

# T550 Balancing Computer





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## Key Features

- T550 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

T550 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 T550 quick and easy.

T550 measures pressure and calculates flow on measuring valves. T550 can also calculate flow of more complex media e.g. antifreeze media used in cooling systems. T550 has built in a large collection of measuring valves, which includes their images ensuring correct selection. T550 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 T550.

Communication and charging of T550 takes place via mini USB connector.

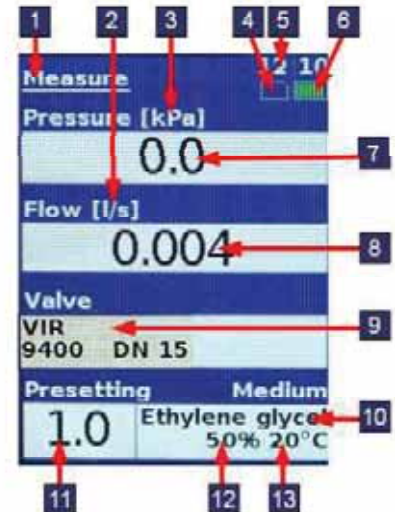
### Overview

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

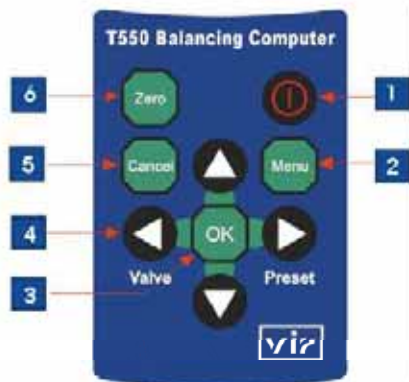


### Measuring Window

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

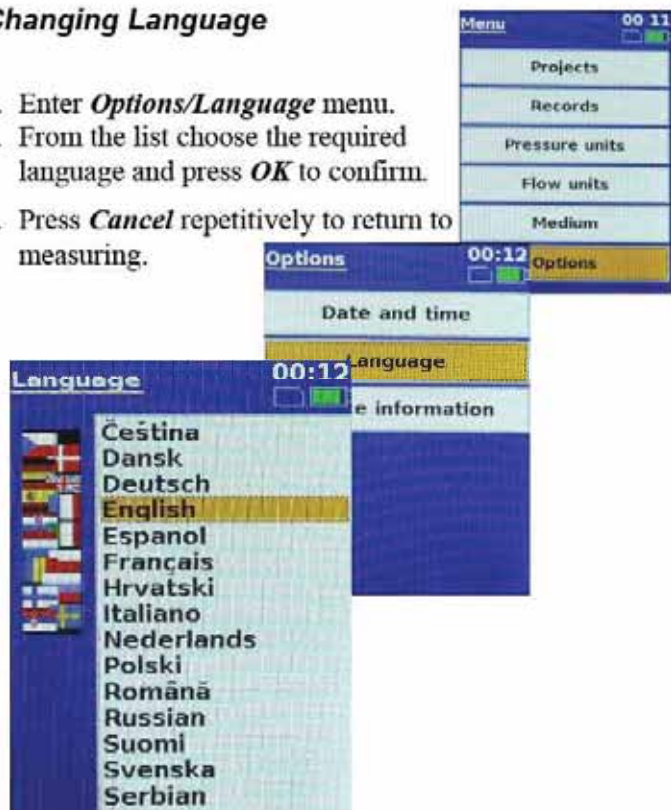
**Zero:** erases letter or number at cursor position



## Basic Settings

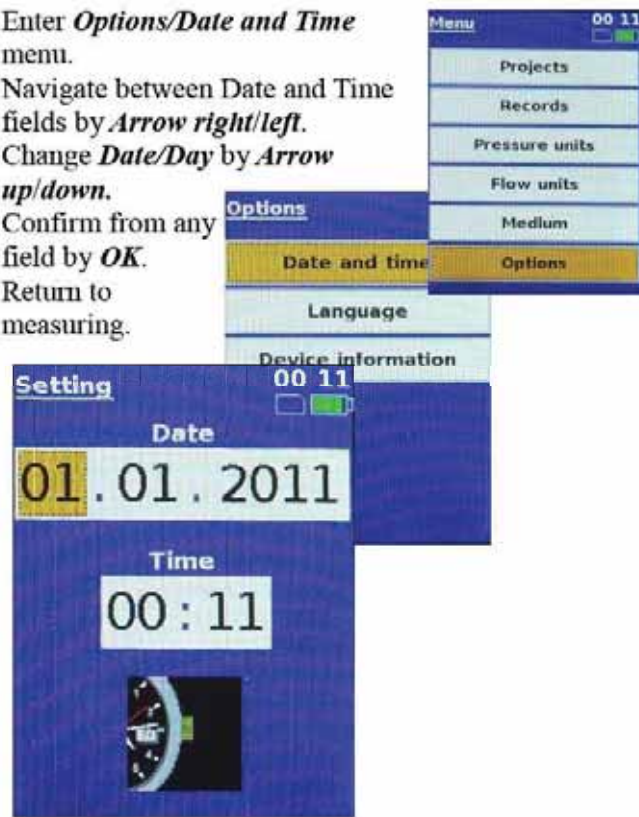
### Changing Language

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

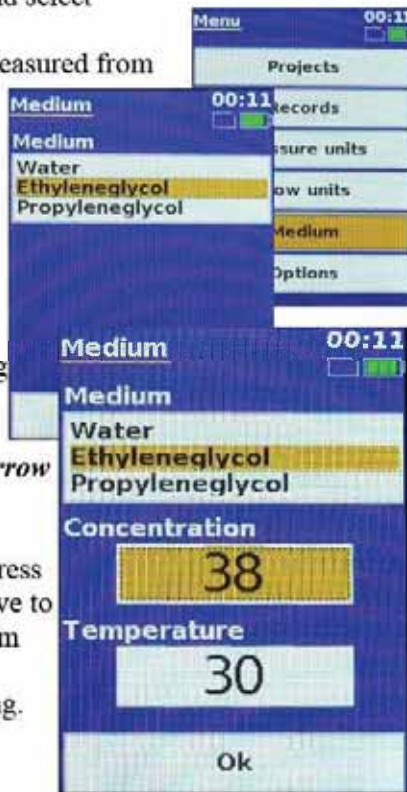
1. Enter *Options/Date and Time* menu.
2. Navigate between Date and Time fields by *Arrow right/left*.
3. Change *Date/Day* by *Arrow up/down*.
4. Confirm from any field by **OK**.
5. Return to measuring.





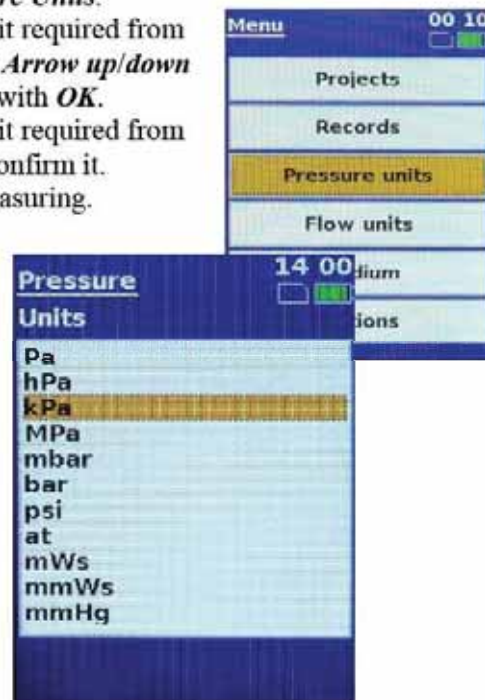
### Changing Measured Media

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.



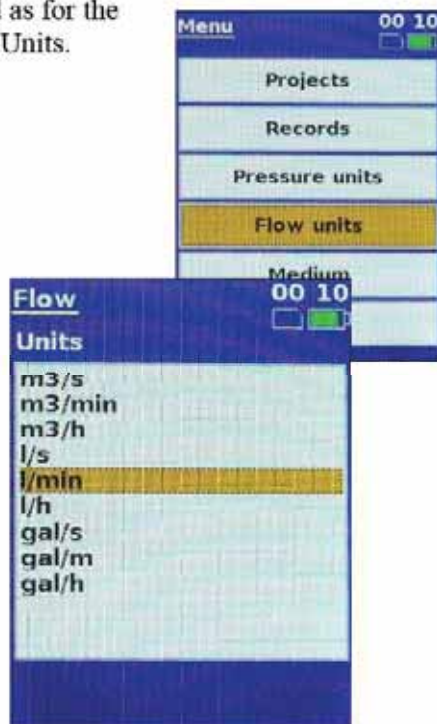
### Selection of Pressure Units

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.



### Selection of Flow Units

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



### Zero Setting

T550 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 below 500 Pa is being measured.

Procedure:

1. Connect two measuring hoses pre-filled with water to the measuring nipples of the balancing valve. Leave T550 pressure inputs disconnected.
2. Press **ZERO** key. T550 display will then guide you through the zero setting process.
3. T550 makes zero setting at the atmospheric pressure.
4. Connect the positive pressure input (red) and wait until the displayed pressure value stabilises. T550 measures static pressure in system.
5. Press **OK**. T550 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.

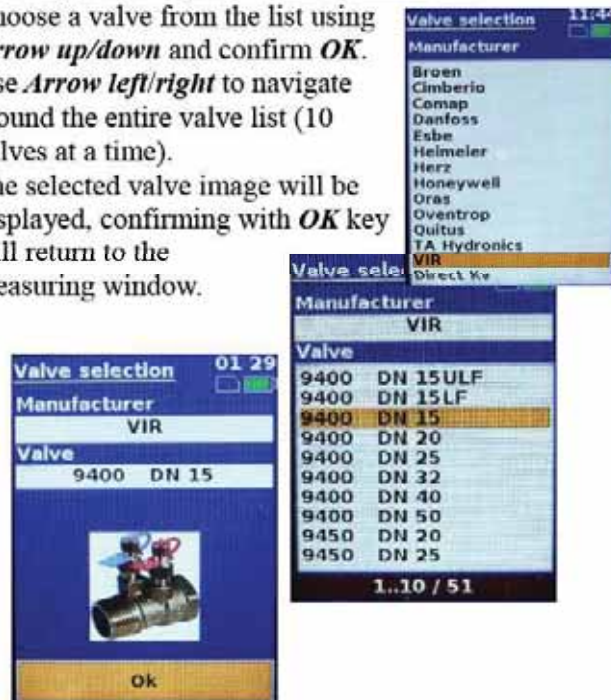
### About This Device

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.



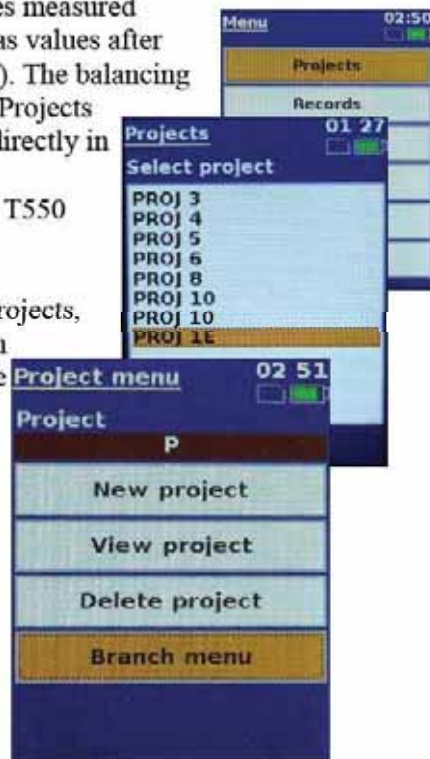
5. Press **Preset** key to set of valve presetting.
6. Press **Arrow right** and change the value using **Arrow up/down**. Use **Arrow right/left** to move between decades.
7. Confirming with **OK** key will return to the measuring window.



## Working with Projects

T550 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 T550 or on a PC and subsequently saved to T550 memory.

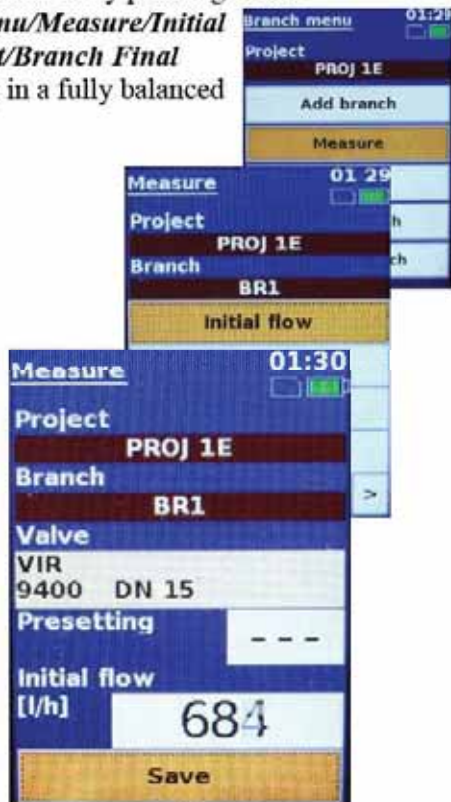
When working with projects, the project and a given branch only need to be selected, T550 will automatically select the correct valve and its presetting. The project is ready to be measured.



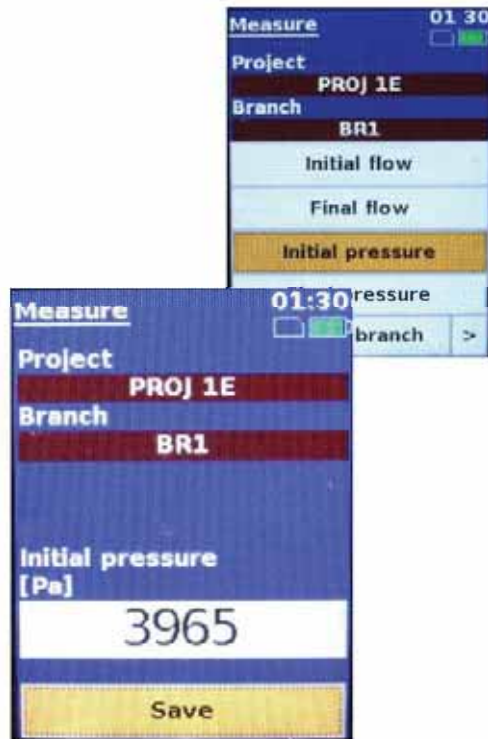


The current flow in given branches of a project prior to balancing can be measured by pressing menu

**Project/Branch menu/Measure/Initial Flow.** Press **Project/Branch Final Flow** for measuring in a fully balanced project.

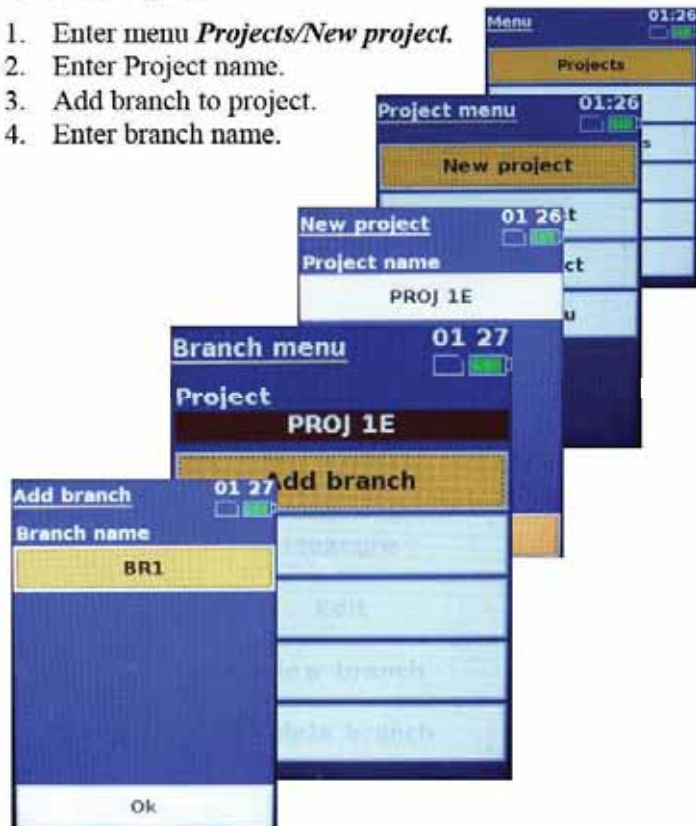


To measure additional pressure values within a branch, press **Project/Branch menu /Measure/Initial Pressure** (or **Final Pressure**).

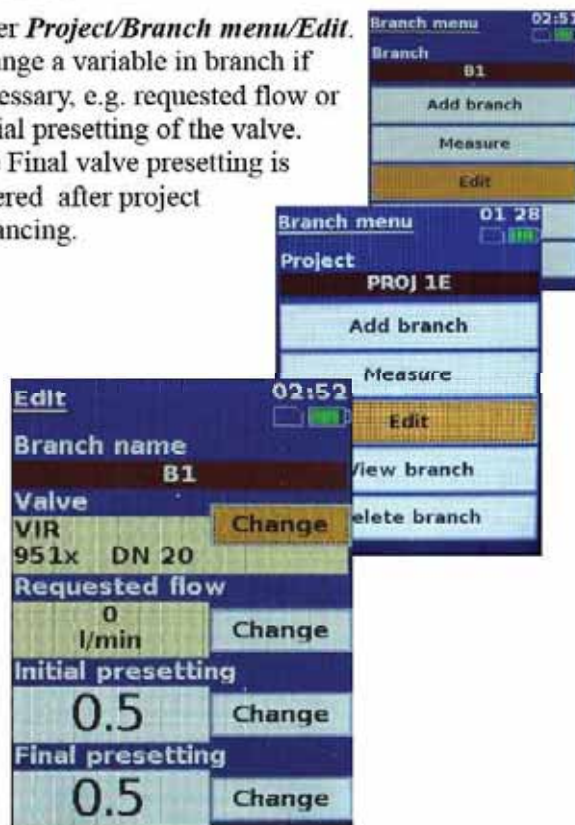


**Create Project**

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

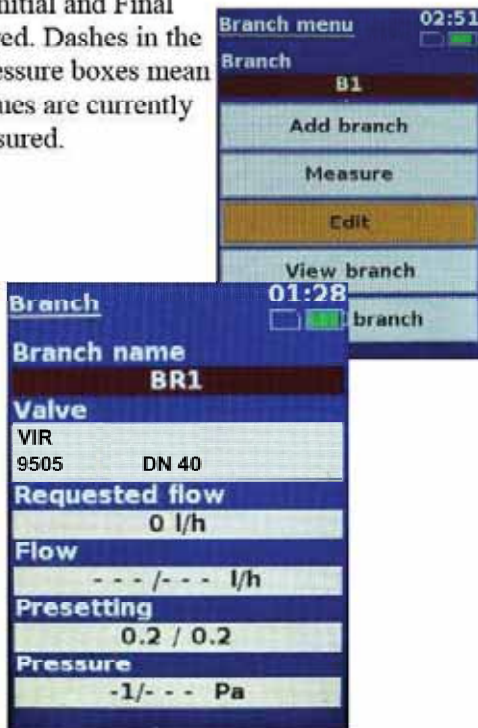
**Edit Branch**

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.



### 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.



### View Project

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





## Records

T550 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 T550 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 T550 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

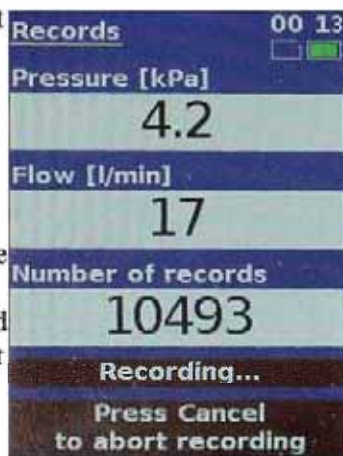
1. Enter *Menu/Records/New record*.
2. Input record description as depicted in part Operation examples.
3. Change the recording period.
4. Make selection of the number of recordings.
5. Confirm with *Start of record*, thus starting the recording.



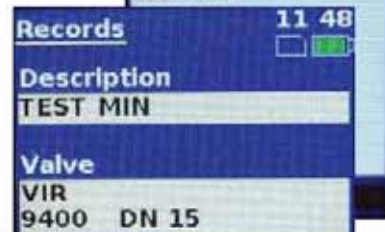
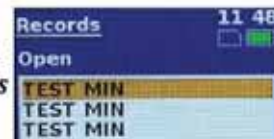
## Records - Running

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.



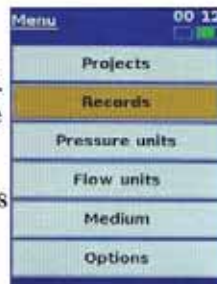
The caption conveys information about record description, valve and its presetting. Press **Table of values** to view a table of recorded values.



Date Time	Pressure Flow	Setting
17.01.2010 09:24:56	3964 Pa 671 l/h	0.0
17.01.2010 09:24:57	3968 Pa 671 l/h	Table of values
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	

## Records – Viewing

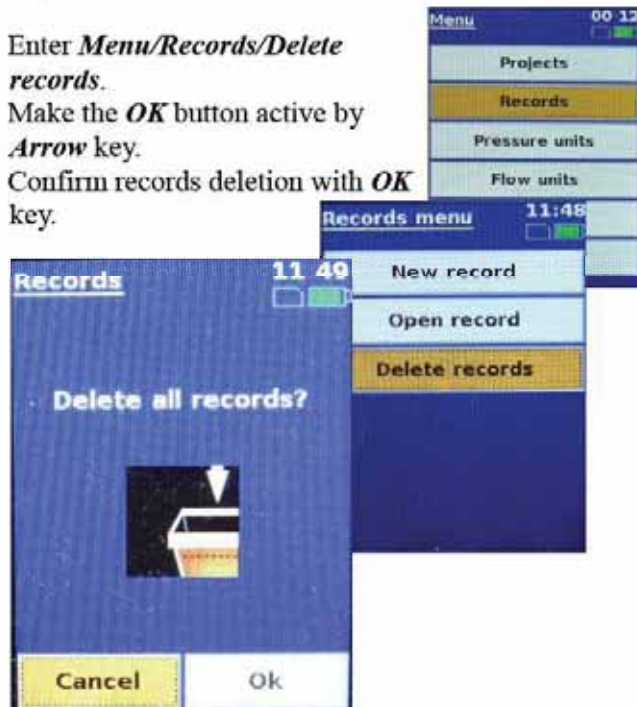
1. Enter **Menu/Records/Open record**. The list of all saved records will be displayed.
2. Select the record required and press **OK**. The record caption will show on the display.



## Records - Deleting

T550 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.

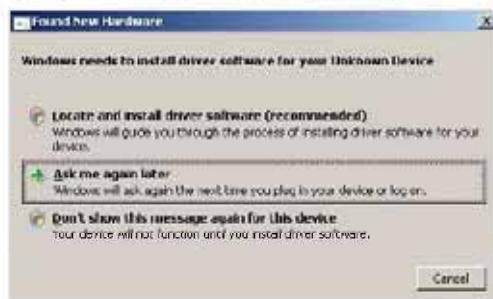
1. Enter **Menu/Records/Delete records**.
2. Make the **OK** button active by **Arrow** key.
3. Confirm records deletion with **OK** key.



## Installation of USB Drivers

Insert T550 installation CD into a CD drive. Turn on T550 and connect to the PC via a USB port.

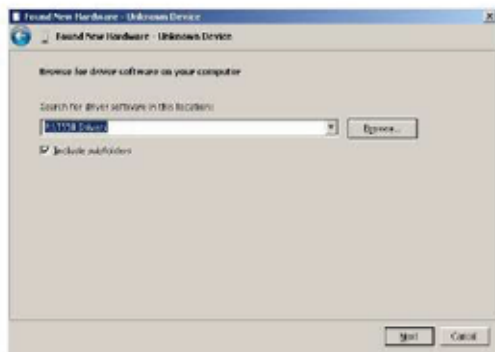
The following window will be displayed:



Select **Locate and install driver software**.



The system will search the location of Windows Update (this can take several minutes) and display the following options:



Select **Browse my computer for driver software**. Enter the T550 installation CD path. The installation of drivers will take several minutes. The system will confirm that Microchip Custom USB Device has been installed.



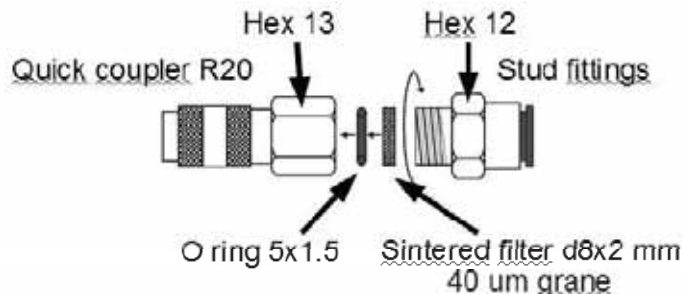
Of note, it is recommended to disconnect the PC from the internet while installing USB drivers. This will shorten the time of Windows update searching.





## Instrument Maintenance

Filters to be changed ones every 6 months and sensor calibrated ones every 12 months.



## 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

T550 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.

## 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	12 months
Dimensions w x h x d	180x80x52 mm
Mass	420 g

