



Manual

Heat Interface Monitor

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1 Description of the software

The Heat Interface Monitor is software that can be used to set-up and monitor heat interface units with a HSF electronic controller (from this point the abbreviation “HIU” is used in the document).

This manual is written for revision V3.80 of the Heat Interface Monitor and compatible with HIU’s with firmware revision 1.32 and higher.

2 Requirements

2.1 Requirements for the PC

- Windows 7.x or higher
- .Net Framework 4
- USB 2.0 ports (Type A)

2.2 Service cable

For the communication between the PC and the HIU, a service cable is needed. The cable can be ordered separately (article 70-FTDI-CABLE-ASSY).



Figure 1: Service Cable

3 Installation

3.1 Connecting the service cable

Connect the service cable to the HIU controller. The service cable will only connect with the special cable which is part of the HIU controller (usually part of the cable going to the 8 pole connector on the HIU controller).

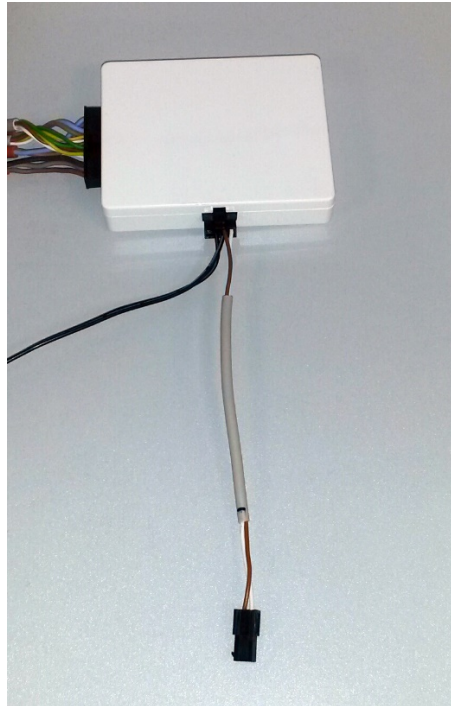


Figure 2: Connector for service cable

Connect the service cable to a USB port of the computer.



USB-RS485-WE Cable images

Figure 3: USB side of the service cable

If the automatic installation of the drivers fails, the driver will need to be installed manually.

3.2 Manually installing the drivers for the service cable

USB Drivers for the service cable are available on <http://www.ftdichip.com>. On this site there are also manuals for the installation of the drivers. For Windows 7 see: AN_119. For Windows 8 see the document: AN_234. For Windows 10 see the document AN_396.

After you have installed the drivers and connected the service cable a USB Serial Port is created. See "Control Panel/Device Manager" on your computer. The name (COM42 below) of this serial port, that is assigned, is different for every cable and computer!

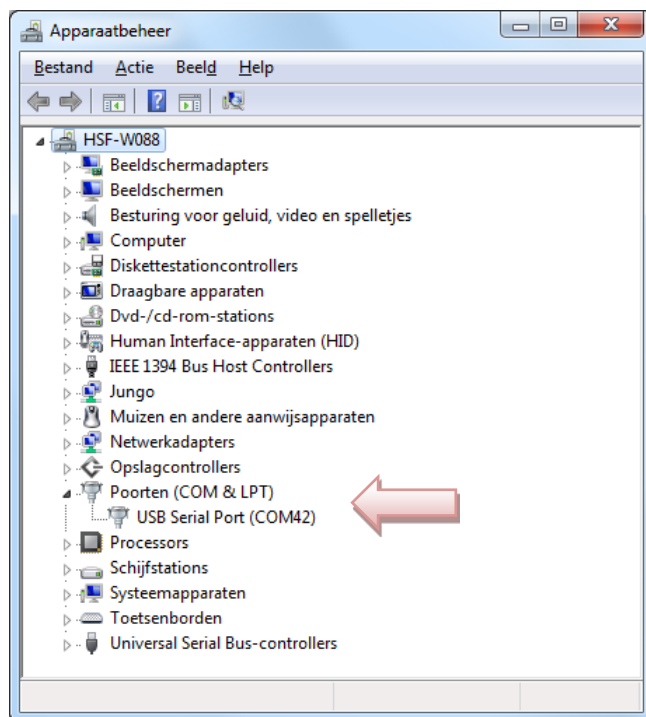


Figure 4: Screen capture for checking the assigned name of the COM-port.

3.3 Installation of the software

If older versions of the Heat Interface Monitor are present on your computer you will have to de-install them first!

By double clicking the "Setup.exe" file in the MonitorInstaller V3_70 folder, the installation process will begin. The Heat Interface Monitor will start as soon as the installation is finished.

Name	Date modified	Type	Size
Application Files	4/12/2014 16:34	File folder	
HWTC_Monitor application	4/12/2014 18:28	ClickOnce Applica...	6 KB
setup.exe	4/12/2014 18:28	Application	424 KB

Figure 5: Screenshot of folder that contains the setup program

4 Working with the Heat Interface Monitor

Before starting the Heat Interface Monitor make sure the HIU is powered on (LED blinking) and the service cable is connected and the drivers are installed.

4.1 Location of the log files

If the application starts it is necessary to select a folder, to which log files will be written. If no selection is made, the program automatically creates a folder named “HSF loggings” on the hard drive (full path C:\HIU_loggings).

The log files are comma separated text files (csv) and can be used for analysis. For more information please contact our sales department.

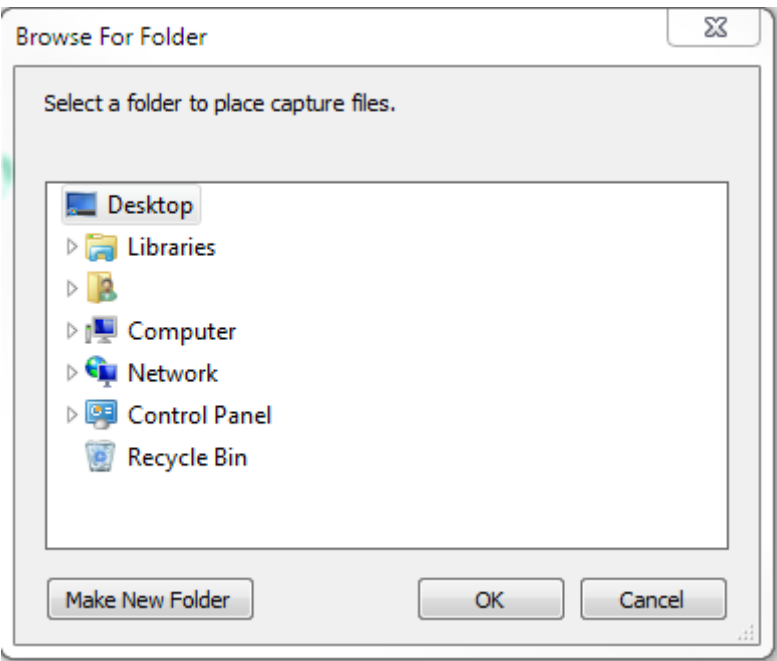


Figure 6: Screenshot of selection screen location of log files.

4.2 Overview of all the buttons

The Heat Interface Monitor consists of several tabs. Switching between these tabs can be done by clicking on the buttons at the bottom of the application window.

					
Connection screen	DHW screen	CH screen	Settings screen	Diagnostic information	Clear graph

Figure 7: overview of the buttons

4.3 The connection screen

In the connection screen choose the serial port that is assigned to the service cable. To find out which COM port is needed, please refer to the Windows device manager. The HIU controller should also be powered on (LED on the HIU should be blinking).

Warning!

If the service cable was not connected before the application was launched the serial port cannot be selected. The application then needs to be closed and the cable must be connected to the PC.

When the button “Connect” is pressed the status should change to “Connected (OK)” and the information fields should be filled. The Service Cable LED indicator starts to blink every second. Some older controllers don’t provide the information for the Serial Number!

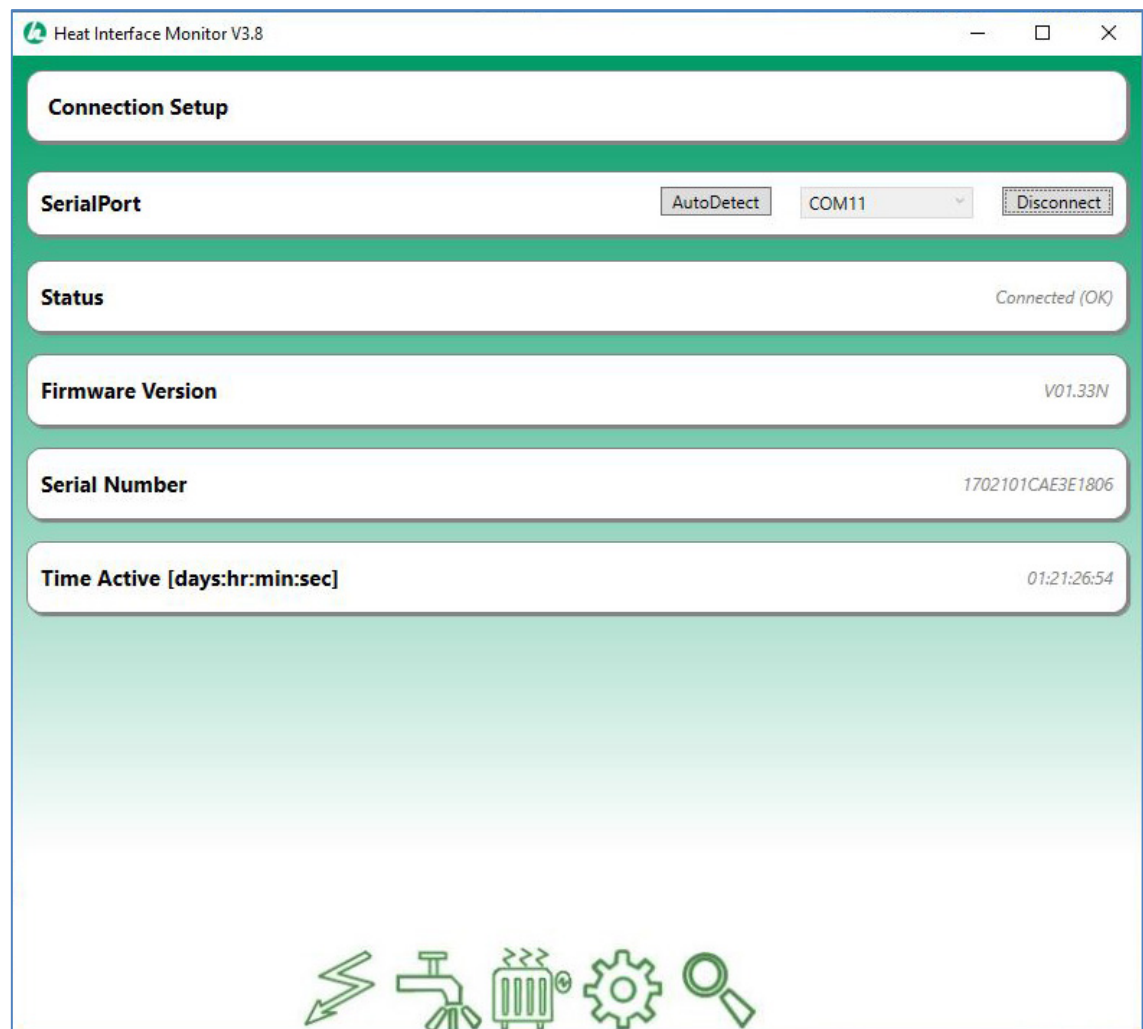


Figure 8: Connection Screen

4.4 Domestic hot water screen

The heat interface unit continuously sends measurement data to the Heat Interface Monitor. The measurement data are also displayed on the real-time chart.

Displayed measurements:

DHW Temp (°C)	: domestic hot water temperature
DHW Flow (l/min)	: current domestic hot water flow rate
DH Temp (°C)	: supply temperature of the distribution system
DH Return Temp (°C)	: temperature of the returned district heating water

Displayed estimations:

Differential DH Pressure (bar)	: estimated differential pressure
DH Flow (l/min)	: estimated district heating flow that is needed



Figure 9: Domestic hot water information screen

Remark:

The indication NC means "not connected". There is no temperature displayed because there is no sensor connected or the sensor/cable is faulty.

Heat Interface Unit status:

The state of the HIU can be seen in by the icon on the left side.

				
Initialization	Stand-by	Warm-up	Tapping	Error

Figure 10: States of the HIU controller

Initialization	: initialization phase (after boot or error state).
Stand-by	: CH is active, no tap (LED on the control flashes green).
Warm-up	: domestic hot water is still warming up (LED flashing blue).
Tapping	: domestic hot water is hot (LED flashing blue).
Error	: error state (LED flashing red. Eco Advance HIU restarts after approx. 30s).

Additional features of the chart:

- Clear: clear the chart. Press the button with the eraser to erase the chart.
- Context menu



A menu with additional features can be activated by moving the pointer of the mouse over the chart and push the right mouse button.

Right-click on the chart to show a menu with the extra features. For example: with Show Point Values, the exact value of a point on the graph can be made visible by clicking on the lines in the chart.

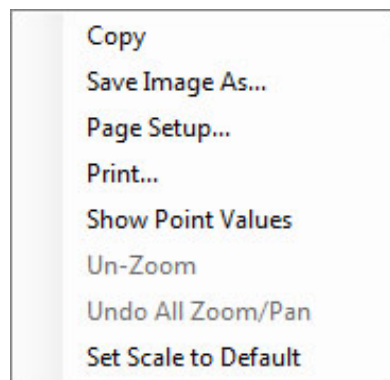
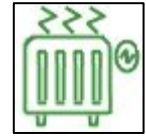


Figure 11: Additional functions of the graph

4.5 The Central Heating screen



The available information of the central heating system will be shown in this screen.

There are several HIU configurations so it can be possible that some of the information isn't available or relevant. If "NC" is displayed, meaning "not connected", the information is not available.

Displayed data:

CH Temp (°C) : central heating supply temperature
 CH Pressure (bar) : measured pressure in the central heating system
 Thermostat (on/off) : thermostat input state. Flame = on, ice crystal = off
 DH Temp (°C) : district heating supply temperature
 DH Return Temp (°C) : district heating return temperature from central heating circuit
 Pump (on/off) : CH pump state (rotating = on / not rotating = off)

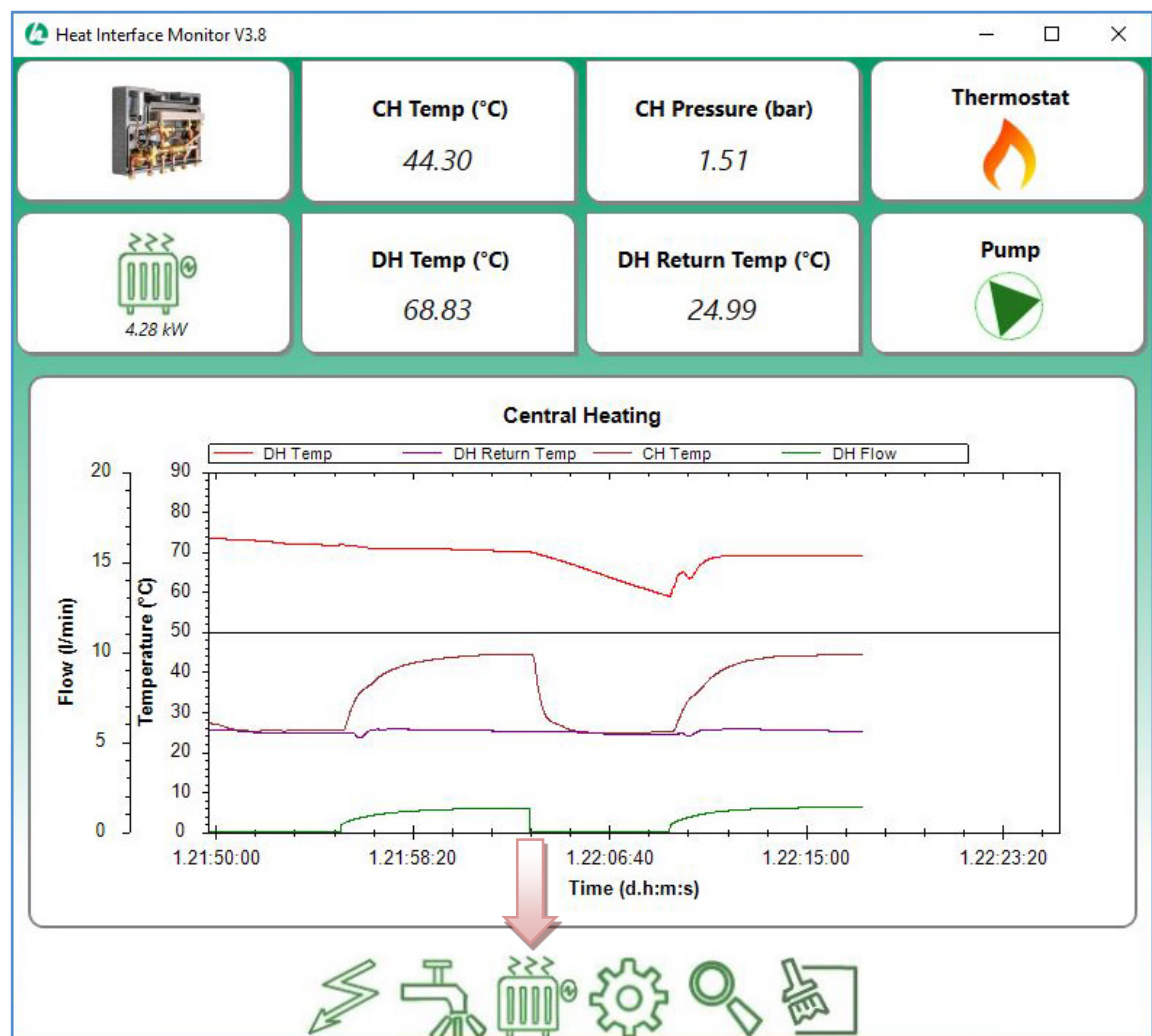


Figure 12: Central Heating screen

If the HIU is thermostat ready but there's no thermostat attached the cable should be short-circuited by a WAGO clamp (mounted in the factory by default) otherwise the CH valve won't open! The thermostat indicator should be ON (flame).

4.6 Domestic hot water settings screen

- Temperature setpoint : The desired domestic hot water temperature can be set.
Pressure : Manual or Automatic estimation of differential pressure of DH.
Heat Exchanger Setting : Choose between Comfort, Eco, and DHW circulation mode
Flow (warm-up boost) : DH boost flow rate, during DHW warm-up.

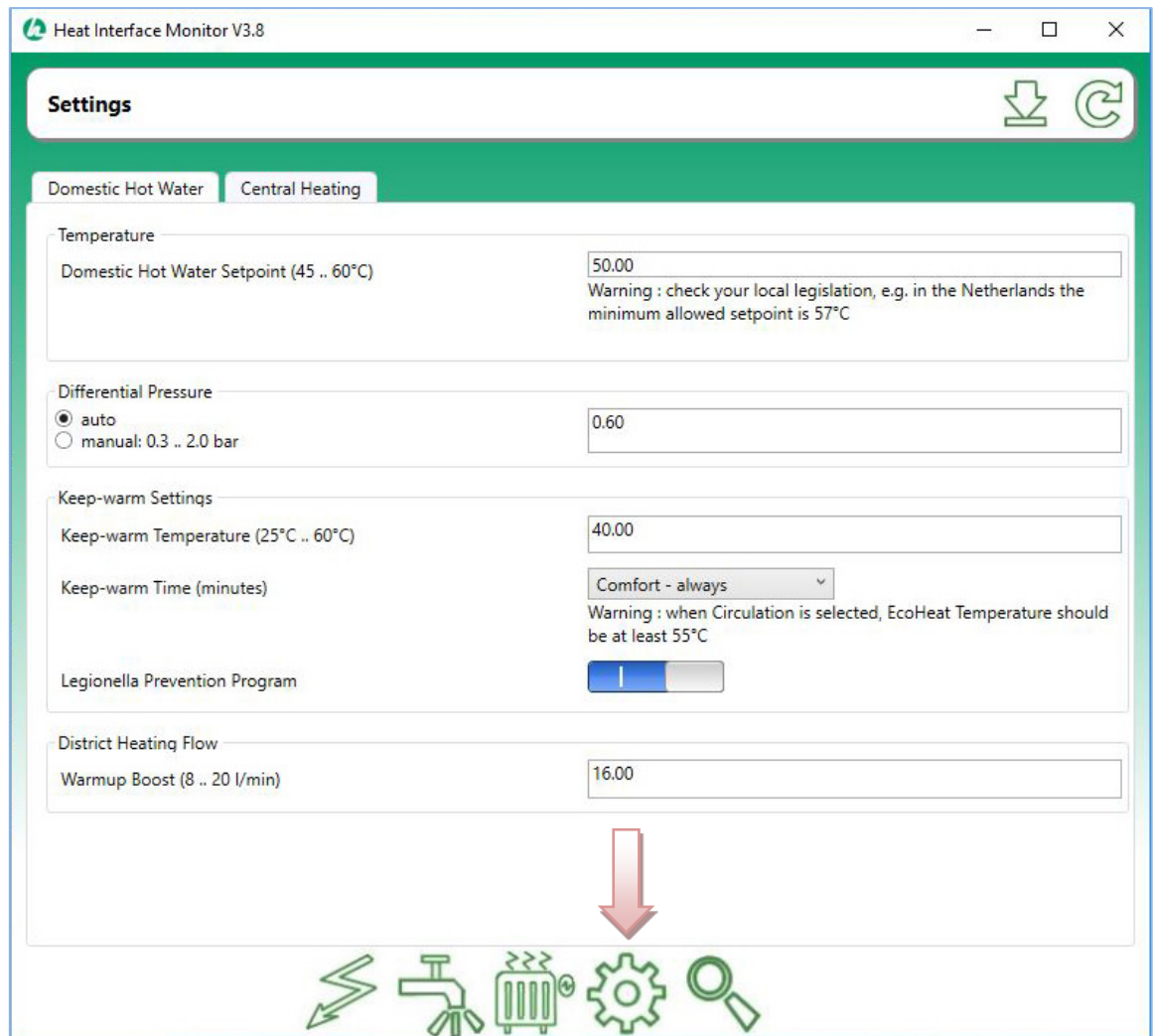


Figure 13: Domestic hot water settings screen activated

Warning! Check your local legislation. For instance, In the Netherlands the minimum domestic hot water temperature is 57 °C

The temperature range is sometimes restricted by the firmware in the HIU controller. In this case the HIU monitor software cannot overrule the restriction. By simply trying to change the DHW temperature setting the allowed range can be found.

Heat Exchanger Settings menu has a pull down menu to select how long the heat exchanger will be kept warm after a tapping has ended. The temperature of the heat exchanger during this period is also selectable. **These settings will not work for firmware prior to V1.24!**

Keep-warm Settings

Keep-warm Temperature (25°C .. 60°C) 40.00

Keep-warm Time (minutes)

Legionella Prevention Program

District Heating Flow

Warmup Boost (8 .. 20 l/min)

Eco - 30 min

Eco - 0 min

Eco - 15 min

Eco - 30 min

Eco - 60 min

Eco - 120 min

Comfort - always

DHW Circulation - always

Figure 14: Pull down menu for selecting comfort modus

In the Comfort mode the heat exchanger will be kept warm 24 hours a day to guarantee a short response time. The keep warm temperature is selectable (40 degrees is in most cases a good compromise between energy savings and response time).

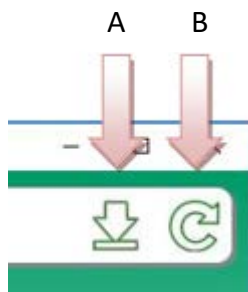
In the Eco mode the heat exchanger is heated only for a short period (time and temperature are selectable) after a hot water draw-off and energy is saved. The DHW response time may be longer in eco mode than in Comfort mode).

In DHW circulation mode the heat exchanger and DHW circulation circuit is kept warm 24 hours a day. The keep warm temperature is also selectable but for Legionella Prevention purposes this should be at least 55°C. In this mode there is higher energy usage. The classic legionella prevention program will not be able to heat the pipes high enough, so that option is automatically disabled when this mode is selected.

Buttons:

A = Upload: the settings are sent to the HIU and stored in the HIU controller

B = Refresh: the settings are retrieved from the HIU again



4.7 Central Heating settings screen

The screenshot shows the 'Settings' window of the 'Heat Interface Monitor V3.8'. The 'Central Heating' tab is selected. The settings are organized into three sections: Temperature, Pump, and Weather Compensator. Each section contains specific parameters with their ranges and current values.

Section	Parameter	Value
Temperature	District Heating Return Limit (30 .. 55°C)	30.00
	Maximum Supply (20 .. 75°C)	45.00
Pump	Overrun time (minutes)	5.00
Weather Compensator	Slope (0.2 .. 4)	1.50
	Displacement (-20 .. +20°C)	5.00

At the bottom of the window, there is a row of five green icons: a lightning bolt, a faucet, a radiator, a gear, and a magnifying glass.

Figure 15: screen CH settings

Settings:

District Heating Return Temperature Limit (°C)	: The maximum temperature can be set.
Central Heating Supply Temperature Limit (° C)	: The maximum temperature can be set.
Pump overrun time (minutes)	: Time the CH pump remains running after thermostat switches off.
Slope	: Slope of the heat curve (outdoor temperature sensor needed).
Displacement	: Adjust the parallel displacement of the heat curve.

For some HIU's there are no settings available for central heating (the tab does not appear).

4.8 Diagnostic Counters and Alarms screen

In addition to measured values there are also two types of counters available. There are alarm counters and diagnostic counters.

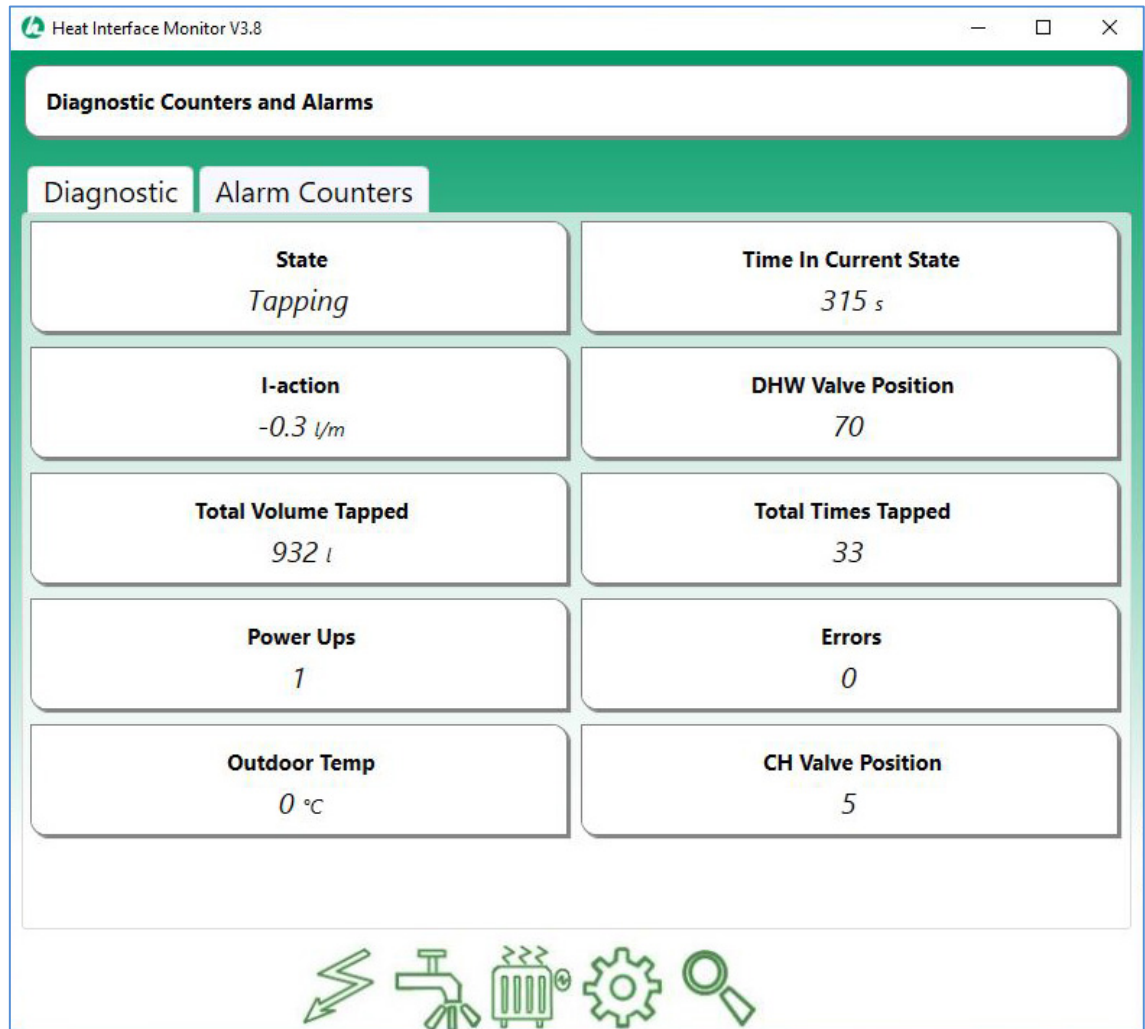


Figure 16: Diagnostic screen

Diagnostic counters:

State	: State of the HIU (Init, Warmup, Tapping, Closed, Standby or Error).
Time in current state	: The time the current state is active
I-action (l/min)	: Correction from feed-back controller DHW.
DHW Valve Position	: DHW valve Position (Open max. 260 / closed min. 5 steps).
Total Volume Tapped	: Total litres of domestic hot water delivered since power-up.
Total Times Tapped	: Number of hot water draw offs since power-up.
Power Ups	: Number of times the HIU has been powered-up.
Errors	: Number of times in Error State.
Outdoor Temperature	: Not in use.
CH Valve Position	: CH valve Position (Open max. 260 / closed min. 5 steps).

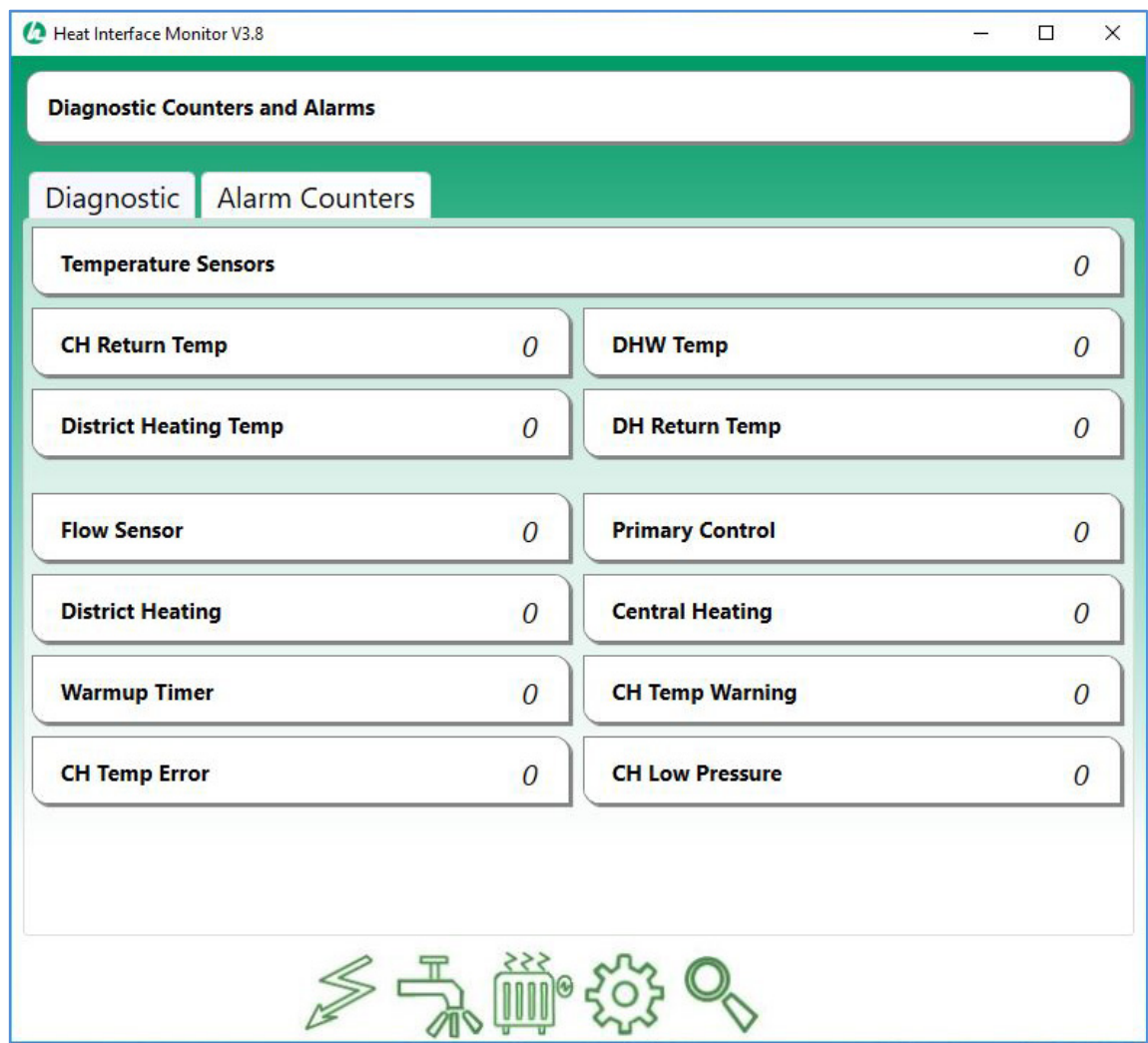


Figure 17: Alarm Counters screen

Alarm counters:

Indication of the number of common errors stored in the control.

Temperature Sensors	: Number of times a temperature sensor error has been detected.
CH Return Temp	: Temperature sensor error (district heating return from CH).
DHW Temperature	: Temperature sensor error (domestic hot water).
District Heating Temp	: Temperature sensor error (district heating supply).
DH Return Temp	: Temperature sensor error (district heating return from DHW).
Flow Sensor	: Flow sensor failure (unrealistic high value is detected).
Primary Control	: Not Applicable (for internal use only)
District Heating	: District heating temperature too cold or insufficient flow.
Central Heating	: DH return from CH has an invalid value ($< 0^{\circ}\text{C}$ / $> 105^{\circ}\text{C}$)
Warmup-Timer	: It took too long to reach the minimum DHW temperature.
CH Temp Warning	: For at least 10 seconds no new measurement data received from sensor.
CH Temp Error	: For at least 30 seconds no new measurement data received from sensor.
CH Low Pressure	: not available (for future firmware updates).

These counter readings are stored in the permanent memory of the HIU and cannot be erased.

The HIU has no on/off button. The HIU is started by connecting the unit to power.