

# Pressure Transmitters

## HDA 3000



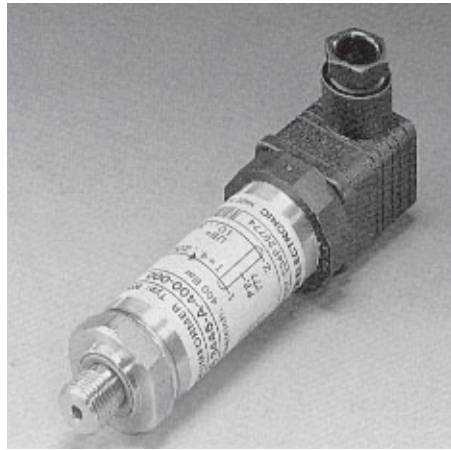
## Description

The HYDAC pressure transmitter range can provide the right transmitter for a multitude of applications in industry, the mobile sector, the laboratory and in service applications. All transmitters come with built-in electronics and all parts in contact with media are stainless steel.

The various models with all the usual standard signals allow easy connection to display and process electronics and can replace existing models when upgrading equipment.

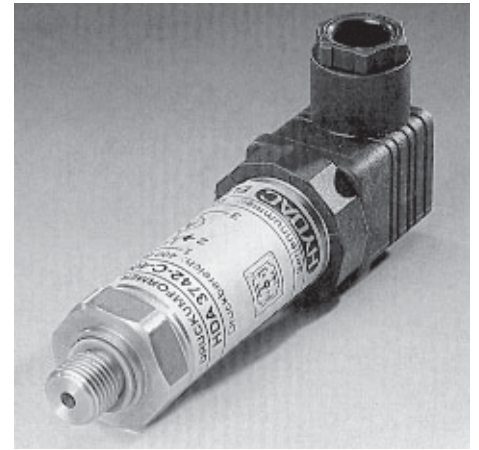
An extensive range of accessories gives additional scope with measured value display, analysis, process technology and know-how service. Please see the brochures on our complete range.

HYDAC's vast experience and extensive product range enable our specialists to find the best solution to your individual problems. Our specialists are always on hand.



### HDA 3400

The HDA 3400 has a pressure measurement cell with DMS on a stainless steel membrane. In the medium price range, it combines a high level of accuracy with robustness and has good EMC properties. It can be used in pneumatics and standard hydraulics.



### HDA 3700/3800

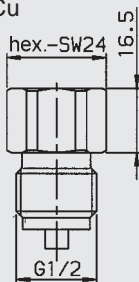
The HDA 3700/3800 pressure transmitters have a very robust and accurate sensor in modern thin-film technology and built-in evaluation electronics in SMD technology. During their development, emphasis was placed on high temperature stability and good EMC properties. They can be used in all branches of hydraulics and pneumatics.

As an option for sensitive applications, the HDA 3700 is also available to safety class EEx ia IIC T6. A separate data sheet is available on request.

## Mechanical accessories

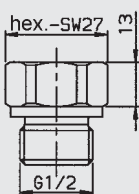
### ZBM 01

Adaptor for G ½ B male thread  
DIN EN 837  
Seal: Cu



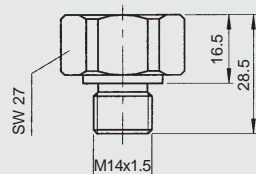
### ZBM 02

Adaptor for G ½ A male thread  
DIN 3852  
Seal: NBR



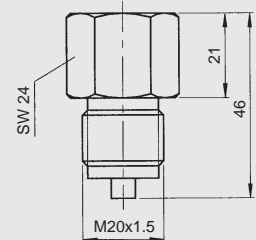
### ZBM 06

Adaptor for M14x1.5 male thread  
Seal: Viton



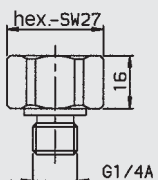
### ZBM 08

Adaptor for M20x1.5 male thread  
Seal: Cu



### ZBM 09

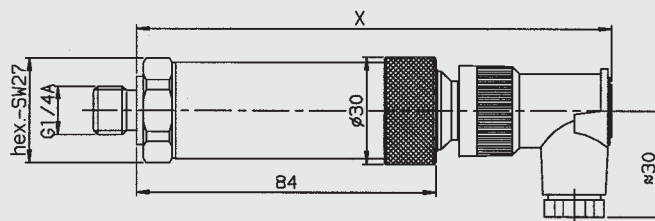
Adaptor with 0.8 mm orifice  
G ¼ female thread -  
G ¼ A male thread  
Seal: Viton



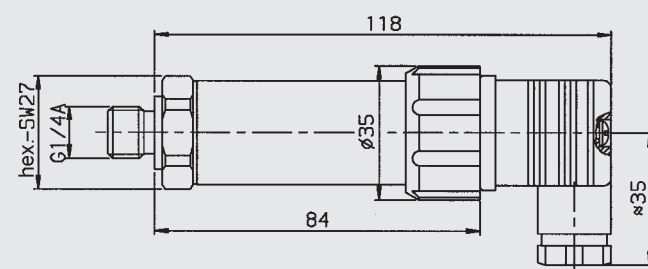
## Pressure transmitters

### HDA 3444 / HDA 3744 / HDA 3844

Dimension "x" with plug ZBE03: ≈135 mm  
Dimension "x" with plug ZBE02: ≈154 mm



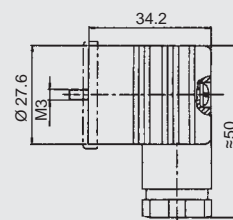
### HDA 3445 / HDA 3745 / HDA 3845



## Electrical accessories

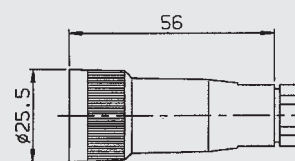
### ZBE 01 (for HDA 3XX5)

Right-angled  
plug to DIN 43650/ISO 4400



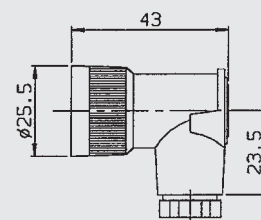
### ZBE 02 (for HDA 3XX4)

4-pole Binder plug,  
series 714 M18



### ZBE 03 (for HDA 3XX4)

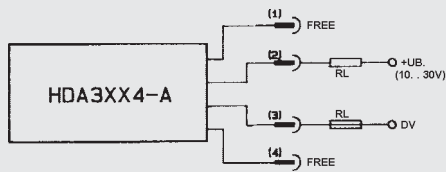
4-pole Binder plug,  
right angled,  
series 714 M18



## Circuit diagrams

### 4-pole Binder plug 714 M18

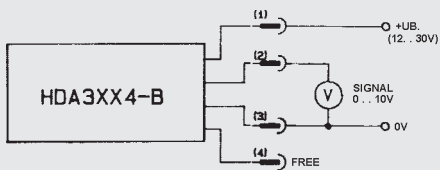
#### Two-conductor 4 . . 20 mA



The maximum permissible load resistance  $R_L$  is dependent on the supply voltage  $+UB$ .

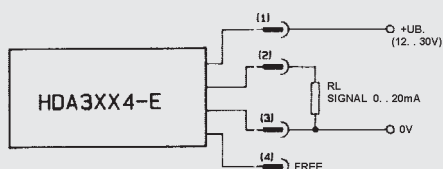
$$R_{L_{max}} = \frac{+UB - 10V}{20mA} (k\Omega)$$

#### Three-conductor 0 . . 10 V



The minimum permissible load resistance is 2 k $\Omega$ .

#### Three-conductor 0 . . 20 mA rising

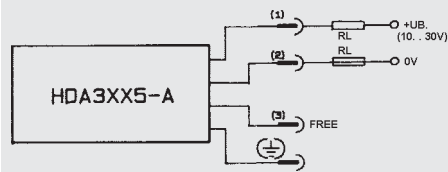


The maximum permissible load resistance  $R_L$  is dependent on the supply voltage  $+UB$ .

$$R_{L_{max}} = \frac{+UB - 7V}{20mA} (k\Omega)$$

### Appliance plug to DIN 43650

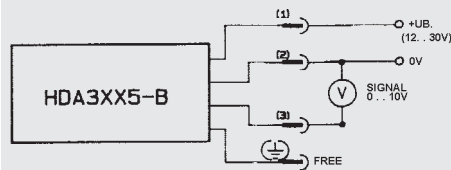
#### Two-conductor 4 . . 20 mA



The maximum permissible load resistance  $R_L$  is dependent on the supply voltage  $+UB$ .

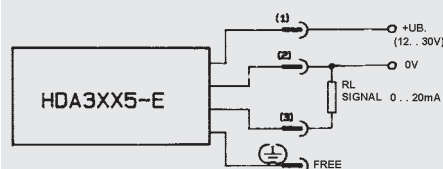
$$R_{L_{max}} = \frac{+UB - 10V}{20mA} (k\Omega)$$

#### Three-conductor 0 . . 10 V



The minimum permissible load resistance is 2 k $\Omega$ .

#### Three-conductor 0 . . 20 mA rising

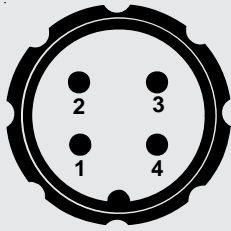


The maximum permissible load resistance  $R_L$  is dependent on the supply voltage  $+UB$ .

$$R_{L_{max}} = \frac{+UB - 7V}{20mA} (k\Omega)$$

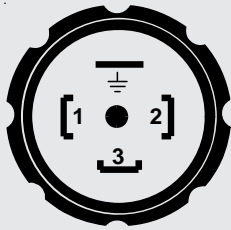
## Pin connections

Internal view of pin connections to suit 4-pole Binder plug (HDA 3XX4)



| PIN | 2-conductor | 3-conductor |
|-----|-------------|-------------|
| 1   | free        | UB          |
| 2   | signal +    | signal      |
| 3   | signal -    | 0 V         |
| 4   | free        | free        |

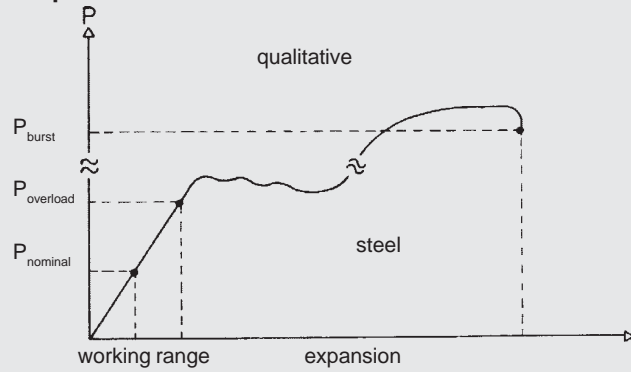
Internal view of pin connections to suit appliance plug DIN 43650 (HDA 3XX5)



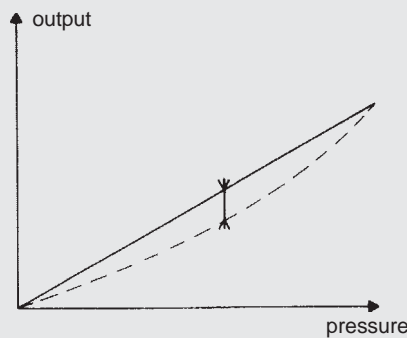
| PIN | 2-conductor | 3-conductor |
|-----|-------------|-------------|
| 1   | signal +    | UB          |
| 2   | signal -    | 0 V         |
| 3   | free        | signal      |

## Technical definitions

### Nominal / Burst pressure

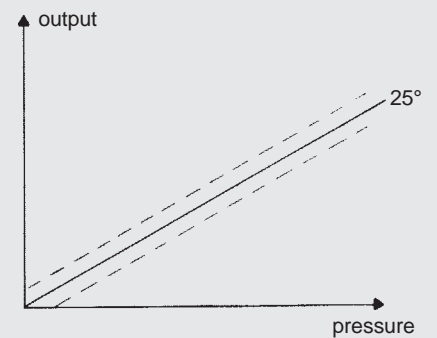


### Linearity



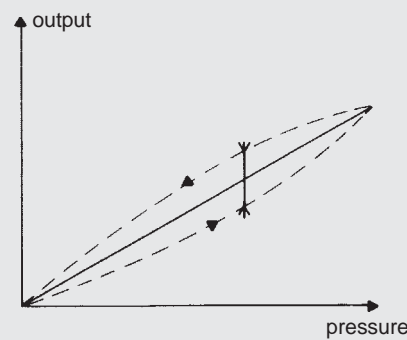
The linearity defines the largest possible deviation in % relative to the final value of the sensor curve from the ideal curve

### Temperature coefficient Zero point



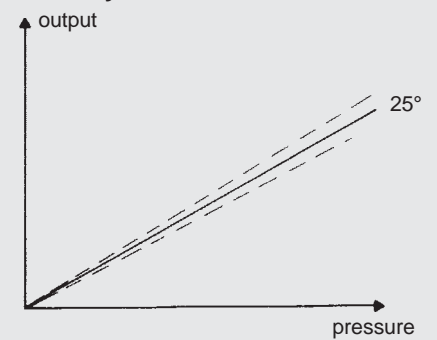
The zero point deviation, i.e. the parallel curve deviation due to temperature effect is defined in %/10 K relative to the final value. The details refer to the compensated range.

### Hysteresis



The sensor curves deviate at increasing and decreasing pressure. The maximum deviation in % relative to the final value is the hysteresis.

### Temperature coefficient Sensitivity



The change in sensitivity, i.e. the variation in slope of the sensor signal due to temperature effect, is given in %/10 K of final value. The details refer to the compensated range.

## Technical data

| Input data                                                                                               |                  | HDA 3400                                                | HDA 3700                                                | HDA 3800                                                |
|----------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Measuring ranges                                                                                         | bar              | 16; 60; 100; 250; 400; 600                              | 6; 16; 60; 100; 250; 400; 600                           | 6; 16; 60; 100; 250; 400; 600                           |
| Overload pressure                                                                                        | bar              | 150 % FS                                                | 20; 32; 200; 200; 500; 800; 900                         | 20; 32; 200; 200; 500; 800; 900                         |
| Burst pressure                                                                                           | bar              | 300 % FS                                                | 100; 200; 500; 500; 1000; 2000; 2000                    | 100; 200; 500; 500; 1000; 2000; 2000                    |
| Parts in contact with media                                                                              |                  | stainless steel                                         | stainless steel                                         | stainless steel                                         |
| Output data                                                                                              |                  |                                                         |                                                         |                                                         |
| Curve deviation at max. setting to DIN16086 (accuracy class)                                             | % FS             | ≤ ± 1                                                   | ≤ ± 0.5                                                 | ≤ ± 0.3                                                 |
| Curve deviation at min. setting                                                                          | % FS             | ≤ ± 0.6                                                 | ≤ ± 0.3                                                 | ≤ ± 0.2                                                 |
| Adjustment zero signal                                                                                   |                  | –                                                       | ≤ ± 2.5*)                                               | ≤ ± 2.5*)                                               |
| Adjustment range                                                                                         |                  | –                                                       | ≤ ± 2.5*)                                               | ≤ ± 2.5*)                                               |
| Temperature compensation zero point                                                                      | max. typ. %/10 K | ≤ ± 0.25<br>≤ ± 0.15                                    | ≤ ± 0.15<br>≤ ± 0.08                                    | ≤ ± 0.1<br>≤ ± 0.05                                     |
| Temperature compensation over range                                                                      | max. typ. %/10 K | ≤ ± 0.25<br>≤ ± 0.15                                    | ≤ ± 0.15<br>≤ ± 0.08                                    | ≤ ± 0.1<br>≤ ± 0.05                                     |
| Linearity to DIN 16086                                                                                   | max. typ. % FS   | ≤ ± 0.3<br>≤ ± 0.2                                      | ≤ ± 0.3<br>(from 100 bar:<br>≤ ± 0.2)<br>≤ ± 0.1        | ≤ ± 0.2<br>(from 100 bar:<br>≤ ± 0.15)<br>≤ ± 0.1       |
| Hysteresis                                                                                               | max. typ. % FS   | ≤ ± 0.4<br>≤ ± 0.25                                     | ≤ ± 0.1<br>≤ ± 0.05                                     | ≤ ± 0.1<br>≤ ± 0.05                                     |
| Repeatability                                                                                            | % FS             | ≤ ± 0.1                                                 | ≤ ± 0.05                                                | ≤ ± 0.05                                                |
| Rise time                                                                                                | ms               | approx. 1                                               | ≤ 0.5                                                   | ≤ 0.5                                                   |
| Long-term drift (6 months)                                                                               | % FS             | ≤ ± 0.3                                                 | ≤ ± 0.1                                                 | ≤ ± 0.1                                                 |
| Ambient conditions                                                                                       |                  |                                                         |                                                         |                                                         |
| Nominal temperature range                                                                                | °C               | 0...+ 70                                                | - 25...+ 85                                             | - 25...+ 85                                             |
| Operating temperature range                                                                              | °C               | - 25...+ 85                                             | - 40...+ 85                                             | - 40...+ 85                                             |
| Storage temperature range                                                                                | °C               | - 40...+100                                             | - 40...+100                                             | - 40...+100                                             |
| Fluid temperature range                                                                                  | °C               | - 40...+100                                             | - 40...+100                                             | - 40...+100                                             |
| CE mark                                                                                                  |                  | EN 50081-1;<br>EN 50081-2;<br>EN 50082-1;<br>EN 50082-2 | EN 50081-1;<br>EN 50081-2;<br>EN 50082-1;<br>EN 50082-2 | EN 50081-1;<br>EN 50081-2;<br>EN 50082-1;<br>EN 50082-2 |
| Vibration resistance to IEC 68-2-6 at 10 ... 500Hz                                                       |                  | approx. 20 g<br>(196.2 m/s <sup>2</sup> )               | approx. 20 g<br>(196.2 m/s <sup>2</sup> )               | approx. 20 g<br>(196.2 m/s <sup>2</sup> )               |
| Safety type to DIN 40050                                                                                 |                  | IP 65                                                   | IP 65                                                   | IP 65                                                   |
| Other data                                                                                               |                  |                                                         |                                                         |                                                         |
| Supply voltage 2-conductor                                                                               | V                | 10 .. 30                                                | 10 .. 30                                                | 10 .. 30                                                |
| Supply voltage 3-conductor                                                                               | V                | 12 .. 30                                                | 12 .. 30                                                | 12 .. 30                                                |
| Residual ripple supply voltage                                                                           | %                | ≤ 5                                                     | ≤ 5                                                     | ≤ 5                                                     |
| Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection |                  | available                                               | available                                               | available                                               |
| Current consumption 3-conductor                                                                          | mA               | approx. 25                                              | approx. 15                                              | approx. 15                                              |
| Weight                                                                                                   | g                | approx. 180                                             | approx. 180                                             | approx. 180                                             |
| Life expectancy                                                                                          | load cycle       | 10 million                                              | 10 million                                              | 10 million                                              |

**Torque ratings:** G ¼ A 17...20 Nm, G ½ A 45...50 Nm

**Note:** **FS(Full Scale)** = relative to the complete measuring range

\*) optionally accessible to customers

## Model code

HDA 3X 4 X - X - XXX - 000

**Type** \_\_\_\_\_  
(cell type and accuracy class)

- 4 = DMS on stainless steel membrane, 1 %
- 7 = thin-film, 0.5 %
- 8 = thin-film, 0.3 %

**Type of connection, mechanical** \_\_\_\_\_

- 4 = G ¼ A male thread

**Type of connection, electrical** \_\_\_\_\_

- 4 = 4-pole Binder plug (without connector)
- 5 = 5-pole appliance plug (without connector)

**Signal technology** \_\_\_\_\_

|                                   | HDA 34XX | HDA 37XX | HDA 38XX |
|-----------------------------------|----------|----------|----------|
| A = 2 conductor, 4...20 mA        | ●        | ●        | ●        |
| B = 3 conductor, 0...10 V         | ●        | ●        | ●        |
| E = 3 conductor, 0...20 mA rising |          | ●        | ●        |

**Pressure ranges in bar** \_\_\_\_\_

| HDA 34XX | HDA 37XX | HDA 38XX |
|----------|----------|----------|
| 016      | 006      | 006      |
| 060      | 016      | 016      |
| 100      | 060      | 060      |
| 250      | 100      | 100      |
| 400      | 250      | 250      |
| 600      | 400      | 400      |
|          | 600      | 600      |

**Modification number** \_\_\_\_\_

- 000 Standard
- E00 Specially protected to EEx ia IIC T6 (HDA 37XX with a 4...20 mA signal only)

## 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.