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Data Sheet

# Pressure transmitter Type **MEP**

For use in mobile hydraulic, industrial hydraulic and air compressor applications


**MEP 2200 and MEP 2250 versions:**
- For use in mobile hydraulic applications
- Dual output

Output 1: Switch output
- Hysteresis 1% FS
- Time constant 1 ms

Output 2: Analogue output
- Ratiometric or absolute voltage output

**MEP 2600 and MEP 2650 versions:**
- For use in mobile hydraulic, industrial hydraulic and air compressor applications
- Single output

Output 1: Switch output
- Hysteresis 1 – 8% FS
- Time constant 8 – 512 ms
- Immunity towards VFD

**The series are available in 2 versions:**
- MEP 2200, MEP 2600 – without integrated pulse-snubber
- MEP 2250, MEP 2650 – with integrated pulse-snubber

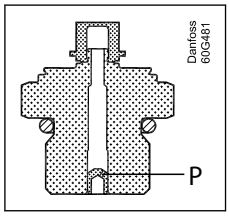
The integrated pulse-snubber offers a high degree of protection against cavitations and liquid hammer. The well thought out design results in excellent vibration stability and an exceptional robustness. The high degree of EMI protection equips the electronic pressure switch to meet most requirements.

## Features

- Designed for use in severe OEM applications
- Excellent long term stability with zero drift
- No leakages due to fully welded design
- Wetted parts made of stainless steel
- For medium and ambient temperatures up to 125 °C
- Dual output versions with switch function and an analogue output signal:
  0 – 5 V, 1 – 5 V, 1 – 6 V, 0 – 10 V, 10 – 90% ratiometric voltage as additional output
- Switch versions with customized hysteresis and time constant
- A wide range of pressure and electrical connections
- EMC protection up to 100 V/m
- Thermal overload protected

## Application

**Figure 1: Pulse-snubber**




| | |
|---|---|
| **P** | Pulse-snubber |

The pulse-snubber protects the sensor element in the event of cavitation, liquid hammer and pressure peaks, which may occur in liquid filled systems with changes in flow velocity, e.g. fast closing of a valve or pump starts and stops.

The problem may occur on the inlet and outlet side, even at rather low operating pressures. The media viscosity has only little effect on the response time.

Even at viscosities up to 100 cSt, the response time will not exceed 4 ms.

# Product specification

## Technical data

### Table 1: Performance (EN 60770)

| Type | MEP 2200 and MEP 2250 | MEP 2600 and MEP 2650 |
|---|---|---|
| | Dual output (Switch and Analogue - output) | Switch output (Switch - output) |
| Switch Hysteresis | ~ 1% FS[1] | 1 – 8% FS |
| Switch Time delay | 1 ms | 8 – 512 mS |
| Accuracy<br>(incl. non-linearity, hysteresis and repeatability) | 2% FS | 2% FS (1 – 5% Hysteresis)<br>3% FS (6 – 8% Hysteresis) |
| Thermal accuracy | < ± 0.15% FS / 10K | < ± 0.15% FS / 10K |

[1] For detailed information please contact Danfoss.

### Table 2: Overload and burst pressure – without pulse-snubber

| Features | Values | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal pressure [bar] | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 500 | 600 | 1000[2] | 1600[2] | 2200[2] |
| Overload pressure | 30 | 48 | 80 | 80 | 140 | 200 | 320 | 500 | 800 | 1400 | 1400 | 2000 | 2500 | 3000 |
| Burst pressure | 400 | 640 | 800 | 800 | 1400 | 2000 | 1600 | 2500 | 4000 | > 4000 | > 4000 | > 4000 | > 4000 | > 4000 |

[2] Only available wih M12 × 11.5 P high pressure port, type FC06. Please contact Danfoss.

### Table 3: Overload and burst pressure – with integrated pulse-snubber

| Features | Values | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal pressure [bar] | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 500 | 600 |
| Overload pressure | 30 | 48 | 120 | 120 | 210 | 300 | 480 | 750 | 1200 | 2100 | 2100 |
| Burst pressure | 400 | 640 | 800 | 800 | 1400 | 2000 | 1600 | 2500 | 4000 | > 4000 | > 4000 |

### Table 4: Electrical specifications

| Type | MEP 2200 and MEP 2250 | MEP 2600 and MEP 2650 |
|---|---|---|
| | Dual output (Switch and Analogue - output) | Switch output (Switch - output) |
| Max. load[3] | 500 mA | 500 mA |
| Electrical connector types | See Electrical connections | See Electrical connections |
| Max. inrush load | 1.6 A | 600 mA |
| Supply voltage | 8 – 32 V | |
| Over/reverse voltage | ± 36 V | ± 33 V |

[3] For inductive load limits, please contact Danfoss.

### Table 5: Secondary output reference for MEP 2200 and 2250

| Nom. output signal (Short-circuit protected) | NPN and PNP | | NPN |
|---|---|---|---|
| | 0 – 5, 1 – 5, 1 – 6 V | 0 – 10 V | 10 – 90% ratiometric |
| Supply voltage [UB], polarity protected | 8 – 32 V | 12 – 32 V | – |
| Supply – current consumption | 4.5 mA | 4.5 mA | 4.5 mA |
| Output inpedance | ≤ 90 Ω | ≤ 90 Ω | ≤ 90 Ω |
| Load [$R_L$] (connected to 0 V) | RL ≥ 10 kΩ | RL ≥ 10 kΩ | RL ≥ 5 kΩ |
| Load [$R_L$] (connected to + V) | Not possible | Not possible | RL ≥ 5 kΩ |

### Table 6: Technical data

| Features | | Values |
|---|---|---|
| Media temperature range | | - 40 – 125 °C |
| Ambient temperature range | | -40 – 125 °C |
| Compensated temperature range | | - 40 – 125 °C |
| Transport temperature range | | -55 – 150 °C |
| EMC – Emission | | EN 61326-2-3: 2013 |
| EMC Directive | | 2014/30/EU |
| EMC – Immunity RF field | 100 V/m, 26 Mhz – 1 GHz | EN 61326-2-3 Cable < 30 m |
| | 3 V/m, 1.4 GHz – 2.7 GHz | |

| Features | | Values |
|---|---|---|
| Electrical performance comply with | | ISO 7637 pulse 1 – 4 V (MEP 26XX) |
| | | ISO 7637-2 / ISO 16750 (MEP 22XX) (pulse 5b <45 V) |
| Vibration stability | 20 g, 10 – 2000 Hz, sinus | EN 60068-2-6 |
| Shock resistance | 100 g | EN 60068-2-27 |
| Enclosure (depending on electrical connection) | | see page 8 |

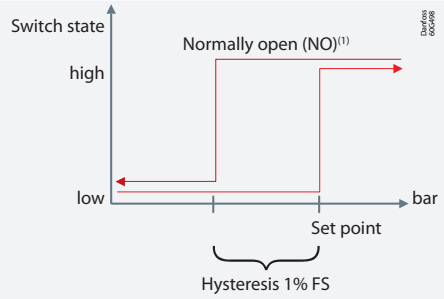
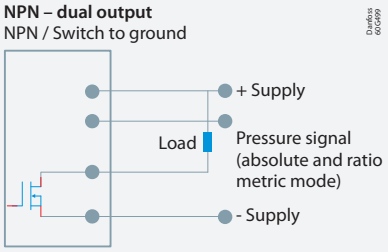
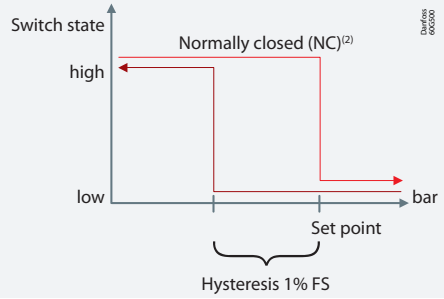
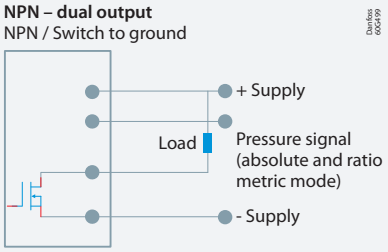
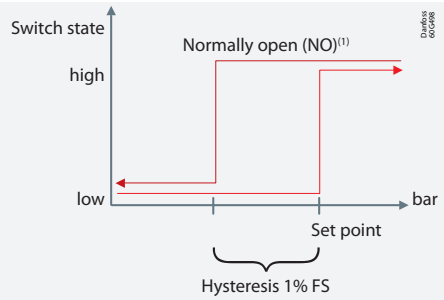
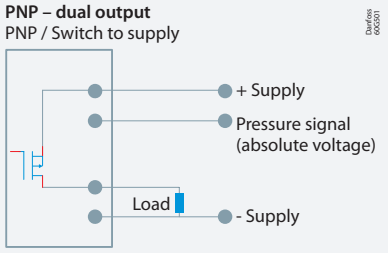
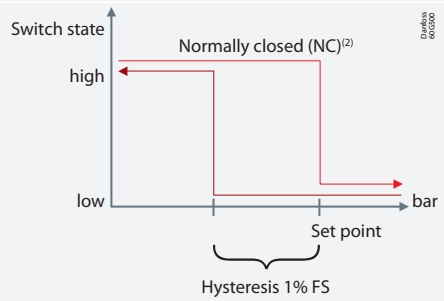
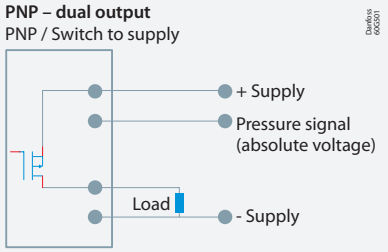
**Table 7: Mechanical conditions**

| Materials | |
|---|---|
| Wetted parts | 17 – 4 PH |
| Enclosure | AISI 304 or plastic |
| Pressure connection | 17 – 4 PH |
| Electrical connection | See Electrical connections |

# Configuration codes

## MEP 2200 and MEP 2250

**Table 8: Configuration codes for MEP 2200 and MEP 2250**

| Code no. | Switch state change – NC and NO | NPN and PNP connection |
|---|---|---|
| Code 1 |  | **NPN – dual output**<br>NPN / Switch to ground<br>  |
| Code 2 |  | **NPN – dual output**<br>NPN / Switch to ground<br>  |
| Code 3 |  | **PNP – dual output**<br>PNP / Switch to supply<br>  |
| Code 4 |  | **PNP – dual output**<br>PNP / Switch to supply<br>  |

(1) **NO:**

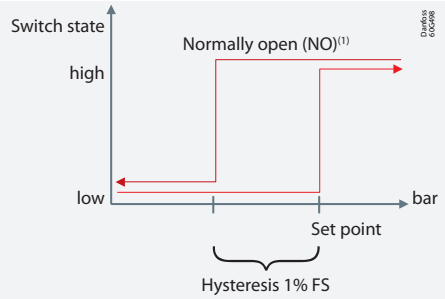
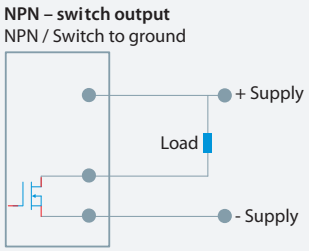
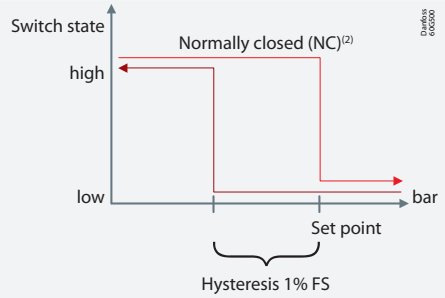
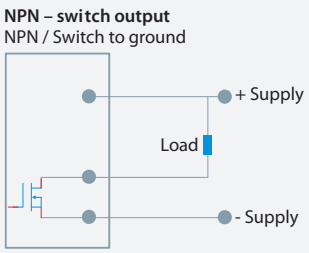
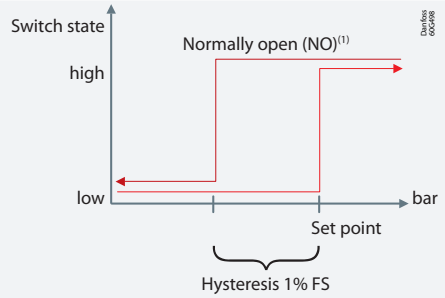
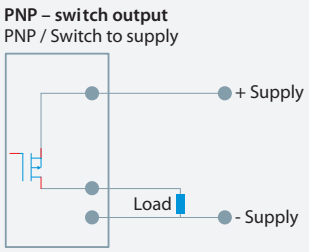
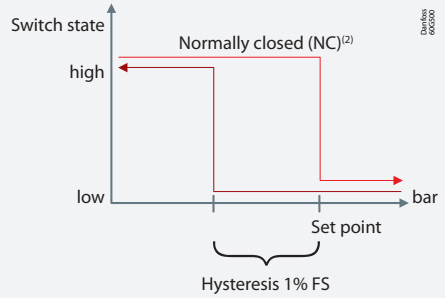
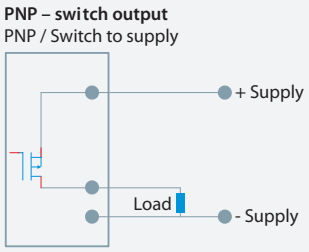
At rising pressure ($P^0$ - $P^{Max}$) when reaching the set point the switch will connect the applied load (switch state change from low to high).
At falling pressure ($P^{Max}$ - $P^0$) when reaching the set point + hysteresis the switch will disconnect the applied load (switch state change from high to low).

(2) **NC:**

At rising pressure ($P^0$ - $P^{Max}$) when reaching the set point the switch will disconnect the applied load (switch state change from high to low).
At falling pressure ($P^{Max}$ - $P^0$) when reaching the set point + hysteresis the switch will connect the applied load (switch state change from low to high).

## MEP 2600 and MEP 2650

**Table 9: Configuration codes for MEP 2600 and MEP 2650**

| Code no. | Switch state change – NC and NO | NPN and PNP connection |
|---|---|---|
| Code 5 |  |  |
| Code 6 |  |  |
| Code 7 |  |  |
| Code 8 |  |  |

(1) NO:

At rising pressure ($P^0$ - $P^{Max}$) when reaching the set point the switch will connect the applied load (switch state change from low to high).
At falling pressure ($P^{Max}$ - $P^0$) when reaching the set point + hysteresis the switch will disconnect the applied load (switch state change from high to low).

(2) NC:

At rising pressure ($P^0$ - $P^{Max}$) when reaching the set point the switch will disconnect the applied load (switch state change from high to low).
At falling pressure ($P^{Max}$ - $P^0$) when reaching the set point + hysteresis the switch will connect the applied load (switch state change from low to high).

## Dimensions / Combinations

**Table 10: Dimensions / Combinations**

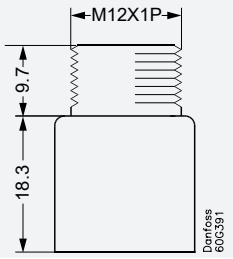
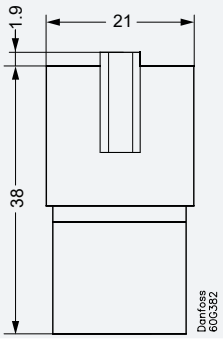
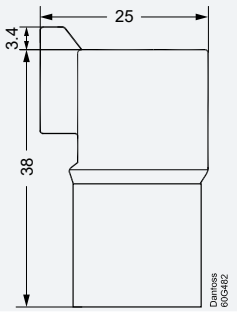
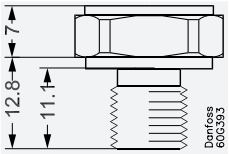
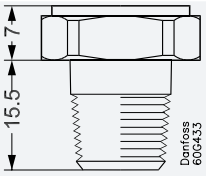
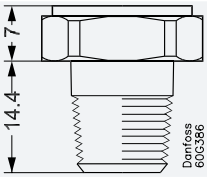
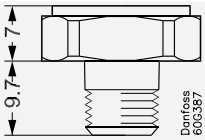
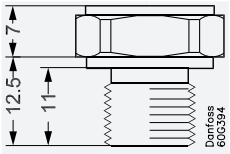
| Type code | C1 | C3 | C7 |
|---|---|---|---|
| | M12 × 1<br>EN60947-5-2 | Deutsch DT04-4P | Deutsch DT04-3P |
| NOTE:<br>The diameter of all housings is 19 mm. |  |  |  |

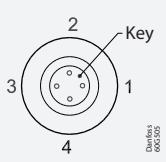
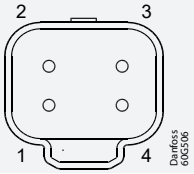
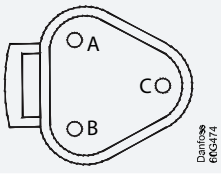
**Table 11: Dimensions / Combinations with recommended torque**

| Type code | BD08 | PT04 | AC04/AF04 | AC02/AF02 | GB04 |
|---|---|---|---|---|---|
| Recommended torque | 18 – 20 Nm | 2 – 3 turns after fnger tightend | 2 – 3 turns after fnger tightend | 2 – 3 turns after fnger tightend | 30 – 35 Nm |
| |  |  |  |  |  |
| | 7/16 – 20 UNF-2A | 1/4 – 19 Pt | 1/4 – 18 NPT / NPTF | 1/8 – 27 NPT / NPTF | G 1/4 A DIN 3852-E |

NOTE:
HEX is 22 mm across flats.

## Electrical connections

**Table 12: Electrical connections**

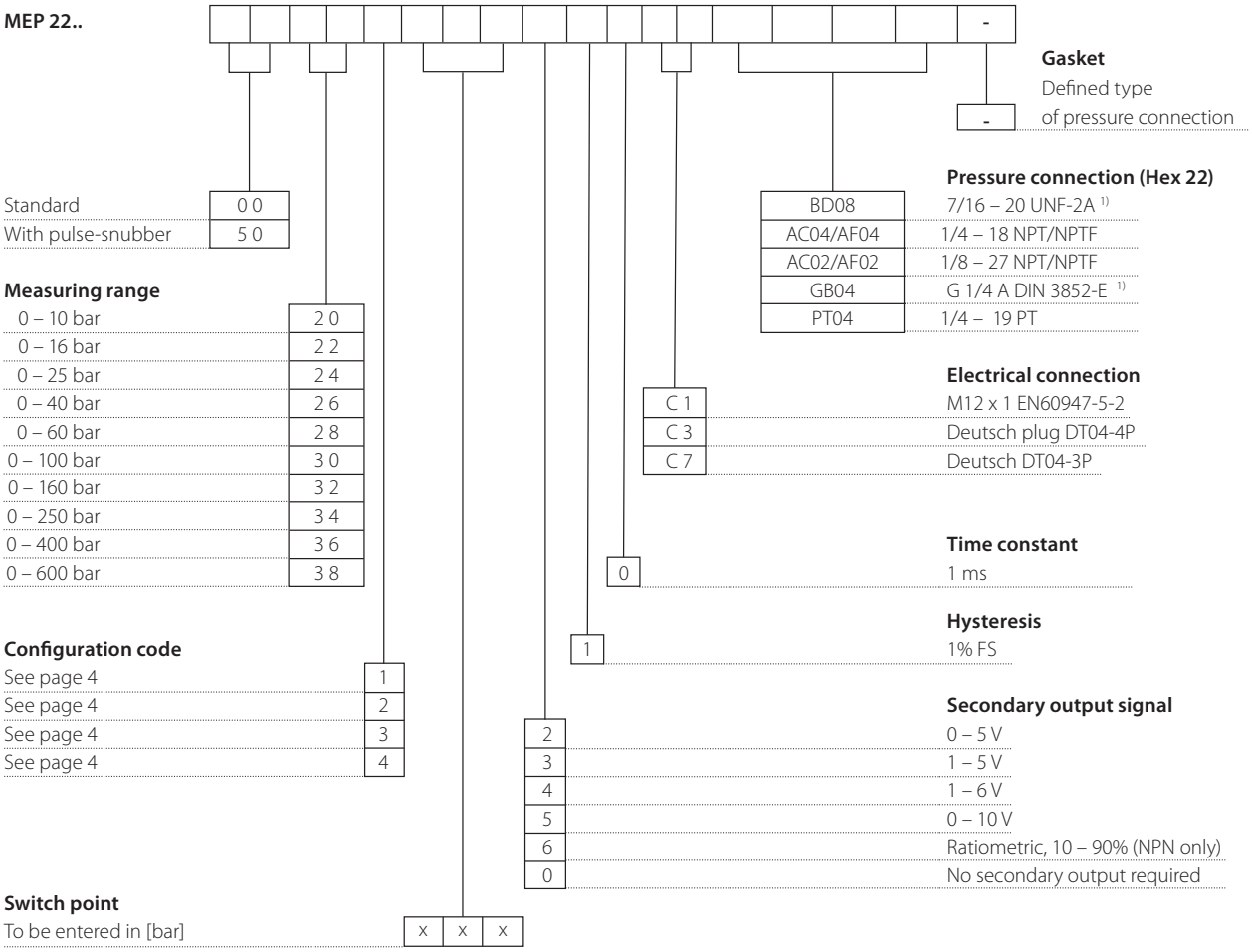
| Type code | C1 | C3 | C7 |
|---|---|---|---|
| |  |  |  |
| | M12x1 EN60947-5-2 | Deutsch DT04-4P | Deutsch DT04-3P |
| Enclosure | IP67 | IP67 | IP67 |
| Material | SS, PBT 30%<br>GFR<br>Gold (Au) plated | Glass filled PBT 30%<br>GFR<br>Gold (Au) plated | Glass filled PBT 30%<br>GFR<br>Tin (Sn) plated |
| Electrical connections, MEP 22XX | Pin 1: + supply<br>Pin 2: pressure output<br>Pin 3: ÷ supply<br>Pin 4: switch output | Pin 1: ÷ supply<br>Pin 2: + supply<br>Pin 3: switch output<br>Pin 4: pressure output | Pin A: + supply<br>Pin B: ÷ supply<br>Pin C: switch output |
| Electrical connections, MEP 26XX | Pin 1: + supply<br>Pin 2: switch output<br>Pin 3: ÷ supply<br>Pin 4: N/A buried | | Pin A: + supply<br>Pin B: ÷ supply<br>Pin C: switch output |

# Ordering

## Dual output version, type MEP 2200 and MEP 2250

**Figure 2: MEP 2200 and MEP 2250**

**Ordering standard for dual output version type MEP 2200 and MEP 2250**

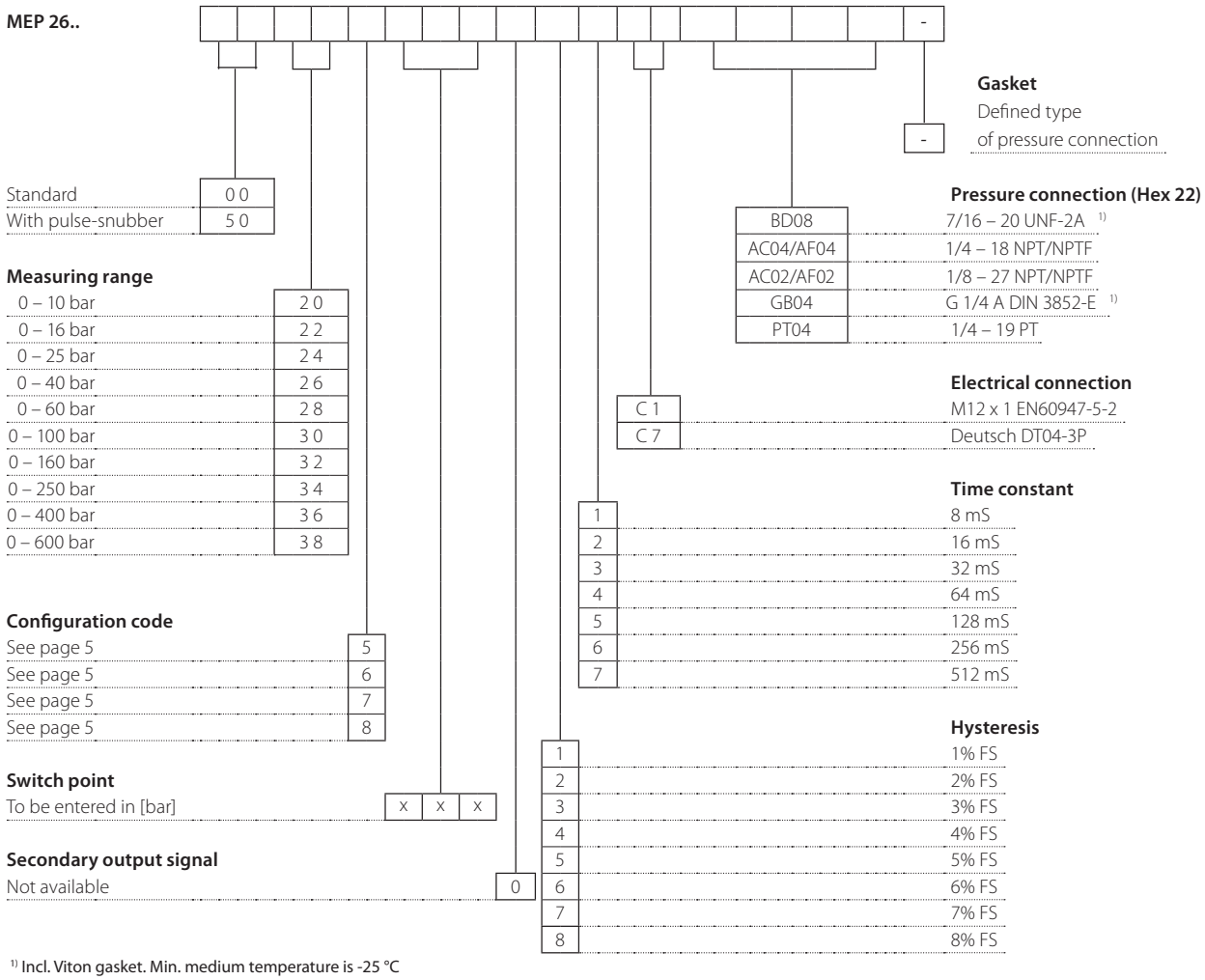



1)Incl. Viton gasket. Min. medium temperature is -25 °C

## Switch version type MEP 2600 and MEP 2650

**Figure 3: MEP 2600 and MEP 2650**

**Ordering standard for switch version type MEP 2600 and MEP 2650**




1) Incl. Viton gasket. Min. medium temperature is -25 °C

## Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

**Table 13: MEP 2200**

| File name | Document type | Document topic | Approval authority |
|---|---|---|---|
| 063R1015 | EU Declaration | EMCD/ROHS | Danfoss |
| 063R1012 | Manufacturers Declaration | China RoHS | Danfoss |

**Table 14: MEP 2250**

| File name | Document type | Document topic | Approval authority |
|---|---|---|---|
| 063R1015 | EU Declaration | EMCD/ROHS | Danfoss |
| 063R1012 | Manufacturers Declaration | China RoHS | Danfoss |

**Table 15: MEP 2600**

| File name | Document type | Document topic | Approval authority |
|---|---|---|---|
| 063R1015 | EU Declaration | EMCD/ROHS | Danfoss |
| 063R1012 | Manufacturers Declaration | China RoHS | Danfoss |

**Table 16: MEP 2650**

| File name | Document type | Document topic | Approval authority |
|---|---|---|---|
| 063R1015 | EU Declaration | EMCD/ROHS | Danfoss |
| 063R1012 | Manufacturers Declaration | China RoHS | Danfoss |

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