Operating Manual

Industrial pressure transmitter DMK / DMP, screw-in transmitter LMK / LMP and OEM pressure transmitter

DMK 331, DMK 331 P, DMK 351, DMK 351 P, DMP 331, DMP 331 P, DMP 333, DMP 334, DMP 343, LMK 331, LMK 351, LMP 331, LMP 331i, 17.6XX, 17.6XX G, 18.6XX, 18.6XX G, 26.6XX, 26.6XX G, 30.6XX, 30.6XX G

1. General information
1.1 Information on the operating manual
This operating manual contains important information on the proper usage of the device. Read this operating manual carefully before installing and starting up the pressure measuring device.

Refer to the safety notes and operating instructions which are given in the operating manual. Additionally applicable regulations regarding occupational safety, accident prevention as well as national installation standards and engineering rules must be complied with!

This operating manual is part of the device, must be kept nearest its location, always accessible to all employees.

This operating manual is copyrighted. The contents of this operating manual reflect the version available at the time of printing. It has been issued to our best knowledge. However, errors may have occurred. LEITENBERGER is not liable for any incorrect statements and their effects.

- Technical modifications reserved –

1.2 Symbols used

DANGER! – potentially dangerous situation, which may result in death or serious injuries

WARNING! – potentially dangerous situation, which may result in minor injuries

NOTE – tips and information to ensure a failure-free operation

1.3 Target group

This operating manual is intended for the following persons to be worked out by qualified technical personnel.

1.4 Limitation of liability

By non-observance of the operating manual, inappropriate use, modification or damage, no liability is assumed and warranty claims will be excluded.

1.5 Intended use

- The pressure transmitter DMK/DMP and OEM-pressure transmitter have, according to the type, been developed for applications in overpressure and vacuum as well as for absolute pressure measurement. The screw-in transmitters LMK/LMP have been particularly developed for level and process measurement. It is the operator's responsibility to check and verify the suitability of the device for the intended application. If any doubts remain, please contact our sales department in order to ensure proper usage. LEITENBERGER is not liable for any incorrect selections and their effects!

- Permissible media are gases or liquids, specified in the data sheet. In addition it has to be ensured, that this medium is compatible with the media wetted parts.

- The technical data listed in the current data sheet are engaging and must be compiled with. If the data sheet is not available, please order or download it from our homepage. (http://www.druck-temperatur.de)

1.6 Package contents

Please verify that all listed parts are undamaged included in the delivery and check for consistency specified in your order:

- pressure transmitter or screw-in transmitter
- for mechanical pressure ports DIN 3852: o-ring (pre-assembled)
- mounting instructions

2. Product identification

The device can be identified by its manufacturing label. It provides the most important data. By the ordering code of the product can be perfectly clearly identified.

Fig. 1 manufacturing label

! The manufacturing label must not be removed from the device!

3. Mechanical installation

3.1 Mounting and safety instructions

WARNING! Install the device only when depressurized and currentless!

WARNING! This device may only be installed by qualified technical personnel who has read and understood the operating manual!

DANGER! When used improperly, special versions of the devices suitable for oxygen applications may explode! To ensure a usage without danger, the following points must be adhered to:

- Make sure that your device has been ordered as a special version for oxygen applications and that it has been delivered conformably. You can check this easily by reading the manufacturing label (see figure 1). If your order code ends with the number "07", your device is suitable for the oxygen application.

- When being dispatched the device is packed into a plastic bag to keep it from impurity. The indication label with the text "Device for oxygen, unpack only directly before assembling" has to be observed!

Furthermore any skin contact must be avoided during unpacking and installing the device, so that no fatty residue remains on the device!

- For installing the respective regulations for explosion protection have to be fulfilled. Please check if an ATEX-approval is necessary for the application in addition to the acceptability for oxygen. (the delivered device has no ATEX-approval)

- Consider that the entire construction must correspond to the standards of BAM (DIN 19213).

For transmitters with oxygen acceptability up to 50 bar, O-rings of VIT47-75 with BAM-approval are used. The upper limiting values allowed are 40 bar / 130°C and 50 bar / 100°C.

For transmitters with oxygen acceptability over 50 bar, O-rings of FKMS 90 are used which were tested for acceptability up to 95°C and 215 bar in the scientific coal research institute in Ostrava – CZ.

! Handle this high-sensitive electronic precision measuring device with care, both in packed and unpacked condition!

There are no modifications/changes to be made on the device.

Do not throw the package/device!

To avoid damaging the diaphragm, remove packaging and protective cap directly before starting assembly. The delivered protective cap has to be stored!

Place the protective cap on the pressure port again immediately after disassembling.

Handle the unprotected diaphragm very carefully: it is very sensitive and may be easily damaged.

Do not use any force when installing the device to prevent damage of the device and the plant!

For installations outdoor and in damp areas following these instructions:

- To prevent moisture admission in the plug the device should be installed electrically after mounting, at once. Otherwise a moisture admission has to be blocked e.g. by using a suitable protection cap.

(The ingress protection in the data sheet is valid for the connected device.)

Choose an assembly position, which allows the flow-off of splashed water and condensation. Avoid permanent fluid at sealing surfaces!

- When using a cable gland or outlet device, turn the outgoing cable downwards. If the cable has to be turned upwards, then point it downward so the moisture can drain.

- Install the device in such a way that it is protected from direct solar irradiation. Direct solar irradiation can lead to the permissible operating temperature being overstressed in the worst case. By this the operability of the device can be affected or damaged. If the internal pressure increases due to solar irradiation, measurement errors may be caused.

! For devices with gauge reference in the housing (small hole next to the electrical connection), install the device in such a way, that the gauge reference is protected from direct solar irradiation. Should the device be exposed to fluid admission, the functionality will be blocked by the gauge reference. An exact measurement in this condition is not possible. Furthermore this can lead to damages on the device.

Take note that no assembly stress occurs at the pressure port, since this may cause a shifting of the characteristic curve. This is especially important for very small pressure ranges as well as for devices with a pressure port made of plastic.

- If there is any danger of damage by lightning or overpressure when the device is installed outdoor, we suggest putting a sufficiently dimensioned overpressure protection between the supply or switch cabinet and the device.

3.2 General installation steps

- Carefully remove the pressure measuring device from the package and dispose of the package properly.

- Go ahead as described in the specific instructions below.

3.3 Installation steps for DIN 3852

- Check to ensure the proper groove fitting of the gasket and additionally to ensure no damage to the o-ring.

- Ensure that the sealing surface of the taking part is perfectly smooth and clean.

- Screw the device into the corresponding thread by hand.

- If you have a device with a knurled ring, the transmitter has to be screwed in by hand only.

- Devices with a spanner flat have to be tightened with an open-end wrench (wrench size of steel: G1/4" approx. 5 Nm; G1/2" approx. 10 Nm; G3/4" approx. 15 Nm; G1" approx. 20 Nm; G1 1/2" approx. 25 Nm; wrench size of plastic: max. 24N).

For installations with oxygen acceptability over 50 bar, O-rings of FKMS 90 are used which were tested for acceptability up to 95°C and 215 bar in the scientific coal research institute in Ostrava – CZ.

PROVIDE A COOLING LINE WHEN USING THE DEVICE IN STEAM PLANTS.

If there is any danger of damage by lightning or overpressure when the device is installed outdoor, we suggest putting a sufficiently dimensioned overpressure protection between the supply or switch cabinet and the device.
3.4 Installation steps for EN 837
- Use a suitable seal, corresponding to the medium and pressure input (e.g. a PTFE-strip).
- Make sure that the sealing surface of the taking part is perfectly smooth and clean.
- Screw the device into the corresponding thread by hand.
- Tighten it with a wrench (for G1/4": approx. 20 Nm; for 1/2" NPT: approx. 52 Nm).

3.5 Installation steps for NPT
- Use a suitable seal, corresponding to the medium and the pressure input (e.g. a PTFE-strip).
- Screw the device into the corresponding thread by hand.
- Tighten it with a wrench (for 1/4" NPT: approx. 30 Nm; for 1/2" NPT: approx. 70 Nm).

3.6 Installation steps for flare
- Cut the end at right angle to the piping and remove all internal and external burn.
- Make sure the flare; depending on the usage, the device has a metal cap on by hand and make sure that the field housing is firmly locked again.

3.7 Installation steps for internal threads M20x1.5 and 9/16" UNF (for DMP 334)
- Screw the high pressure connection into the internal thread of the DMP 334 according to the description of the manufacturer and tighten it properly.
- The high pressure tube seals metal-to-metal in the chamfer of the pressure port. No further seal is allowed with this high pressure connection. A wrong installation can cause dangerous situations.

3.8 Installation steps for dairy pipe
- Check to ensure that the O-ring fits properly into the intended groove in the mounting part.
- Center the dairy pipe connection in the counterpart.
- Screw the cup nut onto the mounting part.
- Then tighten it with a hook wrench.

3.9 Installation steps for Clamp and Varivent
- Use a suitable seal corresponding to the medium and the pressure input.
- Put the seal onto the corresponding mounting part.
- Center the clamp or Varivent connection on the fitting counterpart with seal.
- Then fit the device with a suitable fastening element (e.g. semi-ring or retractable ring clamp) according to the supplier’s instructions.

3.10 Installation steps for connecting flanges
- Use a suitable seal corresponding to the medium and pressure input (e.g. a fiber-gasket).
- Put the seal between connecting flange and counter flange.
- Install the device with 4 resp. 8 screws (depending on flange version) on the counter flange.

4. Electrical Installation
- WARNING! Install the device in currentless condition only!

Establish the electrical connection of the device according to the technical data shown on the manufacturing label, the following table and the respective wiring diagram.

### Pin configuration:

<table>
<thead>
<tr>
<th>Electrical connections</th>
<th>ISO 4400 Binder 723 (5-pin)</th>
<th>M12x1 (4-pin)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply +</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Supply −</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Signal +</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Signal −</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Shield</td>
<td>ground</td>
<td>contact</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

### Electrical connections

- **Buccanneer (4-pin)**: 1
- **TRIM TRIO (4-pin)**: 1
- **3-wire (2 pin)**: 2, 3
- **Shield**: 4

### Electrical connections field housing cable colours (DIN 47110)

<table>
<thead>
<tr>
<th>Supply +</th>
<th>Signal +</th>
<th>Shield</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN +</td>
<td>OUT+</td>
<td>yellow / green</td>
</tr>
</tbody>
</table>

### Wiring diagrams:

#### 2-wire-system (current)

- \( P \to V_s \)

#### 3-wire-system (current/supply)

- \( P \to V_s \)

### Devices with an accuracy of 0.1% FSO have microcontrolled electronics for processing and improving the signal. Principally, the processing takes more time as for analogue sensors, which have only an amplifier.

### Intelligent devices with optional communication interfaces can also be configured by these electronics. Offset, span and damping are programmable within the limits given in the data sheet.

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