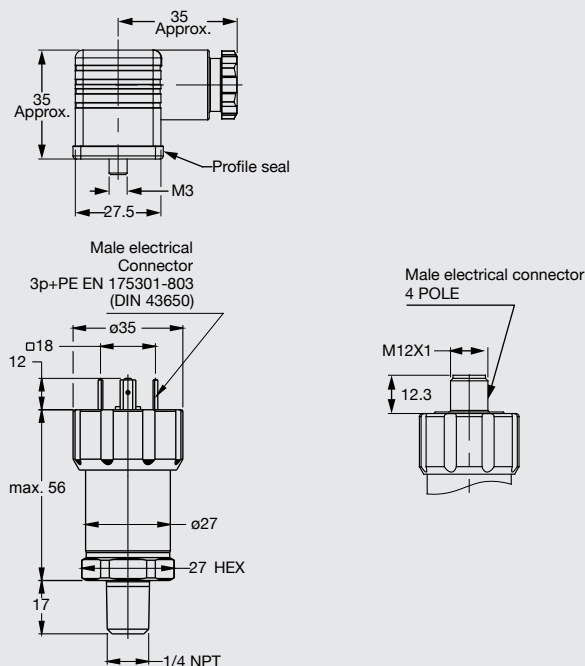
Pin	HDA 41X5-A	HDA 41X5-B
1	Signal+	+U _B
2	Signal-	0 V
3	n.c.	Signal
⊥	Housing	Housing

M12x1



Pin	HDA 41X6-A	HDA 41X6-B
1	Signal+	+U _B
2	n.c.	n.c.
3	Signal-	0 V
4	n.c.	Signal

Dimensions:



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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107

Telephone: 610.266.0100

E-mail: electronics@hydacusa.com

Website: www.hydac-na.com



Electronic Absolute Pressure Transmitter HDA 4100 with Approvals for Shipping

Description:

This pressure transmitter has been specially developed for shipbuilding applications and is based on the HDA 4000 series.

The HDA 4100 has a ceramic measurement cell with thick-film strain gauge for measuring absolute pressure in the low pressure range. The evaluation electronics converts the measured pressure into a proportional analog signal of 4 .. 20 mA.

The electronic module is completely potted to protect it against humidity, vibrations and shock, and is enclosed in a solid stainless steel housing.

For use in the shipping industry, these pressure transmitters have been approved by the following organizations.

Approvals:

- American Bureau of Shipping



- Lloyds Register of Shipping



- Det Norske Veritas



- Germanischer Lloyd



- Bureau Veritas



Other approvals on request

Technical data:

Input data

Measuring ranges	15, 50 psia
Overload pressures	45, 100 psia
Burst pressures	70, 150 psia
Mechanical connection	1/4-18 NPT male
Torque value	30 lb-ft(40Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)

Output data

Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{Lmax} = (U_B - 10 V) / 20 mA [k\Omega]$
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.5 \% FS$ typ. $\leq \pm 1 \% FS$ max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.25 \% FS$ typ. $\leq \pm 0.5 \% FS$ max.
Temperature compensation Zero point	$\leq \pm 0.012 \% FS/^{\circ}F$ typ. $\leq \pm 0.017 \% FS/^{\circ}F$ max.
Temperature compensation Over range	$\leq \pm 0.012 \% FS/^{\circ}F$ typ. $\leq \pm 0.017 \% FS/^{\circ}F$ max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.5 \% FS$ max.
Hysteresis	$\leq \pm 0.25 \% FS$ max.
Repeatability	$\leq \pm 0.1 \% FS$
Rise time	$\leq 1 ms$
Long-term drift	$\leq \pm 0.3 \% FS$ typ. / year

Environmental conditions

Compensated temperature range	-13..+185°F
Operating temperature range ¹⁾	-22..+185°F / -13..+185°F
Storage temperature range	-22..+212°F
Fluid temperature range ¹⁾	-22..+185°F / -13..+185°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 g$
Protection class to IEC 60529	IP 65 (for male EN175301-803 (DIN 43650)) IP 67 (for M12x1 male, when an IP 67 connector is used)

Other data

Supply voltage	10 .. 32 V DC
Residual ripple of supply voltage	$\leq 5 \%$
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 (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾-13 °F with FPM or EPDM seal, -22 °F on request

Model code:

HDA 4 1 X X - A - XXXX - S00 - X 1 (PSI)

Mechanical connection

8 = 1/4-18 NPT male

Electrical connection

5 = Male, 3 pole + PE,
EN175301-803 (DIN 43650)
(connector supplied)

6 = Male M12x1, 4 pole
(connector not supplied)

Signal

A = 4 .. 20 mA, 2 conductor

Pressure ranges in psia

0015, 0050

Modification number

S00 = With approvals for shipping

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

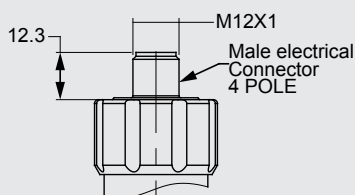
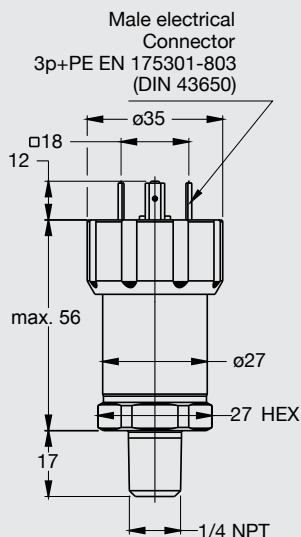
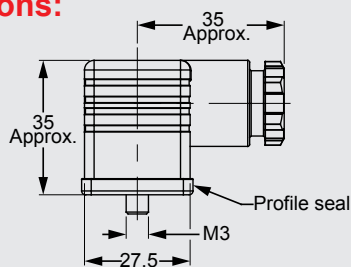
Version

PSI = Pounds per square inch

Accessories:

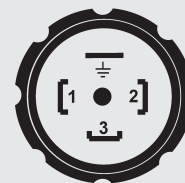
Appropriate accessories, such as electrical connectors can be found in the Accessories brochure.

Dimensions:



Pin connections:

EN175301-803 (DIN 43650)



Pin HDA 41X5-A

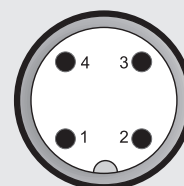
1 Signal+

2 Signal-

3 n.c.

⊥ Housing

M12x1



Pin HDA 41X6-A

1 Signal+

2 n.c.

3 Signal-

4 n.c.

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.

For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107

Telephone: 610.266.0100

E-mail: electronics@hydacusa.com

Website: www.hydac-na.com



Electronic Pressure Transmitter HDA 7476

Description:

The pressure transmitter series HDA 7400 combines excellent technical specifications with a highly compact design.

The HDA 7476 was specifically developed for OEM applications e.g. in mobile applications.

A strain gauge sensor cell is the basis for a robust, long-life pressure transmitter.

Various pressure ranges between 0 .. 300 psi and 0 .. 9000 psi provide versatility when adapting to particular applications.

For integration into modern controls (e.g. with PLC), the analog output signals 4 .. 20 mA or 0 .. 10V are also available on the standard version.

Other output signals are available on request.

Special features:

- Accuracy $\leq \pm 0.5\%$ FS B.F.S.L.
- Highly robust sensor cell
- Very compact design
- Very small temperature error
- Excellent EMC characteristics
- Excellent durability

Technical data:

Input data	
Measuring ranges	300, 500, 750, 1000, 1500, 3000, 6000, 9000 psi
Overload pressures	1160, 1160, 1740, 2900, 2900, 7250, 11600, 14500 psi
Burst pressures	2900, 2900, 4350, 7250, 7250, 14500, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)
Torque value	15lb-ft (20 Nm)
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM
Output data	
Output signal, permitted load resistance	4 .. 20 mA, 2 conductor $R_{Lmax.} = (U_B - 8 V) / 20 \text{ mA} \text{ [k}\Omega\text{]}$ 0 .. 10 V, 3 conductor $R_{Lmin.} = 2 \text{ k}\Omega$
Accuracy to DIN 16086	$\leq \pm 0.5\%$ FS typ.
Max. setting	$\leq \pm 1\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.
Temperature compensation	$\leq \pm 0.0085\%$ FS/°F typ.
Zero point	$\leq \pm 0.017\%$ FS/°F max.
Temperature compensation	$\leq \pm 0.0085\%$ FS/°F typ.
Over range	$\leq \pm 0.017\%$ FS/°F max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3\%$ FS max.
Hysteresis	$\leq \pm 0.4\%$ FS max.
Repeatability	$\leq \pm 0.1\%$ FS
Rise time	$\leq 2 \text{ ms}$
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range ¹⁾	-40..+185°F/-13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range ¹⁾	-40..+212°F/-13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark ²⁾	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20 \text{ g}$
Protection class to IEC 60529	IP 67 (for M12x1, when an IP 67 connector is used)
Other data	
Supply voltage	8 .. 30 V DC 2 conductor 12 .. 30 V DC 3 conductor
for use acc. to UL spec.	- limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	$\leq 5\%$
Current consumption	$\leq 25 \text{ mA}$
Life expectancy	> 10 million cycles 0 .. 100 % FS
Weight	~ 60 g

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

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ -13 °F with FPM seal, -40 °F on request

²⁾ Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

Model code:

HDA 7 4 7 6 - X - XXXX - 000 (PSI)

Mechanical connection
7 = 9/16-18 UNF2A (SAE 6 male)

Electrical connection
6 = Male M12x1, 4 pole
(connector not supplied)

Signal
A = 4 .. 20 mA, 2 conductor
B = 0 .. 10 V, 3 conductor

Pressure ranges in psi
0300, 0500, 0750, 1000, 1500, 3000, 5000, 6000, 9000

Modification number
000 = Standard

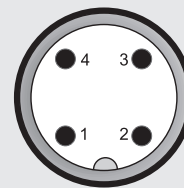
Version
PSI = Pounds per square inch

Accessories:

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

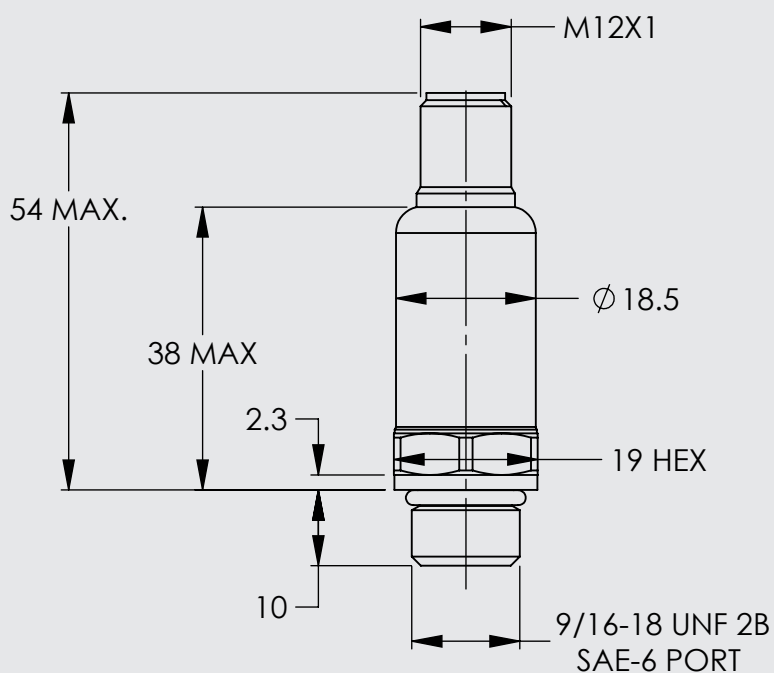
Pin connections:

M12x1



Pin	HDA 7476-A	HDA 7476-B
1	Signal+	+U _B
2	n.c.	n.c.
3	Signal-	0 V
4	n.c.	Signal

Dimensions:



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.
For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS
90 Southland Dr. Bethlehem, PA 18107
Telephone: 610.266.0100
E-mail: electronics@hydacusa.com
Website: www.hydac-na.com



Electronic Pressure Transmitter

HDA 7400

CANopen

Description:

The HDA 7400 CAN is a digital pressure transmitter which is used to measure relative pressures in hydraulics and pneumatics. The measured pressure value is digitized and made available to the CAN field bus system via the CANopen protocol. The instrument parameters can be viewed and configured by the user via the CANopen object directory using standard CAN software.

This pressure transmitter, which is based on the HDA 7400, has a very accurate and robust sensor cell with a thin-film strain gauge on a stainless steel membrane.

Due to their outstanding temperature and EMC characteristics, together with their compact dimensions, these instruments can be used in a wide range of applications in the mobile and industrial sectors.

Special features:

- CANopen interface
- Accuracy $\leq \pm 0.5\%$ FS B.F.S.L.
- Robust thin-film cell
- Excellent EMC characteristics
- Very compact design

Technical data:

Input data	
Measuring ranges	300, 500, 750, 1000, 1500, 3000, 6000, 9000 psi
Overload pressures	1160, 1160, 1740, 2900, 2900, 7250, 11600, 14500 psi
Burst pressures	2900, 2900, 4350, 7250, 7250, 14500, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)
Torque value	15lb-ft (20 Nm)
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM
Output data	
Output signal	CANopen protocol
Accuracy to DIN 16086	$\leq \pm 0.5\%$ FS typ.
Max. setting	$\leq \pm 1\%$ FS max.
Accuracy at min. setting (B.F.S.L.)	$\leq \pm 0.25\%$ FS typ. $\leq \pm 0.5\%$ FS max.
Temperature compensation	$\leq \pm 0.0085\%$ FS/°F typ.
Zero point	$\leq \pm 0.017\%$ FS/°F max.
Temperature compensation Over range	$\leq \pm 0.0085\%$ FS/°F typ. $\leq \pm 0.017\%$ FS/°F max.
Non-linearity at max. setting to DIN 16086	$\leq \pm 0.3\%$ FS max.
Hysteresis	$\leq \pm 0.4\%$ FS max.
Repeatability	$\leq \pm 0.1\%$ FS
Rise time	≤ 2 ms
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range ¹⁾	-40..+185°F/-13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range ¹⁾	-40..+212°F/-13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark ²⁾	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g
Protection class to IEC 60529	IP 67
Other data	
Supply voltage for use acc. to UL spec.	10 .. 35 V DC - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	$\leq 5\%$
Current consumption	≤ 25 mA
Life expectancy	> 10 million cycles 0 .. 100 % FS
Weight	~ 60 g

Note: Reverse polarity protection of the supply voltage and excess voltage protection are provided.

FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ -13 °F with FPM seal, -40 °F on request

²⁾ Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

Model code:

HDA 7 4 7 8 - X - XXXX - 000 (PSI)

Mechanical connection

7 = 9/16-18 UNF2A (SAE 6 male)

Electrical connection

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

Signal

F11 = CANopen

Pressure ranges in psi

0300, 0500, 0750, 1000, 1500, 3000, 5000, 6000, 9000

Modification number

000 = Standard (Baud Rate: 250k Node Id: 1)

Version

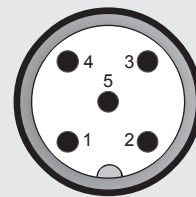
PSI = Pounds per square inch

Accessories:

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

Pin connections:

M12x1



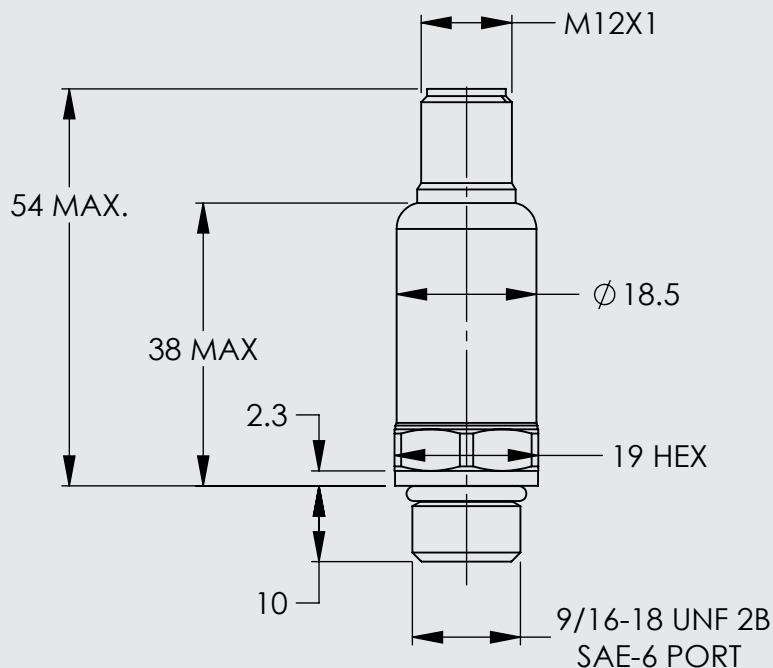
Pin	Signal	Description
1	Housing	shield/housing
2	+U _B	supply +
3	0 V	supply -
4	CAN_H	bus line dominant high
5	CAN_L	bus line dominant low

Configuration corresp. to CIA-DR-303-1

Protocol data for CANopen:

Communication profile	CiA DS 301 V4.2
Device profile	CiA DS 404 V1.3
Layer setting services and protocol	CiA DSP 305 V2.2
Automatic bit-rate detection	CiA AN 801
Baud rates	10 kbit .. 1 Mbit corresp. to DS305 V2.2
Transmission services	
- PDO	Measured value as 16/32 bit, float status
- Transfer	synchronous, asynchronous, cyclical, measured value change, exceeding boundaries
Node ID/Baud rate	Can be set via Manufacturer Specific Profile

Dimensions:



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
For European mechanical connection and bar ranges see European Catalog

HYDAC ELECTRONICS

90 Southland Dr. Bethlehem, PA 18107
Telephone: 610.266.0100
E-mail: electronics@hydacusa.com
Website: www.hydac-na.com