HYDAD INTERNATIONAL

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:

2

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	MDA 4800	V HDA 4700	VDA 4400	V HDA 4300	V HDA 4100	MDA 3800	MDA 7400	MDA 8700	MDA 8400	0000 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	 Image: A set of the set of the	\checkmark	\checkmark	✓	✓	✓	\checkmark			
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		✓						✓		

US 180.000.2/10.17

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

IAC INTERNATIONAL

Technical data:

Input data

Measuring ranges



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

	0000, 9000 psi
Overload pressures	290, 1160, 1740, 2900, 2900, 7250, 11600, 11600, 14500 psi
Burst pressures	1450 2900 4350 7250 7250 14500 29000
Buist pressures	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
	$R_{Lmax} = (U_{B} - 10 \text{ V}) / 20 \text{ mA} [k\Omega]$
	010 V, 3 conductor
	$R = 2 k\Omega$
Accuracy to DIN 16086,	≤ ± 0.125 % FS typ.
Max. setting	≤ ± 0.25 % FS max.
Accuracy at min. setting	≤ ± 0.06 % FS typ.
(B.F.S.L.)	≤ ± 0.125 % FS max.
Temperature compensation	≤ ± 0.003 FS/°F typ.
Zero point	≤ ± 0.006 FS/°F max.
Temperature compensation	$\leq \pm 0.003 \text{ FS/}^{\circ}\text{F}$ typ.
Over range	$\leq \pm 0.006 \text{ FS/}^{\circ}\text{F}$ max.
Non-linearity at max. setting	\leq ± 0.15 % FS max.
Hysteresis	≤ ± 0.1 % FS max.
Repeatability	≤±0.05%FS
Rise time	$\leq 1 \text{ ms}$
Long-term drift	\leq ± 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
	Certificate No. E318391
Vibration resistance to	≤ 20 g
DIN EN 60068-2-6 at 10 500 Hz	
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 10..30 V DC 2-conductor Supply voltage 12...30 V DC 3 conductor - limited energy - according to 9.3 UL 61010; Class 2; for use acc. to UL spec. UL 1310/1585; LPS UL 60950 Residual ripple of supply voltage ≤ 5 % Current consumption ≤ 15 mA > 10 million cycles Life expectancy 0..100 % FS ~ 145 g Weight

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

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

150, 500, 750, 1000, 1500, 3000, 5000,

Model code: HDA 4 8 7 X - X - XXXX - 000 (PSI) **Mechanical connection** 7 = 9/16-18 UNF2A (SAE 6 male) **Electrical connection** -= Male, 3 pole+ PE, EN175301-803 5 (DIN 43650) (connector supplied) 6 = Male M12x1, 4 pole (connector not supplied) Signal = 4 .. 20 mA, 2 conductor А В = 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:

2

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	
\perp	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

YDAD INTERNATIONAL



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 (≤ ± 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 ≤ ±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

Electronic Pressure Transmitter HDA 4800 for Iron and Steelworks **Applications**

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 UI (Torque value) 7/16-20 UI	NF 2A (S NF 2B (S	AE 6 male F 250 CX2) with 0.5 i 0, Autocla	mm orifice ave) with (e (15lb-ft ().5mm ori	(20Nm)) fice (30lb	-ft (40Nm)		
Parts in contact with medium		Mech. Seal:	conn.:	Stainle FF	ss steel PM				
Output data									
Output signal permitted load resistar	nce	4 20	mA 2 co	onducto	r				
eupur eignal, permitted lead recieral		F	$B_{Impx} = (U_{R} - 10 \text{ V}) / 20 \text{ mA [kO]}$						
		020	mA, 3 c	onducto	r source	Э.	-		
		F	$R_{Lmax} = ($	U _B - 4 V	/) / 20 m	ıA [kΩ]			
Accuracy to DIN 16086,		≤ ±0.12	25 % FS	S typ.					
Max. setting		$\leq \pm 0.25$	5 % FS	max.					
Accuracy at minimum setting		$\leq \pm 0.00$	6 % FS	typ.					
B.F.S.L (Best Fit Straight Line)		≤ ±0.12	25 % FS	S max.					
Temperature compensation, zero po	int	≤± 0.0	03 % FS	S/°F typ).				
		≤± 0.0	06 % FS	S/°F ma	ιx.				
Temperature compensation, over rar	nge	≤± 0.0	03 % FS	S/°F typ					
		≤± 0.0	06 % FS	S/°F ma	ιx.				
Non-linearity at max. setting to DIN 16086		≤ ± 0.1	$\leq \pm 0.15$ % FS max.						
Hysteresis		≤ ± 0,1	% FS m	ıax.					
Repeatability		$\leq \pm 0.0$)5 % FS						
Rise time		≤ 1.5 n	ns						
Long-term drift		≤ ±0.1	$\leq \pm 0.1$ % FS typ./ year						
Ambient conditions									
Compensated temperature range		-13 +	185 <i>°</i> F						
Operating temperature range ²⁾		-13 +	185 °F /	-40 +	185 °F				
Storage temperature range		-40	-40 +212 °F						
Fluid temperature range 2)		-13 +212 ℉ / -40 +212 ℉							
<u>(</u> e - mark		EN 610	EN 61000-6-1 / 2 / 3 / 4						
c Rus - Marked ³⁾		Certific	Certificate No.: E318391						
Vibration resistance to DIN EN 60068-2-6 at 10500Hz		≤20 g	≤20 g						
Protection class to IEC 60529		IP 68							
Other data									
Supply voltage		10 30 <i>– limite</i>	V DC 2 o d energy	conducto v —	or / 3 con	ductor			
when applied according to UL the specifications		accord Class 2	ing to 9.3 2; UL 13	3 UL 610 10/1585	010; ; LPS UI	60950			
Residual ripple of supply voltage		≤5%							
Current consumption		≤15 m.	A						
Additional protection against water, hun	nidity	Encaps	sulation o	of the de	vice, cal	ole outle	t with		
and vibration	-	strain r	elief, shri	ink slee\	/e				
Life expectancy		>10 million cycles (0100% FS)							
Weight		~180 g	g plus 90) g/m ca	ıble				
Note: Reverse polarity protection of the su	pply volta	age, overvolt	tage, overr	ide and ar	nd short cir	cuit			
FS (Full Scale) = relative to the full measuring ran 1) 15000 psi only with mechanical connection SF 2	ige 250 CX20), Autoclave	and vice v	ersa					

13 °F with FPM seal, -40 °F on requi 3) Environmental conditions according to 1.4.2 UL 61010-1; C22.2 no. 61010-1

4

HYDA

Мос	lel Code:				
			HDA 4 8 X	(0 - X -)	<u>XXXX</u> – <u>424</u>
Mech 7 = C = Elect 0 =	anical connect 9/16-18 UNF SF 250 CX "15000 psi" p rical connecti Open ended with cable gla	2A male (SA 20, Autoclav ress. range) on cable (Teflor and	AE 6 male) ve (only for n cable, silicone	free)	
Signa A = E =	4 20 mA, 2 0 20 mA, 3	conductor conductor			
Pres	sure ranges in	psi ———			
0150 1500	; 0500; 0750; 1) psi(only in co	000; 1500; 3 njunction wit	000; 5000; 6000 h mechanical co	; 9000; nnection t	ype "C")
Modi 424 =	fication Numb	er Works Appl	ications		
Versi	on				
PSI =	Pounds per so	quare inch			
Cabl 06; 1	e length in me D; 15; 20; 25; 3	ters 0			
Dim	ensions:				
	X			15	

[3.74] 95 0.27 [1.06] [2.22] 56.4 [1.18] Ø 30 Π [1.16] 27 HEX [0.09] 2.3 9/16-18 UNF 2A SAE - 6 PORT [0.39] 10 [0.74] Ø 19

Cable assignment:

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

Cable type:

424 (PSI) XXM

-7/16"-20UNF-2B

 $\ddot{O}lflon\ cable 3\ x\ 0.75\ mm^2\ shielded.$ Outer sheath FEP black Outer diameter 5.9 ± 0.15mm

Note:

The information in this brochure relates to the operating conditions and applications described. For 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

YDAD INTERNATIONAL



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 ≤ ± 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 **Electronic Pressure Transmitter** HDA 4700

| Technical data:

Input data	
Measurement ranges ¹⁾	150, 500, 750, 1000, 1500, 3000, 5000,
6	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
	$R_{Lmax} = (U_{B} - 8 V) / 20 mA [k\Omega]$
	010 V, 3 conductor
	$R_{Lmin} = 2 k\Omega$
Accuracy to DIN 16086,	≤ ± 0.25 % FS typ.
Max. setting	\leq ± 0.5 % FS max.
Accuracy at min. setting	≤ ± 0.15 % FS typ.
(B.F.S.L.)	\leq ± 0.25 % FS max.
Temperature compensation	≤ ± 0.0045% FS/°F typ
Zero point	$\leq \pm 0.0085\%$ FS/°F max.
Temperature compensation	≤ ± 0.0045% FS/°F typ.
Over range	$\leq \pm 0.0085\%$ FS/°F max.
Non-linearity at max. setting	≤ ± 0.3 % FS max.
to DIN 16086	
Hysteresis	≤ ± 0.1 % FS max.
Repeatability	≤ ± 0.05 % FS
Rise time	≤ 1 ms (<u><</u> 1.5ms for 15000 psi range)
Long-term drift	≤ ± 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
C mark	EN 6100-6-1/2/3/4
	Certificate No. E318391
Vibration resistance to	
DIN EN 60068_{-2-6} at 10 500 Hz	≤ 20 g
Protection class to IEC 60520	ID 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
Supply vollage	12 30 V DC 2 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	< 5 %
Current consumption	< 25 mA
	> 10 million cycles
LITE Expectancy	
Weight	~ 145 g
weight	ידי א טדי y
Note: Reverse polarity protection of the supply vo	oltage, excess voltage, override and
short circuit protection are provided.	
F5 (FUII 5Cale) = relative to complete meas B FS L = Best Fit Straight Line	sunny range
1) 15000 psi only with mechanical connection	on SF 250 CX20. Autoclave and vice versa
,, with moonamour bornicola	

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

Model code:	
HDA 4 7 X X – X – <u>XXXX</u> – <u>000</u> <u>F</u>	<u>251</u>
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

2

PSI = Pounds per square inch

Accessories:

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

Dimensions:





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ø19

ø27

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– 27 HEX

9/16-18 UNF 2B

SAE-6 PORT

max, 56

2.3

o-ring 11.89X1.98



27 HEX 7/16"-20 UNF 2B

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
\bot	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



YDAC INTERNATIONAL



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



Bureau Veritas



Electronic Pressure Transmitter HDA 4700 with Approvals for Shipping

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 mA [kΩ]
Accuracy to DIN 16086,	≤ ± 0.25 % FS typ.
Max. setting	≤ ± 0.5 % FS max.
Accuracy at min. setting	\leq ± 0.15 % FS typ.
(B.F.S.L.)	$\leq \pm 0.25$ % FS max.
Temperature compensation	$\leq \pm 0.0045\%$ FS/°F typ.
	$\leq \pm 0.0085\%$ FS/F max.
Iemperature compensation	$\leq \pm 0.0045\%$ FS/°F typ.
Non linearity at max patting	$\leq \pm 0.0005\%$ FS/ F IIIdX.
to DIN 16086	
Hysteresis	≤ ± 0.1 % FS max.
Repeatability	≤±0.05 % FS
Rise time	≤ 1 ms
Long-term drift	≤ ± 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
(f mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to	\leq 20 g
DIN EN 60068-2-6 at 10 500 Hz	
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
Desidual rights of supply valtage	 Γ 0/

Supply voltage	10 32 V DC	
Residual ripple of supply voltage	\leq 5 %	
Life expectancy	> 10 million cycles	
	0100 % FS	
Weight	~ 150 g	

Note: Reverse polarity protection of the supply voltage, excess voltage, override and 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 = 9/16-18 UNF2A (SAE 6 male) 7 Electrical connection = Male, 3 pole + PE, EN175301-803 (DIN 43650) 5 (connector supplied) 6 = Male M12x1, 4 pole (connector not supplied) Signal А = 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:

2

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

Dimensions:



Male electrical connector 3p+PE EN 175301-803 (DIN 43650)





Pin connections:



Pin	HDA 4775-A
1	Signal+
2	Signal-
3	n.c.

n.c. 1 Housing

M12x1

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Pin	HDA 4776-A	
1	Signal+	

2 n.c.

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3
      Signal-
```

4 n.c.

Note:

described.

technical department.



JS 18.322.2/10.17

9 HYDAC

bar ranges see European Catalog

HYDAC ELECTRONICS 90 Southland Dr. Bethlehem, PA 18107 Telephone: 610.266.0100

Subject to technical modifications. For European mechanical connection and

The information in this brochure relates to the operating conditions and applications

For applications or operating conditions

not described, please contact the relevant

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

GYDAD INTERNATIONAL



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

Electronic Pressure Transmitter HDA 4700 CANopen

Technical data:

Input data	
Measuring ranges ¹⁾	500, 750, 1000, 1500, 3000, 5000,
Overland pressures	6000, 9000, 15000 psi
	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.	≤ ± 0.25 % FS tvp.
Max. setting	$\leq \pm 0.5$ % FS max.
Accuracy at min. setting	< ± 0.15 % FS tvp.
(B.F.S.L.)	$\leq \pm 0.25$ % FS max.
Temperature compensation	< + 0.0045% FS/°F typ
Zero point	$\leq \pm 0.0085\%$ FS/°F max.
Temperature compensation	< ± 0.0045% FS/°F typ.
Over range	$\leq \pm 0.0085\%$ FS/°F max.
Non-linearity at max_setting	< + 0.3 % FS max
to DIN 16086	
Hysteresis	≤ ± 0.1 % FS max.
Repeatability	≤ ± 0.08 % FS
Rise time	< 1.5 ms
Long-term drift	< + 0.1 % ES typ / year
Environmental conditions	
Compensated temperature range	-13 +185°E
Operating temperature range ²	10185°E / 13 ±185°E
Storage temperature range	-40+10517-15+1051
	-407212 F
	-40+212 F / -13+212 F
	EN 61000-6-1/2/3/4
	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	10 35 V DC
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	< 5 %
Current consumption	<25 mA
	> 10 million cycles
Ene expectancy	0 100 % FS
Weight	approx 150 g
Note: Reverse polarity protection of the supply v excess voltage protection are provided. FS (Full Scale) = relative to complete mea B.F.S.L. = Best Fit Straight Line Special models available on request. 1) 15000 psi only with mechanical connect 2) -13 °F with FPM seal, -40 °F on request 3) Environmental conditions according to	voltage and asuring range tion SF 250 CX20, Autoclave and vice versa t 1.4.2 UL 61010-1; C22.2 No 61010-1

HYDAC | 10

Model code:

2

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

Mechanical connection = 9/16-18 UNF 2A (SAE 6 male) 7 = 7/16-20-UNF 2B (SF 250 CX20, С 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 - Transfer	Measured value as 16/32 bit, float status synchronous, asynchronous, cyclical, measured value change, exceeding boundaries
Node ID/Baud rate	Can be set via Manufacturer Specific Profile

Dimensions:



Pin connections:



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

YDAC INTERNATIONAL



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

Electronic Pressure Transmitter HDA 4400

Technical data:

Input data	
Moosuring ranges ¹⁾	150 500 750 1000 1500 2000
	5000, 6000, 9000, Fl €€€ 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 UNE 2B (SE 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	420 mA, 2 conductor
	R _{Lmax} = (U _B - 8 V) / 20 mA [kΩ] 010 V, 3 conductor
	$R_{\text{Lmin}} = 2 \text{ K}\Omega$
Accuracy to DIN 16086	$\leq \pm 0.5 \%$ FS typ. < $\pm 1 \%$ FS max
Accuracy at min_setting	$\leq \pm 0.25 \%$ FS typ
(BESL)	$< \pm 0.5\%$ FS max
Temperature compensation	< + 0.0085% FS/°F typ
Zero point	$\leq \pm 0.014\%$ FS/°F max.
Temperature compensation	≤ ± 0.0085% FS/°F typ.
Over range	≤ ± 0.014% FS/°F max.
Non-linearity at max. setting to DIN 16086	≤ ± 0.3 % FS max.
Hysteresis	≤ ± 0.4 % FS max.
Repeatability	≤±0.1 % FS
Rise time	≤ 1 ms (< 1.5ms for 15000 psi range)
Long-term drift	≤ ± 0.3 % FS typ. / year
Environmental conditions	51 5
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
(f mark	EN 61000-6-1 / 2 / 3 / 4
Sum mark ³⁾	Certificate No. E318391
Vibration resistance to	≤ 20 g
DIN EN 60068-2-6 at 10 500 Hz	
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	830 V DC, 2 conductor
for use acc. to LIL spec	1230 V DC, 3 conductor
IOI USE ACC. IO OL SPEC.	9.3 LIL 61010: Class 2:
	UL 1310/1585: LPS UL 60950
Residual ripple of supply voltage	< 5 %
	< 25 m/
	\geq 25 IIIA
Life expectancy	0 100 % FS
Weight	~ 145 g
Note: Reverse polarity protection of the supply vol	Itage, excess voltage, override and
short circuit protection are provided.	
FS (Full Scale) = relative to complete measure	uring range
B.F.S.L.= Best Fit Straight Line	n SE 250 CV20. Autoplays and vice yers
1) 15000 psi only with mechanical connection 2) -13 °F with FPM seal -40 °F on request	IT OF 200 CAZU, AULUCIAVE AND VICE VEISA
Environmental conditions in accordance u	ith 1 4 2 LU 61010 1: C22 2 No 61010 1

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



Accessories:

2

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

Dimensions:





4 POLE M12X1 12.3

Pin connections:





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

GYDAD INTERNATIONAL



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



Bureau Veritas



Other approvals on request

Electronic Pressure Transmitter HDA 4400 with Approvals for Shipping

| Technical data:

Input data	
Measuring ranges	150, 500, 750, 1000, 1500, 3000, 5000, 6000, 9000 psi
Overload pressures	290, 1160, 1740, 2900, 2900, 7250, 1160 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 mA [kΩ]
Accuracy to DIN 16086,	≤ ± 0.5 % FS typ.
Max. setting	≤ ± 1 % FS max.
Accuracy at min. setting	≤ ± 0.25 % FS typ.
(B.F.S.L.)	$\leq \pm 0.5$ % FS max.
Iemperature compensation	$\leq \pm 0.0085\%$ FS / °F typ
	$\leq \pm 0.014\%$ FS / F max.
Reperature compensation	$\leq \pm 0.0085\%$ FS / FF typ.
Non-linearity at max, setting	$\leq \pm 0.3\%$ ES may
to DIN 16086	
Hysteresis	$\leq \pm 0.4$ % FS max.
Repeatability	≤ ± 0.1 % FS
Rise time	≤ 1 ms
Long-term drift	≤ ± 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
(E mark	EN 61000-6-1 / 2 / 3 / 4
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 (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 v short circuit protection are provided. FS (Full Scale) = relative to complete mea B.F.S.L.= Best Fit Straight Line ¹⁾ -13 °F with FPM seal, -40 °F on request	oltage, excess voltage, override and suring range

JS 18.317.3/10.17



Pin connections:



n.c.

 \bot Housing

M12x1

1

2

3



Pin	HDA 44X6-A
1	Signal+

2 n.c.

3 Signal-

4 n.c.

Dimensions:



Male electrical connector 3p+PE EN 175301-803 (DIN 43650)





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

YDAC INTERNATIONAL



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 airconditioning 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 p
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
	$R_{Lmax} = (U_{B} - 8 V) / 20 mA [k\Omega]$
	010 V, 3 conductor
	$R_{Lmin} = 2 K \Omega$
Accuracy to DIN 16086	$\leq \pm 0.5$ % FS typ.
Max. setting	$\leq \pm 1$ % FS max.
Accuracy at min. setting	$\leq \pm 0.25$ % FS typ.
(B.F.S.L.)	≤ ± 0.5 % FS max.
Temperature compensation	$\leq \pm 0.012\%$ FS/°F typ
	$\leq \pm 0.017\%$ FS/ F max.
Temperature compensation	$\leq \pm 0.012\%$ FS/F typ.
Nep linearity of max patting	$\leq \pm 0.017\%$ FS/ F IIIaX.
to DIN 16086	$\leq \pm 0.5 \%$ FS max.
Hysteresis	≤ ± 0.4 % FS max.
Repeatability	≤ ± 0.1 % FS
Rise time	≤ 1 ms
Long-term drift	≤ ± 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
C E mark	EN 61000-6-1/2/3/4
αl' mark ²	Certificate No. E318391
Vibration resistance to	< 20 g
DIN FN 60068-2-6 at 10 500 Hz	<u>= 20 g</u>
Protection class to IEC 60529	IP 65 (for male EN175301-803
	(DIN 43030)) IP 67 (M12v1, when an IP 67 connector is used)
Other data	
Cumphyvaltaga	
Supply voltage	830 V DC 2 conductor
for use acc. to LIL spec	- limited energy - according to
	9.3 UL 61010 [°] Class 2 [°]
	UL 1310/1585; LPS UL 60950
Residual ripple of supply voltage	< 5 %
Current consumption	< 25 mA
	> 10 million cycles 0 100 % FS
Woight	~ 150 a
vvcigiit	- 100 y
Note: Reverse polarity protection of the sup and short circuit protection are provide	ply voltage, excess voltage, override ed.

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 – <u>XXXX</u> – <u>000</u> – X 1 (<u>PS</u>	<u>l</u>)
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	
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:

2

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	_
\perp	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

YDAC INTERNATIONAL



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

- · Germanischer Lloyd

• Det Norske Veritas







Electronic Pressure Transmitter HDA 4300 with Approvals for Shipping

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 signal, permitted load resistance	420 mA, 2 conductor P = (11 - 10)(1/20) mA [ko]
Accuracy to DIN 16086	$R_{Lmax} = (0_B - 10_V) / 20 IIIA [RS2]$
Max setting	$\leq \pm 0.5 \%$ FS typ. $\leq \pm 1 \%$ FS max
Accuracy at min. setting	< + 0.25 % FS typ.
(B.F.S.L.)	$\leq \pm 0.5$ % FS max.
Temperature compensation	≤ ±0.012% FS/°F typ.
Zero point	≤ ± 0.017% FS/°F max.
Temperature compensation	≤ ± 0.012% FS/°F typ.
Over range	≤ ± 0.017% FS/°F max.
Non-linearity at max. setting to DIN 16086	≤ ± 0.5 % FS max.
Hysteresis	≤ ± 0.4 % FS max.
Repeatability	≤ ± 0.1 % FS
Rise time	≤ 1 ms
Long-term drift	\leq ± 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+212°F/ -13+212°F
(f mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to	≤ 20 g
DIN EN 60068-2-6 at 10 500 Hz	-
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 vo	Itage, excess voltage, override and
short circuit protection are provided.	
B.F.S.L. = Best Fit Straight Line	
¹⁾ -13 °F with FPM or EPDM seal, -22 °F on	request



US 18.324.2/10.17

2

GYDAD INTERNATIONAL



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 airconditioning 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	420 mA, 2 conductor
	$R_{\text{Lmax}} = (O_{\text{B}} - 6 \text{ V}) / 20 \text{ IIIA} [KS2]$ 0 10 V 3 conductor
	$R = 2 k\Omega$
Accuracy to DIN 16086	<+ 0.5 % FS tvp
Max. setting	$\leq \pm 1.0 \%$ FS max.
Accuracy at min. setting	≤±0.25 % FS tvp.
(B.F.S.L.)	≤ ± 0.5 % FS max.
Temperature compensation	≤ ± 0.012% FS/°F typ.
Zero point	≤ ± 0.017% FS/°F max.
Temperature compensation	≤±0.012% FS/°F typ.
Over range	≤± 0.017% FS/°F max.
Non-linearity at max. setting	≤± 0.5 % FS max.
to DIN 16086	
Hysteresis	$\leq \pm 0.4 \%$ FS max.
Repeatability	≤±0.1 % FS
Rise time	≤1 ms
Long-term drift	$\leq \pm 0.3$ % FS typ. / year
Environmental conditions	10 110E°E
	-10+100 F
Storage temperature range	-13+103 F
	-40+212 F
	-40+212 F/-13+212 F
	Cortificato No. E219201
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 (for M12x1, when an
	IP 67 connector is used)
Other data	
Supply voltage	830 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 1310/1565, LPS UL 60950
Residual ripple of supply voltage	<u>≤5%</u>
	≤ 25 mA
Life expectancy	> 10 million cycles
Weight	~ 145 g
Note: Reverse polarity protection of the supp	ply voltage, excess voltage, override and
Short circuit protection are provided. ES (Full Scale) = relative to complete	measuring range
BESL = Best Fit Straight Line	measuring range
¹⁾ -13 °F with FPM seal40 °F on requi	est
²⁾ Environmental conditions according t	to 1.4.2 UL 61010-1: C22.2 No 61010-1

HYDAC 20

Model code: HDA 4 1 8 X - X - XXXX - 000 - X 1 (PSI)	P
Mechanical connection	
8 = 1/4-18 NP1 male	
5 = Male, 3 pole + PE, EN175301-803 (DIN 43650) (connector supplied) 6 = Male M12x1, 4 pole (connector not supplied)	P
Signal A = 4 20 mA, 2 conductor B = 0 10 V, 3 conductor	1 2 3
Pressure ranges in psia 0015, 0050	
Modification number 000 = Standard	N
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.	P 1 2 3 4
<complex-block></complex-block>	N Th the de Fc no tec Su Fc ba HY 90

in connections:

N175301-803 (DIN 43650)



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

/12x1



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

ote:

ne information in this brochure relates to e operating conditions and applications escribed.

or applications or operating conditions of described, please contact the relevant chnical department.

ubject to technical modifications. or European mechanical connection and ar ranges see European Catalog

YDAC ELECTRONICS 0 Southland Dr. Bethlehem, PA 18107 elephone: 610.266.0100 E-mail: electronics@hydacusa.com Website: www.hydac-na.com

DADINTERNATIONAL



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

- DINI
- · Germanischer Lloyd



· Bureau Veritas



Electronic Absolute Pressure Transmitter HDA 4100 with Approvals for Shipping

| 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	
Output data	(as per moder code)	
Output signal, permitted load resistance	4 20 mA, 2 conductor $R_{Lmax} = (U_B - 10 \text{ V}) / 20 \text{ mA} [k\Omega]$	
Accuracy to DIN 16086,	≤ ± 0.5 % FS typ.	
Max. setting	≤ ± 1 % FS max.	
Accuracy at min. setting	≤ ± 0.25 % FS typ.	
(B.F.S.L.)	$\leq \pm 0.5 \%$ FS max.	
Iemperature compensation	$\leq \pm 0.012\%$ FS/°F typ.	
	$\leq \pm 0.017\%$ FS/ F Max.	
Over range	$\leq \pm 0.012\%$ FS/ F typ.	
Non-linearity at max, setting	$\leq \pm 0.017 / 0 FS / F Max.$	
to DIN 16086	≤±0.5 % F3 max.	
Hysteresis	≤ ± 0.25 % FS max.	
Repeatability	≤ ± 0.1 % FS	
Rise time	≤ 1 ms	
Long-term drift	≤ ± 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	
(f mark	EN 61000-6-1 / 2 / 3 / 4	
Vibration resistance to	≤ 20 g	
DIN EN 60068-2-6 at 10 500 Hz		
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 % FŚ	
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 seal22 °F on	request	

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GYDAD INTERNATIONAL



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

Electronic Pressure Transmitter HDA 7476

Technical data:

Toominour autu:	
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 p
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 RLmax. = (U _B - 8 V) / 20 mA [kΩ] 010 V, 3 conductor RLmin. = 2 kΩ
Accuracy to DIN 16086	≤ ± 0.5 % FS typ.
Max. setting	≤ ± 1 % FS max.
Accuracy at min. setting	≤ ± 0.25 % FS typ.
(B.F.S.L.)	$\leq \pm 0.5 \%$ FS max.
Iemperature compensation	$\leq \pm 0.0085\%$ FS/°F typ.
Zero point	\leq ± 0.0075% ES/°E tup
Over range	≤ ± 0.0005% FS/ F typ. < + 0.017% FS/°F max
Non-linearity at max. setting	$\leq \pm 0.3$ % FS max.
Hysteresis	< + 0.4 % ES max
Repeatability	<+01% FS
Rise time	<2 ms
Long-term drift	< + 0.3 % FS tvp. / year
Environmental conditions	
	12 ±105°E
	-13TIOD F 40 ±195°E/12 ±195°E
Storage temperature range	-40+100 F/-10+100 F
Eluid temperature range ¹	-+0+2121 40 +212°E/ 12 +212°E
	EN 61000-6-1 / 2 / 3 / 4
D ⁽ -mark ²⁾	Certificate No. E318391
Vibration resistance to	≤ 20 g
DIN EN 60068-2-6 at 10 500 Hz	
	connector is used)
Other data	
Supply voltage for use acc. to UL spec.	8 30 V DC 2 conductor 12 30 V DC 3 conductor - limited energy - according 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 cycles 0 100 % FS
Weight	~ 60 g
Note: Reverse polarity protection of the su short circuit protection are provided. FS (Full Scale) = relative to complete	upply voltage, excess voltage, override and te measuring range

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

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

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Accessories:

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

Dimensions:



2

Pin connections:



HDA 7476-A	HDA 7476-B
Signal+	+U _B
n.c.	n.c.
Signal-	0 V
n.c.	Signal
	HDA 7476-A Signal+ n.c. Signal- 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

GYDAD INTERNATIONAL



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

Electronic Pressure Transmitter HDA 7400 CANopen

Technical data:

Input data	
Measuring ranges	300, 500, 750, 1000, 1500, 3000, 6000,
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	≤ ± 0.5 % FS typ.
Max. setting	≤ ± 1 % FS max.
Accuracy at min. setting	≤ ± 0.25 % FS typ.
(B.F.S.L.)	≤ ± 0.5 % FS max.
Temperature compensation	≤ ± 0.0085% FS/°F typ.
	$\leq \pm 0.017\%$ FS/°F max.
Imperature compensation	$\leq \pm 0.0085\%$ FS/°F typ.
Non linearity at max, softing	\leq ± 0.017 % FS/ F IIIdX.
to DIN 16086	≤±0.3 % FS max.
Hysteresis	≤ ± 0.4 % FS max.
Repeatability	≤ ± 0.1 % FS
Rise time	≤ 2 ms
Long-term drift	≤ ± 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
((mark	EN 61000-6-1 / 2 / 3 / 4
Mus 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	10 35 V DC
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	≤ 25 mA
Life expectancy	> 10 million cycles 0 100 % FS
Weight	~ 60 g
Note: Reverse polarity protection of the supp	ly voltage and excess voltage protection

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



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 - Transfer	Measured value as 16/32 bit, float status synchronous, asynchronous, cyclical, measured value change, exceeding boundaries
Node ID/Baud rate	Can be set via Manufacturer Specific Profile

Dimensions:

2



Pin connections:



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

Note:

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