



**FELIS
WALL HUNG CONDENSING BOILER**

FELIS FL 50/65/100/125/150 HM



**INSTALLATION AND
USER MANUAL**

CONTENTS

INTRODUCTION.....	4
WARRANTY AND SERVICE.....	4
SYMBOLS.....	4
SAFETY RULES AND WARNINGS.....	5
Safety Rules.....	5
Fittings.....	5
Cascading Applications.....	6
Installation.....	6
Commissioning.....	6
Gas Conversion.....	6
Operation and Maintenance.....	6
PRODUCT.....	7
Product Features.....	7
Product Notation.....	8
Technical Dimensions.....	8
Detailed Drawings and List of Components.....	9
Packaging.....	13
INSTALLATION and CONNECTIONS.....	13
Selecting the Suitable Place for Installation.....	13
OPERATING.....	20
Control Panel.....	20
Date/ Time Settings.....	22
Time Programs.....	22
Working Modes.....	22
Domestic Hot Water.....	24
Stand-by and Holiday Function.....	27
ERROR/ FAULT CODES.....	28
MAINTENANCE.....	32
ALL RIGHTS RESERVED.....	32
STANDARDS/ REGULATIONS.....	32
CIRCUIT AND FLUE CONNECTIONS.....	33
ERP GUIDE.....	38
Technical Specifications Table.....	38
CE Marking.....	39
Product Information Form (ErP).....	39
PACKAGE LABEL CALCULATION.....	40
PACKAGE FISCHER BOILER.....	40
REMOVAL INFORMATION.....	42
Unpacking the New Device.....	42
Compliance with AEEE Regulation and Disposal of Waste Product.....	42

INTRODUCTION

First of all, we would like to thank you for choosing an E.C.A. boiler.

E.C.A. Felis condensing boilers are designed to accommodate the central heating needs in a safe and comfortable way. Felis boilers must be installed to a central heating plumbing and sanitary water system selected suitably for the boiler's capacity and performance.

Information about installation and operation of Felis boilers are provided in this manual. Technical specifications, choosing the right place to install, water, gas, flue and electrical connections, maintenance information and a list of possible errors are given in detail. For utilizing your boiler's complete features and to use your appliance safely for a long time, please read the manual carefully.

Please keep all the documents that come with your appliance for future reference.

* This appliance conforms the related regulations about the limitation of hazardous materials in electric and electronic devices.

* Does not contain polychlorinated biphenyl, asbestos or mercury.

WARRANTY AND SERVICE

- All repairs and annual maintenances must be done by qualified E.C.A. technical services. If the instructions and warnings from the installation manual are followed, this boiler has 3 years of warranty for the failures related to the manufacturing and materials.
- First time commissioning must be done by a qualified E.C.A. technical service. For the warranty to be valid, warranty documents must be filled and stamped by the service during commissioning.
- This E.C.A. product does not require repairment under normal working conditions. But if you need any assistance, our qualified services are at your service. For the warranty to be valid, all maintenance and repairs must be done by qualified E.C.A. technical service personnel.
- E.C.A. qualified technical services list are provided separately with your appliance.
- The default life time of boilers are 10 years according to the Ministry of Science, Industry and Technology.

SYMBOLS

Symbols below are placed within the manual to indicate important points about the usage and working of the appliance. Meaning of these symbols are given below.



CAUTION: Indicates the possibility of pecuniary or functional loss.

DANGER: Indicates the possibility of health and safety loss.



Indicates the information that should be considered by the user.



SERVICE: Indicates the situations that must not be interfered by the user, the technical service should be contacted.

SAFETY RULES AND WARNINGS

SAFETY RULES

If there is a gas smell;

- Shut off the gas valve of the appliance and all of your gas burning appliance
- Shut off and put out your oven, stove, cooker etc.
- Do not light matches, lighters etc, put out your cigarettes.
- Open all your windows and door and ventilate the room.
- Do not switch on your electrical devices and do not touch the plugs.
- Shut off the gas valves at the building entrances.
- Do not use phones in the environments that have a gas smell.
- Call the gas company and inform the closest technical service.
- Do not put or use flammable materials near your appliance.
- Keep materials like water, foam etc. away from electrical connections during cleanup, maintenance etc.
- Do not block ventilation outlets in your boiler room.

Fittings

- Before the installation of your boiler, gas, central heating and (if applicable) domestic hot water pipings must be ready. Natural gas pipings must be designed, approved and done by a qualified engineering office. All these must be done and paid by the user.
- **The appliance must be connected to a grounded plug with 230V AC, 50 Hz supply.**
- Before the installation of the boiler, the plumbing (system) must be cleaned using appropriate/registered products. In order to prevent damage to the installation and the metal, plastic and rubber parts in the installation; Use neutral-based, non-acidic and non-alkaline cleaners. When using this type of cleaning products, be sure to follow the manufacturer's instructions for use.
- Excessive lime, dirt, blockage, installation residue, construction residue, burrs, slag, etc. in the heating circuit installation. The presence of particles will negatively affect the operation of the boiler. These types of situations; Inefficient operation of the boiler, overheating, damage due to dry burning in the heat exchanger coil, noisy operation, etc. Failures and problems that may occur in the boiler due to the installation that may cause problems are not covered by the warranty. After the installation is cleaned, the device should be put into operation.
- Plumbing water; For the first use, after cleaning after any intervention or in case of adding water due to lack of water, it should be filled with potable water. If mains water is not of this quality, a purification system must be used.
- Plumbing water must meet the following conditions without adding protective chemical additives:

Variable	Value
General view	Colourless, clear, sediment-free
ph value	7,5 ... 9,5
Hardness value	5°f ... 15°f
Calciumcarbonate (CaCO ₃)	20 ... 150 ppm
Sodium phosphate (Na ₃ PO ₄)	0 ppm
Chlorine	< 85 ppm
Electrical conductivity	< 250 µS/cm
Pressure	0,8 ... 6 bar (100-125-150 kW)
	0,8 ... 4,5 bar (65 kW)
	0,8 ... 3 bar (50 kW)

This boiler is sold without the supplementary parts below due to the nature of the device. Capacity and technical specifications of these parts will vary by the size of the heating system. All supplementary parts must be selected and fitted by a qualified plumber.

- Expansion vessel
- Pressure relief valve
- Circulation pump
- Water inlet valve
- Sludge catcher
- Air purger
- Hydraulic separator



INFORMATION

We strongly suggest that two ball valves should be installed to the flow and return lines on the boiler water connection or separating the boiler from circuit when necessary.



INFORMATION

It is recommended to use plate heat exchangers in conversion installations or old installations.

Cascading Applications

While E.C.A. Felix boilers can be used as a single boiler, it can be used as a part of a cascading system. Cascading system allows up to 16 boilers to work in coordination to reach capacities up to 2400 kW.

Appliances in a cascading system are separated into two categories as master appliance and slave appliances. All sensory information required for the heating system to perform is acquired and processed by the master appliance and the resulting heat request information are sent to slave appliances.

Installation

- Installation of this boiler must be done by a authorized technical service according to the information (placement, flue connections etc.) presented on related standards and authorized gas companies. After the installation, installer must make sure that user has been given the user manual and give all the necessary information about the boiler and related safety equipments.
- Boiler must be installed in a manner that the appliance should not be in direct contact with water vapor, detergent vapor or similar chemicals.
- Flue connections must not be tampered with without consulting to the authorized technical service.
- Siphon included in the appliance package must be mounted to the siphon lid underneath the appliance.



CAUTION: If the appliance will not be in use until winter season, water inside the boiler should be drained to prevent freezing.



INFORMATION

The appliance should not be used above 2000m altitude above sea level.



INFORMATION

Do not install the appliance where it will be affected by direct sunlight. Sun beams can cause discoloration on the outer surfaces of the appliance.

Commissioning

- First startup of the appliance must be done by the authorized service. Natural gas usage must be approved by the related gas company prior to the first startup.
- The gas type (natural gas or LPG), inlet gas pressure (mbar), maximum water pressure (bar) and electrical nominal voltage (V) values on the information label must be checked with the local conditions.
- To prevent the risk of flue gas leakage to the environment, condensing siphon must be filled with water prior to flue connection.
- After the installation of the appliance, please ask your authorized service personnel to give information about the operation and safety equipments of the appliance.
- Tightness rubbers (EPDM) on the flue connections must be lubricated prior to the installation. Grease oil and machine oils shall not be used under any circumstance.

Gas Conversion

- Your device is sold suitable for use with "natural gas" fuel type. If the user requests gas conversion after purchasing the device, this process is paid.
- Gas conversion should be done by the authorized service. Gas leak test must be done after the conversion process.
- After the conversion process, the gas conversion label should be affixed next to the product information label.

Operation and Maintenance

- Please be wary of the warnings in the installation and user manual. That way, any danger caused by false operation could be prevented.
- For more efficient and safe use of your device, regular maintenance should be performed every year. Maintenance operations are not covered by warranty and must be carried out by E.C.A. should be done by authorized services.

- Cleaning of the external surfaces of the device should be done only with a damp cloth, without using detergent or any chemicals. Detergent etc. Use of chemicals may cause rust 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 use of the device by a person responsible for their safety. Children should be supervised to ensure that they do not play with the device. Cleaning and user maintenance should not be performed by unsupervised children.



CAUTION: This device; It is not suitable for use by persons (including children) with reduced physical, sensory and mental capacity, or those who are uninformed and inexperienced, without being informed and supervised by responsible persons regarding the use of the device. Make sure that children do not play with the device.



CAUTION: If the device is used incorrectly or not for its intended purpose, it may pose a danger to life and material damage may occur 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.

PRODUCT

Product Features

E.C.A. Felis condensing boilers are designed to accommodate the central heating needs in a safe and comfortable way. Felis boilers should be connected to a heating circuit that is suitable for the capacity and power level of the boiler. Felis condensing boilers works with natural gas and LPG.

Innovative design that ensures ease of service and maintenance. The width and height dimensions staying same through all capacities enables to use the installation space efficiently. Its curved panel design has a elegant appearance. Screen panel cover provides protection from the environmental hazards of the boiler room conditions.

Functions and the safety of the appliance is provided by the control mainboard. Mainboard controls the gas valve, blower and circulation pump. Flame in the burner is always checked via ionization electrode and can be observed by the LEDs and the screen symbols on the panel.

Control panel is designed ergonomically and easy to use. With a wide LCD screen, Felis condensing boiler provides a control system that supports multiple languages with descriptive menus. White backlight LCD screen shows information about working mode, CH and DHW set points, real time temperatures, fault codes with descriptions and water pressure.

Safety measurements on the appliance assures both your safety and the safety of the appliance. These safety measurements are as follows;

- Flame Loss Safety
- CH Circuit Overheating Safety (90 °C)
- Flue Gas Overheating Safety (95 °C)
- Boiler Overheating Safety (105 °C)
- High Water Pressure Safety (6 bar)
- Low Water Pressure Safety (0,8 bar)
- Low Voltage Safety (170 VAC)
- Frost Protection (Electrical supply to the boiler must be maintained in order to frost protection to work)
- Automatic Air Purger
- Annual Maintenance Reminder
- Anti-Legion Protection (70°C) (Only for HST model)

Product Notation

Notation	Description
Felis FL 50, 65, 100, 125, 150 HM NG/LPG	E.C.A. Felis Wall Hung Condensing Boiler

Technical Dimensions

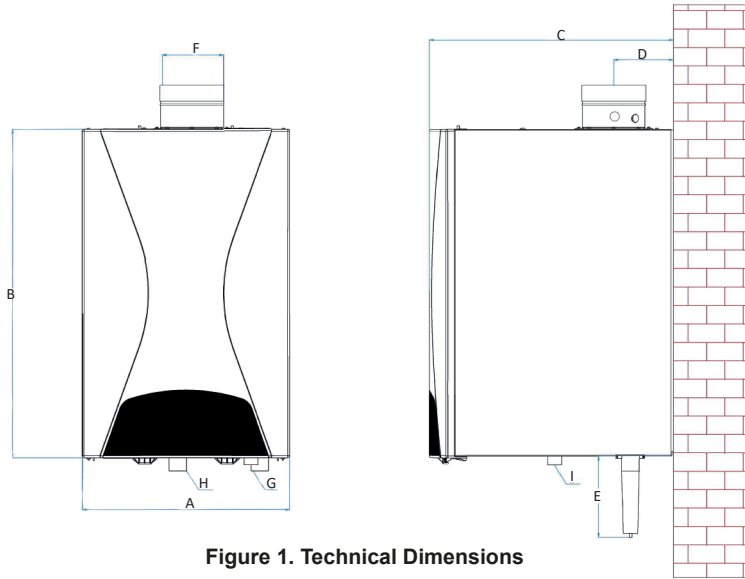
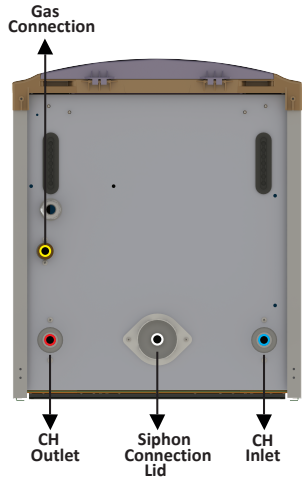


Figure 1. Technical Dimensions

Dimensions	A	B	C	D	E	Ø F	Ø G	Ø H	Ø I
Felis FL 50 HM	501 mm	835 mm	525 mm	145 mm	304 mm	80/125 mm	1 1/4"	1 1/4"	3/4"
Felis FL 65 HM	501 mm	835 mm	590 mm	145 mm	304 mm	80/125 mm	1 1/4"	1 1/4"	3/4"
Felis FL 100 HM	501 mm	835 mm	590 mm	145 mm	304 mm	100/150 mm	1 1/4"	1 1/4"	1"
Felis FL 125 HM	501 mm	835 mm	660 mm	145 mm	304 mm	100/150 mm	1 1/4"	1 1/4"	1"
Felis FL 150 HM	501 mm	835 mm	730 mm	145 mm	304 mm	100/150 mm	1 1/4"	1 1/4"	1"



Detailed Drawings and List of Components
Felis 50

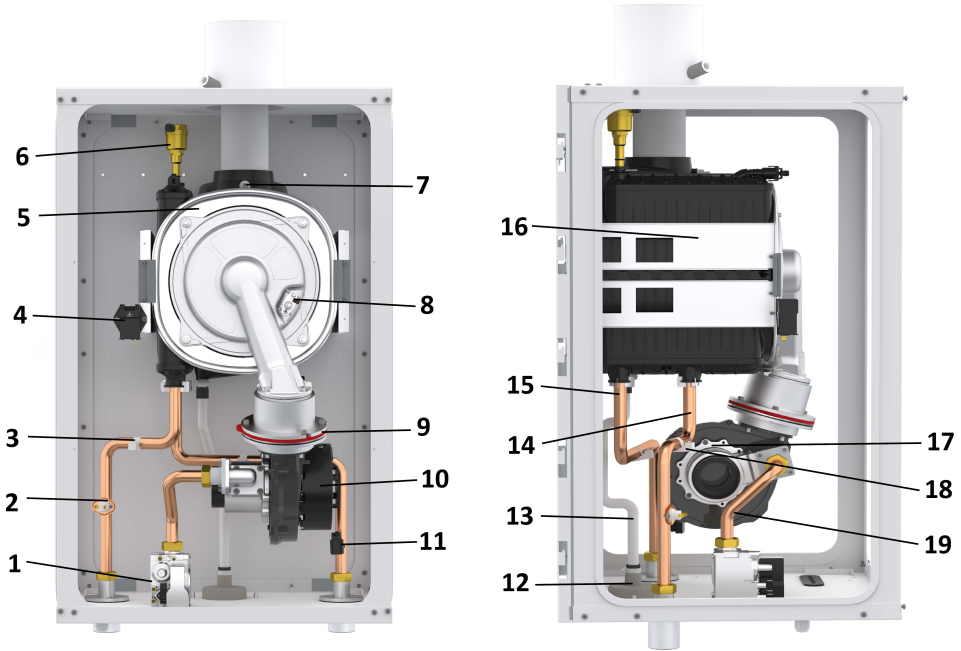


Figure 2a. Felis 50 Detailed Drawings

No	Description	No	Description
1	GAS VALVE	11	PRESSURE SENSOR
2	SAFETY LIMIT THERMOSTAT	12	SIPHON COVER
3	NTC TEMP. SENSOR (OUTLET)	13	CONDENSATION HOSE
4	IGNITION TRANSFORMER	14	BOILER OUTLET PIPE (HOT)
5	HEAT EXCHANGER	15	BOILER INLET PIPE (COLD)
6	AIR PURGER	16	HEAT EXCHANGER HANGING BRACKET
7	FLUE GAS SENSOR	17	MIXER
8	IGNITION AND IONIZATION ELECTRODE	18	NTC TEMP. SENSOR (INLET)
9	BACKFLOW PREVENTER	19	GAS INLET PIPE
10	BLOWER		

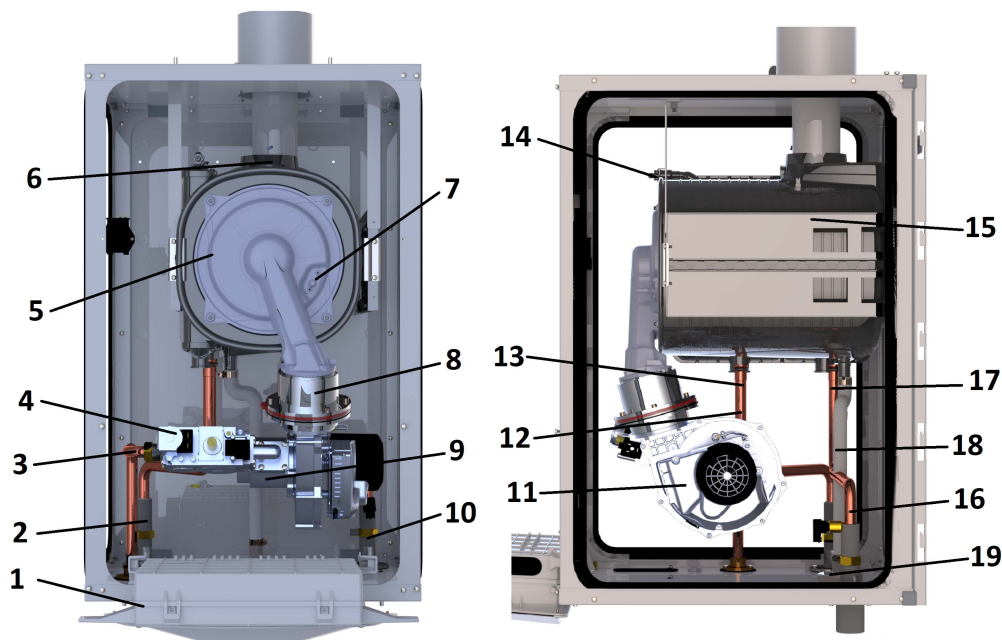


Figure 2b. Felis 65 Detailed Drawings

NO.	DESCRIPTION	NO.	DESCRIPTION
1	SCREEN PANEL AND MAINBOARD BOX	11	BLOWER
2	PRESSURE SENSOR	12	NTC TEMPERATURE SENSOR (OUTLET)
3	GAS INLET PIPE	13	BOILER OUTLET PIPE
4	GAS VALVE	14	AIR PURGER
5	HEAT EXCHANGER	15	HEAT EXCHANGER HANGING BRACKET
6	FLUE GAS SENSOR	16	BOILER INLET PIPE
7	IGNITION AND IONIZATION ELECTRODE	17	NTC TEMPERATURE SENSOR (INLET)
8	BACK FLOW PREVENTER	18	SIPHON HOSE
9	VENTURI	19	SIPHON COVER
10	SAFETY LIMIT THERMOSTAT		

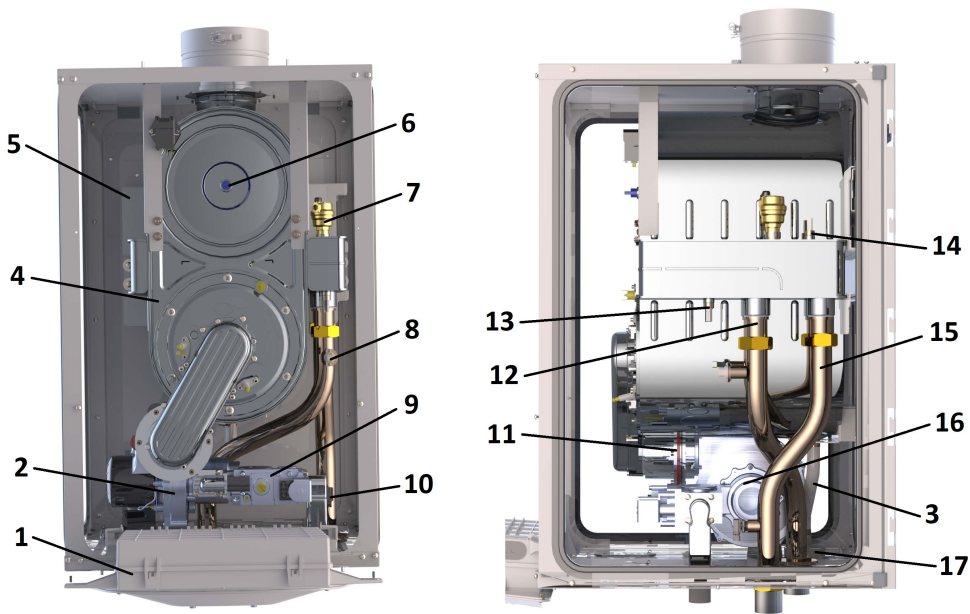


Figure 2c. Felis 100 / 125 / 150 Detailed Drawings

NO.	DESCRIPTION	NO.	DESCRIPTION
1	SCREEN PANEL AND MAINBOARD BOX	10	PRESSURE SENSOR
2	BLOWER	11	BACK FLOW PREVENTER
3	SIPHON HOSE	12	BOILER OUTLET PIPE
4	HEAT EXCHANGER	13	NTC TEMPERATURE SENSOR (OUTLET)
5	HEAT EXCHANGER HANGING BRACKET	14	NTC TEMPERATURE SENSOR (INLET)
6	FLUE GAS SENSOR	15	BOILER INLET PIPE
7	AIR PURGER	16	VENTURI
8	SAFETY LIMIT THERMOSTAT	17	SIPHON COVER
9	GAS VALVE		

Electrical Board Circuit Diagram

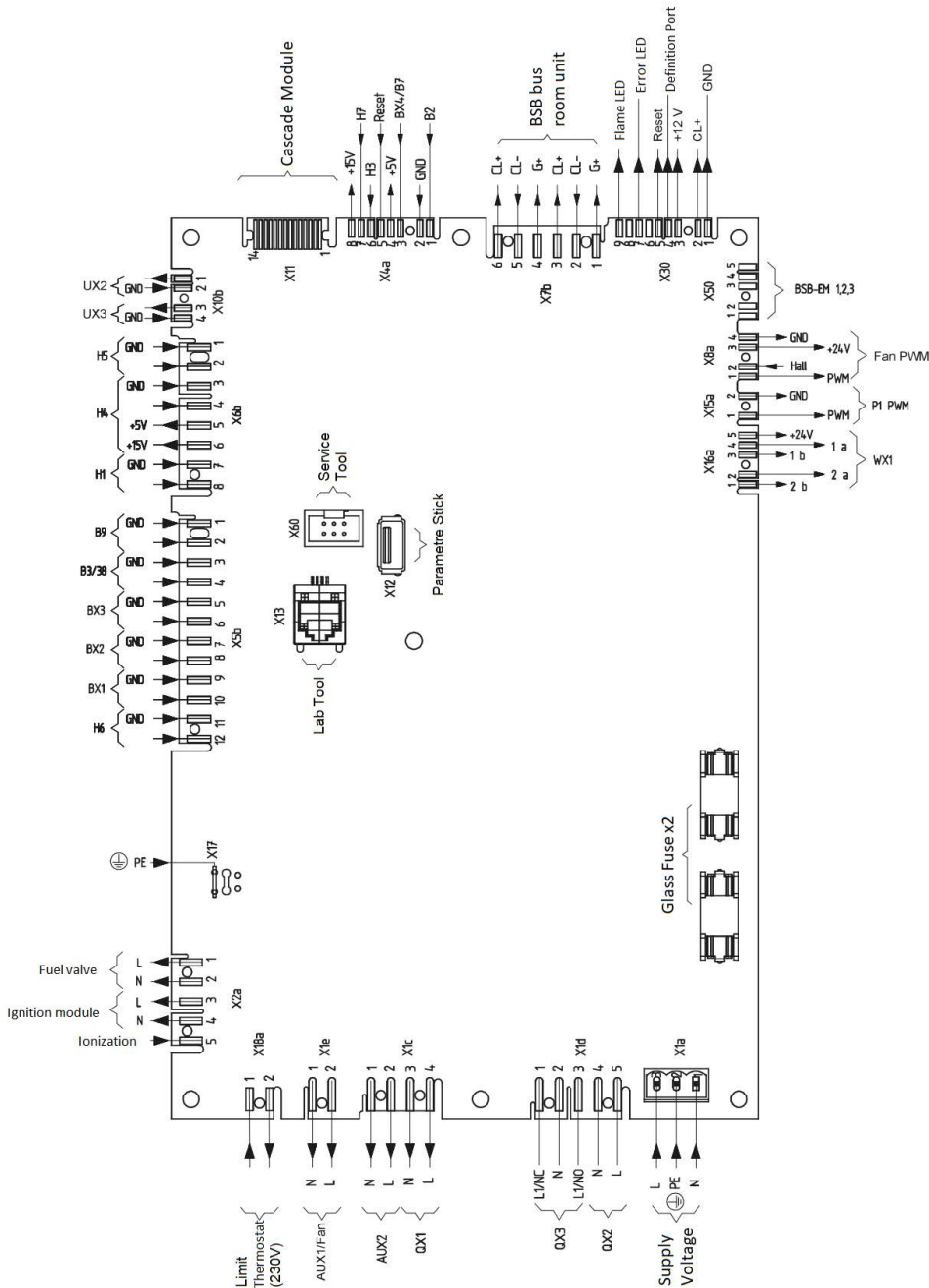


Figure 3. Electronic Board Circuit Diagram

Packaging



CAUTION: Warnings on the packaging must be followed during transportation and storage.

The appliance is delivered in a 1055 x 665 mm cardboard box with 4 pieces of edge styrofoams supporting the appliance.

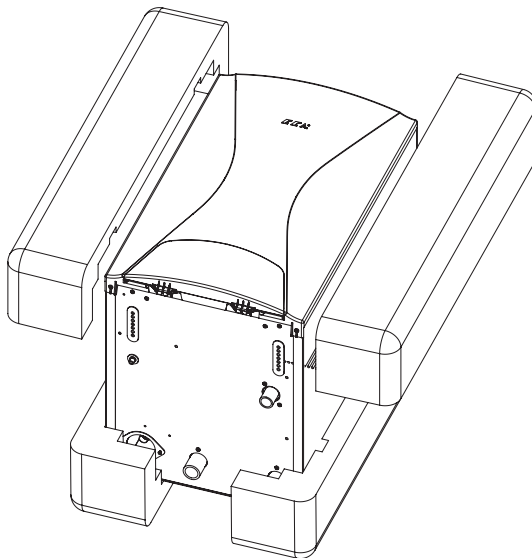


Figure 4. Product Packaging Concept

Parts required for the installation of the product (Wall hanging bracket, 3 gaskets for water and gas connection, 5 wall plugs for screws) is provided in the package.

INSTALLATION AND CONNECTIONS

This device is designed to heat water under atmospheric pressure. It must be connected to a heating circuit suitable for its capacity and nominal output. Felis boilers are suitable with flue types C13(x), C33(x), C43(x), C63(x) and C93(x), therefore its flue system is separated from the ambient air. Even though, in case of a gas leak the boiler room must be equipped with the required ventilation equipment. Under hermetic working, coaxial flue is in contact with the fresh air, therefore there is no need to leave space for flammable construction pieces. Appliance must work hermetically in environments that the air is polluted with halogenic hydrocarbons (hair salon, printing press, chemical cleaner shop etc.)

Selecting the Suitable Place for Installation

Gas and water connections are placed at the bottom of appliance, while flue gas outlet and air inlet are located on the top. Boiler is sold with the outlet pipes directed to the bottom side. Suitable places for installation are defined by the local regulations and the authorized gas companies. In addition to that requirements, for ease of service, maintenance and usage; spaces required around the appliance is indicated in Figure 5.

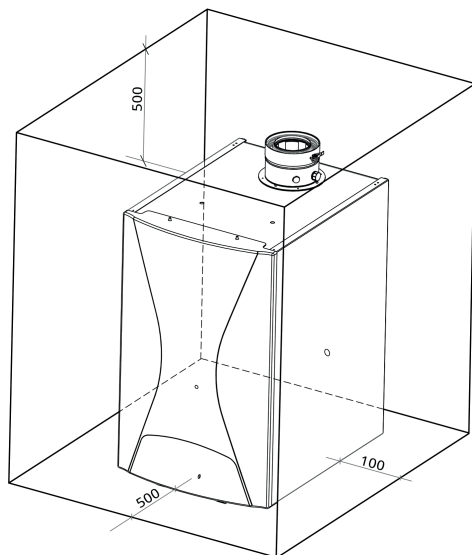


Figure 5. Required Spaces Around the Appliance

■ Hanging the Appliance to the Wall

E.C.A. Felis condensing boiler must be hung to a brick wall with the supplied hanging bracket.
For installation:

- Take measurement from the back side of the boiler to make sure that the holes are in line and horizontal.
- Mark the hole places on the wall.
- Drill the holes and put in the wall plugs.
- Fix the hanging bracket to the wall using the provided screws.
- Hang the boiler to the hanging bracket.

It is important that the hanging parts should be fixed to the wall properly to endure the weight of the appliance.

■ CONNECTIONS..

■ Water Connection Instructions

Before the installation of your boiler, water circuit must be cleaned with suitable/approved chemicals. To not damage the metal, plastic and rubber parts of the pipings and fittings, use neutral based, non-acidic and non-alkalic cleaners. When using these chemicals, please follow the instructions. Any dirt, blockages, welding residuals, burr, flug etc. particles left inside the pipes will affect the boiler's performance. These residuals will cause boiler to overheat, noisy operating etc. Any damage or failure caused by unfit piping system is out of warranty coverage.



INFORMATION

- Water used in the boiler circuit must have a pH value between 7,5 - 9,5. If there are aluminum parts on the water circuit, pH value must be lower than 8,5.



INFORMATION

- Water used in the boiler circuit must have a hardness value between 5°f -15°f. If necessary, water in the circuit must be conditioned using chemicals according to the water connections instructions above.

■ Condensate Water Connection

The condensate water formed during normal operation of E.C.A. Felis boiler should be discharged according to the instructions. In gas burning condensing boilers condensate water is an acid fluid with a pH value between 4-5. Burning 1 m³ natural gas forms approx. 1,7 liters of condensate water. There is a siphon mounted to the condensate water outlet to prevent the flue gas to leak into the surrounding air. Galvanised and copper alloy parts should not be used in the pipes and connection parts, all parts of condensate drain should be in plastic. If the drain hose would be connected to a drain out of the building, isolating the hose might be necessary to prevent the hose to freeze. For a good operation, all horizontal parts of the condensate drain should have a 2°-3° downwards slope.

■ Electrical Connections



DANGER: When making electrical connections, make sure that there is no charge in the electrical line.

- Appliance must be connected to a grounded 230V AC, 50 Hz plug. If the supply cable is damaged, it should be replaced by E.C.A. authorized services.
- A 2A double pole breaker with minimum 3mm contact clearance must be used for electrical connection of the boiler.

For the mains connection of the device, it is appropriate to use **H05W-F 3x0.75 mm²** or **H05W-F 3x1.0 mm²** cable in addition to the mains cable present in the device. The electrical connection cable of the device must be fed in a grounded socket line that can provide sufficient voltage (230V AC, 50Hz) for the device. Card malfunctions and damage to your device due to voltage fluctuations and lack of grounding are not covered by the warranty.

■ Flue Connections

E.C.A. Felis boilers are designed to work with C-type flues to provide the air required for burning from out of boiler room. During flue connections, tightness gaskets should be mounted correctly to prevent flue gas leakage to the fresh air intake. Horizontal flue kit must be installed with a 3% slope towards the appliance to keep the condensate water flowing.

Different connection kits for the air intake and flue outlet are provided separately.

You can use the Felis condensing boiler as a B-type device with a flue adapter that you can supply from your seller. If the appliance is used as a B-type device, the boiler room must be equipped with proper ventilation ducts per required by the directives. Felis boiler shall not be used as a B-type device in environments that the air is polluted with halogenic hydrocarbons (hair salon, printing press, chemical cleaner shop etc.) That way the appliance can be protected from the corrosive effects of the ambient air.



DANGER: The installation location of your condensing boiler and its flue gas connection must comply with the instructions specified by TSE authorized gas companies.



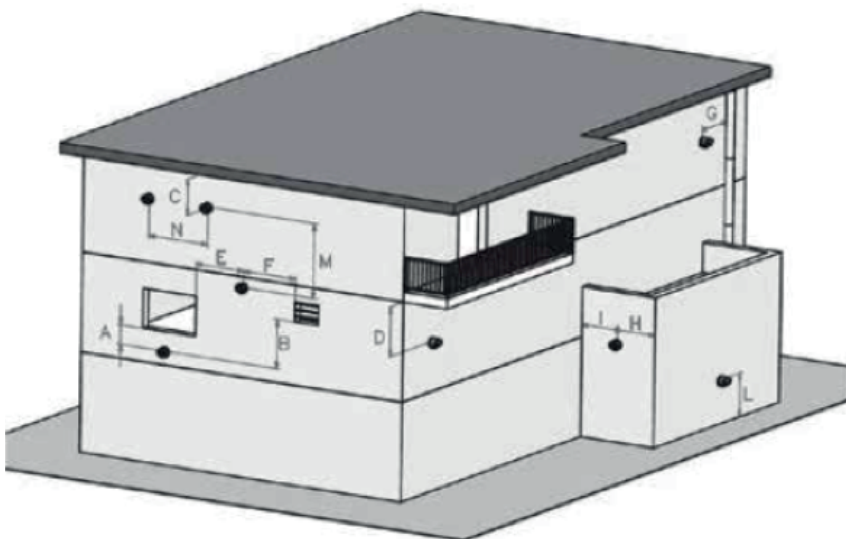
DANGER: Unapproved combustion air / flue gas flow pipes may pose a risk of injury. Only use the manufacturer's original combustion air / flue gas flow pipes. It is not appropriate to intervene in the original chimney kits (cutting, making additions, etc.).



DANGER: During installation, the boiler chimney set and its accessories must be fixed in a way to maintain their tightness, taking into account the effects and impacts that may come from outside. Otherwise, CO (Carbon monoxide) gas that will leak from the chimney connections will cause poisoning and pose a life-threatening risk.

A chimney clamp should be used for each chimney and vertical section transition points, and a distance of less than 2 m should be left between two chimney clamps. The chimney system must be fixed rigidly to the wall with the chimney clamp.

■ Distances for Placement of Chimney Outlets



PLACEMENT	Distance (cm)	PLACEMENT	Distance (cm)
A- Under a window	60	G- Side of a horz. or vert. pipe	60
B- Under an air vent	60	H- Dist. from an outer corne	60
C- Under rain shield	30	I- Dist. from an inner corner	100
D- Under a balcony	30	L- From floor or pavement	180
E- Side of a window	40	M- Vert. distance between two flue outlets	150
F- Side of an air vent	60	N-Horz. distance between two flue outlets	100

Figure 6. Distances for Flue Outlets

Places where it is undesirable to install the chimney outlet of type C (hermetic) devices are stated in the following articles:

- Passages and corridors,
- Narrow eaves gaps,
- Ventilation and light spaces of buildings,
- Inner parts of balconies,
- Elevator shafts,
- Vents that provide fresh air to other units,
- In places that may be directly exposed to wind resistance.

Underground, basement etc. chimneys of the products installed in the spaces; It should be installed in a way that it will not endanger living spaces and that no person can intervene. If such an installation is not possible, the chimney outlet should be extended to the roof.

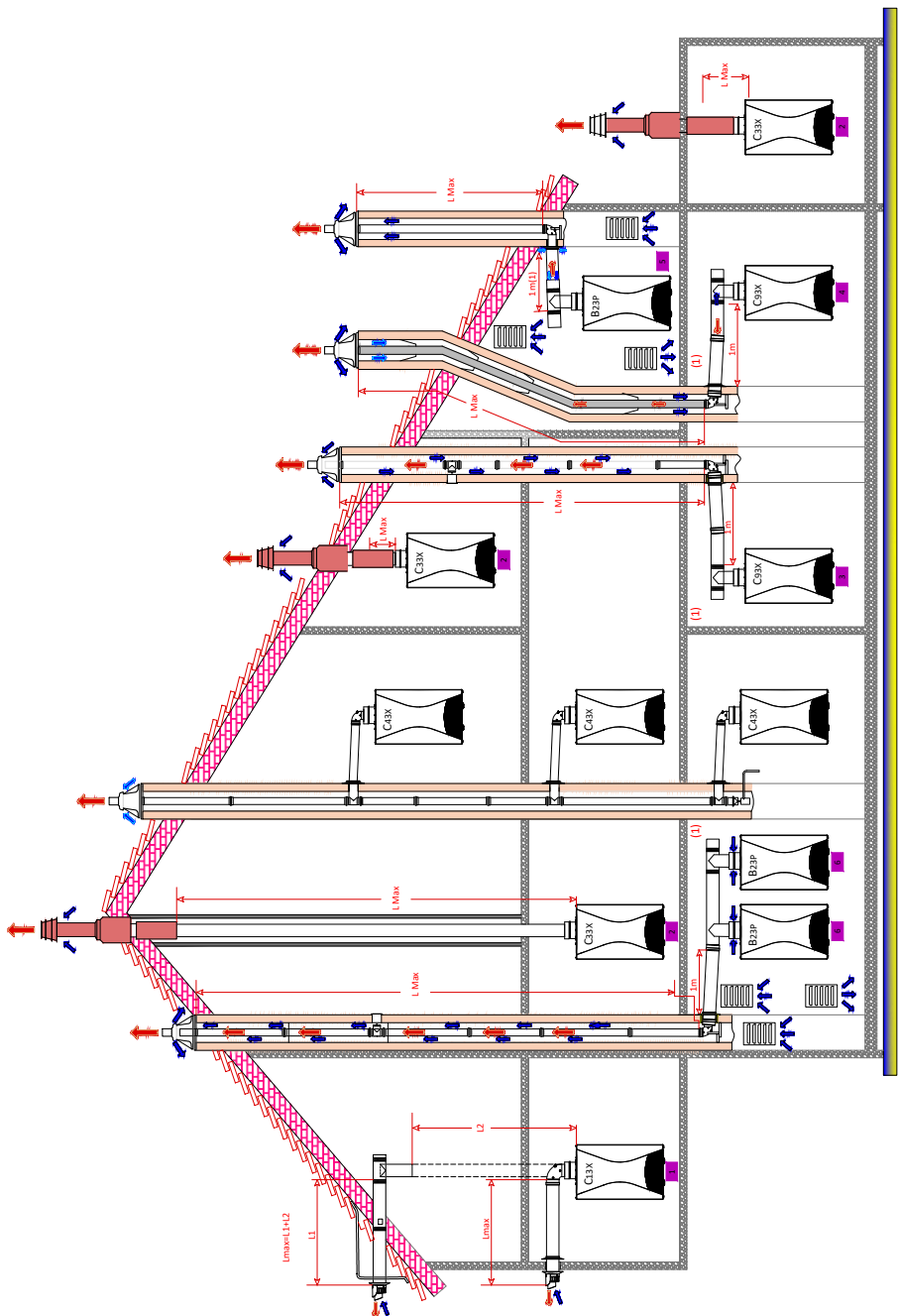


Figure 7. Flue Types

■ Room Thermostat (Optional)

A selection of compatible room thermostats can be used for heating control of the system.



AF17 Digital Room Unit
7006721435



AF18 Room Unit
7006721436



E.C.A. On-Off Room
Thermostat Wireless
7006907522

Figure 8

Outdoor Air Sensor

The outdoor air sensor compatible with your device detects the air temperature of the outdoor environment and transmits this information to the primary (master) device in the cascade installation. The heating system modulates its operation to create the water temperature that will provide the requested comfort temperature, taking into account the outside air temperature.

In systems that do not have an outdoor sensor connected, this situation is indicated on the screen with a warning and error code, and water temperature calculations are made by assuming the outside air temperature is 0°C. In order for the frost protection function on your device to work, the outside air sensor must be connected.

The outdoor air sensor should be mounted on the north/northwest side of the building, at least 2.5m above the ground, and in a location where it can read the outdoor temperature in the healthiest way. Some warnings regarding the mounting position are as in Fig.9.

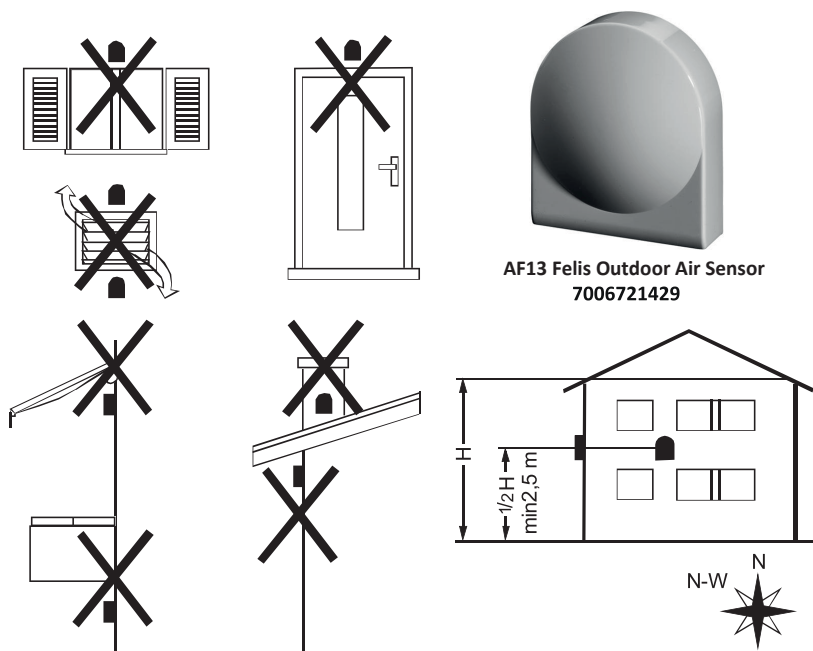


Figure 9. Outdoor Air Sensor

OPERATING

First time operation of the appliance must be made by an authorized service. Before first time operation, required parameter changes must be made by the service according to the components used in the heating application.



INFORMATION

Please inform the authorized service about the additional components (storage tank, 3-way valve, pool heating etc.) in your installation, so required parameter settings can be done. Please ask your authorized service for more information about operating and the safety features of the appliance after installation

Control Panel

E.C.A. Felis condensing boiler gives extensive information to the user about the status of the appliance and system with its wide LCD screen and multi-language support while allowing full control on the appliance.

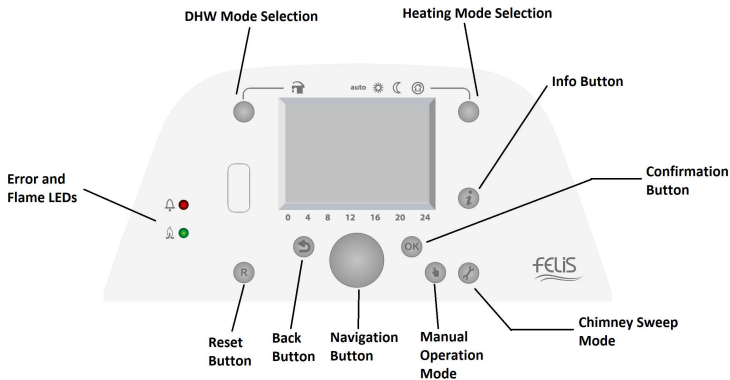


Figure 10. Felis Control Panel and Buttons

By pressing “Info” button, user can see values such as “Boiler temperature, Outside Temperature, Room Temperature, Water Pressure, Authorized Service Telephone No” etc.

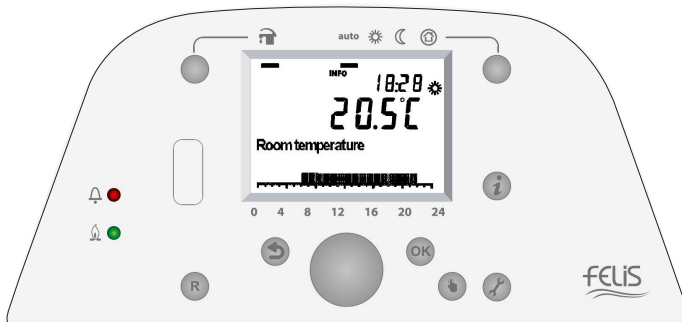


Figure 11. Felis Control Panel - Information

🔔 Error messages

If this symbol appears, an error in the appliance has occurred. Press the info button and read further information.

🔧 Maintenance or special operation

If this symbol appears, a maintenance alarm is delivered or the device has changed to special mode (Chimney sweep mode, manual operation, controller setpoint mode etc). Press the info button and read further information.

Diagram illustrating the control panel components:

- Reset Button**: A rectangular button located at the top right of the panel.
- Error LED**: A red LED indicator located below the Reset Button, accompanied by a bell icon.
- Flame LED**: A green LED indicator located below the Error LED, accompanied by a flame icon.

The FELiS logo is visible in the bottom right corner of the panel.

Wide LCD screen located on the control panels gives various informations about working mode, menu level, heating circuit number, maintenance and error statuses. Meanings of the symbols appearing on the screen is given at Figure 13.



DATE / TIME SETTINGS

Ensuring that the date and time setting of your appliance is right is essential for time programs and summer/winter changeovers to work correctly. When in the main screen press OK to enter the menu, and enter the “Time of day and date” submenu to change the date / time setting and summer/winter changeover dates.

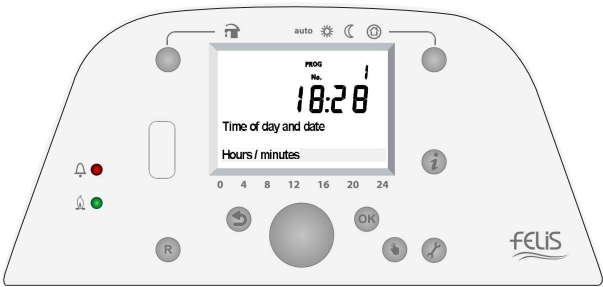


Figure 14. Date / Time Setting

P. No	Description
1	Hour / minute
2	Day / month
3	Year
5	Start of summer time
6	End of summer time

TIME PROGRAMS

You can program the desired time slots for the appliance to run from the control panel. These settings can be done for weekdays (Mon-Fri), weekends (Sat-Sun), all week (Mon-Sun) or separate for each day. For each day you can assign three start and three end times. The appliance will work according to the Comfort setpoint during programmed time slots and it will work according to the Reduced setpoint outside of programmed time slots.

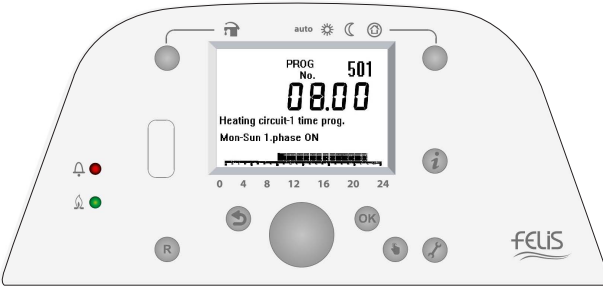


Figure 15. Time Programs

P. No	Description
500	Preselection
501	1.phase ON
502	1.phase OFF
503	2. phase ON
504	2. phase OFF
505	3. phase ON
506	3. phase OFF

When in main screen, press OK to enter the menu and navigate to “Time program Heating circuit-1” submenu. Parameter no. 500 decides the day range for the time program and parameters 501-506 decides the times of the day for the heating to switch on and off. You can see the arranged time program as a line chart in the bottom of the LCD screen.

WORKING MODES

Selection of the Heating Mode

Switching between four different heating modes is done by pressing the Heating Mode button on the upper right side of panel. Selected heating mode is indicated in the LED screen by a horizontal line under the corresponding heating mode symbol.



INFORMATION

In cascade applications, changing of heating mode, setting the comfort and reduced setpoints and other adjustments should be made from the control panel of primary (master) boiler.

Automatic Mode **auto**

Automatic mode controls the room temperature according to the time program. Characteristics of automatic mode:

- Heating mode according to the time program
- Temperature setpoints according to the heating program “Comfort setpoint” or “Reduced setpoint”
- Protective functions active
- Automatic summer / winter changeover (ECO functions)

Continuous operation ☀☾

Continuous operation maintains the room temperature at the selected operating level.

- ☀ Heating to Comfort setpoint
- ☾ Heating to Reduced setpoint

Characteristics of continuous operation:

- Heating mode with no time program
- Protective functions active
- Automatic summer / winter changeover (ECO functions) and 24-hour heating limit inactive in the case of continuous operation with Comfort setpoint.

Protection 🏠

When using protection mode, the heating system is off, but it remains protected against frost (frost protection temperature) provided there is no power failure.

Characteristics of Protection mode:

- Heating off
- Temperature according to frost protection temperature setpoint
- Protective functions active
- Automatic summer / winter changeover (ECO functions) and automatic 24-hour heating limit active

Selecting the DHW heating mode

The button is used to switch DHW heating mode on and off. The selection made is indicated by a bar which appears above the respective symbol. When the DHW heating mode is ON, the domestic hot water tank is heated according to the selected switching program.

Adjusting the room temperature setpoint

When in main screen, turning the knob enters the “Comfort setpoint” adjustment mode. Comfort setpoint ☀ is set by turning the knob to the demanded temperature and pressing “OK”. To change the Reduced Setpoint ☾, press OK while on main screen to enter the menu, navigate to the “Heating circuit” submenu, press OK to enter the submenu, navigate to the “Reduced setpoint” parameter.

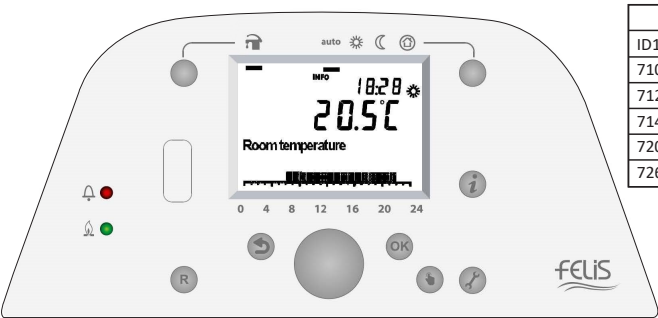


Figure 16. Comfort Setpoint Adjustment

P. No			Description
ID1	ID2	ID3	
710	1010	1310	Comfort setpoint
712	1012	1312	Reduced setpoint
714	1014	1314	Frost protection setpoint
720	1020	1320	Heating curve slope
726	1026	1326	Heating curve adjustment

Heating curve are used for creating a water temperature set point according to the current outside temperature conditions. It can be changed according to local conditions, so heat demand can be changed due to user preferences.

If the heating curve slope is higher; water temperature is higher at lower outside temperatures. If you can't achieve desired room temperature, heating curve slope must be adjusted.

Increasing the slope increases water temperature in lower outside temperatures. Decreasing the slope decreases water temperature for the same outside temperature value.

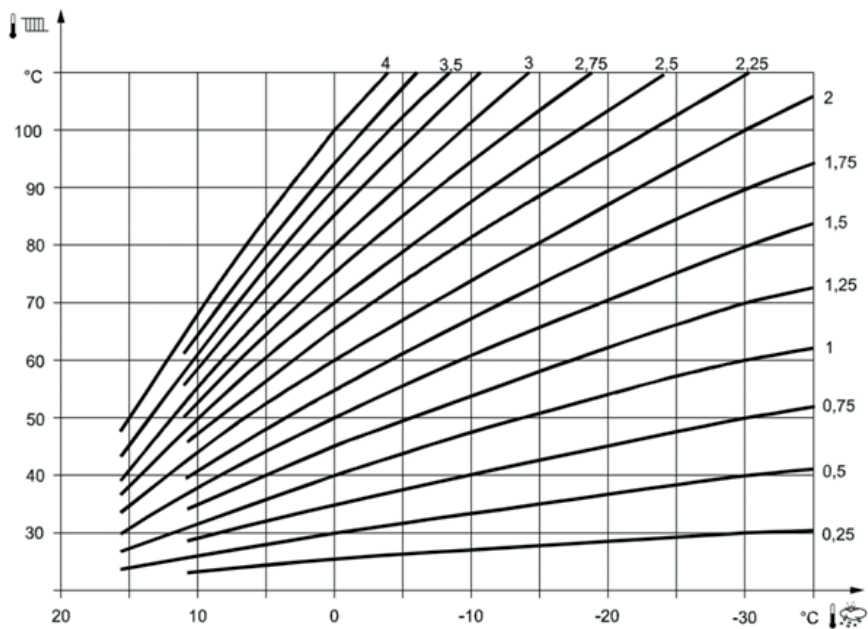



Figure 17. Heating Curves for 20°C Comfort Setpoint

Manual operation

When manual operation is in effect, appliance works according to a user defined manual setpoint rather than the current heating mode or time programs. After activating manual operation mode, pressing "Return" button goes back to main screen. When maintenance/special operation symbol appears on the screen,  user can press "Info" button to change to the manual operation screen and change the manual operation setpoint.

Domestic Hot Water

Selecting the Domestic Hot Water Mode

Domestic hot water (DHW tank) mode selection button is located on the upper left side of the control panel. Selection is indicated with a dash bar located below the DHW symbol. When the DHW heating mode is ON, DHW tank is heated according to the DHW heating parameters.

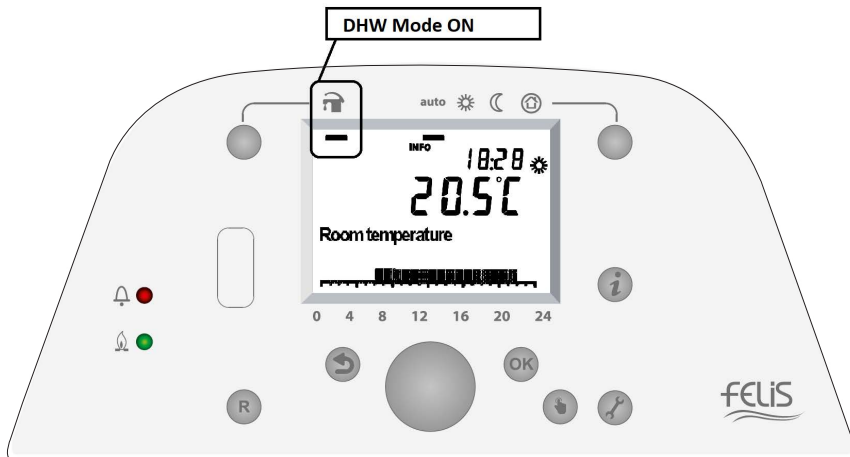


Figure 18. DHW mode

Nominal setpoint max: Only used for limiting the nominal DHW setpoint value

Nominal setpoint: DHW setpoint value of actual usage

Reduced setpoint: DHW setpoint value outside of actual usage

Frost protection setpoint: Frost protection value for the times when DHW heating is OFF. Factory setting is 5 °C as default.

- When the DHW heating is ON, parameter no. 1620 can decide the actual feeding hours of DHW tank during 24 hours.

P. No	Description
1610	DHW Nominal setpoint
1612	DHW Reduced setpoint
1620	Usage
1630	Heating priority
1640	Legionella function
1641	Periodical Legionella func.
1642	Legionella func. day
1645	Legionella func. setpoint

DHW heating can be released in 3 different ways:

- 24h/day

When this setting is used, DHW heating is continuously released as long as it is On. The DHW setpoint is always the Nominal setpoint, unless the Legionella function has been activated. Setting Once/day or Several times/day has no impact. When DHW heating is Off, the Frost Protection setpoint applies.

- Time programs HCs

When this setting is used, DHW heating is released during the occupancy times of the connected heating circuits. If at least one of the heating circuits operates at the Comfort level, DHW heating is released also. If all heating circuits operate at the Reduced level or in Protection mode, the DHW level is set to Reduced also. To ensure that the DHW storage tank is already charged when space heating is started, the release of DHW heating is brought forward in time against the switch-on point for space heating (including optimum start control). The extent of forward shift depends on Charging (5010) (Once/day or Several times/day). When selecting Once/day, the forward shift for the release of DHW heating is 2.5 hours. When selecting Several times/day, the forward shift for the release of DHW heating is 1.0 hour. If the Legionella function is pending, it will be performed when DHW heating is released for the first time in the morning. When DHW heating is Off, the Frost Protection setpoint applies.

- Time program 4/DHW

When using this setting, a specific time program is available for DHW heating. For every weekday, a time program with a maximum of 3 on phases can be set. During the release time, the Nominal DHW setpoint applies, outside the release time, the Reduced DHW setpoint. If the Legionella function is pending, it will be performed when DHW heating is released for the first time in the morning. Setting Once/day or Several times/day has no impact. When DHW heating is Off, the Frost Protection setpoint applies.

DHW priority

When both space heating and DHW heating call for heat, the DHW priority function (parameter no. 1630) ensures that while DHW charging is in progress, the boiler's capacity is used primarily for DHW heating.

- Absolute: Mixing and pump heating circuits stay locked until DHW heating is completed.
- Shifting: If the capacity of the heat source is not sufficient, the mixing and pump heating circuits will be restricted until the DHW is heated up.
- None: DHW heating and space heating take place at the same time. In the case of tightly sized boilers and mixing heating circuits, the DHW setpoint may not be reached if space heating calls for considerable amounts of heat.
- MC shifting, PC absolute: The pump heating circuits stay locked until the DHW storage tank is heated up. If the capacity of the heat source is not sufficient, the mixing heating circuits will be restricted also.

Legionella function

When the Legionella function is activated, the DHW storage tank temperature is periodically raised to the Legionella funct setpoint. The Legionella funct setpoint can be maintained during the set dwelling time.

- Off

Function is deactivated.

- Periodically

The Legionella function is repeated according to the period (Legionella funct periodically 1641). If the Legionella setpoint is attained via solar heating – independent of the selected interval – the time period is started again.

This means that the heat source is switched on only if the solar plant was not able to ensure the required Legionella funct setpoint within the set period of time.

- Fixed weekday

(The Legionella function can be activated on a fixed Legionella funct weekday (1642)). When using this setting, heating up to the Legionella setpoint takes place on the selected weekday, independent of previous storage tank temperatures.

This setting is intended primarily for plant without solar integration.



WARNING: During the time the Legionella function is performed, there is a risk of scalding when opening the taps.

Legionella function setpoint

The Legionella setpoint can be adjusted between 55 °C and 95 °C. When the Legionella function is activated, the DHW storage tank is heated up until the value set here is reached. For the Legionella function to be regarded as fulfilled, sensor B3 at the top or both sensors B3 and B31 must reach the Legionella setpoint which must be maintained for the set dwelling time, depending on Type of charging (5022). The higher the temperature level of the storage tank, the shorter the required dwelling time at that level. The figures given in the table are guide values. They do not guarantee that legionella viruses will be completely killed.

Storage tank temperature	Dwelling time
80 °C	A few seconds
70 °C	1 minute
66 °C	2 minutes
60 °C	32 minutes
55 °C	6 hours
50 °C	No killing of viruses
45 °C	Ideal conditions for viruses

Stand-by and Holiday Function



CAUTION: Do not cut the supply power even if the boiler is not in use. The boiler must be plugged in and supplied with electricity to activate frost protection mode.

When the heating system will not be in use for a prolonged period of time, the boiler can be set to Frost Protection mode by pressing the heating mode selection button or can be set to holiday program to set the boiler to work according to holiday dates.

Holiday Function

The holiday program enables holiday periods to be preprogrammed for a full calendar year. When a holiday period is active, the operating level switches to Reduced or Frost protection (selectable). An active holiday period is indicated by the suitcase symbol. The heating circuit’s operating mode does not change.

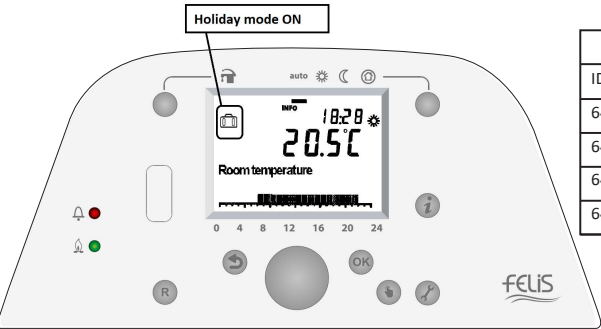


Figure 19. Holiday Function

P. No			Description
ID1	ID2	ID3	
641	651	661	Preselection
642	652	662	Holiday start
643	653	663	Holiday end
648	658	668	Operating level

Holiday periods are only active in Automatic operation. In the other operating modes, they are started and run in the background to become active whenever Automatic operation is selected. When a holiday period has elapsed, the controller automatically deletes it. The same holiday period the following year would have to be reprogrammed. A holiday period starts at 0:00 of the first day and ends/is deleted at 24:00 of the last day of the holiday period. It is possible to enter a holiday period with the date of the first and last day of the period (dd.mm). The operating level that shall apply during active holiday periods can be selected (Reduced or Protection). The impact of a currently active holiday period can only be canceled by switching to non-automatic operation or by deleting the programmed holiday period.

ERROR / FAULT CODES

There are several control mechanisms adapted in the boiler control to ensure a safe operation. Inconsistencies occurred during these controls will be shown as error and fault codes on the LCD screen and will be indicated with a bell sign on the upper left. Some detailed information for the possible error / fault codes is provided in the following table.

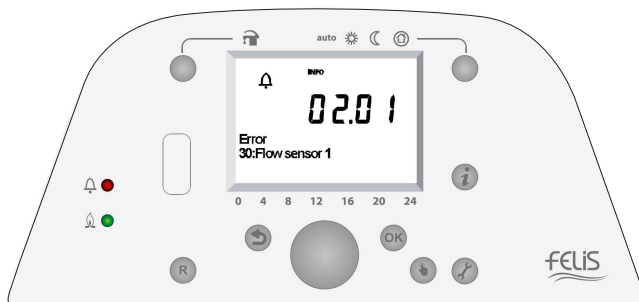


Figure 20. Error / Fault Codes

Error Code	Description of error	Possible Error Causes	Error Solutions
10	Outside temperature, sensor error	*Sensor might not be connected **Sensor might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.
20	Boiler temperature 1, sensor error	*Sensor might not be connected **Sensor might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.
28	Flue gas temperature, sensor error	*Sensor might not be connected **Sensor might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.
40	Return temperature 1, sensor error	*Sensor might not be connected **Sensor might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.

Error Code	Description of error	Possible Error Causes	Error Solutions
46	Cascade return temperature, sensor error	*Sensor might not be connected **Sensor might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.
50	DHW temperature 1 sensor error	*Sensor might not be connected **Sensor might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.
60	Room temperature 1, sensor error	*Sensor might not be connected **Sensor might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.
78	Water pressure, sensor error	*Sensor might not be connected **Sensor might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.
82	LPB address collision	* During cascade installation, more than one device could be given the same address	*Call technical service. Check the parameters for cascade settings.
103	Communication error	*There might be a communication problem between cascading devices.	*Call technical service. Check the parameters for cascade settings.
105	Maintenance message	*Predetermined maintenance lifetime of components are reached.	*Reset the device. Call the technical service for maintenance.
110	STB (SLT) lockout	*Limit thermostat might not be connected **Limit thermostat might be faulty	*Make sure that the sensor is connected firmly to the mainboard. Reset the device. ** Change the sensor. Reset the device.

Error Code	Description of error	Possible Error Causes	Error Solutions
111	Temperature limiter safety shutdown	* Boiler flow temperature might have gone over safety temperature **Temperature sensor might be faulty	* The appliance will continue to work after the water temperature has dropped **Call the service. If the temperature sensor is faulty, it must be replaced.
117	Water pressure too high	*Water pressure in the system is higher than the working pressure **Sensor might be faulty	*Call the service. Check if there is air trapped in the water circuit. **Call the service. If the pressure sensor is faulty, it must be replaced.
118	Water pressure too low	* Water pressure in the system is lower than the working pressure **Sensor might be faulty	*Call the service. Check if there is air trapped in the water circuit. **Call the service. If the pressure sensor is faulty, it must be replaced.
125	Maximum boiler temperature exceeded	*There might be air trapped in the water circuit **Pump might be faulty ***Temperature sensor might be faulty	*Call the service. Check if there is air trapped in the water circuit. **Call the service. Pump must be checked. **Call the service. If the temperature sensor is faulty, it must be replaced.
128	Loss of flame during operation	*There might be a problem with the gas supply.	*Check the gas meter. If problem persists, call the service.
130	Flue gas temperature limit exceeded	*Flue gas temperature might be too high **Temperature sensor might be faulty	*Reset the device when the flue temperature drops. **Call the service. If the temperature sensor is faulty, it must be replaced.

Error Code	Description of error	Possible Error Causes	Error Solutions
133	Safety time for establishment of flame exceeded	*There might be no gas supply to the device **Ignition transformer might be faulty ***Gas valve might be faulty ****Electrodes might be faulty	*Check the gas supply valve for the system. **Call the service. *** Call the service. **** Call the service.
152	Parameterization error	*Parameters might not be loaded **Wrong parameters might be loaded	* Call the service. ** Call the service.
160	Fan speed threshold not reached	*Fan might be faulty **Fan supply connector might not be fully in place ***Fan modulation connector might not be fully in place.	* Call the service. ** Call the service. *** Call the service.
330	Sensor input BX1 without function	*Sensor function might not be defined by parameter **Sensor cable might not be fully in place ***Sensor might be faulty	*Check the parameters from control unit **Check the sensor cable connector ***Check the sensor. Call the service.
331	Sensor input BX2 without function	*Sensor function might not be defined by parameter **Sensor cable might not be fully in place ***Sensor might be faulty	*Check the parameters from control unit **Check the sensor cable connector ***Check the sensor. Call the service.
332	Sensor input BX3 without function	*Sensor function might not be defined by parameter **Sensor cable might not be fully in place ***Sensor might be faulty	*Check the parameters from control unit **Check the sensor cable connector ***Check the sensor. Call the service.
333	Sensor input BX4 without function	*Sensor function might not be defined by parameter **Sensor cable might not be fully in place ***Sensor might be faulty	*Check the parameters from control unit **Check the sensor cable connector ***Check the sensor. Call the service.

Error Code	Description of error	Possible Error Causes	Error Solutions
335	Sensor input BX21 without function	*Sensor function might not be defined by parameter **Sensor cable might not be fully in place ***Sensor might be faulty	*Check the parameters from control unit **Check the sensor cable connector ***Check the sensor. Call the service.
336	Sensor input BX22 without function	*Sensor function might not be defined by parameter **Sensor cable might not be fully in place ***Sensor might be faulty	*Check the parameters from control unit **Check the sensor cable connector ***Check the sensor. Call the service.
385	Mains undervoltage	*Mains voltage might be too low	*Check the electrical connections of the appliance. Call the service.
386	Fan speed tolerance	*Fan speed tolerance defined by the parameters might be reached	* Call the service.
432	Function earth not connected	*Earth connection might be disconnected.	* Call the service.

MAINTENANCE

Appliance must go under maintenance at the start of every heating season. Please refer to E.C.A. authorized services for maintenance.

Outer surfaces of the appliance must be cleaned with a damp cloth without using any chemical substances. Usage of chemicals like detergents etc. could cause rust and scratches.

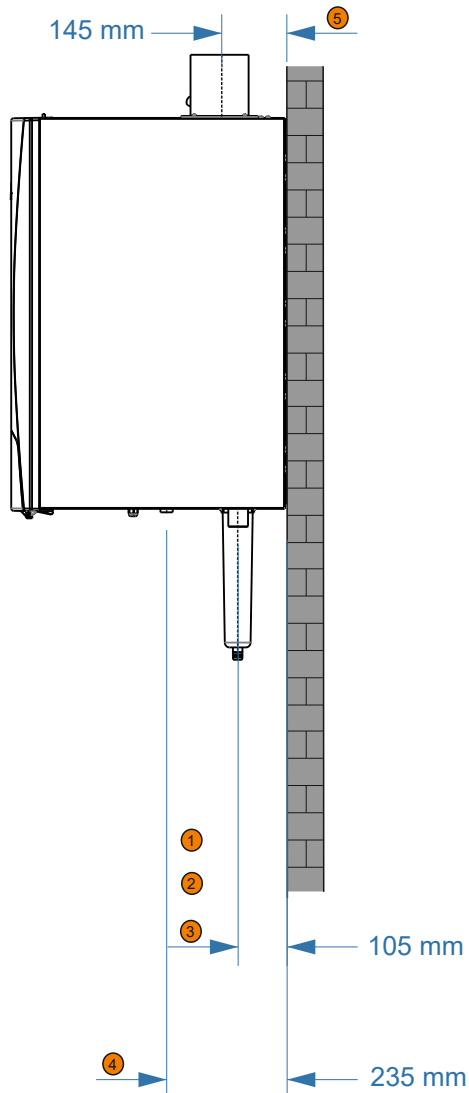
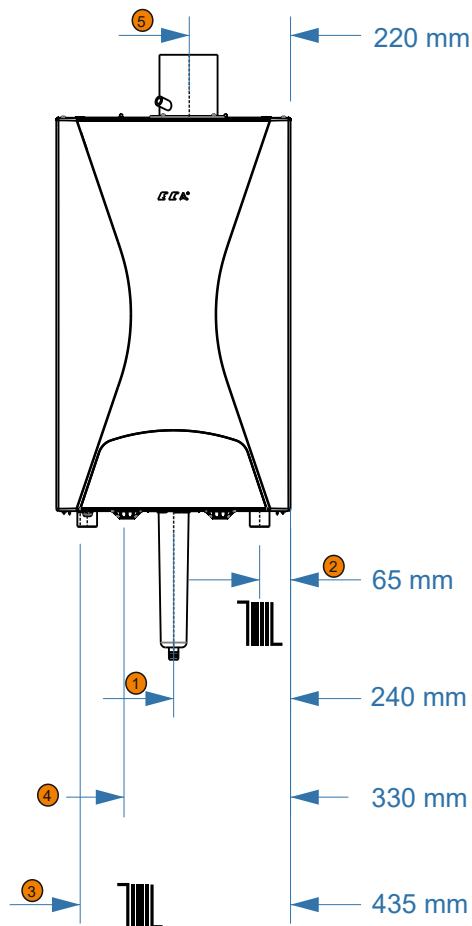
ALL RIGHTS RESERVED.

Our company reserves the right to make changes on the products, installation and user manuals.

STANDARDS / REGULATIONS

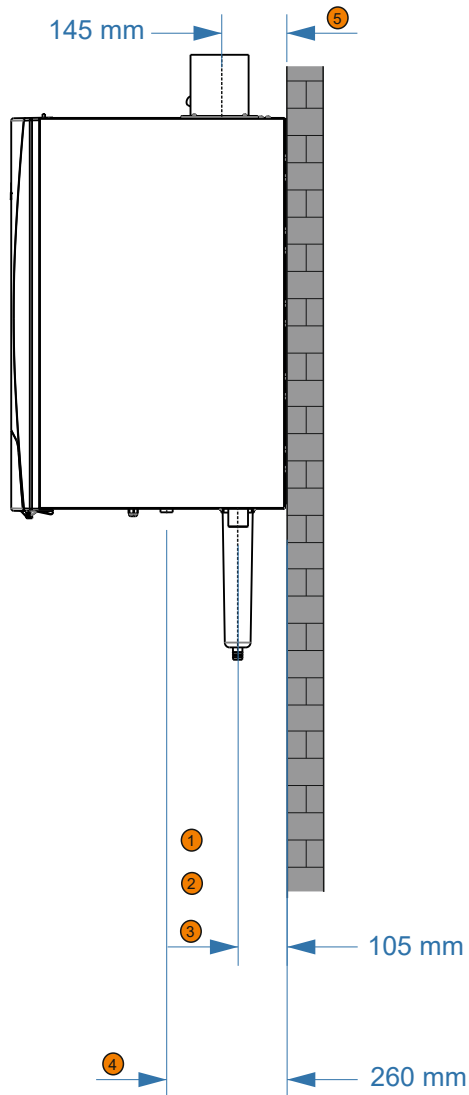
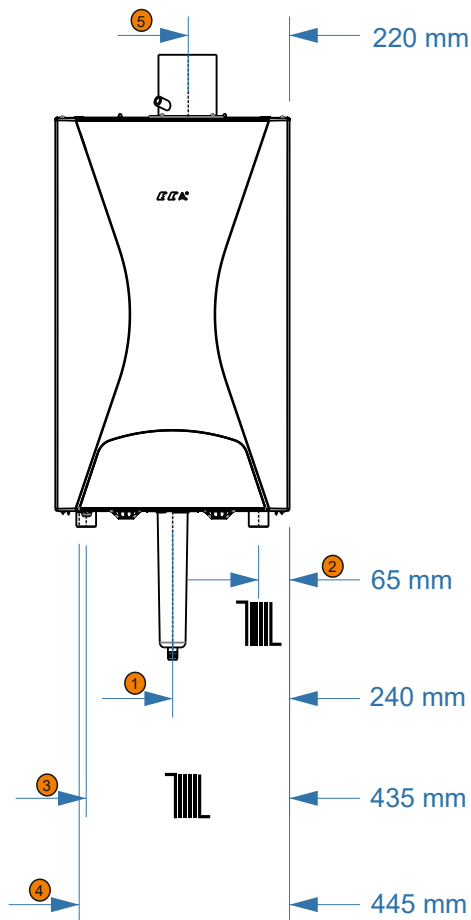
In addition to the warnings and instructions detailed in this manual; all laws, regulations, standards and local gas company instructions regarding the gas burning appliances shall be followed.

FELIS 50 kW
CIRCUIT AND FLUE CONNECTIONS



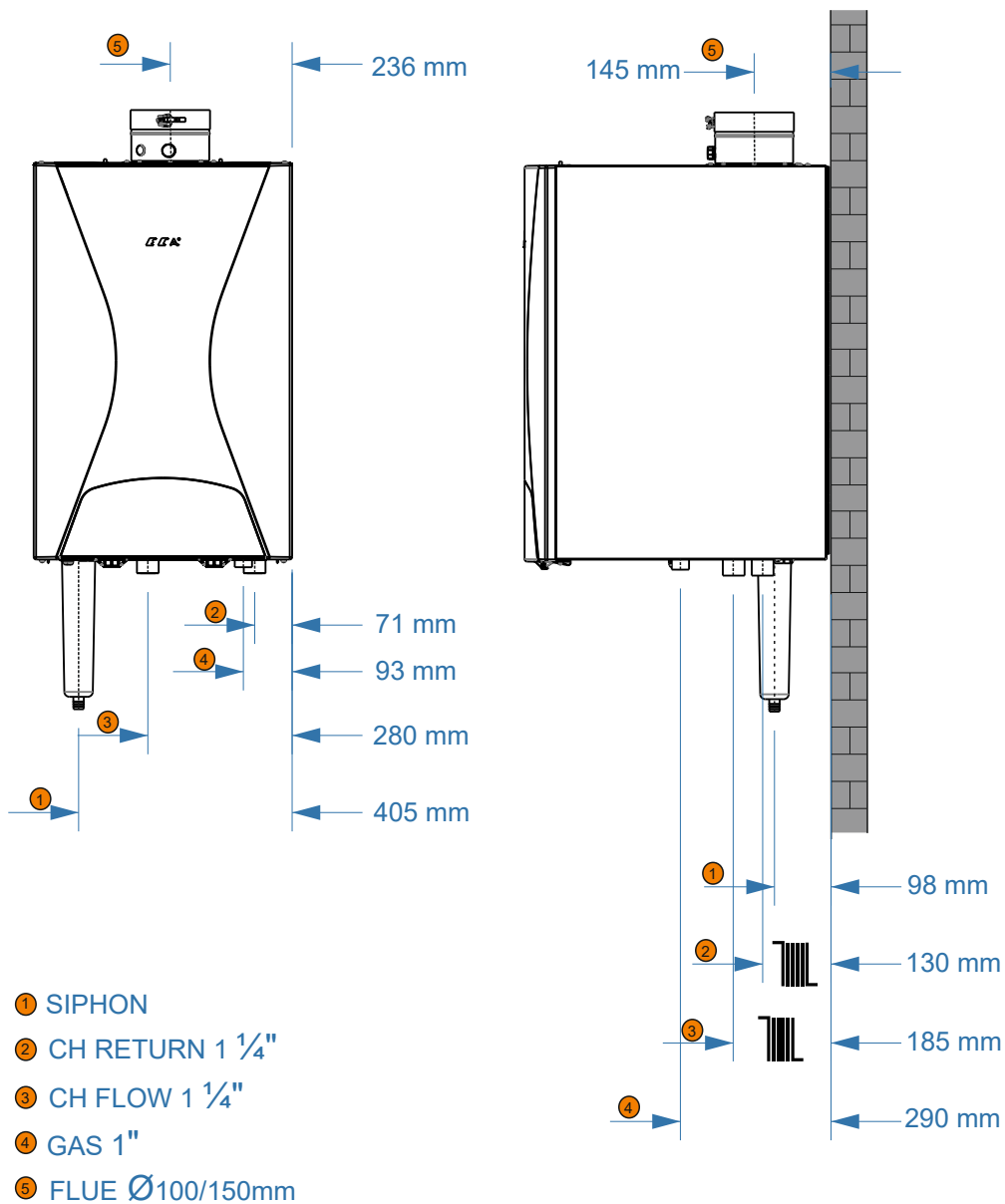
- ① SIPHON
- ② CH RETURN 1 1/4"
- ③ CH FLOW 1 1/4"
- ④ GAS 3/4"
- ⑤ FLUE Ø80/125mm

FELIS 65 kW
CIRCUIT AND FLUE CONNECTIONS

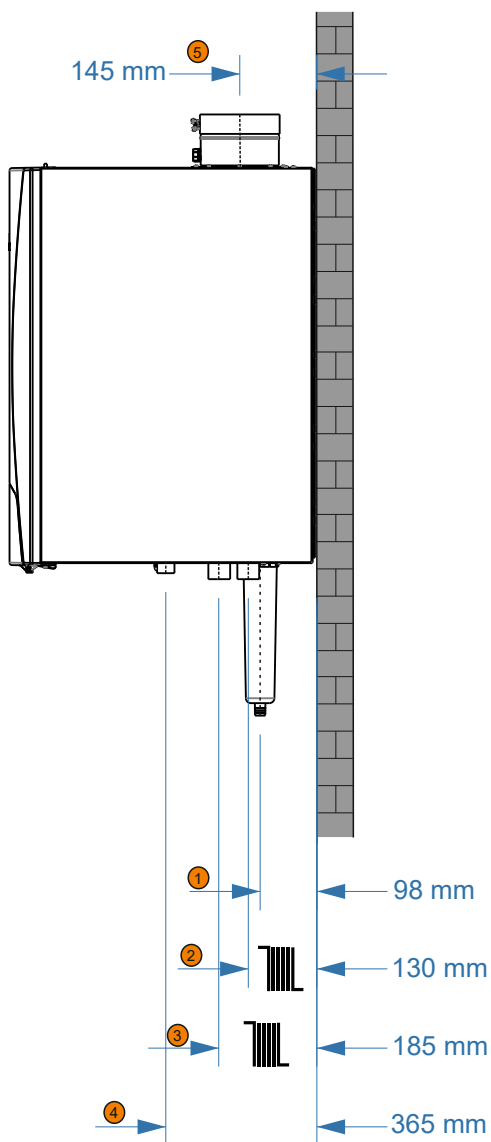
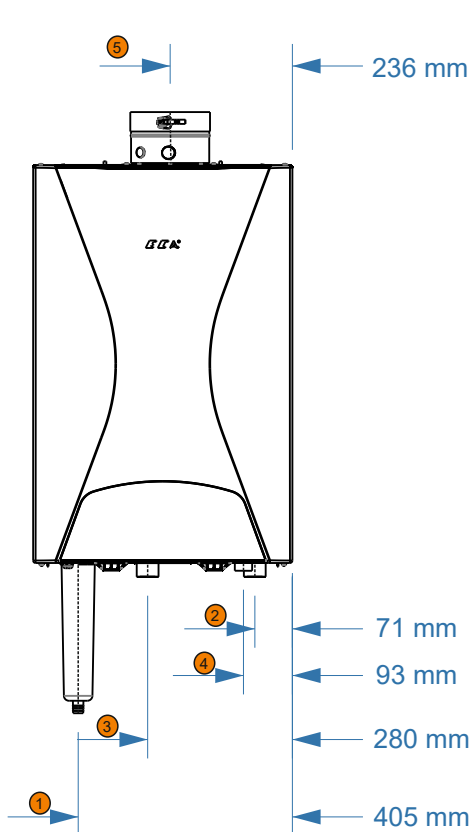


- ① SIPHON
- ② CH RETURN 1 1/4"
- ③ CH FLOW 1 1/4"
- ④ GAS 3/4"
- ⑤ FLUE Ø80/125mm

FELIS 100 kW
CIRCUIT AND FLUE CONNECTIONS

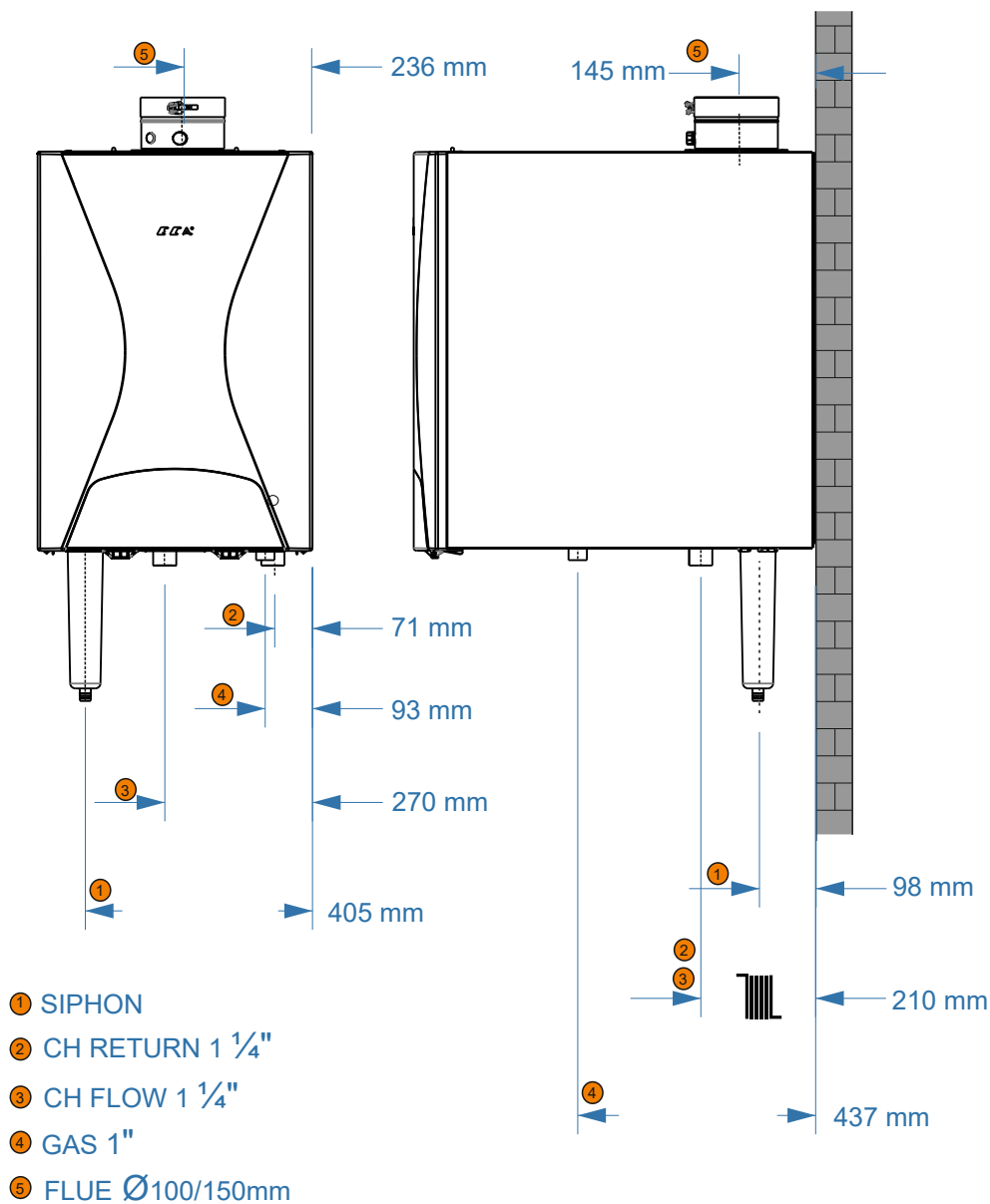


FELIS 125 kW
CIRCUIT AND FLUE CONNECTIONS



- ① SIPHON
- ② CH RETURN 1 1/4"
- ③ CH FLOW 1 1/4"
- ④ GAS 1"
- ⑤ FLUE Ø100/150mm

FELIS 150 kW
CIRCUIT AND FLUE CONNECTIONS



Technical Specifications Table

Product Type	Unit	FELIS FL 50 HM	FELIS FL 65 HM	FELIS FL 100 HM	FELIS FL 125 HM	FELIS FL 150 HM
Category		I2H, I2E	I12H3B/P	I2H, I2E	I12H3B/P	I2H, I2E
Flue Type		C13(x), C33(x), C43(x), C63(x), C93(x), B23P				
Gas Inlet Pressure (Natural Gas-G20)	mbar	20				
Gas Inlet Pressure (LPG-G31)	mbar	37				
Gas Inlet Pressure (LPG-G30)	mbar	30 / 37				
Capacity-Efficiency						
Min. Heating Power - (60°C min)	kW	7,84	13,03	19,4	22,54	25,75
Max. Heating Power - 80/60°C	kW	45,55	66,04	94,05	116,75	135,67
Min. Heating Power - (30°C min)	kW	9,09	14,89	22,34	26,29	29,82
Max. Heating Power - 50/30°C	kW	49,91	69,9	102	130,01	150,43
Min. Heat Input (min) (G20)	kW	8,18	13,5	20,09	24,2	26,57
Min. Heat Input (min) (G30/G31)	kW	8,48	14,7	20,43	31,2	27,71
Max. Heat Input (max)	kW	47,05	68,05	96,7	120,71	140,77
Gas Consumption						
Natural Gas (@Min-Max Capacity)	m³/h	0,882 - 5,120	1,464 - 7,384	2,179 - 10,506	2,513 - 13,100	2,878 - 15,148
LPG (@Min-Max Capacity) (G30)	kg/h	0,535 - 3,06	0,832 - 4,038	1,323 - 6,339	1,817 - 6,767	2,271 - 8,459
LPG (@Min-Max Capacity) (G31)	kg/h	0,530 - 2,982	1,117 - 5,216	1,278 - 6,021	2,289 - 9,143	2,861 - 11,428
NO _x Class		6	6	6	6	6
Central Heating						
Min. Water Pressure	bar	0,8	0,8	0,8	0,8	0,8
Max. Water Pressure	bar	3	4,5	6	6	6
Operation Range (Radiator Heating)	°C	30-85	30-85	30-85	30-85	30-85
Max. Limit Temperature	°C	> 85	> 85	> 85	> 85	> 85
General						
Electrical Supply	V AC-Hz	230 VAC-50 Hz				
Electrical Consumption (Max-HE Pump)	Watt	75	117	143	228	306
Protection Class		IPX4D				
Expansion Vessel	l	8				
Weight (Net)	kg	42	53	66	74	89
Dimensions (HxWxD)	mm	835*501*525	835*501*590	835*501*590	835*501*660	835*501*730
Flue Lengths (*f)						
Flue Diameter	ø mm	80 / 125	80 / 125	100 / 150	100 / 150	100 / 150
C13 (x) - Max. Flue length (horizontally) (*f)	m	10	10	11	11	11
C33 (x) - Max. Flue length (vertical) (*f)	m	12	12	13	13	13
B23P - Max. flue length (*f)	m	11	11	12	12	12
Emission Values						
CO ₂ ratio (@max-G20)	%	9,2 ± 0,2	9,2 ± 0,2	9,3 ± 0,2	9,5 ± 0,2	9,5 ± 0,2
CO ₂ ratio (@min-G20)	%	8,7 ± 0,2	8,7 ± 0,2	8,7 ± 0,2	8,9 ± 0,2	8,9 ± 0,2
CO ₂ ratio (@max-G31)	%	10,4± 0,2	10,4± 0,2	10,4± 0,2	10,6 ± 0,2	10,6 ± 0,2
CO ₂ ratio (@min-G31)	%	9,6 ± 0,2	9,6 ± 0,2	9,6 ± 0,2	9,9 ± 0,2	9,9 ± 0,2

Table 3

(*f) Maximum flue lengths are given for connection without elbows. The equivalent length for each 90° elbow is 1.5 m, and the equivalent length for each 45° elbow is 1 m.

CE Marking



The CE mark certifies that the products meet the essential requirements of the applicable regulations in line with the declaration of conformity. The manufacturer can be consulted for a declaration of conformity.

Product Information Form (ErP)

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

CE PIN Number: 0085CS0419

Product Data	Symbol	Unit	FELIS FL 50 HM	FELIS FL 65 HM	FELIS FL 100 HM	FELIS FL 125 HM	FELIS FL 150 HM
Condensing boiler			Yes	Yes	Yes	Yes	Yes
Low-temperature boiler(*b)			No	No	No	No	No
B1 boiler			No	No	No	No	No
Cogeneration Space Heater			No	No	No	No	No
Combination Heater			No	No	No	No	No
Usable Heating Capacity							
Rated heat output (*c)	Prated	kW	46	68	97	121	141
At rated heat output and high temperature regime (*a)	P4	kW	47,05	68,05	96,7	120,71	140,77
At 30% of rated heat output and low temperature regime	P1	kW	9,09	14,89	22,34	26,29	29,82
Auxiliary electricity consumption							
At full load	elmax	kW	0,075	0,115	0,139	0,226	0,297
At part load	elmin	kW	0,016	0,022	0,033	0,035	0,027
In Standby mode	PSB	kW	0,004	0,004	0,004	0,003	0,004
Space Heating Efficiency							
Seasonal space heating energy efficiency class			A	A	A	A	A
Seasonal space heating energy efficiency	ηs	%	91,8	91,4	91,8	92	91,8
At rated heat output and high temperature regime (*a)	η4	%	86,4	84,3	87,8	87,1	87,5
At 30% of rated heat output and low temperature regime (*b)	η1	%	97,2	97,5	97,4	97,1	97,2
Other Items							
Heat loss: Standby mode	Pstby	kW	0,411	0,939	1,564	0,644	1,6
Ignition burner power consumption	Pign	kW	0	0	0	0	0
Annual energy consumption	QHE	kWh	39713	57390	83085	102765	118623
Sound power level	L _{WA}	db(A)	53	53	53	51	51
NOx emissions	NOx	mg/kWh	37,82	28,13	26,40	42,91	34,06
Operating possibility at only poor load hours			No	No	No	No	No
Manufacturer	Emas Makina Sanayi A.Ş.						
Address of the Manufacturer	Mustafa Kemal Bulvarı Organize Sanayi Bölgesi 3. Kısım No: 13 45030 MANİSA						

Table 4

(*a) High temperature operation means a return water temperature of 60°C at the heater inlet and a outgoing water temperature of 80°C at the heater outlet.

(*b) Low temperature operation means a return water temperature (at the heater inlet) of 30°C for the condensing boiler, 37°C for the low temperature boiler and 50°C for other heating appliances.

(*c) 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).

(*d) valid for HM models.

PACKAGE LABEL CALCULATION

PACKAGE FISCHE BOILER

Seasonal Space Heating Energy Efficiency of Boiler

'I': The value of the seasonal heating efficiency of the primary central heater, expressed in %.

①

"I"

%

Temperature Control

(Room Thermostat – Outdoor Temperature Sensor)
From fiche of

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

+

"I"

%

Supplementary boiler

Seasonal space heating energy efficiency (in %)

From fiche of boiler

(

"I"

 - T) x 0,1 = ±

"I"

 %

Solar Contribution

From fiche of solar device

Collector size (m²)

Tank Volume (m³)

Collector Efficiency (%)

Tank Rating
 A*=0,95, A = 0,91,
 B=0,86, C = 0,83,
 D - G = 0,81

("III" x

"I"

 + "IV" x

"I"

) x 0,9 x (

"I"

 / 100 x

"I"

 = +

"I"

 %

"III" : The value of the mathematical expression: 294/(11.Prated), whereby 'Prated' is related to the preferential space heater.

"IV" : The value of the mathematical expression: 115/(11.Prated), whereby 'Prated' is related to the preferential space heater.

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

Supplementary Heat Pump

From fiche of heat pump

Seasonal space heating energy efficiency (%)

"II" : The factor for weighting the heat output of preferential and supplementary heaters of a package as set out in the following table.

(

"I"

 - "I") x "II" = +

"I"

 %

Solar contribution and Supplementary heat pump

Select smaller value

0,5 x

"I"

 or 0,5 x

"I"

 = -

"I"

 %

Seasonal space heating energy efficiency class of package

⑦

"I"

%

Seasonal space heating energy efficiency class of package

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G	F	E	D	C	B	A	A⁺	A⁺⁺	A⁺⁺⁺
<30%	≥30%	≥34%	≥36%	≥75%	≥82%	≥90%	≥98%	≥125%	≥150%

Boiler and supplementary heat pump installed with low temperature heat emitters at 35°C?

From fiche of heat pump

⑦

"I"

+
(50 x "

"I"

) =

"I"

%

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.

Weighting of boilers

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

$P_{sup} / (Prated + P_{sup})^{(1)(2)}$	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
<p>(1) Intermediate values are calculated by linear interpolation between two adjacent values. (2) Prated is primarily associated with central heating and combination heater.</p>		

REMOVAL INFORMATION

Unpacking the New Device



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 and methods, please contact your authorized dealer or your municipality.

Compliance with AEEE Regulation and Disposal of Waste Product



Dispose of the packaging material in accordance with environmental rules. This product is T.R. It 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.

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

EMAS MAKINA SANAYI A.S

Organize Sanayi Bölgesi 3. Kısım

Mustafa Kemal Bulvarı No: 13 45030

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