



# DM 01

## Battery Powered Precision Digital Gauge

Stainless Steel Sensor

class 0.05

### Nominal pressure

from 0 ... 100 mbar up to 0 ... 400 bar

### Special characteristics

- ▶ modular sensor concept
- ▶ data logger
- ▶ graphic display
- ▶ stainless steel housing Ø100 mm
- ▶ communication interface USB 2.0

### Optional

- ▶ accredited calibration certificate according to DKD / DAkKS
- ▶ IS-version zone 0/1
- ▶ software incl. USB converter
- ▶ service case with accessories

### Functions

- ▶ zero point calibration
- ▶ data logger
- ▶ turn off automatic
- ▶ free button assignment
- ▶ background illumination etc.

The digital pressure gauge DM 01 is a precision device fulfilling highest demands. It was conceived especially for the process monitoring and calibration.

The advantage: The DM 01 consists of two devices - the digital display and a pressure transmitter. The pressure transmitter can be selected on site for different measuring ranges and connected to the display - without tools or parameter setting.

Outstanding measuring qualities, an intuitive operation, as well as an innovative, modular sensor concept characterise the DM 01. The battery-powered digital pressure gauge can be used e.g. for controlling pressure courses or calibrating pressure transmitters.

The integrated data logger is able to record pressure and temperature values linearly and cyclically which can be analysed with the software DAQ.

### Preferred areas of use are



Calibrating techniques



Laboratory applications



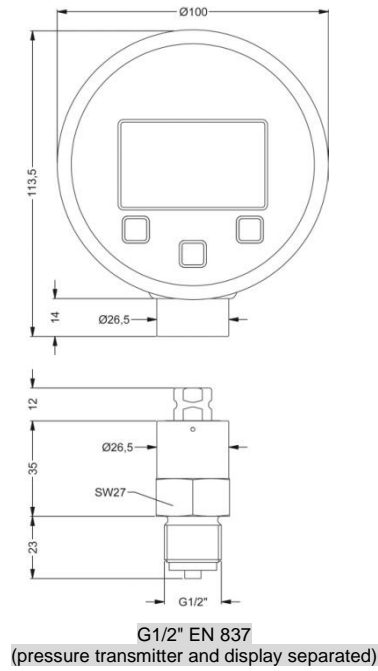
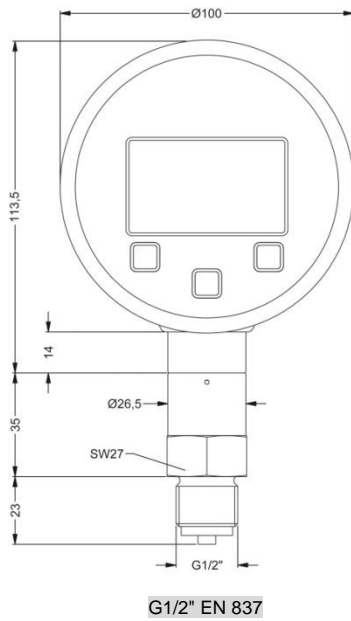
Plant and machine engineering



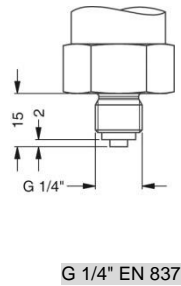
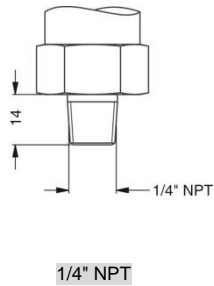
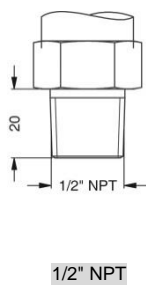
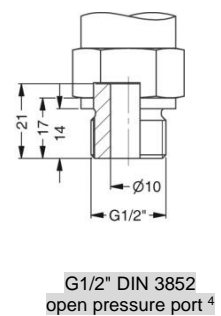
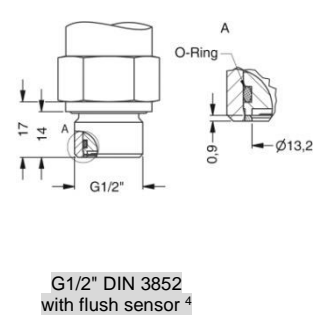
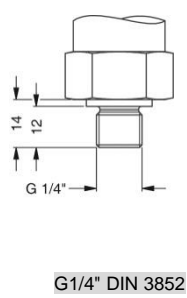
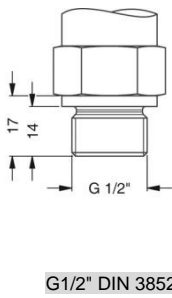
| Input pressure   |   |      |      |      |      |      |      |      |      |      |    |  |
|--|---|------|------|------|------|------|------|------|------|------|----|--|
| Nominal pressure gauge [bar]   | -1...0  | 0.10 | 0.16 | 0.25 | 0.40 | 0.60 | 1    | 1.6  | 2.5  | 4    | 6  |  |
| Nominal pressure abs. [bar]  | -   | -    | -    | -    | 0.40 | 0.60 | 1    | 1.6  | 2.5  | 4    | 6  |  |
| Overpressure [bar]   | 5   | 1    | 1    | 1    | 2    | 5    | 5    | 10   | 10   | 17.5 | 35 |  |
| Burst pressure $\geq$ [bar]  | 7.5   | 1.5  | 1.5  | 1.5  | 3    | 7.5  | 7.5  | 15   | 15   | 25   | 50 |  |
| Nominal pressure gauge / abs. [bar]  | 10  | 16   | 25   | 40   | 60   | 100  | 160  | 250  | 400  |      |    |  |
| Overpressure [bar]   | 35  | 80   | 80   | 105  | 210  | 600  | 600  | 1000 | 1000 |      |    |  |
| Burst pressure $\geq$ [bar]  | 50  | 120  | 120  | 210  | 420  | 1000 | 1000 | 1250 | 1250 |      |    |  |
| Vacuum resistance  | $p_N \geq 1$ bar: unlimited vacuum resistant; $p_N < 1$ bar: on request   |      |      |      |      |      |      |      |      |      |    |  |
| Performance  |   |      |      |      |      |      |      |      |      |      |    |  |
| Accuracy <sup>1</sup>  | nominal pressure $p_N \geq 0.4$ bar: $\leq \pm 0.05$ % FSO BFSL<br>nominal pressure $p_N < 0.4$ bar: $\leq \pm 0.125$ % FSO BFSL  |      |      |      |      |      |      |      |      |      |    |  |
| Long term stability  | $\leq \pm 0.1$ % FSO / year at reference conditions   |      |      |      |      |      |      |      |      |      |    |  |
| Measuring rate / Display   | 1, 2 or 50 measurements per second  |      |      |      |      |      |      |      |      |      |    |  |
| <sup>1</sup> accuracy according to IEC 60770 – minimum value setting (non-linearity, hysteresis, repeatability) - at room temperature 20°C   |   |      |      |      |      |      |      |      |      |      |    |  |
| Thermal effects (offset and span)  |   |      |      |      |      |      |      |      |      |      |    |  |
| Temperature error  | for nominal pressure ranges $p_N \leq 160$ bar: tolerance band $\leq \pm 0.2$ % FSO<br>for nominal pressure ranges $p_N > 160$ bar: tolerance band $\leq \pm 0.75$ % FSO  |      |      |      |      |      |      |      |      |      |    |  |
| compensated range  | 0 ... 50 °C   |      |      |      |      |      |      |      |      |      |    |  |
| Permissible temperatures   |   |      |      |      |      |      |      |      |      |      |    |  |
| Permissible temperatures   | medium: -10 ... 55 °C storage: -20 ... 70 °C<br>environment: display module: -10 ... 55 °C transmitter: -20 ... 70 °C (at 1G to +60 °C)   |      |      |      |      |      |      |      |      |      |    |  |
| Materials  |   |      |      |      |      |      |      |      |      |      |    |  |
| Pressure port / housing  | stainless steel 1.4404 (316L)   |      |      |      |      |      |      |      |      |      |    |  |
| Display housing  | stainless steel 1.4301 (304)  |      |      |      |      |      |      |      |      |      |    |  |
| Seals (media wetted)   | FKM, without (welded version) and others on request   |      |      |      |      |      |      |      |      |      |    |  |
| Diaphragm  | stainless steel 1.4435 (316L)   |      |      |      |      |      |      |      |      |      |    |  |
| Media wetted parts   | pressure port, seal, diaphragm  |      |      |      |      |      |      |      |      |      |    |  |
| Explosion protection   |   |      |      |      |      |      |      |      |      |      |    |  |
| AX16-DM01  | IBExU12ATEX1108 X<br>variant with standard front foil for zone 1: II 2G Ex ia IIB T4 Gb<br>variant with conductive front foil for zone 0: II 1G Ex ia IIC T4 Ga (on request)  |      |      |      |      |      |      |      |      |      |    |  |
| Miscellaneous  |   |      |      |      |      |      |      |      |      |      |    |  |
| Display  | graphic LC display: visible area 55 x 46 mm; (resolution 128x64)<br>figure height 5.5 mm (displaying of pressure value)<br>measured value display: max. 7 digits, depending on pressure range<br>temperature display, time, 100-segment-bargraph,<br>potential input value<br>background illumination: illumination period and intensity adjustable |      |      |      |      |      |      |      |      |      |    |  |
| Temperature display range  | accuracy: $\pm 2$ K<br>resolution: 0.1 K<br>display: -10 ... 55 °C  |      |      |      |      |      |      |      |      |      |    |  |
| Adjustable units pressure and temperature  | [mbar], [bar], [psi], [mmHg], [cmHg], [inHg], [kPa], [MPa], [hPa], [mmH <sub>2</sub> O], [mH <sub>2</sub> O], [inH <sub>2</sub> O], [kg/cm <sup>2</sup> ], [°C], [°F], [K]  |      |      |      |      |      |      |      |      |      |    |  |
| Data logger  | modes: single, cyclic, linear, off<br>recording pressure values and sensor temperature<br>measuring value interval adjustable (hrs, min, sec, 20 ms, daily at a defined time)<br>measurement rate adjustable (1/s, 2/s or 50/s only with 20 ms measured value interval)<br>max. 600798 values   |      |      |      |      |      |      |      |      |      |    |  |
| Current consumption  | without background illumination: approx. 1.3 mA<br>with background illumination: approx. 16 mA (depending on adjusted intensity)<br>standby mode: approx. 1.2 $\mu$ A   |      |      |      |      |      |      |      |      |      |    |  |
| Supply   | 3x 1.5 V: Duracell Plus battery, DUR087033, AA (LR6)  |      |      |      |      |      |      |      |      |      |    |  |
| Ingress protection   | IP 67   |      |      |      |      |      |      |      |      |      |    |  |
| Installation position <sup>2</sup>   | any   |      |      |      |      |      |      |      |      |      |    |  |
| Weight   | approx. 680 g   |      |      |      |      |      |      |      |      |      |    |  |
| A / D-converter resolution   | 16 bit (module)   |      |      |      |      |      |      |      |      |      |    |  |
| Battery life   | standard use: > 2.000 h standby mode: at least 5 years (with measurement rate 1/s and 2/s)  |      |      |      |      |      |      |      |      |      |    |  |
| Operational life   | 100 million load cycles   |      |      |      |      |      |      |      |      |      |    |  |
| CE-conformity  | EMC directive: 2014/30/EU<br>pressure equipment directive: 2014/68/EU (Module A) <sup>3</sup><br>electromagnetic compatibility: according to EN 6132  |      |      |      |      |      |      |      |      |      |    |  |
| <sup>2</sup> Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1$ bar. |   |      |      |      |      |      |      |      |      |      |    |  |
| <sup>3</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar.   |   |      |      |      |      |      |      |      |      |      |    |  |

## Dimensions (in mm)

### standard



### option



⇒ metrical threads and other variations on request

<sup>4</sup> only possible for nominal pressure ranges  $p_N \leq 40$  bar

**Further pressure sensor modules can be combined to the advertisement unity DM01-A21 and DM01-A2E. an overview of available pressure sensor modules and characteristics you will find in the following matrix:**

| Pressure sensor module |                                     |                         |   |           |  |                     |
|------------------------|-------------------------------------|-------------------------|---|-----------|--|---------------------|
| Name                   | Pressure range                      | Filling fluid           | diaphragm                                     | accuracy  | Special feature                            | further information |
| <b>M0</b>              | 0...0.1 bar<br>up to<br>0...400 bar | silicone oil            | stainless steel<br>1.4435                     | 0.05% FSO | very<br>high<br>precision                  | see data sheet      |
| <b>M4</b>              | 0...6 bar<br>up to<br>0...600 bar   | none;<br>welded version | stainless steel<br>1.4542                     | 0.25% FSO | i.a.<br>for oxygen;<br>oil and grease free | on request          |
| <b>M7</b>              | 0...0.1 bar<br>up to<br>0...10 bar  | none                    | ceramic<br>Al <sub>2</sub> O <sub>3</sub> 96% | 0.15% FSO | high<br>overpressure                       | on request          |

## Accessories

### Accessories are not in scope of supply and have to be ordered separately!

#### Software DAQ (Communication, Configuration, Measurement display, Protocol creation)

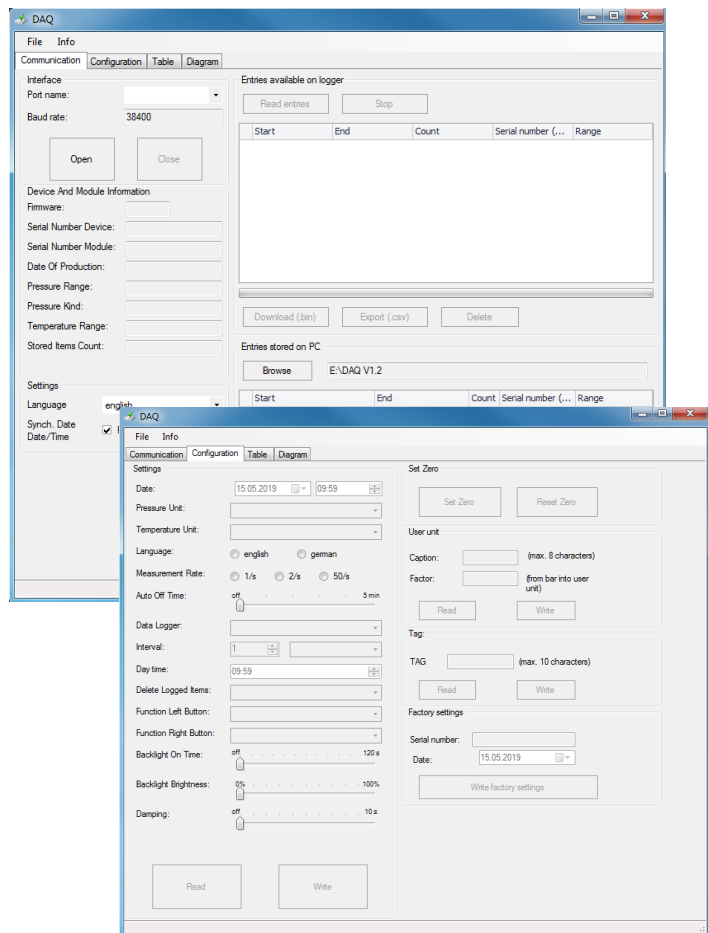
Optionally software DAQ and an interface cable can be ordered. The software is also available for download on our homepage.

#### Software:

- display of device information (serial number, pressure and temperature range, ...)
- configuration area for all parameters
- download area for recorded data:
  - date
  - pressure measurement
  - temperature measurement
- protected data acquisition
- measured value representation in tabular or graphic form
- free scaling of the diagram
- creation of measurement / test report as a PDF file
- data export



Interface cable USB (type A) to mini connector (3.5 mm) with integrated converter  
l: 1.7 m



Ordering number: ZUSBCD01

|  |   |  |
|--|---|--|
| <p>Hard-shell service case without accessories</p> <p>Service_Case_DM01</p>      |    | <p>Hard shell case.</p> <p>dimension in mm (L x W x H):<br/>432 X 363 X 138</p>  |
| <p>Protective cap</p> <p>Ordering number: Z1002648</p>                           |    | <p>Rubber protection</p>   |
| <p>Additional batteries</p> <p>(only in combination with service case)</p>       |    | <p>for IS-version use only<br/>3 x 1.5 V / AA Duracell Power Plus</p>  |
| <p>Seal set</p> <p>(only in combination with service case)</p>                   |   | <p>Flat seal copper for mechanical connections according to EN 837</p>   |
| <p>PTFE seal tape Nr. 498.505</p> <p>(only in combination with service case)</p> |  | <p>Seal tape for mechanical connections</p> <p>material: PTFE (Teflon)<br/>temperature range: -200 ... 280 °C</p>  |
| <p>Wrench</p> <p>(only in combination with service case)</p>                     |  | <p>Wrench SW 27</p>  |
| <p>Calibration test pump KHP 35</p> <p>Ordering number: 1002637</p>              |  | <p>The KHP 35 calibration test pump is used to generate pressure and vacuum for checking, adjusting and calibrating mechanical and electronic pressure measuring instruments by comparative measurements.</p> <p>These pressure tests may be carried out in laboratories, workshop or on site at the measuring point.</p> <p>pressure: 0 ... 35 bar<br/>vacuum: 0 ... -0,95 bar<br/>weight: approx. 510 g<br/>dimension: approx. 220 x 105 x 63 mm</p> |

## Ordering code DM 01

### 1. Position: Digital Display for Precision Digital Pressure Gauge DM 01

DM 01-

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

|  |   |   |   |         |
|--|---|---|---|---------|
| Digital Pressure Gauge DM 01             |   |   |   |         |
| with communication interface             | A | 2 | 1 |         |
| IS (zone 1) with communication interface | A | 2 | E |         |
| IS (zone 0) with communication interface | A | 2 | G | consult |

### 2. Position: Transmitter for Precision Digital Pressure Gauge DM 01

DM 01

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

|                              |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|------------------------------|--|-------------|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|--|--|-------------------|
| <b>Pressure</b>              |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | gauge  | M           | 0 | K |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | absolute   | M           | 0 | L |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
| <b>Input</b>                 |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | [bar]  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 0.10   |             | 1 | 0 | 0 | 0 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 0.16   |             | 1 | 6 | 0 | 0 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 0.25   |             | 2 | 5 | 0 | 0 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 0.40   |             | 4 | 0 | 0 | 0 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 0.60   |             | 6 | 0 | 0 | 0 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 1.0  |             | 1 | 0 | 0 | 1 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 1.6  |             | 1 | 6 | 0 | 1 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 2.5  |             | 2 | 5 | 0 | 1 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 4.0  |             | 4 | 0 | 0 | 1 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 6.0  |             | 6 | 0 | 0 | 1 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 10   |             | 1 | 0 | 0 | 2 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 16   |             | 1 | 6 | 0 | 2 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 25   |             | 2 | 5 | 0 | 2 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 40   |             | 4 | 0 | 0 | 2 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 60   |             | 6 | 0 | 0 | 2 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 100  |             | 1 | 0 | 0 | 3 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 160  |             | 1 | 6 | 0 | 3 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 250  |             | 2 | 5 | 0 | 3 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 400  |             | 4 | 0 | 0 | 3 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | -1 ... 0   |             | X | 1 | 0 | 2 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | customer   |             | 9 | 9 | 9 | 9 |   |   |   |   |   |  |  |  |  |  |  |  |  | consult           |
| <b>Version</b>               |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | standard version (without explosion protection)                        |             |   |   |   | 0 |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | IS-version   |             |   |   |   | E |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
| <b>Accuracy</b>              |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | [BFSL]   |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | standard for $p_N \geq 0.4$ bar  | 0.05 % FSO  |   |   |   |   | B | 1 |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | standard for $p_N < 0.4$ bar   | 0.125 % FSO |   |   |   |   | B | 2 |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | customer   |             |   |   |   |   | 9 | 9 |   |   |   |  |  |  |  |  |  |  |  | consult           |
| <b>Mechanical connection</b> |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | G1/2" DIN 3852   |             | 1 | 0 | 0 |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | G1/2" EN 837   |             | 2 | 0 | 0 |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | G1/4" DIN 3852   |             | 3 | 0 | 0 |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | G1/4" EN 837   |             | 4 | 0 | 0 |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | G1/2" DIN 3852   |             |   |   |   |   | F | 0 | 0 |   |   |  |  |  |  |  |  |  |  | consult           |
|                              | with flush sensor <sup>2</sup>   |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | G1/2" DIN 3852 open pressure port <sup>2</sup>                         |             |   |   |   |   | H | 0 | 0 |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 1/2" NPT   |             |   |   |   |   | N | 0 | 0 |   |   |  |  |  |  |  |  |  |  |                   |
|                              | 1/4" NPT   |             |   |   |   |   | N | 4 | 0 |   |   |  |  |  |  |  |  |  |  |                   |
|                              | customer   |             |   |   |   |   | 9 | 9 | 9 |   |   |  |  |  |  |  |  |  |  | consult           |
| <b>Seals</b>                 |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | FKM  |             |   |   |   |   |   |   | 1 |   |   |  |  |  |  |  |  |  |  |                   |
|                              | customer   |             |   |   |   |   |   |   | 9 |   |   |  |  |  |  |  |  |  |  | consult           |
| <b>Special version</b>       |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | standard   |             |   |   |   |   |   |   | 0 | 0 | 0 |  |  |  |  |  |  |  |  |                   |
|                              | customer   |             |   |   |   |   |   |   | 9 | 9 | 9 |  |  |  |  |  |  |  |  | consult           |
| <b>Accessories</b>           |  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |                   |
|                              | USB converter (incl. software DAQ on USB stick)                        |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  | ZUSBCD01          |
|                              | service case (without accessories)                                     |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  | Service_Case_DM01 |
|                              | Protective cap   |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  | Z1002648          |
|                              | additional batteries (3 x 1.5 V / AA Duracell Power Plus) <sup>3</sup> |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  | 1002798           |
|                              | Seal set <sup>3</sup>  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  | 5008886           |
|                              | PTFE seal tape <sup>3</sup>  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  | 1002724           |
|                              | wrench <sup>3</sup>  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  | 1002722           |
|                              | calibration test pump (KHP)  |             |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  | 1002637           |

<sup>1</sup> absolute pressure possible from 0.4 bar  
<sup>2</sup> only possible for  $p_N \leq 40$  bar  
<sup>3</sup> only in combination with service case

**ordering example:**  
device DM 01:  
position 1: DM01-A21  
position 2: M0K-1001-B1-200-1-000  
only display: position 1: DM01-A21  
only transmitter: position 2: M0K-1001-B1-200-1-000

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