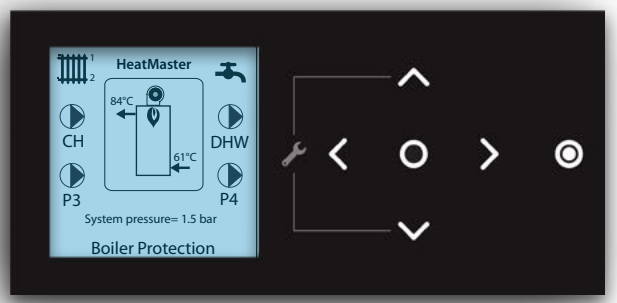
The Installer's Handbook

for Evo appliances controlled with

ACVMax Touch



HeatMaster 25 C Evo
HeatMaster 25 - 35 - 45 - 70 - 85 - 120 TC Evo
WaterMaster 25 (X) - 35 - 45 (X) - 70 (X) - 85 - 120 Evo

660Y3000 • A

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NOTE

This manual contains important information for the installer, with respect to the installation and set-up of the boiler.

This manual is only available on the Internet. Please check for the latest revision on our web-site (www.acv.com).

We accept no liability should any damage result from the failure to comply with the instructions contained in this technical manual.

Essential recommendations for safety

- It is prohibited to carry out any modifications to the appliance without the manufacturer's prior and written agreement.
- The appliance must be set up by a qualified installer, in accordance with applicable standards and regulations.
- The installation must comply with the instructions contained in the boiler's installation manual and with the standards and regulations applicable to heating systems.
- Failure to comply with the instructions in this manual could result in personal injury or a risk of environmental pollution.
- The manufacturer declines all liability for any damage caused as a result of incorrect installation or in the event of the use of appliances or accessories that are not specified by the manufacturer.

Essential recommendations for the correct operation of the appliance

- To guarantee the correct operation of the installation, it is essential to carry out the adjustments in accordance with the instructions in this manual.
- In order to ensure that the appliance operates correctly, it is essential to inspect and service the boiler every year.
- Faulty parts may only be replaced by genuine factory parts.

General remark

- The availability of certain models as well as their accessories may vary according to markets.
- The manufacturer reserves the right to change the technical characteristics and features of its products without prior notice. Please check for an updated version of this manual in the documentation page on the website www.acv.com.

IMPORTANT INSTRUCTIONS - READ BEFORE PROCEEDING

Essential recommendations for safety

- This document is intended to be used by a factory-trained and qualified heating contractor or service technician only. Read all instructions within this document and within the concerned appliance's Installation, Operation and Maintenance Manual before proceeding.
- It is recommended to follow the procedures in the steps given. Skipping or missing procedural steps could result in severe personal injury, death or substantial property damage.
- This appliance can be used by children aged from 8 years old and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, if they have been given supervision or instruction concerning the use of the appliance in a safe way and understand the hazards involved.
- Children should be supervised to ensure that they do not play with the appliance.

APPLICABILITY

This manual is applicable to Evo appliances manufactured from 2022 and equipped with an ACVMax Touch interface.

For appliances equipped with the other ACVMax interface, please refer to the previous version of the Installer's Handbook (660Y2900).

If you smell gas:

- Immediately isolate the gas supply.
- Open windows and doors to ventilate the area.
- Do not use any electrical appliances and do not operate any switches.
- Immediately notify your gas supplier and/or your installer.

HOW TO USE THIS MANUAL

The Installer's Handbook is for the exclusive use of ACV-approved installers. The manual contains all relevant information to set up a system based on an Evo appliance controlled with ACVMax Touch.

It contains:

- A general description of the ACVMax Touch interface controls, functions and icons
- A detailed description of all the screens, menus and parameters, with the exception of the Cascade menus. As ACVMax cannot control an Evo cascade, the cascade menus and functions are not described in this manual.

Cascades of Evo appliances must be controlled by an external controller (e.g. Bus-connected).

- A series of typical hydraulic diagrams for different system configurations, as well as the parameter settings for each configuration, when applicable.
- A list of the error codes displayed on the ACVMax Touch screen, the problem they are related to and proposed solutions.

For simple configurations, the EZ setup function of the ACVMax Touch can be used. Refer to the Installation, Operation and Maintenance manual provided with the appliance, or get it from the Download center at www.acv.com.

For more complex systems, with additional pumps, several configurations have already been preset in the ACVMax Touch controller to help you. Please refer to the table of contents to see the predetermined configurations for the chosen appliance type.

For any other heating system configuration than those in this manual, please contact your ACV customer support.

Finally, this manual has some **interactive features** : interactive table of contents, interactive buttons, cross-references within the document, etc. Clicking on the displayed at the top of the pages will automatically bring you back to the last viewed page.

ACVMAX TOUCH OPERATING INFORMATION

The ACVMax Touch controller is designed to be flexible yet easy to use. It monitors and controls the appliance to have it operate as efficiently as possible. ACVMax monitors the appliance supply, return and flue gas temperatures and operates the electrodes, gas valve and blower. It uses this information to modulate the appliance firing rate to maintain the required setpoint. ACVMax offers many advanced control options, which can be adjusted for various applications to achieve optimum appliance efficiency and operation:

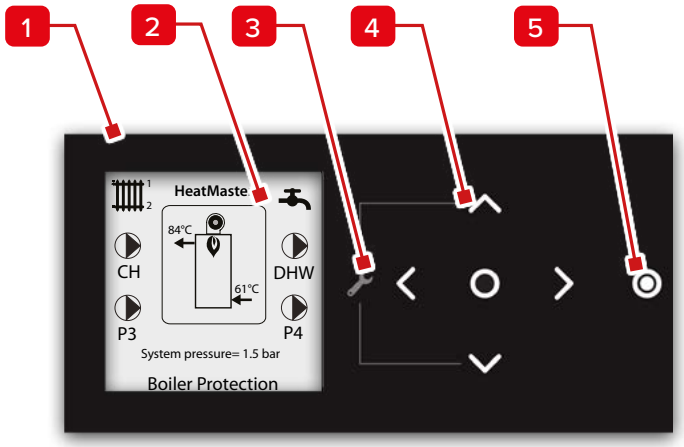
- Two central / space heating (CH) call inputs with separate outdoor curves.
- A Domestic Hot Water (DHW) call input with optional priority.
- System temperature sensing and control with an optional system temperature sensor.
- A cascade function - Not applicable to Evo appliances and not described in this manual.

The Cascade feature is not applicable to Evo units, as a cascade of Evo models must be controlled by an external controller. Refer to the relevant Evo model Installation, Operation and Maintenance manual for more information.

- A Modbus interface that allows integration with building management systems.

These advanced features are adjustable in the Installer Menu after entering an access code. Refer to "Installer Code" for more details.

CONTROL PANEL DESCRIPTION



1-. **ACVMax Touch control panel** - It is comprised of an LCD display and soft keys reacting to the touch.

2- **ACVMax Touch LCD Display** - It is the setup interface of the boiler and indicates the parameter values, the error codes and the set-up status of the parameters. It displays a series of screens, each showing information and/or icons. The main icons are detailed on the following page.

Screen backlight - it will illuminate when any soft key is touched, and remain illuminated for five minutes.

Screen brightness - it can be adjusted at the Home screen by touching and holding simultaneously the and soft keys for **2 seconds**. Touch the and soft key to increase or decrease the contrast. Touch to end the process.

3- **Installer function -** The installer is provided with full access to all available features after simultaneously touching the and soft keys for **5 seconds** and entering a specific access code (refer to **"Installer Code"**).

4- **Arrow touch keys and OK/Reset touch key** - The ACVMax Touch navigation is performed through soft keys that react to the touch and emit a short beep when tapped. Four arrow soft keys , , , are used to browse through the screens and menus of the ACVMax controller, set up the appliance, increase and decrease the displayed values and validate the selections. The center soft key (**OK/Reset**) is used for validation and to RESET the appliance after a blocking (following the instructions on the screen).

Exert a light and short touch (tap) on the soft keys to activate their function. Holding the touch too long will not generate any reaction from the ACVMax Touch, unless it is a combination of soft keys meant to be touched simultaneously for a determined duration, as instructed in this manual. The arrow keys can also be held longer to increase or decrease values faster.

5- **Sleeping mode soft key** - The soft key is used to put the appliance in a sleeping mode.

When touching the soft key, the unit is in a sleeping mode but is not isolated from power supply. Therefore, live current is still present in the unit. For your safety, disconnect electrical power supply to the unit before maintenance or making any electrical connections to avoid possible electric shock hazard. Failure to do so can cause serious injury, or death.

- **When putting in sleeping mode using the soft key, the appliance will not react to any heat demand. However, the basic appliance protection functions (such as frost protection, etc.) remain active.**
- **In addition, the arrow soft keys are no longer illuminated, and the soft key lighting is dimmed.**

MAIN ICONS OF ACVMAX TOUCH DISPLAY

Central Heating - indicates information related to the CH circuit.

DHW - indicates information related to the Domestic Hot Water circuit.

Home - to go back to the main menu screen.

Back - to go back to the previous screen.

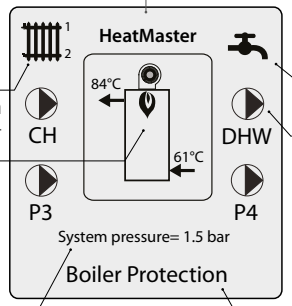
Pump - indicates a pump is operating.

Warm weather shutdown - displays on the home screen when the outdoor temperature reaches the Warm Weather Shutdown preset temperature.

HOME PAGE DESCRIPTION

The **appliance type** is indicated at the top of the screen. The type and model are factory preset. This setting can be accessed through the installer menu (Boiler settings > Appliance settings) and modified using an appliance code (e.g. in the case of a conversion to another gas type or an ACVMax board replacement). Refer to "Appliance codes"

The appliance is represented in the centre of the Home Screen. Basic operating information such as supply and return temperatures are displayed as well as current burner status.



Radiator icon: indicates that a central heating call has been received. A small number 1 or 2 indicates which CH calls are active.

A **flame symbol** is displayed when the unit is fired. The flame size changes to indicate the current firing rate.

Basic information. The user can toggle the items using the LEFT and RIGHT keys and view target, Supply, Return, Domestic, Outdoor and System temperatures, as well as system water pressure.

Tap icon: indicates that a DHW call has been received.

Circulator icons: indicate which circulators are currently powered.

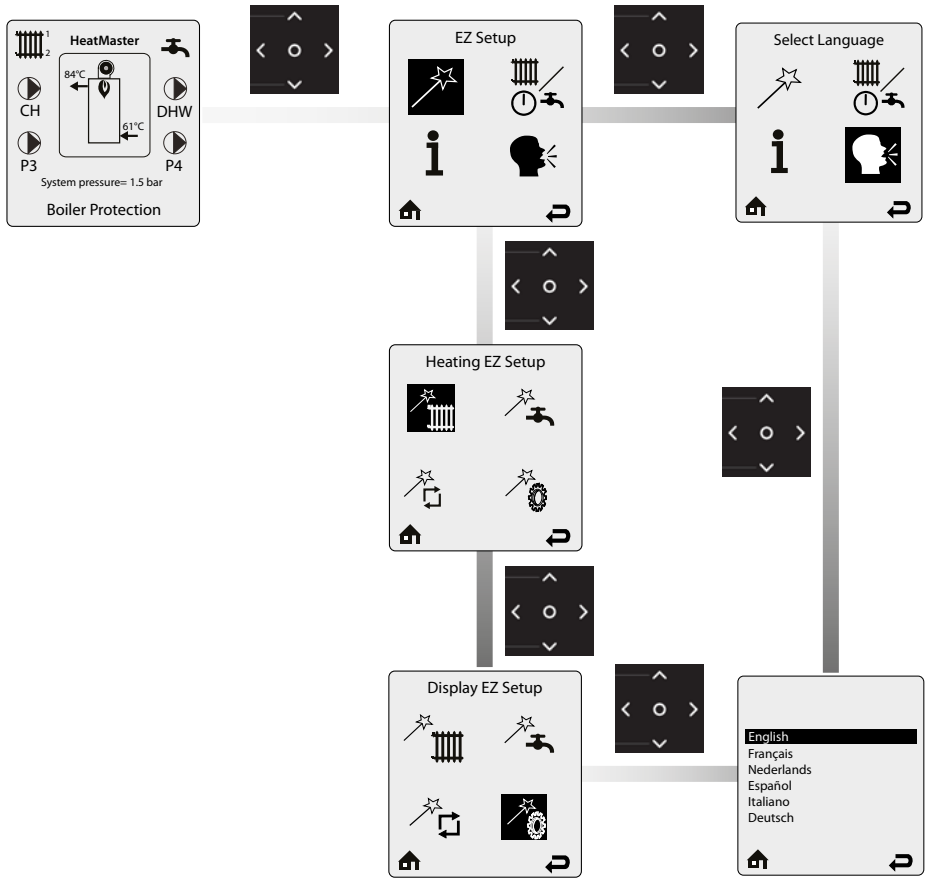
Status line : displays the current operating state of the appliance. See "List of Status Line Messages".

The Heating functions are not active in the WaterMaster Evo units.

APPLIANCE EASY SETUP (EZ SETUP)

The main parameters of the appliance can be set up using the EZ (easy) setup function of the controller. The EZ setup function allows the user/installer to quickly setup the appliance for immediate operation according to the system configuration. Refer to the appliance "Installation, Operation and Maintenance Instructions".

SELECTING THE LANGUAGE



INSTALLER CODE

Through the use of the specific code "**054**", the installer can access various setup screens, in order to define a large set of parameters and adapt the operation of the ACVMax to the system configuration.

To navigate on the screen, use the **UP, DOWN, LEFT** and **RIGHT** soft keys  , then the **OK** key to validate a selection. To increase/decrease values, use the **UP** and **DOWN** soft keys. or **LEFT** and **RIGHT**, according to the situation.

Entering the installer access code allows the installer to make adjustments for 30 minutes. After 30 minutes, the access code will have to be entered again to make any adjustments.

INSTALLER MENU DESCRIPTION

The installer Menu contains the following icons :

1. **CH & DHW Settings** – Allows the installer to adjust the appliances central/space heating and domestic hot water settings for the application. For the detail of the menus, go to "CH & DHW Settings ( ) ".

2. **Manual Operation** – The burner and circulators can be manually enabled for testing. For a detail of the menus, go to "Manual Operation ( )" .

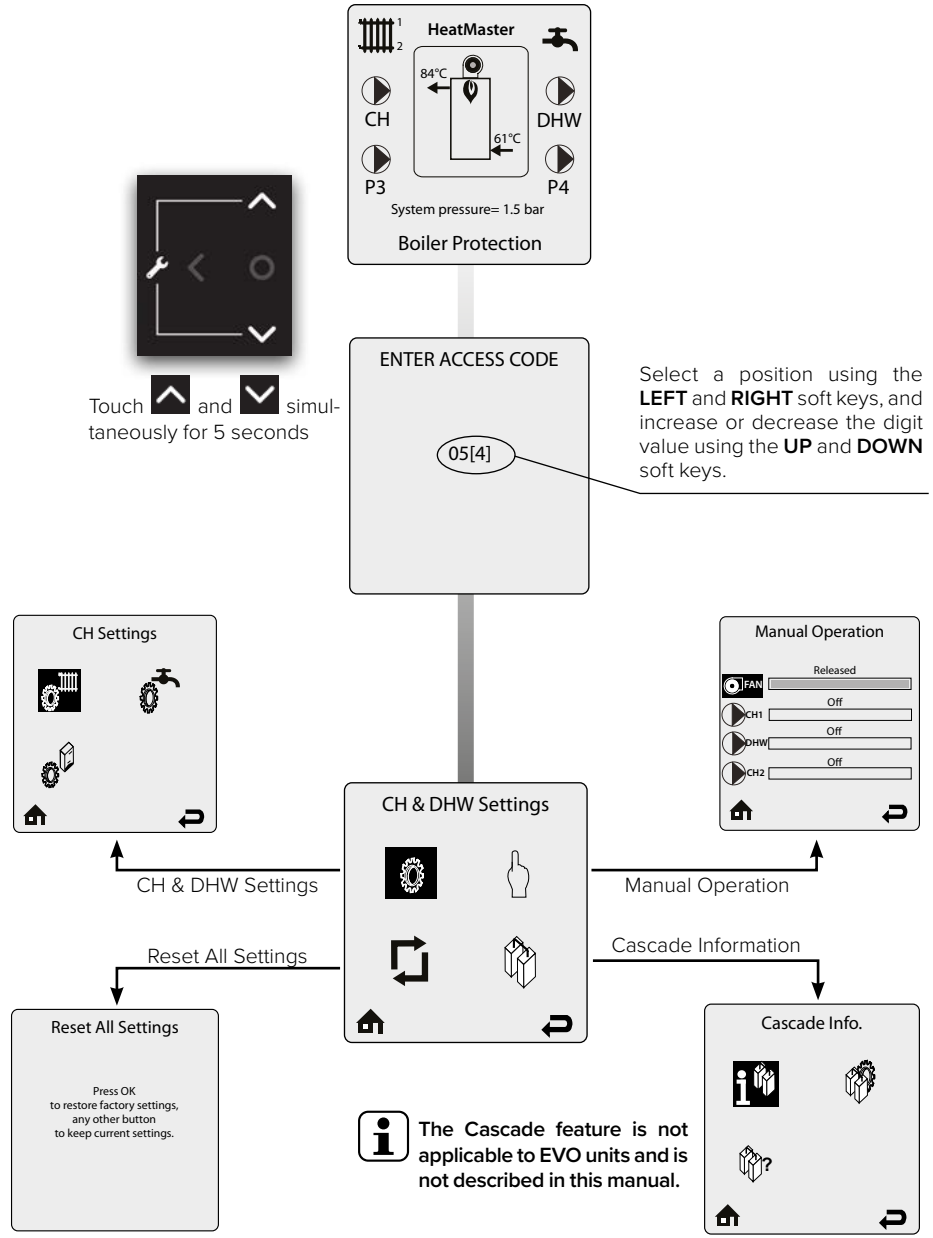
3. **Cascade Settings** – Although the menu is visible, it is not active for the Evo models. Refer to the "Installation, Operation and Maintenance manual" of the units for more information on cascade possibilities.

4. **Reset All Settings** – Resets all CH and DHW Settings back to the default settings (for the detail of the values, go to "Factory settings and reset values"). For a detail of the menus, go to "Reset all settings ( )".

5. **Home** - to go back to the home page.

6. Back - to go back to the previous screen.

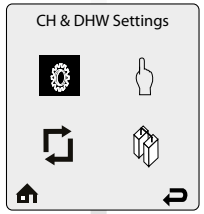
INSTALLER MENU STRUCTURE

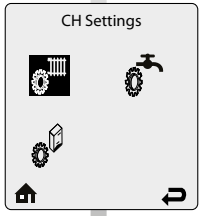


CH & DHW Settings ( ) ➔ CH Settings ( )

Although they are displayed, the Heating functions are not active in the WaterMaster Evo units. Any change made to the menus will have no effect on the appliance operation.

"Installer Code"

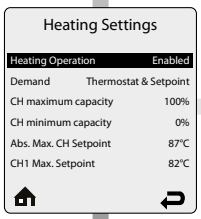




To navigate on the screen, use the **UP**, **DOWN**, **LEFT** and **RIGHT** keys  , then the center (**OK)** key to validate a selection.

To increase/decrease values, use the **UP** and **DOWN** or **LEFT** and **RIGHT** keys, according to the situation

The **Heating Settings** menu contains settings related to central heating operation. Each line contains a CH Setting followed by its current value. Six CH Settings are displayed on the screen at one time.



Heating Operation allows the central heating function to be enabled and disabled.

Touch the **UP** or **DOWN** soft keys to select Enabled or Disabled then touch the **OK** key to store the setting.

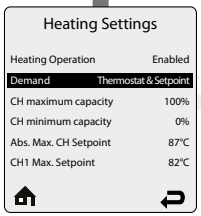
Enabled - The Appliance will respond to a central heating call.

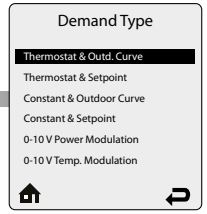
Disabled - The Appliance will not respond to a central heating call. The heating operation disabled icon ( ) is displayed on the home screen when central heating operation has been disabled.

When heating is disabled the frost protection will still be active.

Default HeatMaster Evo: Enabled

Default WaterMaster Evo : Disabled



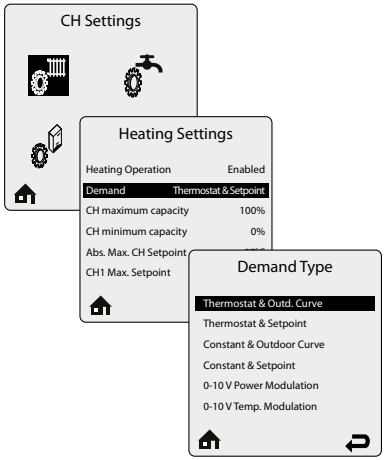


Demand Type allows the installer to select how a CH Demand is generated.

Touch the **UP** or **DOWN** soft keys to select the CH Demand Type then touch the **OK** key to store the setting.

Default: Thermostat and Setpoint

See detail of menu on next page.



Demand Type screen menu

Thermostat & Outdoor Curve – A central heating call from a dry contact switch will enable the appliance and the setpoint will vary with the outdoor temperature for central heating calls.

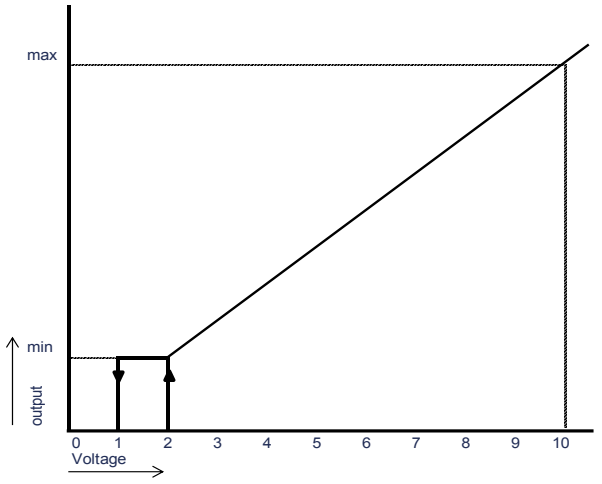
Thermostat & Setpoint - A central heating call from a dry contact switch will enable the appliance and the setpoint will be fixed for central heating calls.

Constant & Outd. Curve - The appliance will maintain setpoint and the central heating circulators will be constantly enabled without an external call from a dry contact switch. The central heating circulators will be disabled when the outdoor temperature exceeds the Warm Weather Shutdown Temperature setting. The setpoint will vary with the outdoor temperature for central heating calls.

Constant & Setpoint - The appliance will maintain setpoint and the central heating circulators will be constantly enabled without an external call from a dry contact switch. The central heating circulators will be disabled when the outdoor temperature exceeds the Warm Weather Shutdown Temperature setting. The setpoint will be fixed for central heating calls.

0 - 10V Power Modulation - This option allows the appliance firing rate to be controlled by an external control system. Based on the control input voltage, the appliance will start to operate for heat demand. The CH temperature is limited by the Absolute maximum temperature.

- 0 – 2V appliance is off.
- 2 – 10 V linear power increase from minimum to maximum output.
- 10 – 2 V linear power decrease from maximum to minimum output.
- 2 – 1 V appliance on minimum capacity.
- 1 - 0 V appliance off.



0 - 10V Temp. Modulation - This option allows the appliance CH temperature to be controlled by an external control system. Based on the control input voltage, the appliance will start to operate for a heat demand.

- 0 – 2V appliance is off.
- 2 – 10 V linear temperature increase from minimum (27°C) to maximum (87°C) temperature.
- 10 – 2 V linear temperature decrease from maximum (87°C) to minimum (27°C) temperature.
- 2 – 1 V appliance on minimum temperature.
- 1 - 0 V appliance is off.

CH Maximum Capacity limits the maximum CH capacity. The appliance capacity can be defined by adjusting this value, 100% means Maximum CH output, 0% means minimum CH output. It is therefore possible to adjust the CH capacity to the installation needs.

Example: when set to 60%, the real appliance capacity is the appliance minimum capacity plus 60% of the difference between the maximum and minimum capacity.

Touch the **LEFT** or **RIGHT** soft keys to adjust the CH Maximum Capacity, then touch the **OK** key to store the setting.

Default: 100%

CH Minimum Capacity sets the lowest limit of the CH capacity. The appliance capacity can be defined by adjusting this value and the CH Maximum capacity. It is therefore possible to adjust the CH capacity to the installation needs.

Example: when the CH minimum capacity is set to 20%, the real appliance capacity is the appliance minimum capacity plus 20% of the difference between the maximum and minimum capacity.

Touch the **LEFT** or **RIGHT** soft keys to adjust the CH Minimum Capacity, then touch the **OK** key to store the setting.

Default: 0%

Absolute Max CH Setpoint limits the setpoint during a central heating call. This setting can be used to prevent a user from adjusting the central heating setpoint or outdoor curve above a safe operating temperature in the EZ Setup Menu. A warning screen will be displayed in EZ Setup if the user attempts to raise the setpoint above the Absolute Max CH Setpoint. The Absolute Max CH Setpoint will be displayed on the outdoor curve in EZ Setup if the user selects an outdoor curve which goes above the Absolute Max CH Setpoint.

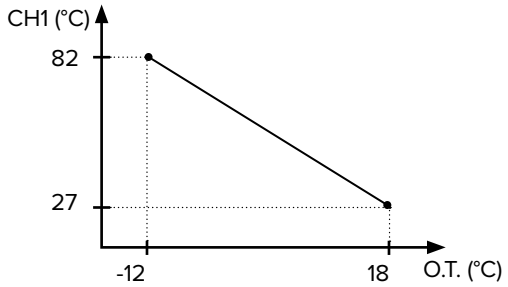
Touch the **LEFT** or **RIGHT** soft keys to adjust the Absolute Max CH Setpoint then touch the **OK** key to store the setting.

Default: 87°C

CH1 Max. Setpoint is the maximum setpoint for a CH1 heating call when an Outdoor Curve option is chosen in Demand Type. CH1 Maximum Setpoint is the fixed setpoint for a CH1 heating call when a Setpoint option is chosen in Demand Type.

Touch the **LEFT** or **RIGHT** soft keys to adjust the CH1 Maximum Setpoint then touch the **OK** key to store the setting.

Default: 82°C



CH1 Min. Setpoint is the minimum setpoint for a CH1 heating call when an Outdoor Curve option is chosen in Demand Type. This setting is not applicable when a Setpoint option is chosen in Demand Type.

Touch the **LEFT** or **RIGHT** soft keys to adjust the CH1 Minimum Setpoint then touch the **OK** key to store the setting.

Default: 27°C

Outdoor Curve Coldest Day is the coldest outdoor design temperature of the heating system when an Outdoor Curve option is chosen in Demand Type. This setting is not applicable when a Setpoint option is chosen in Demand Type.

Touch the **LEFT** or **RIGHT** soft keys to adjust the Outdoor Curve Coldest Day then touch the **OK** key to store the setting.

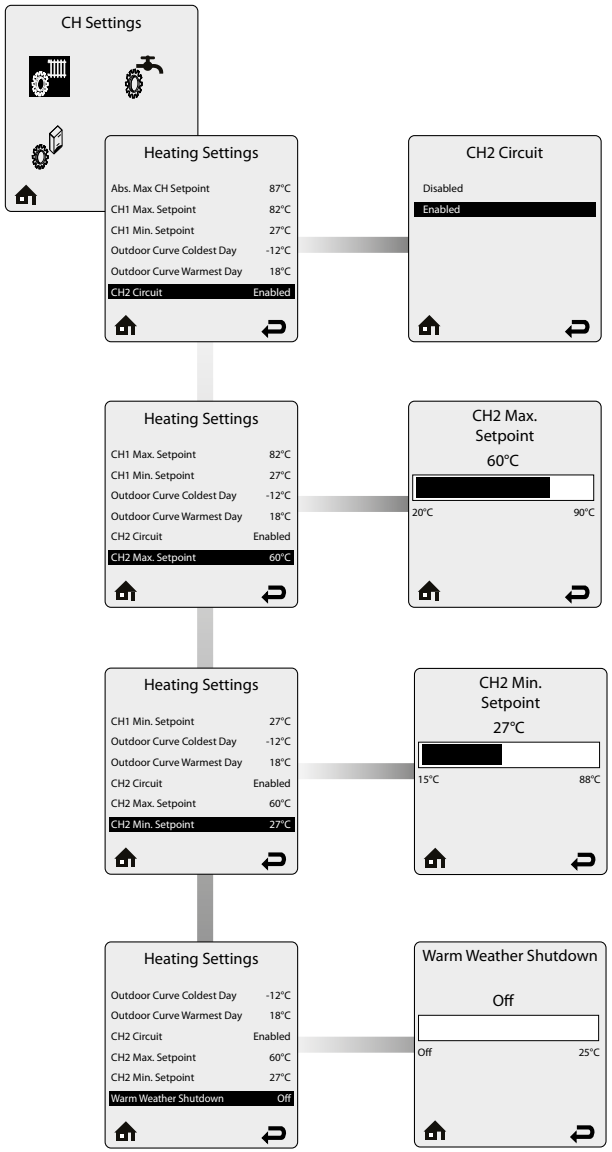
Default: -12°C

Outdoor Curve Warmest Day is the warmest outdoor design temperature of the heating system when an Outdoor Curve option is chosen in Demand Type. This setting is not applicable when a Setpoint option is chosen in Demand Type.

Touch the **LEFT** or **RIGHT** soft keys to adjust the Outdoor Curve Warmest Day then touch the **OK** key to store the setting.

Default: 18°C

The temperatures of Outdoor Curve Coldest Day and Outdoor Curve Warmest Day are identical to those of CH1.



CH2 Circuit allows the CH2 heating call to be enabled and disabled.

Touch the **UP** or **DOWN** soft keys to select Enabled or Disabled then touch the **OK** key to store the setting.

Enabled – The appliance will respond to a CH2 heating call
Disabled – The appliance will not respond to a CH2 heating call

Default: Enabled

CH2 Max. Setpoint is the maximum setpoint for a CH2 heating call when an Outdoor Curve option is chosen in Demand Type. CH2 Maximum Setpoint is the fixed setpoint for a CH2 heating call when a Setpoint option is chosen in Demand Type.

Touch the **LEFT** or **RIGHT** soft keys to adjust the CH2 Maximum Setpoint then touch the **OK** key to store the setting.

Default: 60°C

CH2 Min. Setpoint is the minimum setpoint for a CH2 heating call when an Outdoor Curve option is chosen in Demand Type. This setting is not applicable when a Setpoint option is chosen in Demand Type.

Touch the **LEFT** or **RIGHT** soft keys to adjust the CH2 Minimum Setpoint then touch the **OK** key to store the setting.

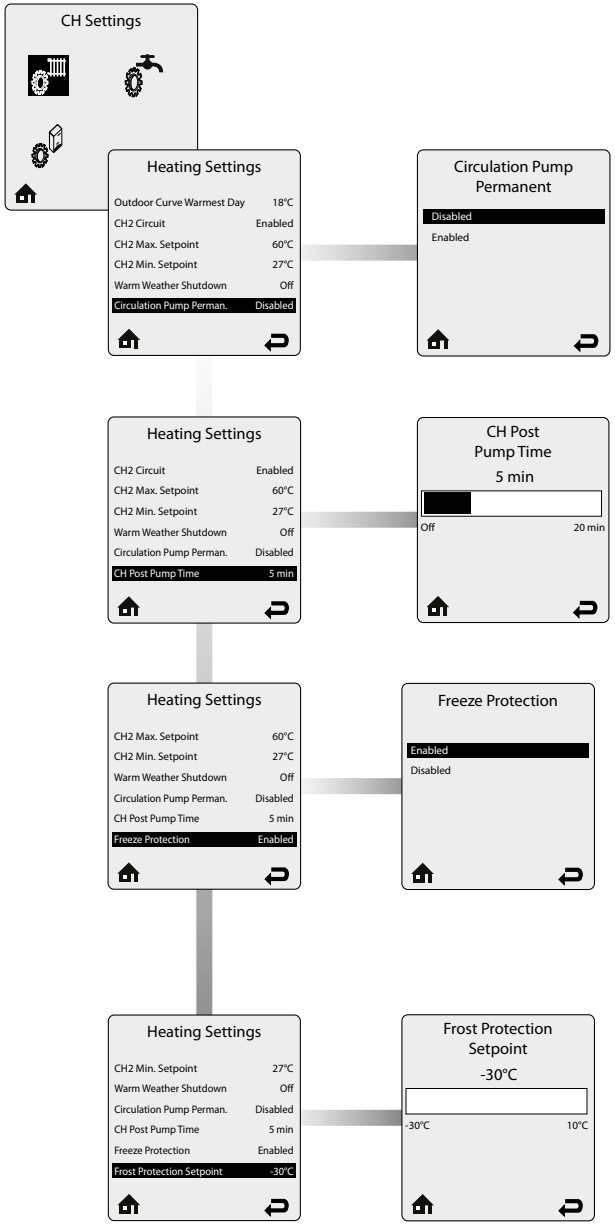
Default: 27°C

Warm Weather Shutdown allows to enter an optional outdoor temperature at which to disable the central heating function. The Appliance will continue to respond to a domestic hot water call or a 0- 10V Modulation Signal when the outdoor temperature exceeds the Warm Weather Shutdown Temperature setting.

Touch the **LEFT** or **RIGHT** soft keys to adjust the Warm Weather Shutdown Temperature then touch the **OK** key to store the setting and complete the Heating setting.

The Warm Weather Shutdown icon ( ) is displayed on the home screen when the outdoor temperature reaches the Warm Weather Shutdown Temperature.

Default: OFF.



Circulation Pump Permanent allows the central heating circulators to be constantly enabled even without a central heating call. A domestic hot water call will cause the circulators to be disabled during the domestic call as long as DHW Priority is enabled.

Touch the **UP** or **DOWN** soft keys to select Enabled or Disabled then touch the OK key to store the setting.

- **Enabled** – The central heating circulators will be enabled for constant circulation without a central heating call.
- **Disabled** – The central heating circulators will only be enabled during a central heating call.

Default: Disabled

CH Post Pump Time sets how long the central heating circulators will continue to operate at the completion of a heating call. Any call during the CH Post Pump Time will be ignored until the post pump has completed. The CH Post Pump Time feature allows the heat remaining in the appliance at the completion of a call to be sent to the heating system, which will improve the overall efficiency of the system.

Touch the **LEFT** or **RIGHT** soft keys to adjust the CH Post Pump Time then touch the **OK** key to store the setting.

Default: 5 min

The **Freeze Protection** menu allows the feature to be enabled and disabled. The built-in frost protection mechanism activates the system pumps as soon as the flow temperature [NTC1 probe] drops below 7°C. As soon as the flow temperature is at 5°C, the burner starts up until the flow temperature rises above 15°C. The pumps continue to run for around 10 minutes.

Touch the **UP** or **DOWN** soft keys to select Enabled or Disabled then touch the **OK** key to store the setting.

- **Enabled** – The Frost Protection feature protects the installation from freezing at a predetermined system flow temperature.
- **Disabled** – The Frost Protection feature is disabled. Only the pumps operate.

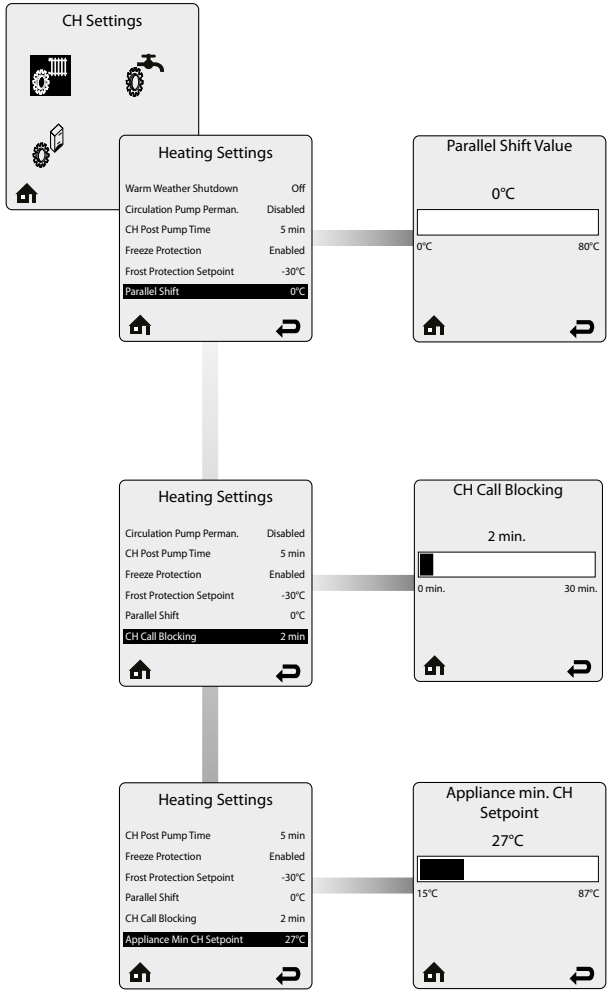
Default: Enabled

Frost Protection Setpoint allows to define the outside air temperature at which the anti-freeze function is activated (only available if an outdoor temperature sensor is connected). The pumps are activated when the outside temperature drops below the threshold defined in this menu.

Touch the **LEFT** or **RIGHT** soft keys to adjust the Freeze temperature Setpoint then touch the **OK** key to store the setting.

In order to enable the protection of the whole system against freezing, all the valves of the radiators and the convectors should be completely open.

Default: -30°C



Parallel Shift allows the CH setpoint to be externally adjusted when a Constant option is chosen in Demand Type. When a Constant option is chosen in Demand Type, continuous CH1 and CH2 heating calls are generated. Simultaneous CH1 and CH2 calls will result in the Appliance operating at the highest CH1 or CH2 setpoint. The CH1 or CH2 Thermostat terminals with the highest setpoint will be used to adjust the setpoint. If the Thermostat terminals with the highest setpoint are open, the CH setpoint will decrease by the Parallel Shift Value. If the Thermostat terminals with the highest setpoint are closed, the CH setpoint will return to the highest CH1 or CH2 setpoint

Touch the **LEFT** or **RIGHT** soft keys to adjust the Parallel Shift Value then touch the **OK** key to store the setting.

Default: 0°C

CH Call Blocking sets the minimum time between burner firings for central heating calls. At the completion of a burner firing, the CH Call Blocking time will begin. The burner will not fire again until after the CH Call Blocking time has elapsed. The CH Call Blocking time only prevents the burner from firing, the central heating circulators will respond to a central heating call. This blocking time has no affect on domestic hot water calls. The CH Call Blocking feature prevents short cycling of the burner and extends the life of the burner components.

Touch the **LEFT** or **RIGHT** soft keys to adjust the Parallel Shift Value then touch the **OK** key to store the setting.

Default: 2 min.

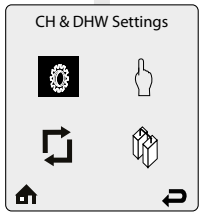
Appliance min CH Setpoint - The minimum setpoint can be reduced when the heating system is needing it to defrost installations.

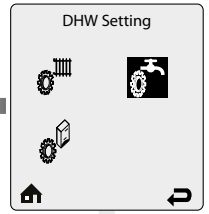
Touch the **LEFT** or **RIGHT** soft keys to adjust the Appliance min CH Setpoint value then touch the **OK** key to store the setting.

Default: 27°C

CH & DHW Settings → DHW Setting

"Installer Code"

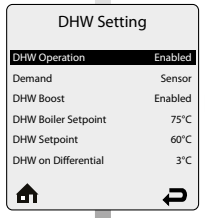




To navigate on the screen, use the **UP**, **DOWN**, **LEFT** and **RIGHT** keys  , then the center (**OK)** key to validate a selection.

To increase/decrease values, use the **UP** and **DOWN** or **LEFT and RIGHT** keys, according to the situation

The **DHW Setting menu** contains settings related to domestic hot water operation. Each line contains a DHW Setting followed by its current value. Six DHW Settings are displayed on the screen at one time.

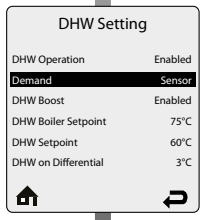


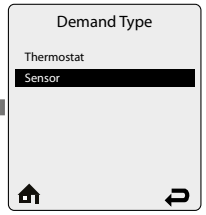
DHW Operation allows the domestic hot water function to be enabled and disabled.

Touch the **UP** or **DOWN** soft keys to select Enabled or Disabled then touch the **OK** key to store the setting.

- **Enabled** - The Appliance will respond to a domestic hot water call.
- **Disabled** - The Appliance will not respond to a domestic hot water call. The domestic hot water operation disabled icon ( ) is displayed on the home screen when domestic hot water operation has been disabled.

Default: Enabled





Demand Type allows to select the type of device that will generate a domestic hot water call. Touch the **UP** or **DOWN** soft keys to select the DHW Demand Type then touch the **OK** key to store the setting.

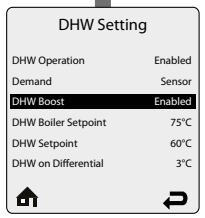
The DHW Demand options are:

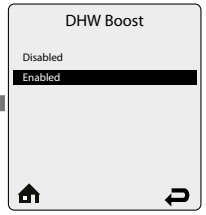
- **Thermostat** - This function should not be used with Evo Models.

Do not use the Thermostat function with any Evo model, as it will override the sensor function of the internal DHW tank.

- **Sensor** - Connected to the internal Water Heater Sensor. The Appliance will monitor the DHW storage temperature and generate a domestic hot water call when the temperature drops below the DHW Storage Setpoint - DHW On Differential.

Default: Sensor



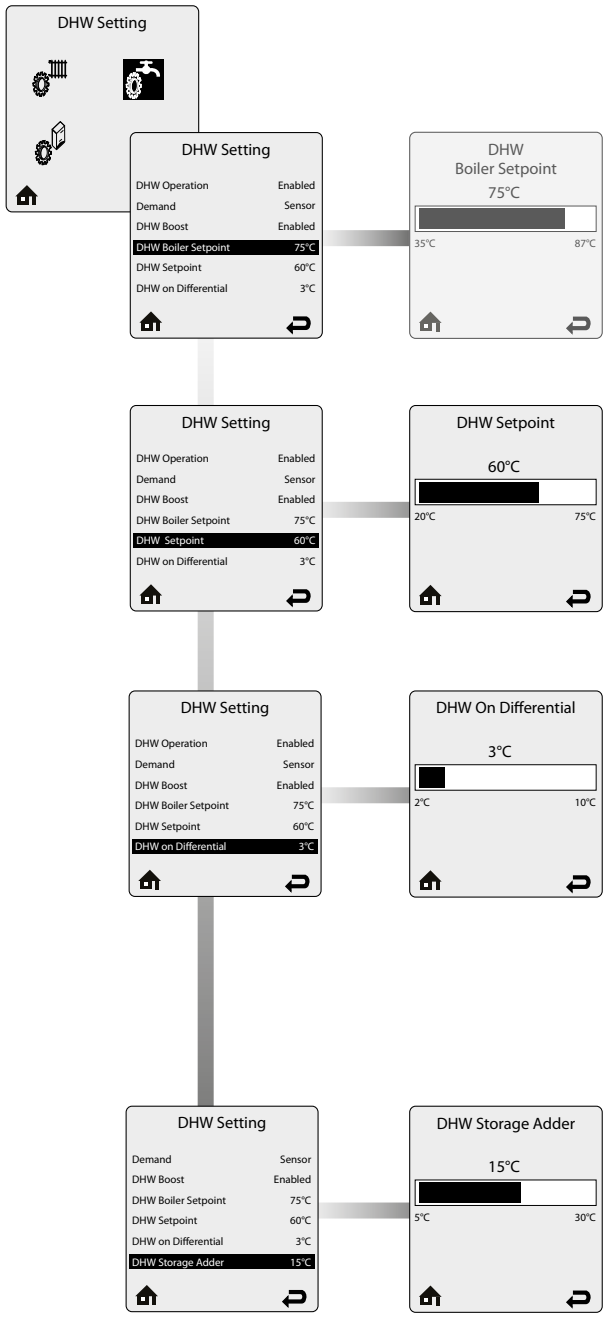


DHW Boost, when enabled, allows to increase the maximum DHW setpoint from 75°C to 85°C, provided that the DHW Setpoint menu is increased accordingly (see page 16).

Touch the **UP** or **DOWN** soft keys to select Enabled or Disabled then touch the **OK** key to store the setting.

- **Enabled** - The max DHW setpoint is set at 85°C
- **Disabled** - The maximum DHW setpoint is set at 75°C.

Default: Disabled



DHW Boiler Setpoint is the fixed appliance setpoint temperature during a domestic hot water call when the Thermostat option is chosen in Demand Type.

This function is not applicable to Evo models. The screen is displayed and available, but any change made here will have no effect.

DHW Setpoint is the domestic hot water storage setpoint temperature when the Sensor option is chosen in Demand Type.

Touch the **LEFT** or **RIGHT** soft keys to adjust the DHW Setpoint then touch the **OK** key to store the setting.

Default: 60°C

- **The appliance setpoint is automatically set to the DHW Setpoint + DHW Storage adder when the Sensor option is chosen in DHW demand.**
- **Increase this value up to at least 70°C to enable the DHW Boost function**

DHW On Differential sets how far the DHW storage temperature must fall below the DHW Storage Setpoint to create a domestic hot water call when the Sensor option is chosen in Demand Type. The domestic hot water call will end when the DHW storage temperature rises above the DHW Storage Setpoint.

Touch the **LEFT** or **RIGHT** soft keys to adjust the DHW On Differential then touch the **OK** key to store the setting.

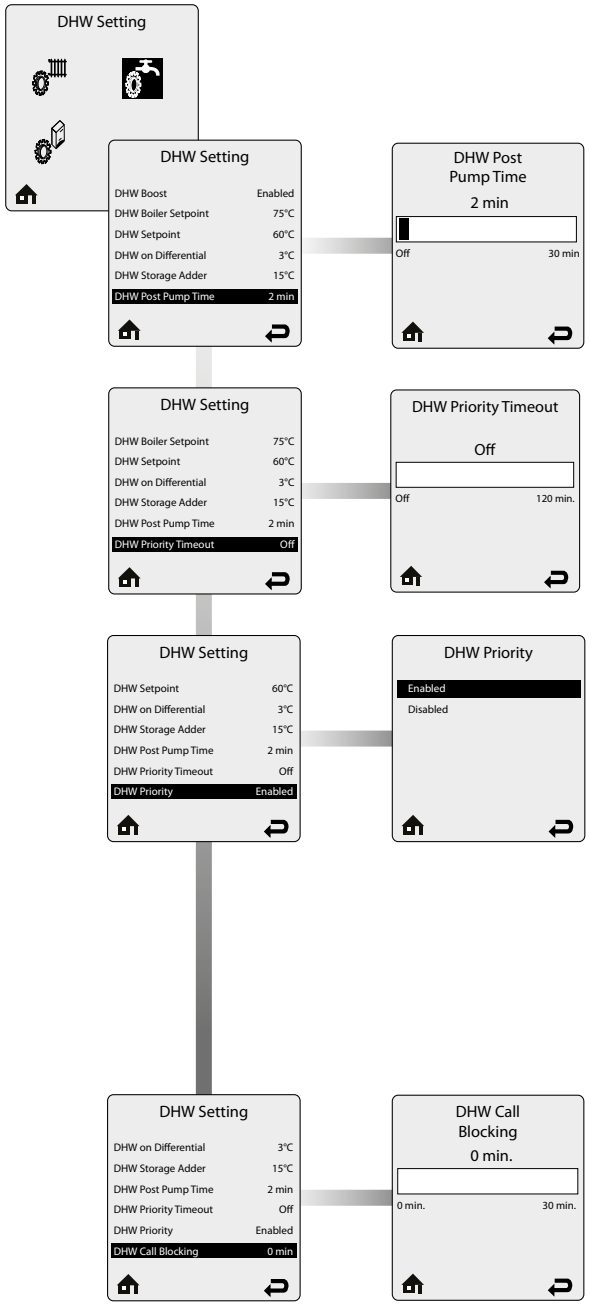
Default: 3°C

The DHW on differential setting greatly affects the production of domestic hot water. A low setting could result in a rapid response to a domestic hot water call resulting in a potential scald hazard. It is strongly recommended that the installer use a thermostatic mixing valve on the hot water outlet of the Indirect Water Heater. Failure to comply could result in severe personal injury, death, or substantial property damage.

DHW Storage Adder is used to compute the appliance setpoint when the Sensor option is chosen in Demand Type. The appliance setpoint will be DHW Setpoint + DHW Storage Adder for a domestic hot water call.

Touch the **LEFT** or **RIGHT** soft keys to adjust the DHW Storage Adder then touch the **OK** key to store the setting.

Default: 15°C



DHW Post Pump Time sets how long the domestic hot water circulator will continue to operate at the completion of a domestic hot water call. Any call during the DHW Post Pump Time will be ignored until the post pump has completed. The DHW Post Pump feature allows the heat remaining in the appliance at the completion of a call to be sent to the Indirect Water Heater, which will improve the overall efficiency of the system.

Touch the **LEFT** or **RIGHT** soft keys to adjust the DHW Post Pump Time then touch the **OK** key to store the setting.

Default : 1 min.

DHW Priority Timeout allows the installer to enter an optional time limit that a domestic hot water call has priority over a central heating call when DHW Priority is set to Enabled.

Touch the **LEFT** or **RIGHT** soft keys to adjust the DHW Priority Timeout then touch the **OK** key to store the setting.

Default: Off

DHW Priority allows the domestic hot water priority function to be enabled and disabled.

Touch the **UP** or **DOWN** soft keys to select Enabled or Disabled then touch the **OK** key to store the setting.

- **Enabled**- Domestic hot water calls will have priority over a central heating call. The appliance setpoint will be set to the domestic hot water setpoint during a domestic hot water call. The DHW circulator will be enabled and the heating circulators will be disabled during a domestic hot water call.
- **Disabled** - Domestic hot water calls will not have priority over a central heating call. The appliance setpoint will be set to the domestic hot water setpoint when only a domestic hot water call is present. The appliance setpoint will be set to the highest setpoint when simultaneous domestic hot water and central heating calls are present. The DHW circulator will be enabled during a domestic hot water call. The heating circulators will be enabled during a central heating call.

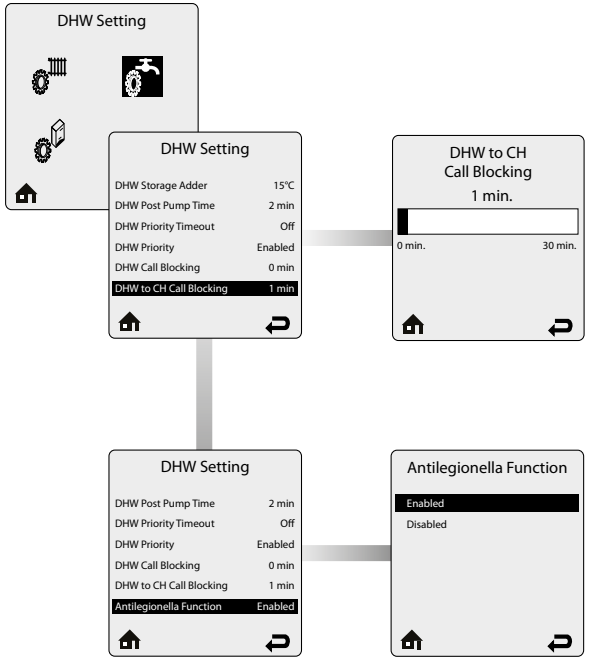
Default: Enabled

Simultaneous domestic hot water and central heating calls will result in the Appliance operating at the highest target temperature when DHW Priority is set to disabled. The use of a mixing device on the lower temperature zones may be required to protect the lower temperature zones from damage.

DHW Call Blocking sets the minimum time between burner firings for domestic hot water calls. At the completion of a burner firing, the DHW Call Blocking time will begin. The burner will not fire again until after the DHW Call Blocking time has elapsed. The DHW Call Blocking time only prevents the burner from firing, the domestic hot water circulator will respond to a domestic hot water call. This blocking time has no affect on central heating calls. The DHW Call Blocking feature prevents short cycling of the burner and extends the life of the burner components.

Touch the **LEFT** or **RIGHT** soft keys to adjust the DHW Call Blocking time then touch the **OK** key to store the setting.

Default: 0 min.



DHW To CH Call Blocking sets the minimum time between a DHW burner firing and a CH burner firing. At the completion of a DHW burner firing, the DHW to CH Call Blocking time will begin. The burner will not fire again for a central heating call until after the DHW To CH Call Blocking time has elapsed. This feature only prevents the burner from firing, the central heating circulators will respond to a central heating call. This blocking time has no affect on domestic hot water calls. The DHW To CH Call Blocking feature prevents the burner from firing when switching from a domestic hot water call to a central heating call. This allows the remaining heat in the heat exchanger to be dissipated and potentially satisfy the central heating call.

Touch the **LEFT** or **RIGHT** soft keys to adjust the DHW To CH Call Blocking time then touch the **OK** key to store the setting.

Default: 1 min.

The **Antilegionella Function** ensures that an Indirect Water Heater is heated at least once per week to prevent the growth of Legionella bacteria.

Touch the **UP** or **DOWN** soft keys to select Enabled or Disabled then touch the **OK** key to store the setting.

- **Enabled**- When the **Thermostat** option is chosen in Demand Type, a domestic hot water call is generated for 15 minutes once per week to heat the Indirect Water Heater.

  When the **Sensor** option is chosen in Demand Type, a domestic hot water call is generated until the DHW storage temperature reaches 60°C once per week. When the Sensor option is chosen in Demand Type, the weekly timer is reset whenever the DHW storage temperature reaches 60°C to prevent unnecessary firings. This function will be active even if DHW Operation has been set to Disabled. The appliance setpoint is at 80°C during the antilegionella cycle.

- **Disabled** - The Appliance will only fire in DHW mode when a domestic hot water call is received.

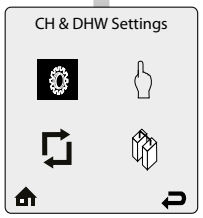
Default: Enabled

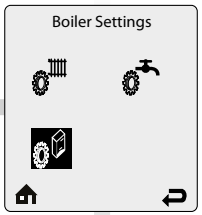
The antilegionella function should only be enabled when an Indirect Water Heater is installed. Enabling the antilegionella function without an Indirect Water Heater will result in the Appliance firing once per week in DHW mode. This could cause a Manual Reset Hard Lockout of the appliance.

The antilegionella function is most effective when the Sensor option is chosen in DHW demand. The use of an Indirect Water Heater Sensor ensures that the domestic hot water is heated to 60°c at least once per week.

CH & DHW Settings → Boiler Settings

"Installer Code"

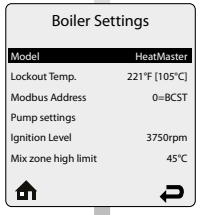




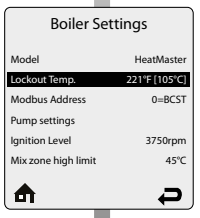
To navigate on the screen, use the **UP**, **DOWN**, **LEFT** and **RIGHT** keys  , then the center (**OK)** key to validate a selection.

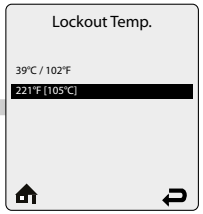
To increase/decrease values, use the **UP** and **DOWN** or **LEFT** and **RIGHT** keys, according to the situation

The **Boiler Settings** menu contains settings related to appliance operation. Each line contains an appliance setting followed by its current value. Seven settings are available.



The **Model** menu indicates the model and possibly type of appliance for which the system is set up.

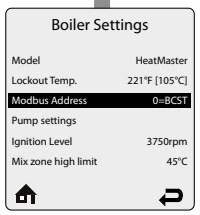


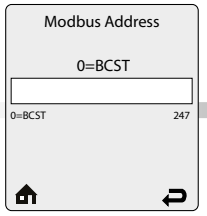


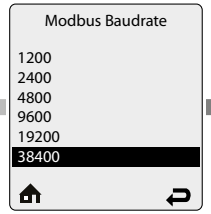
The **Lockout Temp.** setting allows testing of the overheat thermostat function at a reduced temperature. It temporarily decreases the overheat temperature of the appliance to 39°C which allows a safe demonstration of the function.

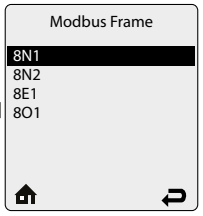
Touch the **UP** or **DOWN** soft keys to scroll through the settings, then **OK** to validate your selection.

Default: 105°C









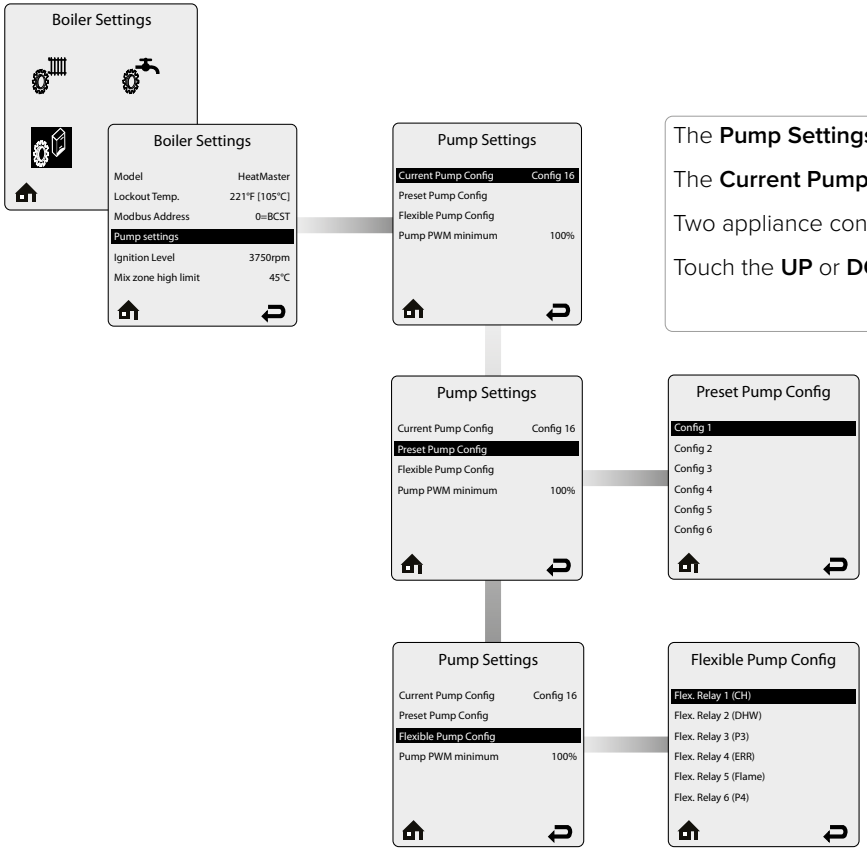
This parameter sets the **Modbus address** of the appliance in a Modbus based communication system.

Touch the **LEFT** or **RIGHT** soft keys to adjust the settings, then **OK** to validate your selection.

Default: 0=BCST

The next two screens allow to select the communication speed, from 1200 to 38400 bauds (Baudrate) and the frame :

8N1	=	8bit frame	no parity	1 stop bit
8N2	=	8bit frame	no parity	2 stop bits
8E1	=	8bit frame	even parity	1 stop bit
8O1	=	8bit frame	odd parity	1 stop bit



The **Pump Settings** menu allows to choose the right pump configuration to the chosen hydraulic configuration.

The **Current Pump Config** indicates which configuration is currently selected for the appliance.

Two appliance configuration modes are available : a preset configuration mode and a flexible configuration mode.

Touch the **UP** or **DOWN** soft keys to scroll through the options, then **OK** to validate your selection.

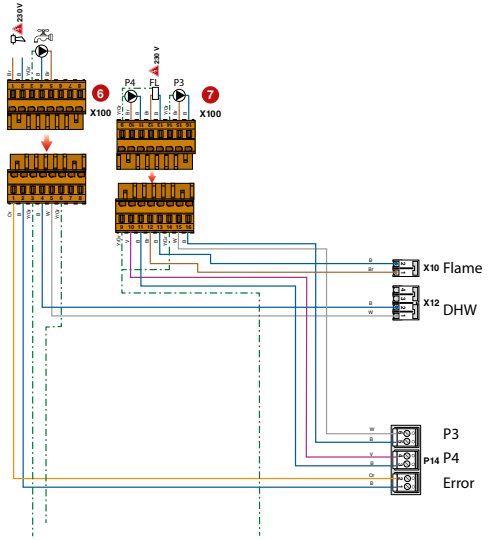
In the **Preset Pump Config.** (preferred selection) you can choose from a number of preset pump configurations. Only the configurations usable with a certain model/type of appliance will appear in the list. The configurations are detailed in **"System Diagrams and Set-up"**. Each configuration is detailed through one or several hydraulic diagrams, a table indicating the electrical connections and a list of the parameters to be defined in ACVMax.

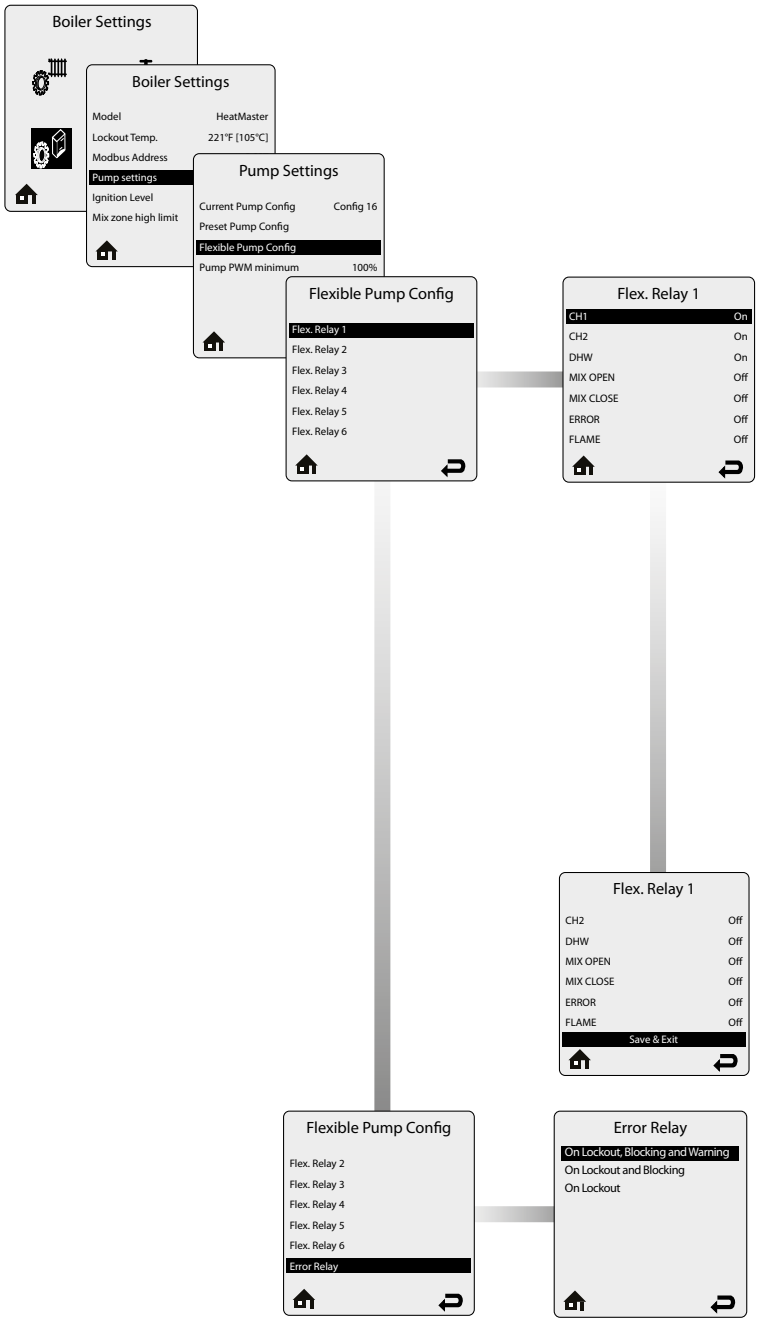
Touch the **UP** or **DOWN** soft keys to scroll through the settings, then **OK** to validate your selection.

The **Flexible Pump Config.** menu allows to customize the connection of the pump(s) installed in the primary circuit in the chosen hydraulic configuration. Only select this option when the preset configurations do not offer you a solution. In this menu you have to choose, per relay, for which heat demand / function it will be activated. The relays are allocated as follows by default (see picture below for physical location on the optional terminal blocks) :

Flex. Relay 1 ➔ CH (int. pump)
Flex. Relay 2 ➔ DHW (pump)
Flex. Relay 3 ➔ P3 (pump)
Flex. Relay 4 ➔ ERR (error)
Flex. Relay 5 ➔ FL (Flame)
Flex. Relay 6 ➔ P4 (pump)

Touch the **UP** or **DOWN** soft keys to scroll through the settings, then **OK** to validate your selection.





Each relay function has several options. Activation will happen when one of the following options has been chosen: **CH1, CH2, DHW, MIX OPEN, MIX CLOSE, ERROR, FLAME.**

More than one action can be chosen for one relay (one relay can become active for CH1 , CH2 and DHW demand when needed.)

Touch the **UP** or **DOWN** soft keys to scroll through the settings, then **OK** to toggle between the On/Off status of each relay. Then go to the next line, until you reach the last line.

- When selecting **CH1**, the relay is activated at CH1 demand.
- When selecting **CH2**, the relay is activated at CH2 demand.
- When selecting **DHW**, the relay is activated at DHW demand.
- When selecting **Mix Open**, the Mixing valve open input is activated. Provided there is a mixing valve in the hydraulic circuit, runtime is assumed to be 120 sec.
- When selecting **Mix Close**, the Mixing valve close input is activated. Provided there is a mixing valve in the hydraulic circuit, runtime is assumed to be 120 sec.
- When selecting **ERROR**, the relay is activated on error.
- When selecting **FLAME**, the relay is activated when appliance is running and a flame signal has been detected.

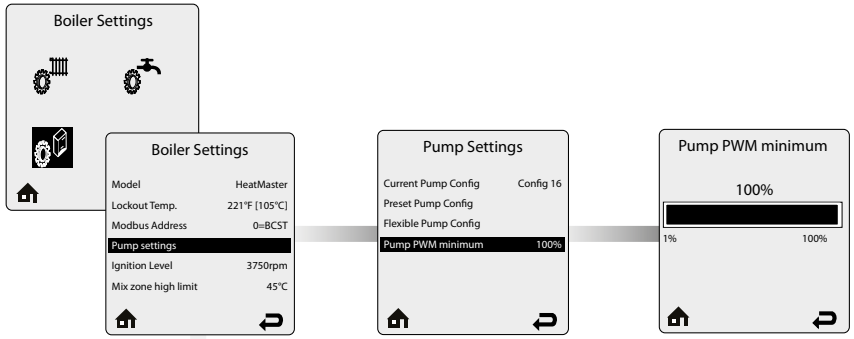
By touching the RIGHT key then OK, you go back to the previous screen, but THE CHANGED VALUES ARE NOT STORED in the memory (Quick escape route).
<u>To save your changes</u>, make sure to scroll down to the last line of the screen and to select Save & Exit. Then touch OK to activate the function.

Touch **OK** to activate **Save & Exit**. This will ensure that the changed data are stored in the appliance.

There are three possible selections to activate the **Error Relay** (alarm) contact:

- **On Lockout, Blocking and Warning**: the error relay is activated at a non-volatile lock-out (e.g. CH Flow NTC defect), at a blocking error (self-resetting errors) (e.g. Gas-pressure switch not closed), or at a warning (e.g. low water pressure warning).
- **On Lock-out and blocking**: the error relay is activated at a non-volatile lock-out or a blocking error.
- **On Lockout**: the error relay is activated at a non-volatile lock-out only.

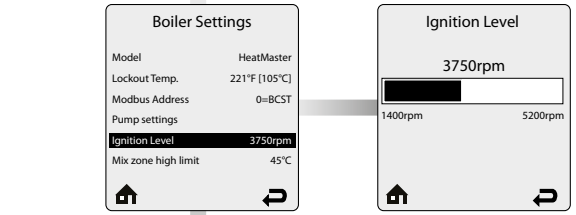
The selection depends on the alarm feedback requirement from the customer.



The **Pump PWM minimum** function allows to adjust the minimum pump setting if the flow in the appliance / system is insufficient at minimum appliance rate.

Touch the **LEFT** or **RIGHT** soft keys to increase/decrease the value, then **OK** to validate your selection.

Default: 100%

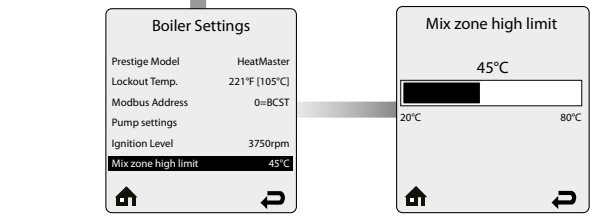


The **Ignition Level** parameter allows to change the fan start speed of the appliance.

Touch the **LEFT** or **RIGHT** soft keys to adjust the settings, then **OK** to validate your selection.

Default: See table below for the fan speed applicable to each appliance/gas combination

	Natural Gas (G20)	Propane (G31)
HeatMaster / WaterMaster Evo		
25 kW	3750 rpm	3750 rpm
35 kW	3750 rpm	3750 rpm
45 kW	3750 rpm	3750 rpm
70 kW	3750 rpm	3750 rpm
85 kW	3750 rpm	3750 rpm
120 kW	4300 rpm	4300 rpm

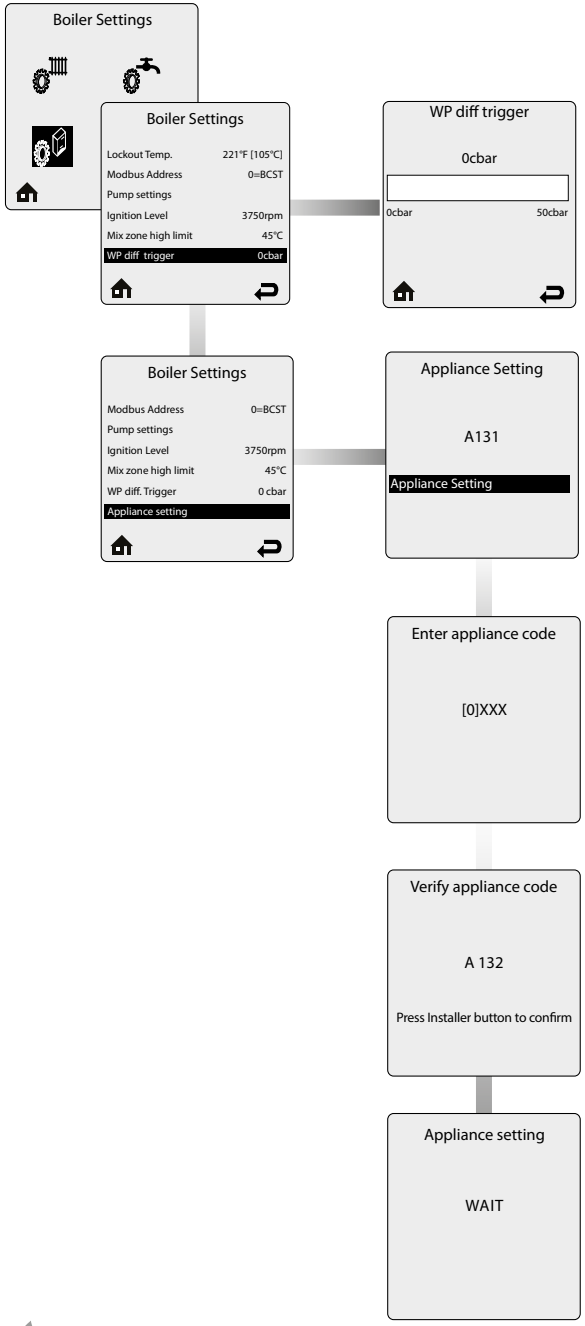


The **Mix zone high limit** setting allows to limit the maximum temperature in the mixed circuit. The function works like an Overheat Cut-off Activation of the limit and will cause the appliance to go in fault state (lockout). This setting allows to change the limit temperature for the mixed circuit. It is based on the CH1 setpoint.

Be aware that for Floor Heating systems this temperature may NOT be adjusted. A higher temperature setting may damage your floor heating circuit

Touch the **LEFT** or **RIGHT** soft keys to decrease/increase the temperature value, then **OK** to validate your selection.

Default: 45°C



The **WP diff trigger** parameter is the required pressure change when the internal pump is starting. This function allows to detect the correct operation of the appliance internal pump.

Touch the **LEFT** or **RIGHT** soft keys to adjust the settings, then on **OK** to validate your selection.

Default: 0 cbar

The **Appliance Setting** allows to change the appliance type and model using a specific code. The appliance type and model are factory preset for the appliance you have received. This means that parameters are already set for the appliance, and the appliance type **MAY NOT** be changed, unless a gas conversion is made to the appliance or the ACVMax mainboard is replaced.

If the appliance type needs to be changed, please refer to **"Appliance codes"** to know which code to use.

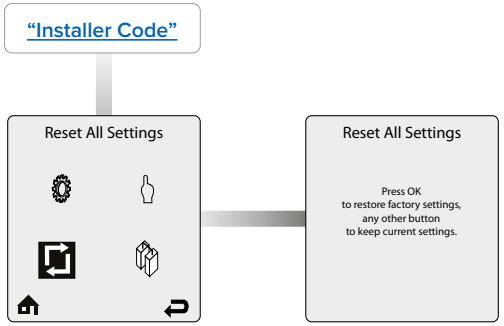
Touch the **UP** or **DOWN** soft keys to decrease/increase the value (from 0 to 9, then A to Z), then on the **LEFT** or **RIGHT** key to change position.

Once the code has been changed, please confirm by touching the **OK** key, then the combined keys of the installer function

or any of the **UP, DOWN, LEFT** or **RIGHT** soft keys to go back to the previous screen and change the code.

After touching the combined keys of the Installer function, the software will process the change, then return to the Main screen.

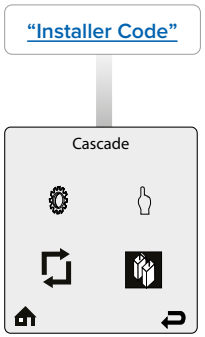
Reset all settings ( )



Reset All Settings allows the installer to reset all parameters back to the default values (Refer to "Factory settings and reset values" for the default settings).

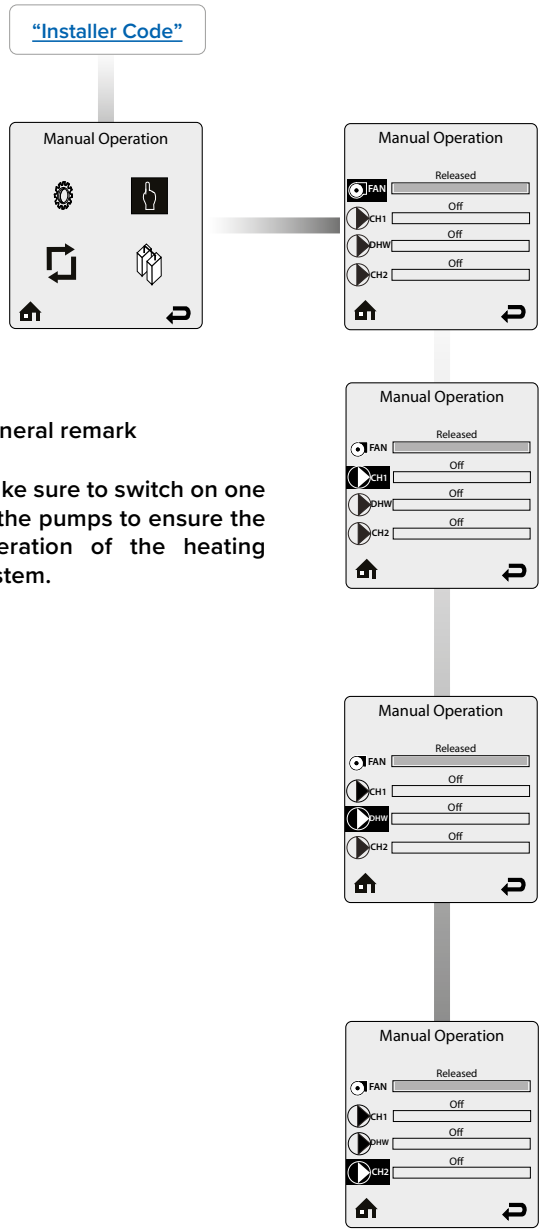
Follow the on-screen instructions to reset all settings back to the factory default values.

Cascade Menu ( )



The Cascade feature is not applicable to Evo units and is not described in this manual. Cascades of Evo appliances must be controlled by an external controller (e.g. Bus-connected).

Manual Operation ( )



General remark

Make sure to switch on one of the pumps to ensure the operation of the heating system.

FAN - Touch the **OK** key while the FAN icon is highlighted to manually fire the burner and power the CH (1) circulator.
Touch the **LEFT** and **RIGHT** soft keys to adjust the firing rate from 0% (Low Fire) to 100% (High Fire).
Hold down the **LEFT** or **RIGHT** soft keys to rapidly increase or decrease the firing rate.
Touch the **OK** key again while the FAN icon is highlighted to shut down the burner when finished.

CH1 - Touch the **OK** key while the CH1 icon is highlighted to manually power the CH 1 circulator(s) as in CH demand.

Touch the **OK** key again while the CH1 icon is highlighted to shut down the CH 1 circulator(s).

The auxiliary appliance circulator is also powered when the CH 1 circulator is manually enabled.

DHW - Touch the **OK** key while the DHW icon is highlighted to manually power the DHW circulator(s) as in DHW demand.

Touch the **OK** key again while the DHW icon is highlighted to shut down the DHW circulator(s).

The auxiliary appliance circulator is also powered when the DHW circulator is manually enabled.

CH2 - Touch the **OK** key while the CH2 icon is highlighted to manually power the CH2 circulator(s) as in CH demand.

Touch the **OK** key again while the CH2 icon is highlighted to shut down the CH2 circulator(s).

LIST OF STATUS LINE MESSAGES

Status Line Message	Description
Standby	Indicates that the appliance is ready to respond when a demand is received.
CH Demand	A central heating call has been received.
DHW Demand	A domestic hot water call has been received.
CH / DHW Demand	Central heating and domestic hot water calls are being received simultaneously. Both calls are being satisfied simultaneously because domestic hot water priority has been disabled.
DHW Priority	Central heating and domestic hot water calls are being received simultaneously. Domestic hot water call is being satisfied first because it has priority over central heating calls.
Priority Timeout	Central heating and domestic hot water calls are being received simultaneously. The domestic hot water priority time limit has been exceeded. Priority will now switch back and forth between central heating and domestic hot water calls until one call is satisfied.
External Demand	An external modulation call has been received.
Slave Operation	The appliance is a slave in a cascade system (Not applicable for Evo appliances).
Manual Operation	The burner or circulators have manually been enabled in the Installer Menu.
CH Burner Delay	The burner will not fire until the call blocking time has elapsed.
DHW Burner Delay	The burner will not fire until the call blocking time has elapsed.
CH Setpoint Reached	The burner is not fired because the supply/system water temperature exceeds the setpoint. The central heating circulator continues to operate and the burner will fire again once the supply/system water temperature drops below the setpoint.
DHW Setpoint Reached	The burner is not fired because the supply/system water temperature exceeds the setpoint. The domestic circulator continues to operate and the burner will fire again once the supply/system water temperature drops below the setpoint.
CH Post Pump	The central heating circulator is running to remove heat from the appliance at the completion of a call.
DHW Post Pump	The domestic hot water circulator is running to remove heat from the appliance at the completion of a call.
Freeze Protection	Freeze protection will end once the supply/system water temperature is raised to 16°C.
Boiler Protection	The burner firing rate is being reduced because of an excessive difference between the appliance supply and return temperatures. The firing rate will begin increasing once the temperature difference is less than 25°C.
Lockout Description	The lockout which currently has the appliance shut down is displayed.

APPLIANCE CODES

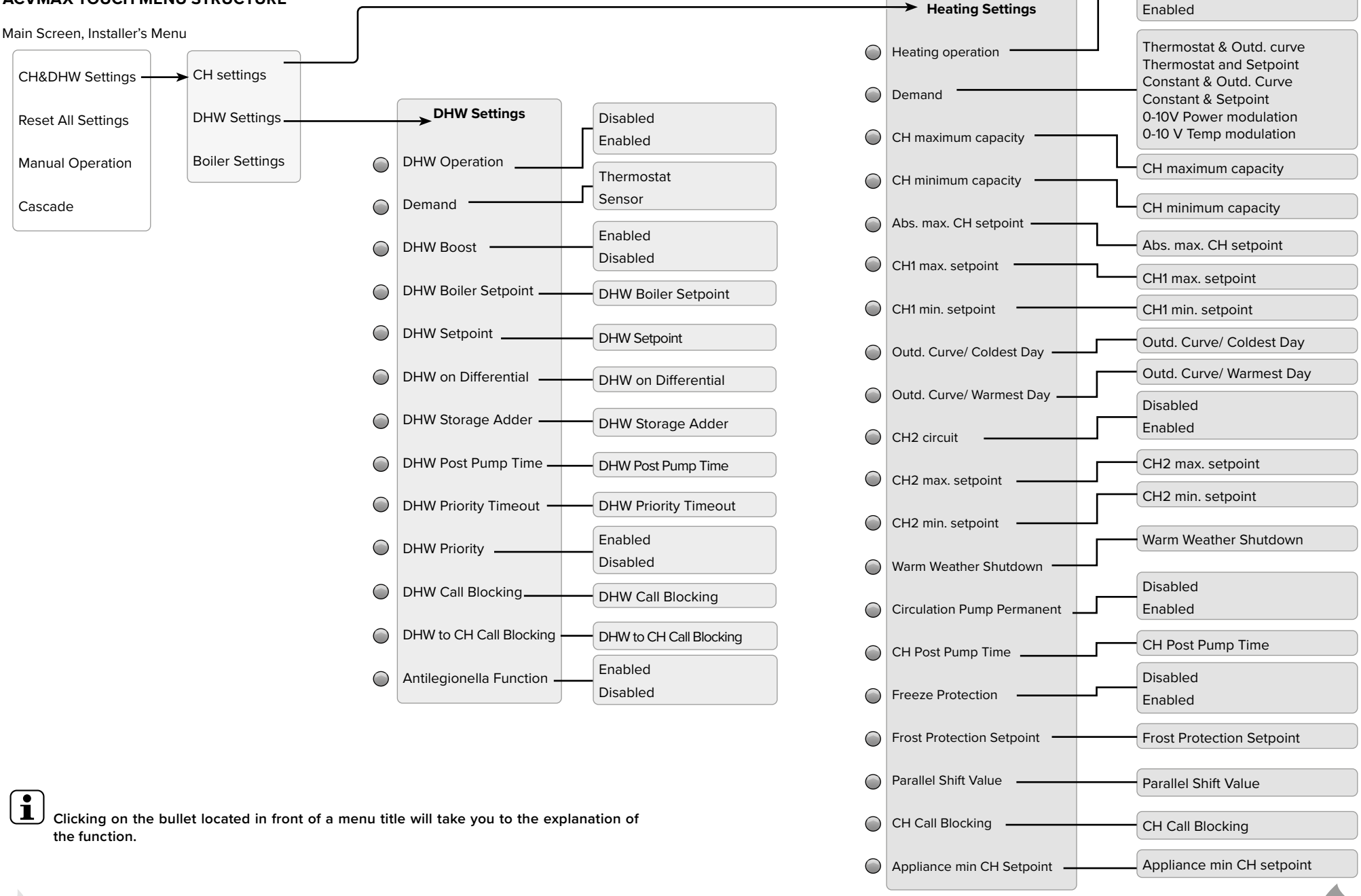
Appliance type	Model	Natural gas	Propane
HeatMaster C Evo	25	A411	A412
HeatMaster TC Evo	25	A421	A422
	35	A431	A432
	45	A441	A442
	70	A451	A452
	85	A461	A462
	120	A471	A472
WaterMaster Evo	25	A621	A622
	25X	A821	A822
	35	A631	A632
	45	A641	A642
	45X	A841	A842
	70	A651	A652
	70X	A851	A852
	85	A661	A662
	120	A671	A672

FACTORY SETTINGS AND RESET VALUES

CH Parameters	Factory Settings		EZ Setup reset	Installer reset
	HeatMaster	WaterMaster		
Heating Operation	Enabled	Disabled		Enabled
Demand	Thermostat & setpoint	—	Thermostat & setpoint	Thermostat & setpoint
CH Maximum Capacity	100%	—		
CH Minimum Capacity	0%	—		
Absolute Max CH Setpoint	87°C	—		85°C
CH1 Max Setpoint	82°C	—	82°C	82°C
CH1 Min Setpoint	27°C	—	27°C	27°C
Outdoor Curve Coldest Day	-12°C	—		-12°C
Outdoor Curve Warmest Day	18°C	—		18°C
CH2 Circuit	Enabled	—		Enabled
CH2 Max Setpoint	60°C	—	60°C	60°C
CH2 Min Setpoint	27°C	—	27°C	27°C
Warm Weather Shutdown	Off	—	Off	Off
Circulation pump permanent	Disabled	—		Disabled
CH Post Pump time	5 min	—		5 min
Freeze Protection	Enabled	—		Enabled
Frost Protection Setpoint	-30°C	—		-30°C
Parallel Shift Value	0°C	—		0°C
CH Call Blocking	2 min	—		2 min
Appliance min CH setpoint	27°C	—		
DHW Parameters				
DHW Operation	Enabled	Enabled		Enabled
Demand	Sensor	Sensor	Sensor	Sensor
DHW Boost	Disabled	Disabled		
DHW Boiler Setpoint	75°C	75°C		75°C
DHW Setpoint	60°C	60°C	60°C	60°C
DHW on Differential	3°C	3°C		3°C
DHW Storage Adder	15°C	15°C		15°C
DHW Post Pump Time	2 min	2 min		2 min
DHW priority Timeout	Off	Off	Off	Off
DHW priority	Enabled	Enabled		Enabled
DHW Call Blocking	0 min	0 min		0 min
DHW to CH Call Blocking	1 min	1 min		1 min
Antilegionella Function	Enabled	Enabled		Enabled

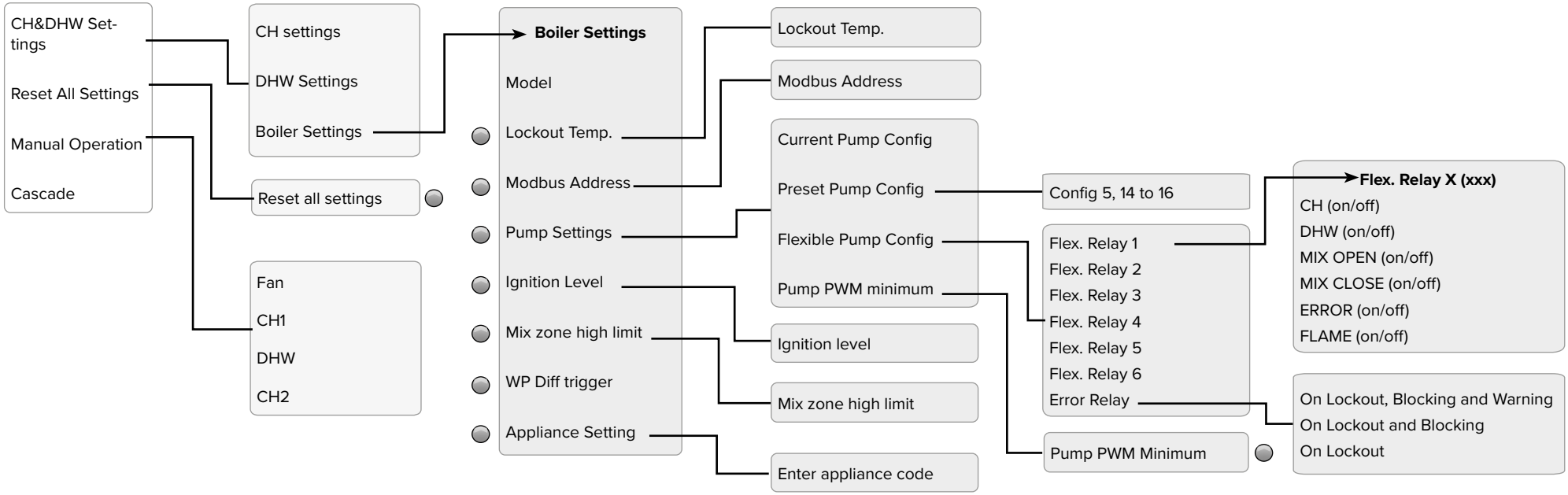
ACVMAX TOUCH MENU STRUCTURE

Main Screen, Installer's Menu



Clicking on the bullet located in front of a menu title will take you to the explanation of the function.

Main Screen, Installer's Menu



The Cascade feature is not applicable to EVO units and is not described in this manual.

ELECTRICAL CHARACTERISTICS - 25 TO 45 KW EVO APPLIANCES

To WD

HeatMaster (T)C Evo

Main Characteristics			25	35	45
Rated voltage		V~	230	230	230
Rated frequency		Hz	50	50	50
Electrical consumption	Max.	W	95	111	126
	Min.	W	19	30	40
Electrical consumption at 30% load		W	24	34	45
Electrical consumption in standby		W	3	3	3
Rated current (Fuse)		A	16	16	16
Class			IP 20	IP 20	IP 20

WaterMaster Evo

Main Characteristics			25(X)	35	45(X)
Rated voltage		V~	230	230	230
Rated frequency		Hz	50	50	50
Electrical consumption	Max.	W	95	110	126
	Min.	W	19	30	40
Electrical consumption at 30% load		W	24	34	45
Electrical consumption in standby		W	3	3	3
Rated current (Fuse)		A	16	16	16
Class			IP 20	IP 20	IP 20

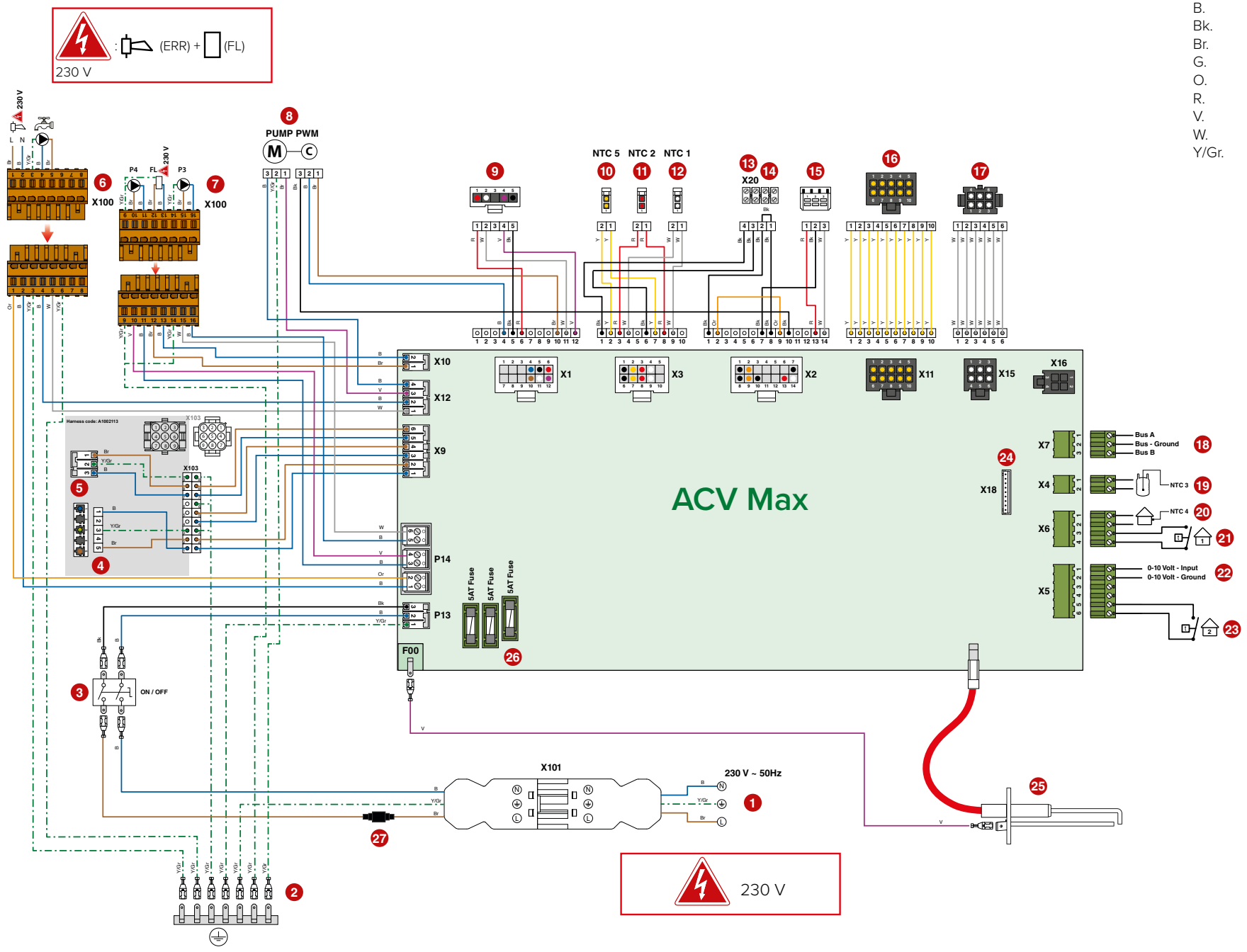
Key

1. 230 V power supply
2. Ground
3. ON/OFF master switch
4. Gas valve rectified
5. Burner power supply
6. Terminal block for optional items
   - : Alarm (ERR) **230 VAC OUTPUT !**
   - : DHW circuit circulator pump (DHW)
7. Terminal block for optional items:
   - : Pump (P3 and P4 terminals)
   - : Flame terminal (versatile connection according to configuration) **230 VAC OUTPUT !**
8. Modulating pump PWM
9. Burner PWM plug
10. NTC5 flue gas temperature sensor
11. NTC2 return sensor
12. NTC1 supply sensor
13. NTC - Low temperature circuit
14. High limit switch
15. Low water pressure sensor
16. PCB (Display)
17. ACVMax programmation plug
18. A & B Modbus (option)
19. NTC3 DHW sensor
20. NTC4 outdoor temperature sensor (option)
21. Room thermostat 1 (option)
22. 0-10 Volt (option)
23. Room thermostat 2 (option)
24. Connection for interface control unit
25. Ignition and ionization cable
26. 5AT slow-blow fuse (3x) for internal and optional circuits*
27. 10A fuse, 250V, Dim: 5x20 mm

* 5AT slow-blow fuse (2x) for internal circuits and connection of CH, DHW and Flame output + 5AT slow-blow fuse (1x) for connection of Alarm, P3 and P4 (connector P14)

2 spare 5AT slow-blow fuses are located on the back side of the electrical box, for fuse replacement, if required.

B.	Blue
Bk.	Black
Br.	Brown
G.	Grey
O.	Orange
R.	Red
V.	Violet
W.	White
Y/Gr.	Yellow/Green



ELECTRICAL CHARACTERISTICS - 70 & 85 kW EVO APPLIANCES

To WD

HeatMaster TC Evo

Main Characteristics			70	85
Rated voltage		V~	230	230
Rated frequency		Hz	50	50
Electrical consumption	Max.	W	210	266
	Min.	W	50	46
Electrical consumption at 30% load		W	55	51
Electrical consumption in standby		W	3	3
Rated current (Fuse)		A	16	16
Class			IP 20	IP 20

WaterMaster Evo

Main Characteristics			70 (X)	85
Rated voltage		V~	230	230
Rated frequency		Hz	50	50
Electrical consumption	Max.	W	280	270
	Min.	W	50	46
Electrical consumption at 30% load		W	55	51
Electrical consumption in standby		W	3	3
Rated current (Fuse)		A	16	16
Class			IP 20	IP 20

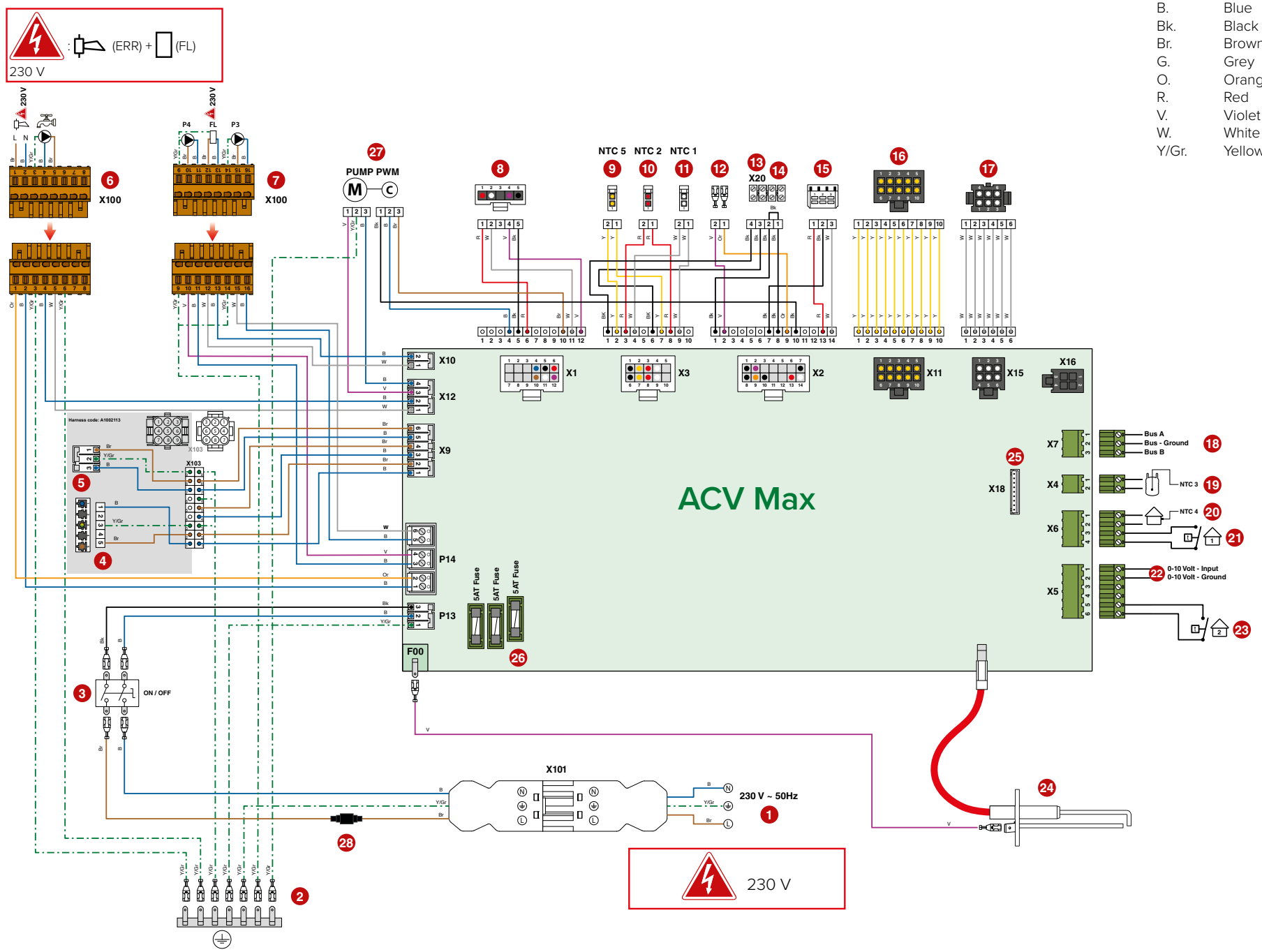
Key

1. 230 V power supply
2. Ground
3. ON/OFF master switch
4. Gas valve
5. Burner power supply
6. Terminal block for optional items
   - : Alarm (ERR terminal) **230 VAC OUTPUT !**
   - : DHW circuit circulator pump (DHW terminal)
7. Terminal block for optional items:
   - : Pump (P3 and P4 terminals)
   - : Flame terminal (versatile connection according to configuration) **230 VAC OUTPUT !**
8. Burner PWM plug
9. NTC5 flue gas temperature sensor
10. NTC2 return sensor
11. NTC1 supply sensor
12. Gas pressure switch
13. NTC - Low temperature circuit
14. High limit switch
15. Low water pressure sensor
16. PCB (Display)
17. ACVMax programmation plug
18. A & B Modbus (option)
19. NTC3 DHW sensor
20. NTC4 outdoor temperature sensor (option)
21. Room thermostat 1 (option)
22. 0-10 Volt (option)
23. Room thermostat 2 (option)
24. Ignition and ionization cable
25. Connection for Interface Control Unit (option)
26. 5AT slow-blow fuse (3x) for internal and optional circuits*
27. Modulating pump PWM
28. 10A fuse, 250V, Dim: 5x20 mm

* 5AT slow-blow fuse (2x) for internal circuits and connection of CH, DHW and Flame output + 5AT slow-blow fuse (1x) for connection of Alarm, P3 and P4 (connector P14).

2 spare 5AT slow-blow fuses are located on the back side of the electrical box, for fuse replacement, if required.

B.	Blue
Bk.	Black
Br.	Brown
G.	Grey
O.	Orange
R.	Red
V.	Violet
W.	White
Y/Gr.	Yellow/Green



ELECTRICAL CHARACTERISTICS - 120 kW EVO APPLIANCES

To WD

			HeatMaster TC Evo
Main Characteristics			120
Rated voltage		V~	230
Rated frequency		Hz	50
Electrical consumption	Max.	W	327
	Min.	W	70
Electrical consumption at 30% load		W	74
Electrical consumption in standby		W	4
Rated current (Fuse)		A	16
Class			IP 20

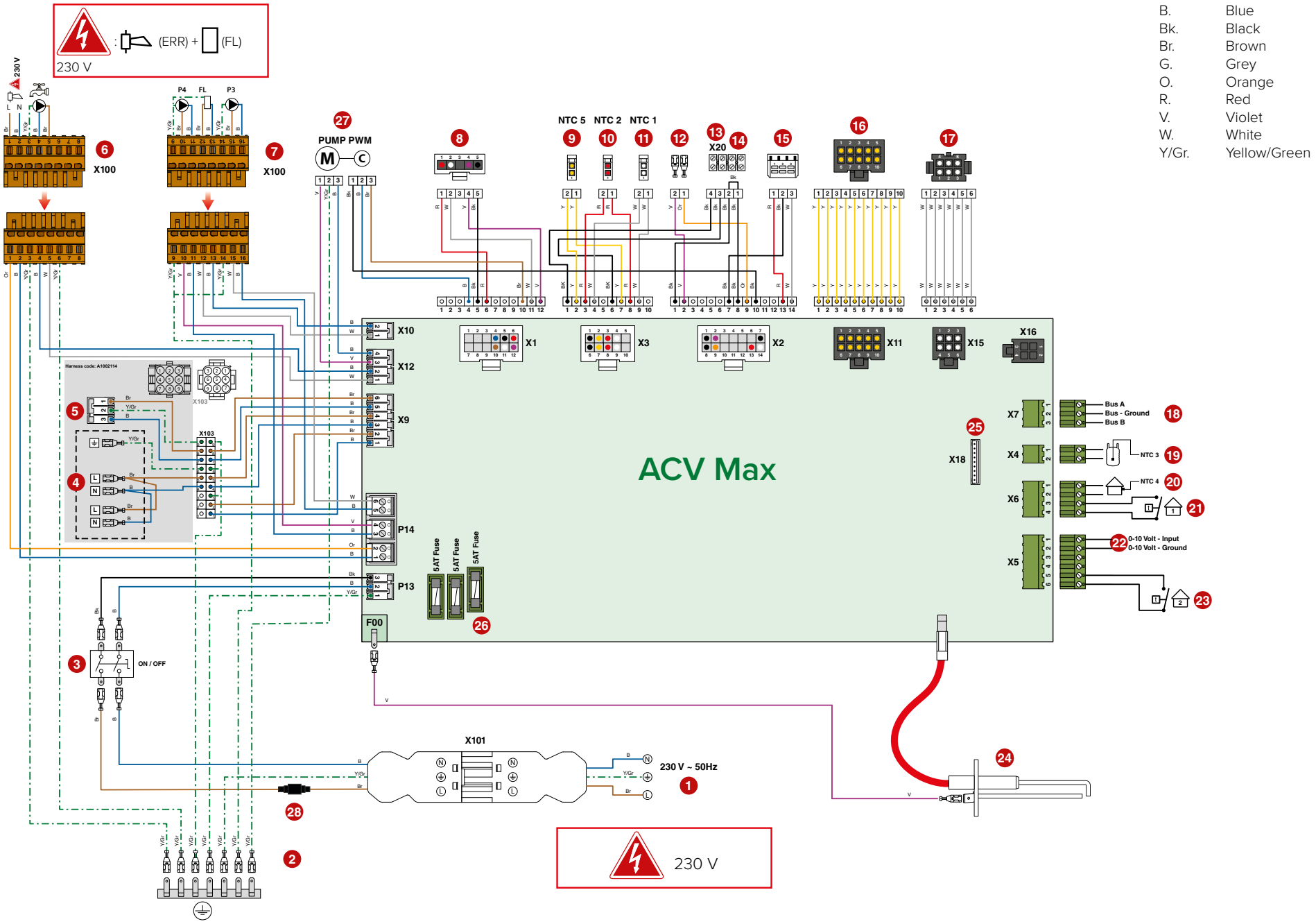
			WaterMaster Evo
Main Characteristics			120
Rated voltage		V~	230
Rated frequency		Hz	50
Electrical consumption	Max.	W	380
	Min.	W	70
Electrical consumption at 30% load		W	74
Electrical consumption in standby		W	4
Rated current (Fuse)		A	16
Class			IP 20

Key

1. 230 V power supply
2. Ground
3. ON/OFF master switch
4. Gas valve
5. Burner power supply
6. Terminal block for optional items
   - : Alarm (ERR terminal) **230 VAC OUTPUT !**
   - : DHW circuit circulator pump (DHW terminal)
7. Terminal block for optional items:
   - : Pump (P3 and P4 terminals)
   - : Flame terminal (versatile connection according to configuration) **230 VAC OUTPUT !**
8. Burner PWM plug
9. NTC5 flue gas temperature sensor
10. NTC2 return sensor
11. NTC1 supply sensor
12. Gas pressure switch
13. NTC - Low temperature circuit
14. High limit switch
15. Low water pressure sensor
16. PCB (Display)
17. ACVMax programmation plug
18. A & B Modbus (option)
19. NTC3 DHW sensor
20. NTC4 outdoor temperature sensor (option)
21. Room thermostat 1 (option)
22. 0-10 Volt (option)
23. Room thermostat 2 (option)
24. Ignition and ionization cable
25. Connection for Interface Control Unit (option)
26. 5AT slow-blow fuse (3x) for internal and optional circuits*
27. Modulating pump PWM
28. 10A fuse, 250V, Dim: 5x20 mm

* 5AT slow-blow fuse (2x) for internal circuits and connection of CH, DHW and Flame output + 5AT slow-blow fuse (1x) for connection of Alarm, P3 and P4 (connector P14).

2 spare 5AT slow-blow fuses are located on the back side of the electrical box, for fuse replacement, if required.



B.	Blue
Bk.	Black
Br.	Brown
G.	Grey
O.	Orange
R.	Red
V.	Violet
W.	White
Y/Gr.	Yellow/Green

RESISTANCE OF THE TEMPERATURE SENSORS

T° [°C]	R Ω	T° [°C]	R Ω	T° [°C]	R Ω
- 20	98200	25	12000	70	2340
- 15	75900	30	9800	75	1940
- 10	58800	35	8050	80	1710
- 5	45900	40	6650	85	1470
0	36100	45	5520	90	1260
5	28600	50	4610	95	1100
10	22800	55	3860	100	950
15	18300	60	3250		
20	14700	65	2750		

PUMPS (HEATMASTER 25C & 25-35-45-70-85-120TC EVO)

The pump configurator system is based on the demands of the hydraulic system that you design. In the table below, you will find the 4 configurations that have been preset in the ACVMax controller for the HeatMaster 25C Evo and HeatMaster 25-35-45-70-85-120 TC Evo, based on different hydraulic schemes that can be used.

The table shows which relays are activated under which condition.

The names in the table refer to the demand done by CH1 by CH2 or DHW respectively, the demand to open/close the Motor of a mixing valve or reflect the activation of the alarm (error) or Flame output relay.

In the following pages, you will find diagrams for HeatMaster C and TC, with a configuration number that corresponds to the setting in the display.

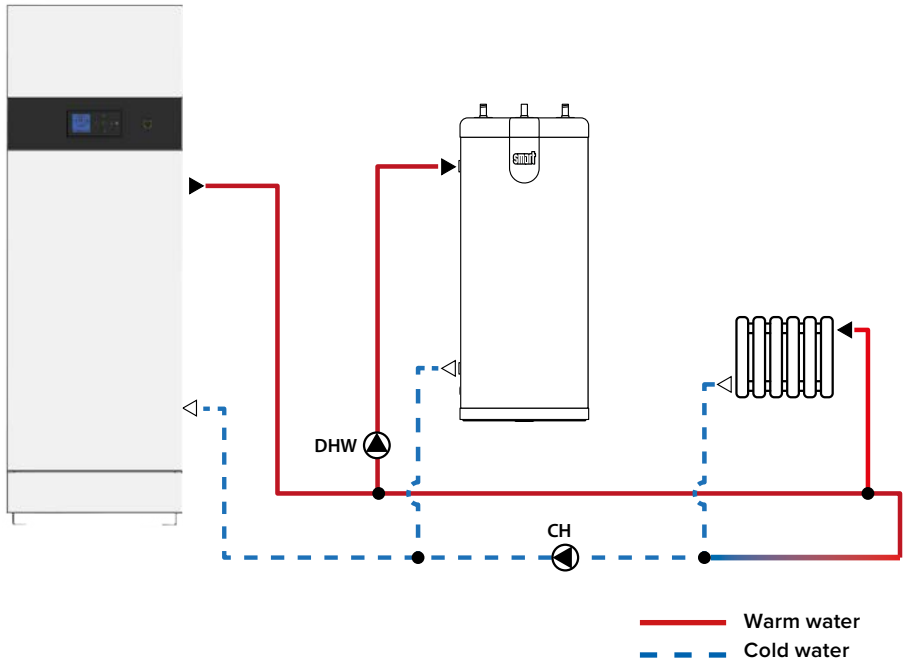
Con-fig. No	Flex 4 ERR	Flex 6 P4	Flex 3 P3	Flex 2 DHW	Flex 1 CH	Flex 5 FL
5	Error/Flame	CH2	CH1	DHW	CH1/CH2/ DHW	Flame
14	Error/Flame	Mix open	CH1/CH2	CH1	CH1/CH2/ DHW	Mix close
15	Mix open	CH2	CH1/CH2	CH1	CH1/CH2/ DHW	Mix close
16	Error/Flame	CH2	CH1/CH2	CH1	CH1/CH2/ DHW	Flame

PRESET CONFIGURATION 5

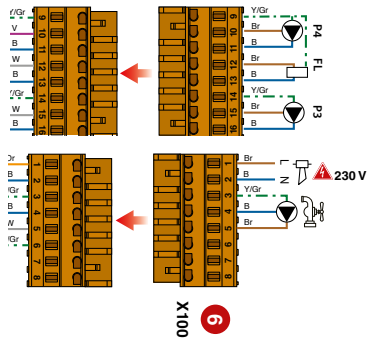
Pump Configuration 5

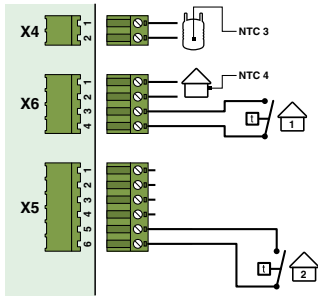
Flex 4 ERR	Flex 6 P4	Flex 3 P3	Flex 2 DHW	Flex 1 CH	Flex 5 FL
Error/Flame	CH2	CH1	DHW	CH1/CH2/ DHW	Flame

High temperature heating circuit, possibly with an optional outdoor temperature sensor and room thermostat, and an additional Domestic Hot Water tank.



Installing a three way valve in the heating supply will allow to control the temperature of the water supply to the heating system. Please contact your ACV representative for more information.

Electrical board terminals	Terminal /pins	Used to connect
	..... Flex 6 (9/⏚ - 10/L - 11/N)	--
	..... Flex 5 (12/L - 13/N)	Flame sensor
	..... Flex 3 (14/⏚ - 15/L - 16/N)	CH Pump
	..... Flex 4 (1/L - 2/N)	Error (Alarm)
	..... Flex 2 (3/⏚ - 4/N - 5/L)	DHW pump



.....DHW sensor (NTC3)

.....Optional outdoor temp. sensor (NTC4)

.....Optional room thermostat 1

For outdoor sensor characteristics, refer to "Resistance of the temperature sensors" on page 36

.....Opt. Aquastat (control of circulator in DHW circuit)

ACVMax Touch settings using the Installer menu (Installer code needed, see "Installer Code"):

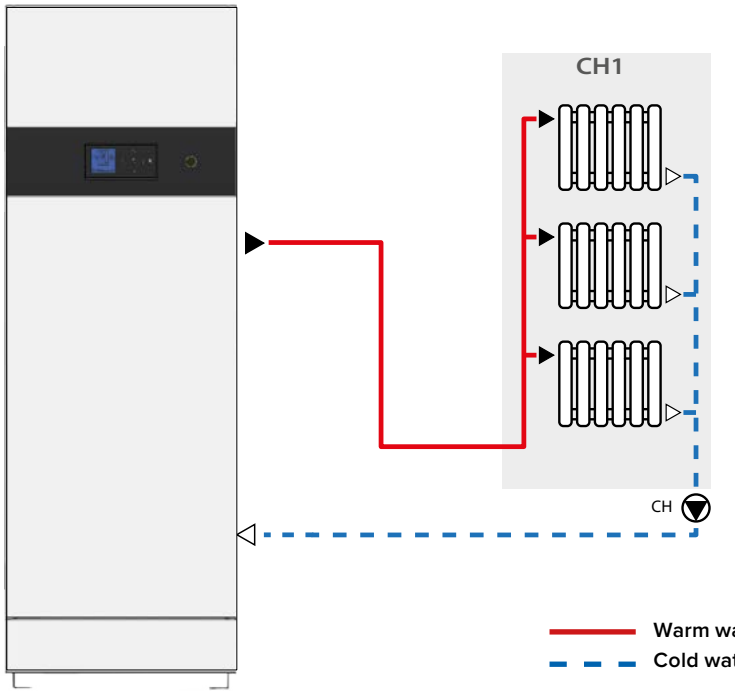
Main Screen	Sub-screen	item	Sub-item	Required selection
		Model		HeatMaster (Pre-set)
		Pump Settings	Preset Pump Config	Config. 5
		Heating Operation		Enabled
		CH2 Circuit		Disabled
		Demand		Thermostat and Setpoint
		DHW Operation		Enabled
		Demand		Sensor

PRESET CONFIGURATION 16

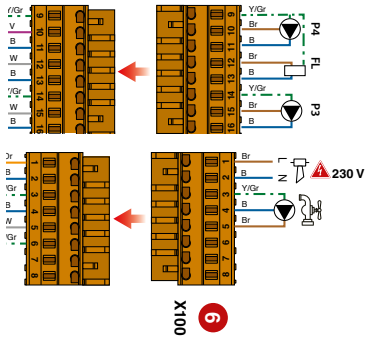
Pump Configuration 16

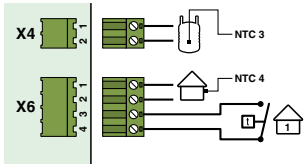
Con-fig. No	Flex 4 ERR	Flex 6 P4	Flex 3 P3	Flex 2 DHW	Flex 1 CH	Flex 5 FL
16	Error/Flame	CH2	CH1/CH2	CH1	CH1/CH2/ DHW	Flame

High temperature heating circuit, possibly with optional outdoor temperature sensor and room thermostat.



Installing a three way valve in the heating supply will allow to control the temperature of the water supply to the heating system. Please contact your ACV representative for more information.

Electrical board terminals	Terminal /pins	to connect
	..... Flex 6 (9/⏚ - 10/L - 11/N)	--
	..... Flex 5 (12/L - 13/N)	Flame sensor
	..... Flex 3 (14/⏚ - 15/L - 16/N)	--
	..... Flex 4 (1/L - 2/N)	Error (Alarm)
	..... Flex 2 (3/⏚ - 4/N - 5/L)	-



.....DHW sensor (NTC3)

.....Optional outdoor temp. sensor (NTC4)

.....Optional room thermostat 1

For outdoor sensor characteristics, refer to "Resistance of the temperature sensors" on page 36

ACVMax Touch settings using the Installer menu (Installer code needed, see "Installer Code"):

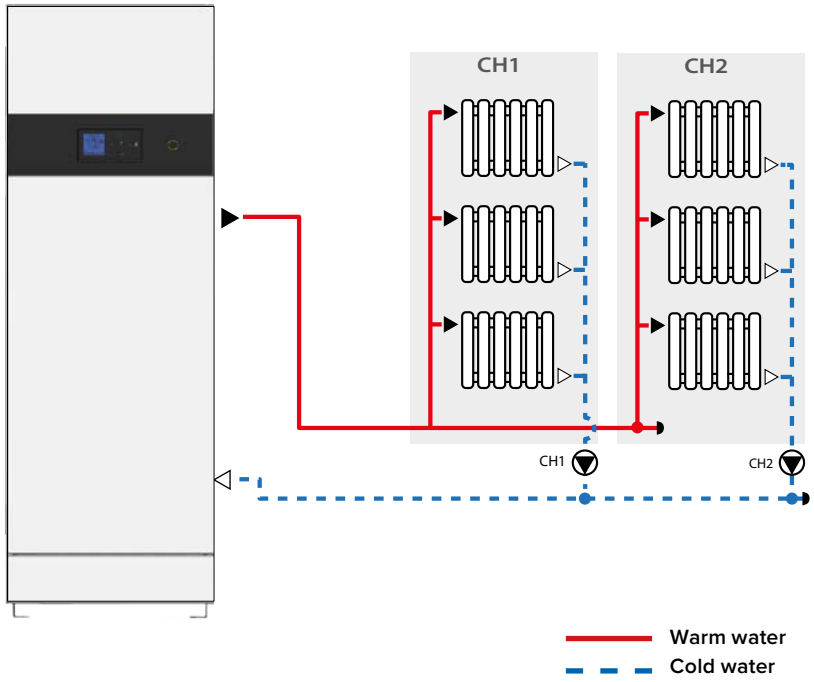
Main Screen	Sub-screen	item	Sub-item	Required selection
		Model		HeatMaster (Pre-Set)
		Pump Settings	Preset Pump Config	Config 16
		Heating Operation		Enabled
		Demand		Thermostat and setpoint
		CH2 Circuit		Disabled
		DHW Operation		Enabled
		Demand		Sensor

PRESET CONFIGURATION 16

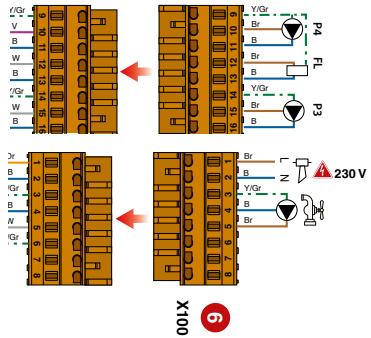
Pump Configuration 16

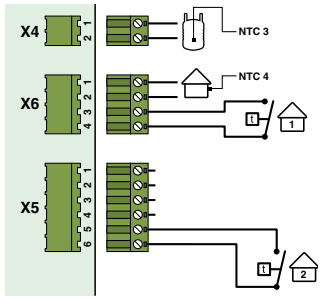
Con-fig. No	Flex 4 ERR	Flex 6 P4	Flex 3 P3	Flex 2 DHW	Flex 1 CH	Flex 5 FL
16	Error/Flame	CH2	CH1/CH2	CH1	CH1/CH2/ DHW	Flame

High temperature heating circuits, possibly with optional outdoor temperature sensor and room thermostats.



Installing a three way valve in the heating supply will allow to control the temperature of the water supply to the heating system. Please contact your ACV representative for more information.

Electrical board terminals	Terminal /pins	to connect
	..... Flex 6 (9/⏚ - 10/L - 11/N)	CH2 Pump
	..... Flex 5 (12/L - 13/N)	Flame sensor
	..... Flex 3 (14/⏚ - 15/L - 16/N)	-
	..... Flex 4 (1/L - 2/N)	Error (Alarm)
	..... Flex 2 (3/⏚ - 4/N - 5/L)	CH1 pump



.....DHW sensor (NTC3)

.....Optional outdoor temp. sensor (NTC4)

.....Optional room thermostat 1 (CH1)

For outdoor sensor characteristics, refer to "Resistance of the temperature sensors" on page 36

.....Optional room thermostat 2 (CH2)

ACVMax interface settings using the Installer menu (Installer code needed, see "Installer Code"):

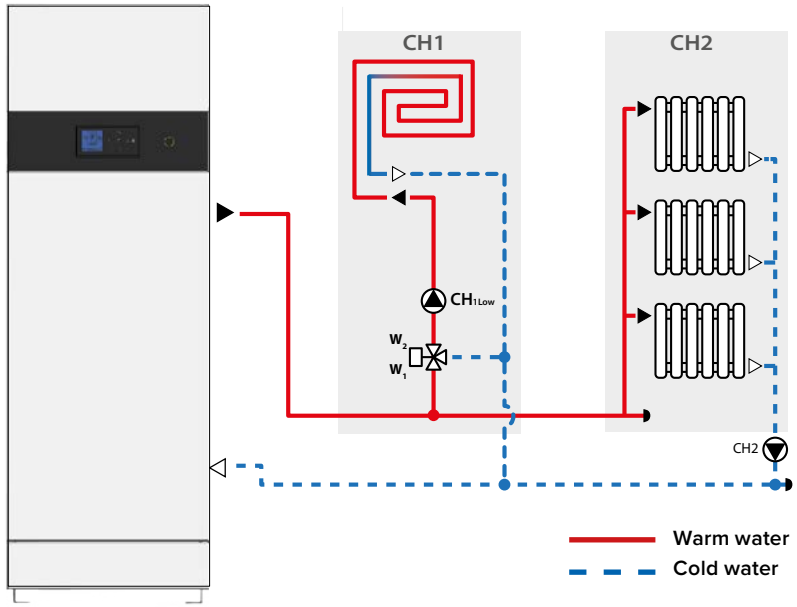
Main Screen	Sub-screen	item	Sub-item	Required selection
		Model		HeatMaster (Pre-Set)
		Pump Settings	Preset Pump Config	Config16
		Heating Operation		Enabled
		Demand		Thermostat and setpoint
		CH2 Circuit		Enabled
		DHW Operation		Enabled
		Demand		Sensor

PRESET CONFIGURATION 14

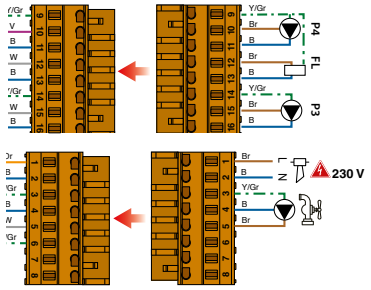
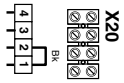
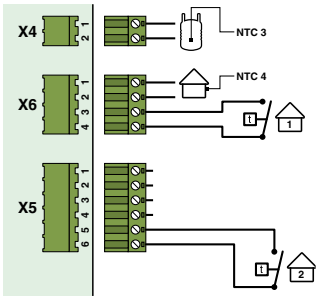
Pump Configuration 14

Con-fig. No	Flex 4 ERR	Flex 6 P4	Flex 3 P3	Flex 2 DHW	Flex 1 CH	Flex 5 FL
14	Error/Flame	Mix open	CH1/CH2	CH1	CH1/CH2/ DHW	Mix close

High and Low temperature heating circuits, possibly with optional outdoor temperature sensor and room thermostats.



- Make sure that CH2 (high temp. circuit) temperature is set at minimum 60°C to prevent Legionella bacteria from developing in the DHW tank.
- The room thermostat 1 always controls the low temperature system.
- Installing a three way valve in the heating supply will allow to control the temperature of the water supply to the heating system. Please contact your ACV representative for more information.

Electrical board terminals	Terminal /pins	Used to connect
	..... Flex 6 (9/⏚ - 10/L - 11/N)	3WYV Open
	..... Flex 5 (12/L - 13/N)	3WYV Closed
	..... Flex 3 (14/⏚ - 15/L - 16/N)	CH2 pump
	..... Flex 4 (1/L - 2/N)	Error (Alarm)
	..... Flex 2 (3/⏚ - 4/N - 5/L)	$CH1_{LOW}$ pump
	..... Low temperature circuit NTC	
	.....DHW sensor (NTC3)	
	.....Optional outdoor temp. sensor (NTC4)	
	.....Optional room thermostat 1 ($CH1_{LOW}$)	
	For outdoor sensor characteristics, refer to "Resistance of the temperature sensors" on page 36	
	.....Optional room thermostat 2 (CH2)	

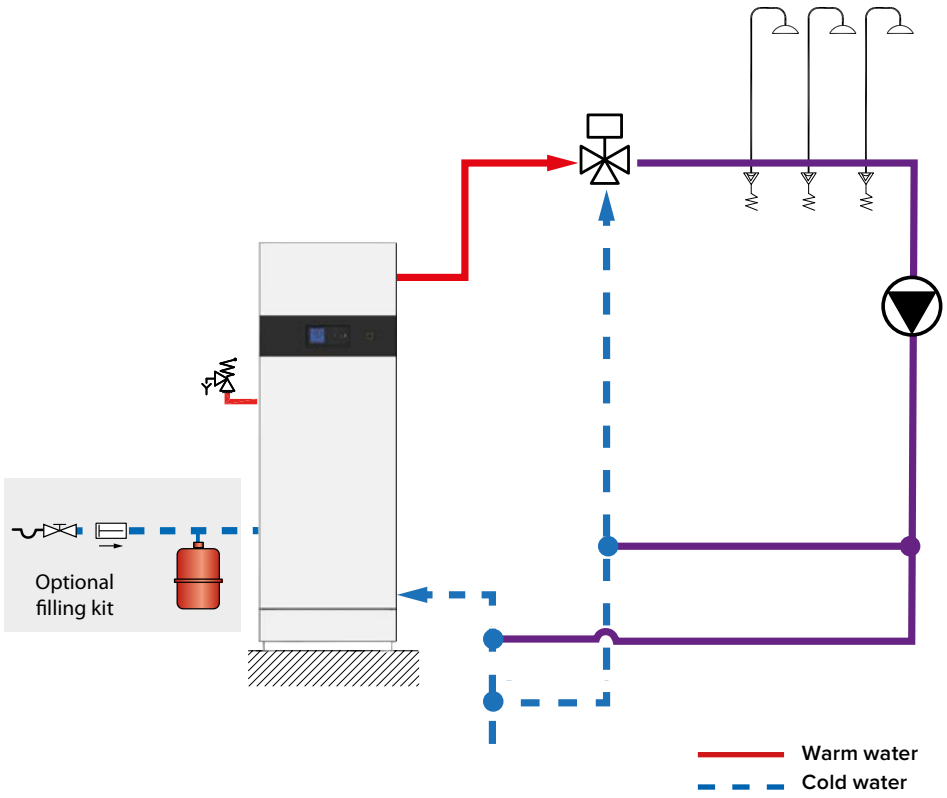
ACVMax interface settings using the Installer menu (Installer code needed, see "Installer Code"):

Main Screen	Sub-screen	item	Sub-item	Required selection
		Model		HeatMaster (Pre-Set)
		Pump Settings	Preset Pump Config	Config 14
		Heating Operation		Enabled
		Demand		Thermostat and setpoint
		CH2 Circuit		Enabled
		DHW Operation		Enabled
		Demand		Sensor

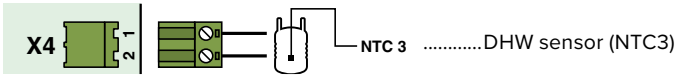
WATERMASTER 25(X)-35-45(X)-70(X)-85-120 EVO

As WaterMaster units are used for DHW production only, there are no preset pump configs to be selected from. Indeed, the ACVMax does not control pumps installed in the DHW circuit. Therefore, the following pages show simple examples of system architectures that can be built with WaterMaster unit(s). For more information, please contact ACV's customer support.

WaterMaster water heater producing Domestic Hot Water, with recirculation circuit.



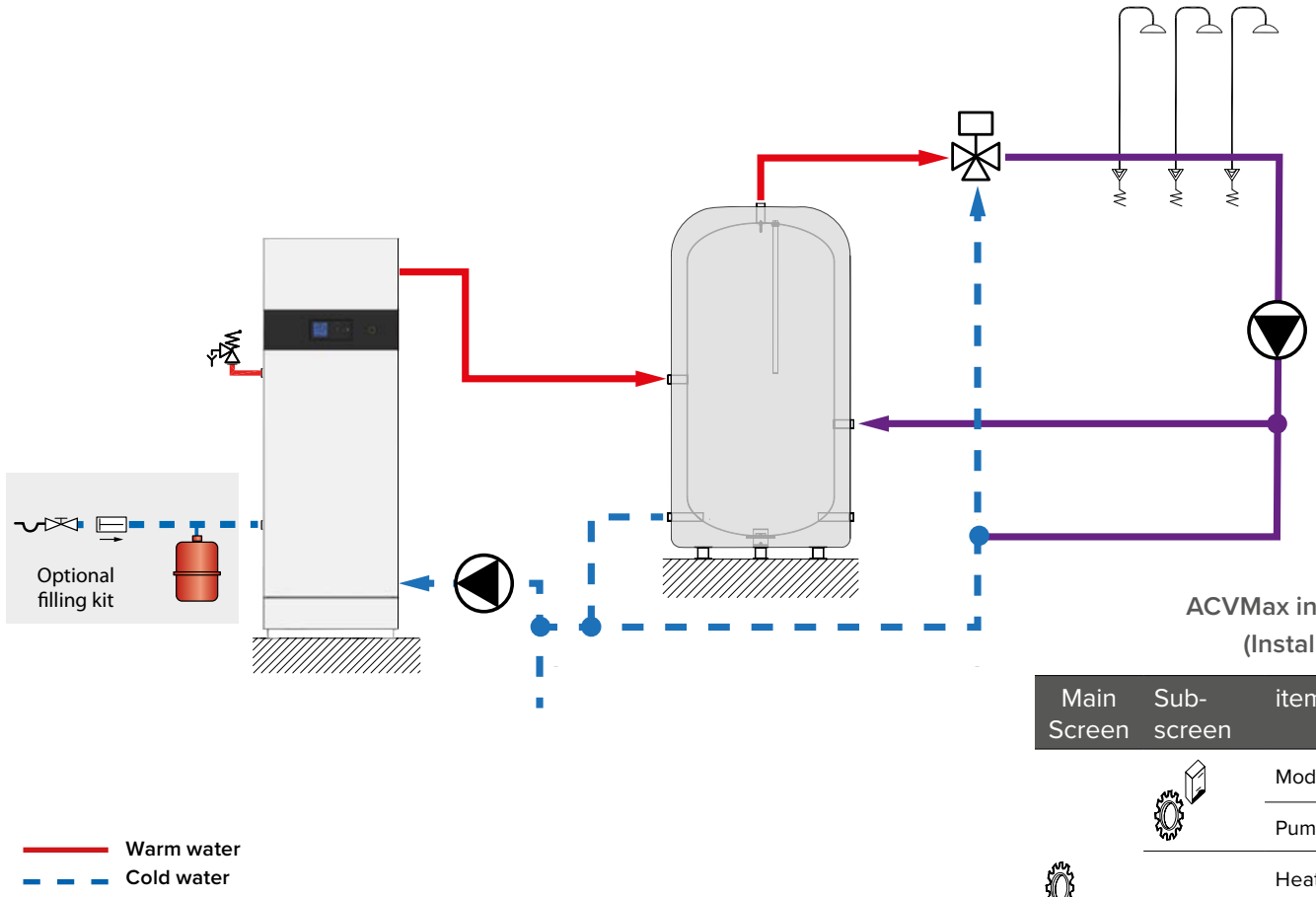
Electrical board terminals



ACVMax interface settings using the Installer menu
(Installer code needed, see "Installer Code"):

Main Screen	Sub-screen	item	Sub-item	Required selection
		Model		WaterMaster (Pre-Set)
		Pump Settings	Preset Pump Config	Config 5
		Heating Operation		Disabled
		Demand		--
		CH2 Circuit		Disabled
		DHW Operation		Enabled
		Demand		Sensor

WaterMaster water heater for the production of Domestic Hot Water, with a DHW buffer tank and recirculation circuit.

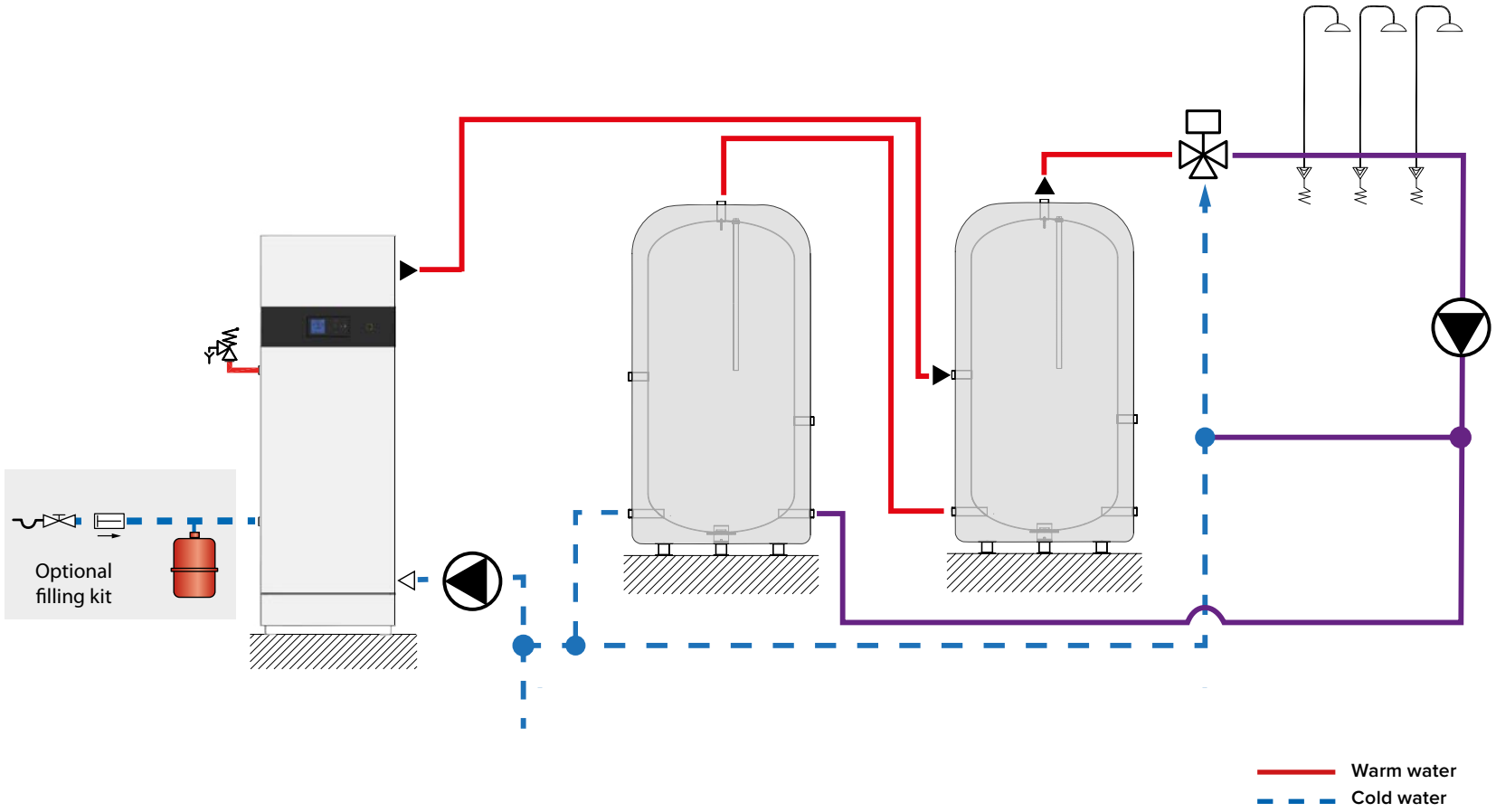


Electrical board terminals

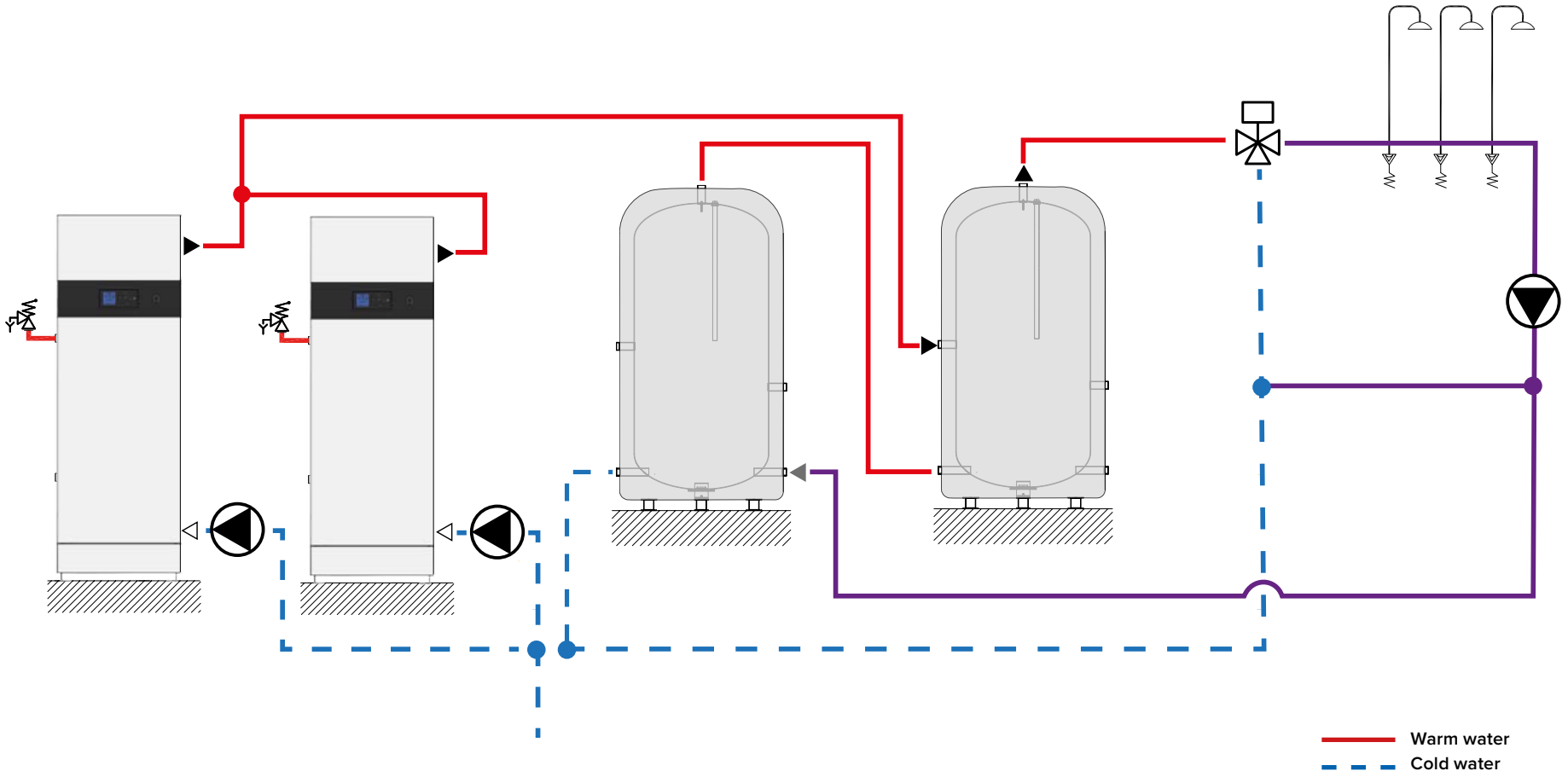
ACVMax interface settings using the Installer menu (Installer code needed, see "Installer Code"):

Main Screen	Sub-screen	item	Sub-item	Required selection
		Model		WaterMaster (Pre-Set)
		Pump Settings	Preset Pump Config	Config 5
		Heating Operation		Disabled
		Demand		--
		CH2 Circuit		Disabled
		DHW Operation		Enabled
		Demand		Sensor

WaterMaster water heater for the production of Domestic Hot Water, with two DHW buffer tanks and a recirculation circuit.



Two WaterMaster water heaters for the production of Domestic Hot Water, with two DHW buffer tanks and a recirculation circuit.



Codes	Description of the fault	Solution for the fault
E 01	**Failed ignition**: The burner failed to light after 5 ignition attempts.	1. Check gas supply to appliance. 2. Check Ignition cable connection in control box. 3. Check electrode for defects, and distance between the pins. 4. Check gas valve and electrical connections to gas valve.
E 02	**False flame:** Flame detected prior to ignition.	1. Check good electrical ground connection to unit. 2. Check electrode for pollution and deposition of dirt.
E 03	**High Boiler temp.** : The boiler temperature exceeds 105°C	Correct condition which caused high temperature or limit to open. 1. Check water flow in the system (radiator valves). 2. Check Pump and pump electrical connections.
E 05	**Blower speed**: Blower speed not correct or speed signal is not received by ACVMax.	1. Check blower and wiring harness. 2. Under normal condition if actual fan speed is 1000 rpm different from set fan speed an error is displayed (after 60sec in running and after 30 sec. at startup). 3. Only exception when actual fan speed > 3000 rpm at max. PWM.
E 07	**High Flue temp.**: Flue temperature exceeds high limit.	1. Heat exchanger may require cleaning. 2. Appliance will automatically reset once flue temperature returns to normal range.
E 08	**Flame Circuit Error**: Flame circuit test failed	1. Turn appliance off. 2. Check and clean the electrode. 3. Check ignition and grounding cables are firmly connected.
E 09	**Gas valve circuit error**: Gas valve circuit test failed.	1. Check the gas valve and wiring harness. 2. If the problem persists replace the "ACVMax" circuit board.
E 12	**Internal Fault**: EEPROM misconfiguration	1. Turn unit off and on to resume normal operation. 2. If the problem persists replace the "ACVMax" circuit board.
E 13	**Reset limit reached**: Resets are limited to 5 every 15 minutes.	1. Turn unit off and on to resume normal operation. 2. If the problem persists replace the "ACVMax" circuit board.
E 15	**Sensor Drift**: Supply or return sensor reading has drifted.	Check supply and return temperature sensors and wiring harness.
E 16	**Supply Sensor Stuck**: Supply sensor reading is not changing.	1. Check supply temperature sensor and wiring harness for shortcuts or other defects. 2. Check waterflow and the temperature balance in the system, because CH supply temperature does not change.
E 17	**Return Sensor Stuck**: Return sensor reading is not changing.	1. Check return temperature sensor and its position, check wiring harness for shortcuts or other defects. 2. Check waterflow and the temperature balance in the system, because CH return temperature does not change. 3. Failure may happen at low output capacity when supplying from a big tank !
E 18	**Sensor Failure**: Supply or return sensor reading changed very rapidly.	Check supply and return temperature sensors and wiring harness.
E19	**Flame Failure**: Flame failure during start up phase	Flame loss after start up of the appliance. 1. Check the flue system for blockage and check the adjustment of the appliance (CO2 high 8.8 +/-0.2%, CO2 low 8.6+/-0.2% measured with front casing open). 2. Also check the Ignition / Ionisation rod (distance to the burner / pollution)
E 21	**Internal Control Fault**: A / D conversion error.	Turn unit off and on then press OK to resume normal operation.
E 25	**Internal Control Fault**: CRC check error.	Turn unit off and on to resume normal operation.
E 30	**Supply Sensor Shorted**: A short circuit has been detected in the appliance supply temperature sensor circuit	1. Check supply temperature sensor and wiring harness for a short circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem, reset the appliance and resume normal operation.

Codes	Description of the fault	Solution for the fault
E 31	**Supply Sensor Open**: An open circuit has been detected in the appliance supply temperature sensor circuit	1. Check supply temperature sensor, connectors and wiring harness for an open circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 32	**DHW Sensor Shorted:** A short circuit has been detected in the DHW temperature sensor circuit	1. Check DHW temperature sensor and wiring harness for a short circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 33	**DHW Sensor Open**: An open circuit has been detected in the DHW temperature sensor circuit	1. Check DHW temperature sensor, connectors and wiring harness for an open circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 34	**Low Voltage**: Line voltage has fallen below an acceptable operating level.	The appliance will automatically reset once line voltage returns to normal.
E 37	**Low Water:** Water level has fallen below 0.7 bar.	1. Increase pressure to normal range. 2. The appliance will automatically reset once water level returns to normal.
E 43	**Return Sensor Shorted**: A short circuit has been detected in the appliance return temperature sensor circuit.	1. Check return temperature sensor and wiring harness for a short circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem, reset the appliance and resume normal operation.
E 44	**Return Sensor Open**: An open circuit has been detected in the appliance return temperature sensor circuit.	1. Check return temperature sensor, connectors and wiring harness for an open circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem, reset the appliance and resume normal operation.
E 45	**Flue Sensor Shorted**: A short circuit has been detected in the appliance flue temperature sensor circuit	1. Check flue temperature sensor and wiring harness for a short circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 46	**Flue Sensor Open**: An open circuit has been detected in the appliance flue temperature sensor circuit.	1. Check flue temperature sensor, connectors and wiring harness for an open circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E47	**Water pressure sensor error**: Water pressure sensor is disconnected or broken	1. Check water pressure sensor, connectors and wiring harness. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 76	**Gas pressure switch open**	1. Check both the static and the dynamic gas pressures. 2. Correct condition which caused the pressure switch to open 3. Appliance will automatically reset once the pressure switch is closed.
	External Limit Open: An external automatic reset appliance limit has opened.	1. Correct condition which caused limit to open. 2. Appliance will automatically reset once external limit closes
E 77	**High temperature mixing circuit**	Check if the mixing valve functions correctly.
E 78	**Mix circuit sensor shorted**	1. Check Mix circuit temp. sensor and wiring harness for a short circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 79	**Mix-circuit sensor Open**	1. Check Mix circuit temp. sensor and wiring harness for an open circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 80	**Return > Supply**: Return temperature is higher than supply temperature.	Confirm water flows in appliance return and out appliance supply.
E 81	**Sensor Drift**: Supply and return temperatures are not equal.	1. Check water is flowing through appliance. 2. Wait a few minutes for the water to equalise the temperature, the appliance will automatically reset once temperatures become equal. 3. If appliance doesn't reset, check the NTC's and check the wire harness, replace if necessary.

Codes	Description of the fault	Solution for the fault
E82	**Delta T protection blocking** - Delta T too high	1. Verify flow in the system. 2. Check pump for blockage and obstructions, unblock it as required. Replace if neccessary.
E83	**Delta T protection Lock-out** - Lock-out due to Delta T value.	1. Verify flow in the system. 2. Check pump for blockage and obstructions, unblock it as required. Replace if neccessary.
E 85	**Pump operation: warning** - Appliance pump is running out of limits.	Pump is running out of its limits. Check pump for blockage and obstructions, replace if neccessary
E 86	**Pump hard fault**: Pump Failure	Pump Failure, check if pump PWM-feedback wire is properly connected, replace pump when neccessary
E 87	**External Limit Open**: An external appliance limit has opened.	1. Correct condition which caused limit to open, then reset appliance. 2. The appliance needs to be reset once external limit closes.
E88	**Pump Blocking**: Pump attempts to restart.	Check pump for blockage and obstructions, unblock it as required. Replace if neccessary.
E 89	**Incorrect Setting**: A parameter setting is outside the settings range.	1. Review CH & DHW settings and correct as necessary. 2. The appliance will automatically reset once corrected.
E 90	**Firmware Mismatch**: Control module and display firmware versions are incompatible.	One or several components are not compatible with the system. Replace mismatched component(s).
E 91	**System Sensor Shorted**: A short circuit has been detected in the system temperature sensor circuit	1. Check system temperature sensor and wiring for a short circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 92	**System Sensor Open**: An open circuit has been detected in the system temperature sensor circuit.	1. Check system temperature sensor and wiring for an open circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 93	**Outdoor Sensor Shorted**: A short circuit has been detected in the outdoor temperature sensor circuit.	1. Check outdoor temperature sensor and wiring for a short circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 94	**Internal Display Fault**: Display memory error	Turn unit off and on to resume normal operation.
E 95	**Supply Sensor Error**: Supply sensor reading is invalid	1. Check wiring between display and control module. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 96	**Outdoor Sensor Open**: An open circuit has been detected in the outdoor temperature sensor circuit.	1. Check outdoor temperature sensor and wiring for an open circuit. 2. If necessary replace the sensor, or the wire harness. 3. After fixing the problem reset the appliance and resume normal operation.
E 97	**Cascade Mismatch**: Cascade configuration has changed.	1. Run autodetection if change was intentional, or else check wiring between appliances. 2. Appliance will automatically reset once repaired.
E 98	**Cascade Bus Error**: Communication with other appliances has been lost.	1. Check wiring between appliances. 2. Appliance will automatically reset once repaired.
E 99	**Controller Bus Error**: Communication between appliance display and control module has been lost.	1. Check wiring between components. 2. Appliance will automatically reset once repaired.