

## Data sheet

# PFM 1000 Measuring Instrument

## Description



Using the differential pressure measured by the measuring component in the system, PFM 1000 calculates the flow that runs through the component (balancing valve or measuring orifice).

The application corrects the calculated flow also for anti-freeze mixes in cooling systems.

The flow can be measured in all branches of the whole hydraulic system and the whole system can be balanced.

The PFM 1000 has been designed to create hydraulic balance in heating, cooling and domestic hot water systems. It enables measuring of static pressure, differential pressure and flow.

#### PFM1000 components

- Main measuring unit
- Measuring needles & hoses
- Smartphone for displaying results and analysis

The main pressure sensor is extremely robust with a sturdy frame. Inside the pressure sensor is a differential pressure gauge with an integrated true differential pressure sensor for accurate digital data processing.

Connectivity between measuring unit and smartphone is wireless via Bluetooth.

PFM1000 can be connected to ANDROID and iOS devices using app downloaded from PLAY STORE (Android) or APPLE STORE (iOS)

## Features

- Accurate pressure measuring with true pressure sensor with 24 bit pressure processing.
- Digital compensation of temperature effects and the pressure sensor nonlinearity.
- Correction of flow calculation based on antifreeze liquid characteristics.
- Compatible with Android (7,0+) and iOS devices.
- Wireless data transfer from measuring unit to mobile Bluetooth Low Energy technology.
- User-friendly interface.
- Easy balancing valve selection from a photographic menu.
- A record of the measured values with the capacity of up to 2,000 recordings.
- Can be used as data logger
- Very robust construction, can withstand fall from height of 2m.

## Usage

The PFM 1000 must be connected on the high side as well as on the low side of the valve using the appropriate needles, connectors and hoses. If you are to measure under high static pressure it is recommended to connect the red hose first in order to protect the membrane inside the pressure sensor. If you connect the blue hose first the pressure sensor may be damaged. You can read flow and pressure on the Android / iOS smartphone which is separate from the pressure sensor.

#### How to measure:

1. Select manufacturer
2. Select the type of valve
3. Select the dimension of the valve
4. Select pre-setting
5. Connect the valve to the pressure sensor
6. Zero adjust
7. Measure the flow

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## PFM 1000 Measuring Instrument

## Ordering

| Type                          | Pressure | Code No. |
|-------------------------------|----------|----------|
| PFM 1000 measuring instrument | 10 bar   | 003Z8260 |
| PFM 1000 measuring instrument | 20 bar   | 003Z8261 |

All versions are upgradable with additional pressure sensors and routers.

## Accessories

| Type                              | Set / pcs. | Code No. |
|-----------------------------------|------------|----------|
| Set of the hoses PFM1000 - 2x1,5m | 1 set      | 003Z8262 |
| Set of the filters PFM1000        | 2 pcs      | 003Z8263 |
| Set of the needles PFM1000        | 2 pcs      | 003Z8264 |
| Adapter R21                       | 2 pcs      | 003Z8267 |

## Technical data

| Type                                                                  | Specification                                                    |
|-----------------------------------------------------------------------|------------------------------------------------------------------|
| Pressure range                                                        | 0-1000 kPa ~ 0-10 bar<br>0-2000 kPa ~ 0-20 bar                   |
| Nominal pressure                                                      | 10 or 20 bar                                                     |
| Max. over pressure                                                    | 120% of nominal pressure:<br>1200kpa ~12 bar<br>2400kpa ~ 24 bar |
| Reliability, linearity and hysteresis error                           | 0.15 % of range                                                  |
| Error for the pressure range 0 till 5 kPa after pressure zero setting | ± 50 Pa for nominal pressure range 1 MPa                         |
|                                                                       | ± 100 Pa for nominal pressure range 2 MPa                        |
| Temperature error                                                     | 0.25 % of range                                                  |
| Medium temperature <sup>1)</sup>                                      | - 5 to 90 °C                                                     |
| Ambient temperature                                                   | - 5 to 50 °C                                                     |
| Storage temperature                                                   | + 5 to 50 °C                                                     |
| Ambient humidity                                                      | 95% r.h., non-condensing                                         |
| Power supply                                                          | AAA Alkaline batteries or NiMH rechargeable batteries            |
| Operating time                                                        | Max. 45 hours                                                    |
| Power consumption                                                     | 20mA                                                             |
| Wireless data tetansfer                                               | Bluetooth Low Energy 5.0                                         |
| Dimensions w x h x d                                                  | 180 x 80 x 52 mm                                                 |
| Weight                                                                | 440 g                                                            |
| IP rated enclosure                                                    | IP 65                                                            |
| Calibration validity                                                  | 24 months                                                        |

<sup>1)</sup> measured at the end of measuring hoses, length 1.5m, Hot water flows thru PFM1000 hydraulic parts during Pressure zero procedure. Maximum time duration of zeroing when temperature of the medium exceeds 50°C is 10 seconds.

## Danfoss A/S

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