promass
Heating jacket for
Promass F, M, A, I sensors

Operating Instructions
## Contents

1 **Safety instructions** .................. 3
   1.1 Designated use ..................... 3
   1.2 Installation, commissioning and operation ... 3
   1.3 Operational safety ................... 3
   1.4 Technical progress .................... 3
   1.5 Notes on safety conventions and icons ...... 4

2 **Identification** ...................... 5
   2.1 Device designation .................... 5
   2.2 Nameplate ............................ 5

3 **Mounting and installation** ............ 6
   3.1 Installation conditions ................. 6
      3.1.1 Dimensions ........................ 6
      3.1.2 Temperature ranges ................. 6
      3.1.3 Thermal insulation ................... 7
      3.1.4 Orientation ......................... 7
   3.2 Installing the heating jacket ............. 7

4 **Technical data** ..................... 8
   4.1 Technical data at a glance .............. 8
      4.1.1 Application ........................ 8
      4.1.2 Function and system design .......... 8
      4.1.3 Operating conditions ................. 8
      4.1.4 Mechanical construction .............. 9
      4.1.5 Ordering information ................ 10
   4.2 Dimensions of heating jacket / Promass F .... 11
   4.3 Dimensions of heating jacket / Promass M .... 12
   4.4 Dimensions of heating jacket / Promass A .... 13
   4.5 Dimensions of heating jacket / Promass I .... 14
   4.6 Dimensions
      Remote version for heating ............. 15
1 Safety instructions

1.1 Designated use

- The heating jacket serves to transfer heat to maintain fluids liquified in the Promass sensors of the F, M, A and I design.
- The manufacturer accepts no liability for damages resulting from incorrect or other than designated use.

1.2 Installation, commissioning and operation

Installation, commissioning and maintenance of the instrument must be carried out exclusively by trained specialists authorised by the facility's owner-operator. The specialist must have read and understood these Operating Instructions and must adhere to them.

1.3 Operational safety

- When using heating jackets, it is recommended to use the remote version of the sensor and transmitter.
- When using the remote version, and particularly with the Promass F, at very high fluid and heating temperatures, we recommend the use of the “long-necked version” (= remote version for heating), so that the ambient temperature of the connection housing and the connecting cable is not exceeded.
- With the compact version, make sure you take appropriate measures (orientation, etc.) so that the maximum ambient temperature for the transmitter is not exceeded, otherwise electronic components will be driven outside their specifications. You should particularly avoid this for components which are used for explosion protection.
- The permitted pressure of the heating medium is specified on the nameplate (see page 5).
- Permitted heating media include water, steam, oil and other non-corrosive fluids. Due to the Pressure Equipment Directive 97/23/EG, it may be the case with Group 1 heating media (explosive, inflammable, toxic, oxidant) that this limits the application.
- The heating jacket has a hot surface when it is functioning properly. The feed pipes conveying the heating medium are also hot and must be insulated to avoid contact. The customer is responsible for mounting this insulation.

⚠️ Warning!
Danger of injury/burning from hot surfaces!
During operation, the surfaces of the heating jacket and those of the conveyance lines for the heating medium may become very hot and will lead to burns if touched. If the heating jacket and the conveyance lines are insulated, you must wait a long enough period of time for the jacket to cool after the insulation is removed.

1.4 Technical progress

The manufacturer reserves the right to modify technical data without prior notice. You can obtain information on updated versions and any additions to these Operating Instructions from your Endress+Hauser Sales Centre.
1.5 Notes on safety conventions and icons

The devices are designed to meet state-of-the-art safety requirements, have been tested, and left the factory in a condition in which they are safe to operate. They can, however, if used improperly or for other than the designated use, be a source of danger. Consequently, always pay particular attention to the safety instructions indicated in these Operating Instructions by the following icons:

⚠️ Warning!
“Warning” indicates an action or procedure which, if not performed correctly, can result in injury or a safety hazard. Comply strictly with the instructions and proceed with care.

🚫 Caution!
“Caution” indicates an action or procedure which, if not performed correctly, can result in incorrect operation or destruction of the device. Comply strictly with the instructions.

📝 Note!
“Note” indicates an action or procedure which, if not performed correctly, can have an indirect effect on operation or trigger an unexpected response on the part of the device.
2 Identification

2.1 Device designation

- Promass F, M and I: The heating jackets consist of two half-shells.
- Promass A: The heating system consists of a heating plate.

2.2 Nameplate

![Nameplate specifications for heating jackets (example)](image)

Fig. 1: Nameplate specifications for heating jackets (example)

1. Ordering code: See the specifications on the order confirmation for the meanings of the individual letters and digits.
2. Serial number / year of manufacture
3. Heating jacket material (St37-2 or 1.4301)
4. Heating process connection (DN15 PN16)
5. Max. operating pressure: 16 bar
6. Max. operating temperature: 200 °C
7. Volume (total): 4 l
8. For Promass sensor type: F DN 25

Corresponding sensor: type (Promass F), nominal diameter (DN 25)
3 Mounting and installation

Warning!
Always comply with the instructions contained in this chapter to ensure safe and reliable operation.

3.1 Installation conditions

3.1.1 Dimensions
Dimensions and fitting lengths → Page 11 ff.

3.1.2 Temperature ranges

Heating medium – Operating temperature
Depending on the type of sensor (Promass F, M, A or I), the temperature of the heating medium may not exceed certain maximum values:

<table>
<thead>
<tr>
<th></th>
<th>Max. operating temperature of the heating medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promass F</td>
<td>+200 °C (+392 °F)</td>
</tr>
<tr>
<td>Promass M</td>
<td>+150 °C (+302 °F)</td>
</tr>
<tr>
<td>Promass A</td>
<td>+200 °C (+392 °F)</td>
</tr>
<tr>
<td>Promass I</td>
<td>+150 °C (+302 °F)</td>
</tr>
</tbody>
</table>

Measuring electronics – Ambient temperature

Caution!
- Always select the orientation of the sensor and the heating jacket so that the maximum ambient temperatures for the measuring electronics are not exceeded → Section 3.1.4.
- With additional heating jacket insulation, always keep to the minimum safety distances to the device → Page 11 ff.
- Keep to the following ambient temperatures depending on the design of the measuring system:

<table>
<thead>
<tr>
<th>Device version</th>
<th>Max. ambient temperatures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact version</td>
<td>Transmitter: maximum +60 °C</td>
</tr>
<tr>
<td>Remote version (standard version)</td>
<td>• Connection housing: maximum +60 °C</td>
</tr>
<tr>
<td></td>
<td>• Operating temperature of connecting cable: maximum +105 °C</td>
</tr>
<tr>
<td>Remote version for heating (long-necked version)</td>
<td>Always use the long-necked version when the max. ambient temperature of +60 °C for using the standard remote version cannot be kept to. The long-necked version has a housing support for the thermal separation of sensor and transmitter.</td>
</tr>
<tr>
<td></td>
<td>This version is used, for example, for applications in which very high fluid and heating medium temperatures are encountered.</td>
</tr>
</tbody>
</table>

Heating jacket – Material load curves (pressure/temperature)
The material load curves (pressure-temperature diagrams) for the heating jacket are to be found on Page 9.
3.1.3 Thermal insulation

With some fluids, make sure that there are no additional heat losses around the sensor and the heating jacket. There are a number of materials which are suitable as insulators for the heating jackets.

Caution!
Risk of electronics overheating!

• With the compact version of the instrument, do not insulate or heat the connecting piece between the sensor and the transmitter. On the remote version, keep the terminal housing free from insulation.
• When installing insulation, always keep to the minimum safety distances to the device → Page 11 ff.
• Keep to the maximum permitted ambient temperatures for the transmitter housing and the connection housing (see Section 3.1.2).

3.1.4 Orientation

In order to ensure that the maximum permissible ambient temperature for the transmitter or the connection housing (remote version) is not exceeded, the following orientations must be observed (Fig. 2).

![Correct orientation (vertical, horizontal) with the example of the compact version](image)

3.2 Installing the heating jacket

Note the following points:
• Screws, nuts, etc. are not included in the scope of supply.
• Dimensions and required space → Page 11 ff.

**Promass F, M, I:**
Join the two half-shells of the heating jacket by screws and nuts:
• for DN ≤ 80 → 5 screws (diameter ~ 10 mm)
• for DN 100 → 8 screws (diameter ~ 11 mm)

Warning!
With large nominal diameters, a support may be required due to the heavy weight of the sensor and the heating jacket. Never use the feed and return pipes of the heating system to support the heating jacket!

The weight data for the sensors are listed in the “Technical data” of the corresponding Operating Instructions.

**Promass A:**
Use 4 screws (M6x15) to fix the sensor to the heating plate which can be installed as a complete entity (incl. transmitter) onto a base.
4 Technical data

4.1 Technical data at a glance

4.1.1 Application
The heating jacket serves to transfer heat to maintain fluids liquified in the Promass sensors of the F, M, A and I design, e.g.:
- Chocolate, condensed milk, liquid sugar
- Oils, fats
- Paints, lacquers, varnishes
- Pharma, catalysts, inhibitors
- Suspensions

4.1.2 Function and system design

<table>
<thead>
<tr>
<th>Promass F, M and I sensors</th>
<th>The heating jacket consists of two half-shells.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promass A sensor</td>
<td>The heating system consists of a heating plate.</td>
</tr>
</tbody>
</table>

4.1.3 Operating conditions

Installation
- Any orientation (horizontal, vertical)
- Restrictions and other notes → Page 6 ff.

Environment
- Ambient temperature
- Transmitter or connection housing
  - Compact version: max. +60°C
  - Remote version (standard): max. +60 °C
  - Remote version for heating (long-necked version): max. +60 °C

Process
- Heating medium temperature range
  - Heating jacket / Promass F: max. +200 °C (+392 °F)
  - Heating jacket / Promass M: max. +150 °C (+302 °F)
  - Heating jacket / Promass A: max. +200 °C (+392 °F)
  - Heating jacket / Promass I: max. +150 °C (+302 °F)

Pressure rating of heating system
- Heating jacket for Promass F (DN 100): 8 bar
- Heating jacket for Promass I (DN 40, DN 40 “FB”, DN 50): 10 bar
- Heating jackets for all other sensors: 16 bar

Due to the Pressure Equipment Directive 97/23/EG, it may be the case with Group 1 heating media (explosive, inflammable, toxic, oxidant) that restrictions occur.
4.1.4 Mechanical construction

Design / dimensions  see page 11 ff.

Weight  see page 11 ff.

Materials  Heating jacket: 1.4301 or St37-2 (S 235 IRG2 - 1.022)

Material load diagrams  Heating jacket

Material: 1.4301 or St37-2 (S 235 IRG2 - 1.022)

Fig. 3: Material load through the heating medium (pressure-temperature diagram)

A = Material load curve for 8 bar pressure  Heating jacket for Promass F (DN 100)
B = Material load curve for 10 bar pressure  Heating jacket für Promass I (DN 40, DN 40 “FB”, DN 50)
C = Material load curve for 16 bar pressure  Heating jackets for all other sensors
### 4.1.5 Ordering information

#### Nominal diameters

<table>
<thead>
<tr>
<th>Nominal diameters</th>
<th>Promass A</th>
<th>Promass M</th>
<th>Promass I</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Promass A</td>
<td>Promass M</td>
<td>Promass I</td>
</tr>
<tr>
<td>02</td>
<td>DN 15</td>
<td>DN 15</td>
<td>DN 15</td>
</tr>
<tr>
<td>04</td>
<td>DN 20</td>
<td>DN 20</td>
<td>DN 20</td>
</tr>
<tr>
<td>08</td>
<td>DN 25</td>
<td>DN 25</td>
<td>DN 25</td>
</tr>
<tr>
<td>15</td>
<td>DN 30</td>
<td>DN 30</td>
<td>DN 30</td>
</tr>
<tr>
<td>16</td>
<td>DN 40</td>
<td>DN 40</td>
<td>DN 40</td>
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<td>25</td>
<td>DN 50</td>
<td>DN 50</td>
<td>DN 50</td>
</tr>
<tr>
<td>26</td>
<td>DN 60</td>
<td>DN 60</td>
<td>DN 60</td>
</tr>
<tr>
<td>40</td>
<td>DN 80</td>
<td>DN 80</td>
<td>DN 80</td>
</tr>
<tr>
<td>50</td>
<td>DN 100</td>
<td>DN 100</td>
<td>DN 100</td>
</tr>
</tbody>
</table>

#### Sensor type

- **A**: Promass A
- **F**: Promass F
- **I**: Promass I
- **M**: Promass M

#### Material of the heating jacket

- **CS**: Carbon steel St37-2 (S 235 IRG2 - 1.022, A281)
- **SS**: Stainless steel 1.4301 (304)

#### Heating process connection

- **A**: DN15, PN16, DIN2501 flange
- **B**: DN25, PN16, DIN2501 flange
- **C**: 1/2", CI 150, ANSI B16.5 flange
- **D**: 1", CI 150, ANSI B16.5 flange
- **E**: DN15, 20K, JIS B2238 flange
- **F**: DN25, 20K, JIS B2238 flange
- **G**: 1" G outer thread
- **H**: 3/4" G outer thread
- **J**: 1/2" G outer thread
- **K**: Cajon 8-VCO-4 coupling
- **9**: other (on request)

#### Certificates

- **0**: Standard without certificates
- **1**: 3.1B material certificate for wetted parts
- **2**: Pressure tested (2.3 certificate)
- **3**: Pressure test (2.3 certificate) + 3.1B material certificate
- **9**: other (on request)

**DKV-**

**Product name**

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FB = Full bore versions

1) Design identical to heating jacket for Promass I DN 25

2) Design identical to heating jacket for Promass I DN 40

3) Design identical to heating jacket for Promass I DN 50
4.2 Dimensions of heating jacket / Promass F

Fig. 4: Dimensions of heating jacket / Promass F

- **R**: Insulation, customer supply (e.g. mineral wool)
- **S**: Safety distance: min. 20 mm
- **T**: Process connection of the heating jacket (acc. to Table on Page 10)

<table>
<thead>
<tr>
<th>DN</th>
<th>A (1)</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>L</th>
<th>Weight (2)</th>
<th>Vol. (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>3/8&quot;</td>
<td>114</td>
<td>314</td>
<td>282</td>
<td>67</td>
<td>40</td>
<td>132</td>
<td>103</td>
<td>242</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>1/2&quot;</td>
<td>114</td>
<td>314</td>
<td>30</td>
<td>312</td>
<td>67</td>
<td>40</td>
<td>132</td>
<td>103</td>
<td>252</td>
<td>16</td>
</tr>
<tr>
<td>25</td>
<td>1&quot;</td>
<td>114</td>
<td>314</td>
<td>40</td>
<td>338</td>
<td>57</td>
<td>28</td>
<td>132</td>
<td>103</td>
<td>258</td>
<td>19</td>
</tr>
<tr>
<td>40</td>
<td>1 1/2&quot;</td>
<td>124</td>
<td>324</td>
<td>40</td>
<td>444</td>
<td>87</td>
<td>33</td>
<td>162</td>
<td>108</td>
<td>364</td>
<td>28</td>
</tr>
<tr>
<td>50</td>
<td>2&quot;</td>
<td>144</td>
<td>344</td>
<td>40</td>
<td>582</td>
<td>123</td>
<td>43</td>
<td>198</td>
<td>118</td>
<td>502</td>
<td>44</td>
</tr>
<tr>
<td>80</td>
<td>3&quot;</td>
<td>180</td>
<td>380</td>
<td>60</td>
<td>710</td>
<td>164</td>
<td>40</td>
<td>259</td>
<td>135</td>
<td>590</td>
<td>66</td>
</tr>
<tr>
<td>100</td>
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<td>228</td>
<td>428</td>
<td>80</td>
<td>840</td>
<td>189</td>
<td>45</td>
<td>304</td>
<td>160</td>
<td>680</td>
<td>90</td>
</tr>
</tbody>
</table>

(1) Dimensions A...L in millimeters
(2) Total weight for both heating shells in kilograms
(3) Total volume for both heating shells in litres
4.3 Dimensions of heating jacket / Promass M

Fig. 5: Dimensions of heating jacket / Promass M

R Insulation, customer supply (e.g. mineral wool)
S Safety distance: min. 20 mm
T Process connection of the heating jacket (acc. to Table on Page 10)

<table>
<thead>
<tr>
<th>DN</th>
<th>A 1)</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>L</th>
<th>Weight 2)</th>
<th>Vol. 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>3/8&quot;</td>
<td>114</td>
<td>314</td>
<td>20</td>
<td>276</td>
<td>103</td>
<td>38</td>
<td>236</td>
<td>15</td>
</tr>
<tr>
<td>15</td>
<td>1/2&quot;</td>
<td>114</td>
<td>314</td>
<td>30</td>
<td>316</td>
<td>103</td>
<td>38</td>
<td>256</td>
<td>16</td>
</tr>
<tr>
<td>25</td>
<td>1&quot;</td>
<td>114</td>
<td>314</td>
<td>40</td>
<td>330</td>
<td>103</td>
<td>28</td>
<td>250</td>
<td>18</td>
</tr>
<tr>
<td>40</td>
<td>1 1/2&quot;</td>
<td>140</td>
<td>340</td>
<td>40</td>
<td>430</td>
<td>116</td>
<td>41</td>
<td>350</td>
<td>24</td>
</tr>
<tr>
<td>50</td>
<td>2&quot;</td>
<td>160</td>
<td>360</td>
<td>40</td>
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<td>125</td>
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<td>620</td>
<td>142</td>
<td>67</td>
<td>540</td>
<td>60</td>
</tr>
</tbody>
</table>

1) Dimensions A...L in millimeters
2) Total weight for both heating shells in kilograms
3) Total volume for both heating shells in litres
4.4 Dimensions of heating jacket / Promass A

Fig. 6: Dimensions of heating jacket / Promass A

- R Insulation, customer supply (e.g. mineral wool)
- S Safety distance: min. 20 mm
- T Process connection of the heating jacket (acc. to Table on Page 10)

<table>
<thead>
<tr>
<th>DN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>L</th>
<th>Weight</th>
<th>Vol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/24&quot;</td>
<td>145</td>
<td>320</td>
<td>160</td>
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<td>75</td>
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<td>178</td>
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</tr>
<tr>
<td>2</td>
<td>1/12&quot;</td>
<td>145</td>
<td>320</td>
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<td>25</td>
<td>75</td>
<td>55</td>
<td>260</td>
<td>5.7</td>
</tr>
<tr>
<td>4</td>
<td>1/8&quot;</td>
<td>175</td>
<td>350</td>
<td>220</td>
<td>435</td>
<td>25</td>
<td>75</td>
<td>50</td>
<td>385</td>
<td>8.2</td>
</tr>
</tbody>
</table>

1) Dimensions A...L in millimeters
2) Weight in kilograms
3) Volume in litres
4.5  **Dimensions of heating jacket / Promass I**

![Diagram of heating jacket]

**Fig. 7: Dimensions of heating jacket / Promass I**

- **R** Insulation, customer supply (e.g. mineral wool)
- **S** Safety distance: min. 20 mm
- **T** Process connection of the heating jacket (acc. to Table on Page 10)

<table>
<thead>
<tr>
<th>DN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>L</th>
<th>Weight (2)</th>
<th>Vol. (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>3/8&quot;</td>
<td>208</td>
<td>408</td>
<td>30</td>
<td>254</td>
<td>136</td>
<td>58</td>
<td>194</td>
<td>15</td>
</tr>
<tr>
<td>15</td>
<td>1/2&quot;</td>
<td>208</td>
<td>408</td>
<td>30</td>
<td>290</td>
<td>136</td>
<td>58</td>
<td>230</td>
<td>16</td>
</tr>
<tr>
<td>15 FB</td>
<td>1/2&quot; FB</td>
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<td>408</td>
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</tr>
<tr>
<td>25 FB</td>
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<td>434</td>
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<td>450</td>
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<td>85</td>
<td>564</td>
<td>44</td>
</tr>
</tbody>
</table>

1) Dimensions A...L in millimeters  
2) Total weight for both heating shells in kilograms  
3) Total volume for both heating shells in litres  

FB = Full bore version
4.6  Dimensions

Remote version for heating

Fig. 8:  Dimensions of remote version for heating ("long-necked version")

Connection housing: made of aluminium
Housing support: made of stainless steel