



 **SIL**  
Protect your process!

Pressure transducers  
with SIL assessment



Pressure transducers  
with flush connection



HydroFox® for  
level measurement



Pressure transducers  
OEM version

## CHAPTER 11

# Electronic pressure measuring instruments: pressure transducers, digital pressure gauges, pressure switches

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		DMU 600/20	DMU 01	DMU 02	DMU 02 Vario	DMU 03	DMU 04	DMU 05
Smallest measuring range		0/1 mbar	0/1 bar	0/600 mbar	0/1 bar	0/100 mbar	0/100 mbar	0/100 mbar
Largest measuring range		0/50 bar	0/400 bar	0/2,000 bar	0/1000 bar	0/600 bar	0/400 bar	0/600 bar
4–20 mA/HART	Output	•/-	•/-	•/-	•/-	•/-	•/-	•/-
0–10 V		•	•	•	•	•	•	•
≤ ± 1% FSO	Accuracy	•						
≤ ± 0.5% FSO			•	•				
≤ ± 0.35% FSO						•	•	•
≤ ± 0.1% FSO								•
Stainless steel	Wetted parts			•	•		•	•
Stainless steel, FKM						•		
Stainless steel, ceramic (AL <sub>2</sub> O <sub>3</sub> ), FKM			•					
Stainless steel, silicon, glass, silicone		•						
Aluminium, silicon, glass, silicone, PUR								
No pressure transmission liquid	Pressure transmission	•	•	•				
Paraffin oil, FDA					•		•	
Silicone oil						•		•
Connection thread	Process connection	•	•	•	•	•	•	•
Hygienic connections					•		•	
Flanges					•			
ISO 4400 connector	Electrical connection	•	•	•	•	•	•	•
M12 x 1		•	•	•	•	•	•	•
Fixed cable connection		•	•	•		•	•	
Cable gland							•	
Temperature of the medium ≥ 100 °C	Application area		•	•		•	•	•
Temperature of the medium < 100 °C		•			•			
Temperature of the medium < -25 °C			•	•			•	•
Temperature of the medium ≥ -25 °C		•			•		•	
Measuring range spread	Evaluation				•			
Indication of measured values								
ATEX certificate				•		•	•	•
SIL assessment						•	•	
Negative pressure (vacuum)	Application areas	•	•	•	•	•	•	•
Relative pressure measurement		•	•	•	•	•	•	•
Absolute pressure measurement			•				•	•
Differential pressure measurement								
Measurement of water / waste water		•	•	•	•	•	•	•
Measurement of oils		•	•	•	•	•	•	•
Measurement of chemicals				•	•		•	•
Measurement of food					•		•	
Measurement of pharmaceuticals					•		•	
Measurement of crystallising media					•		•	
Measurement of gases		•	•	•	•	•	•	•
Measurement of liquids		•	•	•	•	•	•	•

\* Depending on measuring range  
 \*\* Accuracy of mechanical local display

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# Pressure transducers

**Application** Pressure transducers are used for electronic pressure measurement in many industrial and building applications. Various measuring principles, output signals, materials, pressure transmission liquids and process connections allow pressure transducers to be used in almost any application. Pressure transducer versions are available for abrasive, pure, highly viscous, viscous or crystallising media as well as special models for hygienic processes.

## Typical applications areas

- Pneumatic/hydraulic
- Gas industry
- Process engineering
- Pharmaceutical and biotechnology applications
- Chemical industry and petrochemical industry
- Medical technology
- Laboratory applications
- Food applications
- Water treatment
- Waste water applications
- Mechanical and plant engineering
- Automation
- Filter monitoring
- Heating, refrigeration, air conditioning
- Automotive industry



Connection technology with numerous versions, diffusion-tight and extremely robust: pressure transducer DMU 02 Vario

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. Different pressure transducer versions are available which use a variety of measuring principles serving as the basis for sensing the pressure.

## Measuring principle and measuring cell

### Piezo-resistive polysilicon stainless steel measuring cell

An isolation layer made of non-conductive silicon oxide is coated to the stainless steel diaphragm (a high-precision part calculated in view of the force path) on the side facing away from the medium; after that, polysilicon is deposited. Semiconductor resistors are etched from this layer; a gold layer provides contacts. When pressure is applied and causes a deflection, the resistance changes. As compared to conventional strain gauges (conductors), polysilicon semiconductor sensors have a higher output signal.

Since the measuring cell is made of stainless steel, it can be directly welded to the process connection. This helps to prevent leaks caused by fatigue of the sealing material. These robust measuring cells are insensitive to shock and vibration and have a high resistance to overloads. They are used for pressure measurements from 600 mbar up to several thousand bar.

### Pressure transducers with polysilicon stainless steel measuring cells:

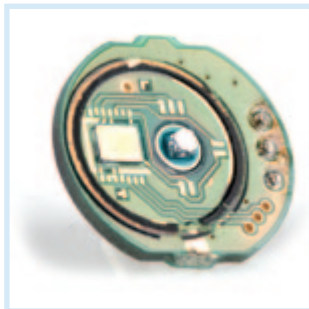
DMU 02, 02 Vario

### Benefits

- Robust measuring cell
- High resistance to chemicals
- No seal
- No internal transmission liquid
- High output signal
- High long-term stability
- Shock- and vibration-resistant



**Measuring principle and measuring cell**



**Piezo-resistive silicon measuring cells**

The function principle of piezo-resistive silicon measuring cells is based on a silicon chip with measuring resistors in the diaphragm. When pressure is applied and causes a deflection of the diaphragm, the resistance changes.

As opposed to open measuring cells which can only be used with certain, non-corrosive media, the silicon chips of encapsulated measuring cells are contained in a gas-evacuated protective housing filled with transmission liquid; this housing is closed with an elastic diaphragm at the pressure side.

If the diaphragm is deflected as a result of the application of pressure, the transmission liquid is displaced towards the sensor.

Silicon measuring cells are highly sensitive and have a high output signal. This allows for measurements at very low pressures and provides for high chemical resistance.

**Pressure transducers with encapsulated silicon stainless steel measuring cells:**

DMU 03, 04, 05, 08, 11, 12, 13, 14

**Pressure transducers with open silicon measuring cells:**

DMU 10 D, 600/20

**Benefits**

- High resistance to chemicals
- High output signal
- Very small measuring ranges possible
- High accuracy



**Measuring principle and measuring cell**



**Ceramic measuring cells**

Aluminium oxide ( $Al_2O_3$ ) that is resistant to almost all chemicals is used for ceramic measuring cells. Piezo-resistive thick-film measuring cells consist of a base and a diaphragm made of aluminium oxide ceramic. During the production process, measuring resistors are burnt into the side of the diaphragm facing away from the medium; they change when pressure is applied to the diaphragm and causes a deflection. Ceramic thick-film measuring cells are used for medium pressure from 1 bar to up to 400 bar.

Capacitance ceramic measuring cells use a ceramic base and a ceramic diaphragm which are gold-coated on the side facing away from the pressure. The gold coating forms the electrode pair of a capacitor; they are positioned at a distance of just a few  $\mu m$  away from each other. Pressure causes a deflection of the diaphragm and the capacitance changes. Capacitance ceramic measuring cells are used for low pressures from 100 mbar to up to 60 bar; they have a high overload resistance.

Both measuring cell types are mounted to the process connection via elastomer seals. The use of ceramic measuring cells is only limited by the chemical resistance of the seals. Different pressure loads and pressure measuring ranges can be obtained by varying the thickness of the diaphragm.

**Pressure transducers with piezo-resistive thick-film measuring cell:**

DMU 01K, 01, 01 VM and DIM 20

**Pressure transducers with capacitance ceramic measuring cell:**

DMU 07, 09

**Benefits**

- Robust measuring cell
- High resistance to chemicals
- Abrasion-resistant
- No internal transmission liquid
- No chemical seal required



# Pressure transducers DMU 600/20

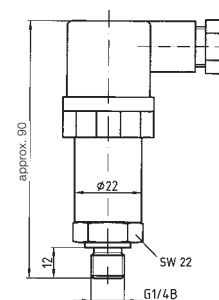
## Compact version



- Special OEM unit
- Compact design
- Superior price/performance ratio due to automated large-scale production
- High pressure resistance
- No transmission liquid



Dimensions (mm)



**Application** Electronic pressure measurement for media such as air, chemical gases (humidity: 0 to 85 % rH, not condensing), water, oil, petrol. Not suitable for media which react with glass, silicon, stainless steel 304 or silicone glue.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 600/20 is equipped with a piezo-resistive silicon measuring cell.

### Technical specifications

#### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $< \pm 1$  % FSO

#### Measuring ranges

Relative pressure: 0/4 mbar to 0/40 bar

#### Overpressure safety

At least 2 x FS  
(burst pressure at least 3 x FS)

#### Operating temperature range

Medium: -25/+85 °C  
Ambient: -25/+85 °C  
Storage: -40/+85 °C

#### Temperature error band

In compensated range  
0/70 °C  $< 0.5$  % FSO/10 K

#### Dynamic characteristics

Response time  $< 1$  ms

#### Process connection

G1/4B, DIN 3852 type E

#### Materials

Housing: Stainless steel 304  
Pressure connection: Stainless steel 304  
Diaphragm: Silicon, glass  
Seal: Silicone

#### Supply voltage

DC 10–32 V

#### Output signal

4–20 mA, 2-wire

#### Load

$4\text{--}20\text{ mA} \leq \frac{U_B - U_{Bmin}}{0.02\text{ A}}$

#### Current input

4–20 mA  $< 25$  mA

#### Electrical protection

Short circuit proof and protected against reverse polarity

#### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

#### CE conformity (EMC)

EMC Directive 2004/108/EC

- Options**
- Other measuring ranges
  - Other process connections
  - Other electrical connections
  - Fixed cable connection
  - Other output signals

DG: H

Measuring range			Part no.	Price €
0/4 bar	50	-	33005	
0/6 bar	50	-	33006	
0/10 bar	50	-	33007	
0/16 bar	50	-	33008	
0/25 bar	50	-	33009	
0/40 bar	50	-	33010	

Other measuring ranges on request



# Pressure transducers DMU 01K

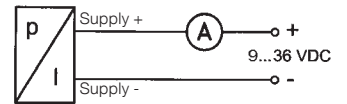
## Compact version



- Special OEM unit
- Proven ceramic technology
- No mechanical ageing of the measuring cell
- Superior price/performance ratio due to automated large-scale production
- Compact design
- No transmission liquid



Wiring diagram  
(4–20 mA, 2-wire)



**Application** For electronic pressure measurement in industrial or HVAC applications (such as hydraulic, pneumatic, automation, heating or air conditioning).

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 01K is equipped with a piezo-resistive thick-film ceramic measuring cell.

### Technical specifications

#### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability): <math>\pm 1\% \text{ FSO}</math>

#### Measuring ranges

Relative pressure: 0/1.6 to 0/250 bar

#### Overpressure safety

At least 1.5 x FS  
(burst pressure at least 3 x FS)

#### Operating temperature range

Medium: -40/+125 °C  
Ambient: -40/+85 °C  
Storage: -40/+85 °C

#### Temperature error band

In compensated range  
<math>-25/+85\text{ °C} \leq 0.5\% \text{ FSO}/10 \text{ K}</math>

#### Dynamic characteristics

Response time: <math>< 10 \text{ ms}</math>  
Voltage: <math>< 3 \text{ ms}</math>

#### Process connection

G1/4B, DIN 3852 type E

#### Material

Housing: Stainless steel 304  
Pressure connection: Stainless steel 304  
Diaphragm: Ceramic (Al<sub>2</sub>O<sub>3</sub> 96 %)  
Seal: FKM (Viton)

### Options

- Fixed cable connection
- Other output signals
- Other connection threads
- Output signal 0–10 V, 3-wire

#### Supply voltage

2-wire DC 8–32 V

#### Output signal

4–20 mA, 2-wire

#### Load

4–20 mA  $\leq \frac{U_B - U_{Bmin}}{0.02 \text{ A}}$

#### Current input

4–20 mA <math>< 25 \text{ mA}</math>

#### Electrical protection

Short circuit proof and protected against reverse polarity

#### Electrical connection/degree of protection

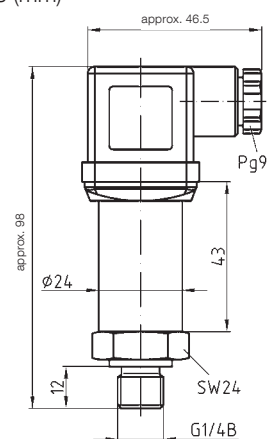
Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

#### CE conformity (EMC)

EMC Directive 2004/108/EC

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Dimensions (mm)



See page 436 for prices.



# Pressure transducers DMU 01

## Standard version



- Proven ceramic technology
- No mechanical ageing of the measuring cell
- No transmission liquid
- Versions for relative pressure and absolute pressure
- Small temperature error



**Application** For electronic pressure measurement in industrial applications (such as hydraulic and pneumatic applications as well as mechanical and plant engineering).

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 01 is equipped with a piezo-resistive thick-film ceramic measuring cell.

### Technical specifications

#### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $< \pm 0.5\%$  FSO (measuring range  $-1/0$  bar  $< \pm 1\%$  FSO)

#### Measuring ranges

Relative pressure:  $-1/0$  to  $0/400$  bar  
Absolute pressure:  $0/1$  to  $0/400$  bar

#### Overpressure safety

At least  $1.5 \times$  FS  
(burst pressure at least  $2 \times$  FS)

#### Operating temperature range

Medium:  $-40/+125$  °C  
Ambient:  $-40/+85$  °C  
Storage:  $-40/+85$  °C

#### Temperature error band

In compensated range  
 $-25/+85$  °C  $\leq \pm 0.3\%$  FSO/10 K

#### Dynamic characteristics

Response time  
2-wire  $< 10$  ms  
3-wire  $< 3$  ms

#### Process connection

$G\frac{1}{2}B$  (EN 837-1/7.3) or  $G\frac{1}{2}$  DIN 3852 type E with flush diaphragm (DMU 01 VM up to max.  $0/25$  bar)

#### Materials

Housing: Stainless steel 304  
Pressure connection: Stainless steel 304  
Diaphragm: Ceramic ( $Al_2O_3$  96 %)  
Seal: FKM (Viton)

#### Supply voltage

2-wire DC 8–32 V  
3-wire DC 14–30 V

#### Output signal

4–20 mA, 2-wire  
0–10 V, 3-wire

#### Load

4–20 mA  $\leq \frac{U_B - U_{Bmin}}{0.02 A}$   
0–10 V  $> 10$  kOhm

#### Current input

4–20 mA  $< 25$  mA  
0–10 V  $< 5$  mA

#### Electrical protection

Short circuit proof and protected against reverse polarity

#### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A, EN 175301-803), IP 65)

#### CE conformity (EMC)

EMC Directive 2004/108/EC

### Options

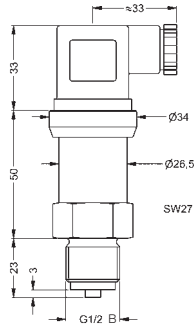
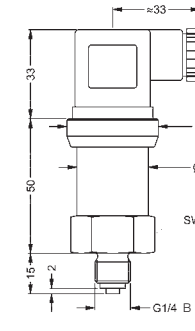
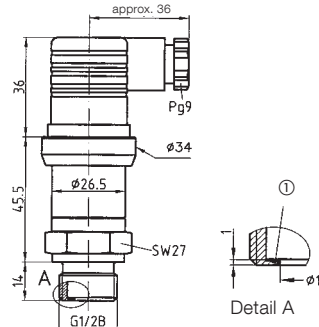
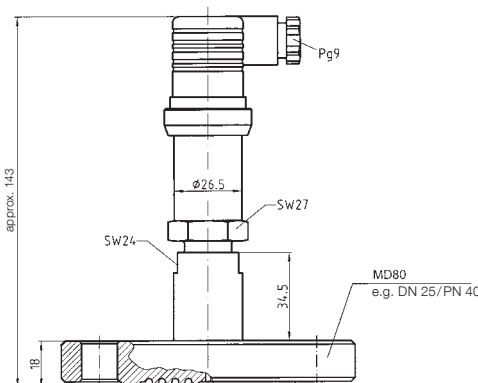
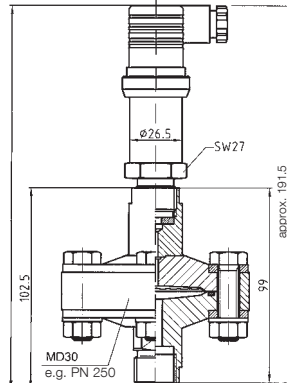
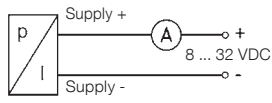
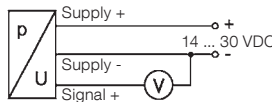
- Fixed cable connection
- Other output signals
- Other connection threads
- Fitting of chemical seal (measuring range  $\geq 0/10$  bar)



See page 436 for prices.

# Pressure transducers DMU 01

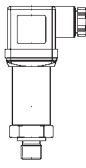
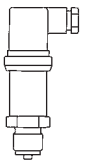
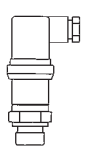
## Dimensions (mm) and electrical connections

<p>Connection G1/2B EN 837</p>  <p>Connection G1/4B EN 837</p> 	<p>DMU 01 VM with connection G1/2B DIN 3852 type E with flush diaphragm DMU 01 VM</p>  <p>① Flat gasket FKM (Viton)</p>																											
<p>With chemical seal MD 80 – flange connection EN 1092-1</p> 	<p>With chemical seal MD 30 – connection G1/2B</p> 																											
<p>Wiring diagram</p> <p>2-wire 4–20 mA</p>  <p>3-wire 0–10 V</p> 	<p>Pin assignment table</p> <table border="1"> <thead> <tr> <th></th> <th></th> <th>Connector ISO 4400</th> <th>Cable colours (DIN 47100)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">2-wire system: (4–20 mA)</td> <td>Supply +</td> <td>1</td> <td>White</td> </tr> <tr> <td>Supply –</td> <td>2</td> <td>Brown</td> </tr> <tr> <td>Earth</td> <td>Earth pin</td> <td>Cable shield</td> </tr> <tr> <td rowspan="4">3-wire system: (0–10 V)</td> <td>Supply +</td> <td>1</td> <td>White</td> </tr> <tr> <td>Supply –</td> <td>2</td> <td>Brown</td> </tr> <tr> <td>Signal +</td> <td>3</td> <td>Green</td> </tr> <tr> <td>Earth</td> <td>Earth pin</td> <td>Cable shield</td> </tr> </tbody> </table>			Connector ISO 4400	Cable colours (DIN 47100)	2-wire system: (4–20 mA)	Supply +	1	White	Supply –	2	Brown	Earth	Earth pin	Cable shield	3-wire system: (0–10 V)	Supply +	1	White	Supply –	2	Brown	Signal +	3	Green	Earth	Earth pin	Cable shield
		Connector ISO 4400	Cable colours (DIN 47100)																									
2-wire system: (4–20 mA)	Supply +	1	White																									
	Supply –	2	Brown																									
	Earth	Earth pin	Cable shield																									
3-wire system: (0–10 V)	Supply +	1	White																									
	Supply –	2	Brown																									
	Signal +	3	Green																									
	Earth	Earth pin	Cable shield																									

The units are shipped with a detailed connection diagram.

# Pressure transducers DMU 01

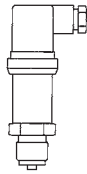
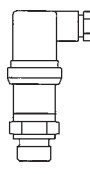
DG: H

Type	DMU 01 K	DMU 01	DMU 01 VM
Version			
Measuring principle	Piezo-resistive thick film ceramic measuring cell		
Measuring accuracy (IEC 60770)	1 % FSO	0.5 % FSO (-1/0 bar 1 % FSO)	0.5 % FSO
Wetted parts	Ceramic/stainless steel 304		
Connection	G $\frac{1}{4}$ B DIN 3852 type E	G $\frac{1}{2}$ B EN 837	G $\frac{1}{2}$ DIN 3852 type E with flush diaphragm
Safety integrity level			SIL 2
Supply voltage	DC 8–32 V	DC 8–32 V	DC 8–32 V
Output	4–20 mA	4–20 mA	4–20 mA
System	2-wire	2-wire	2-wire
Electrical connection	Connector and junction box as per ISO 4400 (DIN 43650-A)		
Measuring range	Part no.	Part no.	Part no.
<b>Price €</b>			
-1/0 bar	---	<b>31114</b>	31619
-1/+1.5 bar	31608	31616	31620
-1/+3 bar	31609	31617	31621
-1/+5 bar	31610	31618	31622
<b>Price €</b>			
0/1 bar	---	<b>31115</b>	31623
0/1.6 bar	31511	31116	31624
0/2.5 bar	31512	<b>31117</b>	31625
0/4 bar	31513	<b>31118</b>	31626
0/6 bar	31514	<b>31119</b>	31627
0/10 bar	31515	<b>31120</b>	31628
0/16 bar	31516	<b>31121</b>	31629
0/25 bar	31517	<b>31122</b>	31630
0/40 bar	31518	31123	---
0/60 bar	31611	31124	---
0/100 bar	31612	31125	---
<b>Price €</b>			
0/160 bar	31613	<b>31126</b>	---
0/250 bar	31614	<b>31127</b>	---
0/400 bar	---	<b>31128</b>	---
0/600 bar	---	---	---

\* Delivery only in packing units of 10 pieces per measuring range

# Extra charges for pressure transducers DMU 01

DG: H

Type	DMU 01	DMU 01 VM
Version		
	<b>Price €</b>	<b>Price €</b>
Connection G $\frac{1}{2}$ B DIN 3852 type E		
Connection G $\frac{1}{4}$ B EN 837 type E		
Connection $\frac{1}{4}$ -18 NPT		
Connection $\frac{1}{2}$ -14 NPT		
Other connections		
Suitable for oxygen ( $\leq 25$ bar)		
Fixed cable connection 2 metres		
Cable extension per metre		
Output 0–10 V, 3-wire		
Other output signals		
Absolute pressure (measuring ranges according to data sheet)		
Fitting of chemical seal	For measuring range $\geq 0/10$ bar	

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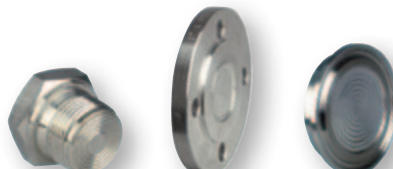
i

See chapter 15 for digital display units and signal processing.



i

See chapter 10 for chemical seals.



# Pressure transducers DMU 02 Industrial version



- Extremely resistant to shock, pulsation and vibration
- High overload safety
- Dynamic pressure resistance at high load changes
- Wetted area without seals due to welding
- No transmission liquid



**Application** For electronic pressure measurement in industrial applications, e.g. hydraulic, pneumatic, gas industry, refrigeration, automation, medical, as well as general mechanical and plant engineering applications.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 02 is equipped with a piezo-resistive polysilicon thin-film measuring cell.

## Technical specifications

### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $< \pm 0.5\%$  FSO

### Measuring ranges

Relative pressure:  
-1/0 to -1/+24 bar  
0/0.6 to 0/2000 bar

### Overpressure safety

$\leq 250$  bar at least 2 x FS  
(burst pressure at least 3 x FS)  
 $\leq 250$  bar at least 1.5 x FS  
(burst pressure at least 2 x FS)  
 $\geq 1,000$  bar at least 1.2 x FS  
(burst pressure at least 1.5 x FS)

### Operating temperature range

Medium: -40/+125 °C  
Ambient: -40/+105 °C  
Storage: -40/+125 °C

### Temperature error band

In compensated range  
 $-20/+85$  °C  $\leq 0.05\%$  FSO/10 K

### Dynamic characteristics

Response time  $< 1$  ms

### Process connection

G $\frac{1}{2}$ B (EN 837-1/7.3)

### Material

Housing: Stainless steel 304  
Pressure connection: Stainless steel 630  
Seal: Without

### Supply voltage

DC 12–32 V

### Output signal

4–20 mA, 2-wire  
0–10 V, 3-wire

### Load

$4-20\text{ mA} \leq \frac{U_B - U_{Bmin}}{0.02\text{ A}}$

### Current input

4–20 mA  $< 25$  mA  
0–10 V  $< 20$  mA

### Electrical protection

Short circuit proof and protected against reverse polarity

### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

### CE conformity (EMC)

EMC Directive 2004/108/EC

## Options

- Other connection threads
- Fixed cable connection
- Other connectors
- Other output signals
- Cleaned for oxygen
- EX version (II 1G Ex ia IIB T4)



See page 443 for prices.

# Pressure transducers DMU 02



## Dimensions (mm) and electrical connections

<p>Connector ISO 4400 (DIN 43650-A)</p>	<p>M12 connector</p>
<p>Connector DIN 43650-C</p>	<p>Fixed cable connection</p>

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Pin assignment table

	Electrical connections		
	ISO 4400 (DIN 43650-A, EN 175301-803)	M 12 x 1 (4-pin) EN 61076-2-101	Cable outlet
2-wire system: Supply +	1	1	Red
Supply -	2	3	Black
Earth	Earth contact	-	-
3-wire system: Supply +	1	1	Red
Supply -	2	3	Black
Signal	3	4	White
Earth	Earth pin	-	-

The units are shipped with a detailed connection diagram.

# Pressure transducers

## DMU 02 Vario (programmable)



- Connection technology with numerous versions
- Extremely resistant to shock, pulsation and vibration
- Best dynamic pressure resistance at high load changes
- Measuring cell welded, no seals
- Without transmission medium
- Turn down 1:4
- Zero correction via magnet



**Application** For electronic pressure measurement in mechanical and plant engineering applications, gas applications and medical technology. Particularly suitable for pure media.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 02 Vario is equipped with a piezo-resistive polysilicon thin-film measuring cell. All standard electrical connection types are available. The measuring ranges can be changed via optional parameterisation hardware and software. The zero point can be corrected from the outside via a permanent magnet after voltage has been supplied and within a given time window.

### Technical specifications

#### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $\leq \pm 0.3\%$  FSO

#### Measuring ranges

Relative pressure:  
-1/0 to -1/+24 bar  
0/1 bar to 0/1,000 bar

#### Overpressure safety

$\leq 250$  bar at least  $2 \times$  FS  
(burst pressure at least  $3 \times$  FS)  
 $> 250$  bar at least  $1.5 \times$  FS  
(burst pressure at least  $2 \times$  FS)  
1000 bar at least  $1.2 \times$  FS  
(burst pressure at least  $1.5 \times$  FS)

#### Operating temperature range

Medium: -40/+125 °C  
Ambient: -40/+105 °C  
Storage: -40/+125 °C

#### Temperature error band

In compensated range -10/+80 °C  $< 0.5\%$  FSO/10 K

#### Dynamic characteristics

Response time  $< 1$  ms  
(without flush diaphragm)

#### Process connection

G $\frac{1}{2}$ B (EN 837-1/7.3)

#### Material

Housing: Stainless steel 304  
Pressure connection: Stainless steel 630  
Seal: Without

#### Supply voltage

DC 12–32 V

#### Output signal

4–20 mA, 2-wire

#### Load

4–20 mA  $< \frac{U_B - U_{Bmin}}{0.02 A}$

#### Current input

$< 25$  mA

#### Electrical protection

Short circuit proof and protected against reverse polarity

#### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

#### CE conformity (EMC)

EMC Directive 2004/108/EC

### Options

- Other process connections
- Other electrical connections
- Field housing (stainless steel)
- Cleaned for oxygen
- Fitting of chemical seal
- Customer-specific setting (damping, unit)
- Programmable hardware and software



See page 442 for dimensions.  
See page 443 for prices.



# Pressure transducers

## DMU 02 Vario (flush)



- Ideal for hygienic processes
- Connection technology with numerous versions
- Extremely resistant to shock, pulsation and vibration
- Best dynamic pressure resistance at high load changes
- Measuring cell welded, no seals
- Zero correction via magnet



**Application** For electronic pressure measurement in mechanical and plant engineering, gas and medical applications. With flush diaphragm, the pressure transducers are also suitable for use with viscous, highly viscous or crystallising media.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 02 Vario is equipped with a piezo-resistive polysilicon thin-film measuring cell. DMU 02 Vario is available in a virtually unlimited number of versions. All standard and customer-specific connections can be connected to the electronic precision measuring system. All standard electrical connection types are available. The zero point can be corrected from the outside via a permanent magnet after voltage has been supplied and within a given time window.

### Technical specifications

#### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $\leq \pm 0.3$  % FSO

#### Measuring ranges

Relative pressure:  
-1/0 to -1/+24 bar  
0/1 bar to 0/600 bar

#### Overpressure safety

$\leq 250$  bar at least 2 x FS  
(burst pressure at least 3 x FS)  
 $> 250$  bar at least 1.5 x FS  
(burst pressure at least 2 x FS)

#### Operating temperature range

Medium: -10/+85 °C  
Ambient: -10/+105 °C  
Storage: -10/+125 °C

#### Temperature error band

In compensated range 0/70 °C  
 $< 1.5$  % FSO/10 K

#### Dynamic characteristics

Response time  $< 20$  ms

#### Process connection

G $\frac{1}{2}$ B DIN 3852 A with O ring (FBO);  
Clamp (CP); dairy fitting (MR);  
Varivent (VT); NEUMO BioControl (BC);  
Flange connection (FT)

#### Material

Housing: Stainless steel 304  
Pressure connection: Stainless steel 316 L  
Seal: Without

#### Pressure transmission liquid

Multi-grade oil, FDA-compliant

#### Supply voltage

DC 12–32 V

#### Output signal

4–20 mA, 2-wire

#### Load

4–20 mA  $< \frac{U_B - U_{Bmin}}{0.02 A}$

#### Current input

$< 25$  mA

#### Electrical protection

Short circuit proof and protected against reverse polarity

#### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

#### CE conformity (EMC)

EMC Directive 2004/108/EC



See page 442 for dimensions.  
See page 443 for prices.

### Options

- Other process connections
- Other electrical connections
- Field housing (stainless steel)
- Filling for oxygen
- Customer-specific setting (damping, unit)
- Hygienic weld-in socket for G $\frac{1}{2}$ B DIN 3852-A

# Pressure transducers DMU 02 Vario



## Dimensions (mm) and electrical connections

Connection G1/2B EN 837

Wiring diagram

4-20 mA, 2-wire

Setting the zero point

## Modular system for great variety of versions

<b>Connector</b>	 ISO 4400	 DIN 43650-C	 M12 x 1	 M12 x 1 with junction box
<b>Housing</b>	Transducer electronics 			
<b>Thermal isolation</b>	Direct mounting 	Cooling element up to 180 °C 		Capillary 
<b>Process connections</b>	G1/2B EN 837 	G1/2B DIN 3852-E 	1/2-14 NPT 	VCR 9/16-18 UNF 
	Chemical seals 			

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# Pressure transducers DMU 02/DMU 02 Vario



DG: H

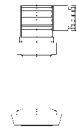
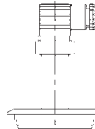
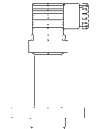
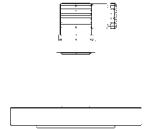
Type	DMU 02	DMU 02 HD High pressure	DMU 02 Vario Programmable*	DMU 02 Vario FBO flush with O ring	DMU 02 Vario CP Clamp
Version					
Measuring principle	Piezo-resistive polysilicon stainless steel measuring cell (thin film)				
Measuring accuracy (IEC 60770)	0.5 % FSO	0.5 % FSO	0.3 % FSO		
Wetted parts	Stainless steel 630	Stainless steel 630	Stainless steel 630	Stainless steel 316 Ti/ FKM	Stainless steel 316 L
Connection	G½B EN 837	M18 x 1.5 male	G½B EN 837	G½B DIN 3852-A	ISO 2852 1"
Supply voltage	DC 12–32 V				
Output	4–20 mA				
System	2-wire				
Electrical connection	Connector and junction box as per ISO 4400 (DIN 43650-A)				
Offset error compensation	---	---	Subsequent zero correction via magnet from the outside		
Measuring range	Part no.	Part no.	Part no.	Part no.	Part no.
<b>Price €</b>					
-1/0 bar	32801	---	32833	32863	32892
-1/-1.5 bar	32802	---	32834	32864	32893
-1/+3 bar	32803	---	32835*	32865	32894
-1/+5 bar	32804	---	32836	32866	32895
-1/+9 bar	32805	---	32837*	32867	32896
-1/+24 bar	32806	---	32838*	32868	32897
<b>Price €</b>					
0/600 mbar	32807	---	32841	---	---
<b>Price €</b>					
0/1 bar	32808	---	32842*	32872	32901
0/1.6 bar	32809	---	32843	32873	32902
0/2.5 bar	32810	---	32844*	32874	32903
0/4 bar	32811	---	32845	32875	32904
0/6 bar	32812	---	32846	32876	32905
0/10 bar	32813	---	32847*	32877	32906
0/16 bar	32814	---	32848	32878	32907
0/25 bar	32815	---	32849	32879	32908
0/40 bar	32816	---	32850*	32880	32909
0/60 bar	32817	---	32851	32881	---
0/100 bar	32818	---	32852	32882	---
<b>Price €</b>					
0/160 bar	32819	---	32853*	32883	---
0/250 bar	32820	---	32854	32884	---
0/400 bar	32821	---	32855	32885	---
0/600 bar	32822	---	32856	32886	---
0/1,000 bar	32823	---	32857*	---	---
0/1,600 bar	---	32829	---	---	---
0/2,000 bar	---	32830	---	---	---

\* Programmable turn down 1:4 via optional programming tool  
(no asterisk = fixed measuring range)

# Pressure transducers DMU 02 Vario



DG: H

Type	DMU 02 Vario MR Dairy fitting	DMU 02 Vario VT VARIVENT®	DMU 02 Vario BC NEUMO BioControl®	DMU 02 Vario FL Flange
Version				
Measuring principle	Piezo-resistive polysilicon stainless steel measuring cell (thin film)			
Measuring accuracy (IEC 60770)	0.3 % FSO			
Wetted parts	Stainless steel 316 L	Stainless steel 316 L	Stainless steel 316 L	Stainless steel 316 L
Connection	DIN 11851 DN 25	VARIVENT® F (DN 25 and 1")	BioControl® DN 25	EN 1092-1 type B1 DN 25 PN 40
Supply voltage	DC 12–32 V			
Output	4–20 mA			
System	2-wire			
Electrical connection	Connector and junction box as per ISO 4400 (DIN 43650-A)			
Offset error compensation	Subsequent zero correction via magnet from the outside			
Measuring range	Part no.	Part no.	Part no.	Part no.
<b>Price €</b>				
-1/0 bar	32915	32938	32960	32981
-1/-1.5 bar	32916	32939	32961	32982
-1/+3 bar	32917	32940	32962	32983
-1/+5 bar	32918	32941	32963	32984
-1/+9 bar	32919	32942	32964	32985
-1/+24 bar	32920	32943	32965	32986
<b>Price €</b>				
0/1 bar	32924	32947	32969	32990
0/1.6 bar	32925	32948	32970	32991
0/2.5 bar	32926	32949	32971	32992
0/4 bar	32927	32950	32972	32993
0/6 bar	32928	32951	32973	32994
0/10 bar	32929	32952	32974	32995
0/16 bar	32930	32953	32975	32996
0/25 bar	32931	32954	---	32997
0/40 bar	32932	---	---	32998
0/60 bar	---	---	---	On request
0/100 bar	---	---	---	On request
<b>Price €</b>				
0/160 bar	---	---	---	On request
0/250 bar	---	---	---	On request

# Extra charges for DMU 02/DMU 02 Vario




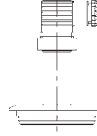
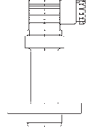
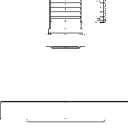
DG: H

Type	DMU 02	DMU 02 HD High pressure	DMU 02 Vario Programmable	DMU 02 Vario FBO flush with O ring	DMU 02 Vario CP Clamp
Version					
	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>
EX protection II 1 G Ex ia IIC T4					
Connection G $\frac{1}{4}$ B EN 837		---		---	---
Connection G $\frac{1}{2}$ B DIN 3852 type E		---		---	---
Connection G $\frac{1}{4}$ B DIN 3852 type E		---		---	---
Connection G $\frac{1}{2}$ B DIN 3852 type A		---		---	---
Connection G $\frac{1}{4}$ B DIN 3852 type A		---		---	---
Connection $\frac{1}{4}$ -18 NPT		---		---	---
Connection $\frac{1}{2}$ -14 NPT		---		---	---
High pressure connection M16 x 1.5 female	---		---	---	---
Connection VCR 9/16-18 UNF pressure screw for $\frac{1}{4}$ " pipes	---	---		---	---
Connection VCR $\frac{1}{2}$ " pressure screw	---	---		---	---
Connection VCR 9/16-18 UNF union nut for $\frac{1}{4}$ " pipes	---	---		---	---
Connection VCR $\frac{1}{2}$ " union nut	---	---		---	---
Other VCR screw connections	---	---		---	---
Connection G $\frac{1}{2}$ B (flush DIN 3852-A)	---	---	---		---
Connection G1B (flush DIN 3852 A)	---	---	---		---
Connection G1B (flush with O ring DIN 3852 A)	---	---	---		---
Connection clamp ISO 2852 1 $\frac{1}{2}$ "	---	---	---	---	
Connection clamp ISO 2852 2"	---	---	---	---	
Connection clamp ISO 2852 2 $\frac{1}{2}$ "	---	---	---	---	
Other connections and designs (chemical seals)	---	---	See chapter 10	---	---
Other materials					
Coatings					
Surface roughness $\leq 0.4 \mu\text{m}$	---	---	---		
Weld-in socket G $\frac{1}{2}$ "	---	---	---		---
Weld-in socket G1"	---	---	---		---
High temperature version up to 180 °C		---			
Capillary tube with spiral hose	---	---			
Cleaned for oxygen					
Socket DIN 43650-C			---	---	---
Field housing (stainless steel)	---	---			
Circular connector M12x1, 4-pin, A-coded DIN-EN 61076-2-101					
Fixed cable connection 2 metres			---	---	---
Cable extension per metre			---	---	---
Right angle socket M12 x 1.5 with 2 m PUR cable, shielded	---	---			
Right angle socket M12 x 1.5 with 5 m PUR cable, shielded	---	---			
Output 0-20 mA, 3-wire					
Output 0-10 V, 3-wire					
CANopen 2.0A			---	---	---
Ratiometric 0.5-4.5 V @ 5 VDC					
Other output signals					
Calibration report (for measuring accuracy up to 0.3 % FSO)					
Programming hardware and software for DMU 02 Vario	---	---		---	---

# Extra charges for DMU 02/DMU 02 Vario



DG: H

Type	DMU 02 Vario Dairy fitting	DMU 02 Vario VT VARIVENT®	DMU 02 Vario BC NEUMO BioControl®	DMU 02 Vario FL Flange
Version				
	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>
Connection DIN 11851 DN 32 / PN 40		---	---	---
Connection DIN 11851 DN 40 / PN 40*		---	---	---
Connection DIN 11851 DN 50 / PN 25*		---	---	---
Connection DIN 11851 DN 65 / PN 25		---	---	---
Connection DIN 11851 DN 80 / PN 25		---	---	---
Connection VARIVENT® type N DN 40-125 and 1½"-6"	---		---	---
NEUMO BioControl® DN 50	---	---		---
NEUMO BioControl® DN 65	---	---		---
NEUMO BioControl® DN 80	---	---		---
Connection EN 1092-1 type B1 DN 40 PN 40	---	---	---	
Connection EN 1092-1 type B1 DN 50 PN 40	---	---	---	
Connection EN 1092-1 type B1 DN 80 PN 40	---	---	---	
Connection EN 1092-1 type B1 DN 100 PN 40	---	---	---	
Connection ASME B 16.5 DN 1" class 150	---	---	---	
Connection ASME B 16.5 DN 1½" class 150	---	---	---	
Connection ASME B 16.5 DN 2" class 150	---	---	---	
Connection ASME B 16.5 DN 3" class 150	---	---	---	
Connection ASME B 16.5 DN 4" class 150	---	---	---	
Other connections and designs	---	---	---	
Other materials				
Coatings				
Surface roughness ≤ 0.4 µm				
High temperature version up to 180 °C				
Capillary tube with spiral hose				
Cleaned for oxygen				
Socket DIN 43650-C	---	---	---	---
Field housing (stainless steel)				
Circular connector M12 x 1, 4-pin, A-coded EN 61076-2-101				
Right angle socket M12 x 1.5 with 2 m PUR cable, shielded				
Right angle socket M12 x 1.5 with 5 m PUR cable, shielded				
Output 0–20 mA, 3-wire				
Output 0–10 V, 3-wire				
CANopen 2.0A	---	---	---	---
Ratiometric 0.5–4.5 V @ 5 VDC				
Other output signals				
Calibration report (for measuring accuracy up to 0.3 % FSO)				

\*See extra charges DMU 04 for sep. union nut

# Pressure transducers DMU 03 Industrial version



- SIL 2
- For low pressure ranges
- Versions for relative pressure and absolute pressure
- Excellent long-term stability
- Optional ATEX version



**Application** For electronic pressure measurement in mechanical and plant engineering as well as process engineering applications. With flush diaphragm, the pressure transducers are also suitable for use with viscous, highly viscous media.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 03 is equipped with an oil-filled piezo-resistive silicon measuring cell. DMU 03 has safety integrity level SIL 2 (IEC 61508/61511).

## Technical specifications

### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $< \pm 0.35\%$  FSO (measuring ranges 0/100 mbar to 0/400 mbar  $\leq \pm 0.5\%$  FSO)

### Long-term stability

$\leq \pm 0.1\%$  FSO/year

### Measuring ranges

Relative pressure: 0/100 mbar to 0/600 bar  
Absolute pressure: 0/100 mbar to 0/600 bar

### Overpressure safety

At least  $2 \times$  FS  
(burst pressure at least  $5 \times$  FS)

### Operating temperature range

Medium:  $-40/+125\text{ }^{\circ}\text{C}$   
Ambient:  $-40/+85\text{ }^{\circ}\text{C}$   
Storage:  $-40/+100\text{ }^{\circ}\text{C}$

### Temperature error band

In compensated range  
 $0-70\text{ }^{\circ}\text{C} < 1\%$  FSO

### Dynamic characteristics

Response time  $< 10\text{ ms}$

### Process connection

G $\frac{1}{2}$ B (EN 837-1/7.3 / DIN 3852)  
with flush diaphragm  
(0/100 mbar to 0/40 bar)

### Materials

Housing: Stainless steel 316 L  
Pressure connection: Stainless steel 316 L  
Diaphragm: Stainless steel 316 L  
Seal: FKM (Viton)

### Pressure transmission liquid

Silicone oil

### Output signal/supply voltage

4–20 mA, 2-wire DC 8–32 V  
ATEX version DC 10–28 V  
0–20 mA, 3-wire DC 14–30 V  
0–10 V, 3-wire DC 14–30 V

### Load

$4-20\text{ mA} \leq \frac{U_B - U_{Bmin}}{0.02\text{ A}}$   
 $0-20\text{ mA} \leq 500\text{ Ohm}$   
 $0-10\text{ V} > 10\text{ kOhm}$

### Current input

$4-20\text{ mA} < 25\text{ mA}$   
 $0-20\text{ mA} < 25\text{ mA}$   
 $0-10\text{ V} < 5\text{ mA}$

### Electrical protection

Short circuit proof and protected against reverse polarity

### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

### Safety integrity level

SIL 2 (IEC 61508/61511) 2-wire only

### CE conformity (EMC)

EMC Directive 2004/108/EC



See page 449 for prices.

## Options

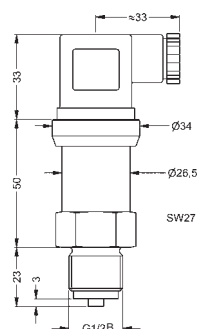
- EX version (II 1 G Ex ia IIC T4)
- Other process connections
- Other electrical connections
- Field housing (stainless steel 304)
- Other seal materials
- Higher accuracy
- Greater overpressure safety
- Fitting of chemical seal



# Pressure transducers DMU 03

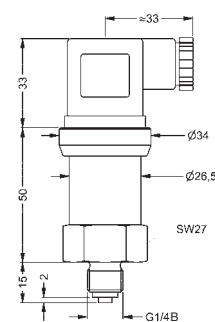
## Dimensions (mm) and electrical connections

Connection G $\frac{1}{2}$ B  
EN 837 and ISO 4400

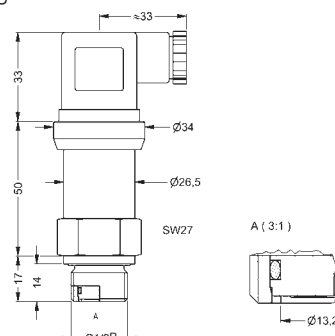


The Ex version is 20 mm longer.

Connection G $\frac{1}{4}$ B  
EN 837 and ISO 4400

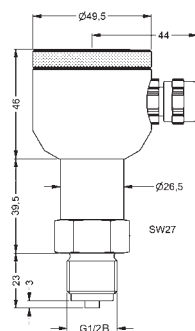


Connection G $\frac{1}{2}$ B DIN 3852 type E with  
flush diaphragm



The Ex version is 20 mm longer.

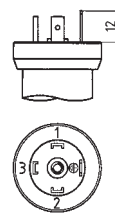
DMU 03 with G $\frac{1}{2}$ B EN 837 and field housing



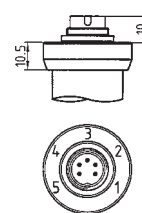
The Ex version is 26.5 mm longer.  
(cable gland M12 x 1.5 brass, nickel-plated)

Electrical connections

ISO 4400  
(DIN 43650)



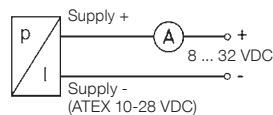
Binder 723



Wiring diagram

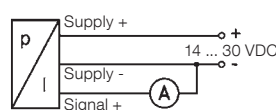
2-wire

4–20 mA

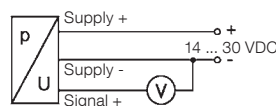


3-wire

0–20 mA



0–10 V



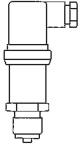
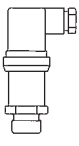
Pin assignment table

	Connector ISO 4400 (DIN 43650)	Binder Series 723	Cable colours (DIN 47100)
<b>2-wire system:</b>			
Supply + (4–20 mA)	1	3	White
Supply –	2	4	Brown
Earth	Earth pin	5	Cable shield
<b>3-wire system:</b>			
Supply +	1	3	White
Supply –	2	4	Brown
Signal +	3	1	Green
Earth	Earth pin	5	Cable shield

The units are shipped with a detailed connection diagram.

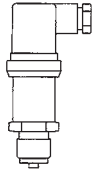
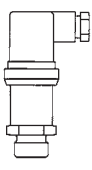
# Pressure transducers DMU 03

DG: H

Type	DMU 03	DMU 03 VM
Version		
Measuring principle	Piezo-resistive stainless steel measuring cell	
Measuring accuracy (IEC 60770)	0.35 % FSO (≤ 0.4 bar 0.5 % FSO)	0.35 % FSO (≤ 0.4 bar 0.5 % FSO)
Wetted parts	Stainless steel 316 L	
Connection	G $\frac{1}{2}$ B EN 837	G $\frac{1}{2}$ B DIN 3852 type E with flush diaphragm
Safety integrity level	SIL 2	
Supply voltage	DC 8–32 V	DC 8–32 V
Output	4–20 mA	4–20 mA
System	2-wire	2-wire
Electrical connection	Connector and junction box as per ISO 4400 (DIN 43650-A)	
Measuring range	Part no.	Part no.
<b>Price €</b>		
-1/0 bar	31634	---
-1/+1.5 bar	31635	---
-1/+3 bar	31636	---
-1/+5 bar	31637	---
<b>Price €</b>		
0/40 mbar	---	---
0/60 mbar	---	---
0/100 mbar	31638	31643
0/160 mbar	31639	31644
0/250 mbar	31145	31165
0/400 mbar	31146	31166
0/600 mbar	31147	31167
<b>Price €</b>		
0/1 bar	31148	31168
0/1.6 bar	31149	31169
0/2.5 bar	31150	31170
0/4 bar	31151	31171
0/6 bar	31152	31172
0/10 bar	31153	31173
0/16 bar	31154	31174
0/25 bar	31155	31175
0/40 bar	31156	32026
0/60 bar	31157	---
0/100 bar	31158	---
<b>Price €</b>		
0/160 bar	31159	---
0/250 bar	31160	---
0/400 bar	31161	---
0/600 bar	31162	---

# Extra charges for pressure transducers DMU 03

DG: H

Type	DMU 03	DMU 03 VM
Version		
	<b>Price €</b>	<b>Price €</b>
EX protection II 1 G Ex ia IIC T4		
Connection G $\frac{1}{4}$ B DIN 3852 type E		---
Connection G $\frac{1}{2}$ B DIN 3852 type E		
Connection G $\frac{1}{4}$ B EN 837 type E		---
Connection $\frac{1}{4}$ -18 NPT		---
Connection $\frac{1}{2}$ -14 NPT		---
Other connections		
Field housing (stainless steel 304)		
Binder connector 723		
Fixed cable connection 2 metres		
Cable extension per metre		
Output 0–20 mA, 3-wire		
Output 0–10 V, 3-wire		
Other output signals		
Absolute pressure (measuring ranges according to data sheet)		
Measuring accuracy 0.25 % FSO		
Calibration report (for measuring accuracy 0.25 % FSO)		
Fitting of chemical seal	All measuring ranges, minimum range depends on design of chemical seal	

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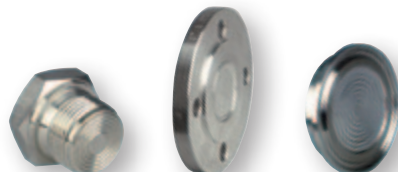
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See chapter 14 for digital display units and signal processing.



i

See chapter 10 for chemical seals.



# Pressure transducers DMU 04 industrial version



- SIL 2
- DMU 04 CP/MR for hygienic processes
- Small temperature error
- Optional: ATEX, field housing or high temperature version (up to 300 °C)



**Application** For applications requiring hygienic process connections, materials or processing, especially food technology, pharmaceutical and biotechnology applications.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 04 is equipped with an oil-filled piezo-resistive silicon measuring cell. DMU 04 has safety integrity level SIL 2 (IEC 61508/61511).

## Technical specifications

### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $< \pm 0.35\%$  FSO (measuring ranges  $\leq 0/400$  mbar  $< \pm 0.5\%$  FSO)

### Measuring ranges

Relative pressure:  
-1/0 bar, 0/100 mbar to 0/40 bar  
Absolute pressure:  
0/400 mbar to 0/400 bar

### Overpressure safety

At least 2 x FS  
(burst pressure at least 5 x FS)

### Operating temperature range

Medium: -10/+125 °C  
Short-term (60 min) up to 150 °C

Ambient: -40/+85 °C  
Storage: -40/+100 °C

### Temperature error band

In compensated range  
0–70 °C  $< 0.75\%$  FSO  
(0–50 °C  $\leq 0.40$  bar  $< 1.5\%$  FSO)

### Dynamic characteristics

Response time  $< 10$  ms

### Process connections

G $\frac{1}{2}$ B DIN 3852 with flush diaphragm  
G1B DIN 3852 with flush diaphragm,  
Clamp 1 $\frac{1}{2}$ "/1 $\frac{1}{2}$ "/2" ISO 2852,  
conical dairy fitting DIN 11851  
DN 25/40/50 (without union nut)

### Materials

Housing: Stainless steel 316 L  
Pressure connection: Stainless steel 316 L  
Diaphragm: Stainless steel 316 L

### Pressure transmission liquid

Food oil (FDA-compliant)

### Output signal/supply voltage

4–20 mA, 2-wire DC 8–32 V  
EX version DC 10–28 V  
0–20 mA, 3-wire DC 14–30 V  
0–10 V, 2-wire DC 14–30 V

### Load

4–20 mA  $< \frac{U_B - U_{Bmin}}{0.02 \text{ A}}$   
0–20 mA  $\leq 500$  Ohm  
0–10 V  $> 10$  kOhm

### Current input

4–20 mA  $< 25$  mA  
0–20 mA  $< 25$  mA  
0–10 V  $< 5$  mA

### Electrical protection

Short circuit proof and protected against reverse polarity

### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

### Safety integrity level

SIL 2 (IEC 61508/61511)

### CE conformity (EMC)

EMC Directive 2004/108/EC

## Options

- EX version (II 1 G Ex ia IIC T4)
- Other process connections
- Other electrical connections
- Field housing
- High temperature version
- Higher accuracy
- Union nut DN 25/40/50

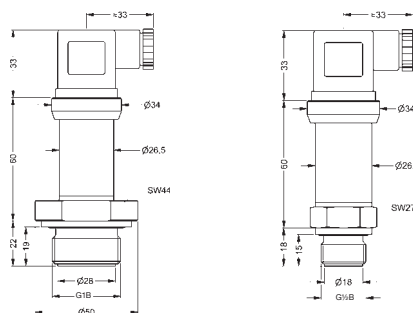


See page 455 for prices.

# Pressure transducers DMU 04

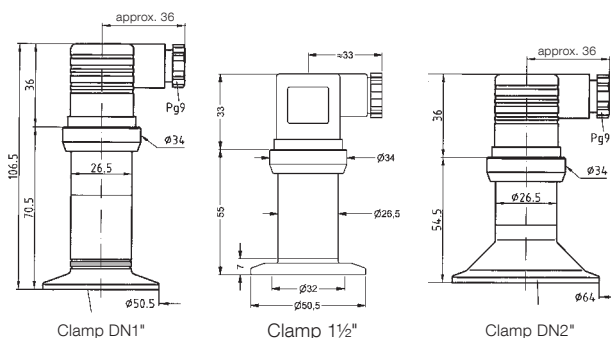
## Dimensions (mm) and electrical connections

### Threaded connections with flush diaphragm

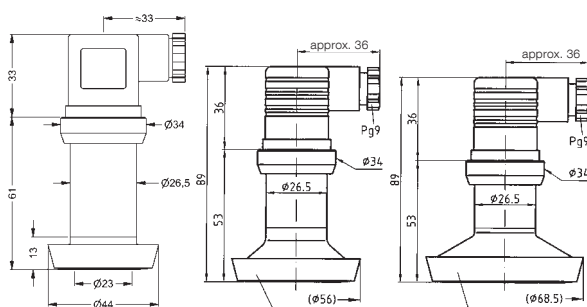


The EX version is 33 mm longer.

### Clamp connections ISO 2852

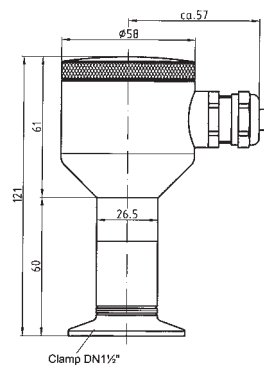


### Conical dairy fitting DIN 11851



Conical dairy fitting DN 2:

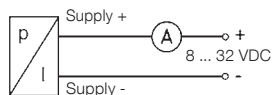
### Field housing



### Wiring diagram

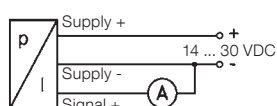
#### 2-wire

4–20 mA

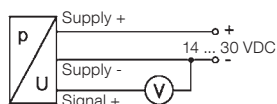


#### 3-wire

0–20 mA



0–10 V



### Pin assignment table

	Connector ISO 4400 (DIN 43650)	Cable colours (DIN 47100)
2-wire system: Supply + (4–20 mA) Supply – Earth	1 2 Earth pin	White Brown Cable shield
3-wire system: Supply + (0–10 V) Supply – (0–20 mA) Signal + Earth	1 2 3 Earth pin	White Brown Green Cable shield

The units are shipped with a detailed connection diagram.

# Pressure transducers DMU 05 P precision version



- Precision version with outstanding measurement performance
- For applications requiring superior measuring accuracy and long-term stability
- Optional RS 232 programming interface and version



**Application** For electronic pressure measurement in applications requiring high measuring accuracy and long-term stability, such as process engineering, water treatment, laboratory applications as well as measurements of gas consumption and heat energy.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 05 P is equipped with an oil-filled piezo-resistive silicon measuring cell. The intelligent DMU 05 pressure transducers are equipped with digital amplifier electronics (microprocessor and 16 bit A/D converter). DMU 05 P actively compensates for sensor-specific deviations (non-linearity and temperature error), allowing for superior measuring characteristics. DMU 05 can also be supplied with an optional digital RS 232 programming interface for setting offset, range and damping.

## Technical specifications

### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $< \pm 0.1 \%$  FSO

### Long-term stability

$\leq +0.1 \%$  FSO/year

### Measuring ranges

Relative pressure: 0/100 mbar to 0/600 bar  
Absolute pressure: 0/400 mbar to 0/600 bar

### Overpressure safety

At least 2 x FS  
(burst pressure at least 5 x FS)

### Operating temperature range

Medium: -40/+125 °C  
Ambient: -40/+85 °C  
Storage: -40/+100 °C

### Temperature error band

In compensated range  
 $-20/+80 \text{ °C} \leq 0.2 \%$  FSO/10 K

### Dynamic characteristics

Response time  $< 40 \text{ ms}$

### Process connection

G $\frac{1}{2}$ B (EN 837-1/7.3) or G $\frac{1}{2}$  DIN 3852 type E with flush diaphragm  
(0/400 mbar to 0/40 bar)

### Materials

Housing: Stainless steel 316 L  
Pressure connection: Stainless steel 316 L  
Diaphragm: Stainless steel 316 L  
Seal: FKM (Viton)

### Pressure transmission liquid

Silicone oil

### Output signal/supply voltage

4–20 mA DC 10–32 V  
2-wire  
EX version DC 12–28 V

### Load

4–20 mA  $< \frac{U_B - U_{Bmin}}{0.02 \text{ A}}$

### Current input

4–20 mA  $< 25 \text{ mA}$

### Electrical protection

Short circuit proof and protected against reverse polarity

### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

### CE conformity (EMC)

EMC Directive 2004/180/EC

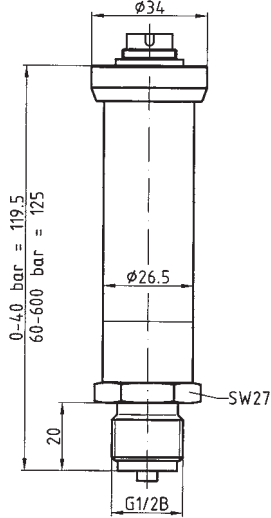
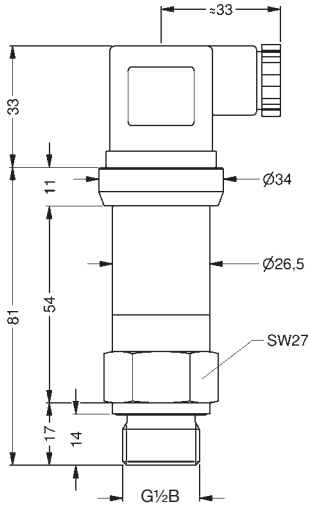
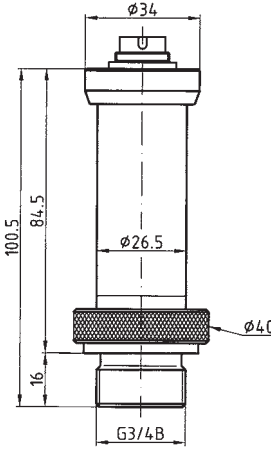
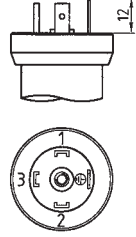
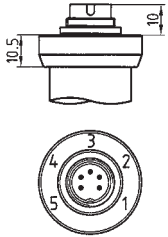
- Options**
- RS 232 programming interface (interface and software required) in conjunction with Binder connector 723
  - EX version (II 1 G Ex ia IIC T4)
  - Other process connections
  - Other electrical connections
  - Other seal materials



See page 455 for prices.

# Pressure transducers DMU 05 P

## Dimensions (mm) and electrical connections

<p>Connection G<math>\frac{1}{2}</math>B EN 837</p> 	<p>Connection G<math>\frac{1}{2}</math>B DIN 3852 type E with flush diaphragm</p> 
<p>G<math>\frac{3}{4}</math>B DIN 3852 type E Screw-in version for level measurement</p> 	<p>Electrical connections / cable outlet</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="898 1115 1050 1473"> <p>ISO 4400 (DIN 43650-A)</p>  </div> <div data-bbox="1121 1115 1289 1473"> <p>Binder 723</p>  </div> </div>

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Pin assignment table

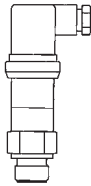
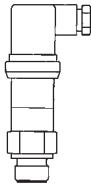
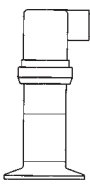
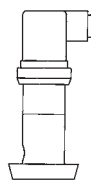
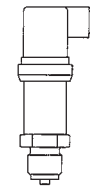
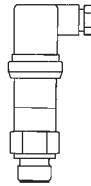
		Electrical connections			
		ISO 4400 (DIN 43650)	Binder 723 (5-pin)	Binder 723 (7-pin)	Cable outlet
2-wire system:	Supply +	1	3	3	White Brown Cable shield
	Supply -	2	4	1	
	Earth	Earth contact	5	2	
RS 232 <sup>1)</sup> :	RxD	-	-	4	-
	TxD			5	
	CTS			6	
	GND			7	

<sup>1)</sup> Software, interface and cable must be ordered separately. The units are shipped with a detailed connection diagram.



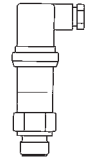
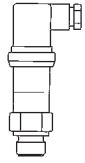
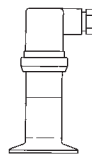
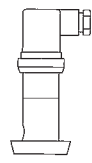
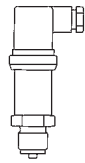
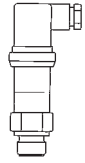
# Pressure transducers DMU 04/DMU 05 P

DG: H

Type	DMU 04	DMU 04	DMU 04 CP	DMU 04 MR	DMU 05 P	DMU 05 P VM
Version						
Measuring principle	Piezo-resistive stainless steel measuring cell					
Measuring accuracy (IEC 60770)	0.35 % FSO (> 40 bar 0.5 % FSO)	0.35 % FSO (> 40 bar 0.5 % FSO)	0.35 % FSO (< 0.4 bar 0.5 % FSO)	0.35 % FSO (< 0.4 bar 0.5 % FSO)	0.1 % FSO	0.1 % FSO
Wetted parts	Stainless steel 316 L				Stainless steel 316 L/FKM	
Connection	G½B DIN 3852-E with flush diaphragm	G1B DIN 3852-E with flush diaphragm	Clamp 1" ISO 2852	Conical dairy fitting DIN 11851 DN 25 (without union nut)	G½B EN 837	G½B DIN 3852 with flush diaphragm
Safety integrity level	SIL 2	SIL 2	SIL 2	SIL 2		
Supply voltage	DC 8–32 V	DC 8–32 V	DC 8–32 V	DC 8–32 V	DC 10–32 V	DC 10–32 V
Output	4–20 mA	4–20 mA	4–20 mA	4–20 mA	4–20 mA	4–20 mA
System	2-wire	2-wire	2-wire	2-wire	2-wire	2-wire
Electrical connection	Connector and junction box as per ISO 4400 (DIN 43650-A)					
Measuring range	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
<b>Price €</b>						
-1/0 bar	---	31663	31686	31719	31742	---
-1/+1.5 bar	31647	31664	31687	31720	31743	---
-1/+3 bar	31648	31665	31688	31721	31744	---
-1/+5 bar	31649	31666	31689	31722	31745	---
<b>Price €</b>						
0/100 mbar	---	33021	---	---	33026	33027
0/160 mbar	---	33022	---	---	31747	31771
0/250 mbar	33016	31669	33023	33025	31748	31772
0/400 mbar	33017	31670	33024	31726	31749	31773
0/600 mbar	33018	31671	31694	31727	31750	31774
<b>Price €</b>						
0/1 bar	33019	31672	31695	31728	31751	31775
0/1.6 bar	33020	31673	31696	31729	31752	31776
0/2.5 bar	31651	31674	31697	31730	31753	31777
0/4 bar	31652	31675	31698	31731	31754	31778
0/6 bar	31653	31676	31699	31732	31755	31779
0/10 bar	31654	31677	31710	31733	31756	31780
0/16 bar	31655	31678	31711	31734	31757	31781
0/25 bar	31656	31679	31712	31735	31758	31782
<b>Price €</b>						
0/40 bar	31657	31680	31713	31736	31759	33028
0/60 bar	31658	31681	---	---	31760	---
0/100 bar	31659	31682	---	---	31761	---
0/160 bar	31660	31683	---	---	31762	---
0/250 bar	31661	31684	---	---	31763	---
0/400 bar	31662	31685	---	---	31764	---
0/600 bar	---	---	---	---	31765	---

# Extra charges for DMU 04/DMU 05 P

DG: H

Type	DMU 04	DMU 04	DMU 04 CP	DMU 04 MR	DMU 05 P	DMU 05P VM
Version						
	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>
EX protection II 1 G Ex ia IIC T4						
Clamp 1½" ISO 2852	---	---		---	---	---
Clamp 2" ISO 2852	---	---		---	---	---
Conical dairy fitting DIN 11851 DN 40	---	---	---		---	---
Conical dairy fitting DIN 11851 DN 50	---	---	---		---	---
Sep. union nut DIN 11851 DN 25	---	---	---		---	---
Sep. union nut DIN 11851 DN 40	---	---	---		---	---
Sep. union nut DIN 11851 DN 50	---	---	---		---	---
G1B with conical seal	---		---	---	---	---
Other process connections						
High temperature version up to +300 °C					---	---
Field housing (stainless steel 304)					---	---
Binder connector 723						
Fixed cable connection 2 metres						
Cable extension per metre						
Output 0–20 mA, 3-wire					---	---
Output 0–10 V, 3-wire					---	---
Other output signals						
Absolute pressure (measuring ranges according to data sheet)						
Measuring accuracy 0.25 % FSO					---	---
Calibration report (for measuring accuracy 0.25 % FSO)					---	---
RS 232 interface*	---	---	---	---		
Programming interface and software	---	---	---	---		

\*Only in conjunction with Binder connector 723

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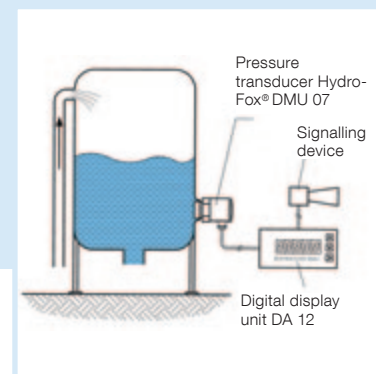
See chapter 14 for digital display units and signal processing.



# Pressure transducers HydroFox® DMU 07 for level measurement



- Flush diaphragm
- No transmission liquid
- Mechanically insensitive ceramic sensor
- Small temperature error
- High overpressure safety



**Application** For continuous electronic level measurement of liquids and for pressure measurement of liquids and gases in plant engineering.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. HydroFox® DMU 07 uses a capacitance ceramic measuring cell.

## Technical specifications

### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $\leq \pm 0.35\%$  FSO

### Measuring ranges

Relative pressure: 0/40 mbar to 0/20 bar

### Overpressure safety

$\leq 400$  mbar at least 15 x FS  
 $> 400$  mbar at least 3 x FS

### Operating temperature range

Medium:  $-25/+125$  °C  
 Ambient:  $-25/+85$  °C  
 Storage:  $-40/+100$  °C

### Temperature error band

In compensated range  
 $-20/+80$  °C  $< 0.5\%$  FSO/10 K

### Dynamic characteristics

Response time  $< 200$  ms

### Process connection

G1½B flush diaphragm

### Materials

Housing: Stainless steel 316 L  
 Pressure connection: Stainless steel 316 L  
 Diaphragm: Ceramic (Al<sub>2</sub>O<sub>3</sub> 96 %)  
 Seal: FKM (Viton)

### Output signal/supply voltage

4–20 mA DC 9–36 V  
 2-wire

### Load

4–20 mA  $\leq \frac{U_B - U_{Bmin}}{0.02 A}$

### Current input

4–20 mA  $< 21$  mA

### Electrical protection

Short circuit proof and protected against reverse polarity

### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

### CE conformity (EMC)

EMC Directive 2004/108/EC

- Options**
- Pressure connection made of PVDF
  - Other seal materials
  - Field housing (stainless steel 304)
  - Higher accuracy
  - Other output signals

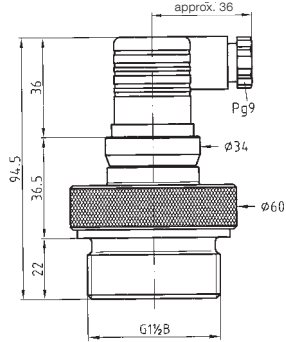
## i

See chapter 1 for the complete "Level Measurement" range. See page 467 for prices.

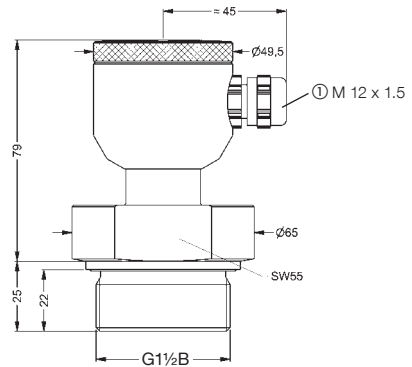
# Pressure transducers HydroFox® DMU 07

## Dimensions (mm) and electrical connections

Connection G1½B DIN 3852 type E –  
Connector and junction box ISO 4400

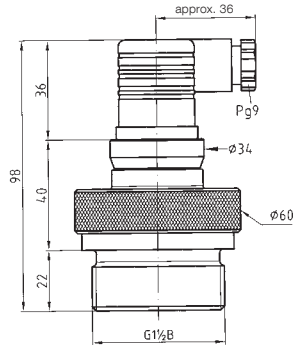


Connection G1½B – field housing



① Cable outlet

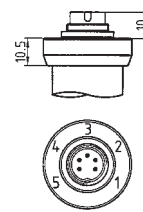
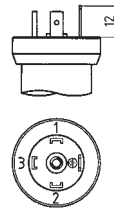
Connection G1½B DIN 3852 type E –  
Pressure connection made of PVDF



Electrical connections

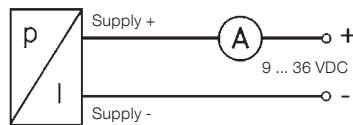
DIN 43650

Binder 723



Wiring diagram

2-wire 4–20 mA

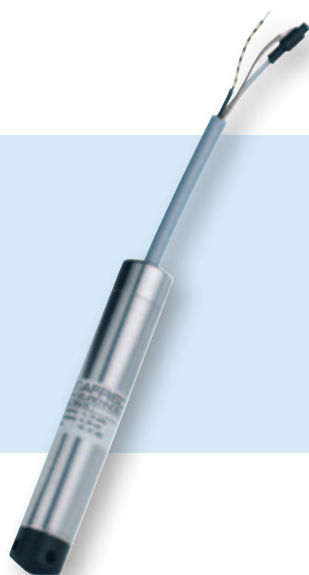


Pin assignment table

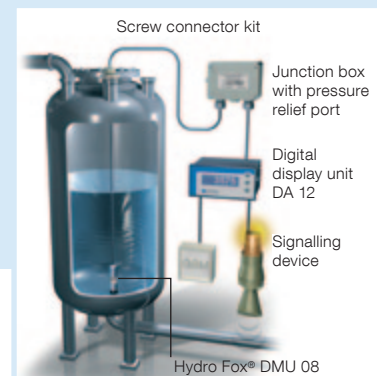
	Electrical connections	
	Connector ISO 4400	Cable colours (DIN 47100)
2-wire system: Supply + (4–20 mA)	1	White
Supply –	2	Brown
Earth	Earth pin	Cable shield

The units are shipped with a detailed connection diagram.

# Pressure transducers HydroFox® DMU 08 – level probe



- SIL 2
- Compact and sturdy stainless steel design
- Integrated overvoltage protection
- Special calibration for all standard pressure units possible
- Optional ATEX version



**Application** For electronic, continuous level measurement, e.g. in wells, drilling holes, water, containers or in waste water systems. Suitable for groundwater, drinking water, waste water (with optional FEP cable), diesel fuel and fuel oil.

**Description** Pressure transducers HydroFox® DMU 08 convert physical pressure into an electrical signal proportional to the pressure. HydroFox® DMU 08 uses a piezo-resistive silicon measuring cell. DMU 04 has safety integrity level SIL 2 (IEC 61508/61511).

## Technical specifications

### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $\leq \pm 0.35\%$  FSO (measuring ranges 0/100 mbar to 0/400 mbar  $< \pm 0.5\%$  FSO)

### Measuring ranges

Relative pressure: 0/100 mbar to 0/25 bar

### Overpressure safety

At least 2 x FS  
400 mbar at least 3 x FS

(burst pressure at least 3 x FS)

### Operating temperature range

Medium: -10/+70 °C  
Ambient: -10/+70 °C  
Storage: -25/+70 °C  
EX version max. +60 °C

### Temperature error band

In compensated range  
0/70 °C  $< 1\%$  FSO/10 K

### Dynamic characteristics

Response time  $< 10$  ms

### Materials

Housing: Stainless steel 316 L  
Diaphragm: Stainless steel 316 L  
Seals: FKM (Viton)

### Pressure transmission liquid

Silicone oil

### Supply voltage

DC 8–32 V EX version DC 10–28 V

### Output signal

4–20 mA, 2-wire

### Load

$$4-20 \text{ mA} \leq \frac{U_B - U_{Bmin}}{0.02 \text{ A}}$$

### Current input

4–20 mA  $< 25$  mA

### Electrical protection

Short circuit proof and protected against reverse polarity

### Electrical connection/degree of protection

PUR cable (IP 68)

### CE conformity (EMC)

EMC Directive 2004/108/EC

### Safety integrity level

SIL 2 (IEC 61508/61511)

### Accessories (options)

- Screw connector kit
- Junction box
- Overvoltage protection
- Anchor clamp

- Options**
- EX version (II 1 G Ex ia IIC T4)
  - FEP cable

## i

See chapter 1 for the complete "Level Measurement" range. See page 467 for prices.

# Pressure transducers HydroFox® DMU 08

## Dimensions (mm) and electrical connections

<p>Standard version</p>		<p>EX version</p>									
<p>Screw connector kit</p>		<p>Anchor clamp</p>									
<p>Junction box with pressure relief port</p>		<p>Pin assignment table</p> <table border="1"> <tr> <td></td> <td>Cable colours (DIN 47100)</td> </tr> <tr> <td>2-wire system: Supply + (4-20 mA)</td> <td>White</td> </tr> <tr> <td>Supply -</td> <td>Brown</td> </tr> <tr> <td>Earth</td> <td>Cable shield</td> </tr> </table>			Cable colours (DIN 47100)	2-wire system: Supply + (4-20 mA)	White	Supply -	Brown	Earth	Cable shield
	Cable colours (DIN 47100)										
2-wire system: Supply + (4-20 mA)	White										
Supply -	Brown										
Earth	Cable shield										
<p>Wiring diagram</p> <p>2-wire 4-20 mA</p>		<p>Pin assignment table</p> <table border="1"> <tr> <td></td> <td>Cable colours (DIN 47100)</td> </tr> <tr> <td>2-wire system: Supply + (4-20 mA)</td> <td>White</td> </tr> <tr> <td>Supply -</td> <td>Brown</td> </tr> <tr> <td>Earth</td> <td>Cable shield</td> </tr> </table>			Cable colours (DIN 47100)	2-wire system: Supply + (4-20 mA)	White	Supply -	Brown	Earth	Cable shield
	Cable colours (DIN 47100)										
2-wire system: Supply + (4-20 mA)	White										
Supply -	Brown										
Earth	Cable shield										

The units are shipped with a detailed connection diagram.

# Pressure transducers HydroFox® DMU 09 Level probe – for chemical applications



- Chemical-resistant plastic version
- Robust ceramic diaphragm without transmission liquid
- Highly resistant FEP cable
- Special calibration for all standard pressure units possible



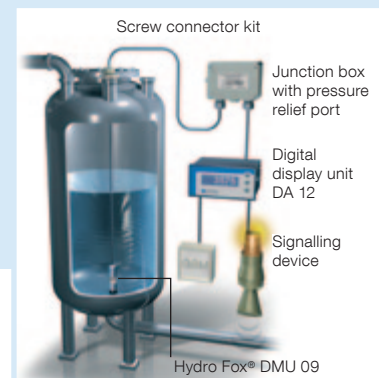
Page 587



Page 589



Page 592



**Application** For electronic, continuous level measurement in extremely corrosive liquids, e.g. chemicals or waste water from landfill sites.

**Description** Pressure transducers HydroFox® convert physical pressure into an electrical signal proportional to the pressure. HydroFox® DMU 09 uses a capacitance ceramic measuring cell.

## Technical specifications

### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $< \pm 0.35\%$  FSO

### Measuring ranges

Relative pressure: 0/40 mbar to 0/10 bar

### Overpressure safety

$\leq 400$  mbar at least 15 x FS  
 $> 400$  mbar at least 4 x FS

### Operating temperature range

Medium: 0/70 °C  
 Ambient: -10/+70 °C  
 Storage: -10/+70 °C

### Temperature error band

In compensated range  
 0/70 °C  $< 0.5\%$  FSO/10 K

### Dynamic characteristics

Response time  $< 200$  ms

### Materials

Housing: PP  
 Diaphragm: Ceramic ( $\text{Al}_2\text{O}_3$  96 %)  
 Seals: FKM (Viton)

### Output signal/supply voltage

4–20 mA DC 11–32 V  
 2-wire

### Load

4–20 mA  $\leq \frac{U_B - U_{Bmin}}{0.02 \text{ A}}$

### Current input

4–20 mA  $< 25$  mA

### Electrical protection

Short circuit proof and protected against reverse polarity

### Electrical connection/degree of protection

FEP cable (IP 68)

### CE conformity (EMC)

EMC Directive 2004/108/EC

### Accessories (options)

- Screw connector kit
- Junction box
- Lightning protection
- Anchor clamp

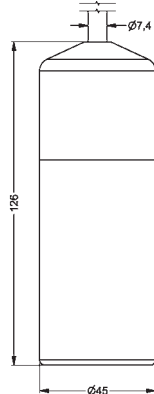
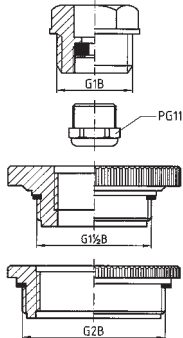
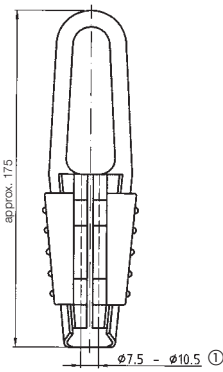
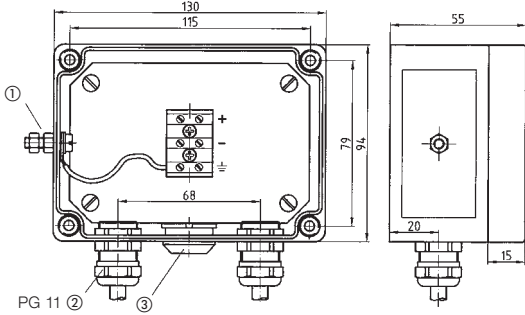
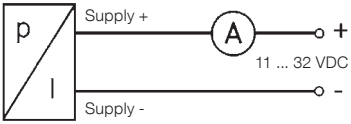
- Options**
- Housing PVDF
  - Cable protection conduits
  - FFKM seals
  - Diaphragm pure ceramic ( $\text{Al}_2\text{O}_3$  99.9 %)

## i

See chapter 1 for the complete "Level Measurement" range. See page 467 for prices.

# Pressure transducers HydroFox® DMU 09

## Dimensions (mm) and electrical connections

<p>Standard version</p> 	<p>Screw connector kit</p> 								
<p>Anchor clamp</p>  <p>① Cable diameter</p>	<p>Junction box with pressure relief port</p>  <p>① Earth      ② Cable gland PG 11      ③ Pressure compensation element</p>								
<p>Wiring diagram</p> <p>2-wire      4–20 mA</p> 	<p>Pin assignment table</p> <table border="1" data-bbox="786 1339 1409 1518"> <tr> <td></td> <td>Cable colours (DIN 47100)</td> </tr> <tr> <td>2-wire system: Supply + (4–20 mA)</td> <td>White</td> </tr> <tr> <td>Supply -</td> <td>Brown</td> </tr> <tr> <td>Earth</td> <td>Cable shield</td> </tr> </table>		Cable colours (DIN 47100)	2-wire system: Supply + (4–20 mA)	White	Supply -	Brown	Earth	Cable shield
	Cable colours (DIN 47100)								
2-wire system: Supply + (4–20 mA)	White								
Supply -	Brown								
Earth	Cable shield								

The units are shipped with a detailed connection diagram.

11

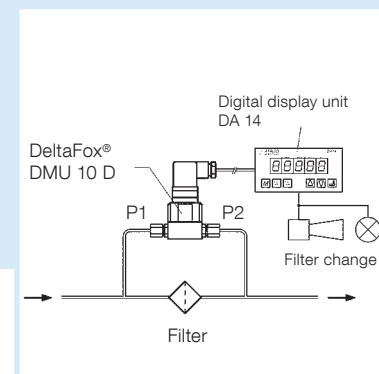


# Pressure transducers DeltaFox® DMU 10 D

## Version for differential pressure measurement



- Compact design
- Robust aluminium housing
- High long-term stability
- High overpressure safety
- Long service life



**Application** For electronic differential pressure measurement at very low differential pressure. For non-corrosive gaseous media. Particularly suitable for monitoring filters and fans in air and air conditioning applications.

**Description** The DeltaFox® DMU 10 D pressure transducers feature piezo-resistive silicon measuring cells. When pressure is applied, the pressure difference between the positive side and the negative side is converted into a current or voltage signal which is proportional to the differential pressure.

### Technical specifications

#### Measuring accuracy

Deviation from the characteristic curve as per IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):

> 0/160 mbar:	< ±0.35 % FSO
0/40–0/160 mbar:	≤ ±1 % FSO
< 0/40 mbar:	≤ ±2 % FSO

#### Long-term stability

≤ +0.2 % FSO/year

#### Measuring ranges

Differential pressure measuring range	Max. static pressure
0/6 mbar to 0/10 mbar	100 mbar
0/25 mbar	200 mbar
0/40 mbar to 0/60 mbar	350 mbar
0/100 mbar to 0/400 mbar	1000 mbar
0/600 mbar to 0/1000 mbar	3000 mbar

#### Operating temperature range

Medium: -25/+125 °C  
Ambient: -25/+85 °C  
Storage: -40/+100 °C

#### Temperature error band

Differential pressure measuring range	In compensated range 0/60 °C
< 0/10 mbar	≤ ±2.0 % FSO
< 0/25 mbar	≤ ±1.5 % FSO
< 0/250 mbar	≤ ±1.0 % FSO
> 0/250 mbar	≤ ±0.5 % FSO

#### Dynamic characteristics

Response time < 5 ms

#### Process connection

2 x G½B female thread

#### Materials

Housing: Aluminium  
Process connection: Aluminium  
Sensor: Silicon, glass, RTV, Ceramic (Al<sub>2</sub>O<sub>3</sub>, nickel)  
Seal: PUR glued

#### Output signal/supply voltage

4–20 mA, 2-wire DC 12–36 V  
0–20 mA, 3-wire DC 14–36 V  
0–10 V, 3-wire DC 14–36 V

#### Load

4–20 mA ≤  $\frac{U_B - U_{Bmin}}{0.02 \text{ A}}$   
0–20 mA < 500 Ohm  
0–10 V > 10 kOhm

#### Current input

0/4–20 mA max. 25 mA  
0–10 V max. 7 mA

#### Electrical protection

Short circuit proof and protected against reverse polarity

#### Electrical connection/degree of protection

Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

#### CE conformity (EMC)

EMC Directive 2004/108/EC

#### Options

- Other process connections
- Other electrical connections
- Digital plug-in display DA 06



See page 467 for prices.

# Pressure transducers DeltaFox® DMU 10 D

## Dimensions (mm) and electrical connections

**Connection 2 x G<sup>1</sup>/<sub>8</sub> female thread**

① Connector ISO 4400

① Screw

**DMU 10 D with plug-in display DA 06**

① Connector ISO 4400

**Electrical connections**

Standard

ISO 4400 (IP 65)

Optional

M12x1 4-pin (IP 67)

Optional

Cable outlet (IP 67)

**Wiring diagram**

2-wire

4–20 mA

3-wire

0–20 mA

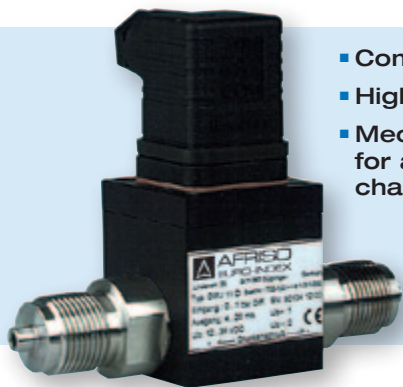
0–10 V

**Pin assignment table**

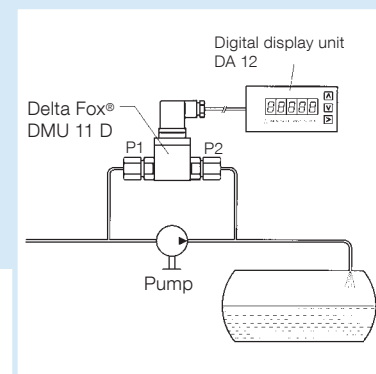
Pin assignment	ISO 4400 (DIN 43650)	M 12 x 1	Cable colours
2-wire system: Supply + (4–20 mA)	1	1	White
Supply -	2	2	Brown
Earth	Earth pin	4	Yellow/green shield
3-wire system: Supply +	1	1	White
Supply -	2	2	Brown
Signal +	3	3	Green
Earth	Earth pin	4	Cable shield

# Pressure transducers DeltaFox® DMU 11 D

## Version for differential pressure measurement



- Compact design
- High overload safety
- Mechanically robust and reliable, suitable for applications involving dynamic pressure changes as well as shock and vibration



**Application** For electronic differential pressure measurement in industrial applications. For corrosive gaseous and liquid media which are not highly viscous and do not crystallise.

**Description** The DeltaFox® DMU 11 D pressure transducers feature two oil-immersed piezo-resistive stainless steel measuring cells. When pressure is applied, the pressure difference between the positive side and the negative side is converted into a current or voltage signal which is proportional to the differential pressure.

### Technical specifications

#### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  $< \pm 0.5 \% \text{ FSO}$

#### Measuring ranges/overload safety

Nominal pressure (bar)	Differential pressure measuring range (bar)	Max. static pressure at one end (bar)
0.4	0/0.04 to 0/0.4	1
1.0	0/0.1 to 0/1.0	3
2.5	0/0.25 to 0/2.5	6
6.0	0/0.6 to 0/6.0	20
16	0/1.6 to 0/16	60

#### Operating temperature range

Medium:  $-25/+125 \text{ }^\circ\text{C}$   
 Ambient:  $-25/+85 \text{ }^\circ\text{C}$   
 Storage:  $-40/+100 \text{ }^\circ\text{C}$

#### Temperature error band

In compensated range  
 $0-70 \text{ }^\circ\text{C} \leq 1.5 \% \text{ FSO}$   
 at nominal pressure  $0.4 \text{ bar} \leq 2 \% \text{ FSO}$

#### Dynamic characteristics

Response time  $< 5 \text{ ms}$

#### Process connection

$2 \times \text{G}1/2\text{B}$  (837-1/7.3)

#### Materials

Housing: Aluminium  
 Pressure connection: Stainless steel 316 Ti  
 Diaphragm: Stainless steel 316 Ti  
 Seal: FKM (Viton)

### Options

- Other process connections
- Other electrical connections
- Other seal materials
- Other output signals
- Fitting of chemical seal



See page 467 for prices.

#### Output signal/supply voltage

4–20 mA, 2-wire DC 12–36 V  
 0–10 V, 3-wire DC 14–36 V

#### Load

$4-20 \text{ mA} \leq \frac{U_B - U_{Bmin}}{0.02 \text{ A}}$   
 $0-10 \text{ V} > 10 \text{ k}\Omega$

#### Current input

4–20 mA  $< 25 \text{ mA}$   
 0–10 V  $< 7 \text{ mA}$

#### Electrical protection

Short circuit proof and protected against reverse polarity

#### Electrical connection/degree of protection

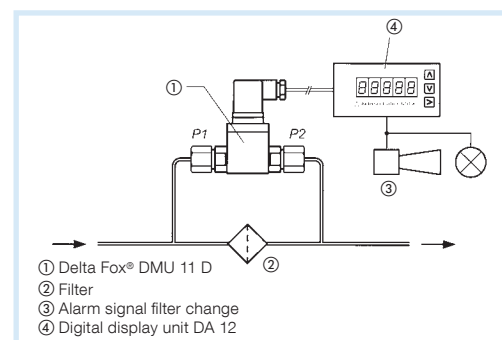
Connector and junction box as per ISO 4400 (DIN 43650-A), IP 65

#### CE conformity (EMC)

EMC Directive 2004/108/EC

#### Scope of delivery

Pressure measuring instrument with mounting bracket



# Pressure transducers DeltaFox® DMU 11 D

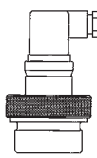
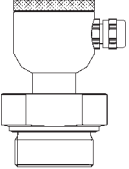

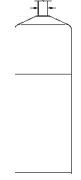
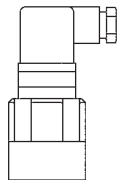
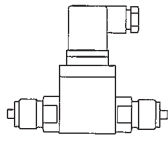
## Dimensions (mm) and electrical connections

<p>Connection 2 x G<math>\frac{1}{2}</math>B (EN 837)</p> <p>① Connector</p>	<p>Connection 2 x G<math>\frac{1}{2}</math>B (EN 837)</p> <p>① Screw</p>																
<p>Connection 2 x 7/16 UNF</p> <p>① Connector</p>	<p>Connection 2 x G<math>\frac{1}{4}</math> female thread</p> <p>① Plug connection ② Pressure connection (female thread)</p>																
<p>Wiring diagram</p> <p>2-wire 4–20 mA</p>	<p>Pin assignment table</p> <table border="1"> <thead> <tr> <th>Pin assignment</th> <th>ISO 4400 (DIN 43650)</th> </tr> </thead> <tbody> <tr> <td>2-wire system: Supply + (4–20 mA)</td> <td>1</td> </tr> <tr> <td>Supply –</td> <td>2</td> </tr> <tr> <td>Earth</td> <td>Earth pin</td> </tr> <tr> <td>3-wire system: Supply +</td> <td>1</td> </tr> <tr> <td>Supply –</td> <td>2</td> </tr> <tr> <td>(0...10 V) Signal +</td> <td>3</td> </tr> <tr> <td>Earth</td> <td>Earth pin</td> </tr> </tbody> </table>	Pin assignment	ISO 4400 (DIN 43650)	2-wire system: Supply + (4–20 mA)	1	Supply –	2	Earth	Earth pin	3-wire system: Supply +	1	Supply –	2	(0...10 V) Signal +	3	Earth	Earth pin
Pin assignment	ISO 4400 (DIN 43650)																
2-wire system: Supply + (4–20 mA)	1																
Supply –	2																
Earth	Earth pin																
3-wire system: Supply +	1																
Supply –	2																
(0...10 V) Signal +	3																
Earth	Earth pin																

The units are shipped with a detailed connection diagram.

# Pressure transducers DMU 07 – DMU 11 D

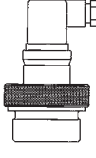
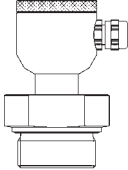


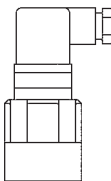
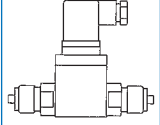
DG: H

Type	DMU 07	DMU 07 FG	DMU 08	DMU 09	DMU 10 D	DMU 11 D*
Version						
Measuring principle	Capacitance ceramic measuring cell		Piezo-resistive stainless steel measuring cell	Piezo-resistive ceramic measuring cell	Piezo-resistive silicon measuring cell	Piezo-resistive stainless steel measuring cell
Measuring accuracy (IEC 60770)	0.35 % FSO	0.35 % FSO	0.35 % FSO (≤ 0.4 bar 0.5 % FSO)	0.35 % FSO	> 160 mbar = 0.35 % FSO 40–160 mbar = 1 % FSO < 40 mbar = 2 % FSO	0.5 % FSO (with ref. to nominal pressure)
Wetted parts	Ceramic/FKM Stainless steel 316 L	Ceramic/FKM Stainless steel 316 L	Stainless steel/ FKM 316 L	PP/ceramic/FKM	Aluminium/silicon/glass RTV/ceramic, nickel/PUR (glued)	Stainless steel/ FKM 316 Ti
Connection	G1½B with flush diaphragm	G1½B with flush diaphragm	---	---	2 x G1/8B female thread	2 x G1/2B EN 837
Safety integrity level	---	---	SIL 2	---	---	---
Supply voltage	DC 9–36 V	DC 9–36 V	DC 12–36 V	DC 9–36 V	DC 12–36 V	DC 12–36 V
Output	4–20 mA	4–20 mA	4–20 mA	4–20 mA	4–20 mA	4–20 mA
System	2-wire	2-wire	2-wire	2-wire	2-wire	2-wire
Electrical connection	Connector ISO 4400 (43650-A)	Field housing M12 x 1.5	5 m PUR cable	5 m FEP cable	Connector ISO 4400 (43650-A)	
Measuring range	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
<b>Price €</b>						
0/6 mbar	---	---	---	---	31861	---
0/10 mbar	---	---	---	---	31862	---
0/25 mbar	---	---	---	---	31863	---
0/40 mbar	31789	31821	---	31767	31864	31830
0/60 mbar	31790	31805	---	31768	31865	31831
0/100 mbar	31791	31547	<b>31555</b>	31571	31866	31813
0/160 mbar	31792	31806	<b>31556</b>	31572	31867	31814
0/200 mbar	31793	31548	<b>31557</b>	31573	---	---
0/250 mbar	31794	31807	<b>31558</b>	31574	31868	31815
0/300 mbar	---	---	<b>31519</b>	31812	---	---
0/400 mbar	31795	31549	31559	31575	31869	31832
0/600 mbar	31796	31808	31560	31576	31870	31833
0/1 bar	31797	31550	31561	31577	31871	31816
0/1.6 bar	31798	31809	31562	31578	---	31834
0/2 bar	31799	31551	31563	31579	---	---
0/2.5 bar	---	---	31564	31580	---	31817
0/4 bar	31800	31552	31565	31581	---	31835
0/6 bar	31801	31810	31566	31582	---	31818
0/10 bar	31802	31553	31567	31583	---	31836
0/16 bar	---	---	31568	---	---	31837
0/20 bar	---	---	31569	---	---	---
0/25 bar	---	---	31570	---	---	---

\* Please specify required nominal pressure/maximum static pressure when ordering.

# Extra charges/accessories for DMU 07 – DMU 11 D

DG: H

Type	DMU 07	DMU 07 FG	DMU 08	DMU 09	DMU 10 D	DMU 11 D
Version						
	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>
EX protection II 1 G EEx ia IIC T4	---	---	---	---	---	---
2 x G $\frac{1}{4}$ female thread	---	---	---	---	---	---
2 x hose connection 6 mm	---	---	---	---	---	---
2 x $\frac{7}{16}$ UNF	---	---	---	---	---	---
Other connections			---	---		
Cable connection per metre PUR cable	---	---		---	---	---
Cable connection per metre FEP cable	---	---			---	---
Binder connector		---	---	---	---	---
Fixed cable connection 2 metres		---	---	---		---
Cable extension per metre		---	---	---		---
Output 0–20 mA, 3-wire	---	---		---		---
Output 0–10 V, 3-wire						
Other output signals						
Measuring accuracy 0.25 % FSO			---	---	---	---
Calibration report (for measuring accuracy 0.25 % FSO)			---	---	---	---

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## Accessories for DMU 08/ DMU 09

DG: H

	Part no.	Price €
Screw connector kit, plastic G2" – 1 $\frac{1}{2}$ " – 1"	<b>52125</b>	
Screw connector kit stainless steel G1"	<b>31822</b>	
Adapter stainless steel G1" to G1 $\frac{1}{2}$ "	<b>31823</b>	
Junction box with pressure relief port (IP 65)	<b>31824</b>	
Anchor clamp	<b>31825</b>	

i

See chapter 14 for digital display units and signal processing.



# Pressure transducers DMU 12

## Intelligent version



- Level measurement version with adjustable function tables
- Text-based user interface via graphic display
- Turn down 20:1
- HART protocol optional



**Application** For high-precision electronic measurement of pressure or differential pressure, with integrated digital display. Robust design for use in rough operating conditions, e.g. chemical industry, process engineering and food industry.

**Description** The DMU 12 pressure transducers feature a calibrated, amplified sensor signal which is available as a standardised current output, also via HART protocol.

### Technical specifications

#### Graphic display

Text-oriented user interface  
Display versions (standard):  
Measured value and pressure unit plus choice of one of the following:

1. Bar chart
2. Sensor temperature
3. Measured value in %
4. Output current in mA

#### Mounting position

Any position; housing can be rotated by 170° to the left or to the right; the display and control panel can be factory-set at angles of 90°, 180° or 270°.

#### Measuring accuracy

< 0/200 bar ≤ ±0.2 % FSO  
≥ 0/200 bar ≤ ±0.5 % FSO

#### Range selection/range spread

User-adjustable without test bench  
Maximum spread 1:20  
(at: differential pressure max. 1:10)

#### Operating temperature range

Medium: -10/+90 °C  
Ambient: -10/+55 °C  
Storage: -25/+60 °C

#### Temperature error band

In compensated range  
-10/+30 °C < ±0.1 FSO %/10 K

#### Dynamic characteristics

Suitable for static and dynamic measurements;  
measuring cycle max. 0.8 s

#### Process connection

Stainless steel 316 L  
G½B (EN 837-1/7.3)

#### Wetted parts

Stainless steel 316 L

#### Pressure transmission liquid

Silicone oil

#### Output signal/supply voltage

4–20 mA, 2-wire DC 12–50 V  
(optional with HART protocol)  
Short circuit protected,  
protected against reverse polarity  
Maximum ± supply voltage

#### Load

4–20 mA ≤  $\frac{U_B - U_{Bmin}}{0.02 A}$

#### Current input

4–20 mA max. 20.8 mA

#### Housing (degree of protection)

Stainless steel 303 (IP 65), window safety glass

#### Electrical connections

Cable gland

#### CE conformity (EMC)

EN 50081-1 and EN 50082-2

### Options

- HART protocol
- Version for differential pressure measurement
- Version for level measurement
- Fitting of chemical seal
- Wall bracket
- EX version (II 2 G Ex ia II C T4/T5/T6)



For menu types and measuring ranges, see table on page 470. See page 476 for prices.

# Pressure transducers DMU 12

## Menu types

The following menus are available for displaying information and selecting parameters:

Menu type	Meaning	Menu type	Meaning
Measuring range selection	Specify pressure range, without indication of pressure	Alarm condition	Specify output current for fault
Damping	Select signal damping	Calibrate	Specify pressure range, with indication of pressure
Min./max. values	Display min./max. pressure/level and temperature values	Current balancing	Adapt output signal to connected devices
Output functions	Select output function (linear, inverted, root, table)	Factory defaults	Reset to factory defaults
Pressure units	Select physical unit with conversion, e.g. mWC, mmHg, mbar, psi	Lock	Protection against unauthorised use
Measurement cycle test	Create a defined output signal (current)	Language	Select language (English/German)

Measuring ranges	Overpressure safety	Measuring ranges	Overpressure safety (one side)	Max. static pressure
Relative pressure:		Differential pressure:		
-160/+160 mbar	2 bar			
-1/+1 bar	6 bar	0/1 bar	6 bar	75 bar
-1/+4 bar	16 bar	0/4 bar	16 bar	75 bar
-1/+16 bar	60 bar	0/16 bar	30 bar	75 bar
-1/ +40 bar	100 bar			
-1/ +100 bar	150 bar			
-1/+400 bar	500 bar			
Absolute pressure:				
0/1 bar	3 bar absolute			
0/ 4 bar	10 bar absolute			
0/16 bar	60 bar absolute			

## Dimensions (mm) and electrical connections

Standard version – connection G $\frac{1}{2}$ B

① Cable gland for cable

Version for differential pressure measurement – fitting of chemical seal

① Chemical seals

approx. 120

Wiring diagram

2-wire 4–20 mA



# Pressure transducers DMU 13 with local display



- Robust stainless steel housing (safety housing)
- High-precision measurements with integrated transducer
- Mechanical, power-independent local display



Chapter 10



Page 587

**Application** For pressure measurements with a power-independent local display in combination with an electrical output signal.

**Description** The DMU 13 pressure transducers consist of a mechanical Bourdon tube measuring element and a piezo-resistive stainless steel measuring cell. The Bourdon tube measuring element is used to provide an easy-to-read analogue local display. The display is power-independent. Due to the integrated pressure transducer, high-precision measurement in parallel is possible. A standardised current output is available for signal transmission and recording of measured data. The robust stainless steel housing has a solid baffle wall and blow out (safety housing).

## Technical specifications

**Nominal size**  
100

### Measuring accuracy

Pressure gauge: class 1.0 (EN 837-1/6)  
Transducer: Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability):  
< ± 0.5 % FSO

### Measuring ranges

Relative pressure: 0/0.6 to 0/40 bar

### Application area

Static load: full scale value  
Dynamic load:  
0.9 x full scale value  
Short term: 1.3 x full scale value

### Operating temperature range

Medium: -20/+100 °C  
Ambient: -20/+60 °C  
Storage: -40/+70 °C

## Additional data transducer

**Output signal/supply voltage**  
4–20 mA DC 12–36 V  
2-wire

**Load**  
4–20 mA ≤  $\frac{U_B - U_{Bmin}}{0.02 \text{ A}}$

**Current input**  
4–20 mA < 25 mA

## Housing (safety housing)

Housing with solid baffle wall and blow-out at back

### Window

Laminated safety glass

### Degree of protection

IP 54 (EN 60529)

### Process connection

G½B – spanner size SW 22, bottom  
(EN 837-1/7.3)

### Materials

Housing: Stainless steel 304  
Pressure connection: Stainless steel 316 L  
Diaphragm: Stainless steel 316 L  
Seal: FKM (Viton)

### Pressure transmission liquid

Silicone oil

### Electrical connection

Junction box

### Long-term stability

≤ ±0.2 % FSO/year

### Temperature error band

In compensated range  
0–70 °C ≤ 1 % FSO/10 K

### Pressure transmission liquid

Silicone oil



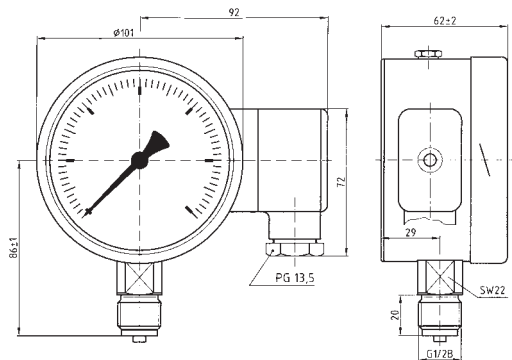
See page 476  
for prices.

- Options**
- Housing filling (paraffin oil)
  - Electrical contacts
  - Other process connections
  - Fitting of chemical seal

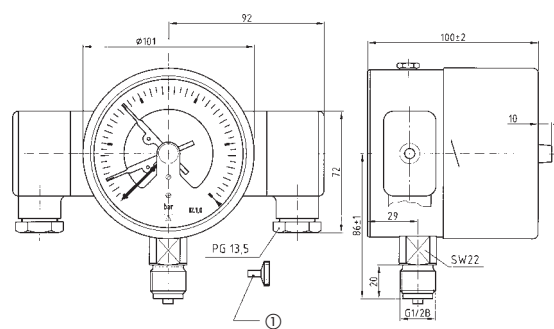
# Pressure transducers DMU 13

## Dimensions (mm) and electrical connections

Bottom connection



Bottom connection, with electrical contact



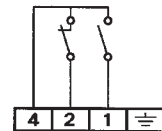
① Removable key, delivered loose with the unit.

Pin assignment table for pressure measuring cell (right junction box)

Supply +	1
Supply -	2
Earth	Earth pin

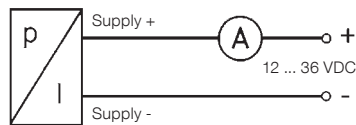
Pin assignment table for electrical contact (left junction box). Example: Magnetic spring contact MK2.12

Normally open contact	1
Normally closed contact	2
Common	4



Wiring diagram

2-wire, 4–20 mA



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# Pressure transducers DMU 14

## Version with field housing



- Robust housing design
- High measuring accuracy
- High overpressure safety
- Turn down 1:10
- High long-term stability
- Long service life
- Optional display



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DMU 14 FG with display



**Application** For electronic pressure measurement in applications requiring high measuring accuracy and long-term stability, especially under rough operating conditions. With aluminium die cast housing, the transducers are particularly suitable for process engineering applications. With stainless steel field housing and hygienic process connection, the transducers are also ideally suited for applications in the food industry.

**Description** Pressure transducers convert physical pressure into an electrical signal proportional to the pressure. DMU 14 is equipped with an oil-filled piezo-resistive silicon measuring cell.

### Technical specifications

#### Measuring accuracy

Deviation from the characteristic curve according to IEC 60770 – limit point calibration (non-linearity, hysteresis, repeatability)

250 mbar:  $\leq \pm 0.2\%$  FSO

$\geq 0/1$  bar:  $\leq \pm 0.1\%$  FSO

#### Long-term stability

$\pm 0.1\%$  x turn down FSO/year

#### Measuring ranges/overpressure safety

Relative pressure:

Measuring range	Max. overpressure
0/ 250 mbar	1000 mbar
0/1 bar	3 bar
0/1.6 bar	6 bar
0/6 bar	20 bar
0/16 bar	60 bar
0/25 bar	100 bar
0/60 bar	140 bar
0/160 bar	340 bar
0/250 bar	600 bar
0/600 bar	1000 bar

#### Operating temperature range

Without display

Medium: -40/+125 °C

Ambient: -40/+80 °C

Storage: -40/+80 °C

With display

Medium: -40/+125 °C

Ambient: -20/+70 °C

Storage: -30/+80 °C

#### Temperature error

-20/+80 °C < 0.3 % FSO

#### Dynamic characteristics

Response time < 100 ms

#### Process connection

G $\frac{1}{2}$ B (EN 837-1/7.3)

#### Materials

Housing: Stainless steel 316 L

Process connection: Stainless steel 316 Ti

Diaphragm: Stainless steel 316 L

Seal: FKM

#### Pressure transmission liquid

Silicone oil

#### Adjustable parameters

Electrical damping: 0/100 s

Offset: 0/90 %

Turn down (of span): 1:10

#### Output signal/ supply voltage

4–20 mA, 2-wire DC 10–30 V

4–20 mA, 2-wire DC 10–28 V

with Ex version/HART communication

#### Load

$R_{\max} = [(U_B - U_{Bmin}) / 0.02] \Omega$

HART communication  $R_{\min} = 250 \Omega$

#### Current input

4–20 mA max. 25 mA

#### Electrical protection

Short circuit proof and protected against reverse polarity

#### Electrical connection (degree of protection)

Connection terminals in terminal box (IP 67)

#### CE conformity (EMC)

EMC Directive 2004/108/EC

#### Options

- Other process connections
- EX version with HART communication
- High temperature version
- Integrated display in housing

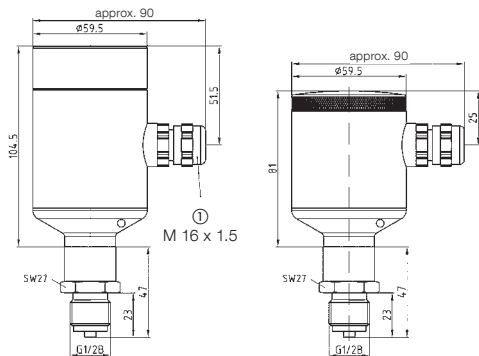


See page 476 for prices.

# Pressure transducers DMU 14

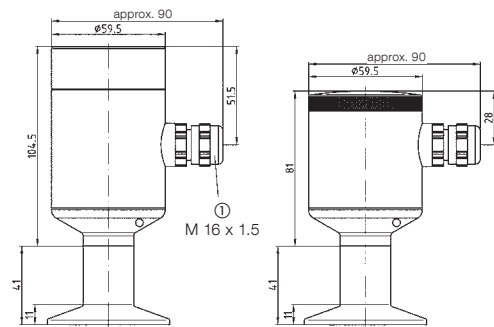
## Dimensions (mm) and electrical connections

DMU 14 FG 1/2" with and without display



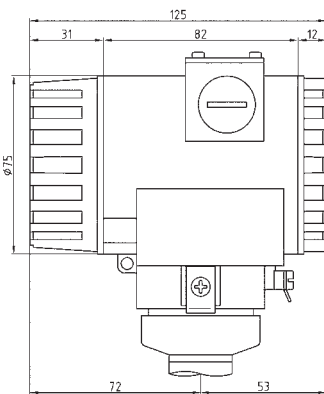
① Cable gland

DMU 14 FG Clamp 1/2" with and without display

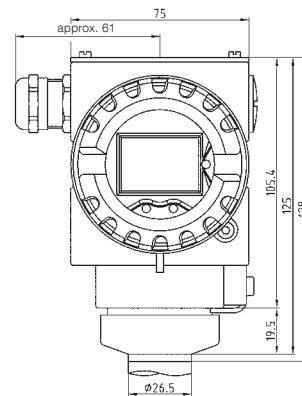


① Cable gland

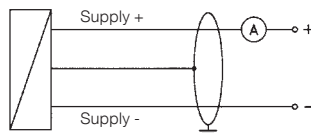
DMU 14 DG



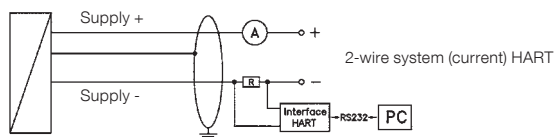
DMU 14 DG



### Wiring diagrams



2-wire system (current)



2-wire system (current) HART

### Pin assignment table

	Stainless steel field housing Connection terminals	Aluminium die cast housing Connection terminals
Supply +	1	2
Supply -	2	4
Test	Test	3
Earth	6	1

By connecting an ammeter between supply + and test, you can check the output signal without disconnecting the supply voltage.

# Universal digital pressure gauge DIM 20

## Service instrument



- High flexibility due to selectable units
- Min./max. memory
- Intuitive operation via menus
- Display can be rotated by 330°
- Zero and full scale can be calibrated

**Application** For high-precision electronic pressure measurement with local digital display, for applications such as hydraulics, pneumatics, mechanical and plant engineering.

**Description** Compact microprocessor-controlled pressure gauge with thick film ceramic measuring cell. The signal received from the pressure sensor is processed by the microprocessor, converted and displayed. Each device is shipped with its own measurement log.

### Technical specifications

#### Functions

Selection of units, min./max. memory, zero and full scale calibration, adjustable auto-off function, adjustable decimal point, battery status indication

#### Displayed values

Selectable pressure unit:  
bar/mbar/psi/InHg/mmHg/hPa/kPa/MPa/mWC

#### Display

Multi-line display

Line 1:

4.5 digit, numeric, for displaying the measured value (character height 9.5 mm)

Line 2:

6-digit, alphanumeric, for displaying additional information (character height 6.8 mm) and additional symbols

Display can be rotated by 330°

#### Measuring accuracy

±0.5 % FSO as per IEC 60770

±1 % FSO (-1/0 bar)

#### Measuring ranges

Relative pressure: -1/0 bar, 0/2.5 bar to 0/700 bar

#### Overpressure safety

At least 1.5 x FS

#### Burst pressure

< 160 bar at least 2.5 x FS

> 160 bar at least 1.5 x FS

#### Operating temperature range

Medium: -20/+125 °C

Ambient: -20/+45 °C

Storage: -30/+80 °C

Temperature error

In compensated range 0/70 °C < 0.5 % FSO/10 K

#### Dynamic characteristics

Measuring rate 5/s

#### Process connection

G1/4B (EN 837-1/7.3), bottom

#### Materials

Housing: PA6, glass-loaded

Pressure connection: Stainless steel 304

Diaphragm: Ceramic (Al<sub>2</sub>O<sub>3</sub> 96 %)

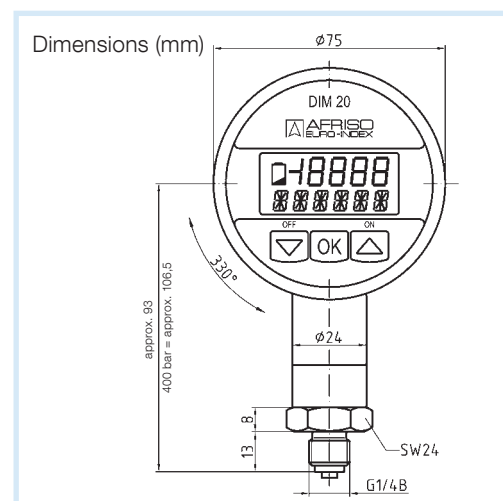
Seal: FKM

#### Degree of protection

IP 51 (EN 60529)

#### Supply voltage

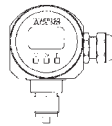
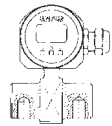
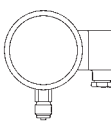
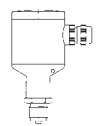
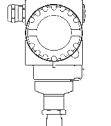

1 x lithium battery 3.6 V (included),  
battery life depends on usage (max. 5 years)



See page 476 for prices.

# Pressure transducers/digital pressure gauges

DG: H

Type	DMU 12	DMU 12 Dif	DMU 13	DMU 14 FG	DMU 14 DG	DIM 20
Version						
Housing Ø	62	62	100	60	75	75
Housing	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Aluminium	Plastic
Measuring accuracy	0.2 % FSO	0.2 % FSO	0.35 % FSO	See data sheet	See data sheet	0.5 % FSO (-1/0 bar = 1% FSO)
Wetted parts	Stainless steel 316 L	Stainless steel 316 L	Stainless steel 316 Ti/316 L	Stainless steel 316 Ti/316 L	Stainless steel 316 Ti/316 L	Stainless steel 304 ceramic/FKM
Connection	G½B	EN 61518	G½B	G½B	G½B	G¼B
Supply voltage	DC 12–50 V	DC 12–50 V	DC 12–36 V	DC 10–30 V	DC 10–30 V	DC 3.6 V
Output	4–20 mA	4–20 mA	4–20 mA	4–20 mA	4–20 mA	---
Measuring range	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
<b>Price €</b>						
0/250 mbar	---	---	---	31977	31987	---
<b>Price €</b>						
-1/0 bar	---	---	---	---	---	<b>32500</b>
0/0.6 bar	---	---	31076	---	---	---
0/1 bar	31040*	31049	31077	31978	31988	---
<b>Price €</b>						
0/1.6 bar	---	---	31078	31979	31989	---
0/2.5 bar	---	---	31079	---	---	<b>32503</b>
0/4 bar	31041*	31050	31080	---	---	---
0/6 bar	---	---	31081	31980	31990	<b>32505</b>
0/10 bar	---	---	31082	---	---	<b>32506</b>
0/16 bar	31042*	31051	31083	31981	31991	---
0/25 bar	---	---	31084	31982	31992	<b>32508</b>
0/40 bar	31043*	---	31085	---	---	<b>32509</b>
<b>Price €</b>						
0/60 bar	---	---	---	31983	31993	---
0/100 bar	31044*	---	---	---	---	<b>32511</b>
0/160 bar	---	---	---	31984	31994	<b>32512</b>
0/250 bar	---	---	---	31985	31995	<b>32513</b>
0/400 bar	31045*	---	---	---	---	<b>32514</b>
0/600 bar	---	---	---	31986	31996	---
<b>Price €</b>						<b>245.50</b>
0/700 bar	---	---	---	---	---	<b>32516</b>
<b>Extra charges**</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Price €</b>	<b>Spare battery</b>  <b>Part no.</b> <b>68309</b>  <b>Price €</b>
EX protection/HART communication			---			
Housing filling	---	---		---	---	
Display			---			
Clamp connection 1" or 1½"	---	---	---			
Clamp connection 2"	---	---	---			
Dairy fitting DIN 11851 DN 25	---	---	---			
Dairy fitting DIN 11851 DN 40	---	---	---			
Dairy fitting DIN 11851 DN 50	---	---	---			
High-temperature version +300 °C	---	---	---			

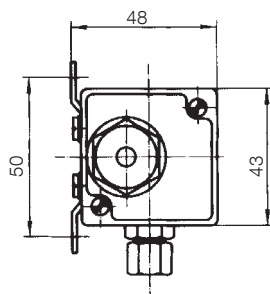
\* Measuring range -1/+x bar

\*\* Wetted parts of clamp connection and dairy fitting version = stainless steel (316 L)

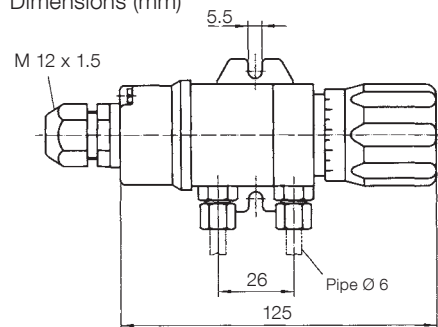
# Differential pressure switches DS 01



Dimensions (mm)



Dimensions (mm)



**Application** Suitable for all practically neutral media such as process water, heating water, neutral gases, oils. Suitable for two-point control by means of a continuously adjustable switching point (between 10 and 100% of pressure range).

**Description** A robust diaphragm type movement serves as the basis for this unit. It is suitable for overpressure, vacuum and differential pressure measurements. The unit uses the same principle of operation for all three measuring applications. The pressure or the differential pressure applies a force to one side of the diaphragm. This force displaces the diaphragm system and moves the measurement range spring. A switching pin mounted to the diaphragm actuates an electrical switching element. The switching point is adjusted by means of a knurled knob according to the scale.

## Technical specifications

### Pressure ranges

0/0.6 to 0/4 bar

### Maximum static pressure

16 bar, device is overpressure-proof up to 16 bar and vacuum-proof

### Operating temperature range

Medium:  $T_{max} = +80\text{ °C}$

Ambient:  $T_{max} = +80\text{ °C}$

### Connection

2 x G $\frac{1}{8}$  female thread

### Pressure chamber

Brass

### Diaphragm

NBR (Perbunan)

### Mounting

Bracket for wall-mounting

### Electrical connection

Cable gland M 12 x 1.5

### Switching point

10–100 % of pressure range, continuously adjustable

### Contact

Microswitch, normally closed contact or normally open contact (please specify desired switching function)

### Hysteresis

Approx. 2 %

### Maximum rating

U ... AC 250 V, I ... 3 A, P ... 500 VA

DG: H

Pressure range	Part no.	Price €
<b>0/0.6 bar</b>	88103	
<b>0/1 bar</b>	88104	
<b>0/1.6 bar</b>	88105	
<b>0/2.5 bar</b>	88107	
<b>0/4 bar</b>	88106	
Extra charges – options		
<b>Diaphragm FKM (Viton)</b>	88125	
<b>Fixed cable 2.5 m</b>	88126	
<b>2 x compression fitting</b> for 6 mm pipes, steel	88120	
<b>2 x compression fitting</b> for 6 mm pipes, brass	88108	
<b>2 x compression fitting</b> for 8 mm pipes, brass	88114	