

Data sheet

Electronic Pressure Switch

MEP

**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 VDF

The series are available in 2 versions:

- MEP 2200 and MEP 2600 – without integrated pulse-snubber
- MEP 2250 and MEP 2650 – with integrated pulse-snubber

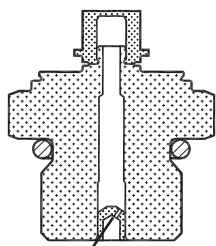
The integrated pulse-snubber offers a high degree of protection against cavitations and liquid hammer. The well thought out design results in excellent vibration stability and an exceptional robustness. The high degree of EMI protection equips the electronic pressure switch to meet most requirements.

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

Approvals

UL 508 recognized

**Pulse-snubber
in MEP 2250 and MEP 2650**


Pulse-snubber

Application

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.

Technical data
Performance (EN 60770)

	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 (incl. non-linearity, hysteresis and repeatability)	1% FS	1% FS
Thermal accuracy	< ± 0.15% FS / 10K	< ± 0.15% FS / 10K

¹⁾For detailed hysteresis please contact Danfoss

Overload and burst pressure – without pulse-snubber

Nominal pressure [bar]	10	16	25	40	60	100	160	250	400	500	600	1000*	1600*	2200*
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

*Only available with M12 × 11.5 P high pressure port, type FC06. Please contact Danfoss.

Overload and burst pressure – with integrated pulse-snubber

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

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 ²⁾	500 mA	500 mA
Electrical connector types	See page 8	See page 8
Max. inrush load	2 A	600 mA
Supply voltage	8 – 32 V	
Over/reverse voltage	± 36 V	± 33 V

¹⁾For inductive load limits, please contact Danfoss

Technical data
(continued)
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 [U _s], polarity protected	8 – 32 V	12 – 32 V	–
Supply – current consumption	4.5 mA	4.5 mA	4.5 mA
Output impedance	≤ 90Ω	≤ 90Ω	≤ 90Ω
Load [R _L] (connected to 0 V)	R _L ≥ 10kΩ	R _L ≥ 10kΩ	R _L ≥ 5kΩ
Load [R _L] (connected to + V)	Not possible	Not possible	R _L ≥ 5kΩ

Environmental conditions

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	
EMC Directive	2004/108/Ec	
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	
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
Durability, P:	10 – 90% FS	>10 × 106 cycles
Enclosure (depending on electrical connection)	see page 8	

Mechanical conditions

Materials	Wetted parts	17 – 4 PH
	Enclosure	AISI 304 or plastic
	Pressure connection	17 – 4 PH
	Electrical connection	see page 8

Configuration codes for MEP 2200 and MEP 2250

<p>Code 1</p>		<p>NPN – dual output NPN / Switch to ground</p> <p>+ Supply Pressure signal (absolute and ratio metric mode) Load - Supply</p>
<p>Code 2</p>		<p>NPN – dual output NPN / Switch to ground</p> <p>+ Supply Pressure signal (absolute and ratio metric mode) Load - Supply</p>
<p>Code 3</p>		<p>PNP – dual output PNP / Switch to supply</p> <p>+ Supply Pressure signal (absolute voltage) Load - Supply</p>
<p>Code 4</p>		<p>PNP – dual output PNP / Switch to supply</p> <p>+ Supply Pressure signal (absolute voltage) Load - Supply</p>

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).

Configuration codes for MEP 2600 and MEP 2650

<p>Code 5</p>		<p>NPN – switch output NPN / Switch to ground</p>
<p>Code 6</p>		<p>NPN – switch output NPN / Switch to ground</p>
<p>Code 7</p>		<p>PNP – switch output PNP / Switch to supply</p>
<p>Code 8</p>		<p>PNP – switch output PNP / Switch to supply</p>

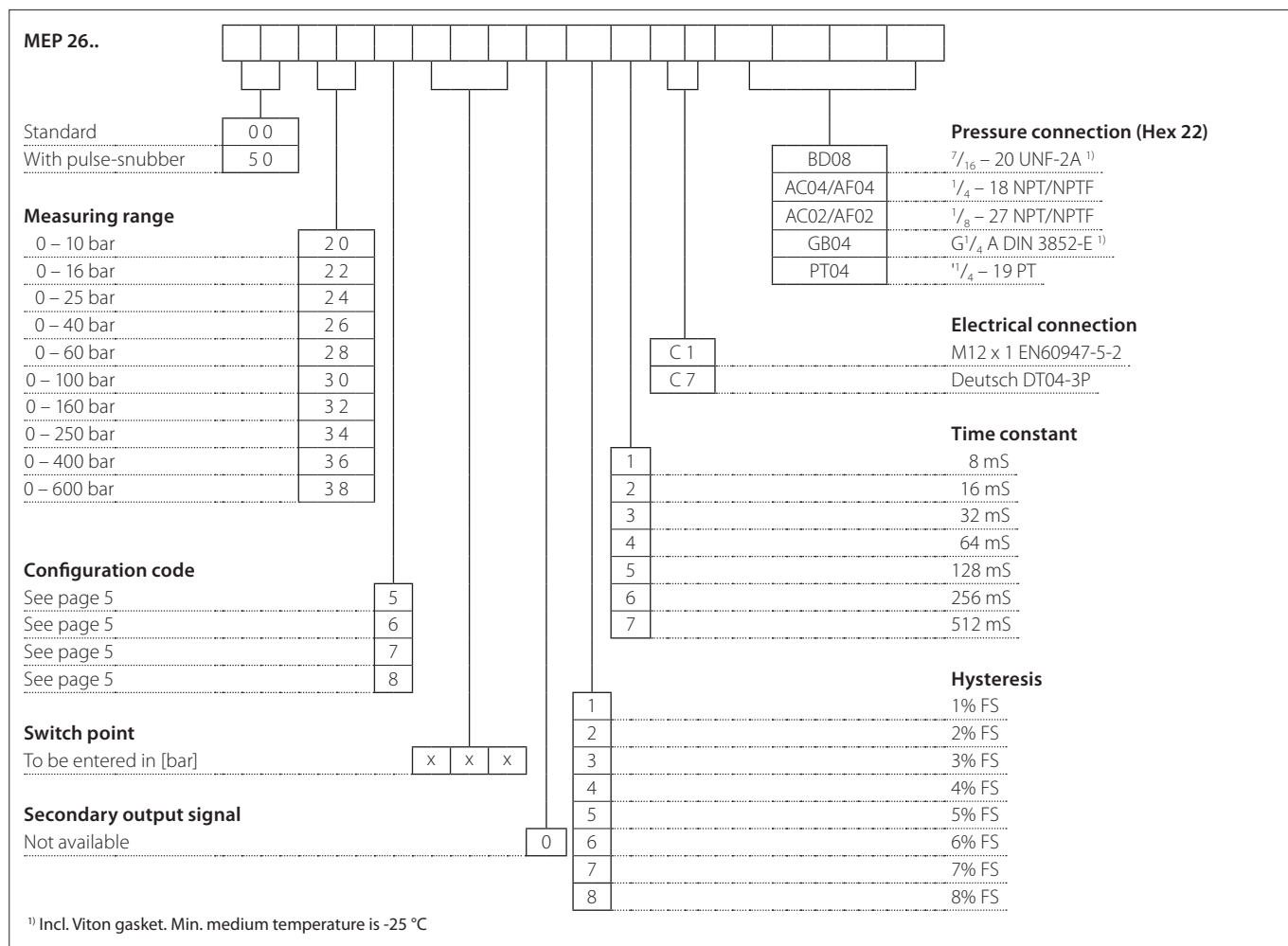
¹⁾ NO: At rising pressure ($P^0 - P^{Max}$) when reaching the set point the switch will connect the applied load (Switch state change from low to high).
At falling pressure ($P^{Max} - P^0$) when reaching the set point + hysteresis the switch will disconnect the applied load (Switch state change from 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).

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

MEP 22..		[Ordering code grid]																											
Standard	00																												
With pulse-snubber	50																												
Measuring range																													
0 – 10 bar	20																												
0 – 16 bar	22																												
0 – 25 bar	24																												
0 – 40 bar	26																												
0 – 60 bar	28																												
0 – 100 bar	30																												
0 – 160 bar	32																												
0 – 250 bar	34																												
0 – 400 bar	36																												
0 – 600 bar	38																												
Configuration code																													
See page 4	1																												
See page 4	2																												
See page 4	3																												
See page 4	4																												
Switch point		[x] [x] [x]																											
To be entered in [bar]																													
1) Incl. Viton gasket. Min. medium temperature is -25 °C																													
2) Mating connector available code no. 063G0306																													
		<table border="1"> <tr> <td>BD08</td> <td>$\frac{7}{16}$ – 20 UNF-2A ¹⁾</td> </tr> <tr> <td>AC04/AF04</td> <td>$\frac{1}{4}$ – 18 NPT/NPTF</td> </tr> <tr> <td>AC02/AF02</td> <td>$\frac{1}{8}$ – 27 NPT/NPTF</td> </tr> <tr> <td>GB04</td> <td>G$\frac{1}{4}$ A DIN 3852-E ¹⁾</td> </tr> <tr> <td>PT04</td> <td>$\frac{1}{4}$ – 19 PT</td> </tr> </table>										BD08	$\frac{7}{16}$ – 20 UNF-2A ¹⁾	AC04/AF04	$\frac{1}{4}$ – 18 NPT/NPTF	AC02/AF02	$\frac{1}{8}$ – 27 NPT/NPTF	GB04	G $\frac{1}{4}$ A DIN 3852-E ¹⁾	PT04	$\frac{1}{4}$ – 19 PT								
BD08	$\frac{7}{16}$ – 20 UNF-2A ¹⁾																												
AC04/AF04	$\frac{1}{4}$ – 18 NPT/NPTF																												
AC02/AF02	$\frac{1}{8}$ – 27 NPT/NPTF																												
GB04	G $\frac{1}{4}$ A DIN 3852-E ¹⁾																												
PT04	$\frac{1}{4}$ – 19 PT																												
		<table border="1"> <tr> <td>C 1</td> <td>M12 x 1 EN60947-5-2</td> </tr> <tr> <td>C 3</td> <td>Deutsch plug DT04-4P</td> </tr> <tr> <td>C 5</td> <td>Mini DIN plug EN 175301-803-A ²⁾</td> </tr> <tr> <td>C 7</td> <td>Deutsch DT04-3P</td> </tr> </table>										C 1	M12 x 1 EN60947-5-2	C 3	Deutsch plug DT04-4P	C 5	Mini DIN plug EN 175301-803-A ²⁾	C 7	Deutsch DT04-3P										
C 1	M12 x 1 EN60947-5-2																												
C 3	Deutsch plug DT04-4P																												
C 5	Mini DIN plug EN 175301-803-A ²⁾																												
C 7	Deutsch DT04-3P																												
		<table border="1"> <tr> <td>0</td> <td>Time constant</td> <td>1 mS</td> </tr> <tr> <td>1</td> <td>Hysteresis</td> <td>1% FS</td> </tr> </table>										0	Time constant	1 mS	1	Hysteresis	1% FS												
0	Time constant	1 mS																											
1	Hysteresis	1% FS																											
		<table border="1"> <tr> <td>2</td> <td>Secondary output signal</td> <td>0 – 5 V</td> </tr> <tr> <td>3</td> <td></td> <td>1 – 5 V</td> </tr> <tr> <td>4</td> <td></td> <td>1 – 6 V</td> </tr> <tr> <td>5</td> <td></td> <td>0 – 10 V</td> </tr> <tr> <td>6</td> <td></td> <td>Ratiometric, 10 – 90% (NPN only)</td> </tr> <tr> <td>0</td> <td></td> <td>No secondary output required</td> </tr> </table>										2	Secondary output signal	0 – 5 V	3		1 – 5 V	4		1 – 6 V	5		0 – 10 V	6		Ratiometric, 10 – 90% (NPN only)	0		No secondary output required
2	Secondary output signal	0 – 5 V																											
3		1 – 5 V																											
4		1 – 6 V																											
5		0 – 10 V																											
6		Ratiometric, 10 – 90% (NPN only)																											
0		No secondary output required																											

Ordering standard for switch version type MEP 2600 and MEP 2650



Dimensions / Combinations

Type code	C1	C3	C5	C7
	M12 x 1 EN60947-5-2	Deutsch DT04-4P	Mini DIN plug EN 175301-803-C	Deutsch DT04-3P
Note: The diameter of all housings is 19 mm.				

Note: HEX is 22 mm across flats.					
	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
Type code	BD08	PT04	AC04/AF04	AC02/AF02	GB04
Recommended torque	18 – 20 Nm	2 – 3 turns after finger tightend	2 – 3 turns after finger tightend	2 – 3 turns after finger tightend	30 – 35 Nm

Electrical connections

Type code	C1	C3	C5	C7
	M12x1 EN60947-5-2	Deutsch DT04-4P	EN 175301-803-C	Deutsch DT04-3P
Enclosure	IP67	IP67	IP67	IP67
Material	SS, PBT 30% GFR Gold (Au) plated	Glass filled PBT 30% GFR Gold (Au) plated	Glass filled PBT 30% GFR Tin (Sn) plated	Glass filled PBT 30% GFR Tin (Sn) plated
Electrical connections, MEP 22XX	Pin 1: + supply Pin 2: pressure output Pin 3: ÷ supply Pin 4: switch output	Pin 1: ÷ supply Pin 2: + supply Pin 3: switch output Pin 4: pressure output	Pin 1: pressure output Pin 2: + supply Pin 3: switch output Pin 4: ÷ supply	Pin A: + supply Pin B: ÷ supply Pin C: switch output
Electrical connections, MEP 26XX	Pin 1: + supply Pin 2: switch output Pin 3: ÷ supply Pin 4: N/A buried			Pin A: + supply Pin B: ÷ supply Pin C: switch output

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.