ARCEUS ELECTRIC COMBI BOILER

ARCEUS EK
12-15-18-24-27 kW MT
6-9-12-15-18-24-27 kW CH/ST

USER AND INSTALLATION MANUAL

CONTENTS

1- INTRODUCTION

First of all, thank you for choosing E.C.A.

E.C.A. ARCEUS electric combi boilers are intended for meeting central heating and hot domestic water requirement in an efficient, safe, and comfortable manner. ARCEUS electric combi boilers can operate on 220-240 VAC (6/9/12/15 kW) and 380-415 VAC (6/9/12/15/18/24/27 kW) power.

MT model: It is intended for both central heating and hot domestic water requirement.

CH model: It is for central heating requirement only.

ST model: It is intended for both central heating and hot domestic water requirement. A boiler connection is required to meet the hot domestic water requirement.

This manual contains assembly and operation information for 6/9/12/15/18/24/27 kW ARCEUS electric combi boilers. The manual gives detailed information on the technical specifications of the device, selection of device's installation location, water, and electrical connections, maintenance information, and detection and elimination of possible faults. Please read your manual carefully to benefit from all the features of your device and use it smoothly for a long time.

Keep all documents provided with your device for future reference.

2- WARRANTY AND SERVICE

• The appliance has guarantee period against faulty workmanship or material in condition that the instructions and precautions in this manual must be obeyed. The service operations and general maintenance must be carried out only qualified person.

• The warranty certificate must be registered by Service in the installation day.

• Your appliance needs not any repairs if operated according to this manual. For assistance for additional information, consult qualified person or installer.

3- SYMBOLS

The following symbols are placed at the necessary points in the text to draw attention to the important points regarding the operation and installation of the device**.** The meanings of the symbols are described below.

Indicates situations that the user should not intervene, and are under the responsibility of the authorized service.

INFORMATION These are descriptions containing information that should be taken intoconsideration by the user.

CAUTION: Indicates that material damage or slight personal injury may occur.
DANGER: Indicates that severe personal injury may occur.

4- SAFETY RULES AND WARNINGS

4.1- Safety Rules

The power line to which the device is connected must have cross-sectional dimensions as specified in the manual and grounded. For three-phase operating devices, a three-phase power supply must be available at the installation location. Leakage current protection relay must be connected before the device input.

4.2- Installation

- Electrical, central heating, and hot domestic water installations must be completed before the assembly of your device.

4.3- Assembly

- The device must be assembled by an authorized installation agent in accordance with the standards in the assembly manual.
- The device must be mounted on a flat, rigid wall that can withstand its weight. The device should not be mounted so that it is directly exposed to water vapor, detergent vapor, etc.
- The initial start-up of the device must be performed by the authorized service.
- Sun exposure can cause discoloration on the outer surface of your device over time.
- The device should normally be installed indoors. However, it can also be installed within a suitable cabinet in places such as a garage, open balcony, etc. Consult E.C.A. for appropriate cabinet size.
- If the device is located in an unheated location, it should be powered on, switched on, and within the operating pressure range of installation so that freeze protection would be activated. The freeze protection remains active even if the device is in OFF (closed) position.

4.4- Commissioning

- The initial start-up of the device must be performed by the authorized service.
- Whether the maximum water pressure (bar) for the device and the rated voltage of the power supply in the information label are compatible with the local supply conditions must be precisely checked.
- After the installation and initial start-up operations of the device are completed, ask the authorized service for information about how to operate the device and the safety devices.

4.5- Operation and Maintenance

- Observe the warnings in the installation and operation manual. This will prevent any misuse and associated hazards.
- For more efficient and safe use of your device, regular maintenance should be performed every year. Maintenance operations are out of warranty and must be carried out by the E.C.A. authorized services.
- The outer surfaces of the device should only be cleaned with a damp cloth without using detergent or any chemicals. Using chemicals such as detergent, etc. may cause corrosion and scratches on your device.

CAUTION: This device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge unless they have been given supervision or instruction concerning the use of the device by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance. Cleaning and user maintenance should not be made by unattended children.

CAUTION: This device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge unless they have been given supervision or instruction concerning the use of the device by a responsible person. Children should be supervised to ensure that they do not play with the device. to the product and its surroundings.

CAUTION: If the device is used incorrectly and inappropriately, it may pose a life-threatening risk and may cause material damage to the product and its surroundings.

CAUTION: This appliance can be used by children aged from 8 years 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 use of the appliance in a safe way and understand the hazards involved.

5- PRODUCT

5.1- General Specifications

The control panel is designed ergonomically and user-friendly. ARCEUS Electric Combi Boilers, with a visualized plastic control panel and an advanced LCD screen, perform the heating function by water circulation through a heat exchanger with gradually activated electric heaters. ARCEUS Electric Combi Boilers provide ease of use and service. On LCD screen with a black instrument panel; you can see the operating state icons, heating circuit and operating water adjustment values, the fault/error codes, and the heating water installation pressure.

The safety systems in your device provide safety for both you and your device. These safety systems are:

- Heating Circuit Water Overheating Safety (88 °C)
- DHW (Domestic Hot Water) Overheating Protection (71 °C)
- High Water Pressure Protection (3 bar)
- Low Water Pressure Protection (0.4 bar)
- Low Voltage Protection (170 VAC-300 VAC)
- High Demand for Hot Water Protection (with Internal By-pass circuit and pump over-run)
- Contactor
- Automatic Circuit breaker
- Anti-freeze Protection for both Central Heating and Domestic Water Circuit Domestic Water Flow Control
- Pump Jamming Safety
- 3-Way Valve Jamming Safety
- Automatic Air Purge
- Expansion Tank (8 liters)
- Annual Maintenance Reminder System
- Anti-Legion Protection (70°C) (Only for ST model)

5.2- Product Notation

NOTATION	DESCRIPTION
ARCEUS 12-15-18-24-27 MT	ARCEUS Monothermic Electric Combi Boiler
ARCEUS 6-9-12-15-18-24-27 CH	ARCEUS Central Heating Electric Combi Boiler
ARCEUS 6-9-12-15-18-24-27 ST	ARCEUS Central Boiler Aided Electric Combi Boiler

Table 1. Device Notation Table

5.3- Wiring Diagrams

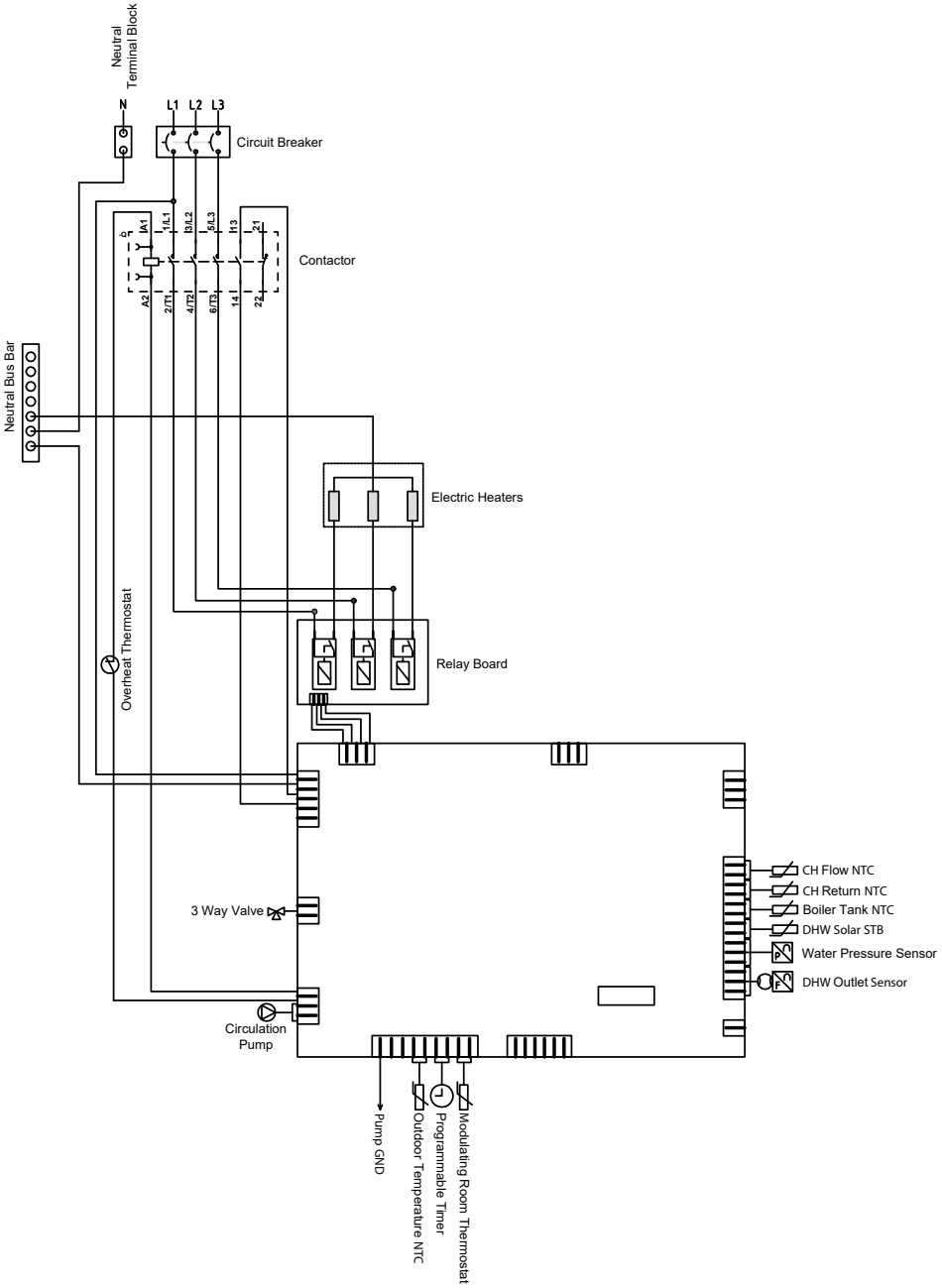


Figure 1. Arceus 6-9 kW Wiring Diagram

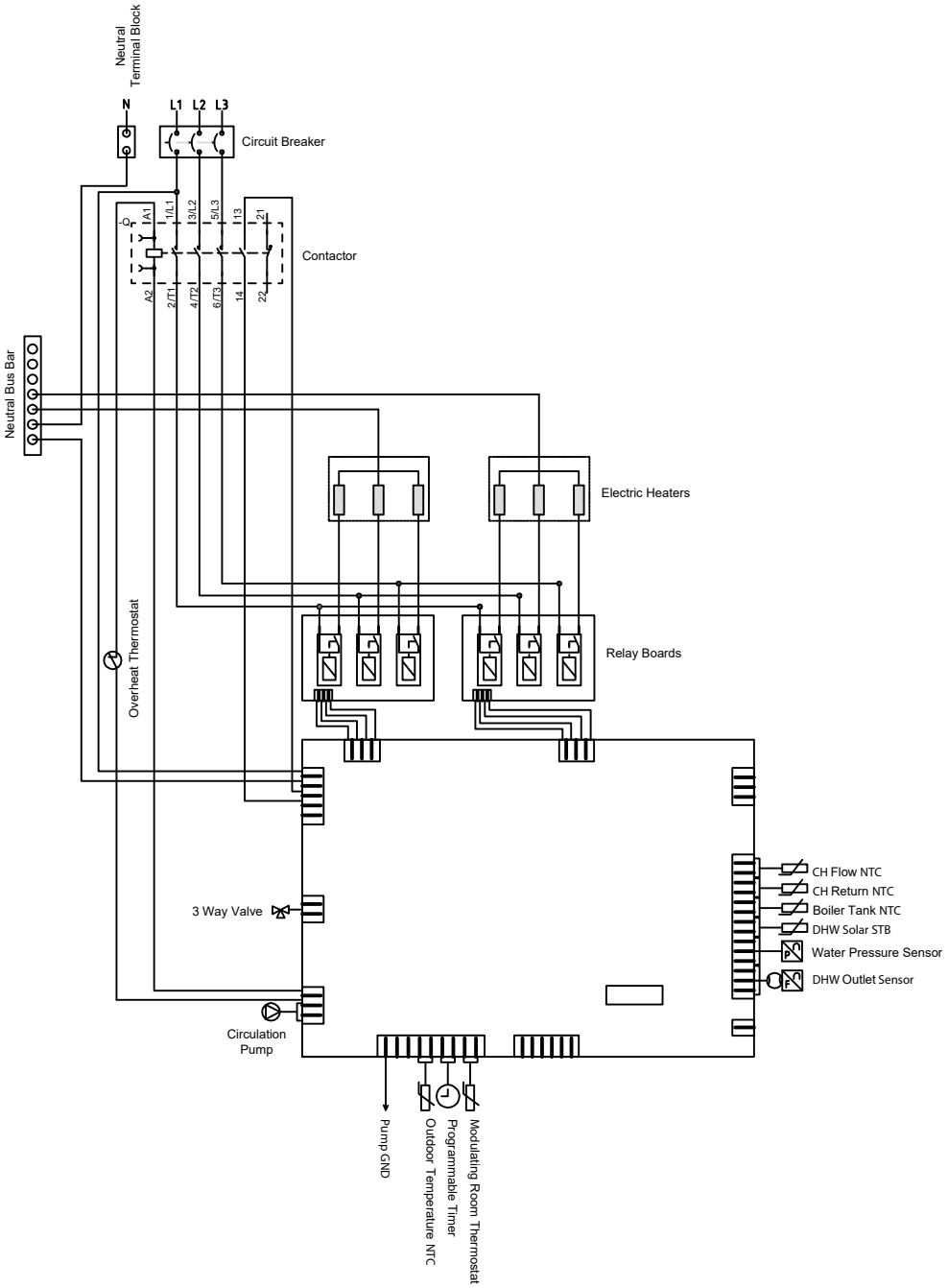


Figure 2. Arceus 12-15 kW Wiring Diagram

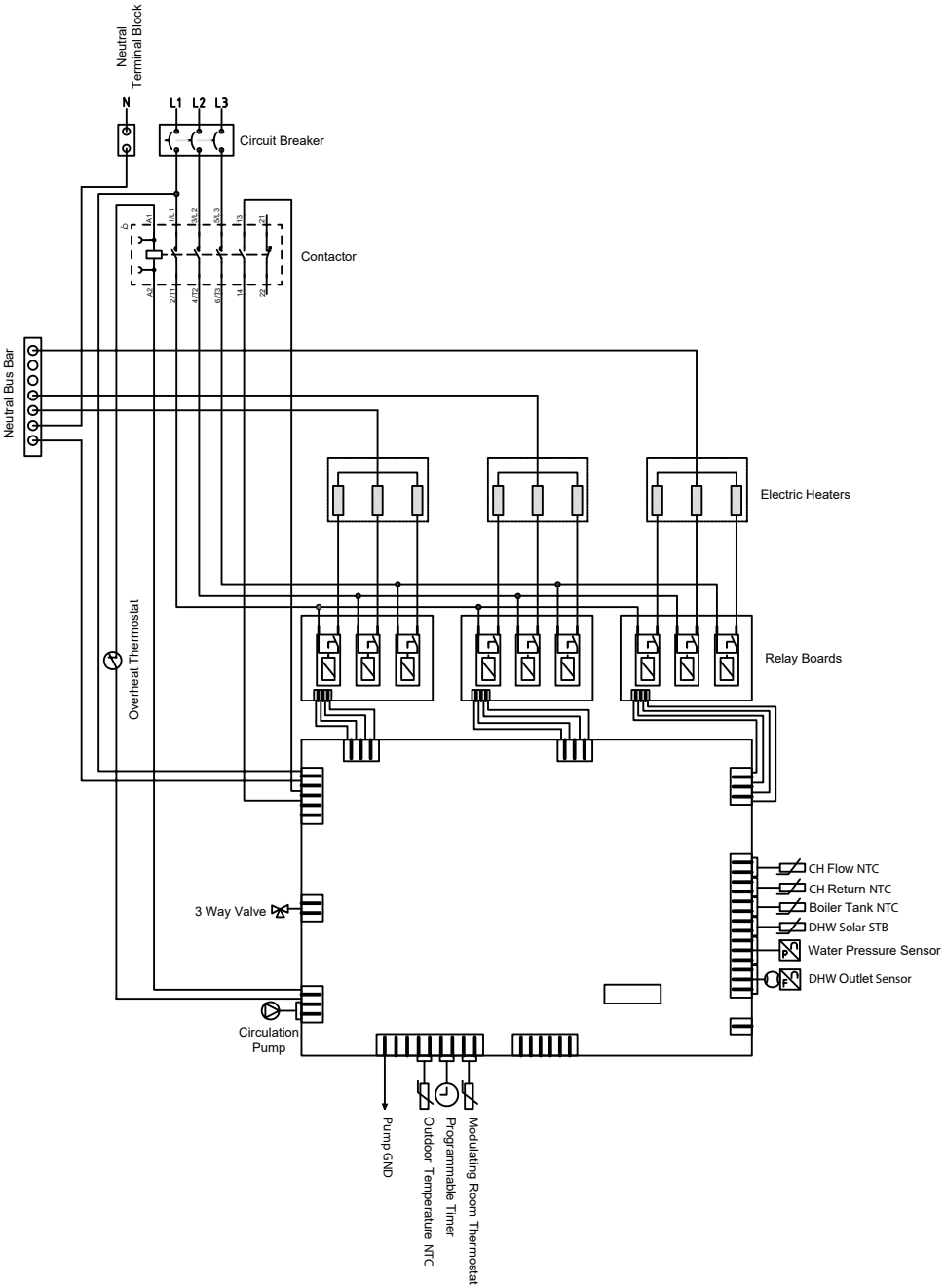


Figure 3. Arceus 18-24 kW Wiring Diagram

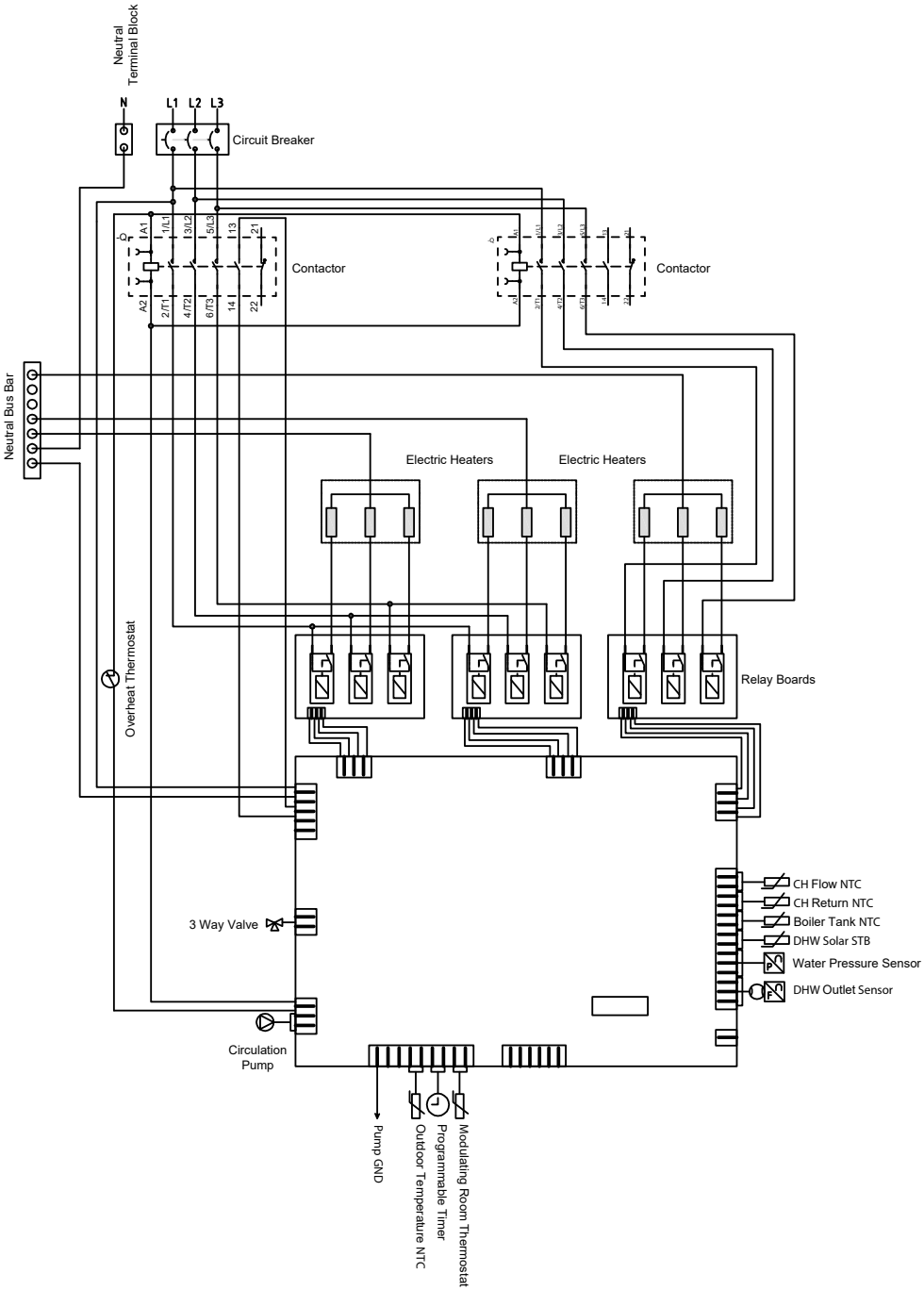


Figure 4. Arceus 27 kW Wiring Diagram

5.4- Detailed View, Component List and Installation

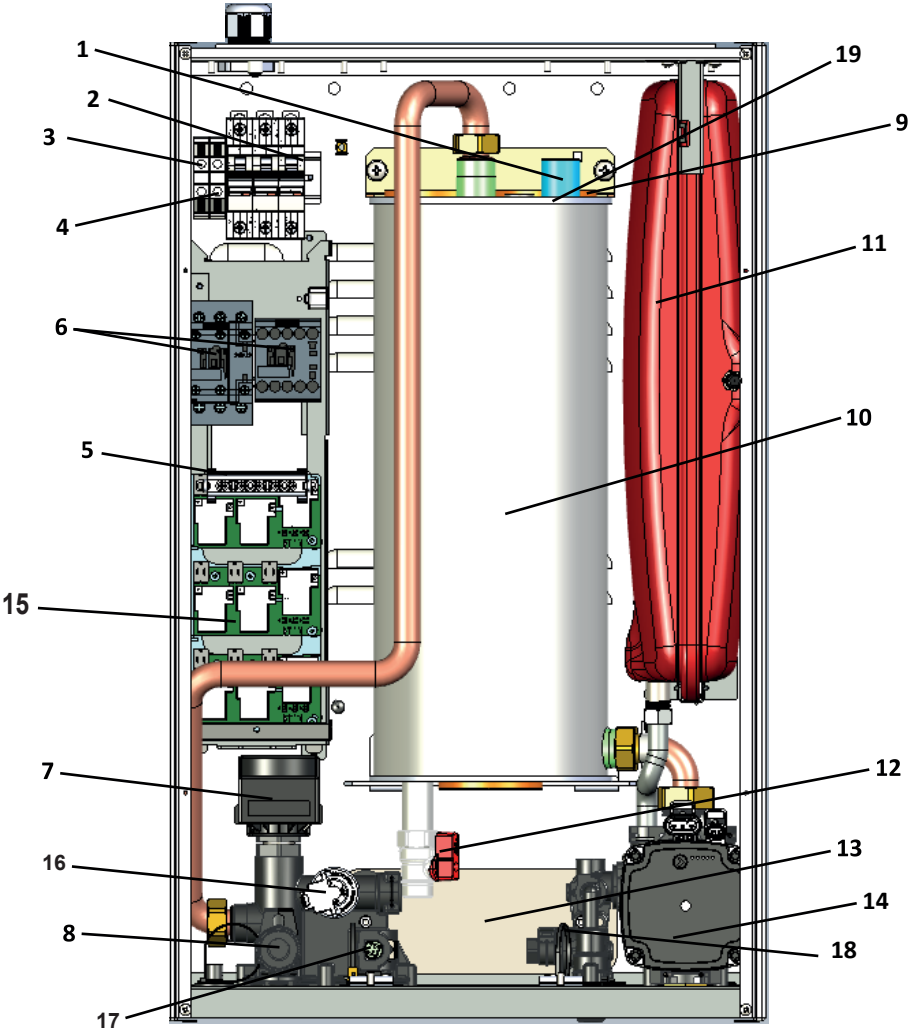
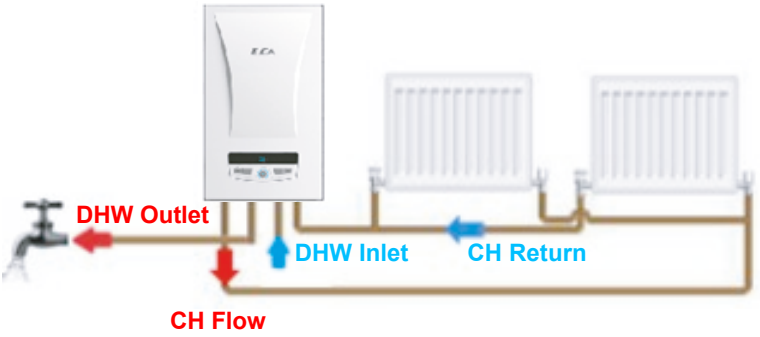


Figure 5. Component View of Device

1. Air Purge
2. Circuit Breaker
3. Ground Terminal Block
4. Neutral Terminal Block
5. Neutral Busbar
6. Cantactor
7. 3 Way Valve
8. 3 Bar Safety Valve
9. Electric Heaters
10. Main Heat Exchanger
11. Expansion Vessel
12. Drain Valve
13. Plate Heat Exchanger
14. Circulation Pump
15. Relay Boards
16. Pressure Sensor
17. Immersion type NTC
18. Flow sensor
19. Overheat thermostat

5.4.1- MT Model Installation



Figurel 6. Monothermic Device Installation Scheme

5.4.2- CH Model Installation

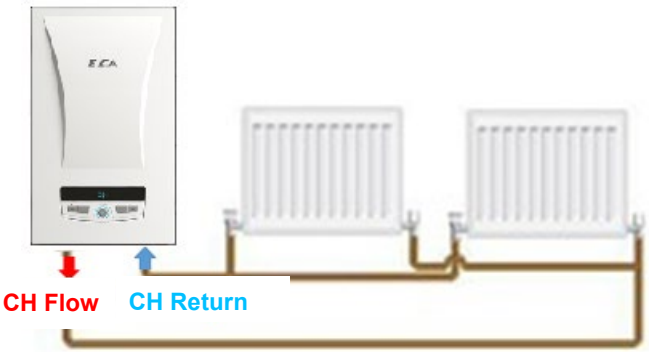


Figure 7. CH Device Installation Scheme

5.4.3- ST Model Installation

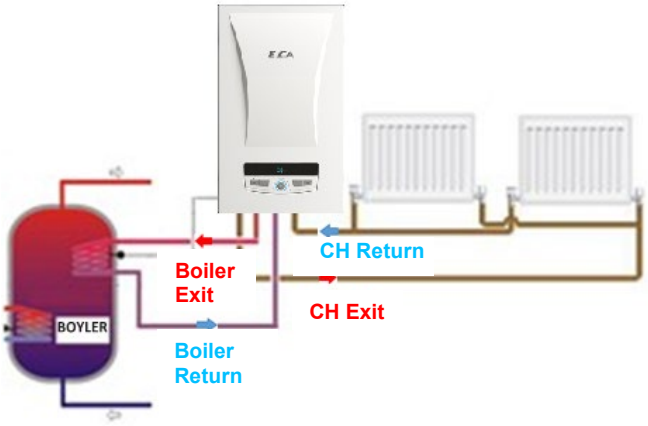


Figure 8. ST Device Installation Scheme

6- PACKAGE

CAUTION: Warnings on the carton package must be observed during transportation and storage of the device.

- The device is delivered in a carton box with dimensions of 735 x 345 x 490 (HxWxD) as supported by lower and upper styrofoams.

- The parts required for the installation of the device (wall bracket, 5 gaskets, 3 dowels, and fixing screws for water connections) are placed in the upper styrofoam. The user manual is placed between the upper styrofoam and the combi boiler.

7- ASSEMBLY

7.1- Selection of Device's Assembly Location

The location where the device can be assembled and spaces to be left around it for safety, service, maintenance, and use purposes must be as shown in Figure 9.

Figure 9: Indicates the minimum spaces to be left from the top and sides of the device (Dimensions are given in mm).

For correct service and maintenance of the combi boiler, the installation should be carried out in accordance with the following minimum spaces. The position of the combi boiler must be checked in accordance with the technical rules.

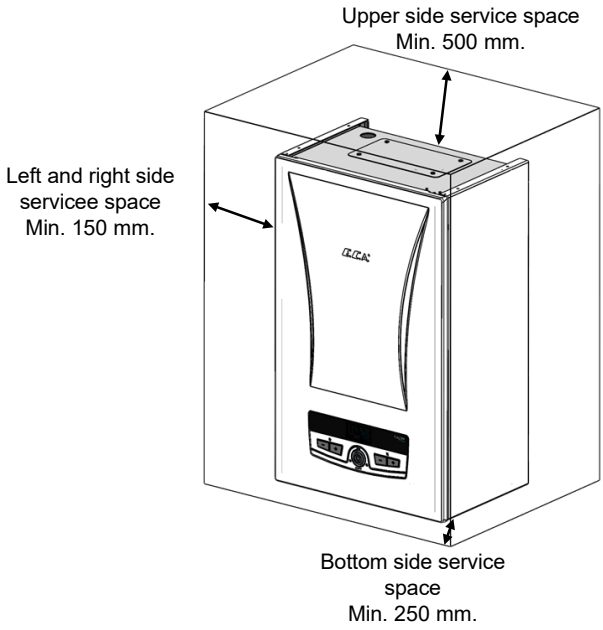


Figure 9. Required spaces for the assembly of the device

- The device can not be used at altitudes higher than 2000 m above sea level.There is no need to remove side panels for the inside combi boiler service operations. Min. 50 mm spaces are given by considering a possible side panel sheet replacement.
- Do not assemble your combi boiler in places where it will be exposed to direct sunlight. Sun exposure can cause discoloration on the outer surface of your device over time.
- The ambient temperature of the device's assembly location must be between 5 - 35 °C.
- The device must not be assembled outdoors.
- The device must not be assembled on devices with a direct steam outlet.
- The device must not be assembled in areas where it can be at risk of direct water exposure.
- The device must not be assembled on damp places such as bathtubs, shower cabinets and must be assembled at least 100 cm away from these areas.
- Since the outer surface temperature of the device does not exceed 85°C at maximum heating power, no special protective measures are required for combustible building materials and components.

7.2- Wall Mounting of the Device

After determining the place where the combi boiler is mounted:

• The locations of the fixing screws of the wall hanging bracket are marked according to the template below.

• After the marked points are drilled, the wall hanging apparatus and mounting apparatus are securely fixed to the wall with the dowels and fixing screws included in the packaging of the device.

• Finally, the hanging bracket on the back of the boiler is attached to the hooks on the wall-mounted hanging bracket and the boiler is hung on the wall.

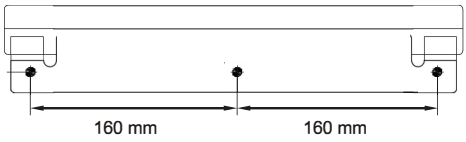


Figure 10.a. Bracket Template

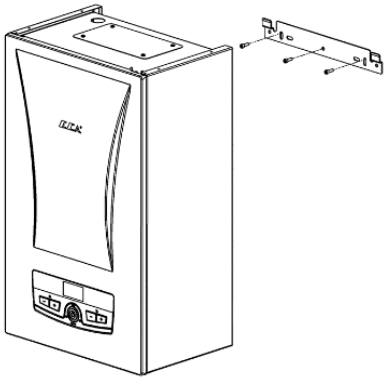


Figure 10.b. Bracket Assembly

8- CONNECTIONS

8.1- Water Pipe Connections

- The water connections between the wall mounting bracket fixed on the wall and the combi boiler are made with the pipe group and nipples as shown in the figure.

8.1.1- MT Model

a) Central heating pipe 3/4" outlet line (hot)
b) Domestic water pipe 1/2" outlet line (hot)
c) Domestic water pipe 1/2" inlet line (cold)
d) Central heating pipe 3/4" return line (cold)

e) A suitable sized valve should be installed in the water pipelines. In addition, a strainer must be placed in the domestic water (1/2") pipe inlet line and central heating (3/4") pipe return line.
f) The hose from the 3-bar safety valve must be connected to the sewage drain line.

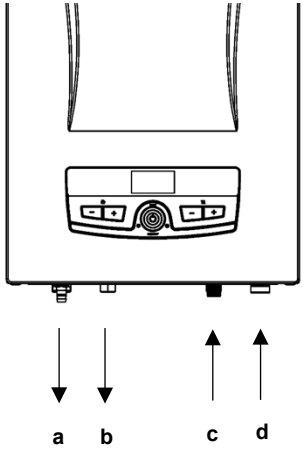


Figure 11. MT boiler water connections

8.1.2- HCH Model

a)Central heating pipe 3/4" outlet line (hot)
b)Central heating pipe 3/4" return line (cold)

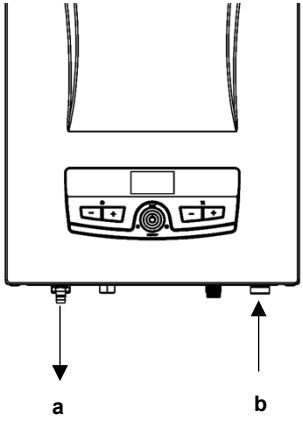


Figure 12. CH boiler water connections

8.1.3- HST Model

a)Central heating pipe 3/4" outlet line (hot)
b) Boiler outlet line 1/2" (hot)
c) Boiler return line 1/2" (cold)
d) Installation Filling line 1/2"
e) Central heating pipe 3/4" return line (cold)

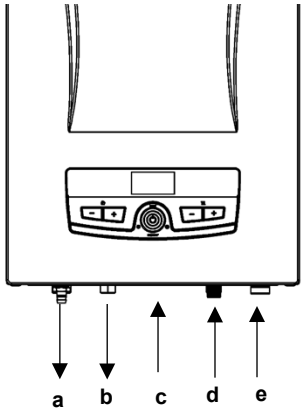


Figure 13. ST boiler water connections

8.2- Electrical Connection

Your combi boiler must be connected to a grounded power line that can supply 230 VAC 50 Hz voltage for single-phase devices and 400 VAC 50 Hz voltage for 3-phase devices. Malfunctions caused by voltage fluctuations are not covered by the warranty.

DANGER: When making the electrical connection of the device, be sure that there is no voltage in the power line.

DANGER: If the supply cable is damaged, it must be replaced by the manufacturer, or an authorized service or an equivalent qualified person.

CAUTION: Power supply line of the device must be protected by a residual current device with 30 mA tripping sensitivity.

CAUTION: The electrical connection of your device must be made according to the cable sections in the table.

CAUTION: For the safety of the device, there is a fuse inside your device that will provide overcurrent protection. In case of excessive current flow, the fuse cuts off the energy to the device. In such cases, intervention should be carried out by competent personnel. Call for service.

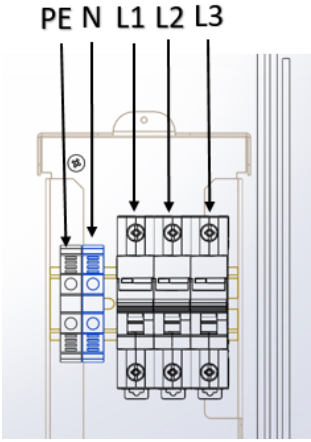


Figure 14. Device Mains Connections

CAUTION: Only 6, 9 ,12 and 15 kW models are suitable for single phase operation.

CAUTION: For single-phase operation of the device, you can connect the live wire of the supply cord to the middle pole of the circuit breaker and bridge to the other poles of the circuit breaker by the bridging bar supplied with the product.

Figure 15. Bridging bar

CAUTION: For single-phase operation, a power supply cord with suitable cross section defined for single-phase operation must be used.

CAUTION: The specified cable cross-section dimensions are valid for lines less than 30 meters long.

CAUTION: Bridging bar must **not be used** in 3-phase operation.

CAUTION: Malfunctions caused by power supply grid are not associated with the device and are not covered by warranty.

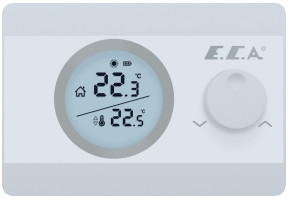
Device	Power Supply	Supply Cord (mm^2)	Nominal Current (A)	Supply Line Minimum Circuit Breaker Capacity
ARCEUS 6 CH-ST	Single-phase	3x6	26	B32-1P
	Three-phase	5x2.5	9	B10-3P
ARCEUS 9 CH-ST	Single-phase	3x10	39	B40-1P
	Three-phase	5x2.5	13	B15-3P
ARCEUS 12 MT-CH-ST	Single-phase	3x10	52	B63-1P
	Three-phase	5x4	17	B20-3P
ARCEUS 15 MT-CH-ST	Single-phase	3x16	65	B80-1P
	Three-phase	5x6	21	B25-3P
ARCEUS 18 MT-CH-ST	Three-phase	5x6	26	B32-3P
ARCEUS 24 MT-CH-ST	Three-phase	5x6	35	B40-3P
ARCEUS 27 MT-CH-ST	Three-phase	5x10	39	B40-3P

Table 2. Power Supply Connection Requirements

8.3- Room Thermostat

One of the optional room thermostats compatible with your device can be used to provide local heating control.

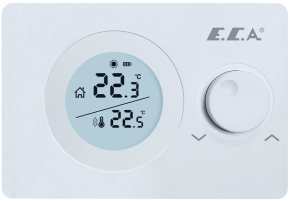
ECA Poly COMFORT 200B Thermostat
7006903007



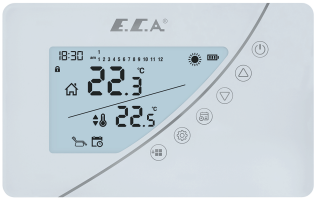
Poly Plus 100 Wireless Room Thermostat
7006903002

ECA Poly TOUCH 400B Thermostat
7006903006

ECA Poly COMFORT 200W Thermostat
7006903004



ECA Poly PURE 100W Thermostat
7006903003



ECA Poly TOUCH 400W Thermostat
7006903005

E.C.A. Circle 100 W On/Off Wireless Room thermostat
7006903000

Poly 100 W Room Thermostat
7006903001

E.C.A. On/Off Cordless Room Thermostat T6360
7006907522

E.C.A. Programmable Digital Room Thermostat
7006901501

9- INITIAL START-UP, OPERATION AND SHUT DOWN

9.1- Initial Start-Up

- First of all, the electrical connection of combi boiler should be made. The electrical connection of the device must be connected to a grounded supply line that can supply sufficient voltage for the device.
- All radiator valves are opened.
- The radiator outlet-return valves of the combi boiler must be open.
- After these operations, the filling valve is slowly opened to start water filling.
- The filling process is continued until the water pressure read on the device screen is between 1.5 to 2 bar and then the valve is closed.
- When the water pressure rises above 0.8 bar, the combi boiler switches to automatic air purge mode, and “AP” is displayed on the device. In this case, the RESET button should never be pressed and it should be waited for the 16-second air purge process to complete.
- During commissioning, the pressure on the pressure gage should be checked frequently. If the pressure drops frequently, there is a leak in the water installation.
- To discharge air from the central heating installation, the air purgers of the radiator are loosened and the air is allowed to discharge until water comes out. This is done for all radiators.
- The pressure is rechecked via the LCD screen. The filling valve is opened and the pressure is allowed to reach 1.5-2 bar.
- Whether there is air in the central heating installation is checked from the radiator air purgers. For fully efficient heating, all air must be evacuated from the installation.
- Finally, check for any leaks in the radiator and installation pipes.

CAUTION: To prevent calcification of the heat exchanger, the pH of the water to be used in the combi boiler installation should be between 7.5 to 9.5. If there are any aluminum parts in the installation, the pH shoul d be less than 8.5. The hardness value of the water to be used in combi boiler installation should be between 5°f-15°f.

- Check the domestic water installation by opening the hot water tap. Check for any leaks in the plumbing pipes.
- The first start-up of the device must be done by an authorized service.
- At the end of the first operation of the device after its installation, ask the authorized service for information about the operation of the device and its safety devices.
- Get information about device eco and comfort mode for useful usage

9.2- Turning Off the Device

You can turn off the combi boiler by holding the On/Off button for 3 seconds.

The screen will turn off in 1 minute.

Anti freeze protection function remains active.

10- CONTROL PANEL

10.1- Button Functions

Reset/Mode Selection Button

Using mode can be changed by pressing the mode selection button to change between the winter mode and the summer mode. If the button is pressed for 3 seconds, the device will switch to the "stand by" position. It will be enough to press the button once to set the device in operation position.

Domestic Water Temperature Increase Button

With the domestic water temperature increase button, the temperature of the domestic water can be increased to 65°C.

Central Heating Circuit Temperature Increase Button

With the central heating circuit temperature increase button, the temperature of the heating water in the central heating circuit can be increased to 80°C.

Domestic Water Temperature Decrease Button

With the domestic water temperature decrease button, the temperature of the domestic water can be decreased to 30°C.

Heating Circuit Temperature Decrease Button

With the central heating circuit temperature decrease button, the temperature of the heating water in the central heating circuit can be decreased to 30°C.

10.2- LCD Screen and Keypad:

The LCD screen displays the icons described in the following figure.

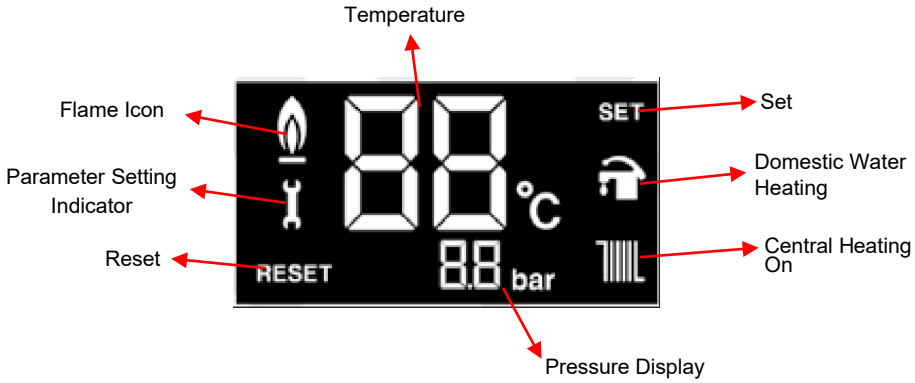


Figure 16. Keypad and LCD Screen Symbols

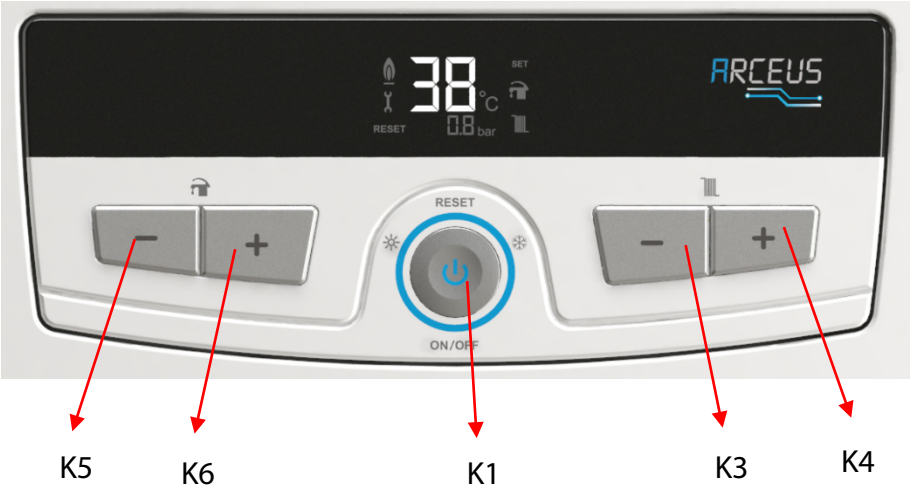


Figure 17. Control Panel Button Configuration

10.2.1- Button Functions:

Button Number	Button Name	Function
K4	CH +	- Increases central heating set temperature - Increases password value at parameter menu entry - Increases parameter value - Indicates information value - Indicates error history value
K3	CH -	- Reduces central heating set temperature - Reduces password value at parameter menu entry - Reduces parameter value - Indicates information value - Indicates error history value
K6	DHW +	- Increases domestic water set temperature - Allows for selection between parameters, information, error history, and clear error history menus - Confirms the password at parameter menu entry - Increases parameter number - Shows information number - Increases fault history number
K5	DHW Minus	- Reduces domestic water set temperature - Allows for selection between parameters, information, error history, and clear error history menus - Confirms the password at parameter menu entry - Reduces parameter number - Shows information number - Reduces fault history number

K1	Mode	- Allows for selection between STANDBY MODE, SUMMER MODE, and WINTER MODE when shortly pressed. - Resets error - Allows skipping the test mode - Allows skipping the AP function - Directs to the service menu when pressed for 5 seconds - Allows access to the selected sub-menu in the service menu - Exits from the parameter menu with changes saved when pressed for 5 seconds, - Exits from the error history menu when pressed for 5 seconds
K5 & K6	DHW+ & DHW-	-When the domestic water temperature buttons are pressed at the same time, it allows to switch between ECO and Comfort modes. At this time, the text “EC” or “CO” will appear on the screen.

Table 3. User Button Functions

10.3- Operation Modes:

10.3.1- Standby Mode (Off Mode): It is the mode in which the device can be set to standby mode. In this mode, central heating and domestic water heating demands cannot be met.

10.3.2- Summer Mode: In this mode, the device does not perform central heating but does domestic water heating if there is a demand.

10.3.3- Winter Mode: In this mode, the device performs both central heating and domestic water heating if there is a demand.

10.3.4- Domestic Water (DHW) Comfort Mode: In this mode, water in the heat exchanger is kept at the domestic water set temperature and thus can be supplied at the desired temperature when the domestic water is turned on.

While heating the water in the heat exchanger in comfort mode, tap icon on the screen flashes twice a second to inform the user that Comfort Mode heating is in progress. At the same time, “CO” letters are shown on the pressure indicator field. When the device in ECO Mode you can change the mode as a COMFORT whit pressing K5 and K6 buttons together.

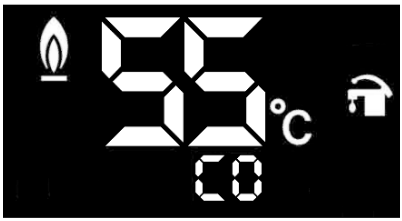


Figure 18. DHW Comfort Mode Screen View

10.3.5- Domestic Hot Water (DHW) Eco Mode: At the times that hot water demand is not expected (e.g. holidays etc.) or more economic use is preferred, ECO mode prevents the water in the exchanger to be heated and provides a more economic use of the device. When the ECO Mode is active “EC” letters are shown on the pressure indicator field.

Figure 19. DHW Eco Mode Screen Display

10.3.6- Air Purge Mode (AP Mode: It is the process that the device automatically performs to discharge air in the central heating installation for 160 seconds. While in this mode, “AP” is displayed on the screen. The circulation pump runs for 15 seconds and stops for 5 seconds in every 20 seconds. The three-way valve motor also changes position between CH-DHW every 40 seconds. The situations where this mode is activated are listed below:

- When the device is powered for the first time or after the power goes out and comes back,
- After a reset process following the overheating error,
- After a high water pressure or low water pressure error is eliminated.

CAUTION: Do not press the RESET button while the device is in AP

10.4- Error Preventive Functions

10.4.1- Anti Freeze Protection: During the winter season, when the water temperature of the installation drops below 6°C, anti freze protection is activated and the device keeps on heating until water temperature reaches to 15°C. Below conditions must be provided and controlled by the customer for anti freze protection to work properly:

- Power supply of the device must bu connected
- Radiator valves must be open
- Water pressure of the system should be proper
- Anti freze protection function does not protect your installation, it protects the device
- If the device will not be operated in locations where there is a risk of freezing, the water of the device should be drained and antifreeze solutions should be used.

10.4.2- Pump Anti-Blocking Function: In situations that the pump is not turned on for 24 hours straight, pump is turned on for 5 seconds to prevent it to be stuck. This function is active in error status and stand by mode.

10.4.3- 3 Way Valve Anti-Blocking Function: In situations that the 3 way valve is not turned on for 24 hours straight, 3 way valve is turned on and changes position for 10 seconds to prevent it to be stuck. If a heat demand occurs during this procedure, anti blocking function is interrupted and the valves takes the position of normal working condtion. This function is active in error status and stand by mode.

10.4.4- Maintenance Reminder Function: After the time period that the device stays connected to the power upply reaches 8760 hours (1 year), the customer is informed that the annual maintenance time has come by flashing “ASE” characters and steady alarm icon on the screen. During this notification, the functionality of the device does not change. If the customer confirms this notification by pressing K1 button, timer is reset and the reminder does not appear for another 8760 hours.
In case the customer has periodic maintenance service, service resets the clock and 8760 hour period starts over.

11- ERROR CODES AND DESCRIPTIONS

ERROR TYPE	DESCRIPTION	ERROR CODE
Limit Thermostat Protection Error	This error is displayed if the temperature read by one of the central heating outlets or return temperature sensors is above 107°C. The error must be reset when the temperature reduces to 85°C.	E03
Faulty contactor feedback	If a false feedback is received even though the contactor should not be active, this error is displayed. A RESET operation is required after the error is corrected	E04
Central Heating Return Temperature Sensor Error	This error is displayed if the central heating return temperature sensor is short or open circuit, or damaged. Domestic water and central heating demands are stopped. When this error is cleared, normal operation begins.	F33
Low Voltage Error	This error occurs when the Supply Line voltage drops below 170 ±15 VAC per phase. When the voltage rises above 180±15 VAC, the device switches to normal operation.	F34
Too Frequent Error Reset Error	This error is displayed when 5 error resets are performed within 1 hour. Domestic water and central heating demands are stopped. This error can only be cleared by disconnecting the power to the mainboard.	F13
Central Heating Inlet Temperature Sensor Error	This error is received if the central heating inlet temperature sensor is short-circuit, open-circuit, or damaged. Domestic water and central heating request is stopped. When this error is deleted, normal operation begins.	F35
Low Water Pressure	The water pressure parameter FP11 is at a low level. This error is displayed if the water pressure is less than FP11/10 bar. When the water pressure is greater than (FP11/10+0.4 bar), the error is automatically cleared.	F37
Outdoor Temperature Sensor Error	This error is displayed if the outdoor temperature sensor is short or open circuit, or damaged. Domestic water and central heating demands are stopped. When this error is cleared, normal operation begins.	F39
High Water Pressure	The water pressure parameter FP12 is at a high level. This error is displayed if the water pressure is greater than FP12/10 bar. When the water pressure is less than (FP12/10-0.2 bar), the error is automatically cleared.	F40
Water Pressure Sensor Error	This error is displayed if the pressure sensor is short or open circuit, or damaged. When this error is cleared, normal operation begins.	F47

Solar Boiler Tank Temperature Sensor Error	This error is displayed if the solar boiler tank temperature sensor is short or open circuit, or damaged. Domestic water and central heating demands are stopped. When this error is cleared, normal operation begins.	F50
Solar Panel Temperature Sensor (PT1000) Error	This error is displayed if the solar panel temperature sensor (PT1000) is short or open circuit, or damaged. Domestic water and central heating demands are stopped. When this error is cleared, normal operation begins.	F51
DHW NTC probe error	If DHW NTC probe is open or short circuit, or it is damaged this error is given. Both DHW and CH demand is stopped during this error. Normal operation is restarted when error is disappeared.	F52
Continuous domestic water heating error	This is the error seen when the device makes domestic water heating for 6 hours continuously. It disappears automatically when the domestic water flow is stopped. It has been developed to protect the device and prevent unnecessary consumption in cases such as plumbing explosions.	F60
CH flow NTC probe - CH return NTC probe swap test failed	If CH flow NTC probe, CH return NTC probe swap test fails, this error is given. RESET action is required in order to reset the failure.	E80

Table 4. Device Error Codes

12- USEFUL PRODUCT INFORMATION

12.1- Information on the Efficient Use of the Combi Boiler in Terms of Safety and Energy Consumption

- The insulation of your building is extremely important. In houses with double-glazed windows and insulated walls, significant energy savings are achieved as heat loss is minimized.
- Using a Thermostatic valve on your radiators ensures that the room temperature remains constant or saves energy.
- Turning radiator valves to lower levels in rooms that will not be used for a long time and keeping their doors closed will reduce fuel consumption.
- If you use a program clock with your device, your combi boiler will run at the times you set and consume less fuel.
- If you use your combi boiler with a room thermostat, it keeps the room temperature at the level you set, reducing fuel consumption.
- Covering the radiator top and sides with furniture-like things adversely affects hot air circulation, thus prevents the environment from heating and increases fuel consumption.
- If you will leave your device in operation late at night, keeping the water temperature of the central heating circuit at low levels will ensure saving.
- If you feel that the room temperature is high, the radiator valves should be closed instead of opening a window.

12.2- Clogging in Installation

- In old installations with iron pipes, usually clogging is encountered shortly after the device is commissioned.
- In case of clogging in installation, an inhibitor (Sentinel X400, etc.) should be added to the installation water.

12.3- Cleaning of Combi Boiler

Keep the outer casing of the combi boiler clean by wiping it with a soft damp cloth. Do not use strong, abrasive cleaning agents.
During and after the warranty period of the combi boiler, performing maintenance regularly once a year before the winter season ensures safe use and prolongs the life of the device. The respective maintenance times will be automatically reminded by the combi boiler.
Periodic maintenance must be carried out by the E.C.A. Authorized Services.
Use only original spare parts to guarantee the lifetime and safety of the device.
E.C.A. shall not be liable for any damage to the device or any objects and living beings around it as a result of maintenance by unauthorized service and persons.

13- DISPOSAL OF THE DEVICE

After the lifespan of the device is complete or device is required to be disposed for any other reason, device should not be disposed to a domestic waste and should be submitted to a recycling centre that accepts electric devices.

14- TECHNICAL DATA TABLE

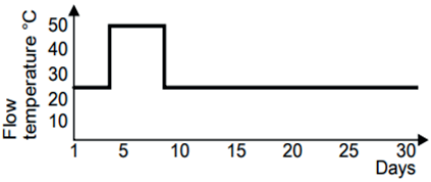
Device Type		ARCEUS EK 6	ARCEUS EK 9	ARCEUS EK 12	ARCEUS EK 15	ARCEUS EK 18	ARCEUS EK 24	ARCEUS EK 27
Nominal Power (kW)		6	9	12	15	18	24	27
Minimum Heating Power (kW)		2	3	2	2	2	2	3
Supply Power Voltage		1~ 230 VAC 3~ 400 VAC				3~ 400 VAC		
Nominal Current (A)		1~ 26,1	1~ 39,1	1~ 52,2	1~ 65,2	26,1	34,8	39,1
		3~ 8,7	3~ 13,1	3~ 17,4	3~ 21,7			
Power Cord Cross Section (mm²)		1~ 3x6	1~ 3x10	1~ 3x10	1~ 3x16	3~ 5x6	3~ 5x6	3~ 5x10
		3~ 5x2,5	3~ 5x2,5	3~ 5x4	3~ 5x6			
Protection Class		IPX4D						
Sound Level (dB)		42		38				
Net Weight (kg)		26		27		29		
Gross Weight (kg)		29		30		32		
Dimensions (HxWxD)		678 x 410 x 288						
Central Heating Seasonal Energy Efficiency		39,4	39,5	39,6	39,8		39,9	
Energy Efficiency Class	Domestic Hot Water Load Profile - Efficiency Class	-	-	M-C	L-C		XL-C	
	Central Heating Efficiency Class	D						
ST Setting Range (°C)		8-65						
DHW Setting Range (°C)		-	-	30-65				
Radiator Heating Set Range (°C)		30-80						
Underfloor Heating Set Range (°C)		30-45						
DHW Max. Flow (L/min)		-	-	7±%15	8±%15	9±%15	10±%15	10±%15
Sanitary Water Min. Flow ΔT (L/min)		-	-	2±%10				
Stand By Heat Loss (kW)		0,042		0,044		0,050		

Table 5. Device Technical Data Table

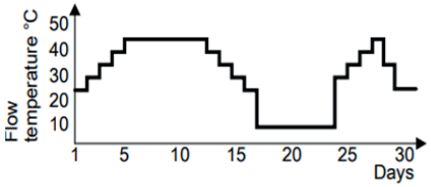
SCREED DRYING FUNCTION

The device has 5 different heating profiles to dry the screed placed on the installation. Profiles include 30-day periods. The function is suitable for use in underfloor heating systems. The company that produces the screed material should be consulted for the appropriate profile. To use the function, all installation connections must be made without any leaks. Collector valves must be open and system pressure must be appropriate.

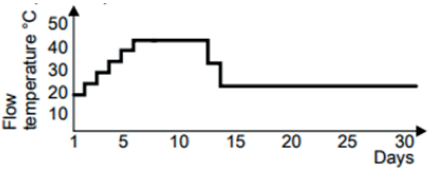
Screed Drying Profiles;



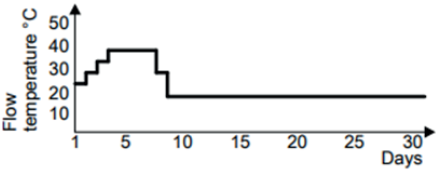
Profile 1



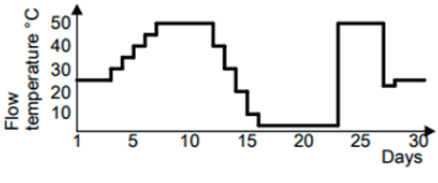
Profile 2



Profile 3

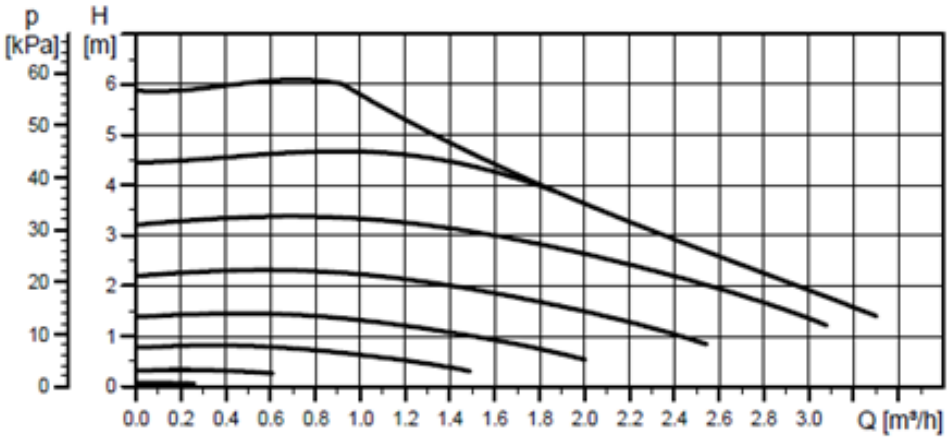


Profile 4



Profile 5

Pump performance curve



15- ERP MANUAL

15.1- PRODUCT FICHES

The product data presented below complies with the requirements of EU regulations 811/2013 and 813/2013 to comply with directives 92/42/EU and 92/42/EEC

Product Data	Symbol	Unit	ARCEUS ELECTRIC COMBI EK 6 kW CH-ST	ARCEUS ELECTRIC COMBI EK 9 kW CH-ST	ARCEUS ELECTRIC COMBI EK 12 kW MT-CH-ST	ARCEUS ELECTRIC COMBI EK 15 kW MT-CH-ST	ARCEUS ELECTRIC COMBI EK 18 kW MT-CH-ST	ARCEUS ELECTRIC COMBI EK 24 kW MT-CH-ST	ARCEUS ELECTRIC COMBI EK 27 kW MT-CH-ST
Condensing boiler			No	No	No	No	No	No	No
Low-temperature boiler(*b)			No	No	No	No	No	No	No
B1 boiler			No	No	No	No	No	No	No
Cogeneration Space Heater			No	No	No	No	No	No	No
Combination Heater			Yes (for MT Models) / No (for CH and ST Models)						
Usable Heating Capacity									
Rated heat output (*e)	Prated	kW	6	9	12	15	18	24	27
At rated heat output and high temperature regime (*a)	P4	kW	5,9	8,9	11,9	14,9	17,9	23,9	26,9
At 30% of rated heat output and low temperature regime	P1	kW	-	-	-	-	-	-	-
Auxiliary Electricity Consumption									
At full load	elmax	kW	-	-	-	-	-	-	-
At part load	elmin	kW	-	-	-	-	-	-	-
In Standby mode	PSB	kW	0,005	0,005	0,005	0,005	0,005	0,005	0,005
Space Heating Efficiency									
Seasonal Space Heating Energy Efficiency Class			D	D	D	D	D	D	D
Seasonal space heating energy efficiency	ηs	%	37	37	37	37	37	37	37
At nominal heating power and high temperature operation (*c)	η4	%	39,9	39,9	39,9	39,9	39,9	39,9	39,9
At 30% of nominal heating power and low temperature operation (*d)	η1	%	-	-	-	-	-	-	-
For Combination Heaters (*f)									
Temperature application (*f)			Medium	Medium	Medium	Medium	Medium	Medium	Medium
Declared load profile (*f)			M	M	M	L	L	XL	XL
Water heating energy efficiency class (*f)			C	C	C	C	C	C	C
Water heating energy efficiency (*f)	ηwh	%	38	38	38	38	38	38	38
Daily fuel consumption (*f)	Qfuel	kWh	-	-	-	-	-	-	-
Annual fuel consumption (*f)	AFC	Gj	-	-	-	-	-	-	-
Other Items									
Standby Heat Loss	Pstby	kW	0,05	0,05	0,05	0,05	0,05	0,05	0,05
Ignition Burner Power Consumption	Pign	kW	0	0	0	0	0	0	0
Annual Energy Consumption	QHE	kWh	5133	7743	10353	12963	15573	20793	23403
Daily Electricity Consumption	Qelec	kWh	4,46	6,72	8,99	11,25	13,52	18,05	20,32
Annual Electricity Consumption	AEC average	kWh	964	1455	1348	2688	2688	4399	4399
Sound Power Level	L_{WA}	db(A)	38	38	38	38	38	38	38
Emission of Nitrogen Oxide	NOx	mg/kWh	-	-	-	-	-	-	-
Indication about ability working only during off-peak hours			No	No	No	No	No	No	No
Manufacturer	Emas Makina Sanayi A.Ş.								
Address of the Manufacturer	Mustafa Kemal Boulevard Organized Industrial Zone 3rd Section No: 13 45030 MANİSA								

Table 6.

(*a) High-temperature regime means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.
(*b) Low temperature means for condensing boilers 30 °C, for low-temperature boilers 37 °C and for other heaters 50 °C return temperature (at heater inlet).
(*c) High-temperature regime means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.
(*d) Low temperature means for condensing boilers 30 °C, for low-temperature boilers 37 °C and for other heaters 50 °C return temperature (at heater inlet).
(*e) For heat pump heaters and combined heaters, the rated heat output Prated is the same as the standard load in heating mode Pdesignh. The rated heat output of a Psup auxiliary heating device is the same as the auxiliary heating power sup(Tj).
(*f) valid for HM models.

15.2- Package information card stating the central heating energy efficiency of the package

15.2.1- Package Information - Combi Boiler

Seasonal Space Heating Energy Efficiency of the Combi Boiler (Table 7)
"I": The value of the seasonal heating efficiency of the primary central heater, expressed in %.

(1) "I" ____ %

Temperature Controller
(Room Thermostat-Outdoor Air Sensor)
From the temperature controller information sheet

Class I = 1%, Class II = 2%, Class III = 1.5%, Class IV = 2%, Class V = 3%, Class VI = 4%, Class VII = 3.5%, Class VIII = 5%

(2) + ____ %

Additional Combi

From the combi boiler information form

Seasonal space heating energy efficiency in %

(____ - T) x 0,1 = ± (3) ____ %

Solar Katkısı

Güneş enerjisi cihazı bilgi formundan

Collector size (m^2) ____ Tank Volume (m^3) ____ Collector Efficiency % ____ Tank Class A*=0,95, A = 0,91, B=0,86, C = 0,83, D - G = 0,81 ____

("III" x ____ + "IV" x ____) x 0,9 x (____ / 100 x ____ = + (4) ____ %

''III'': Value of mathematical expression: 294/(11.Prated), where ''Prated'' refers to the preferred heater.
'IV': Value of mathematical expression: 115/(11.Prated), where ''Prated'' refers to the preferred heater.

(1) If tank rating is above A, use 0.95.

Additional Heat Pump Additive

From the heat pump data sheet

''II': The preferred factor for weighting the heat output of a package's optional and additional heaters is given in table 7.

Seasonal Space Heating Energy Efficiency (in %)

(____ - "I") x "II" = + (5) ____ %

Solar Additive and Additional Heat Pump

Please choose the smaller value

0,5 x (4) ____ or 0,5 x (5) ____ = - (6) ____ %

Seasonal Space Heating Energy Efficiency of the Package

(7) ____ %

Seasonal Space Heating Energy Efficiency Class of the Package

G	F	E	D	C	B	A	A+	A++	A+++
<30%	≥30%	≥34%	≥36%	≥75%	≥82%	≥90%	≥98%	≥125%	≥150%

Are the Boiler and Additional Heat Pump Mounted with 35°C Low Temperature Radiating Devices?

From the Heat Pump Data Sheet

(7) ____ + (50 x "II") = ____ %

The energy efficiency of the products in the package provided for this data sheet (fiche) may not represent the actual energy efficiency when installed in a building, as the efficiency is affected by other factors such as heat loss in the distribution system and the sizing of the products depending on the size and characteristics of the building.

Water Heating Energy Efficiency of Combination Heater (Table 8)

Declared load profile: ☐

① "I" %

Solar Energy Device Contribution

From the solar energy device data sheet

Auxiliary Electric

(1.1 x 'I' - 10 %) x 'II' - 'III' - 'I' =

② + %

Water Heating Energy Efficiency of the Package under Average Climatic Conditions

③ %

Water Heating Energy Efficiency Class of the Package under Average Climatic Conditions

	G	F	E	D	C	B	A	A+	A++	A+++
☐ M	<27%	≥27%	≥30%	≥33%	≥36%	≥39%	≥65%	≥100%	≥130%	≥163%
☐ L	<27%	≥27%	≥30%	≥34%	≥37%	≥50%	≥75%	≥115%	≥150%	≥188%
☐ XL	<27%	≥27%	≥30%	≥35%	≥38%	≥55%	≥80%	≥123%	≥160%	≥200%
☐ XXL	<28%	≥28%	≥32%	≥36%	≥40%	≥60%	≥85%	≥131%	≥170%	≥213%

Water Heating Energy Efficiency of the Package under Average Climate Conditions

Colder: ③ - 0,2 x ② = %

Hotter: ③ + 0,4 x ② = %

The energy efficiency of the products in the package provided for this data sheet may not represent the actual energy efficiency when installed in a building, as efficiency is affected by other factors such as heat loss in the distribution system and the sizing of the products depending on the size and characteristics of the building.

To evaluate the water heating energy efficiencies of combination heater, temperature control and solar device packages, the elements identified in Table 8 are included, where the following information is included:

- I: water heating energy efficiency value of the combination heater, expressed in %.
- II: Value of the mathematical expression (220.Qref)/Qnonsol. Here, Qref is taken from the product data sheet of the solar energy device in Annex VII and for the declared M, L, XL or XXL load profiles of the Qnonsol combination heater.
- III: Value of the mathematical expression (Qaux .2,5)/ (220.Qref) expressed as a %. Here, Qaux is taken from the product data sheet of the solar device and Qref is taken from Table 8 in Annex VII for the declared M, L, XL or XXL load profiles.

Weighting of Combi Boilers

For Table 7 of this Annex, weighting of priority boiler space heater or boiler combination heater and auxiliary heater (*)

Psup / (Prated+Psup)[1][2]	II, Package Without Hot Water Storage Tank	II, Package with Hot Water Storage Tank
0	0	0
0.1	0.3	0.37
0.2	0.55	0.70
0.3	0.75	0.85
0.4	0.85	0.94
0.5	0.95	0.98
0.6	0.98	1
≥ 0.7	1	1

(1) Intermediate values are calculated by linear interpolation between two adjacent values.
(2) Prated is primarily associated with central heating and combination heater.

16- REMOVAL INFORMATION

16.1- Unpacking the New Product

Packaging protects your device against transport damage. All materials used in packaging are environmentally friendly and can be reused. Please help: Dispose of the packaging in a way that will not harm the environment.
To obtain information about current troubleshooting methods, please contact your authorized dealer or municipality.

16.2- Compliance with AEEE Regulation and Disposal of Product Waste

Dispose of the packaging material in accordance with environmental rules.
This product does not contain harmful and prohibited substances specified in the "Regulation on the Control of Waste Electrical and Electronic Equipment" published by the Ministry of Environment and Urbanization of the Republic of Turkey.
It complies with AEEE regulations.
This product is manufactured from high quality parts and materials that are recyclable and reusable. Therefore, do not dispose of the product with household or other waste at the end of its service life. Take it to a collection point for the recycling of electrical and electronic equipment. Ask your local government about these collection points. Help protect the environment and natural resources by recycling used products. Before disposing of the product, for the safety of children, cut off the power plug and break the lock mechanism, rendering it inoperable.

PRODUCTION

Organize Sanayi Bolgesi 3.Kisim Mustafa
Kemal Boulevard No:13 45030 MANISA
Tel.:+90 236 213 00 21
Fax:+90 236 213 08 59
email: emas@emas.com.tr
www.emas.com.tr

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