

Operating Instruction Pressure Transmitter Series HDA 4000 for medium hydrogen, Intrinsically safe, non incendive cCSA_{US} approval

This manual with part number 670004 is specifically for pressure transmitters for hydrogen applications, it is a derivation from the basis manual 669717.



Protection types and applications:

(Details see model code and associated evaluation table)

Intrinsically safe:			
- Class I	Division 1	Group A, B, C, D T6	[C, US]
- Class II	Division 1	Group E, F, G	[C, US]
- Class III			[C, US]
- Class I	Zone 0	AEx ia IIC T6 Ga	[US]
-		Ex ia IIC T6 Ga	[C]
-	Zone 20	AEx ia IIIC T85°C, T ₅₀₀ 90°C Da	[US]
-		Ex ia IIIC T85°C, T ₅₀₀ 90°C Da	[C]
Non incendive:			
- Class I	Division 2	Group A, B, C, D, T6, T5, T4	[C, US]
- Class II	Division 2	Group F, G	[C, US]
- Class III			[C, US]
- Class I	Zone 2	AEx ic IIC T6, T5, T4 Gc	[US]
-		Ex ic IIC T6, T5, T4 Gc	[C]
- Class I	Zone 2	AEx nA IIC T6, T5, T4 Gc	[US]
-		Ex nA IIC T6, T5, T4 Gc	[C]
-	Zone 22	AEx tc IIIB T80/ T90/T100°C Dc	[US]
-		Ex tc IIIB T80/ T90/T100°C Dc	[C]
Certificate Nr.:		CSA 1760344 / 06CA1760344	

Table of Contents

1	General	3
2	Function	3
3	Installation and commissioning information	3
4	Important mounting instructions for units with ½-14 NPT conduit	4
5	Safety information	5
6	Technical data.....	6
7	Model code to identify the delivered part.....	8
8	Serial number.....	10
9	Pin assignment	10
10	Dimensions	11
11	Control drawing	12
12	CSA certificate	16

1 General

If you have any queries regarding technical details or the suitability of the unit for your application, please contact our **Technical Sales Department**. The series HDA 4000 pressure transmitters are individually tested and calibrated at a computer operated test station. They are maintenance-free and operate perfectly when used according to the data (see Technical Specifications). However, if there is a cause for complaint, please contact **HYDAC Service**. Interference by anyone other than HYDAC personnel will invalidate all warranty claims as well as the CSA approval.

2 Function

The pressure signal measured by the sensor is converted into an analog 4 .. 20 mA signal.

3 Installation and commissioning information

The pressure transmitters can be installed directly on the process side via the threaded connection. It is important to ensure that the membrane is protected from mechanical damage during installation.

In order to prevent mechanical damage when dealing with critical applications involving heavy vibrations or blows, for example, we recommend securing the unit with an elastomer clamp and decoupling the hydraulic ports via a Minimesse hose.

Tightening torque see dimensions.

Pressure transmitters with a rated pressure of ≤ 100 bar (≤ 1500 psi) provide for pressure equalization with the ambient pressure. This is enabled by a small hole underneath the plug connector. The connector is covered on the inside by a special membrane which prevents moisture from seeping into the unit from the outside. In order to prevent the hole from becoming clogged, mounting should be done in a horizontal position in moist or dusty environments, or vertically with the pressure port pointing downwards.

On units with a rated pressure of ≤ 100 bar (≤ 1500 psi) and a $\frac{1}{2}$ -14 NPT conduit electrical connection, the pressure equalization with single leads is realized by means of a short vent line, using jacketed cables, it is realized by means of a cable with an integrated venting hose. It must be ensured that the venting only takes place outside the hazardous area.

Connection is to be done from qualified personal in accordance with the pertinent regulations pertaining to potentially explosive environments.

The requirements of the standards (see technical data) cannot be satisfied unless the pressure transmitter housing is properly grounded via the mechanical connection or the $\frac{1}{2}$ -14 NPT conduit. If a green-yellow wire is available, it can be used additionally for grounding, but may not be used on its own as the grounding connection. When using hose mounting the housing has to be grounded separately.

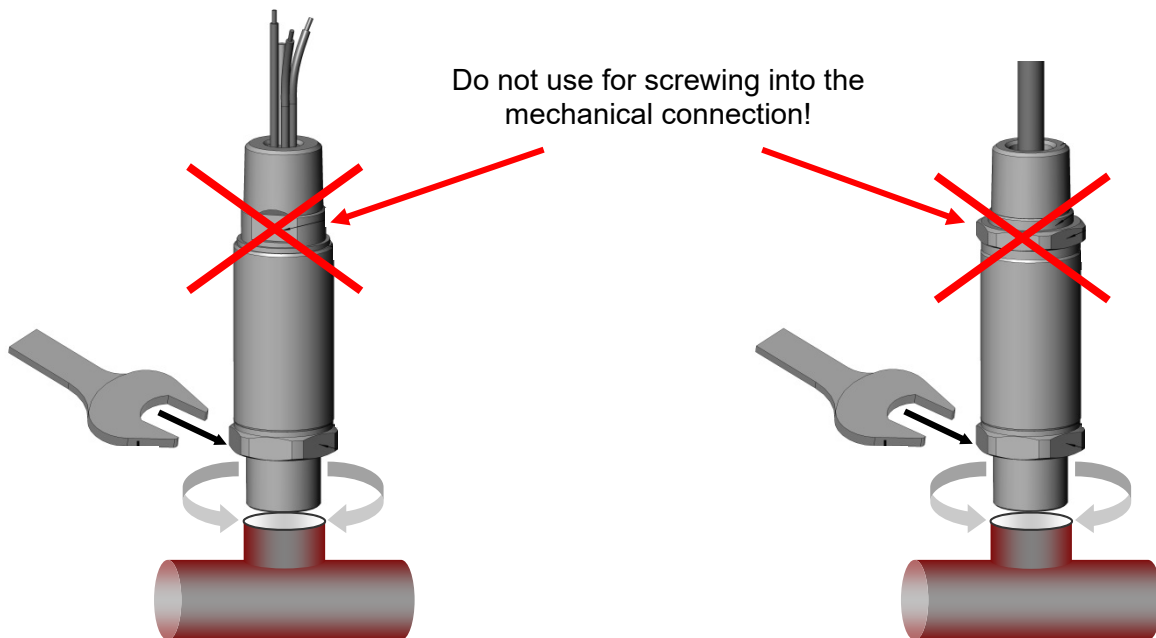
The related intrinsically safe devices (e.g. zener barriers) must also be grounded. A potential equalisation is required along the intrinsically safe electrical circuit in the N type model (dielectric strength ≤ 50 VAC).

Installation per Control Drawing No. 18-000-601-4-663126 (see chapter 11).

4 Important mounting instructions for units with ½-14 NPT conduit

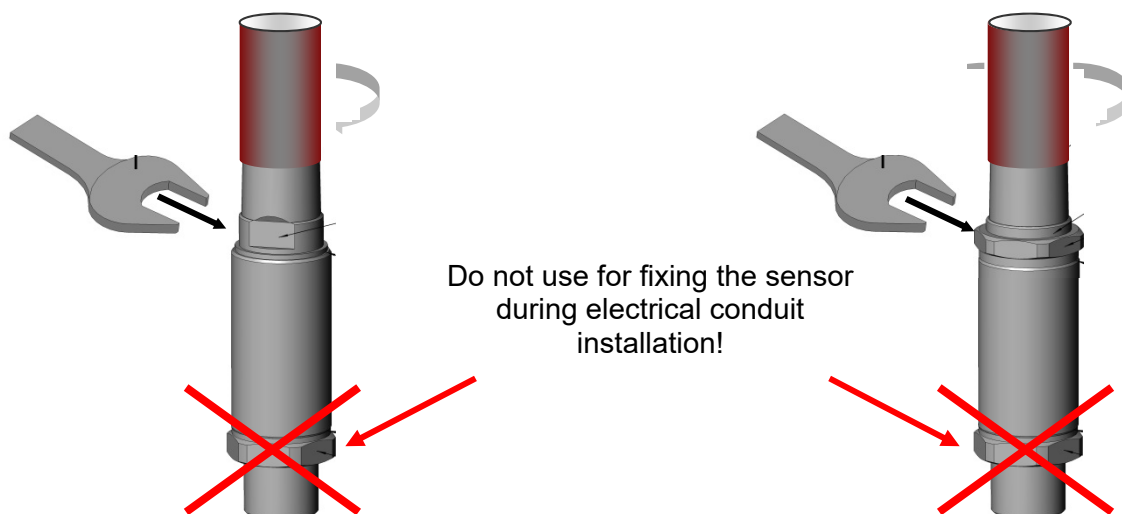
Mechanical Installation

The process installation of the transmitters may only be carried out utilizing the hex. flats on the process connection side.



Electrical Installation

The flats at the electrical connection side next to the ½-14 NPT conduit only serves to fix the transmitter during conduit installation





5 Safety information

The pressure transmitter may no longer be used when the label becomes illegible.

The pressure transmitters are to be used in general with a suitable intrinsically safe barrier.

The seals and gaskets are to be checked to see that they function properly prior to mounting and at regular intervals in keeping with the climatic conditions and the influence of the fluid, and to be changed as needed. Replacement seals and gaskets can be obtained from HYDAC ELECTRONIC GMBH. (Standard seal see technical data) This check is to be conducted at least every three years.

If used simultaneously in zones 0 and 1, the metal membrane of the pressure transmitter serves as a partition wall between zones 0 and 1. The thickness of this partition wall is generally $\leq 1\text{mm}$, and with a nominal pressure ranging below 100 bar, $\leq 0.2\text{ mm}$. In order to ensure this partition function, the compatibility of the measuring fluids with the used materials is compulsory, as well as the overload and bursting pressures must absolutely be complied with (further details, please see "Technical Data").

It is imperative that the measurement fluid is compatible with the materials used in the pressure transmitter; similarly, the overload pressures and bursting pressures must be adhered to without fail (for these specifications, see the "Technical Specifications" and "Safety Information" of the EC type examination certificate).

The internal measurement membrane of the pressure transmitter is to be protected against mechanical damage.

Please ensure sufficient sealing between the zones as well.

The data pertaining to use in Hazardous Location is to be heeded in any event.

Operation is only permitted when operational and process related intensive electrostatic changes are eliminated.

From a safety point of view, the supply / output circuit of pressure transmitter shall be considered to be connected to earth.

When used in atmospheres containing combustible dusts, the pressure transmitter must be installed in such a way that it is protected from damage and knocks.

6 Technical data

Input data												
Measuring Ranges	bar	16	25	40	60	100	200	250	400	500	600	1050
Overload ranges	bar	50	50	80	120	200	500	500	800	1000	1000	1400
Burst pressure	bar	125	125	200	300	500	1250	1250	2000	3000	3000	3000
Measuring range	psi	300	500	750	1500	3000	5000	6000	9000	15000		
Overload pressure	psi	725	1160	1740	2900	7250	11600	14500	14500	20300		
Burst pressure	psi	1800	2900	4350	7250	18000	29000	43500	43500	43500		
Mechanical connection (torque value, recommended)	SF250CX20, Autoclave (7/16-20 UNF 2B) (15 Nm for measuring range ≤ 600 bar/9000 psi) (20 Nm for measuring range 1050 bar/15000 psi) G 1/4 B DIN EN 837 (20 Nm for measuring range ≤ 600 bar/ 9000 psi) (40 Nm for measuring range 1050 bar/15000 psi) 3/4-16 UNF 2A (SAE8) (20 Nm für Messbereich ≤ 600 bar/ 9000 psi)											
Parts in contact with fluid	Stainless steel		1.4435 (Ni content ≥ 13 %)									
	Measuring cell		additional gold-plated									
	Seal		Copper (Cu-DHP) (G 1/4 B) Zurcon ® Z22 (SAE 8)									
Output data		HDA 4400					HDA 4700					
Output signal, permitted load resistance		4 .. 20 mA (2-conductor), R _{Lmax.} = (U _B – 12 V) / 20 mA [kΩ]					4 .. 20 mA (2-conductor), R _{Lmax.} = (U _B – 12 V) / 20 mA [kΩ]					
Accuracy acc. to DIN 16086, terminal based	Typ.	≤ ± 0.5 % FS					≤ ± 0.25 % FS					
	Max.	≤ ± 1.0 % FS					≤ ± 0.5 % FS					
Accuracy, B.F.S.L	Typ.	≤ ± 0.25 % FS					≤ ± 0.15 % FS					
	Max.	≤ ± 0.5 % FS					≤ ± 0.25 % FS					
Temperature compensation	Typ.	≤ ± 0.015 % FS/°C [≤ ± 0.0085 % FS/°F]					≤ ± 0.008 % FS/°C [≤ ± 0.0045 % FS/°F]					
Zero point	Max.	≤ ± 0.025 % FS/°C [≤ ± 0.014 % FS/°F]					≤ ± 0.015 % FS/°C [≤ ± 0.0085 % FS/°F]					
Temperature compensation	Typ.	≤ ± 0.015 % FS/°C [≤ ± 0.0085 % FS/°F]					≤ ± 0.008 % FS/°C [≤ ± 0.0045 % FS/°F]					
Span	Max.	≤ ± 0.025 % FS/°C [≤ ± 0.014 % FS/°F]					≤ ± 0.015 % FS/°C [≤ ± 0.0085 % FS/°F]					
Non-linearity acc. to DIN 16086, terminal based	Max.	≤ ± 0.3 % FS					≤ ± 0.3 % FS					
Hysteresis	Max.	≤ ± 0.4 % FS					≤ ± 0.1 % FS					
Repeatability		≤ ± 0.1 % FS					≤ ± 0.1 % FS					
Rise time		≤ 2 ms					≤ 2 ms					
Long-term drift	Typ.	≤ ± 0.3 % FS / year					≤ ± 0.3 % FS / year					
Environment conditions												
Compensated temperature range	-25 .. 85 °C [-13 .. 185 °F]											
Operation / ambient / fluid temperature range	T6, T80/T85 °C: Ta = -40 .. +60 °C [-40 .. 140 °F] T5, T90 °C: Ta = -40 .. +70 °C [-40 .. 158 °F] T100 °C: Ta = -40 .. +80 °C [-40 .. 176 °F] T4: Ta = -40 .. +85 °C [-40 .. 185 °F]											
Storage temperature range	-40 .. +100 °C [-40 .. +212 °F]											
Vibration resistance acc. to DIN EN 60068-2-6 at 10.. 500 Hz	≤ 20 g ≤ 10 g for devices with electrical connection ½-14 NPT conduit											
Shock resistance acc. to DIN EN 60068-2-27	≤ 100 g / 6 ms ≤ 50 g / 6 ms for devices with electrical connection ½-14 NPT conduit											
Protection class acc. to: DIN EN 60529 ¹⁾ ISO 20653	IP 67 (connector versions) IP 6K9K (½-14 NPT conduit)											

Relevant data for Ex Application	Ex ia	Ex ic	Ex nA, Ex tc
Supply voltage	U _i = 12 .. 28 V	U _i = 12 .. 28 V	U _i = 12 .. 28 V
Max. input current	I _i = 100 mA		
Maximum input power	P _i =1 W		
Connection capacitance of the sensor	C _i = ≤ 22 nF	C _i = ≤ 22 nF	
Inductance of the sensor	L _i = 0 mH	L _i = 0 mH	
Insulation voltage ²⁾	50 V AC, with integrated overvoltage protection		
Other data			
Residual ripple supply voltage	≤ 5%		
Current consumption	≤ 25 mA		
Life expectancy	> 10 million load cycles 0 .. 100 %FS		
Weight	approx. 150 g (connector versions) approx. 300 g (1/2-14 NPT conduit)		

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

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

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

¹⁾ With mounted mating connector in corresponding protection class.

²⁾ See model code for "insulation voltage"

7 Model code to identify the delivered part

7.1 Model Code HDA 4000

Accuracy _____ 4 = 1 % FS max. 7 = 0.5 % FS max. Mechanical Connection _____ C = SF250CX, Autoclave (7/16-20 UNF 2B), female G = G1/4 B DIN EN 837 H = 3/4 -16 UNF 2A (SAE 8) Electrical Connection _____ 5 = Male connector, EN 175301-803, 3 pol. + PE (IP 67 mating connector included) 6 = Male connector M12x1, 4-pol.(mating connector not included) 9 = 1/2-14 NPT conduit male, single leads Output signal _____ A = 4 .. 20 mA, 2-conductor Measuring ranges _____ Are shown in bar or psi (in case of psi, see additional psi declaration) Approval _____ C = cCSA_{us}, details see evaluation table chapter 7.3 and certificate Insulation voltage _____ H = 500 V AC to housing N = 50 V AC to housing Protection types and applications (see evaluation table chapter 7.3) _____ A = Model code characteristic A B = Model code characteristic B C = Model code characteristic C D = Model code characteristic D E = Model code characteristic E Modification Number _____ H00 = for hydrogen applications (other numbers are used for e.g. for customized pin connection) (psi) _____ Additional declaration for psi version (not applicable for bar version) Cable length (e.g. for conduit connection , not applicable for connector versions) _____ Shown in m or inch	HDA 4 X X X - A - XXXXX - C X X - H00 (psi) XX inch)
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7.2 Evaluation table: Classification of the protection type

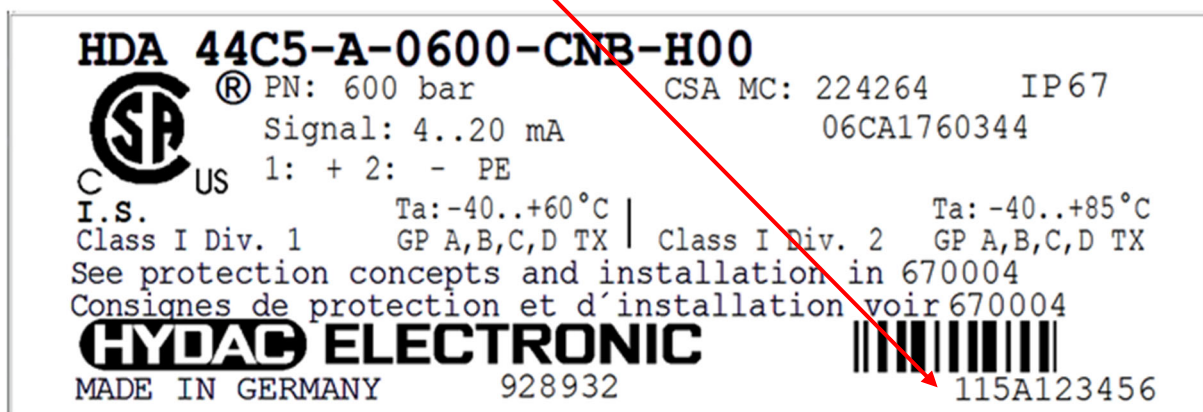
CSA certificate number 1760344					
Model code characteristic	A		B		C
			D	E	
Protection class	Intrinsically safe Use in gases and dusts		Intrinsically safe Use in gases	Non incensive with field wiring Use in gases	Non incensive Use in gases and dusts
Application	Class I, Division 1 Group A, B, C, D T6 Class II, Division 1 Group E, F, G Class III Class I, Zone 0 AEx ia IIC T6 Ga Ex ia IIC T6 Ga Zone 20 AEx ia IIIC T85°C, T ₅₀₀ 90°C Da Ex ia IIIC T85°C, T ₅₀₀ 90°C Da		Class I, Division 1 Group A, B, C, D T6 Class I, Zone 0 AEx ia IIC T6 Ga Ex ia IIC T6 Ga	Class I, Division 2 Group A, B, C, D, T6, T5, T4 Class I, Zone 2 AEx ic IIC T6, T5, T4 Gc Ex ic IIC T6, T5, T4 Gc	Class I, Division 2 Group A, B, C, D, T6, T5, T4 Class II, Division 2 Group F, G Class III Class I, Zone 2 AEx nA IIC T6, T5, T4 Gc Ex nA IIC T6, T5, T4 Gc Zone 22 AEx tc IIIB T80/T90/T100°C Dc Ex tc IIIB T80/T90/T100°C Dc
Electrical connection (see model code)	9		5; 6; 9;		9

8 Serial number

The serial number includes the calendar week and year of manufacture of the unit, adjacent to the sequential serial number.

Configuration of serial number (SN): xyy~~k~~zzzzzz

XX	Manufacturing date	e.g. : 1 → 2021
yy	Calendar week	e.g. : 15 → KW 15
k	Change control status	e.g. : -, A, B
zzzzzz	Sequential serial number	e.g. : 123456

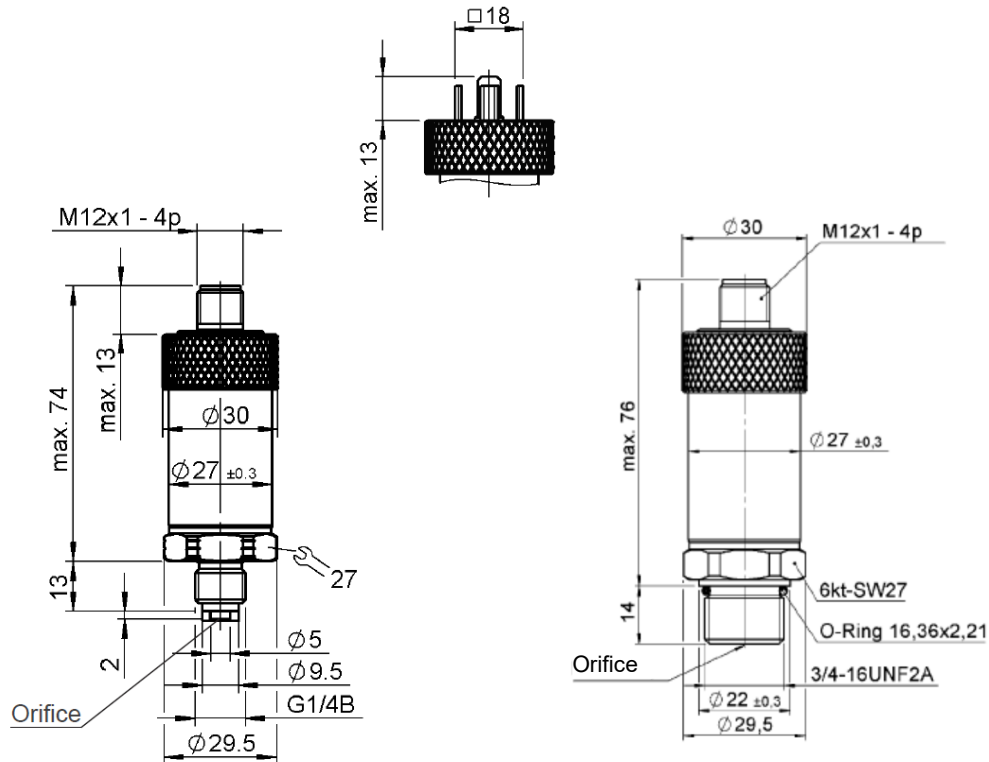


9 Pin assignment

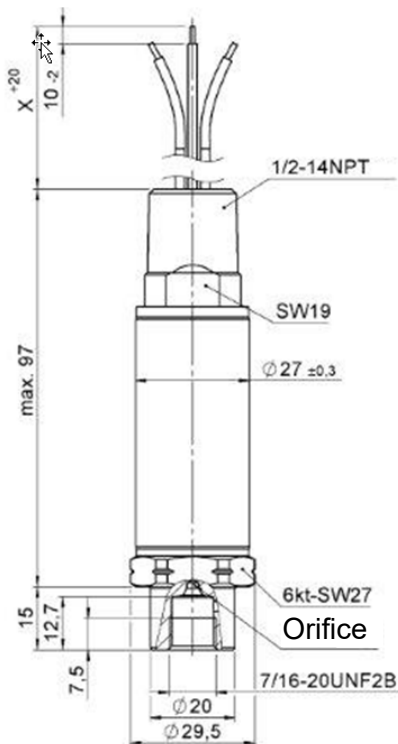
The pin assignment for the electrical connection is mentioned in the chapter "Control Drawing" as well as at the label of the pressure transmitter.

10 Dimensions

Male connector EN175301-803,
3 pole + PE

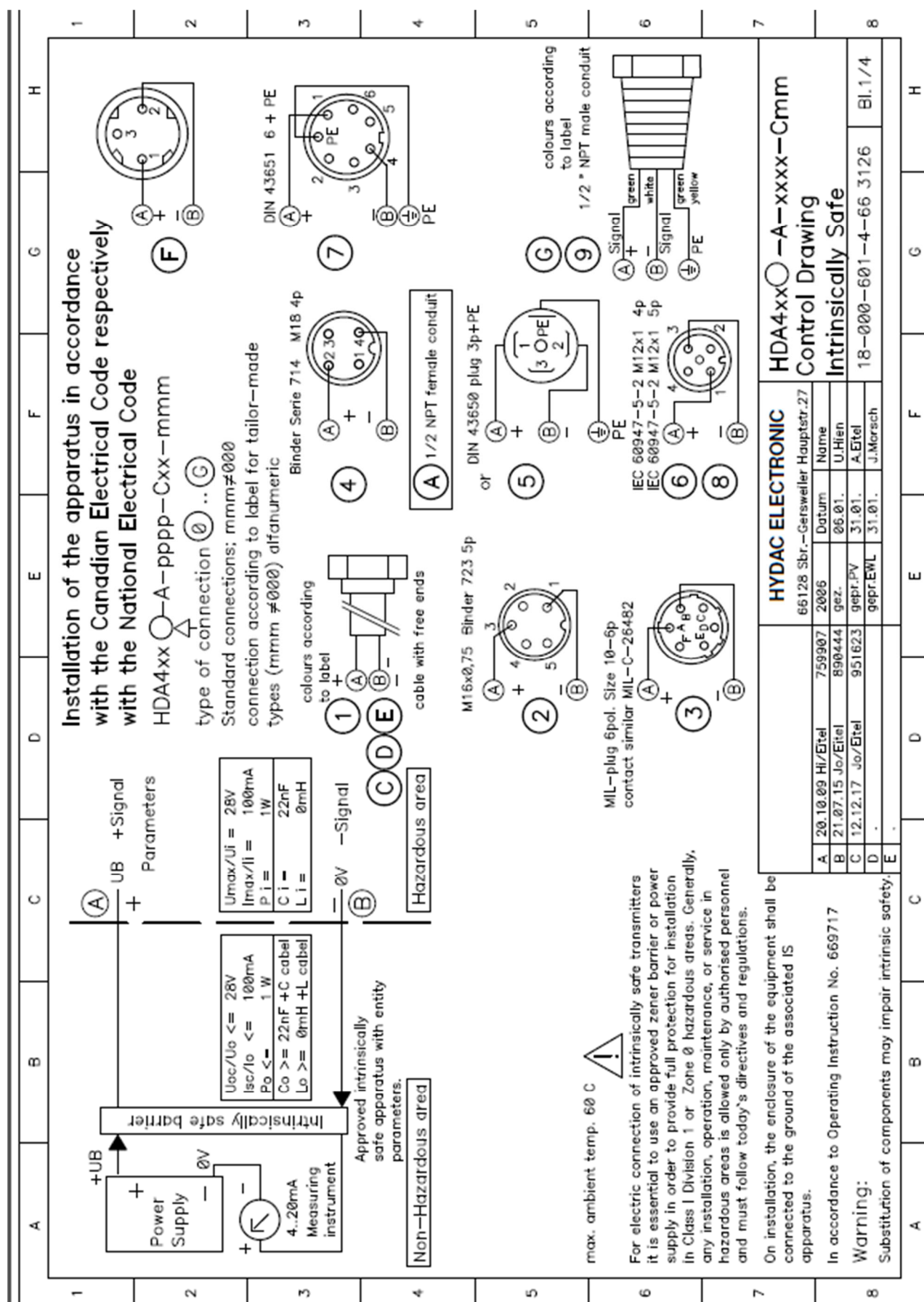


With 1/2-14 NPT Conduit

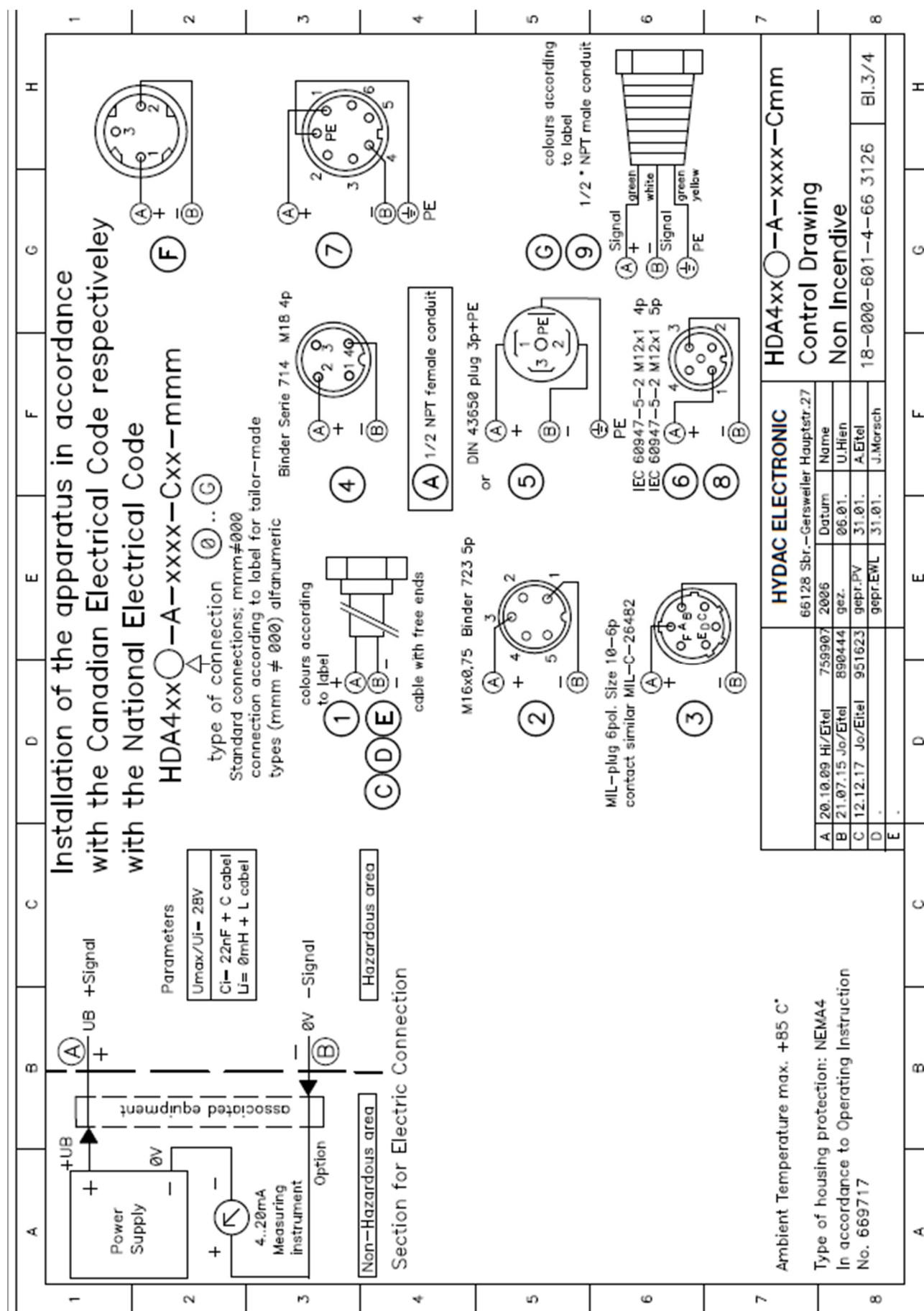


Female thread 7/16-20 UF2B
(SF 250 CX 20, Autoclave)

11 Control drawing



1	2	3	4	5	6	7	8																																			
A	B	C	D	E	F	G	H																																			
HDA4xx ○ — A — pppp — Cxx — mmm Intrinsically Safe 9, G Class I, Div.1 Group A,B,C,D,T6 Class II, Div.1 Group E,F,G Class III Ex ia IIC T6 Ga Class I, Zone 0, AEx ia IIC T6 Ga Ex ia IIIC T85°C T_{amb} 90°C Da Zone 20, AEx ia IIIC T85°C T_{amb} 90°C Da Ex ta IIIC T80, 90, 100°C Da Zone 20, AEx ta IIIC T80, 90, 100°C Da all Versions Class I, Div.1 Group A,B,C,D,T6 Ex ia IIC T6 Da Class I, Zone 0, AEx ia IIC T6 Da																																										
HYDAC ELECTRONIC 66128 Sbr.—Gertsweiler Hauptstr.27 <table border="1"> <tr> <td>A</td> <td>20.10.09</td> <td>Jo/Etel</td> <td>759907</td> <td>2006</td> <td>Datum</td> <td>Name</td> </tr> <tr> <td>B</td> <td>21.07.15</td> <td>Jo/Etel</td> <td>890444</td> <td>gez.</td> <td>06.01.</td> <td>D.Jost</td> </tr> <tr> <td>C</td> <td>12.12.17</td> <td>Jo/Etel</td> <td>951623</td> <td>gepr.PV</td> <td>31.01.</td> <td>A.Eitel</td> </tr> <tr> <td>D</td> <td>.</td> <td>.</td> <td>.</td> <td>gepr.EWL</td> <td>31.01.</td> <td>J.Morsch</td> </tr> <tr> <td>E</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> </table>								A	20.10.09	Jo/Etel	759907	2006	Datum	Name	B	21.07.15	Jo/Etel	890444	gez.	06.01.	D.Jost	C	12.12.17	Jo/Etel	951623	gepr.PV	31.01.	A.Eitel	D	.	.	.	gepr.EWL	31.01.	J.Morsch	E	.	.	.	.	.	.
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HDA4xx ○ — A — xxxx — Cmm Control Drawing Intrinsically Safe 18-000-601-4-66 3126 Bl.2/4																																										
A	B	C	D	E	F	G	H																																			



1	2	3	4	5	6	7	8																																			
A	B	C	D	E	F	G	H																																			
HDA4xx○—A—pppp—Cxx—mmm Non incensive 9, G Class I, Div.2 Group A,B,C,D,T6, T5, T4 Class II, Div.2 Group F, G Class III Ex na IIC T6, T5, T4 Gc Class I, Zone 2, AEx na IIC T6, T5, T4 Gc Ex tc IIIB T80 °C,T90 °C,T100 °C Dc Zone 22,AEx tc IIIB T80 °C,T90 °C,T100 °C Dc Class II, Div.1 Group E, F, G Ex ta IIIB T80 °C,T90 °C,T100 °C Da Zone 20, AEx ta IIIB T80 °C,T90 °C,T100 °C Da all Versions Class I, Div.2 Group A,B,C,D,T6, T5, T4 Class II, Div.2 Group F,G Class III Ex na IIC T6, T5, T4 Gc Class I, Zone 2, AEx na IIC T6, T5, T4 Gc Ex tc IIIB T80 °C,T90 °C,T100 °C Dc Ex tc IIC T80 °C,T90 °C,T100 °C Dc Zone 22, AEx tc IIC T80 °C,T90 °C,T100 °C Dc Ta max 70 °C for HDA4x ○ x ; △ — = 6; M12 Plug																																										
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E	.	.	.	.	.	.																																				
A	B	C	D	E	F	G	H																																			

12 CSA certificate

	
Certificate of Compliance	
Certificate: 1760344	Master Contract: 224264 (224264)
Project: 70155216	Date Issued: 2017-12-15
Issued to: Hydac Electronic GmbH Hauptstrasse 27 Saarbruecken, Saarland 66128 GERMANY Attention: Alwin Eitel	
<i>The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.</i>	
	Issued by: Konstantin Rybalko Konstantin Rybalko
<u>PRODUCTS</u>	
CLASS - C225804 - PROCESS CONTROL EQUIPMENT-Intrinsically Safe, Entity - For Hazardous Locations CLASS - C225884 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity-- For Hazardous Locations - Certified to US Standards	
Class I, Div. 1, Group A, B, C & D, TX; Class II, Div. 1, Group E, F & G; Class III; Ex ia IIC TX Ga; Class I, Zone 0, AEx ia IIC TX Ga; Ex ia IIIIC TX Da; Zone 20, AEx ia IIIIC TX Da; Ex ta IIIIC TX Da; Zone 20, AEx ta IIIIC TX Da;	
- Pressure Transducer, series HDA 4ab9-A-, HDA 4abA-A- and HDA 4abG-A-	
Input rated 12 - 28 Vdc, 4 - 20 mA; with entity parameters: $U_i (V_{max}) = 28\text{ V}$, $I_i (I_{max}) = 100\text{ mA}$, $P_i = 1\text{ W}$, $C_i = 22\text{ nF}$, $L_i = 0\text{ mH}$; intrinsically safe when connected in accordance with Installation Drawing No. 18-00-601-4-66 3126, page 1.	
DQD 507 Rev. 2016-02-18	Page 1



Certificate: 1760344
Project: 70155216

Master Contract: 224264
Date Issued: 2017-12-15

Ambient temperature range:
Ex ia IIC & Ex ia IIIC: -40°C to +60°C;
Ex ta IIIC: -40°C to +80°C;

- Pressure Transducer, series HDA 4ab9-F21-, HDA 4abA- F21-; HDA 4abG- F21-

Input rated 12 - 28 Vdc, 4 - 20 mA; with entity parameters: $U_i (V_{max}) = 28 \text{ V}$, $I_i (I_{max}) = 100 \text{ mA}$, $P_i = 0.7 \text{ W}$, $C_i = 22 \text{ nF}$, $L_i = 0 \text{ mH}$; intrinsically safe when connected in accordance with Installation Drawing No. 18-00-601-4-663893, page 1.

Ambient temperature range:
Ex ia IIC & Ex ia IIIC: -40°C to +70°C;
Ex ta IIIC: -40°C to +80°C;

Maximum Ambient Temperature (°C)	Temperature Class (Ex ia IIC)	Maximum Surface Temperature (T) (Ex ta IIIC) (°C)	Maximum Surface Temperature (T) (Ex ia IIIC), (°C)	Maximum Surface Temperature (T ₅₀₀) (Ex ta IIIC), (°C)
60	T6	80	85	90
70	T5	90	95	100
80	-	100	-	110
85	T4	-	-	-

Class I, Div. 1, Group A, B, C & D, TX;
Ex ia IIC TX Ga;
Class I, Zone 0, AEx ia IIC TX Ga;

- Pressure Transducer, series HDA 4abc-A-

Input rated 12 - 28 Vdc, 4 - 20 mA; with entity parameters: $U_i (V_{max}) = 28 \text{ V}$, $I_i (I_{max}) = 100 \text{ mA}$, $P_i = 1 \text{ W}$, $C_i = 22 \text{ nF}$, $L_i = 0 \text{ mH}$; intrinsically safe when connected in accordance with Installation Drawing No. 18-00-601-4-663126, page 1.

Ambient temperature range: -40 °C to +60°C.
Temperature Class: T6

- Pressure Transducer, series HDA 4abc-F21-

Input rated 12 - 28 Vdc, 4 - 20 mA; with entity parameters: $U_i (V_{max}) = 28 \text{ V}$, $I_i (I_{max}) = 100 \text{ mA}$, $P_i = 0.7 \text{ W}$, $C_i = 22 \text{ nF}$, $L_i = 0 \text{ mH}$; intrinsically safe when connected in accordance with Installation Drawing No. 18-00-601-4-663893, page 1.

Ambient temperature range: -40 °C to +70°C.
Temperature Class: T6 @ Tamb +60 °C, T5 @ Tamb +70 °C



Certificate: 1760344
Project: 70155216

Master Contract: 224264
Date Issued: 2017-12-15

Notes:

1. Measures shall be taken to avoid ignition due to impact for models utilizing light metal enclosures.
2. Measures shall be taken to avoid ignition due to electrostatic charges for installation of device incorporating external polymeric components.
3. The process separation element shall be protected against environmental stress.

CLASS 2258-02 – PROCESS CONTROL EQUIPMENT - For Hazardous Locations

CLASS 2258-82 – PROCESS CONTROL EQUIPMENT - For Hazardous Locations - Certified to US Standards

Class II, Div. 1, Group E, F & G;

Class III;

Ex ta IIIC TX Da;

Zone 20, AEx ta IIIC TX Da;

- Pressure Transducer, series HDA 4ab9-A-, HDA 4abA-A-, HDA 4abG-A- and series HDA 4ab9-F21-, HDA 4abA- F21-, HDA 4abG- F21-

Input rated 12 - 28 Vdc, 4 - 20 mA; Ambient temperature range: -40°C to +80°C.

Maximum Ambient Temperature (°C)	Maximum Surface Temperature (T) (°C)
60	80
70	90
80	100

Class I, Div. 2, Group A, B, C & D, T4;

Class II, Div. 2, Group F & G;

Class III;

Ex nA IIC T4 Gc;

Class I, Zone 2, A/Ex nA IIC T4 Gc;

Ex tc IIIB T100 Dc;

Zone 22, AEx tc IIIB T100 Dc;

- Pressure Transducer, series HDA 4ab9-A- and HDA 4abG-A- and series HDA 4ab9-F21-, HDA 4abG-A- F21-

Input rated 12 - 28 Vdc.

Degree of Protection provided by the enclosure: IP6x

Ambient temperature range

Ex nA IIC: -40°C to +85°C,

Ex tc IIIC: -40°C to +80°C



Certificate: 1760344
Project: 70155216

Master Contract: 224264
Date Issued: 2017-12-15

Maximum Ambient Temperature (°C)	Temperature Class (Ex nA IIC)	Maximum Surface Temperature (T) (Ex tc IIIC) (°C)
60	T6	80
70	T5	90
80	-	100
85	T4	-

Class I, Div. 2, Group A, B, C & D, TX;

Class II, Div. 2, Group F & G;

Class III;

Ex ic IIC TX Gc;

Class I, Zone 2, AEx ic IIC TX Gc;

Ex ic IIIB TX Dc;

Ex tc IIIB TX Dc;

Zone 22, AEx tc IIIB TX Dc;

- Pressure Transducer, series HDA 4abc-A-

Input rated 12 - 28 Vdc, Ci = 22 nF, Li = 0 mH, non-incendive when connected in accordance with Installation Drawing No. 18-00-601-4-66 3126, page 2.

- Pressure Transducer, series HDA 4abc-F21-

Input rated 12 - 28 Vdc, Ci = 12 nF, Li = 0 mH, non-incendive when connected in accordance with Installation Drawing No. 18-00-601-4-663893, page 2.

Degree of Protection provided by the enclosure: IP6x

Ambient temperature range:

Ex ic IIC: -40 to +85°C,

Ex ic IIIC & Ex tc IIIC: -40°C to +80°C

Maximum Ambient Temperature (°C)	Temperature Class (Ex ic IIC)	Maximum Surface Temperature (T) (Ex tc IIIC) (°C)
60	T6	80
70	T5	90
80	-	100
85	T4	-

Notes: Measures shall be taken to avoid ignition due to impact for models utilizing light metal enclosures.



Certificate: 1760344
Project: 70155216

Master Contract: 224264
Date Issued: 2017-12-15

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-M91	- General Requirements - Canadian Electrical Code, Part 1
C22.2 No 61010-1: 2012	- Safety requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 1: General Requirements
UL 61010-1 3 rd Ed.	- Safety requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 1: General Requirements
CAN/CSA-C22.2 No. 25 -1966	- Enclosures for Use in Class II Groups E, F, and G Hazardous Locations
C22.2 No. 30-M1986	- Explosion-Proof Enclosures for Use in Class I Hazardous Locations
CAN/CSA-C22.2 No. 157-92	- Intrinsically Safe and Non-Incensive Equipment for Use in Hazardous Locations
ANSI/UL Standard 508	- Electric Industrial Control Equipment
ANSI/UL Standard 913	- Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II and III, Div. 1 Hazardous (Classified) Locations
C22.2 NO. 213 / ISA-12.12.01: 2016	- Nonincensive electrical equipment for use in Class I and II, Division 2 and Class III, Divisions 1 and 2 hazardous (classified) locations
CAN/CSA-E60079-0-02/ UL 60079-0	- Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements
CAN/CSA-E60079-11 -02/ UL 60079-11	- Electrical Apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety "i"
CAN/CSA-E60079-15-02/ UL 60079-15	- Electrical Apparatus for Explosive Gas Atmospheres - Part 15: Type of Protection "n"
C22.2 No 60079-0 / UL 60079-0 6 th Ed.	- Explosive Atmospheres - Part 0: General Requirements
C22.2 No 60079-11 / UL 60079-11 6 th Ed.	- Explosive Atmospheres - Part 11: Equipment protected by Intrinsic Safety "i"
C22.2 No 60079-15 / UL 60079-15 4 th Ed.	- Explosive Atmospheres - Part 15: Equipment protected by type of protection "n"
C22.2 No 60079-26 / UL 60079-26 2 nd Ed.	- Explosive Atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga
C22.2 No 60079-31 / UL 60079-31 1 st Ed.	- Explosive Atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

Notes:

1. C22.2 No. 30 was used as a guide and is included solely to allow direct process connection.



Supplement to Certificate of Compliance

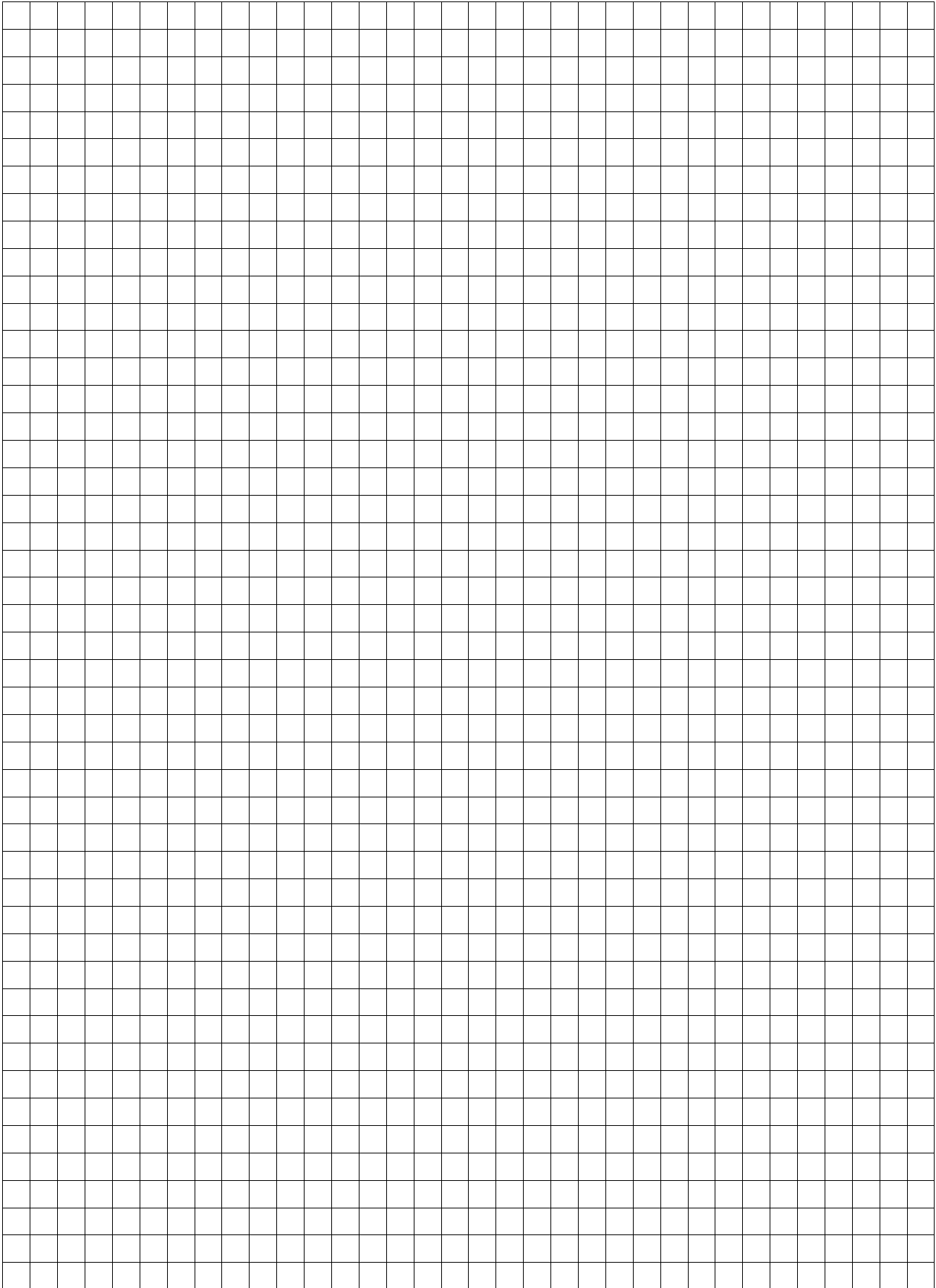
Certificate: 1760344

Master Contract: 224264 (224264)

*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
70155216	2017-12-15	Update to report 1760344 to cover addition of HDA 4xxx-F21 (HART) model based on existing ExTR; changes to existing models including update to documentation and mechanical changes; applicable requirements update to replace obsolete standards.
1951662	2007-09-10	Update to report 1760344 for construction changes
1760344	2006-03-10	Original certification



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Note

The information and particulars provided in this manual apply to the operating conditions and applications described herein. For applications and operating conditions not described, please contact the relevant technical department.

If you have any questions, suggestions, or encounter any problems of a technical nature, please contact your Hydac representative.

Subject to technical modifications.