MDPS2

The digital differential manometer **MDPS2** is an adaptable and full-equipped device for differential pressure measurement on **EvoPICV** (in order to verify the start-up achievement) and for flow rate measurement on fixed orifice balancing valve **Terminator** and **Venturi** tubes.
The manometer is made by a battery Bluetooth® sensor equipped with 2 measurement needles and hoses: it communicates with any Android® device via Bluetooth®. The device can be only managed through the specific app for smartphones and tablets which can be downloaded through the USB key included or downloaded from the app market as "Pettinaroli Balance". All differential pressure and flow rate measurements can be performed on the Fratelli Pettinaroli valve range with an easy and intuitive approach. The sensor and the mobile device must be connected by Bluetooth® communication. The provided app includes all the features you need to use the device with Fratelli Pettinaroli's products: there are Kv values, opening position and start-up of all Pettinaroli **EvoPICV**, **Terminator**, **Venturi** devices and **PCS kit**.
If the measured data are properly saved, the app can provide the measurement history of a valve. Data can be exported on the PC by installing the software (CD-ROM) in order to perform calculations and verifications of installations and to save and manage measured data.

TECHNICAL FEATURES

- Bluetooth® communication between sensor and Android® device through the app Smart Balance
- Differential pressure measurement
- Flow rate measurement of fixed orifice valves
- Temperature measurement (optional)
- Differential pressure correction with temperature
- Measurement correction for fluid type
- Calibration label
- Calibration offset
- Selection of several units of measure
- Data export on the PC and automatic report creation on spreadsheet

USE

- The flow rate measurement has to be carried out for the fixed orifice balancing valves **Terminator** and **Venturi** (**PCS kit** included). Two different measuring methods, 1 and 2, are available and they can be selected in the main screen in measure mode. Specifically, the method 1 allows to measure the valve flow rate starting from opening position (or Kv) and ΔP; method 2 allows to get the opening position starting from the desired flow rate.
- The ΔP measure can easily evaluate whether the **EvoPICV** start-up pressure has been achieved or not. The mobile device shows, according to the selected valve and flow rate, a comparative diagram with the start-up pressure and the measured one.

GENERAL INFORMATION

Case content

1 x measure sensor
1 x handbook (ITA,FRA&ENG)
1 x sensor charger
2 x measuring hoses
2 x measuring needles
1 x Allen keys set
1 x USB key with software, app, handbooks (IT, EN, FR, DE)
1 x carrying case
1 x calibration protocol

STE0292 rev.01 15/03/2021

TECHNICAL DATA

Type	MDPS2	CERTIFICATION
Differential pressure range	0 – 10 bar	CE
Max static pressure	< 10 bar	
Temperature range	-30°C - +120°C	
ΔP measuring precision	< 0.1% of full scale	
T measuring precision	< 0.2°C	
Battery capacity	6.600 mAh	
Operating time	35 hours, continuous duty	
Class of protection	IP65	
Admissible ambient temperature	0°C to 40°C	
Admissible storage temperature	-20°C to +60°C	
Admissible ambient humidity	max. 90%, no condensing	
Weight	540 g (sensor), 2.8 kg (case)	

SENSOR ASSEMBLY

Follow the reference colours to connect hoses and needles, as shown below:

MEASURING

Switch the sensor on and start the app Smart Balance on your smartphone or tablet. Connect two devices through the Bluetooth®. Always do an offset calibration, clicking on Fratelli Pettinaroli logo on the top left and selecting the option *Function Test*: needles have to be in free atmosphere. This step always ensures the best measuring accuracy.

Flow rate measurement for fixed orifice balancing valves and Venturi tubes

In order to do the commissioning or the function test of **Terminator** valves and installations with **Venturi tube**, proceed as follows:

1. Put needles in pressure ports according to corresponding colours (red and blue);
2. Select *Start Measure* on the main page of the Android® app;
3. Select the valve type, the model and opening position, then click *Continue*;
4. Do zeroing: follow the instruction and press *Continue*;
5. Entering the measuring screen, select *Method 1* or *Method 2* to do the measure; add the design flow rate to reach throughout the commissioning or to be verified, if available. During the operation, results are shown both in a diagram and a numeric table;
6. At the end, the measure file can be saved by pressing the right button and then downloaded on the PC. Direct export on a spreadsheet can be achieved also on the smartphone. For further information please read the technical manual in the case or on the CD-ROM.

If the product you want to calculate the flow rate is not in the app yet, after having done preliminary operations, select DP on the main screen and measure the differential pressure. Then the flow rate can be calculated (Valve Kv has to be known) with the equation:

$$Q = Kv \cdot \sqrt{\Delta P}$$

with ΔP in bar and Q in m^3/h

Via Pianelli,38 - 28017 S.Maurizio d'Opaglio (NO) ITALY Tel. +39 0322 96217 - Fax. +39 0322 96546 - www.pettinaroli.com

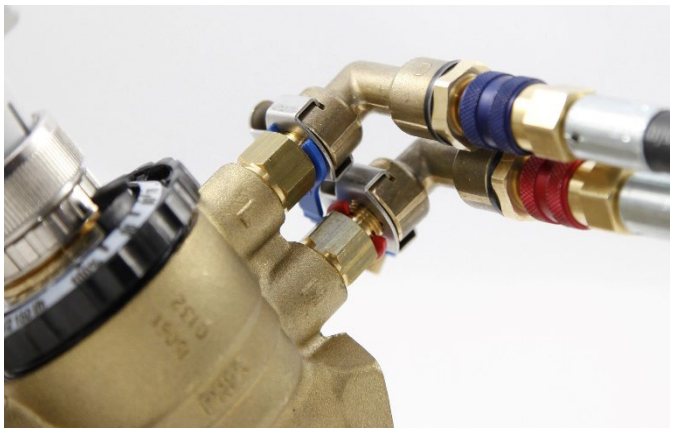
Sensor connection to **Terminator** valves and **Venturi**:

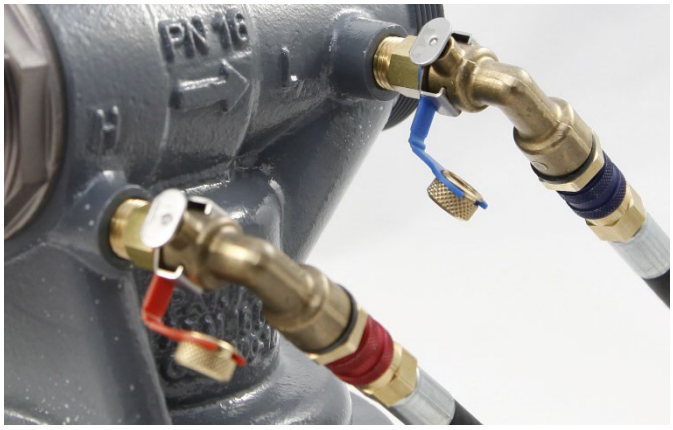
Start-up measurement for Pressure Independent Control Valve EvoPICV

In order to do the commissioning or the function test of **EvoPICV** valves, proceed as follows:

1. Put needles in pressure ports according to corresponding colours (red and blue);
2. Select *DP* on the main page of the Android® app;
3. Select the valve type, the model and dimensions from the *Dynamic Valve* menu, pressing on the specific button on the top; enter the requested presetting flow rate, then click *Continue*;
4. Do zeroing: follow the instruction and press *Continue*;
5. Do the measure. During the operation, results are shown as a diagram.

Sensor connection to **EvoPICV** valves:





At the end of every use, be sure the sensor is empty: to do that, open the by-pass and shake the sensor. If water inside, avoid exposing it to temperatures below zero Celsius degree.

For further information please read technical manuals in carrying case.

STE0292 rev.01 15/03/2021