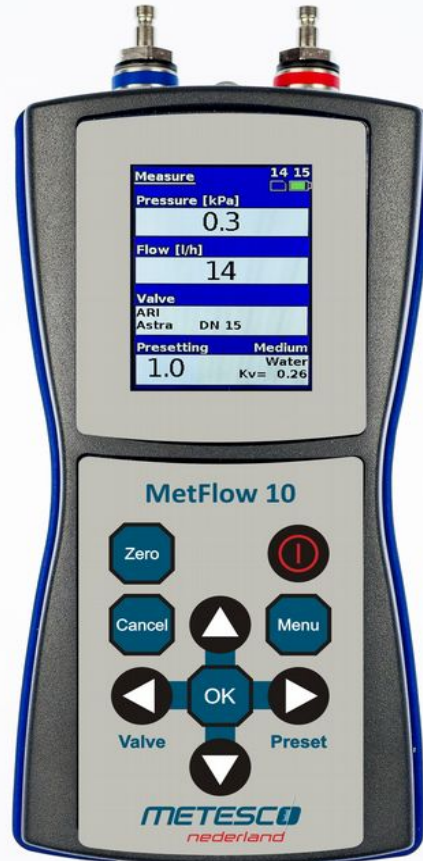


# MetFlow 10 Balancing Computer

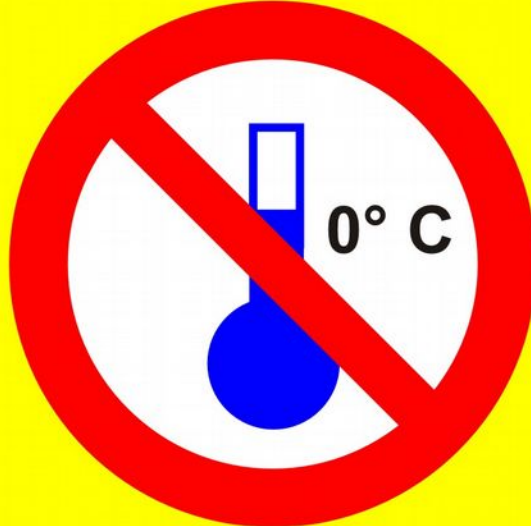




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**CAUTION !**



**FROST SENSITIVE  
DEVICE !**

### **Key Features**

- MetFlow 10 Smart Computer is new generation of basic line of devices for the balancing of hydronic heating systems
- 2.2 inch QVGA RGB (240 x 320 pixels) display
- 1 200 predefined valves
- Simple valve detection by valve image
- Programmable recording
- Memory for up to 20 000 records
- Antifreeze media correction
- Working with projects
- Balancing report printing
- Rechargeable Li-Ion battery with USB charger
- Mini USB PC interface
- New device case
- IP65 cover

### **Introduction**

MetFlow 10 is a new generation pressure meter equipped with illuminated, colour QVGA display that clearly shows all values measured. Its user-friendly interface makes working with MetFlow 10 quick and easy.

MetFlow 10 measures pressure and calculates flow on measuring valves. MetFlow 10 can also calculate flow of more complex media e.g. antifreeze media used in cooling systems.

MetFlow 10 has built in a large collection of measuring valves, which includes their images ensuring correct selection.

MetFlow 10 has a large memory for the storage of recorded pressure and flow data and enables direct viewing of recorded values on its display.

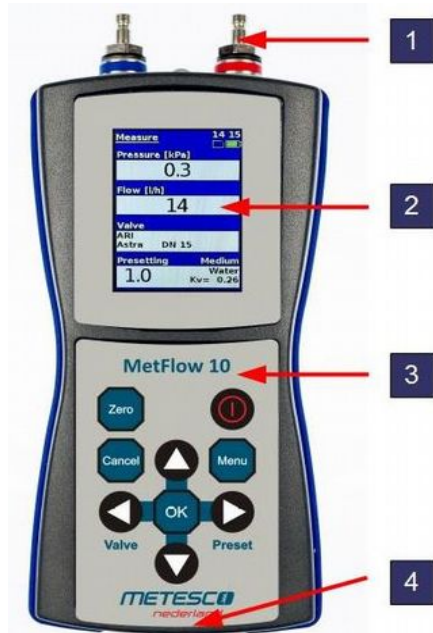
Logical keypad layout facilitates and speeds up working with MetFlow 10.

Communication and charging of MetFlow 10 takes place via mini USB connector.

# MetFlow 10 Balncing Computer

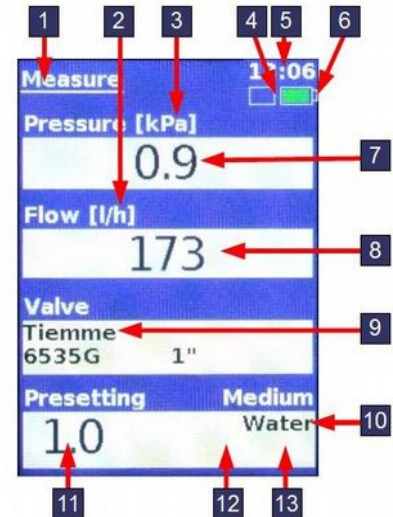
## Overview

1. Pressure inputs - positive red, negative blue
2. QVGA display (240 x 320 pixels) with backlight
3. Keypad
4. Mini USB connector for PC communication and charging



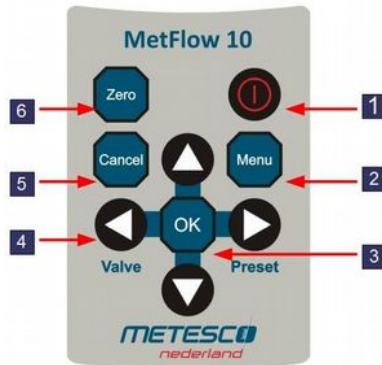
## Measuring Window

1. Window name
2. Flow unit
3. Pressure unit
4. Used record capacity (virtual SD card icon)
5. Time
6. Battery capacity
7. Measured pressure
8. Measured flow
9. Selected valve
10. Selected medium
11. Valve presetting
12. Medium concentration
13. Medium temperature

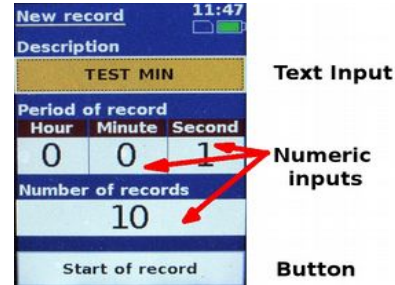


## Operation

1. Instrument **ON/OFF**
2. **Menu** – main menu
3. **OK** – confirmation
4. **Arrows** – to move within menu, between items or to change a value in input box  
**Valve** - valve hot key  
**Pre-set** – presetting hot key
5. **Cancel** – menu one level back
6. **Zero** – zeroes the pressure measuring, erases in input box



## Operation Examples



### Using of keypad in window

**Arrow right/left:** moves between boxes or buttons, active box or button is orange

**Arrow up/down:** changes letter or number at cursor position

**OK:** confirms letter at cursor position, confirms selected button

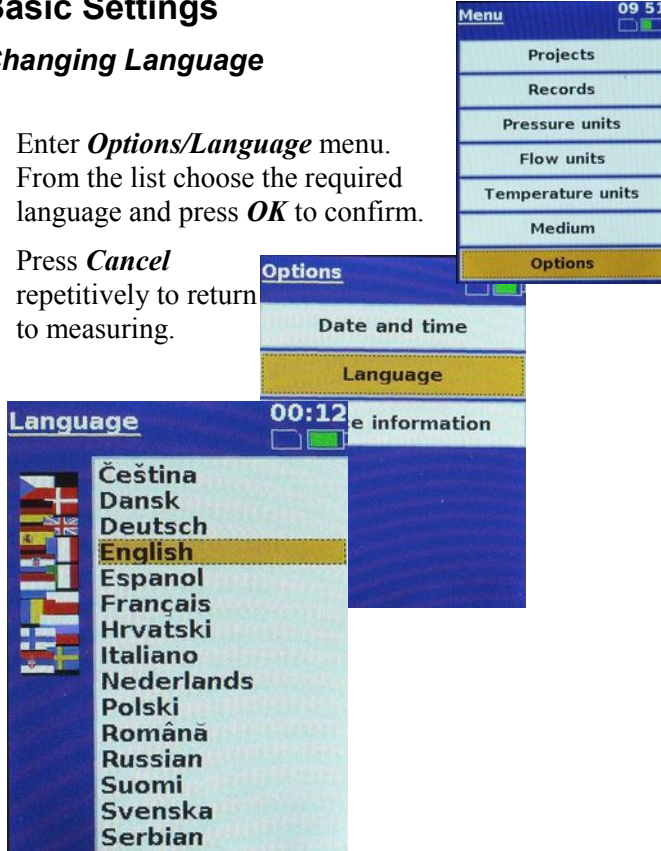
**Zero:** erases letter or number at cursor position

# MetFlow 10 Balncing Computer

## Basic Settings

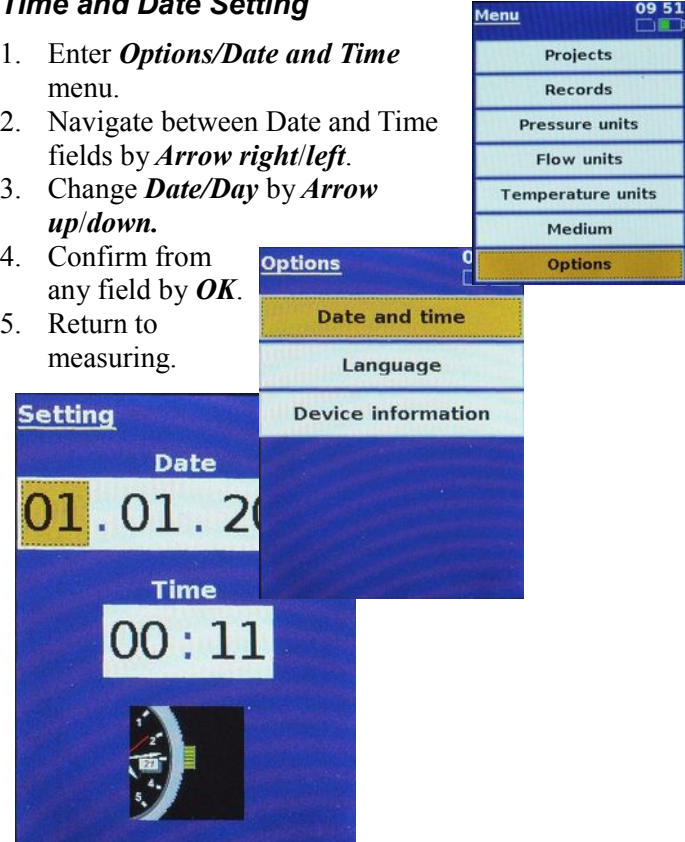
### Changing Language

1. Enter *Options/Language* menu.
2. From the list choose the required language and press **OK** to confirm.
3. Press **Cancel** repetitively to return to measuring.



## Time and Date Setting

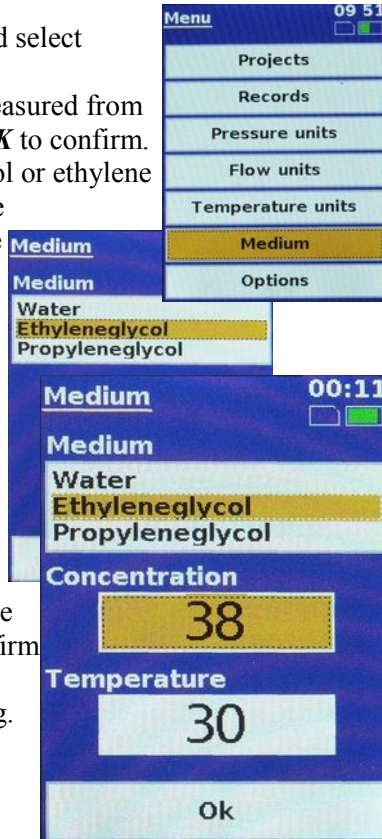
1. Enter *Options/Date and Time* menu.
2. Navigate between Date and Time fields by *Arrow right/left*.
3. Change *Date/Day* by *Arrow up/down*.
4. Confirm from any field by **OK**.
5. Return to measuring.





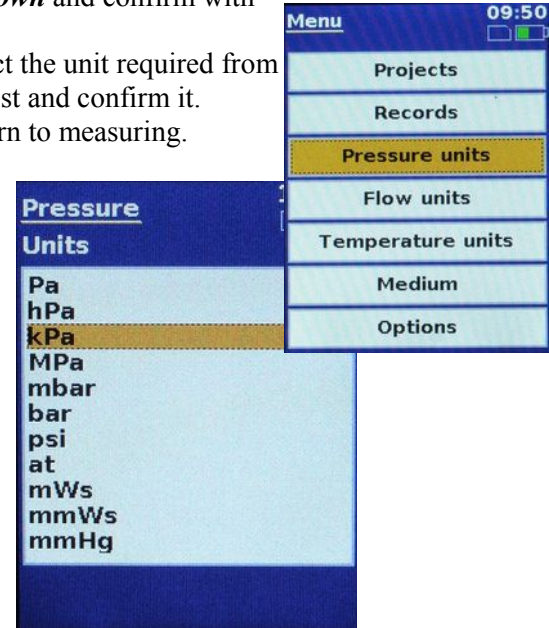
## Changing Measured Media

1. Press **Menu** key and select **Medium**.
2. Choose medium measured from the list and press **OK** to confirm.
3. For propylene glycol or ethylene glycol enter also the concentration of the medium.
4. Change concentration using **Arrow up/down**.
5. Move to **Temperature** by **Arrow right** and change temperature using **Arrow up/down**. Press **Arrow right** to move to **OK** box and confirm with **OK**.
4. Return to measuring.



## Selection of Pressure Units

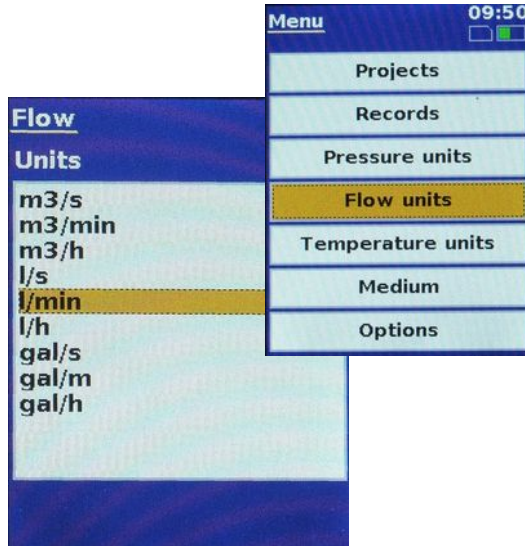
1. Enter **Pressure Units**.
2. Select the unit required from the list using **Arrow up/down** and confirm with **OK**.
3. Select the unit required from the list and confirm it.
4. Return to measuring.



## MetFlow 10 Balncng Computer

### Selection of Flow Units

Use the same method as for the selection of Pressure Units.

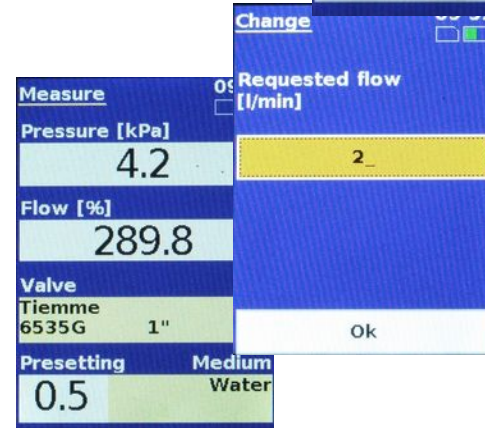


- Setting the requested value you should make according the procedure described in the *Using of keyboard in the window*.
- After press **OK** on the keyboard, you will return to the main menu and after press **Cancel** on the keyboard you will return to the window for measurement.
- In this window you will see the flow in the *Lambda* value.



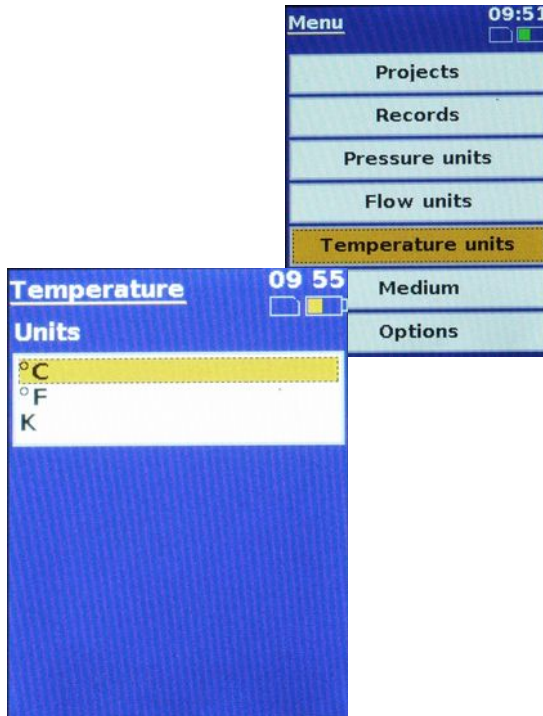
### Selection of the flow with Lambda value

- Enter the menu *Flow units*.
- Choose the last line *Lambda* by the help of *arrow up/down* and confirm **OK**.
- On the new opened window set Requested flow.



## Selection of Temperature Units

Use the same method as for the selection of Pressure Units.



## Zero Setting

MetFlow 10 has built in an automatic correction for static pressure in the system measured referred to as zero setting. This setting should be used whenever differential pressure of bellow 500 Pa is being measured.

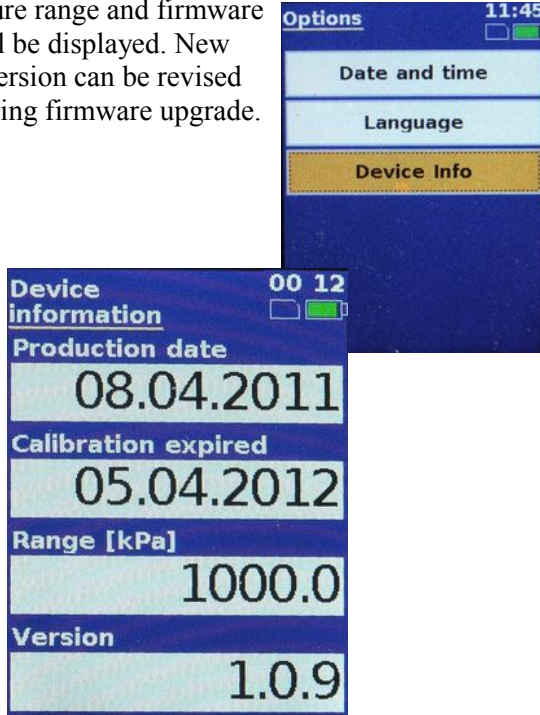
Procedure:

1. Connect two measuring hoses pre-filled with water to the measuring nipples of the balancing valve. Leave MetFlow 10 pressure inputs disconnected.
2. Press **ZERO** key. MetFlow 10 display will then guide you through the zero setting process.
3. MetFlow 10 makes zero setting at the atmospheric pressure.
4. Connect the positive pressure input (red) and wait until the displayed pressure value stabilises. MetFlow 10 measures static pressure in system.
5. Press **OK**. MetFlow 10 will compute zero correction depending on the static pressure. Zero settings is complete.
6. Message **Connect blue input** will appear for 1.5 s. Connect blue input and continue to measure differential pressure.

## MetFlow 10 Balncing Computer

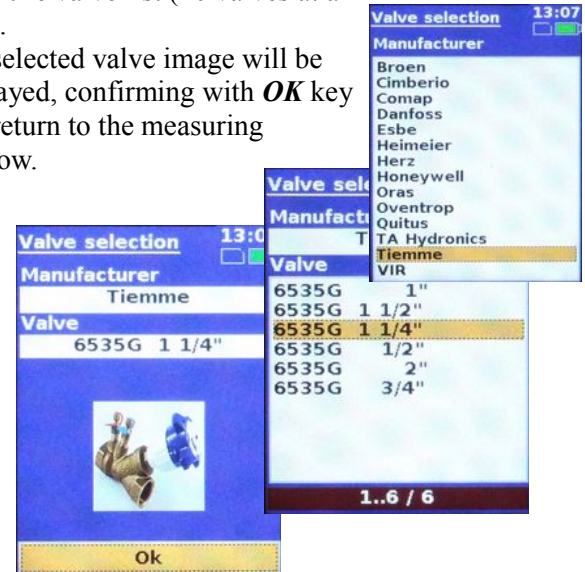
### About This Device

Press **Options/Device Info**. The instruments date of manufacture, type of pressure sensor calibration expiration date, pressure range and firmware version will be displayed. New firmware version can be revised here following firmware upgrade.

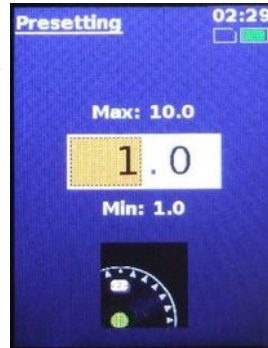


### Measuring without Project - Quick Start

1. Turn on by pressing **ON/OFF** key.
2. Press **Valve**, choose the valve manufacturer from the list using **Arrow up/down** and confirm **OK**.
3. Choose a valve from the list using **Arrow up/down** and confirm **OK**. Use **Arrow left/right** to navigate around the entire valve list (10 valves at a time).
4. The selected valve image will be displayed, confirming with **OK** key will return to the measuring window.



5. Press **Preset** key to set of valve presetting.
6. Press **Arrow right** and change the value using **Arrow up/down**. Use **Arrow right/left** to move between decades.
7. Confirming with **OK** key will return to the measuring window.



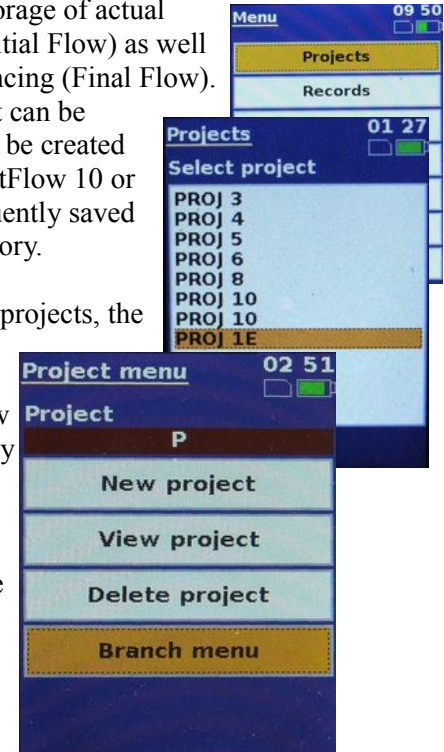
## Direct Kv input

1. Press **Valve** and choose the last line Direct Kv and confirm **OK**.
2. The first and second window confirm with **OK**.
3. Press **Preset** and open the window on which you can input Kv value.
4. Use **Arrow up/down** for choosing the value and confirm **OK**. This you can repeat till you will write the complete number. For returning back or deleting use the **Zero**.
5. After writing complete value of Kv confirm **OK**.

## Working with Projects

MetFlow 10 Working with Project enables the measurement and storage of actual values measured (Initial Flow) as well as values after balancing (Final Flow). The balancing report can be printed. Projects can be created either directly in MetFlow 10 or on a PC and subsequently saved to MetFlow 10 memory.

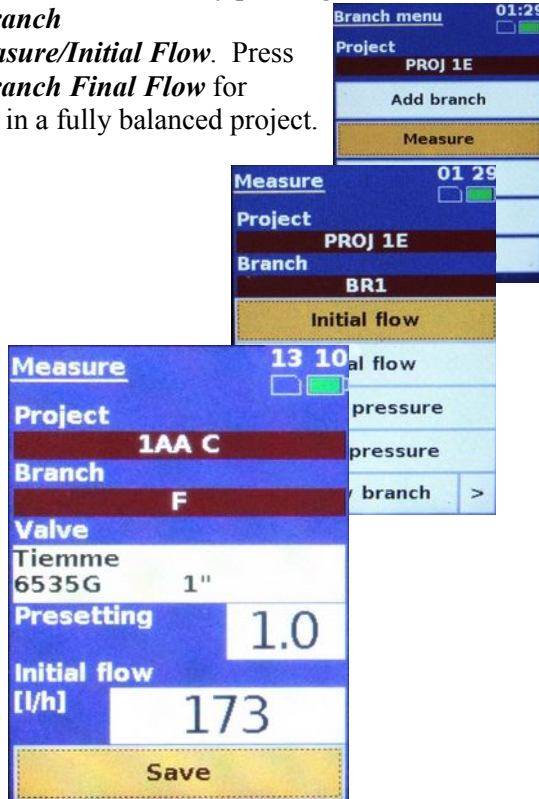
When working with projects, the project and a given branch only need to be selected, MetFlow 10 will automatically select the correct valve and its presetting. The project is ready to be measured.



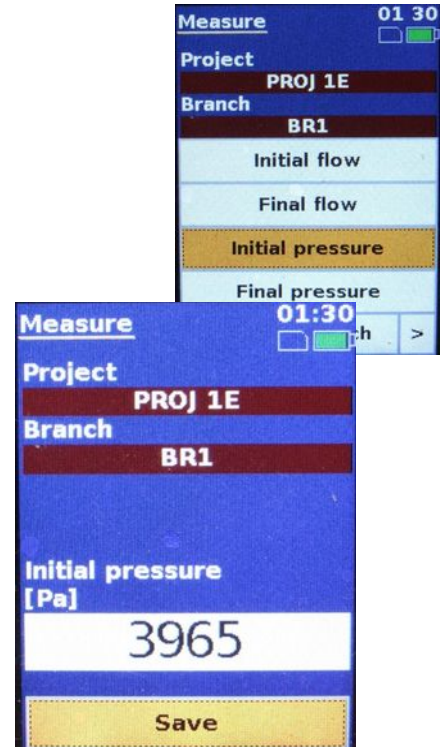


## MetFlow 10 Balncing Computer

The current flow in given branches of a project prior to balancing can be measured by pressing menu **Project/Branch menu/Measure/Initial Flow**. Press **Project/Branch Final Flow** for measuring in a fully balanced project.

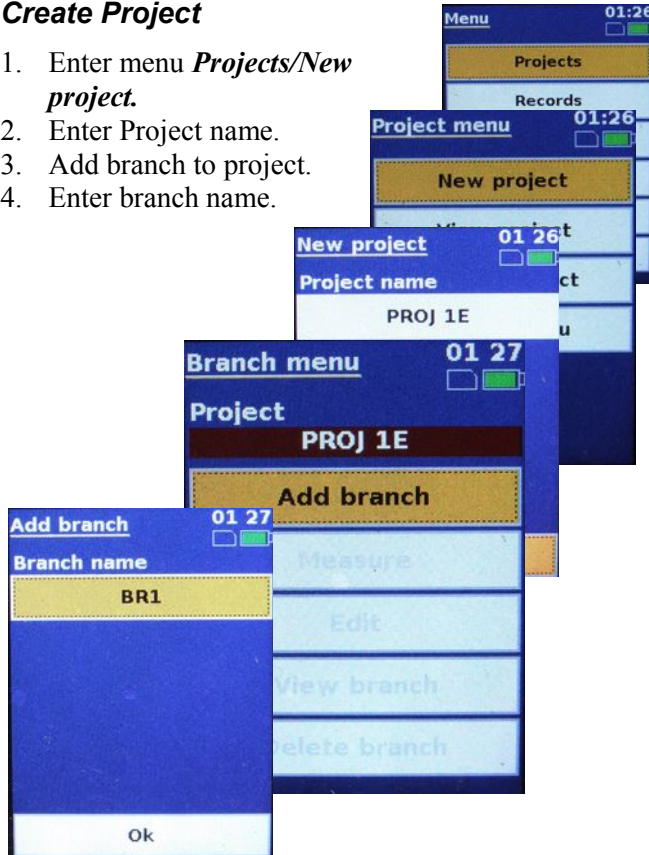


To measure additional pressure values within a branch, press **Project/Branch menu /Measure/Initial Pressure** (or **Final Pressure**).



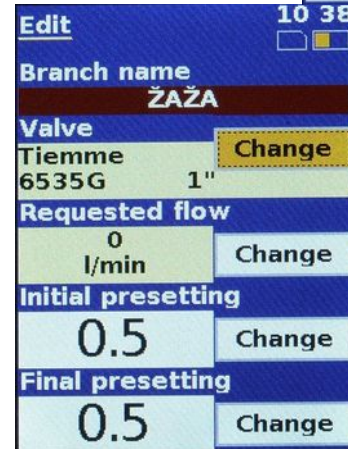
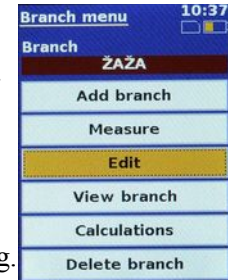
## Create Project

1. Enter menu *Projects/New project*.
2. Enter Project name.
3. Add branch to project.
4. Enter branch name.



## Edit Branch

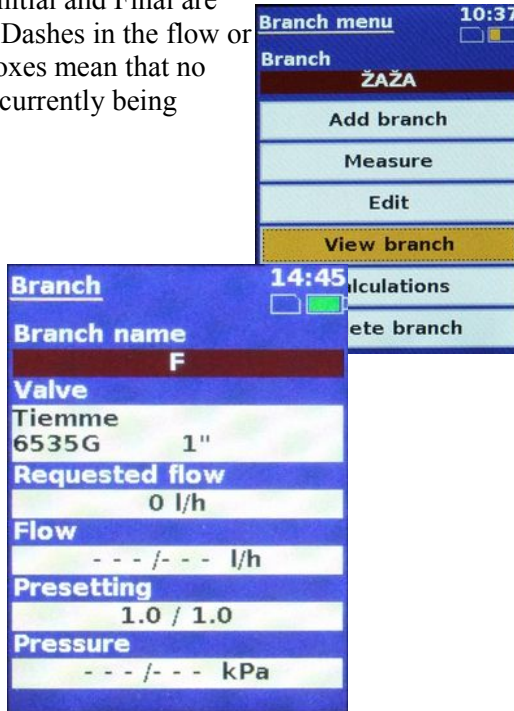
1. Enter *Project/Branch menu/Edit*.
2. Change a variable in branch if necessary, e.g. requested flow or initial presetting of the valve.
3. The Final valve presetting is entered after project balancing.



## MetFlow 10 Balncing Computer

### View branch

1. Enter **Project/Branch menu/View branch**.
2. Both the parameters of the branch and measured variables Initial and Final are displayed. Dashes in the flow or pressure boxes mean that no values are currently being measured.

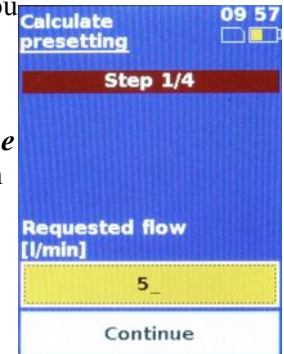


### Calculation of the presetting for the valve in the branch

1. Enter the menu **Projects/Branch menu /Calculations**.



2. In the first window (step) you set the flow you need. The value you should insert according the procedure writnen over in **Using of the keypad in the window**. With the left arrow we will move on **Continue** and push the **OK** button.





3. In the second window (step) you will see the initial flow and initial presetting, which you can change after pressing the **OK** button, for the procedure see the paragraphs over about setting of the presetting for the valve. After possible change you will return to the second window and you will continue on the **Continue** and push the **OK** button.

Calculate presetting 09:57  
Step 2/4  
Initial flow [l/min]  
4  
Initial presetting  
2.0  
Continue

4. In the third window (step) you will set the initial flow and you will continue on the **Continue** and push the **OK** button.

Calculate presetting 09 57  
Step 3/4  
Initial pressure [kPa]  
4.2  
Continue

5. In the fourth window you will see the needed flow and calculated presetting for the valve in the branch. After pressing the **OK** button you will return to the **Branch menu**.

Calculate presetting  
Step 4/4  
Requested flow [l/min]  
5  
Calculated Presetting  
2.2  
Ok

### View Project

1. Enter *Project/View project*.
2. Information about project is displayed in this window.

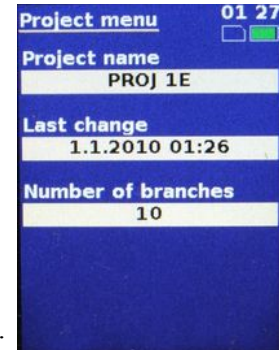


### Records

MetFlow 10 has an integrated recording module equipped with a real time circuit. This enables the diagnosis of any timed processes taking place in the system, the analysis of which aids selecting the most optimal system set up. During recordings with longer measuring periods, the MetFlow 10 automatically enters a lower energy consumption mode. This ensures prolonged recording from the internal energy source (a lithium battery).

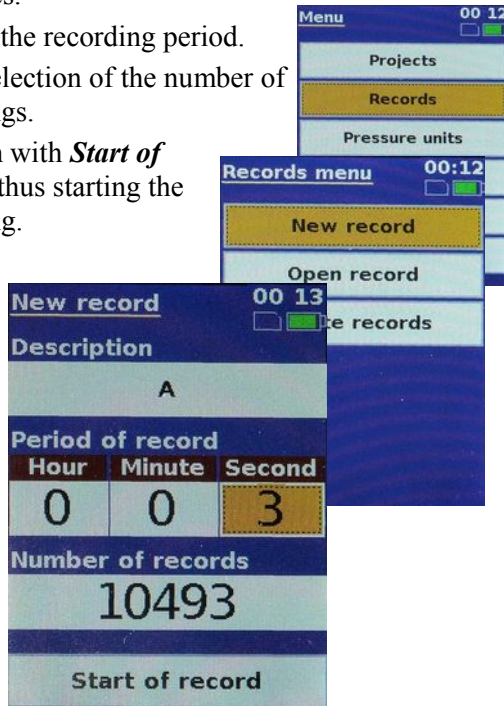
Data can be collected periodically. The values recorded by the MetFlow 10 include pressure, flow, chosen valve and its pre-settings. Each measurement is given an id, which makes the subsequent data handling easier. The recorded data can be subsequently transferred into a PC using the software provided. The software further enables its analysis in tabulated or graphic formats.

Alternatively, the data can be exported using standard PC formats and analysed in text editing, table processing or database programmes. All data can also be printed.



## New Record

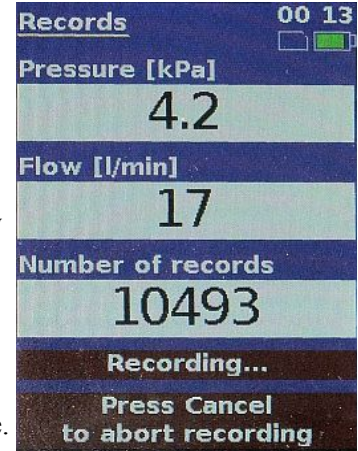
1. Enter *Menu/Records/New record*.
2. Input record description as depicted in part Operation examples.
3. Change the recording period.
4. Make selection of the number of recordings.
5. Confirm with *Start of record*, thus starting the recording.



## Records - Running

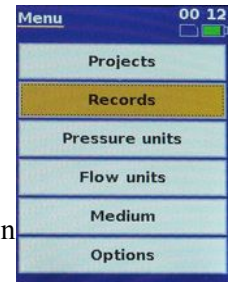
During recording, the current pressure, flow and the number of recordings left will be displayed in a window. The device enters sleep mode to lower energy consumption during recording periods of a minute or more.

The recording can be stopped by **OK** key when the relevant button is active.



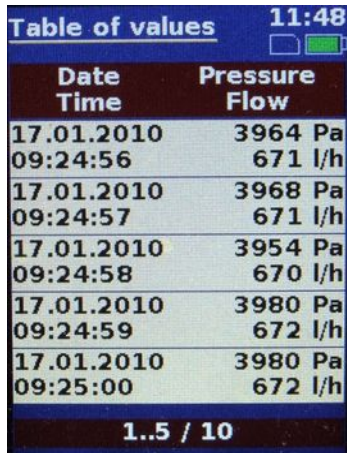
## Records – Viewing

1. Enter *Menu/Records/Open record*. The list of all saved records will be displayed.
2. Select the record required and press **OK**. The record caption will show on the display.



## MetFlow 10 Balncing Computer

The caption conveys information about record description, valve and its presetting. Press **Table of values** to view a table of recorded values.



Date Time	Pressure Flow
17.01.2010 09:24:56	3964 Pa 671 l/h
17.01.2010 09:24:57	3968 Pa 671 l/h
17.01.2010 09:24:58	3954 Pa 670 l/h
17.01.2010 09:24:59	3980 Pa 672 l/h
17.01.2010 09:25:00	3980 Pa 672 l/h

1.5 / 10



Records 11:48

Open

TEST MIN  
TEST MIN  
TEST MIN

Records 14:46

Description  
LU1AU

Valve  
Tiemme  
6535G 1"

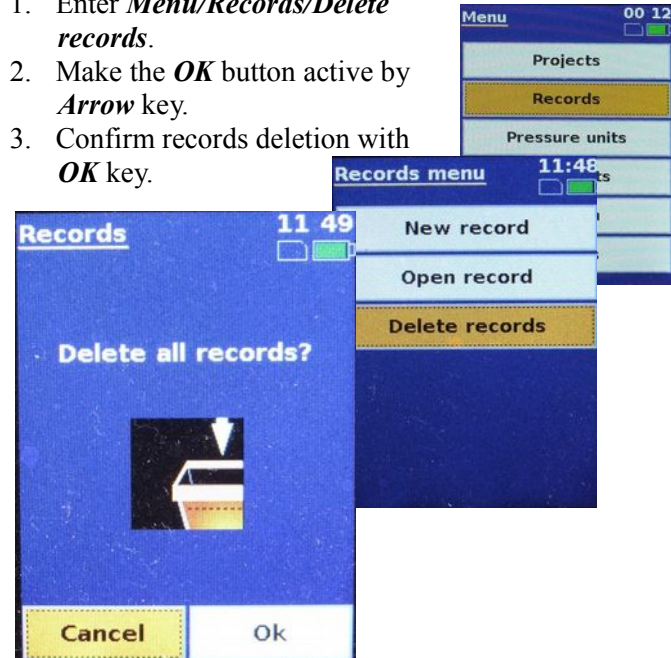
Presetting  
1.0

Table of values

## Records - Deleting

MetFlow 10 uses Flash memory to store data, which will be removed entirely once deleted. Copy data to a PC should you require to retain the information.

1. Enter **Menu/Records/Delete records**.
2. Make the **OK** button active by **Arrow** key.
3. Confirm records deletion with **OK** key.



Menu 00:12

Projects

Records

Pressure units

Records menu 11:48

New record

Open record

Delete records

Records 11:49

Delete all records?

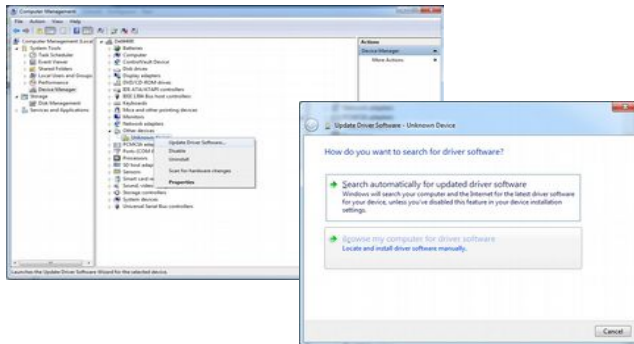
Cancel Ok

## Installation of USB Drivers

Insert MetFlow 10 installation CD into a CD drive. Turn on MetFlow 10 and connect to the PC via a USB port.

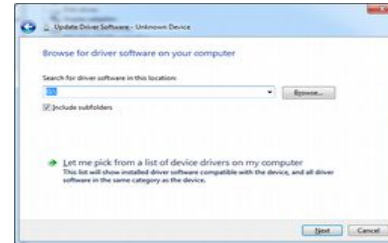
The following procedure will be required, if you have OS Windows 7, 8, 10.

Press menu **START** and choose **Computer**, after that make a click on **the right button on the mouse** and from the new menu select **Computer Management** and click on **Device manager**.

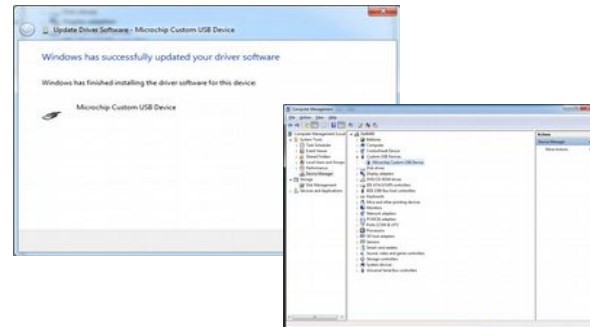


By USB you will find **Unknown device**. Make on the Unknown device again the click on the right button on the

mouse and select **Update driver software**. In the new menu select **Browse my computer for driver software** and choose disk CD disc. Thence install new driver.

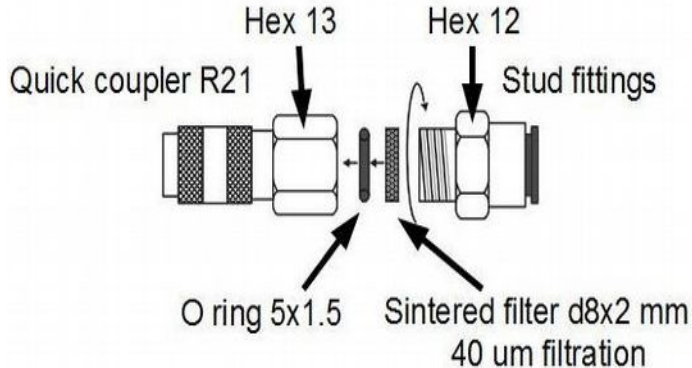


If the driver is installed successful you will see in the Computer Management by USB, will be written **Microchip Custom USB device**.



### Instrument Maintenance

- Filters to be changed ones every 6 months and sensor calibrated ones every 24 moths.



- If the device is not possible to switch on and the display stay black, you have to make the reset of the device on such way, that you will connect the device with the PC via USB cabel and leave connected for min. 5 min., before you will try to switch on the device again. If after this procedure the device is not possible to switch on, you have to send this device to the authorized service centre for the repair.



### Charging and USB Communication

The instrument can be charged either using the supplied charger or PC via mini USB cable. This cable also serves for communication with PC.

### Content of Delivery

MetFlow 10 Smart Computer  
Measuring hoses (1 pair)  
Sintered Filters (1 pair)  
USB cable  
USB charging adapter  
CD with PC software  
User's guide  
Calibration report  
Optional adapters for connecting to hydronic system



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.

## MetFlow 10 Balncing Computer

### Technical Specifications

Pressure range nominal	1 000 kPa or 2 000 kPa
Maximum overpressure	120% of nominal range
Linearity and hysteresis error	0.15% of NR
Temperature error	0.25% of NR
Media temperature	-5 up to 90 °C
Operating temperature	-5 up to 50 °C
Storage temperature	-5 až 50 °C
Power	Internal 900mAh rechargeable Li-Ion battery
Power consumption	80 mA with active display
Standby consumption	50 uA
Number of records	20 000 max.
Number of valve producers	20 max
Number of valves	1 200 max
Charging/Communication	Mini USB 5V/200mA

Display	320x240 pixels, 65K colours
Keypad	9 keys
Cover	IP65
Calibration validity	24 months
Dimensions w x h x d	180x80x52 mm
Mass	420 g