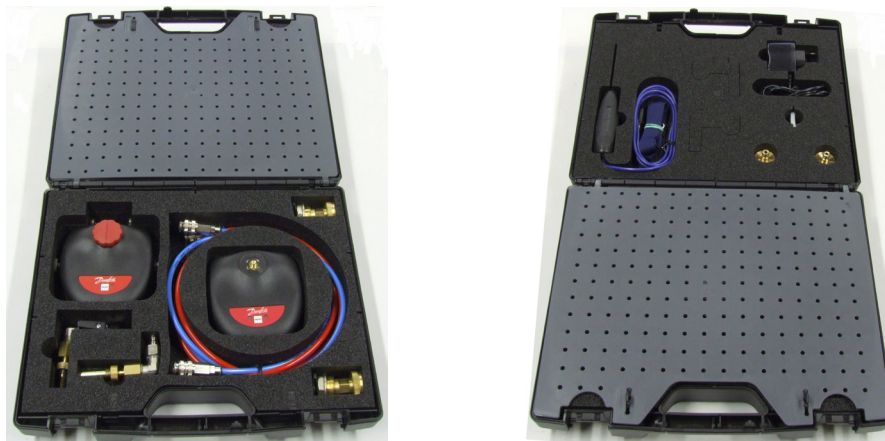


Data Sheet

PFM 5001 Measuring Instrument

Application



PFM 5001 suitcase

The PFM 5001 has been designed to create hydraulic balance in heating, cooling and domestic hot water systems. It enables measuring of pressure flow and temperatures in a system. Using differences in pressure the PFM 5001 is capable of turning these two pressures on both sides of a valve into flow. Flow through individual branches of the system can be measured, creating perfect balance in the whole system.

Three separate parts

- A main pressure sensor for measuring pressure, flow and temperature (radio signal).
- Smartphone or pc are used for displaying results and data analysis via Bluetooth.
- A converter between radio and Bluetooth signals.

The main pressure sensor is extremely robust with a sturdy frame and sound cover. Inside the pressure sensor is a differential pressure gauge with an integrated true differential pressure sensor for accurate digital data processing. The pressure gauge automatically corrects the flow for different types of mediums being measured, e.g., antifreeze additives in cooling systems.

Multi branch systems

The PFM 5001 is able to calculate complicated multi branch heating systems by simulating the hydraulic system using balancing calculations based on readings in each branch. This function drastically reduces the time required for balancing.

Measuring accuracy

The PFM 5001 has the advantage of high class digital technology which enables it to compensate for inaccuracies normally associated with pressure measurements, such as temperature dependency and non-linearity.

The main pressure sensor is designed with incoming by-pass couplers for hydraulic zero setting in order to increase the accuracy of low pressure measuring and to enable pressure connection deaeration.

The PFM 5001 can be supplemented with an external thermometer connected via a coaxial connector.

The temperature of the working medium can be measured by inserting the thermometer into the measuring nipples of the valve where you normally insert 3 mm measuring needles.

Specifications for other valve manufacturers than Danfoss are pre-programmed in the memory of the PFM 5001.

Autonomous measuring mode

The PFM 5001 allows independent data recording based on a pre-programmed period. The acquired data are initially saved in the main pressure sensor and can subsequently be analysed on smartphone or pc.

Features

- Separated main pressure sensor and converter.
- Data analysis based on Android smartphone (not iPhone) or pc via Bluetooth.
- Upgradable with additional sensors and routers to extend range.
- Possible to choose from different pressure sensors (kPa, bar, etc.).
- Accurate pressure measuring with true differential pressure sensor and 24 bit ADC.
- Hydraulic by-pass for exact small differential pressure measuring.
- External PT-100 thermometer.
- Working with projects.
- Programmable autonomous recording mode.
- Main sensor powered by rechargeable Li-Ion battery.

Usage

The PFM 5001 pressure sensor must be connected on the high side as well as on the low side of the valve using the appropriate needles, connectors and hoses.

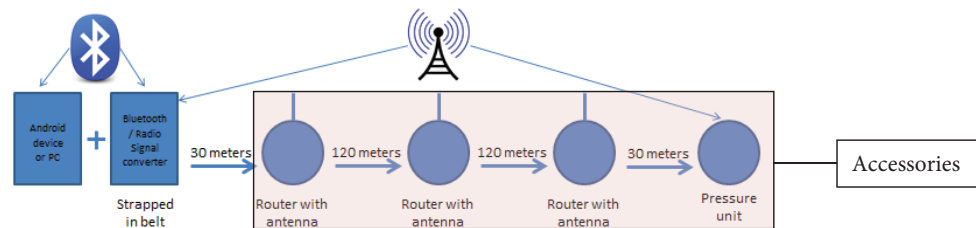
If you are to measure under high static pressure it is recommended to connect the red hose first in order to protect the membrane inside the pressure sensor. If you connect the blue hose first the pressure sensor may be damaged.

You can read flow and pressure on the Android smartphone or pc which is separate from the pressure sensor. The maximum distance recommended between the Android smartphone or pc

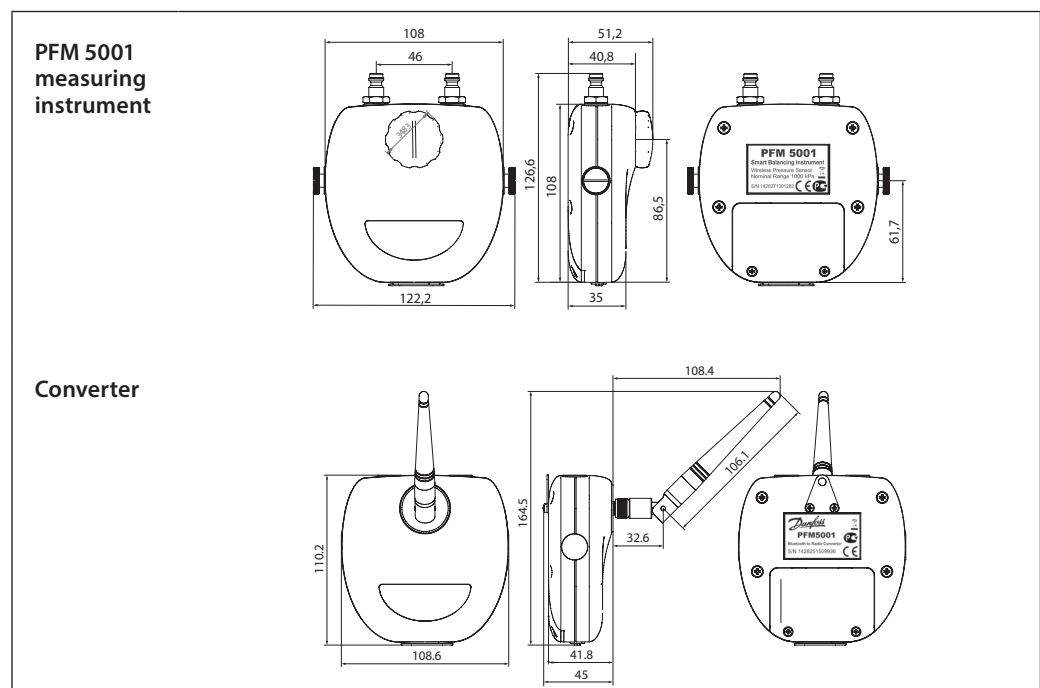
and the pressure sensor is 30 meters, but can be extended up to 300 meters by adding up to 3 routers.

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



Dimensions



Ordering

Type	Version	Pressure	Code no.
PFM 5001 measuring instrument	standard	10 bar	003L8343
PFM 5001 measuring instrument	standard	20 bar	003L8344
PFM 5001 measuring instrument	Russian	10 bar	003L8345
PFM 5001 measuring instrument	Russian	20 bar	003L8346

All versions are upgradable with additional pressure sensors and routers.

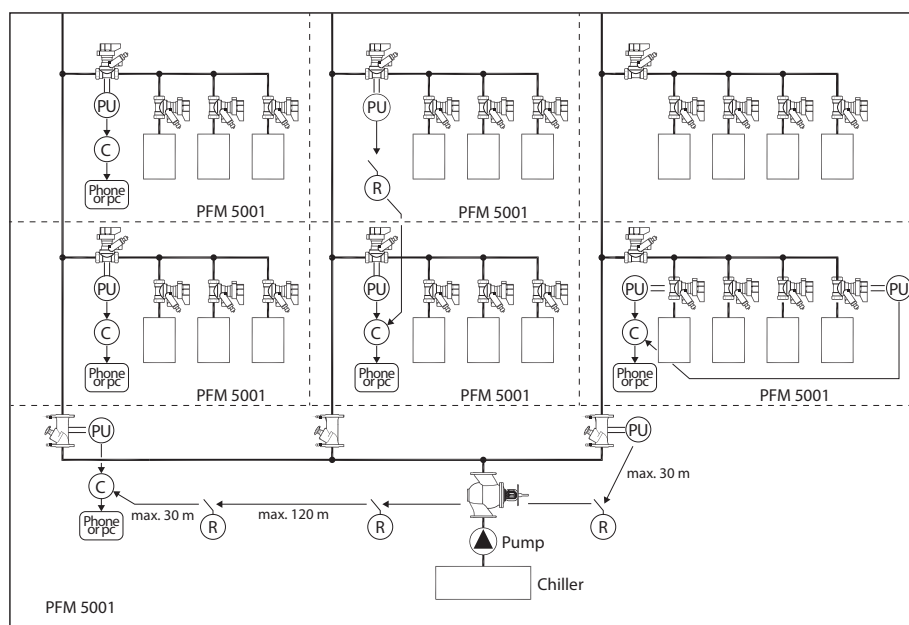
Technical Specifications

Type	Specification
Pressure range	0-1000 kPa ~ 0-10 bar 0-2000 kPa ~ 0-20 bar
Max. static pressure	10 or 20 bar
Max. over pressure	1200 kPa ~ 12 bar 2200 kPa ~ 22 bar
Reliability, linearity and hysteresis error	0.15 % of range
Temperature error	0.25 % of range
Static pressure effect	± 200 Pa
Medium temperature	- 5 to 90° C (at end of connection tubes)
Ambient temperature	- 5 to 50° C
Storage temperature	-10 to 70° C
Temperature probe	Pt 100 digital
Temperature measuring range	-20 to 120° C
Temperature measuring error	± 1° C
Power	Li Ion battery 3.6 V 950 mAh (for Nokia 6230 mobile phone)
Operating time	Max. 120 hours
Charging time	7 hours
Interface	RF wireless 868 MHz (standard versions) RF wireless 869,025 MHz (Russian versions)
Communication speed	9600 bps
RF transmitter power	25 mW
Radio range (open air)	up to 30 m
Wireless routers	868 MHz, 500 mW (standard versions) 869,025 MHz, 25 mW (Russian versions)
Number of routers	max. 3
Radio range in open air with 3 routers	300 m (standard versions) 100 m (Russian versions)
Recording period	1 sec up to 24 hours
Number of records	max. 3000
Dimensions w x h x d	77 x 19 x 25 mm
Weight	620 g
Cover	IP 65
Calibration validity	12 months

Accessories

Type	Set / pcs.	Code no.
Measuring hose 2 x 1.5 m	2	003L8210
Battery for pressure sensor	1	003L8214
Router with antenna	1	003L8215
Strap for pressure sensor	1	003L8224
Filters for pressure sensor	2	003L8231
AC adapter for pressure sensor	1	003L8234
Quick coupling for measuring hose	1	003L8237
Plastic bracket for simultaneously mounting of 2 measuring needles	1	003L8251
Adapters, DN15 x DN20	2	003L8272
Measuring adapter, DN20 x 3 mm needle connection	1	003L8273
Measuring needles	2	003L8279
Temperature probe, 120° C, 3 mm	1	003L8288
Converter, radio signal to Bluetooth	1	003L8338
Pressure sensor, 10 bar (Russian version)	1	003L8339
Pressure sensor, 20 bar (Russian version)	1	003L8340
Pressure sensor, 10 bar	1	003L8341
Pressure sensor, 20 bar	1	003L8342
Empty suitcase for 3 routers and 1 pressure sensor	1	003L8347

Setup



PHONE = Android OS
 PU = Pressure Sensor
 R = Router
 C = Converter

Max. distances:
 • between PFM and router max. 30 m
 • between 2 routers max. 120 m
 • between pressure sensor and router max. 30 m

If there is a long distance between the pressure transmitters and the mobile phone up to 3 routers can be used. For further information see the User Guide.