

## HYDAC INTERNATIONAL

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### Pressure Transmitter HDA 4300 Ex applications

Relative pressure Accuracy 0.25 %

Intrinsically Safe  
Non-Incendive  
CSA approval



#### Description:

The pressure transmitter HDA 4300 in CSA version has been specially developed for the North American market for use in potentially explosive atmospheres and is based on the HDA 4000 series.

As with the industry model, the HDA 4300 in CSA version has a very accurate and robust sensor cell with a thin-film strain gauge on a stainless steel membrane.

Intended fields of application are, for example, the oil and gas industry, on gas turbines or in locations with high levels of dust contamination, e.g. in mills.

#### Protection types and applications:

##### Intrinsically safe:

- Class I Div. 1 Group A, B, C, D T6 [C, US]
- Class I Zone 0 AEx ia IIC T6 [US]
- Ex ia IIC T6 [C]

##### Class I, II, III

- Div. 1
- Group A, B, C, D, E, F, G T6 [C, US]

##### Non-incendive:

- Class I Div. 2 Group A, B, C, D T4A [C, US]
- Class I Zone 2 AEx nL IIC T4 [US]
- Class I Zone 2 Ex nL IIC T4 [C]

##### Class I, II, III

- Div. 2
- Group A, B, C, D, F, G T4A [C, US]
- Class I Zone 2 AEx nA II T4 [US]
- Class I Zone 2 Ex nA II T4 [C]

#### Technical data:

| Input data                                                           |                                                                                                                                                                                                                   |     |     |     |     |     |      |      |      |      |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|------|------|------|------|
| Measuring ranges <sup>1)</sup>                                       | bar                                                                                                                                                                                                               | 6   | 16  | 40  | 60  | 100 | 250  | 400  | 600  | 1000 |
| Overload pressures                                                   | bar                                                                                                                                                                                                               | 15  | 32  | 80  | 120 | 200 | 500  | 800  | 1000 | 1600 |
| Burst pressure                                                       | bar                                                                                                                                                                                                               | 100 | 200 | 200 | 300 | 500 | 1000 | 2000 | 2000 | 3000 |
| Mechanical connection                                                | G1/4 A ISO 1179-2                                                                                                                                                                                                 |     |     |     |     |     |      |      |      |      |
| Tightening torque, recommended                                       | 20 Nm                                                                                                                                                                                                             |     |     |     |     |     |      |      |      |      |
| Parts in contact with fluid                                          | Stainless steel: 1.4542; 1.4571; 1.4548; 1.4435; 1.4404; 1.4301                                                                                                                                                   |     |     |     |     |     |      |      |      |      |
|                                                                      | Seal: FKM                                                                                                                                                                                                         |     |     |     |     |     |      |      |      |      |
| Output data                                                          |                                                                                                                                                                                                                   |     |     |     |     |     |      |      |      |      |
| Output signal, permitted load resistance                             | 4 .. 20 mA, 2-conductor<br>$R_{Lmax} = (U_B - 12 \text{ V}) / 20 \text{ mA [k}\Omega\text{]}$                                                                                                                     |     |     |     |     |     |      |      |      |      |
| Accuracy acc. to DIN 16086, terminal based                           | $\leq \pm 0.25 \text{ \% FS typ.}$<br>$\leq \pm 0.5 \text{ \% FS max.}$                                                                                                                                           |     |     |     |     |     |      |      |      |      |
| Accuracy, B.F.S.L.                                                   | $\leq \pm 0.15 \text{ \% FS typ.}$<br>$\leq \pm 0.25 \text{ \% FS max.}$                                                                                                                                          |     |     |     |     |     |      |      |      |      |
| Temperature compensation                                             | $\leq \pm 0.008 \text{ \% FS / } ^\circ\text{C typ.}$<br>$\leq \pm 0.015 \text{ \% FS / } ^\circ\text{C max.}$                                                                                                    |     |     |     |     |     |      |      |      |      |
| Zero point                                                           | $\leq \pm 0.008 \text{ \% FS / } ^\circ\text{C typ.}$<br>$\leq \pm 0.015 \text{ \% FS / } ^\circ\text{C max.}$                                                                                                    |     |     |     |     |     |      |      |      |      |
| Temperature compensation                                             | $\leq \pm 0.008 \text{ \% FS / } ^\circ\text{C typ.}$<br>$\leq \pm 0.015 \text{ \% FS / } ^\circ\text{C max.}$                                                                                                    |     |     |     |     |     |      |      |      |      |
| Span                                                                 | $\leq \pm 0.015 \text{ \% FS / } ^\circ\text{C max.}$                                                                                                                                                             |     |     |     |     |     |      |      |      |      |
| Non-linearity acc. to DIN 16086, terminal based                      | $\leq \pm 0.3 \text{ \% FS max.}$                                                                                                                                                                                 |     |     |     |     |     |      |      |      |      |
| Hysteresis                                                           | $\leq \pm 0.1 \text{ \% FS max.}$                                                                                                                                                                                 |     |     |     |     |     |      |      |      |      |
| Repeatability                                                        | $\leq \pm 0.05 \text{ \% FS}$                                                                                                                                                                                     |     |     |     |     |     |      |      |      |      |
| Rise time                                                            | $\leq 1.5 \text{ ms}$                                                                                                                                                                                             |     |     |     |     |     |      |      |      |      |
| Long-term drift                                                      | $\leq \pm 0.1 \text{ \% FS typ. / year}$                                                                                                                                                                          |     |     |     |     |     |      |      |      |      |
| Environmental conditions                                             |                                                                                                                                                                                                                   |     |     |     |     |     |      |      |      |      |
| Compensated temperature range                                        | $-25 \dots +85 \text{ } ^\circ\text{C}$                                                                                                                                                                           |     |     |     |     |     |      |      |      |      |
| Operating/ambient temperature range <sup>2)</sup>                    | Intrinsically safe: $T_a = -40 \dots +60 \text{ } ^\circ\text{C} / -20 \dots +60 \text{ } ^\circ\text{C}$<br>Non-incendive: $T_a = -40 \dots +85 \text{ } ^\circ\text{C} / -20 \dots +85 \text{ } ^\circ\text{C}$ |     |     |     |     |     |      |      |      |      |
| Storage temperature range                                            | $-40 \dots +100 \text{ } ^\circ\text{C}$                                                                                                                                                                          |     |     |     |     |     |      |      |      |      |
| Fluid temperature range <sup>2)</sup>                                | Intrinsically safe: $T_a = -40 \dots +60 \text{ } ^\circ\text{C} / -20 \dots +60 \text{ } ^\circ\text{C}$<br>Non-incendive: $T_a = -40 \dots +85 \text{ } ^\circ\text{C} / -20 \dots +85 \text{ } ^\circ\text{C}$ |     |     |     |     |     |      |      |      |      |
| Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz        | $\leq 10 \text{ g (1/2-14 NPT Conduit)}$<br>$\leq 20 \text{ g (male connector)}$                                                                                                                                  |     |     |     |     |     |      |      |      |      |
| Protection class acc. to DIN EN 60529 / NEMA <sup>3)</sup> ISO 20653 | IP 65, NEMA 4 (male connector)<br>IP6K9K (1/2-14 NPT Conduit)                                                                                                                                                     |     |     |     |     |     |      |      |      |      |
| Relevant data for Ex applications                                    |                                                                                                                                                                                                                   |     |     |     |     |     |      |      |      |      |
| Supply voltage                                                       | 12 .. 28 V DC                                                                                                                                                                                                     |     |     |     |     |     |      |      |      |      |
| Max. input current                                                   | $I_i = 100 \text{ mA}$                                                                                                                                                                                            |     |     |     |     |     |      |      |      |      |
| Max. input power                                                     | up to 28 V: $P_i = 1 \text{ W}$                                                                                                                                                                                   |     |     |     |     |     |      |      |      |      |
| Connection capacitance of the sensor                                 | $C_i \leq 22 \text{ nF}$                                                                                                                                                                                          |     |     |     |     |     |      |      |      |      |
| Inductance of the sensor                                             | $L_i = 0 \text{ mH}$                                                                                                                                                                                              |     |     |     |     |     |      |      |      |      |
| Insulation voltage <sup>4)</sup>                                     | 50 V AC, with integrated overvoltage protection acc. to EN 61000-6-2                                                                                                                                              |     |     |     |     |     |      |      |      |      |
| Other data                                                           |                                                                                                                                                                                                                   |     |     |     |     |     |      |      |      |      |
| Residual ripple of supply voltage                                    | $\leq 5 \text{ \%}$                                                                                                                                                                                               |     |     |     |     |     |      |      |      |      |
| Current consumption                                                  | $\leq 25 \text{ mA}$                                                                                                                                                                                              |     |     |     |     |     |      |      |      |      |
| Life expectancy <sup>5)</sup>                                        | $> 10 \text{ million cycles, } 0 \dots 100 \text{ \% FS}$                                                                                                                                                         |     |     |     |     |     |      |      |      |      |
| Weight                                                               | $\sim 150 \text{ g; } \sim 300 \text{ g (1/2-14 NPT Conduit)}$                                                                                                                                                    |     |     |     |     |     |      |      |      |      |

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range; B.F.S.L. = Best Fit Straight Line

<sup>1)</sup> psi measuring ranges on request

<sup>2)</sup>  $-20 \text{ } ^\circ\text{C}$  with FKM seal,  $-40 \text{ } ^\circ\text{C}$  on request

<sup>3)</sup> With mounted mating connector in corresponding protection class

<sup>4)</sup> 500 V AC on request

<sup>5)</sup> Measuring range 1000 bar:  $> 1 \text{ million cycles (} 0 \dots 100 \% \text{ FS)}$

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## Fields of application:

| Group                        | 1                                                                                         | 2                                                                                                                                         | 3                                                                                                                                                          | 4                                                                                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Protection type</b>       | Intrinsically safe<br>Gases and dusts                                                     | Intrinsically safe<br>Gases                                                                                                               | Non-incendive<br>(with field wiring)<br>Gases                                                                                                              | Non-incendive<br>Gases and dusts                                                                                                                                              |
| <b>Certificate</b>           | CSA 1760344                                                                               |                                                                                                                                           |                                                                                                                                                            |                                                                                                                                                                               |
| <b>Application fields</b>    | Intrinsically safe<br>- Class I, II, III<br>Division 1<br>Group<br>A, B, C, D, E, F, G T6 | Intrinsically safe<br>- Class I<br>Division 1<br>Group<br>A, B, C, D T6<br><br>- Class I<br>Zone 0<br>AEx ia IIC T6<br><br>- Ex ia IIC T6 | Non-incendive<br>- Class I<br>Division 2<br>Group<br>A, B, C, D T4A<br><br>- Class I<br>Zone 2<br>AEx nL IIC T4<br><br>- Class I<br>Zone 2<br>Ex nL IIC T4 | Non-incendive<br>- Class I, II, III<br>Division 2<br>Group<br>A, B, C, D, F, G T4A<br><br>- Class I<br>Zone 2<br>Ex nA II T4<br><br>- Class I<br>Zone 2<br>AEx nA II T4 IP 6x |
| <b>Electrical connection</b> | 9                                                                                         | 5, 9, A                                                                                                                                   | 5, 9, A                                                                                                                                                    | 9                                                                                                                                                                             |
| <b>Code for model code</b>   | A                                                                                         | B                                                                                                                                         |                                                                                                                                                            | C                                                                                                                                                                             |

## Model code:

HDA 4 7 4 X - A - XXXX - C N X - 000 (2m)

### Mechanical connection

4 = G1/4 A ISO 1179-2

### Electrical connection

5 = male EN175301-803

3 pole + PE

(IP67 mating connector supplied)

9 = 1/2-14 NPT Conduit (male thread),

single leads

A = male EN175301-803

3 pole + PE

(1/2" Conduit female thread)

### Output signal

A = 4 .. 20 mA, 2-conductor

### Measuring ranges in bar

0006, 0016; 0040; 0060; 0100; 0250; 0400; 0600; 1000

### Approval

C = CSA

### Isolation voltage

N = 50 V AC to housing

### Protection types and applications (code)

A = Group 1

B = Group 2 and 3

C = Group 4

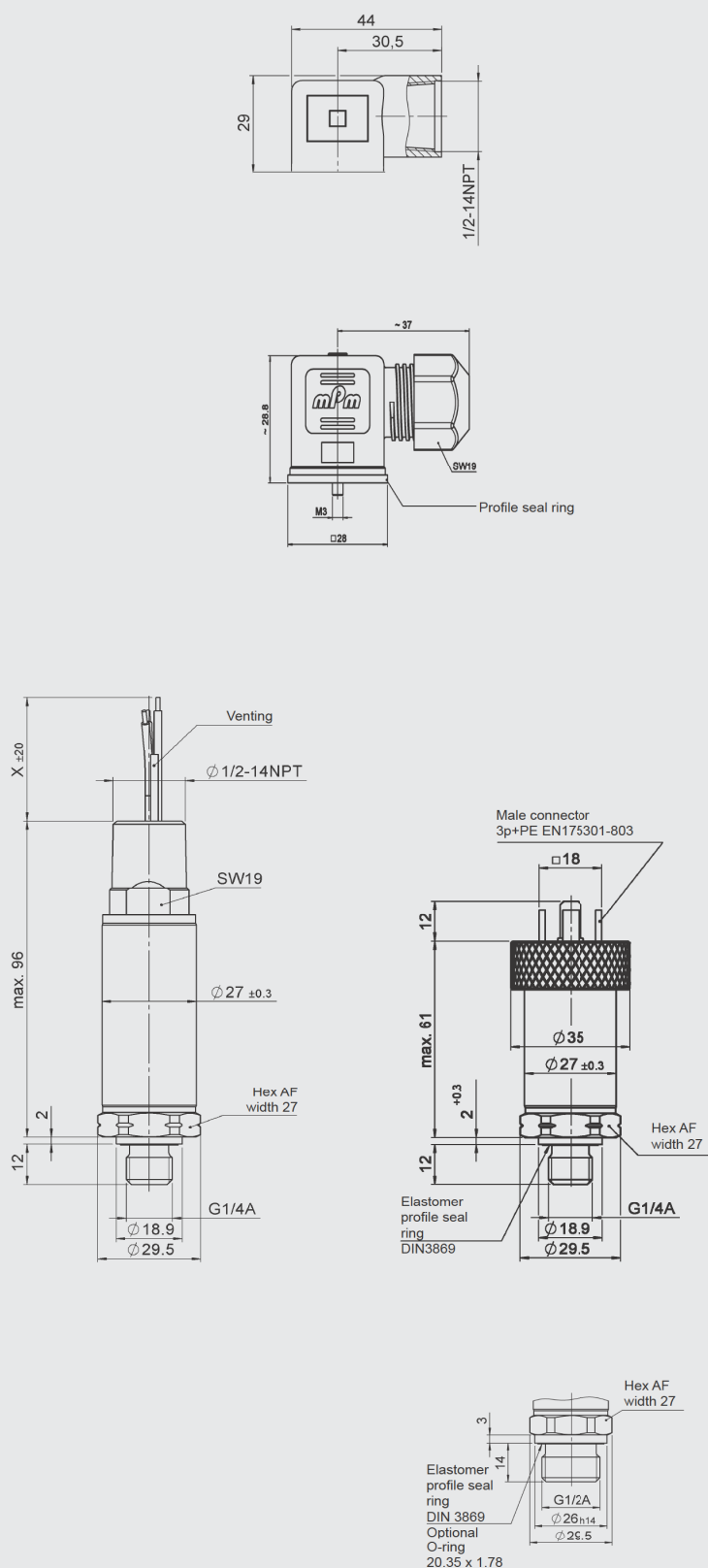
### Modification number

000 = standard

### Cable length in m (only for electr. connection code "9")

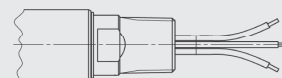
Standard = 2 m

## Dimensions:



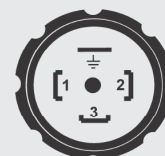
## Pin connections:

Conduit (single leads)



| Lead         | HDA 47X9-A |
|--------------|------------|
| green        | Signal +   |
| white        | Signal -   |
| green-yellow | Housing    |

EN175301-803



| Pin | HDA 47X5-A | HDA 47XA-A |
|-----|------------|------------|
| 1   | Signal +   | Signal +   |
| 2   | Signal -   | Signal -   |
| 3   | n.c.       | n.c.       |
| ⊥   | Housing    | Housing    |

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