

Commissioning

Mega E



Thermia AB is not liable or bound by warranty if these instructions are not adhered to during installation or service.

The English language is used for the original instructions.
Other languages are a translation of the original instructions.
(Directive 2006/42/EC)

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1 About documents and decals

1.1 Introduction

The following documents are available for this product:

- **Installation Guide.** Gives thorough information on how to install the heat pump.
Available for download, see below.
- The **Commissioning Guide** contains the required information in order to commission the heat pump and tune the heating system.
Available for download, see below.
- The **Wiring Diagrams** for the heat pump intended for fault tracing and service.
Available for download, see below.
- The **User Guide** is intended for the end user and must be handed over and gone through with the end user when installation and commissioning is completed.
Supplied with the heat pump on delivery.
- The **Technical Description** contains information about the heat pump's function, fault tracing and technical data.
Available for download, see below.
- **Country specific instructions** and forms are available where relevant.
Supplied with the heat pump on delivery.
- **Self-adhesive decals** with translation text. Must be placed on the manufacturing plate in conjunction with installation.
Supplied with the heat pump on delivery.

Documents not delivered with the heat pump are available for download here:

www.thermia.com/documents

1.2 Symbols in documents

The instructions contain different warning symbols, which, together with text, indicate to the user that there are risks involved with actions to be taken.

The symbols are displayed to the left of the text and three different symbols are used to indicate the degree of danger:

Danger



Indicates an immediate danger that leads to fatal or serious injury if necessary measures are not taken.

Warning



Risk of personal injury!
Indicates a possible danger that can lead to fatal or serious injury if necessary measures are not taken.

Caution



Risk of installation damage.
Indicates a possible hazard that can lead to item damage if necessary measures are not taken.

A fourth symbol is used to give practical information or tips on how to perform a procedure.



Information regarding making the handling of the installation easier or a possible operational technical disadvantage.

1.3 Symbols on decals

The following symbols can occur on decals on the different parts of the heat pump. Which symbols are used depends on the heat pump model.

1.3.1 General



Warning, danger!



Read the documentation provided.



Read the documentation provided.



Warning, hazardous electrical voltage!



Warning, hot surfaces!



Warning, moving parts!



Warning, risk of crushing injury!



This appliance is charged with R454B, a mildly flammable refrigerant.



Service indicator: Read technical manual.

1.3.2 Electrical components

1.3.3 Pipe connections



Tap water



Heating system



Brine system



Defrosting tank



Expansion tank with safety valve, brine



Air bleeding



Temperature and pressure relief valve



Outdoor unit



Water heater



Fan

2 Important information/Safety instructions

2.1 General safety precautions



This appliance is charged with R-454B, a mildly flammable refrigerant.

Carefully follow the precautions listed as below because they are essential to guarantee the safety of Thermia product. Store the manual in a safe place in order to be able to use it as reference after installation. Remember to hand it over to the new owner if the heat pump unit is sold or transferred. To prevent serious damage on the system and injuries to users, precautions and other notices shall be observed.

Warning



This appliance can be used by children aged 8 years and above, and by persons with reduced physical, sensory or mental capabilities or lack of experience or knowledge, provided that they are supervised or have been instructed in the safe use of the appliance and understand the hazards involved. Children must not clean or carry out user maintenance on the appliance except under adult supervision.

Warning



Ensure that children do not play with the product.

Warning



The installation must only be carried out by a qualified installation engineer, following applicable rules and regulations in addition to these installation instructions.

Caution



The heat pump must be located in a frost-free environment!

Caution



Installation and connection should be carried out in accordance with the instructions, in order to avoid subjecting local residents to noise disturbance.

Caution



The heating appliance should be placed on a stable surface that can support the gross weight of the heating appliance.

Caution



Before the heat pump is powered, you must ensure that the heating system and coolant system, including the heat pump, are filled and bled; otherwise, their circulation pumps may be damaged.

Caution



If the electrician wishes to test the electrical connections before the above is carried out, this should only be done after ensuring that the heat transfer fluid pump and coolant pump are disconnected.

Caution



When filling the coolant system the coolant pump must be operating; you must ensure that the compressor and the heat transfer pump cannot start.

Caution



This unit is equipped with a refrigerant leak detector and ventilation system for safety. To be effective, the unit must be electrically powered at all times after installation, other than when servicing.

Caution



This appliance is intended for use by expert or trained users in shops, in light industry and on farms, or for commercial use by lay people.

Caution



In accordance with SS-EN 60335-2-40, this product is classified as not available to the public. This means that the product is designed to be handled by trained personnel and installed in machine rooms intended for heat pumps.

Caution



The maximum ambient temperature in the machine room must not exceed 30°C. For Mega E S-E, if the heat pump is operating with B10W65, or higher, in combined use with the internal immersion heater, the ambient temperature must not exceed 25°C.

Caution



Isolate the power supply to the heat pump while servicing the appliance or replacing parts.

Caution



Only spare parts approved by Thermia may be used for this appliance.



In normal operation the heat pump generates noise and vibrations. The appliance should be set up and connected in accordance with the instructions in order to avoid noise being spread to noise-sensitive areas.

Caution



Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).

Caution



The appliance shall be stored and installed so as to prevent mechanical damage from occurring.

2.2 Refrigerant

2.2.1 Refrigerant

Caution



Work on the refrigerant circuit must only be carried out by a certified refrigeration engineer.

Although the heat pump's refrigerant circuit is filled with a chlorine-free and environmentally-approved refrigerant that will not affect the ozone layer, work on this system may only be carried out by authorised persons.

The refrigerant circuit is hermetically sealed and is subject to the EC regulation 517/201. According to EC regulation 517/2014, for heat pumps containing 10 tonnes of CO₂ equivalent or more, with hermetically sealed fluorinated greenhouse gases.

For refrigerant charge, see type plate on heat pump.

2.2.2 Fire risk

The refrigerant is not combustible in normal conditions.

2.2.3 Toxicity

In normal use and normal conditions the refrigerant has low toxicity. Even though the toxicity of the refrigerant is low, it can cause injury (or even death) in abnormal circumstances or if deliberately abused.

Warning



Risk of personal injury! Spaces in which heavy vapor can collect below the level of the air must be well ventilated.

Refrigerant vapour is heavier than air, and in enclosed spaces or in areas below the level of the door, for example, seepage can give rise to high concentrations with a resultant risk of suffocation due to lack of oxygen.

Warning



Risk of personal injury! Refrigerant exposed to a naked flame creates a poisonous irritating gas. This gas can be detected by its odor even at concentrations below its permitted levels. Evacuate the area until it has been sufficiently ventilated.

2.2.4 Working on the refrigerant circuit

Warning



Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised.

Warning



Do not pierce or burn.

Warning



Be aware that refrigerants may not contain an odour.

Caution



When the refrigerant circuit is repaired, the refrigerant must not be released from the heat pump - it must be handled appropriately.

Draining and refilling must only be carried out using new refrigerant (for the amount and type of refrigerant see manufacturer's plate) through the service valves.

Caution



All warranties will become void if a refrigerant, other than what Thermia specifies, is used for refilling.

2.2.5 Scrapping

Caution



When the heat pump is to be scrapped the refrigerant must be extracted for disposal. Local rules and regulations related to the disposal of refrigerant must be followed.

2.3 Electrical connection

Warning



Hazardous electrical voltage! The terminal blocks are live and can cause death through electric shock. All power supplies must be isolated before electrical installation is started. The heat pump is connected internally at the factory, for this reason electrical installation consists primarily of the connection of the power supply.

Caution



Electrical installation may only be carried out by an authorized electrician and must follow applicable local and national regulations.

Caution



The electrical installation must be carried out using permanently routed cables and must follow applicable local and national regulations. It must be possible to isolate the power supply using an all-pole circuit breaker with a minimum contact gap of 3 mm.

2.4 Maintenance check for frequency inverter

Warning



Work on the frequency inverter must be made by authorized personnel. Make sure that the main power is switched off.

Avoid dust from depositing on the drive surface, circuit boards and other electric components. These deposits act as insulation layers and hamper heat transfer to the ambient air, reducing the cooling capacity. The increased heat load causes an accelerated aging of the electrical components, thus decreasing the service life. Dust deposits that accumulate on the heat sink located on the back of the VFD will also decrease the service life of the unit.

The drive cooling fans have small bearings into which dust can penetrate and act as an abrasive. This leads to bearing damage and fan failure.

Under the conditions described above, it is advisable to clean the frequency converter during periodic maintenance. Remove dust off the heat sink and fans.

2.5 Water quality

This heat pump and its components is developed to reliable and efficient work with water qualities in line with VDI 2035. In practice this means that some general precautions should be taken:

It is recommended to use magnetite filter for all retrofit systems.

As a heating system often contains small amounts of suspended solids (rust) and sludge products from calcium oxide, precaution should be taken to ensure that the water in the heating system is as clean as possible to ensure long lasting performance and minimize the risk of reliability issues. If magnetite can be expected in the heating system, cleaning of system and /or installation of magnetite filters should always be considered. Any filters supplied with the heat pumps should always be installed. The dirt strainer should be fitted on the return line from the heating system, as close to the heat pump as possible.

Chemical and/or oil contamination shall always be avoided.

In areas where there are exceptional water conditions with regards to hard water, a softening filter may be necessary to use/install (applies to heating system, hot water and brine circuit). The softening filter softens the water, cleans any impurities and prevents lime build-up. The hot water tank is designed to work well in all normal drinking water qualities in line with the European drinking water directive (98/83/EC). With regards to chloride level this means that it is approved to up to 250 mg/l.

2.6 Commissioning

Before commissioning the heat pump, Thermia highly recommend to preform **Ventilation test** in manual test. See chapter **6.1.6**.

Caution



The installation may only be commissioned if the heating system and brine system have been filled and bled. Otherwise the circulation pumps can be damaged.

Caution



If the installation is only to be operated by an auxiliary heater during the installation, ensure that the heating system is filled and the brine pump and compressor cannot be started. Only applies to Mega E S-E.

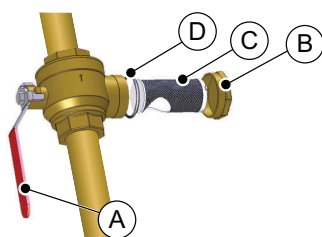
3 Checking piping and electrical installation

3.1 Checking piping installation

During transportation and installation there is a risk that the heat pump may be damaged and components may move or become bent, and this can cause abnormal noise. It is therefore important to check that the heat pump is free from defects after installation and before commissioning.

Before filling the heating system, check the pipe installation according to the checklist below.

Piping checklist	Checked
Are the pipe connections in accordance with the connection diagram?	
Is the dirt strainer fitted on the return pipe? See image below.	
Is an expansion tank fitted?	
Is a valve pipe with safety valve and manometer fitted?	
Is a filler cock with non-return valve for the heating system fitted?	



- A Stopcock
- B Cover
- C Dirt strainer
- D O-ring

Fig. 1: Dirt strainer

3.2 Checking electrical installation

Before turning on electrical power, check the electrical installation according to the checklist below

Electrical installation checklist	Checked
Are circuit-breakers installed?	
Are correct fuses installed? See fuse table below.	
Positioning of the outdoor sensor. See "Positioning of the outdoor sensor".	

Fuse table

Heat pump	Unit	XL	L	M	S
400V~3N 50 Hz heat pump	A	C63	C40	C32	C25

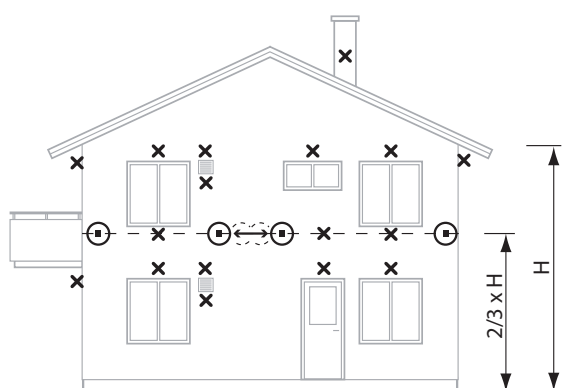
Heat pump	Unit	Compressor only	Compressor + Step 1 (5kW)	Compressor + Step 2 (10kW)	Compressor + Step 3 (15kW)
Mega E S-E 400V~3N 50 Hz	A	C25	C32	C40	C50

Commissioning

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Heat pump	Unit	M	S
230V 3N~ 50 Hz heat pump	A	C50	C40

Positioning of the outdoor sensor



- Recommended location
- ✗ Unsuitable location

- Position the outdoor sensor on the north or north west side of the house.
- Make sure that the outdoor sensor is not placed in direct sun light.
- For taller buildings, the sensor should be positioned between the second and third floors.
- The sensor location must not be completely protected from the wind but not placed in a direct draft.
- The outdoor sensor must not be placed on reflective panel walls.
- The sensor must be positioned at least 1 m from openings in the walls which may emit hot air.
- If the sensor cable is connected through a pipe, the pipe must be sealed so that the sensor is not affected by outgoing air.

4 Filling and bleeding

4.1 Filling and bleeding the water heater and heating system

Caution



The pressure in the heating system must never exceed 6 bar. Bleed the system thoroughly!



Leave all radiator valves fully open.

1. Fill the system with cold water by opening the filler valve on the valve pipe to a pressure of 1 bar.
2. Open all radiator valves fully.
3. Bleed all radiators.
4. Refill the heating system to a pressure of min. 1 bar.
5. Repeat the procedure until all air has been removed.
6. Check the system for leakage.

4.2 Filling and bleeding the brine circuit

4.2.1 Introduction

Caution



Before the brine circuit is filled, the electrical installation must be completed and checked so that the brine pump can be manoeuvred

Caution



Always check local rules and regulations before filling with antifreeze.

Caution

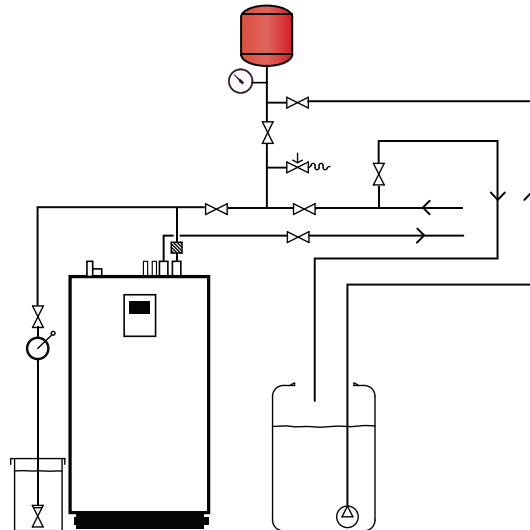


The pressure in the brine circuit must never exceed 6 bar.



Antifreeze with anti-corrosive properties must be used in the brine collector circuit, so that frost protection down to $-17 \pm 2^{\circ}\text{C}$ is achieved.

4.2.2 Filling



1. Set the heat pump to OFF on the control panel.
2. Mix water and antifreeze to the correct freezing point in an external container .



Ensure that the external container contains the requisite amount of brine.

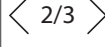
3. Use a refractometer to check the freezing point, for the brine collector circuit, $-17 \pm 2^\circ\text{C}$.
4. Use an external pump to fill the brine system. Connect the pressure side of the pump to the filler cock.
5. Close the shut-off valve on the filler cock.
6. Open the suction valve on the filler cock and the return valve on the brine system.
7. Connect a transparent hose to the filler cock. The hose should discharge into the external container.
8. Open the return valve on the filler cock.
9. Start the external pump and fill the brine circuit .



Allow the external pump to run until the manual test of the brine pump is complete. See "Manual test".
Check the brine level in the external container at regular intervals

5 Configuration of control system

5.1 Display symbol description

Symbol	Description
	Opens the menu screen from the start screen. Return to the menu screen from any sub-menu.
	Confirm setting. A change which has been made is confirmed and becomes the new setting.
	Ignore change. Changes which are not confirmed with  are reset to the previous value.
	Page navigation. To browse through pages and sub-menus. Press the arrows to navigate. 2/3 means that you are on page 2 of 3.
	Home. Back to start screen.
	Information. Shows information about the respective page.
	This symbol indicates that the text that follows can be pressed to open a new view.
	Alarm. Press on the symbol to go to the alarm window. The window displays the alarm history.
	Alarm. Indicates that there are active class A or class B alarms. Press on the symbol to go to the alarm window.
	Select operating mode. Press on the symbol to select operating mode. A new window opens for selection of operating mode.
	Operating data. Opens a number of sub-menus which show current operating data such as: ▪ Outdoor temperature ▪ etc.
	Factory reset. Resets values on the current menu page to factory values.
	Settings. Opens a number of sub-menus such as: ▪ Language ▪ System settings
	Back. Back to previous view.
	Push-pull control. Used for raising or lowering values. Press on the "handle" and push it to the sides. Alternatively, press "+" or "-".
	Activation/deactivation of push-pull control or switch functions/equipment on/off. Press on the symbol to change mode. The symbol  indicates activated function/equipment switched on.
	Activation/deactivation of push-pull control or switch functions/equipment on/off. Press on the symbol to change mode. The symbol  indicates deactivated function/equipment switched off.
	Certain menu selections are locked to prevent unauthorised use. An authorisation code is required.

	Anti legionella mode. Visible in the top of the display when the heat pump is in anti legionella mode.
	Compressor mode. Visible in the top of the display when the heat pump is producing heat or hot water with the compressor. During oilboost, the compressor's own automatic maintenance function, the text "Oilboost" will be visible with the compressor symbol in the drop down menu.
	Cooling mode. Visible in the top of the display when the heat pump is in cooling mode.
	External auxiliary mode. Visible in the top of the display when the heat pump is producing heat or hot water with the external auxiliary heater.
	Idle mode. Visible in the top of the display when the heat pump has no heating, cooling or hot water demand.
	Restart icon. Visible in the top of the display when the heat pump has a pending restart demand. Execute restart in Operating view.
	Switch buttons. Switch between 1 and 2 functions.
	Internet connection. Visible in the top of the display when the heat pump has an internet connection.
	Network connection. Visible in the top of the display when the heat pump has a network connection.
	Pool heating mode. Visible in the top of the display when the heat pump is in pool heating mode.
	Space heating mode. Visible in the top of the display when the heat pump is in space heating mode.
	Restriction timer. Visible in the top of the display when the heat pump is in restriction to start.
	Tap water mode. Visible in the top of the display when the heat pump is in tap water heating mode.
	Virtual keyboard. Opens up a virtual keyboard. Changes must be acknowledged in the keyboard window AND in the view in which the changes are made.
	Reconnect button. Used when re-establishing connection between primary and secondary heat pump, in Primary/secondary view.
	Ventilation test is running.

5.2 Installer access

From this chapter forward, certain functions will be locked and only accessible with the correct access code. To gain access, the following steps must be made:

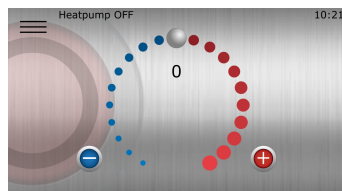
1. Press  on the Start screen to open the Menu screen.
2. Press .
3. Press the input area to open up the num pad.
4. Enter the code for installer access, **60,70,80** and confirm by pressing the white tic in the lower right corner.
5. Once back in the previous menu, the green tic in the lower right corner needs to be pressed, to make the final confirmation.



The access code is active for 8 hours. After 8 hours the code must be entered again.
Remaining time is shown in the upper left area of the display.

5.3 Display description

Start screen

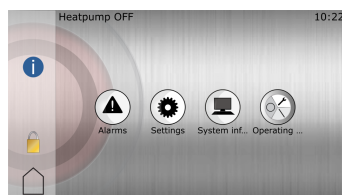


This start screen appears when the system is started for the first time, starting in OFF mode and no functions activated.

From here you can carry out an indoor comfort adjustment:

1. Drag clockwise or anticlockwise to raise or lower the offset.
Each point represents an increase/decrease of 1°C.
2. Alternatively, press  or .

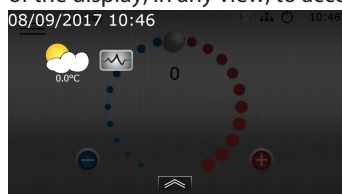
Menu screen



This screen appears when you have pressed  on the start screen.

Drop down view

There is a quick link, easy accessible, to view useful information about the heat pumps current status etc. Swipe downwards from the top of the display, in any view, to access. The following screen appears:



Press  at the bottom of the drop down view to hide the screen.

5.4 Select display language

1. Press  in the upper left corner of the Start screen
2. Press 
3. Press on the text **Language**.
4. Select language.
5. Press  to return to System settings.
Or press  in the upper left corner to return to the Menu screen.

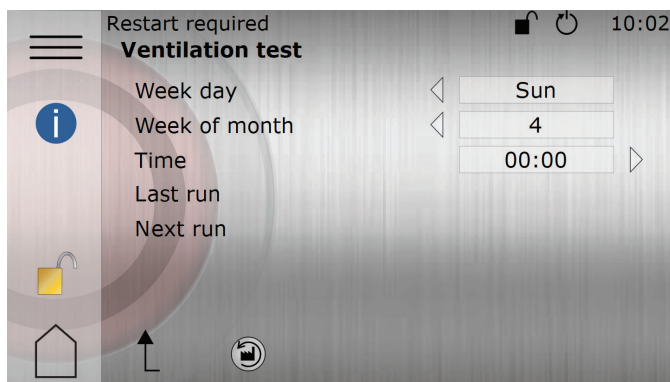
5.5 Setting date and time

1. Press  in the upper left corner of the Start screen.
2. Press .
3. Press on the text **System settings**.
4. Press on the text **Date/time**.
5. Press + or – for each field to change the setting.
6. Press  to confirm settings.
7. Press  to return to System settings.
Or press  in the upper left corner to return to the Menu screen.

5.6 Setting date for monthly ventilation test

For installations with one or more secondary units, it is important to set different dates for each of the heat pumps for the monthly ventilation test.

- Mega E/Mega (R410A) as a primary: Make settings for primary, and ventilation test for secondary units will automatically be set with a couple of minutes apart.



1. Press  in the upper left corner of the Start screen.
2. Press .
3. Press on the text **Ventilation test**.
4. Set **Week day**.
5. Set **Week of month**.
6. Set **Time**.
7. Press  to confirm settings.
8. Press  to return to Settings.
Or press  in the upper left corner to return to the Menu screen.

5.7 How to set up functions



Functions must be enabled and activated in the control system before they can be used.



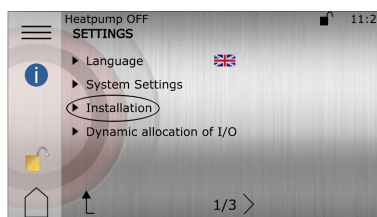
In a primary/secondary heat pump system, make sure to do adjustments needed to set up communication before attending to this chapter. Primary/secondary chapter is found in chapter 5.

Below is an **example** how functions are enabled.
All functions are enabled in a similar way.

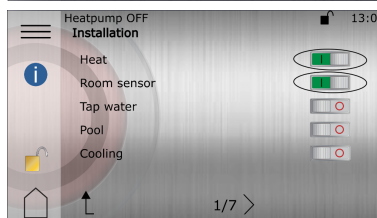
Make sure the display is unlocked for installer access.

Press  in the upper left corner of the Start screen.

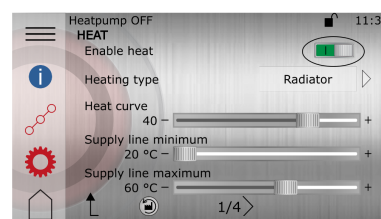
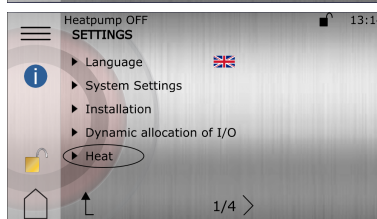
Press .



Press **Installation** text. Click on the functions you want to install.



Go back to the setting and you can now find the functions you chosen. Go in under each individual function to activate and make desired settings.



The heat pump needs to be restarted for the functions to start working.

5.8 Deactivate functions

Below is an **example** where the **Heat** function is deactivated.
Other functions are deactivated in a similar way.

1. Press  in the upper left corner of the Start screen.
2. Press the icon for **Heat**  to enter the settings menu for **Heat**.
3. Press  to deactivate **Heat** function.
4. Press  to return to the Menu screen.
5. The following icon in the menu will indicate that the function is turned off: .

5.9 Distribution circuits

Distribution circuit 1 is available from factory but needs additional equipment to function. Distribution circuit 2-5 require an expansion module, separately sold as accessory.
Up to 5 distribution circuits can be active simultaneously.

Note: You can only choose either one of the functions **Distribution circuit 1** or **Variable speed hot gas**. So if you already installed **Variable speed hot gas**, **Distribution circuit 1** will not be an available option.

Example of settings for distribution circuit 1:

1. Press  in the upper left corner of the Start screen
2. Press  and press the **Installation** text.
3. Navigate to **Distribution circuit 1** and press the switch to enable the function.
4. Step back and navigate to **Mix valves** or go to the main menu and press  in the menu page.
5. Press text for **Distribution circuit 1**.
6. Press  to enter the settings view.
7. **Page 1:**
Enable the distribution circuit.
Set Heat or Cool, depending on what function is desired.
Confirm the settings with 
8. **Page 2:**
Heating type: Radiator or Floor heating.

Heat curve: If the heating type is set to Radiator, the default heat curve is set to 40°C, and for Floor heating it's set to 30°C.

Settings for supply line temperatures: The maximum supply line temperature changes depending on what heating type is chosen.
NOTE! The distribution circuit settings can not exceed the values set in the main heat curve.

Press  to access the curve view.

The temperatures in the curve can be adjusted in two ways:

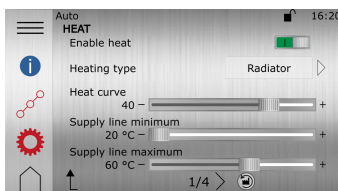
- Press the Curve indicator  and adjust the entire curve with  or .
- Press and move individual curve points (adjusting the supply line temperature for specific outdoor temperatures):
- Press the curve indicator  so it turns grey. Individual points can now be moved separately by pressing the desired temperature point and adjusting with  and  to the desired temperature.

Confirm the settings with 

5.10 Heating Settings

In Heat settings, you can set seasonal stop, min/max supply line temperature and comfort factor.

The *Comfort factor* (0 - 3) influences the desired Supply line (HP) value. If the Comfort factor is set to for example 3, an increase of the Comfort wheel setting with +1 will result in an increase of the supply line temperature with +3 °C.



1. Press  on the Start screen to open the Menu screen.
2. Press .
3. Press  if the Heat settings window is not shown.
4. Make the desired changes.
5. Confirm settings by pressing .

5.11 Adjusting the indoor temperature

The heat curve is a graph that compares the outdoor temperature with the supply temperature. The colder the outdoor temperature is, the more heat is supplied to the heating system. The heat curve is adjusted during installation. It must however be re-adjusted later to obtain a pleasant indoor temperature in all weather conditions.

For an explanation of the factory pre-set heat curve, see *Adjusting the Heat Curve*.

The following examples are based on a heat curve set to 40:

At an outdoor temperature of 0°C the supply temperature should be 40°C. Note that this is only a benchmark. There are radiator systems, floor heating systems and other types of heating system which require either lower or higher temperatures.

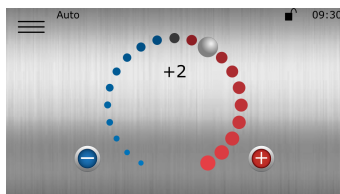
At outdoor temperatures below 0°C, supply line water hotter than 40°C is supplied to the radiators. Supply line water colder than 40°C is supplied if the outdoor temperature is above 0°C.

A correctly set heat curve reduces the need for maintenance, as well as making operation more energy-efficient.

The indoor temperature is adjusted by changing the heat curve of the heat pump. This curve is the control system's tool for calculating the correct supply temperature of water for the heating system.

Comfort adjustment, to change temperature

Comfort adjustment means moving the whole curve upwards or downwards.



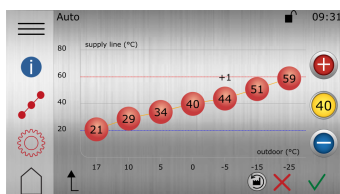
Drag clockwise or anticlockwise to raise or lower the offset. Each point represents an increase/decrease of approximately 1°C of the supply line temperature, depending on comfort factor settings.

Alternatively, press  or .

NOTE: This option should be primarily used for temporary temperature adjustments. When permanently changing the indoor temperature for a more precise indoor climate, change the heat curve settings.

5.12 Adjusting the Heat Curve

The Curve indicator has two modes that can be toggled by pressing the Curve indicator symbol.



1. Press  on the Start screen to open the Menu screen.
2. Press .
3. Press  if the Heat curve is not shown.
4. There are two ways of adjusting the heat curve:
 - If the Curve indicator  is lit, press  or  to adjust the entire curve.
 - Or:**
 - If the Curve indicator  is not lit individual points can be moved separately by pressing the desired individual point and pressing  and  to the desired temperature.
5. Confirm the new selection by pressing .

Symbol description

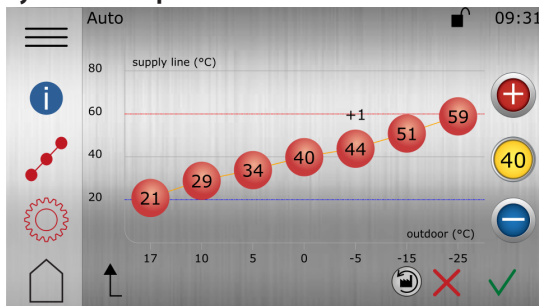


Fig. 1: The figure shows the standard curve 40

Symbol	description
(+1) 	Shows when the curve is comfort-adjusted. The digit shows how much the deviation is from the default value.
	Information. Shows information about the respective page.
	Shows that the heat curve window is inactive. Press on the symbol to open heat curve settings.
	Shows that the heat curve window is active. This window is the default window.
	Shows that the heating settings window is inactive. Press on the symbol to open heating settings.
	Shows that the heating settings window is active.
	When the curve indicator is lit, press  or  to move whole curve upwards or downwards.
	When the curve indicator is not lit, press  or  to move individual curve points upwards or downwards.
	Press  to reset to factory settings in the current view.

5.13 Network connection, Online and setting up primary and secondary functionality

Thermia Online

The heat pump is factory prepared for monitoring (and as an additional service being operated) remotely via internet. (Thermia Online)
In order to use the Thermia Online service:

- Make sure that there is an available internet connection (router or equivalent) in the building
- An account and registration is required to use the Thermia Online service.
For more information, see:
www.thermia.com/documents
- Make a note of the heat pump MAC-address. The MAC-address is available in the Network menu in the display

Bear in mind that firewalls, deficient connections etc. can cause problems that will prevent desired functionality. Some operators, municipal networks etc. does not allow traffic through their firewalls.
Contact the internet service provider or network administrator if there are any such problems.

Connecting to internet

Connect the commissioned heat pump to an existing internet connection (router or equivalent). Use the RJ45 connection placed below the display (CM module) behind the front panel. Use a patch cable (not cross over cable).

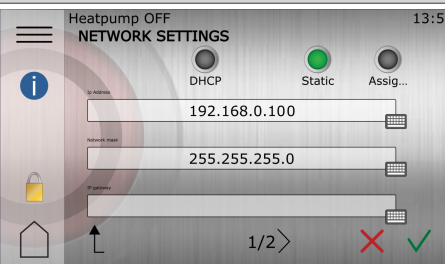
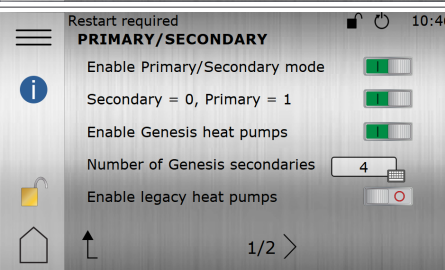
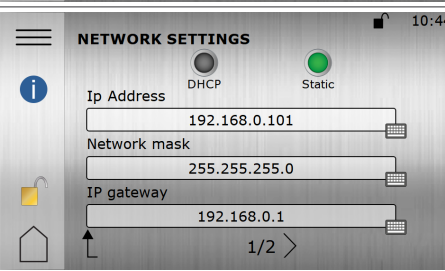
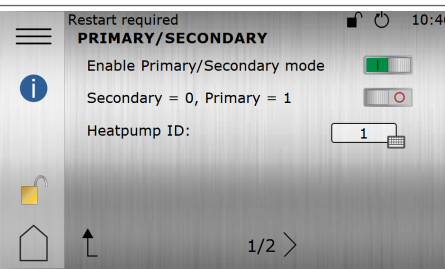
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Network settings

In the Network settings DHCP (factory default) or Static IP-address can be selected. For DHCP, the router in the local network will provide IP-address etc. See *Menu settings*.

If Static is selected, then IP-address, Network mask, IP gateway, DNS1 and DNS2 must be set manually. See *Menu settings*.

Example of setting up primary and secondary functionality	
First ensure that the <u>primary</u> unit is correctly set up with a valid network configuration in the "NETWORK SETTINGS" menu. NB! There can only be ONE primary heat pump in the same installation! By pressing the "assign IP" button, (Only available in static mode) the CM-card will be assigned IP= 192.168.0.100 (for the primary heat pump) and 192.168.0.101, 102 or 103 and for the secondary heat pump(s) depending of the set ID number of the secondary heat pump(s) ID 1= .101, ID2= .102 Network mask: 255.255.255.0.	
In the "PRIMARY/SECONDARY" menu on the <u>primary</u> unit, ensure that the number, and type, of the secondary units are correctly configured. When done, proceed to setup the secondary unit. (Legacy secondaries require accessory equipment, Expansion Module 1).	
On the <u>secondary</u> unit, go to the "NETWORK SETTINGS" menu and configure the machine to be on the same subnet. Make sure that the Network mask is the same as on the primary unit. IP gateway is only needed in an external network connection setup.	
In the "PRIMARY/SECONDARY" menu on the <u>secondary</u> unit, make the final configurations and assign a heat pump ID to the secondary unit. It's recommended to set the secondary units in numerical order, starting with ID: 1. For the primary/secondary function to start working, all affected units must be restarted.	

The primary heat pump will exclude any secondary heat pump if the following errors occurs:

- **Version error:** The secondary heat pump does not have the same software version as the primary heat pump.
- **Pump already registered:** The secondary heat pump is already registered, but with another ID. Change to the old ID or restart the primary heat pump.
- **ID already registered:** Another secondary heat pump has the same ID. Change to another ID.
- **Multiple errors:** A combination of the errors above. Solve them in any order.

The secondary heat pump must be manually reconnected to the primary heat pump. This is done with the green button, , or by restarting the heat pump.

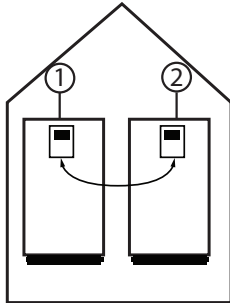
Example below with no external network connection (for installations with only one secondary unit):

(This solution will NOT provide internet functionality. See next example if internet functionality, or router solution, is desired)

Commissioning

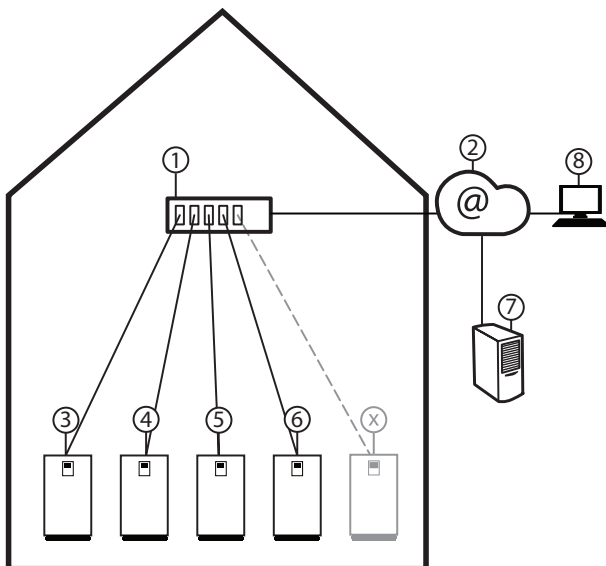
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Ethernet cable: Standard Cat 5 network cable, RJ 45.



1. Primary (controlling) heat pump with IP address e.g. 192.168.0.100
2. Secondary heat pump with IP address e.g. 192.168.0.101

Example below with external network connection (for installations with one or more secondary units):



- 1 Router/Switch
- 2 Possibility of internet access via router
- 3 Primary (controlling) heat pump with IP address e.g. 192.168.0.100
- 4 Secondary heat pump with IP address e.g. 192.168.0.101
- 5 Secondary heat pump with IP address e.g. 192.168.0.102
- 6 Secondary heat pump with IP address e.g. 192.168.0.103
- X Secondary heat pump with IP address e.g. 192.168.0.XXX
- 7 Online Web server and database
- 8 Online web browser

Menu settings



If more than one heat pump is installed, network settings must be entered in every one of the units.



Contact your network administrator if settings in a router or other network equipment is required.

1. Press  in the upper left corner of the Start screen.
2. Press .
3. Press the text **System settings**
4. Press the text **Network settings**

For automatic IP-settings:

1. Set Dhcp/static to 0 (factory default) 
2. Press  to return to System settings.
Or press  in the upper left corner to return to the Menu screen.

For manual IP-settings:

1. Set Dhcp/static to 1 
2. Press on the insert area for the IP-address, type the relevant address and press confirm to change the setting.
3. Repeat previous step for Network mask, IP gateway etc.
4. Press  to confirm the setting.
5. Press  to return to System settings.
Or press  in the upper left corner to return to the Menu screen.

5.14 Dynamic allocation

On the BM-card (PCB) of this heat pump, some of the I/O's are dynamically allocated, meaning they have the possibility to be changed to suit more installations than a static solution with the same number of I/O's would. As shown in the picture below, "Digital in"(in), "Temp sensors"(in), "Analog out"(out) and "Pot free relay"(out), can be altered in what functions they can support.

Digital in:

- Smart grid 2 (default)
- Flow guard (default)
- External alarm (optional)

Temp sensors:

- Supply line sensor (distribution circuit 1)/(default)
- HGW sensor

Analog out:

- Shunt (distribution circuit 1)/(default)
- Circulation pump Hot gas 0-10V

Pot free relay:

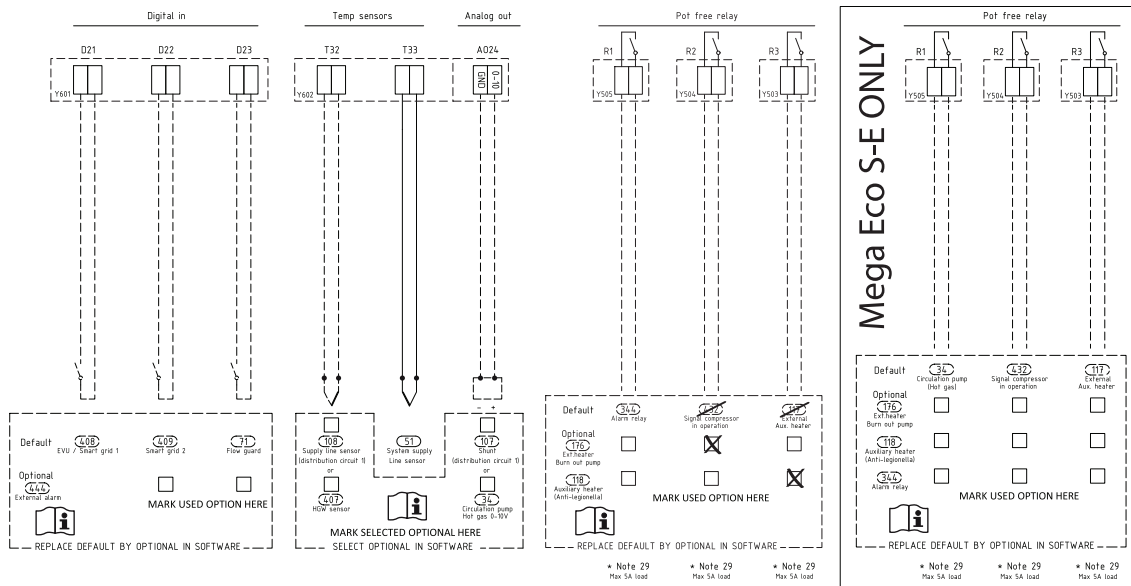
- Alarm relay (default for Mega XL instead of Circulation pump hot gas)
- Circulation pump (hot gas)/(default for Mega E S-E instead of Alarm relay)
- Signal compressor In operation (default)
- External Aux. heater (default)
- Ext. heater burn out pump (optional)
- Auxiliary heater (Anti-legionella) (optional)

It is important to view the adhesive electrical sheet on the electrical cabinet, to see if any changes have been made! Mega E S-E has a different setup for "Pot free relay". See example picture below.

If the default configuration is changed, the previous default function may have to be shut off in the display, to make place for the new function. In the example below, both "Signal compressor in operation" and "External Aux. heater" have been replaced by "Ext. heater Burn out pump" and "Auxiliary heater (Anti-legionella)" on the relay outputs, and have to be set up accordingly in the display under the respective function page.

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If there is a need for more than the number of physical in- and outputs provided on the card, an accessory card (sold separately) will provide that.

5.15 Activating accessories

The accessories shown below are not delivered with the heat pump but, if installed, should be activated in the control system. Some functions are part of the Dynamic allocation functionality of this heat pump. Make sure to read the chapter Dynamic allocation to know if any adjustments are to be made. Some accessories will need an expansion module (EM3) to function. See manual for EM3 for further instructions.

Flow guard

A flow guard sensor may be connected to control the flow in the brine circuit. Set as a default function in the Dynamic allocation configuration it still needs to be activated in the Installation view.



If no flow guard is installed and flow guard is activated in the control system, the heat pump will not start



In primary/secondary system solutions, individual flow guards can be controlled, if installed individually for the secondary heat pumps. Set functionality from the primary heat pump, to support individual flow guards on each secondary or one overall flow guard from the primary heat pump.

Activating the flow guard sensor:

1. Press  in the upper left corner of the Start screen
2. Press 
3. Press the text **Installation**.
4. Navigate to **Flow guard** and press  to activate.
5. Press  to return to Settings.
6. Press **Flow guard** text to enter the Flow guard menu.
7. Press  to activate Flow/pressure switch.
8. Make desired settings and restart the heat pump if necessary.

Hot gas pump

Note: You can only choose either one of the functions **Variable speed hot gas (34, 407)** or **Distribution circuit 1 (107, 108)**. So if you already installed **Distribution circuit 1**, **Variable speed hot gas** will not be an available option.

1. Press  in the upper left corner of the Start screen
2. Press 
3. Press the text **Installation**.
4. If you have a fixed speed hot gas pump navigate to **Hot gas** and activate. If you have a variable speed hot gas pump activate the **Variable speed hot gas** function.
5. Press  to return to Settings and press the **Hot gas** text to access the menu.
6. Press  to enable hot gas circulation pump.
7. Check that the hot gas pump is running by:
 - listening
 - placing a hand on the pump
 - listening for air
8. Bleed if there is air in the hot gas circuit.
9. Make desired settings and restart the heat pump if necessary.

Reversing valve for hot gas

This function is only available if both **Hot gas** and **TWC** are activated

1. Press  in the upper left corner of the Start screen
2. Press 
3. Press the **Installation** text.
4. Activate both **Hot gas** and **TWC**.
5. Go back to the Settings menu and enable both functions on their respective page.
6. In the **Hot gas** page, navigate to **Reversing valve hot gas enable** and turn it on.
7. Check that the indicator on the upper side of the reversing valve changes position.
8. Make desired settings and restart the heat pump if necessary.

Auxiliary heater

Set as a default function in the Dynamic allocation configuration it still needs to be activated in the Installation view. Make sure to activate the System circ. pump in the Circulation pump menu if needed.

1. Press  in the upper left corner of the Start screen
2. Press 
3. Press the **Installation** text.
4. Navigate to **Auxiliary heater** and press the switch to activate.
5. Press  to return to Settings.
6. Press the **Auxiliary heater** text.
7. Start auxiliary heating by pressing . The circulation pump will start automatically.
8. Check that the auxiliary heater is working by checking that the temperature of the supply line rises.
9. Make desired settings and restart the heat pump if necessary.

System return line sensor

If installed, activate by following the steps below.

1. Press  in the upper left corner of the Start screen
2. Press 
3. Press  if the Heat settings window is not shown.
4. Navigate to **System return line sensor** and press the switch to activate.

5.16 Buffer tank

Below are 5 different system solutions with buffer tank. To activate buffer tank functionality:

1. Login: Press padlock, 607080 and confirm
2. Go to SETTINGS/INSTALLATION and activate Buffer tank
3. Go to SETTINGS/BUFFER TANK and set the corresponding number in the Buffer tank type box
4. Make desired settings and confirm
5. Restart the heat pump and check functionality

Buffer tank type: 1

The heat pump is connected to feed the buffer tank and the buffer tank then feeds the heating system via the system mixing valve, adjusting the system temperature. Overcharge in the tank is allowed. No external auxiliary heater is permitted in this solution, only an internal electric heater, when applicable.

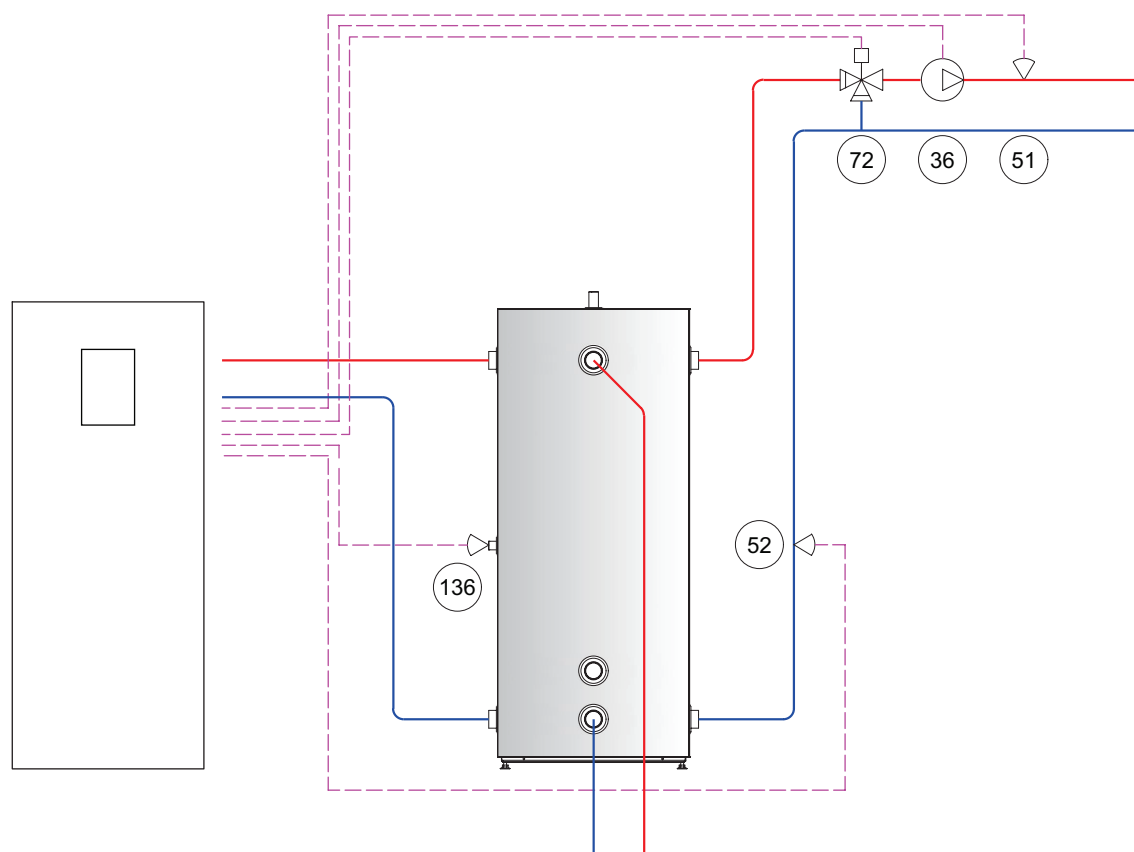


Table item number	Terminal	Description
36	FR6	Circulation pump (system)
51	T33	System supply line sensor
52	T34	System return line sensor
72	AO25	External auxiliary heater shunt
136	T31	Buffer tank sensor

Buffer tank type: 2

The heat pump is connected to feed the heating system directly and will never charge the buffer tank. When energy is available in the tank from an external source, e.g. solar, wood burning or similar, it can be used for heating. When the buffer tank has energy to provide, the heat pump shuts off and the system mix valve provides the correct supply temperature to the heating system, as defined by the main heating curve. If the system mix valve is closed, the buffer tank will be by-passed.

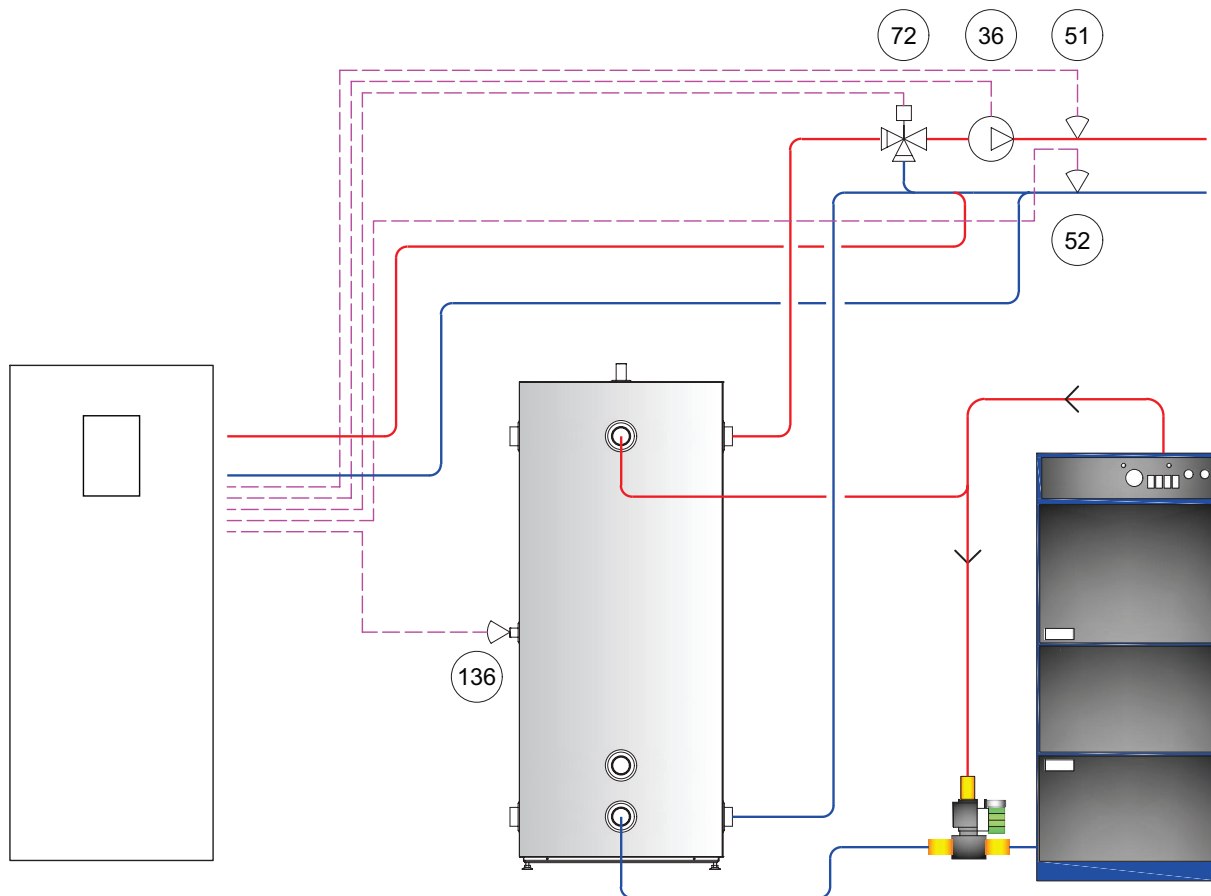


Table item number	Terminal	Description
36	FR6	Circulation pump (system)
51	T33	System supply line sensor
52	T34	System return line sensor
72	AO25	External auxiliary heater shunt
136	T31	Buffer tank sensor

Buffer tank type: 3 (requires auxiliary heater and distribution circuit 1)

A customized solution with an external auxiliary heater that supplies the buffer tank. The heater is regulated with the system mix valve. The heat pump is connected to feed the buffer tank. The buffer tank feeds the heating system via the distribution circuit 1 mix valve. Temperature settings for the system are made in the distribution circuit 1 menu. Overcharge of the buffer tank is allowed.

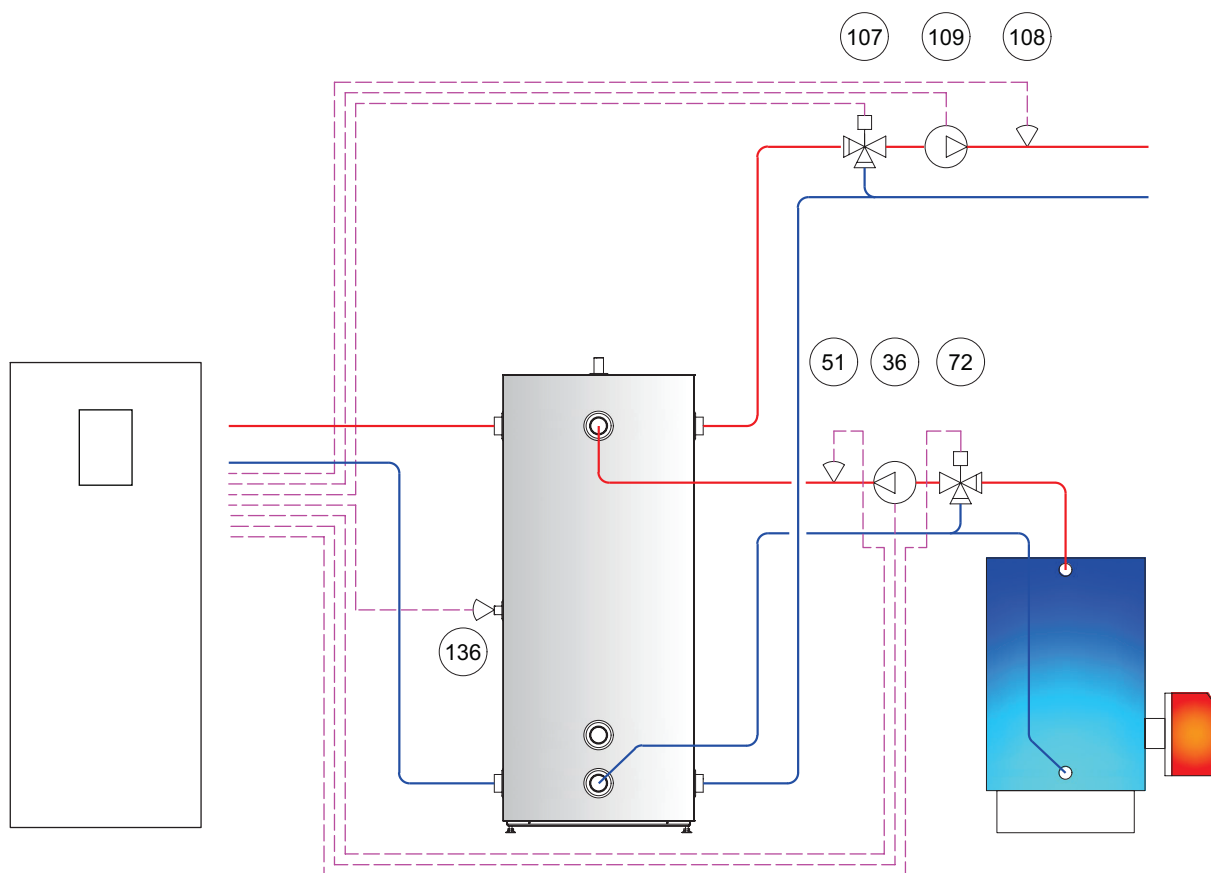


Table item number	Terminal	Description
36	FR6	Circulation pump (system)
51	T33	System supply line sensor
72	AO25	External auxiliary heater shunt
107	AO24	Shunt (distribution circuit 1)
108	T32	Supply line sensor (distribution circuit 1)
109	FR5	Circulation pump (distribution circuit 1)
136	T31	Buffer tank sensor

Buffer tank type: 4 (requires auxiliary heater)

The heat pump feeds the buffer tank. The buffer tank, in turn, feeds the heating system in series with the external auxiliary heater (on/off, 0-10V controlled, or in combination with both, depending on the type of external additional heater). The buffer tank is not directly charged by the external auxiliary heater. Overcharge of the buffer tank is not allowed.

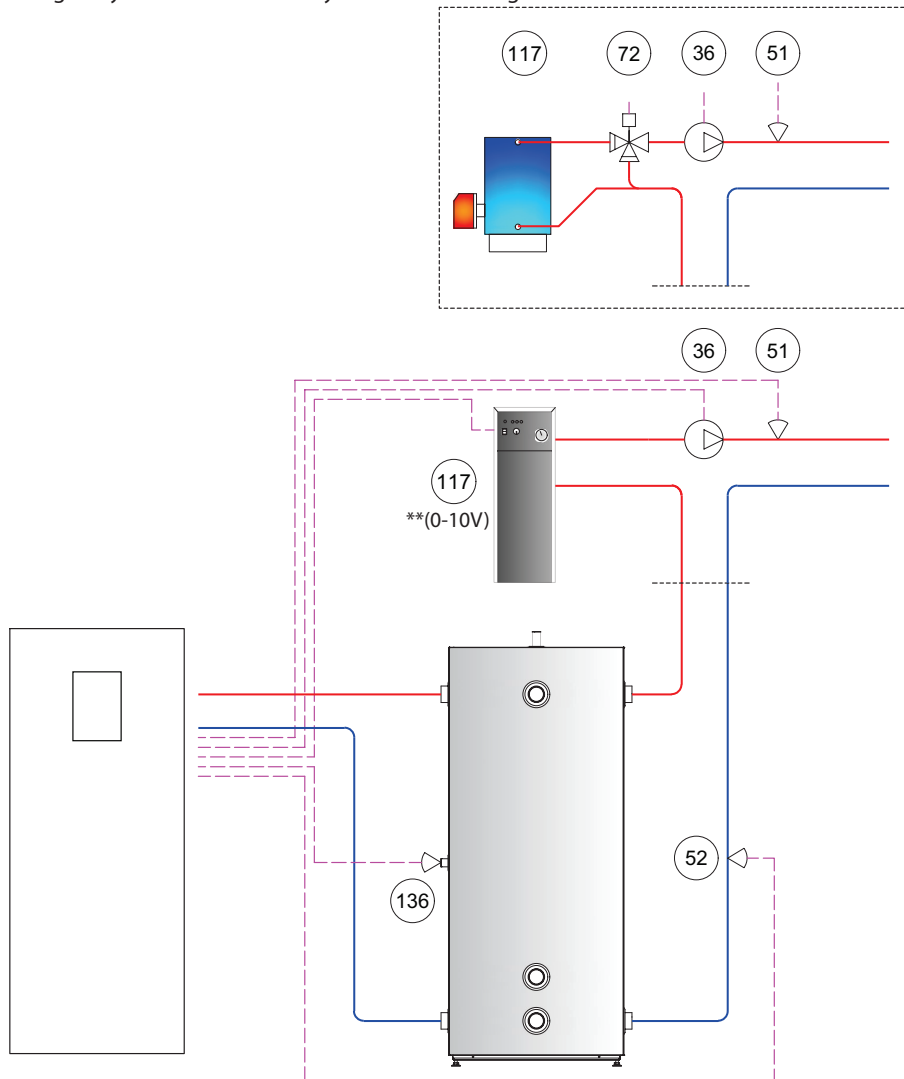


Table item number	Terminal	Description
36	FR6	Circulation pump (system)
51	T33	System supply line sensor
52	T34	System return line sensor
72	AO25	External auxiliary heater shunt
117	R3 / **(If auxiliary heater is 0-10V controlled, it must be connected to AO25 instead)	External auxiliary heater
136	T31	Buffer tank sensor

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Buffer tank type: 5 (requires auxiliary heater and distribution circuit 1)

The heat pump feeds the buffer tank. The buffer tank, in turn, feeds the heating system in series with the external auxiliary heater (on/off, 0-10V controlled, or in combination with both, depending on the type of external additional heater). The buffer tank is not directly charged by the external auxiliary heater. The distribution circuit 1 mix valve located after buffer tank allows for overcharge.

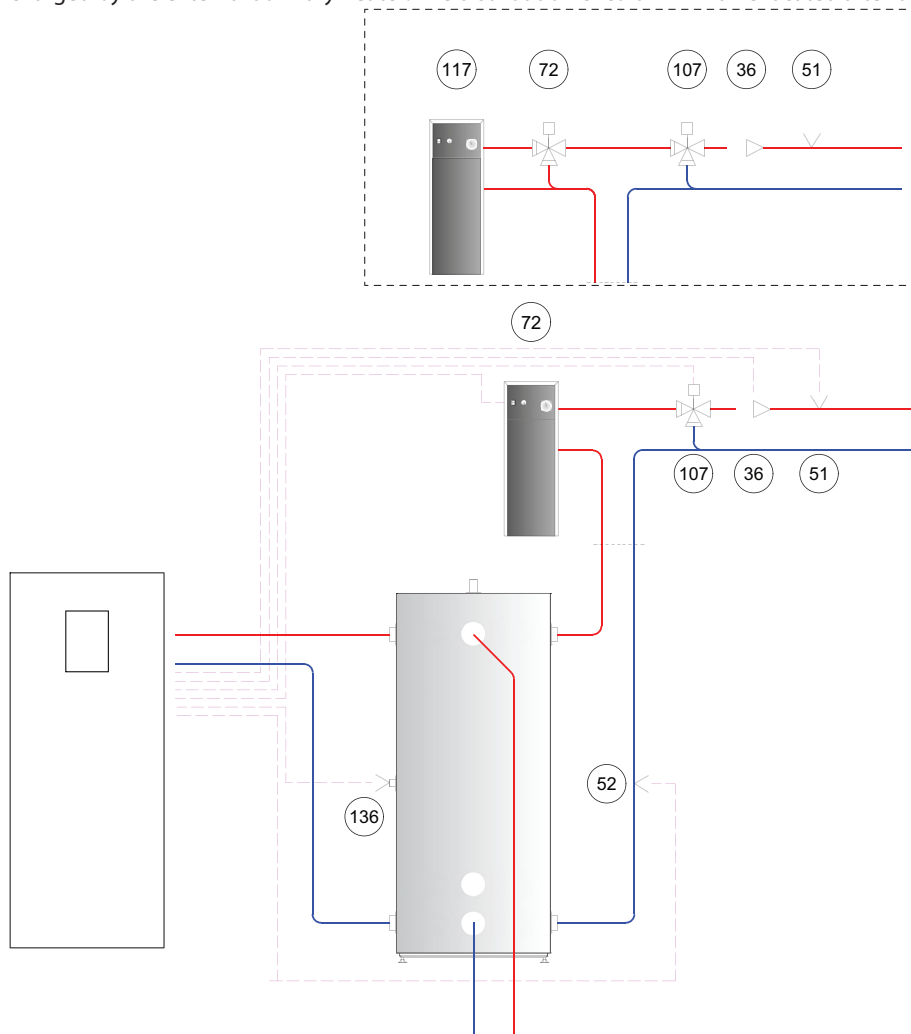


Table item number	Terminal	Description
36	FR6	Circulation pump (system)
51	T33	System supply line sensor
52	T34	System return line sensor
72	AO25	External auxiliary heater shunt
117	R3 / ** (If auxiliary heater is 0-10V controlled, it must be connected to AO25 instead)	External auxiliary heater
136	T31	Buffer tank sensor

6 Manual test

Caution



The installation may only be commissioned if the heating system and water heater have been filled and bled. Otherwise the circulation pumps and auxiliary heating, if installed, may become damaged.

Caution



Any alarms that may occur in connection with the commissioning must be fault-traced.



The system supply line sensor and outdoor sensor should be connected to ensure that the heat pump always have the correct temperature conditions to calculate from



Class A alarms will prevent the heat pump from starting.

6.1 Activate manual test



The manual test activation time follows the ordinary access code activation time, shown in the upper part of the display. After a total of 8 hours the access code must be entered again and all settings made, will be reset.

Ensure that the main circuit breaker is on.

1. Press  on the Start screen to open the Menu screen.
2. Press .
3. Enter the code for installer access: 607080.
4. Press on Settings .
5. Press  to go to the menu page for Manual test.
6. Press on the text **Manual test**.
7. Press  to activate manual test.
8. Select test case on the various menu pages.



During MANUAL TEST, this symbol is shown on all screens:





Mandatory test cases are described in the following chapters.
Test cases not described are optional.



The tests must first be enabled and then activated



The pump tests (brine pump, system pump and circulation pump) can be carried out in any order.

The test cases in the table below are available in MANUAL TEST.

Parameter	Meaning
Compressor	0 = compressor stopped Set compressor gear 1 –10
Brine pump	0 = stop brine pump 1 = start brine pump Range: 30-100%
Circulation pump	0 = stop circulation pump 1 = start circulation pump Range: 30-100%
Reversing valve	0 = heat 1 = tap water
System pump	0 = stop system pump 1 = start system pump
Hot gas pump	0 = stop hot gas pump 1 = start hot gas pump
External auxiliary heater on/off	0 = stop external auxiliary heater 1 = start external auxiliary heater
External auxiliary heater 0 -100%	0% = external auxiliary heater switched off 100% = fully open, maximum auxiliary heating
Burn out circulation pump	0 = stop burn out circulation pump 1 = start burn out circulation pump
Distribution circuit 1 Circulation pump	0 = stop circulation pump distribution circuit 1 1 = start circulation pump distribution circuit 1 0% = mixing valve closed 100% = mixing valve fully open
Mixing valve Circuit 1	
Expansion valve	0= expansion valve closed 1-100%= expansion valve fully open at 100%. For service only.
Sum alarm (potential free)	0= inactive 1= active

6.1.1 Testing the circulation pump (HP)

1. Start the circulation pump by pressing  (on/off).
2. Check that the circulation pump is running by:
 - listening
 - placing a hand on the pump
 - listening for air
3. Bleed the system if necessary. See chapter 'Filling and bleeding the water heater and heating system'
4. Stop the circulation pump by pressing .

6.1.2 Testing the reversing valve

For system solutions with a reversing valve installed. Built in, factory fitted, for Mega E S-E.

Test the reversing valve where 0=heat and 1=hot water.

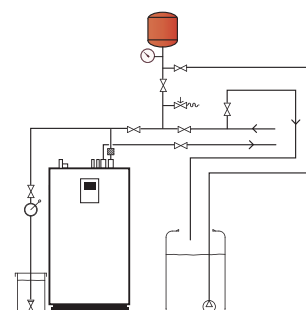
6.1.3 Testing the brine pump

Caution

The brine circuit may be pressurised to max 6 bar.



1. Start the brine pump by pressing  (on/off).
2. Check that the brine pump is running by:
 - listening
 - placing a hand on the pump
 - checking that the level in the expansion tank is stable. If the level varies, there is air in the system .
 - listening for air
3. Bleeding the brine circuit.
 1. Run the brine pump and the external pump in series until liquid, free of air, comes out of the return hose.
 2. Open the safety valve on the expansion tank and fill up to 2/3.
 3. Close the safety valve.
 4. Bleed the expansion tank.
 5. Press  to stop the brine pump. Allow the external pump to continue running.
 6. Open the valve with the external pump still running, in order to remove air between the valves.
 7. Check the system for leaks. Repair any leaks immediately.
 8. Close the valve and pressurise the system using the external pump.
 9. Close the valve.
 10. Stop the external pump and disconnect it from the filling equipment.
 11. Apply insulation to the filler cock.



6.1.4 Testing the system pump

1. Enable the system pump by pressing  (manual enable).
2. Start the system pump by pressing  (on/off).
3. Check that the system pump is running by:
 - listening
 - placing a hand on the pump
 - listening for air
4. Bleed the system if necessary. See chapter 'Filling and bleeding the water heater and heating system'
5. Stop the system pump by pressing .

6.1.5 Testing the compressor

1. Enable the compressor by pressing  (manual enable).
2. Set compressor gear.
3. Check that there is no abnormal noise.
4. Check that the pressure pipe becomes hot.
5. Stop the compressor by pressing  (manual enable).

If there are problems with specific frequencies, this can be adjusted in the display by tuning the actual gear. This is made in the Gear RPM adjustment menu. 50-100 rpm in either direction can make a significant improvement. Switch between the menus and make adjustments while having the Manual test activated, to tune the whole span of compressor gears, should there be any disturbing sounds or vibrations.

6.1.6 Testing the ventilation

To run the ventilation test go to page **MANUEL TEST -> Ventilation test**

1. Press  in the upper left corner of the Start screen.
2. Press .
3. Go to page **MANUEL TEST -> ventilation test**.
4. Press  to activate the test.
5. Let the test finish.
6. Press  to return to System settings.

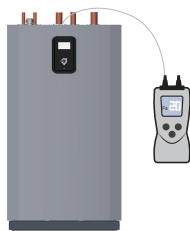
In order for the test to be approved, a negative pressure of 20 Pa must be achieved in the cabinet for a 10-second period within one minute of starting the test. One way to test this, is to connect a pressure gauge, connected via one of the sensor ports on the top of the heat pump (see image below).



In a cascade installation, it is important to test each individual unit separately and not on multiple units at the same time, this can create the opposite effect. If the test is not approved, please investigate and make the test again until the test is approved.

If the ventilation test fails, check following causes.

- Make sure that the cabinet is properly sealed.
- Make sure that the pipe grommets are sealed.
- Make sure that the differential pressure switch tube is not folded.
- Make sure that the tube has free passage.
- Make sure that the tube properly connected.
- Make sure that the fan is able to run properly.
- Make sure that the ventilation pipe has free passage.



6.1.7 Exiting manual test

To exit manual test:

1. Press  on the Start screen to open the Menu screen.
2. Press on Settings .
3. Press  to go to the menu page for Manual test.
4. Press on the text **Manual test**.
5. Press  to exit manual test.

The  symbol disappears.

6.1.8 Insulating pipes

When the manual test is completed, a check for leaks should be carried out. When the leakage check has been successfully completed, the pipes should be insulated.

Caution



Ensure that the pipes which transport cold water are properly insulated to prevent condensation damage.

7 Starting and tuning the system



How often the compressor is allowed to switch gear is decided by the gear shift delay setting. Each demand has its own gear shift delay. The setting should be tuned so that the system has enough time to react on the effect of each gear shift. Safety features such as envelope and brine monitoring etc. can bypass this delay. Usually a "faster" system requires a shorter gear shift delay value, and vice versa.

7.1 Selecting operating mode



The starting time for space heating is dependent on two things primarily: "Seasonal integral" and "Calculated demand". See the table for "Operating data" for values and ranges.

Set the heat pump to the desired operating mode in the menu:

1. Press  on the Start screen to open the Menu screen.
2. Press . A new window opens.
3. Press the appropriate symbol for the desired operating mode.

Symbol	Description
	Operating mode Off. All functions are off. Components inside the heat pump are still current carrying.
	Operating mode Service. In this operating mode the heat pump is deactivated and will not produce hot water or heating. All internal functions off. Components inside are still current carrying. External functions and secondary units (if connected) are on.

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Symbol	Description
	Operating mode Auxiliary heater only.  External functions are on. Compressor is off, thus unable to produce any heating or tap water. This button is only visible if auxiliary/immersion heater(s) are installed in the system. External auxiliary heater(s) can NOT produce hot tap water. Any secondaries connected will be restricted to produce heating and hot water.
	Operating mode On. All activated functions are on.

7.2 System information

Check applicable operating data described in the tables below. The information can be found in the sub-menu System information .

Select System information on the Menu screen:

1. Press  on the Start screen to open the Menu screen.
2. Press System information .

Operating data

In this view press  to see relevant temperatures and  for compressor RPM, pump efficiency, opening degrees etc.

What is shown in this view is dependent on what is connected to the respective heat pump.

Displayed text	Explanation
Outdoor	Shows the temperature on the outdoor sensor.
System supply line	Shows the temperature on the system supply line.
Desired system supply line	Shows the current system requirement value.
Hot water	Shows the temperature of the hot water sensor, if hot water production is permitted.
Supply line (HP)	Shows temperature of outgoing radiator temperature from heat pump.
Return line (HP)	Shows temperature of incoming radiator temperature to heat pump.
Brine in	Shows the current temperature of brine in to the heat pump.
Brine out	Shows the current temperature of brine out from the heat pump.
Seasonal integral	Shows the accumulated difference between the outdoor temperature and the set "seasonal stop" value. Heating season: start -100, stop +100 Cooling season: start +100, stop -100
Calculated demand	Shows heating surplus or heating deficit in the heating system. ¹ Minus value indicates heating deficit.
Start/stop calculated demand threshold +/-	Start is, default, set to -4. Stop is, default, set to +4. This range is adjusted in the HEAT menu in SETTINGS . The desired target for the control system is to work towards the value 0. A "-" value means that there is a current heat demand.

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Actual compressor rpm	Shows the current rpm of the compressor.
Circulation pump (HP)	Shows the current efficiency of the circulation pump (HP).

¹ An installed system supply line sensor has precedence over the built-in supply line sensor.

Operating time

	Explanation
Compressor run time	Shows the number of hours that the compressor has been in operation.
Tap water run time	Shows the number of hours that has been used for hot water production.
External heater run time	Shows the number of hours that the external heater has been activated.
Internal immersion heater run time	Shows the number of hours that the internal immersion heater has been activated. Mega E S-E only.

Version information

In the menu Operating data, version information about the control system software is shown. This information is useful when contacting support.

7.3 Checking abnormal noise

The characteristics of the piping system and construction can, under unfavourable circumstances, cause noise and vibration to be amplified at certain compressor speeds.

Test-run the heat pump in both hot water and heating operating modes, and check that there is no abnormal noise.

Test-run the heat pump across the entire speed range of the compressor and check that there is no abnormal noise. While this test is in progress, check that there is no abnormal noise in other parts of the building.

Any problems should be remedied in the first instance by checking the pipe installation and install flexible hoses and sound damping pipe clamps in the vicinity of the pump. If any problems remain, problematic compressor speeds can be blocked/adjusted in the control system. See chapter on adjusting the compressor speeds under Manual test.

Circulation pump settings (max/min) speeds can be adjusted in the control system.

7.4 Compressor settings

Sometimes there is a need to adjust the compressor's output power or fine tune the range of the gears of the compressor.

Navigate to **Settings/Compressor settings**.

Press **Gear RPM adjustment** to adjust the RPM range for specific compressor gears. Used for preventing unwanted vibrations and noise amplified in the building at certain RPM's.

Press **Gear limitation** to adjust the gear range of the compressor. Used for limiting the output power of the compressor for different demands: Heat, Tap water, Pool and Cooling.

Adjust **Compressor set delay** to set how long after the brine pump has started, the compressor should start (30s default) if there is a demand calling for start of the compressor.

7.5 Completed commissioning

When the commissioning is completed, the control system must be set to end user mode:

Press  and then  to exit the commissioning mode.

Make sure that the  symbol is shown to the left in the Menu screen before handing over the system to the end user.

8 Installation protocol and customer information

After installation and test operation, the customer must be informed about their new heat pump installation. In the *User guide* there is a checklist regarding the information that the installer must give the customer.



The serial number must always be given for warranty matters.
Always make a note of the serial number in the installation protocol in the User Guide.

8.1 Installation protocol

Fill in the Installation protocol in the *User Guide*.

9 Alarms

9.1 Alarms

If the display shows a green screen saver, the system is OK and no actions are required.

There are different types of alarms:

- **Class A:** Stops the heat pump. The alarm must be acknowledged.
The display shows a red screen saver.
- **Class B:** Does **not** stop the heat pump. The alarm must be acknowledged.
The display shows a yellow screen saver.
- **Class C:** Temporary functional deviation, no action required. Does **not** stop the heat pump.
The alarm is self-acknowledging.
The display shows a green screen saver during the functional deviation.
- **Class D:** Alarm visible only in Genesis primary/secondary systems. Information from Genesis secondary heat pump(s) to primary heat pump.
The display shows a yellow screen saver. Must be acknowledged.
- **Class E:** Alarm visible only in legacy primary/secondary systems. Information from legacy secondary heat pump(s) to primary heat pump.
The display shows a yellow screen saver. Must be acknowledged.

If an A-alarm is active, the heat pump compressor is disabled, and the hot water production will stop. This is to draw attention to the fact that there is an alarm that must be resolved before the heat pump can regain normal functionality.

If the alarm can not be acknowledged, and auxiliary heater is installed and activated, it will automatically provide space heating if allowed.

Press the screen, and the following window will appear:

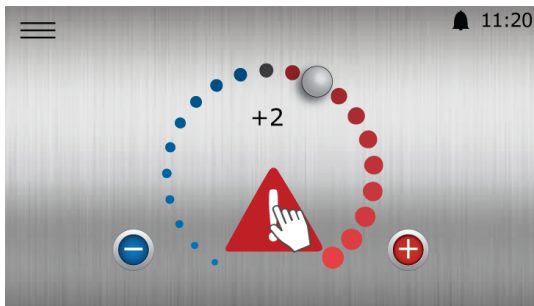


Fig. 3: Start screen with a class A alarm

Press  A new window opens, showing the alarm which has been triggered.

Acknowledging alarms

Press  to reset all alarms.

Contact the installer if alarms are persisting and/or recurring.

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9.1.1 Alarm list

Message	Class	Description
High pressure switch	A	High pressure switch triggered
Low pressure	A	Stopped on low pressure, more than 5 times in 5 hours. Low pressure limit = 2.3 bar
High discharge temp	A	Stopped on high discharge temperature, more than 3 times in 8 hours
Operating pressure	A	Stopped on operating pressure, more than 5 times in 5 hours. Switch off limit = 41.5 bar
Discharge pipe sensor	A	Sensor alarm
Liquid line sensor	A	Sensor alarm
Suction gas sensor	A	Sensor alarm
Low brine flow/pressure	A	Pressure or flow guard
I/O phase detection	A	BM-card, one or more phases missing
Inverter (x-x)	A	Inverter alarm, more than 3 stops in 2 hours
RSM internal failure	A	Safety card failure (see chapter "Alarms, RSM" for details)
Fan error	A	Fan alarm (see chapter "Alarms, RSM" for details)
Ventilation test failed	A	Inconsistent ventilation pressure (see chapter "Alarms, RSM" for details)
Ventilation test failed/error	A	Failed ventilation test (see chapter "Alarms, RSM" for details)
Refrigerant leakage detected!	A	Gas sensor alarm (see chapter "Alarms, RSM" for details)
Refrigerant leakage sensor failure	A	Gas sensor alarm (see chapter "Alarms, RSM" for details)
Low superheat	A	Stopped on low superheat, more than 5 times in 5 hours
Pressure ratio	A	Stopped on pressure ratio, high and low pressure side on the compressor, more than 5 times in 5 hours
Outside envelope	A	Stopped on envelope work area restrictions, more than 5 times in 5 hours
Brine temp	A	Stopped on brine monitoring, more than 5 times in 5 hours
Inverter communication	A	The CM-card (Control module) has lost its Modbus communication with the inverter
Machine profile	A	Re-configure in the Machine profile menu
No BM-card found	A	No BM-card detected. Requires a restart
BM-card configuration error	A	The BM-card is unable to be configured
Below envelope	A	Stopped on envelope work area restrictions, more than 5 times in 5 hours
Right of envelope	A	Stopped on envelope work area restrictions, more than 5 times in 5 hours
RSM communication error	B	Lost connection to the Refrigerant Safety Module.
No recorded ventilation test	B	An initial ventilation test has not been performed!
Brine in sensor	B	Sensor alarm
Brine out sensor	B	Sensor alarm
Condenser in sensor	B	Sensor alarm
Condenser out sensor	B	Sensor alarm
Outdoor sensor	B	Sensor alarm
System supply sensor	B	Sensor alarm
Distribution circuit 1 sensor	B	Sensor alarm
Distribution circuit 2 sensor	B	Sensor alarm
Distribution circuit 3 sensor	B	Sensor alarm
Distribution circuit 4 sensor	B	Sensor alarm
Distribution circuit 5 sensor	B	Sensor alarm
Tap water charge system sensor	B	Sensor alarm
Tap water control sensor	B	Sensor alarm
Tap water return sensor	B	Sensor alarm
Cool tank sensor	B	Sensor alarm
Cool circuit supply sensor	B	Sensor alarm
Cool circuit return sensor	B	Sensor alarm

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Delta temp brine max	B	Brine delta exceeds "alarm limit brine delta" setpoint
Tap water lower sensor	B	Sensor alarm
Maximum brine in temp	B	Brine in temperature is above desired limit for brine monitoring
Minimum brine in temp	B	Brine in temperature is below desired limit for brine monitoring
Minimum brine out temp	B	Brine out temperature is below desired limit for brine monitoring
Humidity room sensor	B	Sensor alarm
Surplus heat supply sensor	B	Sensor alarm
Surplus heat return sensor	B	Sensor alarm
Cool tank return sensor	B	Sensor alarm
Pool return sensor	B	Sensor alarm
Tap water end tank sensor	B	Sensor alarm. Requires TWC-anti legionella to be activated
Anti legionella max. time exceeded	B	Anti legionella function has not been finished within 3,5 hours from start
Buffer tank sensor	B	Sensor alarm
EM3 communication: 0-9	B	Communication alarm for EM3 ID: 0-9. The CM card has no communication with one or more EM3 cards.
EM3 communication: 10-19	B	Communication alarm for EM3 ID: 10-19. The CM card has no communication with one or more EM3 cards.
Distr. circ. 2 room sensor	B	Sensor alarm
Distr. circ. 3 room sensor	B	Sensor alarm
Distr. circ. 4 room sensor	B	Sensor alarm
Distr. circ. 5 room sensor	B	Sensor alarm
Internal immersion heater	B	Overheating protection on internal immersion heater triggered. Mega E S-E only.
TWC return minimum	C	Low temperature on recirculating water as per TWC hot water return temperature alarm settings
TWC control minimum	C	Low TWC temperature as per TWC hot water supply temperature alarm settings
WCS control	C	Temperature deviation according to alarm settings for WCS
Distribution circuit 1 controller	C	Temperature deviation according to alarm settings for Distribution circuit 1
Distribution circuit 2 controller	C	Temperature deviation according to alarm settings for Distribution circuit 2
Distribution circuit 3 controller	C	Temperature deviation according to alarm settings for Distribution circuit 3
Distribution circuit 4 controller	C	Temperature deviation according to alarm settings for Distribution circuit 4
Distribution circuit 5 controller	C	Temperature deviation according to alarm settings for Distribution circuit 5
Cool circuit supply control	C	Temperature deviation according to alarm settings for cooling
Cool tank control	C	Temperature deviation according to alarm settings for cooling tank
Surplus heat control	C	Temperature deviation according to alarm settings for surplus heat
Room sensor	C	Room sensor communication error
External alarm	C	Alarm input for external alarm. Requires activation in the "Alarm control/sum alarm" menu
Low system supply temp	C	Supply line temperature below 70% of the setpoint for more than 3 hours
High system supply temp	C	Supply line temperature exceeds set limit (default 70°C)
Stuck valve tap water	C	The controller suspects that the tap water valve is stuck in the wrong position.
Com. to primary error	D	Secondary heat pump to primary heat pump communication error. Genesis only
Com. to secondary error	D	Primary heat pump to secondary heat pump communication error. Genesis only
Too few secondaries detected	D	Number of secondary heat pumps communicating with primary heat pump are lower than expected. Genesis only
Secondary pump class A	D	A secondary heat pump reacting on an A alarm. Genesis only
Secondary pump class B	D	A secondary heat pump reacting on a B alarm. Genesis only
Multiple primaries detected	D	One or more additional primary units was found on the same communication port. This is not allowed. Resolve the issue by changing the communication port.
Legacy pump pressure switch alarm	E	Operating pressure switch. Legacy only
Legacy pump general error	E	Sum alarm from secondary heat pump. Legacy only
Legacy pump communication	E	Communication error. Legacy only

9.2 Alarms, RSM (Refrigerant Safety Module, safety card)

To clear the alarm when you have performed the action needed, restart the unit by turning the power off and then on. A restart from the display does not clear the alarm.

Alarm	Description	Possible cause	Action
Safety card failure	RSM Internal error.	RSM card.	▪ Cut off the power to the heat pump and restart it. ▪ If the error remains, replace the Safety card. (RSM card).
Fan error	RSM Internal error.	RSM card. The fan might not be receiving power correctly.	▪ Cut off the power to the heat pump and restart it. ▪ If the error remains, replace the safety card. (RSM card).
Ventilation test failed	A negative pressure of -20 Pa must be achieved within 30 seconds and maintain that pressure for the remaining time. The total ventilation test time is 60 seconds.	Failed accurate pressure.	▪ Check if the cabinet is properly sealed. ▪ Check if the differential pressure sensor cable is connected to the sensor and leads outside the cabinet. ▪ Check that the ventilation fan runs in manual test.
Refrigerant leakage detected	Refrigerant leakage.	Defective refrigerant leak sensor.	▪ Check the refrigerant circuit for possible leaks.
Refrigerant leakage sensor failure	The RSM card has either lost contact with the refrigerant sensor or the refrigerant sensor has reported back with an error code.		▪ A restart of the unit could solve the problem. ▪ Check the cable connections. ▪ If the alarm appears within 2-4 weeks, replace the sensor.
RSM communication error	Lost contact with RSM card.		▪ Check the connections of the Modbus cable. ▪ Ensure that the card has voltage. ▪ Restart the safety card (RSM card).
No recorded ventilation test	Ventilation tests have not been performed. The next test is scheduled according to the calendar settings.	Ventilation test has not been performed.	▪ Ventilation test must be performed. ▪ The ventilation test can be performed from the "Manual test" menu.





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