

INSTRUCTION MANUAL & SERVICE MANUAL ORLIGNO 400



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Thank You for choosing a ORLIGNO 400 pellet burner from Eko-Vimar Orlanski.

We ask you review this operating and installation manual before you start installing your new ORLIGNO 400 pellet boiler in order to avoid harm to people and product.

We recommend that the boiler is installed by a licensed plumber.



WARNING!

That you **MUST** unplug the connector before the burner is removed from the boiler.



WARNING!

The feeding hose and electric ignition are wearing parts and are therefore not covered by any warranty.

This manual contains information that is protected under copyright law.

1. Delivery

Orligno 400 package is packed on one pallet wrapped up with foil. External elements of Orligno 400 are package pached in cardbox:

- pellet tank
- elastic pipe with clamp
- metal connector
- auqer with motoreducer is wrapped in foil attached to pallet.

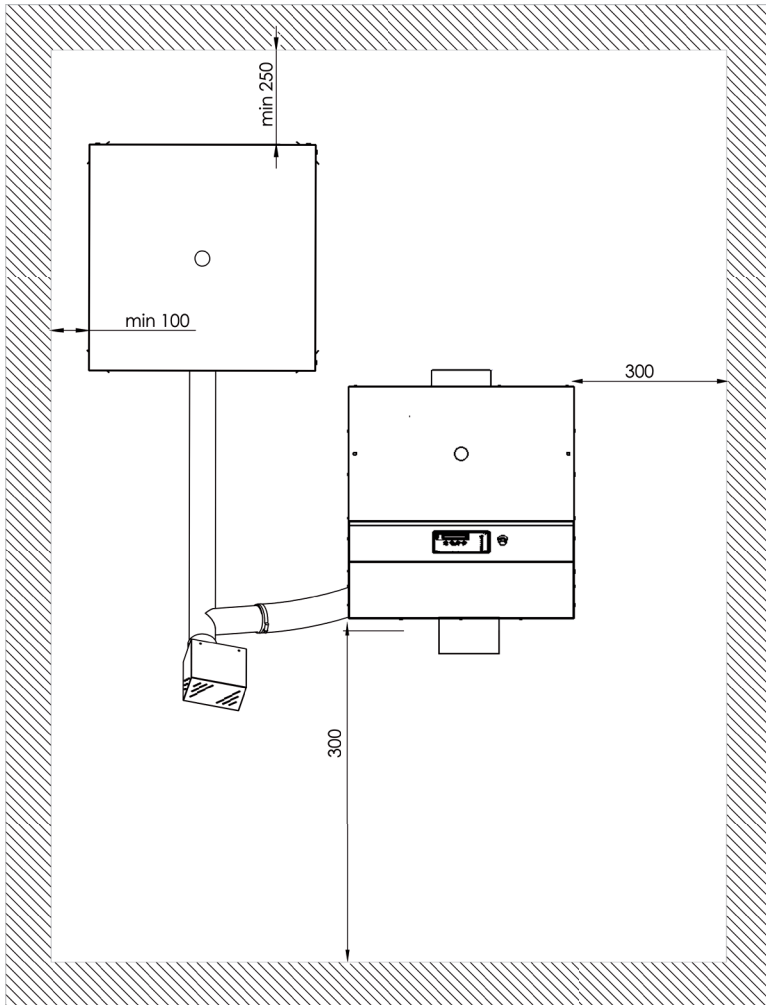
2. Installation and assembly

Generally, placement and installation must be carried out by competent skilled installers, and it is installer's responsibility that he has the necessary training and certification to conduct mounting.

All applicable standards and regulations are to be followed at the placement and installation, including:

- National Working Environment Authority Regulations (WEA)
- Water Norm
- Building Code, including distance to combustibile material
- Fire Instructions.

Orligno 400 placement in boiler room.



Air Draft Stabilizer:

When installing a ORLIGNO 400, we strongly recommend that you mount an air draft stabilizer, either at the flue between the boiler and the chimney, or directly on the chimney.

If there are an excessive chimney draft, there is an increased risk for high consumption of wood pellets.

We prescribe that you operate with as low draft as possible, usually not more than 10 Pa, it gives the controller optimal conditions.



WARNING!

It is required to install protection from low temperature water return to boiler. Return water should never drop below 55°C.



Check if fumes sensor is fitted tightly



Connectors from snail assembled with connectors from the controller



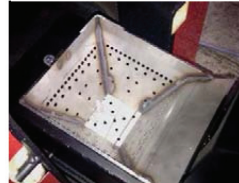
Unplug the burner before opening the burner.



Termix sensor fuse must be replaced if it does not work.

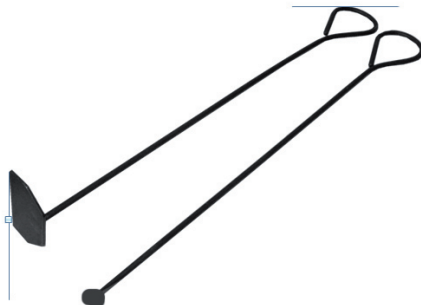


For cleaning the hearth pull the stick back and forth while the boiler is working.



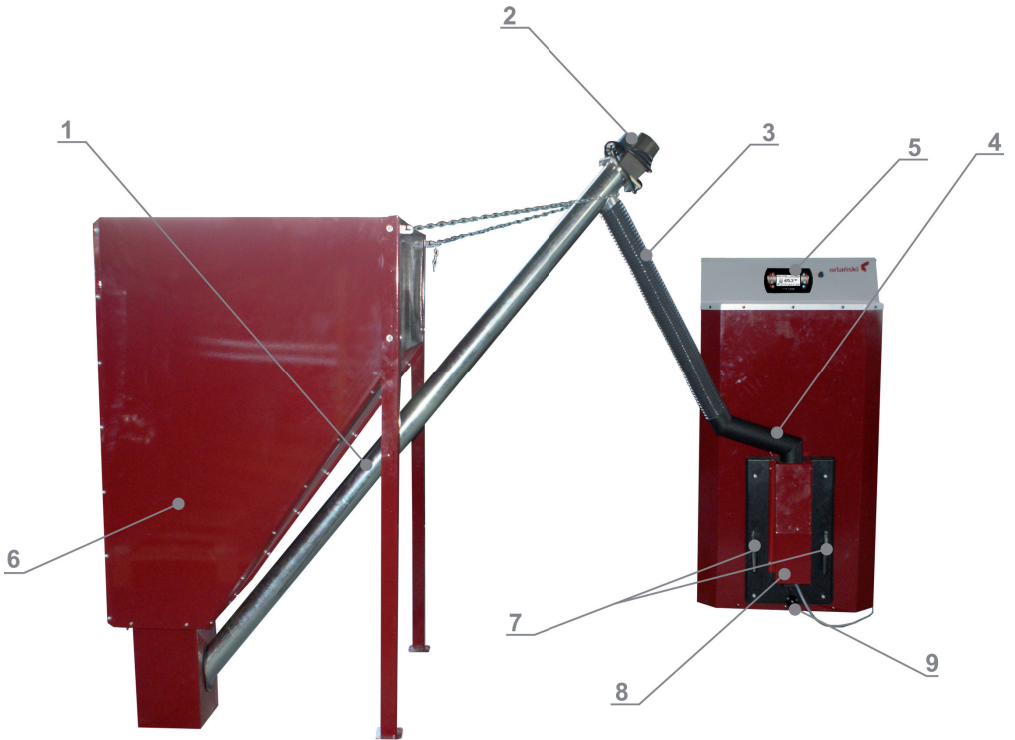
Hearth has to be cleaned approx. once a week

Approx. every third week, top cover over the flue pipe must be removed and flues should be cleaned with cleaning tools.

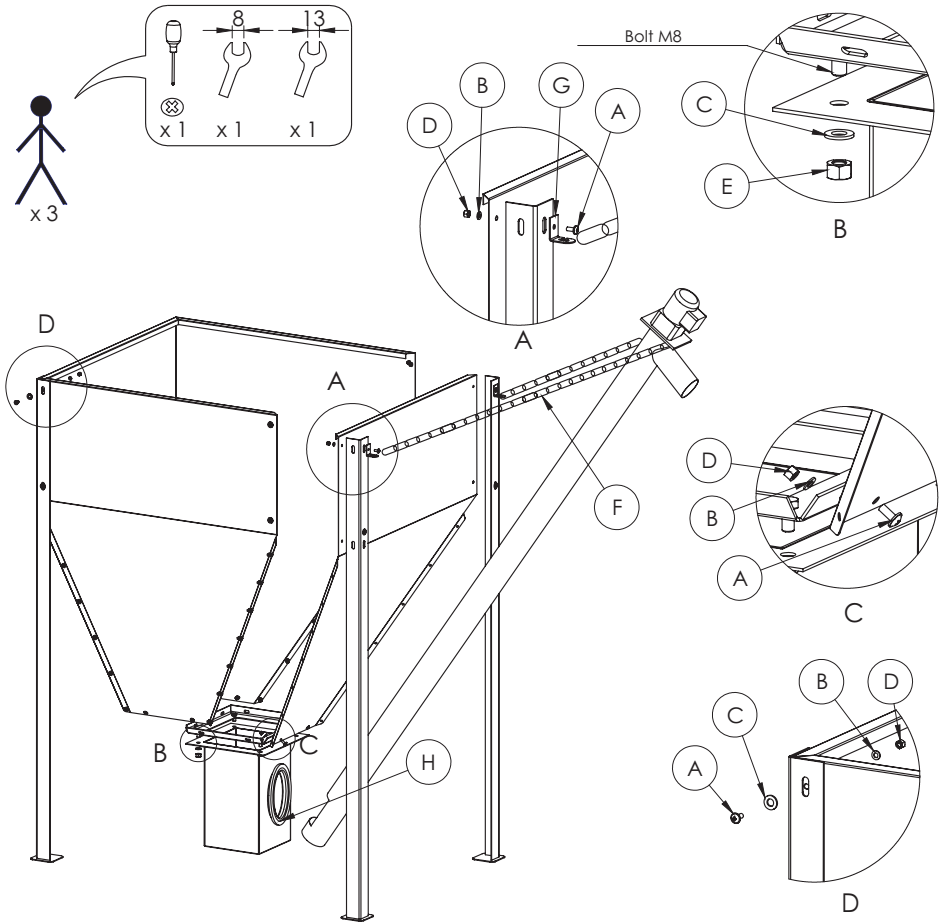


3. Boiler view after assembly

1. Boiler feeder
2. Motoreducer
3. Elastic feeding pipe
4. Metal connector
5. Boiler controler
6. Pellet tank 450l
7. Burners handles
8. burner
9. Burner cleaning handle



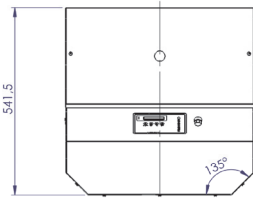
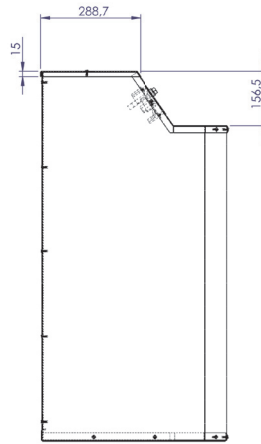
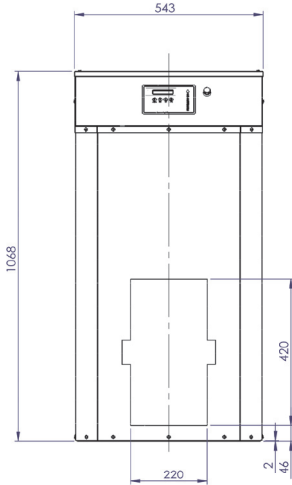
4. Pellet tank assembly



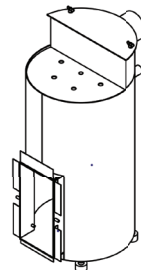
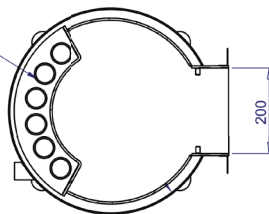
A x 46		M5 x 12	Bolt	B x 46		M5	Washer	C x 14		M8	Washer	D x 46		M5	Nut
E x 4		M8	Nut	F x 1			Chain	G x 2			Handle	H x 1			Gasket

5. Dimensions

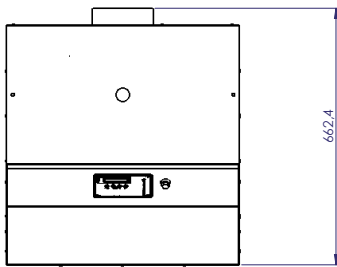
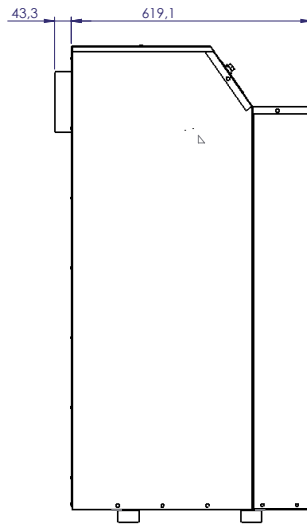
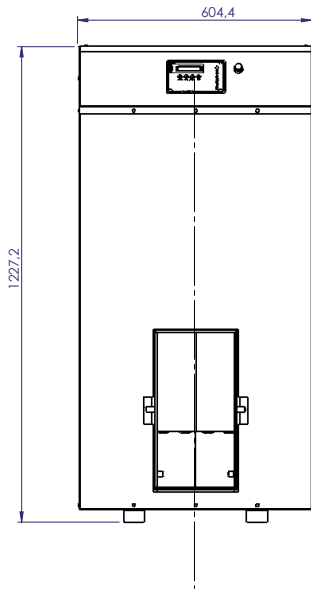
5.1. ORLIGNO 400 16kW



heat exchanger pipes



5.2. ORLIGNO 400 30kW



6. Orligno 400 package assembly

Mounting external equipment:

1. Attach burner plug to burner (pic 1)
2. Fit metal connector to burner
3. Attach the elastic pipe between the feeding screw(auger) and the metal connector. Tighten elastic pipe to feeding screw with clamp.

External auger:

4. Fit the auger to pellet tank by insert it to bottom base so the pellets can fall through the elastic pipe into the pellet burner in max. 50° incline.
5. Make sure the elastic pipe is near vertical (no bends), so the pellets drop directly into the hearth.
6. Attach the connector from the controller to auger's motoreducer.
7. Fit the plug 230V to socket.



pic. 1

Adjustments:

The control system runs continuously 100 % modulation and changes between these steps. It is important that the adjustment is correct, in order to get boiler to operate correct.

Adjusting the pellets:

You should occasionally open the door to the burner and watch the flame.

Each time the fuel changed (dust, length of pile, etc...) auger will also dispense different and therefore it will also dispense different and have an influence on the burn.

A pellet burner should **NOT** smoke but it must be close.

The smoke from the chimney must be invisible down to a few degrees of frost then it could be seen as a white vapor that disappears 3-6 feet above the chimney.

Invisible smoke is a sign of good combustion, sufficient air volume in relation to fuel.

Therefore, adjust the air/fuel ratio for richer combustion (less air) until the smoke from the chimney could be seen (brown).

Let each adjustment "fall into place" for approx. 2-3 minutes until the smoke is analyzed

Then adjust the air/fuel ratio to less fat burning (more air) until the smoke from the chimney exactly can not be seen anymore.

Now combustion is rough set, and further adjustments can be made from the ash color or flame.

If combustion is correct it gives a dark gray ash, however, there may be variations depending on the type of wood the pellets is made of.

7. Cleaning instructions

Cleaning should be done regularly and as needed.

The boiler should be cleaned weekly to achieve the best efficiency.

This ensures the best fuel economy and operation.

You increase the cleaning interval if you use the best quality of pellets.



WARNING!

If boiler is not used for over 14 days it is necessary to empty pellet tank and feeding auger.

Cleaning mechanism assembly in Orligno 400 - option.

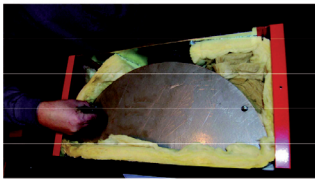


Fig 1. Disconnect top boiler cover.



Fig 2 Pull out all turbulators.

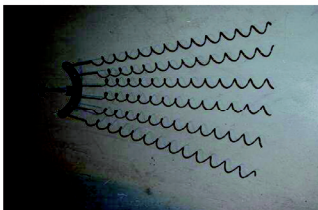


Fig 3 Screw together the cleaning system.

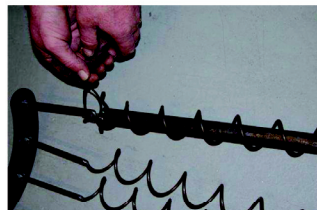


Fig 4 Us strips for keeping the turbulators in correct place

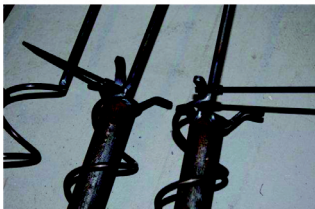


Fig 5 Place 4 turbulators (as photo)
Remember to remove the strips

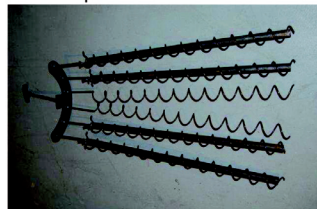


Fig 6 In case of low chimney temperature,
remove more turbulators.

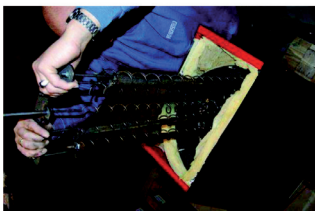


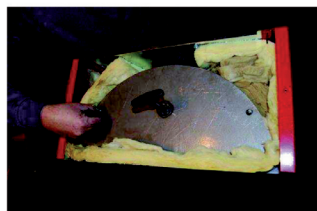
Fig 7 Place cleaning system into
the boilers (As photo)



Fig.8 Pull down the cleaning system.

Fig 9 Place the top cover again and fix all bolts.
Make a 12 mm hole in the plastic tap in the boiler
top cover.

Do the cleaning 2 - 3 times each week.



**WARNING!**

If boiler is not used for over 14 days it is necessary to empty pellet tank and feeding auger.

Cleaning of pellet tank:

Occasionally you have to empty the tank completely, in order to clean the area around the feeder inlet from pellet dust

The more dust there is in the tank and around the auger inlet, may lead to fewer pills in the auger and the boiler will come out of alignment with the risk of downtime.

How often to do tank clean, depends entirely on silo design and the quality of fuel.

Fuel:

Orligno 400 boiler is designed for burning wood pellets.

It is important that the pellets are without too much sawdust and stored completely dry

Moisture content max. 8% op pellets.

Chimney draft:

If the chimney draft is exceeding 15 Pa, a draft stabilizer should be mounted in the chimney.

**WARNING!**

By chimney temperature less than 180°C at rated output, you should be aware that smoke does not condense in the chimney as it gives soot. At particularly low smoke temperature it may be necessary to put a ceramic or stainless steel sleeve in the chimney.

Technical data			
Type	unit	16kW	30kW
Weight	kg	142,5	190
Flue	mm	133	155
Water outlet, return	inch	1	1
Efficiency	%	89,4	91,8
Power range	kW	3,9-16	7,8-30
boiler class EN 303-5		3	3
Required draft	Pa	10	10
Max working pressure	Bar	2,5	2,5
Water content	l	49	57
Max boiler temp.	°C	80	80
Min boiler temp.	°C	60	60
Flue gas temp.			
nominal	°C	146	173
minimal		77	84
Flue gas flow			
nominal	kg/h	33	60,1
minimal		13	19,6
Fuel usage			
nominal	kg/h	3,5	6,7
minimal		0,9	1,75

Controller's manual

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8. Connection - electric scheme

Orligno 400 is equipped in exhaust gases and boiler sensor. Boiler sensor is inserted into sleeve in boiler body together with STB thermal protection. Exhaust gases sensor is inserted into sleeve in boiler flue. Burner contains termic sensor glued to burner body as a burn-back protection.



WARNING!

External sensors for installation control such as hot domestic water HW1 or central heating CH1 are an option. They are not included in standard Orligno 400 package.

The device supply voltage is ~ 230V/50Hz. Plug the power cord to the controller in accordance with the posted signs.

Attach to the controller for operating the boiler sensors and actuators as needed. The drawings shows the connection scheme of equipment. In the tables, a description of the inputs and outputs.



WARNING!

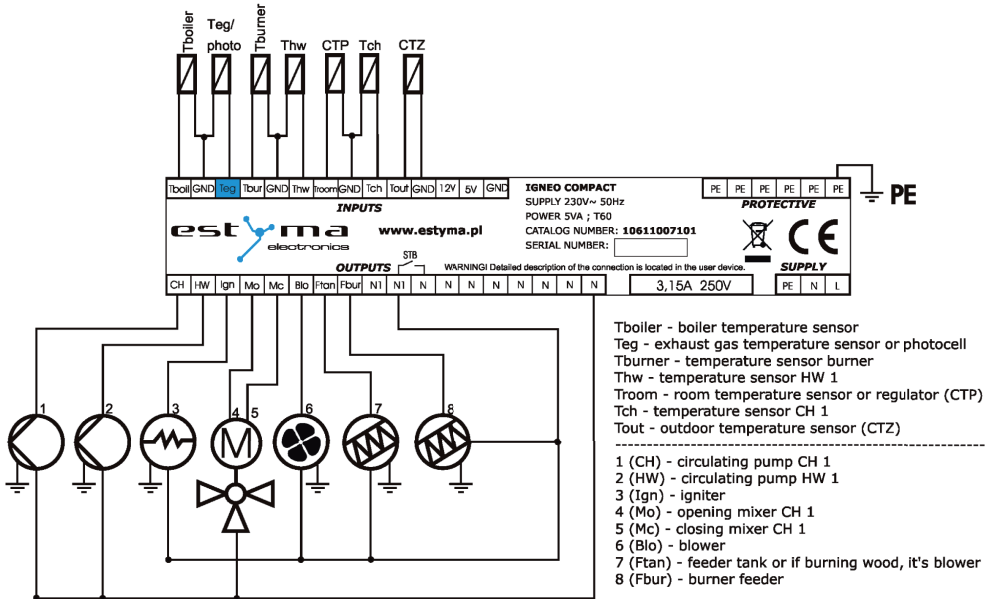
Under no circumstances connect the protective conductor (PE) with a neutral (N).



WARNING!

Wiring must be done with the device disconnected from the mains.

Connections should be exercised by a person possessing adequate powers in this regard.

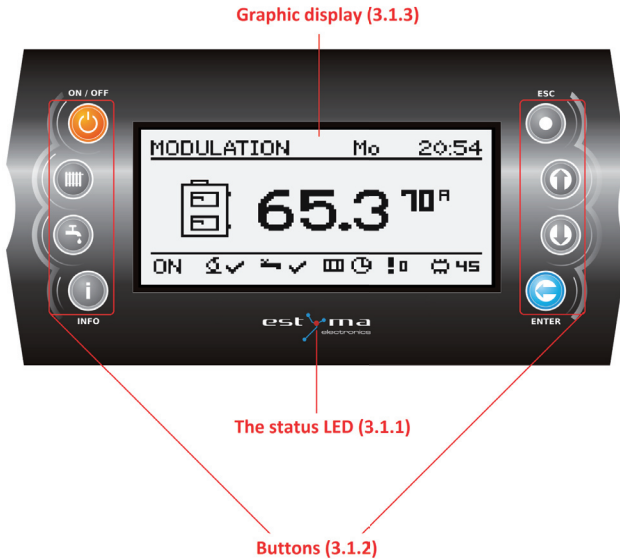


INPUTS	
Description	Explanation
Tboiler	Boiler temperature sensor
Teg	Exhaust gas temperature sensor
Tburner	The temperature sensor burner
Thw	The temperature sensor hot water
Troom	Room temperature sensor / regulator (CTP)
Tch	The temperature sensor central heating
Tout	Outdoor temperature sensor (CTZ)
12V	+12V output to supply optional equipment
5V	+5V output to supply optional equipment
GND	Mass electric to connect sensors

OUTPUTS	
Description	Explanation
1 (CH)	Central heating circulating pump
2 (HW)	Circulating pump for hot water
3 (Ign)	Burner igniter
4 (Mo)	Opening the central heating mixer
5 (Mc)	Closing the central heating mixer
6 (Blo)	Burner blower
7 (Ftan)	Feeder tank, or if burning wood, it's blower
8 (Fbur)	Burner feeder
STB	Protection STB
N	Neutral standing
N1	Neutral separable such as by STB
PE	Protective

9. Overview of the basic functions









9.1. Control panel



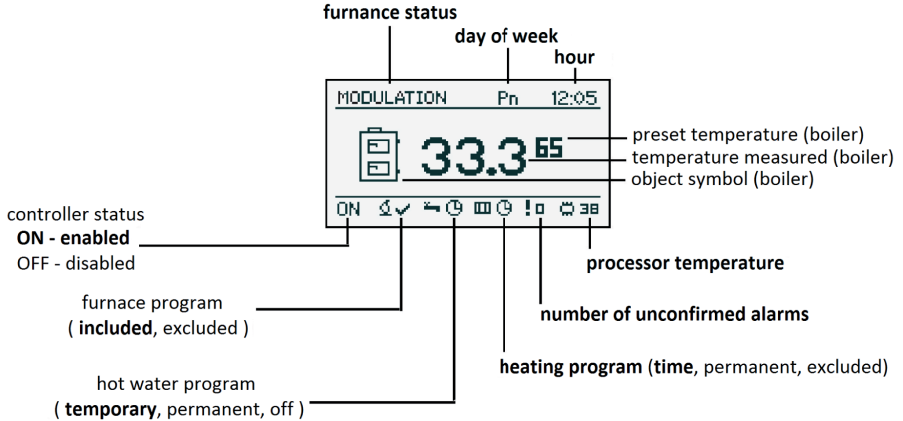
9.1.1 The status LED

Status	Importance
Green light continuously	Controller OFF
Green blinks	Controller enabled, burner OFF
Orange light continuously	Controller enabled, burner enabled
Orange blinks	Burner works
Red light continuously	There is an alarm to be confirmed
Red blinks	Alarm active

9.1.2 Buttons

Button	Function
 <p>ON / OFF</p>	<p>Long press on the main screen (>3 seconds) changes the state of the ON/OFF (on/off).</p>
 <p>CH</p>	<p>Quick access to the full configuration settings for the central heating.</p>
 <p>HW</p>	<p>Quick access to the full configuration settings for hot water.</p>
 <p>INFO</p>	<p>Shows the navigation information and descriptions of the regulated parameters.</p>
 <p>ESC</p>	<p>Back one level up in the menu, the resignation of the parameter change.</p>
 <p>Up arrow</p>	<p>Navigating through the menus, increasing the value of the parameter being edited. On main screen, enter the menu simple.</p>
 <p>Down arrow</p>	<p>Navigating through the menus, reducing the value of the parameter being edited. On main screen, enter the menu simple.</p>
 <p>ENTER</p>	<p>Access to the menu. Acceptance of changes in the value of the parameter being edited. Confirmation of the alarm.</p>

9.1.3 Graphic display



9.2. Statuses of furnace

Status	Description
TURNED OFF	The burner is not working. Permission to work off.
CLEANING	Cleaning the burner by strong stream of air.
FIRING UP	Firing up fuel. Providing the initial dose of fuel to run igniter and blower.
INCANDESCING	When the flame in phase of the firing up is discovered, starts providing additional portions of fuel and increase the power of blower for arcing furnace.
POWER 1	The burner works with the power first.
POWER 2	The burner works with the power of a second.
MODULATION	The burner works with a modulated power.
BURNING OFF	Quenching of the furnace. Work of burner and blower tray until the complete disappearance of the flame.
Stop	Burner does not work but it is to agree to his work. The required boiler temperature is reached.

10. Handling

10.1. Navigation in the menu

The device has two types of menus: simple and main menus.

Simple menu – allows for quick access to basic controller functions. Enter the menu is simple by pressing the “up arrow” or “down arrow” on the main screen. Description of a simple menu in chapter 11.

Main menu – allows you to access all the functionality of the controller (monitoring, adjustments and service settings.) Access to the main menu is done by pressing the button «Confirm, enter» on the main screen. Description of the main menu in Chapter 11.

PBack to the main screen is possible from any screen by pressing the button “Back, esc” several times.



WARNING!

Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system..

10.2. Starting regulator - ON

To run the controller (ON mode) for 3 seconds to press the „ON / OFF” on the screen when it is in the OFF mode.

10.3. Switching off the regulator - OFF

To turn off the controller (OFF mode) for 3 seconds to press the „ON / OFF” on the screen when he is in the ON mode.



WARNING!

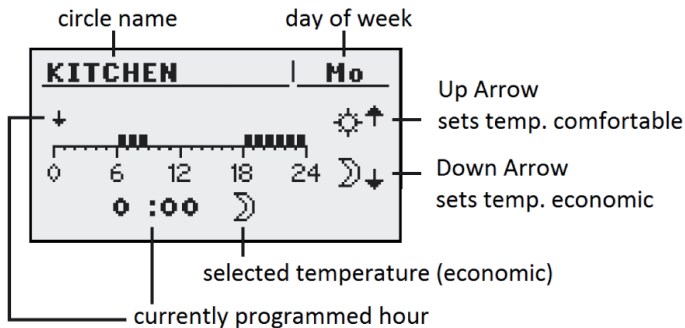
When you turn off the controller, depending on the previous state, the burner can still work (quenching), the state should not be interrupted. If the device is to be excluded from the power supply, wait quenching process, until the status of the burner is „off”.

10.4. Time scheduling

Controller is equipped with a clock and calendar. This makes it possible to program the operation of individual circuit elements for heating depending on the time and day of week. Date and time are not reset during a power failure, because the controller is equipped with a battery that should be replaced every two years.

Programming takes place in the menu of the circuit (eg, hot water, heating, buffer) and for each item carried in the same way.

Selecting the day of week. Upon entry in the „Programme Time“ day of the week flashes. Arrow buttons to select the day you want to set or just check the settings of the program. Programming. After selecting the day of week and approved „ENTER“, indicator being programmed hours flashes. At the same time also displays the time, and the next to it icon that represents the currently selected setting time (the symbol of the sun means comfort temperature, the moon is a symbol of the economic temperature.) To move to the next hour, press the down arrow (economy temperature) or the up arrow (comfort temperature). If the day is already programmed in accordance with our wish, press „ENTER“. After approved the changes (or cancellation) will blink day of the week.



The figure shows an example of the preset day of the week.

Temp. economy from 00:00 to 6:00

Temp. comfortable from 6:00 to 9:00

Temp. economy from 9:00 to 18:00

Temp. comfortable from 18:00 to 24:00



WARNING!

Values of temperatures comfortable and economical are set in the "SETTINGS" menu and may be different for each of the circuits. To make the time program work, you must also enable a timed mode in the "SETTINGS" menu.

10.5. Service password

Access to the service parameters are password protected. After entering the correct password, access will be lifted. Access to the service parameters will be locked after a period of 10 minutes without pushing buttons.

Service code is a temperature of the boiler in menu BOILER / SETTINGS and 3 letters "EST".

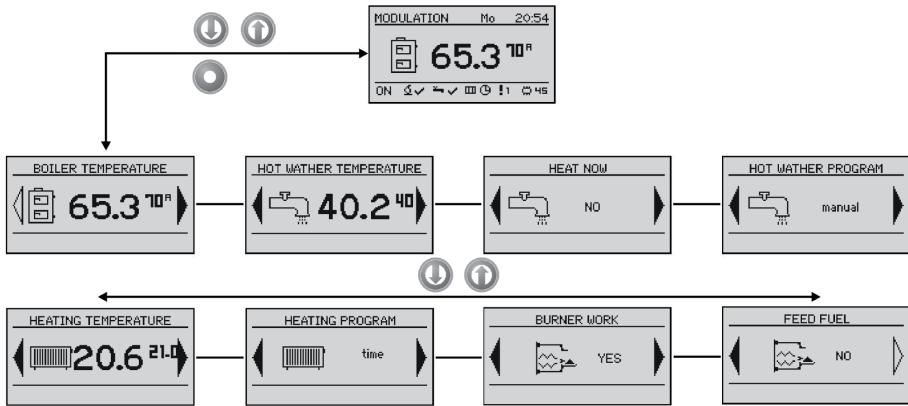
Example: If the temperature of the boiler in menu BOILER / SETTINGS is 60°C, password is: „60EST“.



WARNING!

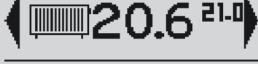
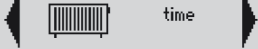
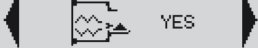
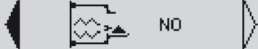
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

11. Simple menu

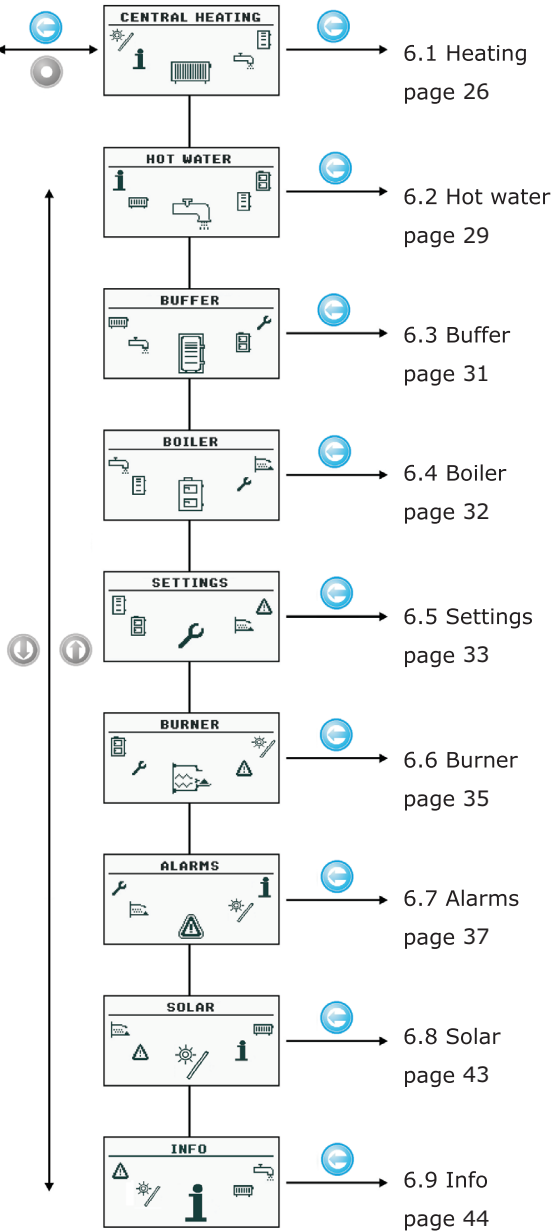
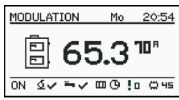


11.1. Simple menu screens

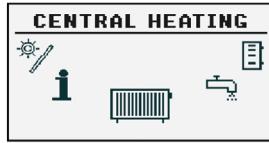
Screen	Description
	Shows the current temperature of the boiler (large font) and the desired temperature (small font). After pressing the „ENTER“ set the desired temperature of the boiler.
	Shows the current temperature of hot water (large font) and the desired temperature (small font). After pressing the „ENTER“ set the desired temperature of hot water. <i>Menu relates to the circuit No. 1</i>
	Disposable heating hot water to a comfortable temperature regardless of the program. <i>Menu relates to the circuit No. 1</i>
	Set the mode a hot water: a. time - according to the programmed timescales b. constant - regardless of the time intervals comfortable temperature is maintained c. disabled - off the heat <i>Menu relates to the circuit No. 1</i>

<p>HEATING TEMPERATURE</p> 	<p>Shows the current temperature in the room No 1 (large font) and the value of the desired (small font). After pressing the „ENTER” go to set the desired temperature in the room. <i>Menu relates to the circuit No. 1</i></p>
<p>HEATING PROGRAM</p> 	<p>Set the mode a heating circuit: a. time - according to preset ranges b. constant - regardless of the time intervals comfortable temperature is maintained c. disabled - off the heat <i>Menu relates to the circuit No. 1</i></p>
<p>BURNER WORK</p> 	<p>Allow for operation of the burner. When not consent to the burner operation, regulator controls the heating system, but do not attach the burner.</p>
<p>FEED FUEL</p> 	<p>Manual start of the fuel feed from the tray. Useful function after the exhaustion of fuel from the cartridge. After refilling the fuel cartridge, run the „enter fuel” until the fuel gets into the burner.</p>

12. Main menu

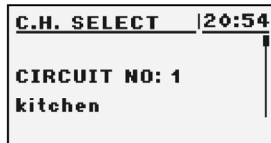


12.1 Heating



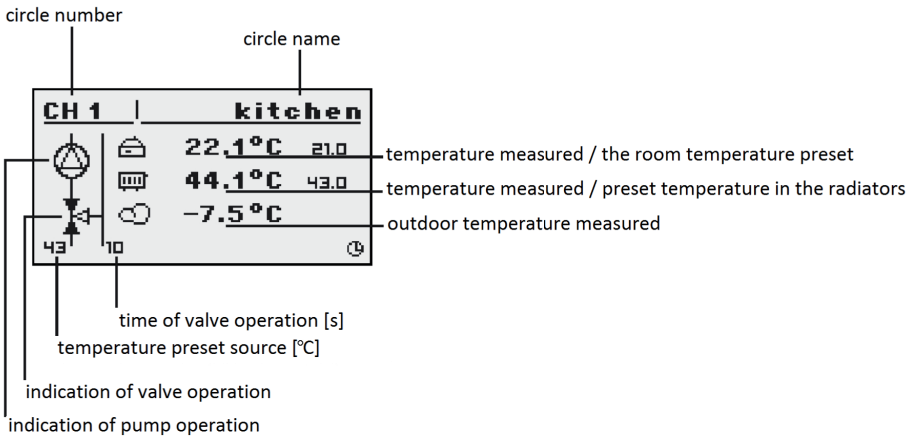
12.1.1 Selection of circuit

Allows you to select a number of central heating circuit. The selection of the circuit make arrows.



12.1.2 State

Allows you to monitor the status of central heating system.



12.1.3 Settings

Function	Description
Comfortable temp.	Desired temperature in the room during the heating.
Programme	Programs: a. time - according to preset intervals b. constant - regardless of the time intervals comfortable temperature is maintained c. disabled - off the heat d. economic - in the rooms temperature is maintained the economic
Temp. ekonomiczna	Desired temperature in the room outside the period of heating.

12.1.4 Time program

Used to configure the time program steering central heating..

Description of the adjustment time program refer to chapter 10.4.

12.1.5 Service



WARNING!

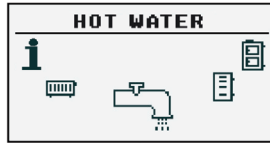
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

Function	Description
Comf. MAX pump temp.	Maximum outdoor temperature at which the circulating pump can work in a comfortable range.
Econ. MAX pump temp.	Maximum outdoor temperature at which the circulating pump can work in a economic range.
MIN Tch pump	Minimum temperature calculated for central heating at which the circulating pump can be operated.
Source	Specifies the source of energy for central heating circuit.
Temperature MAX	Maximum temperature for central heating.
Mixer time	Time of full opening of the mixer.
Hot water priority	Priority for hot water of the heating circuit. During heating hot water the central heating pump is not working.
Pump test	Starts the pump regardless of other conditions.
Mixer test	Starts the mixer motor independently of the other conditions.
Circ. name	Gives name for the central heating circuit.

Function	Description
CH temp. for -20°C	The point of the heating curve for -20°C.
CH temp. for 0°C	The point of the heating curve for 0°C.
CH temp. for 10°C	The point of the heating curve at 10°C.

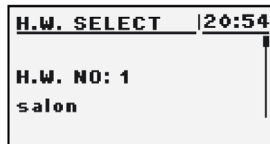
Service	
CH temp. for corr. factor	Central heating temperature correction required the desired room temperature for 1 °C. For example, if the correction factor is set at 6°C, room temperature set at 20°C and measured in the room is 20.5°C then the temperature calculated at will be reduced by 3°C.
Mode type	Specifies the input mode central heating temperature: manual - the temperature of central heating inflicted manually, weather - the temperature of central heating calculated from the heating curve.
Manual Tch	The desired temperature of central heating when the mode is set to manual.
Room temp. sensor	Specifies whether the system uses a room sensor.
CH temp. sensor	Specifies whether the system uses a sensor heating.
Permanent pump	Yes - the pump runs at a given temperature in the room, reduced the temperature for heating (only with the use of a sensor for central heating and room sensor), No - after reaching the set temperature in the room the pump is turned off.

12.2 Hot water



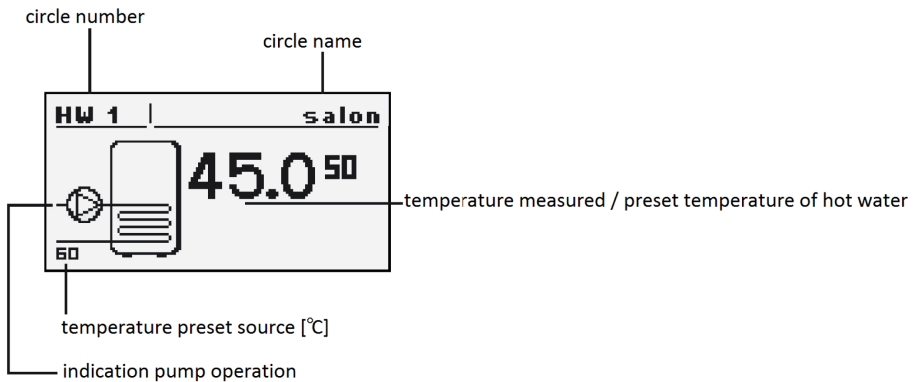
12.2.1 Selection of circuit

Allows you to select the number of hot water circuit.



12.2.2 State

Allows you to monitor the status of hot water.



12.2.3 Settings

Function	Description
Comfortable temp.	Desired temperature of hot water during heating.
Programme	Set the mode a circuit: a. time - according to preset ranges b. constant - regardless of the time intervals comfortable temperature is maintained c. disabled - off the heat.
Heat now	Heats hot water once to a comfortable temperature <u>regardless of the program.</u>
Hysteresis	The value of which can reduce the temperature of hot water.
Economical temp.	Desired temperature of hot water outside the period of heating.

12.2.4 Time program

Used to configure the time steering hot water preparation.

Description of the adjustment time refer to chapter 10.4.

12.2.5 Service

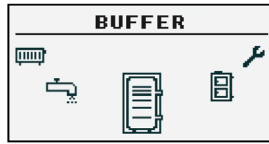


WARNING!

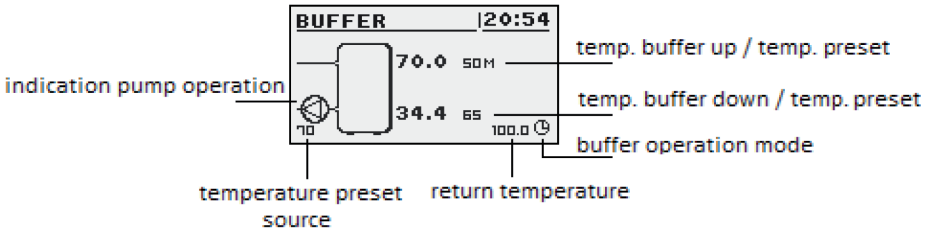
Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

Function	Description
Source delta	Increasing the temperature of the source of the desired <u>temperature of hot water during heating.</u>
Source	Specifies the source of energy for hot water.
Temperature MAX	Maximum temperature of hot water.
Delta MIN temp.	The minimum temperature difference between the source <u>and the hot water at which the pump can work.</u>
Pump test	Starts the pump regardless of other conditions.
Circ. name	Gives name for the hot water circuit.

12.3 Buffer (option available only with external module CAN)



12.3.1 State



12.3.2 Settings

Function	Description
Upper set temperature	Below this temperature in the upper part of the buffer starts charging.
Lower set temperature	Above this temperature at the bottom of a buffer completes the process of charging.
Programme	Constant - the buffer is charged regardless of the time, time - the buffer charged only at specified intervals. Intervals are set in the „time program“, disabled - off charging buffer.

12.3.3 Time program

Used to configure time program to controlling charging buffer.

Description of program adjustment time refer to chapter 10.4.

9.3.4 Service

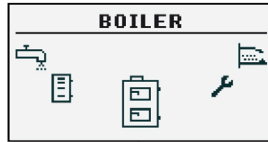


WARNING!

Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

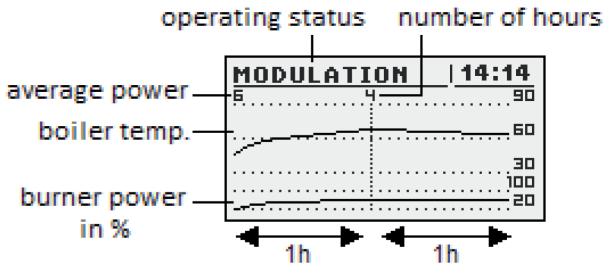
Function	Description
Minimal pump temp.	The minimum temperature in the upper part of the buffer at which the circulating pump can work for central heating.
Auto upper temp.	Specifies whether the upper temperature buffer (minimum) is requested manually or automatically. Automatically based on the needs of other power consumers in the buffer.

12.4 Boiler



12.4.1 State

Statistics of the boiler in the past 24 hours. The graph shows the temperature of the boiler and power of burner. „Hours” refers to how many hours ago the boiler behaved these operating parameters. Across the screen are displayed statistics of 2 hours. Screens switching buttons „up” and „down”.



12.4.2 Settings

Function	Description
Boiler temp. set	Heating water temperature in the boiler which will be maintain the controller. Menu is active only in continuous work mode.

9.4.3 Service



WARNING!

Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

Function	Description
MIN pump temp.	The temperature above which the the controller can attach pumps.
Mode	Operating mode of boiler: a. auto - temperature calculated automatically b. continuous - the temperature is kept constant
Hysteresis	The temperature of the boiler must be reduced by this value to launch the burner.
MIN return temp.	Minimal return to boiler temperature maintain by mixer.
Return mixer time	Specifies the time of full opening of the return mixer.
Boiler pump test	Starts boiler pump regardless of other conditions.
Return mixer test	Starts actuator of the return mixer regardless of other conditions.

12.5 Settings



12.5.1 Date and time

Using this menu is made to set the date and time of the driver.

12.5.2 Language

Use this menu to select language of the menu.

12.5.3 General settings

12.5.3.1 Alarm buzzer

We define here, if the driver shall notify of alarms by acoustic signal.

12.5.4 Service



WARNING!

Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

12.5.4.1 Module configuration

Menu is used to configure the CAN network. In the menu, select the modules that are connected to the system.



WARNING!

A detailed description of the modules and their destination are described in the manual of expansion modules.

SUMMARY OF THE EXPANSION MODULES	
Module	Description
Module no. 0	3 heating circuits of the numbers 2,3,4. Outdoor temperature sensor.
Module no. 1	3 heating circuits of the numbers 5,6,7.
Module no.2	3 heating circuits of the numbers 8,9,10.
Module no 3	3 heating circuits of the numbers 11,12,13.
Module no 4	3 heating circuits of the numbers 14,15,16..
Module no 5	Buffer. Solar collectors. Hot water no. 2. Return temperature sensor.
Module no 6	Not used.
Module no 7	Not used.
Module Lambda	Module of the Lambda sensor.

12.5.4.2 System configuration

Menu is used to configure the heating system (hydraulic). The possibility of settings is dependent of number of expansion modules connected in the system.



WARNING!
You must first configure the modules..

SYSTEM CONFIGURATION	
Function	Description
Number of CH circuits	Specifies the number of heating circuits in the system.
Number of HW circuits	Specifies the number of hot water circuits in the system.
Number of buffers	Specifies the number of buffers in the system.
Outside temp. sensor	Specifies if in the system is installed outside temperature sensor (module 0).
Return temp. sensor	Specifies if in the system is installed return temperature sensor (module 5).
Solars	Specifies if the system is equipped with solar collectors.

12.5.4.3 Restore to factory settings

This function allows the controller to restore the factory settings.

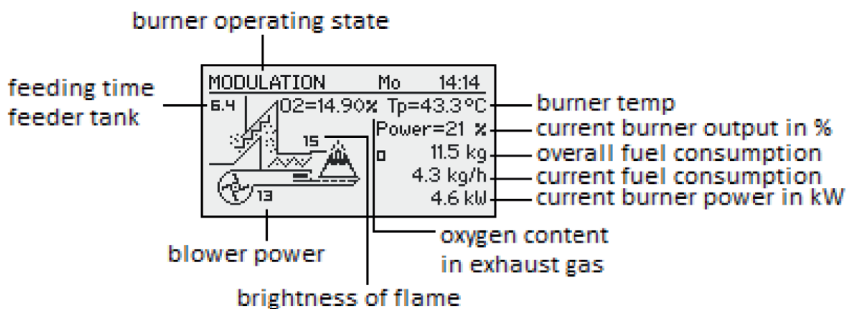


WARNING!
Will be restored all factory settings, which can cause your system to malfunction.
After restoring the factory settings may be need to reconfigure the controller settings.

12.6 Burner



12.6.1. State



12.6.2. Settings

Function	Description
Feed fuel now	Starts fuel feeding screw regardless of other features.
Burner on	Consent to work of the burner.
Fuel type	Specifies the type of fuel.

12.6.3. Service



WARNING!

Access the service is intended only for qualified technical personnel. The changes may cause malfunction of the system.

Function	Description
Air MIN (20%)	Minimum amount of air during modulation where power of burner is 20% or power number is 1.
Air MAX (100%)	Maximum amount of air during modulation where power of burner is 100% or power number is 2.
Feeding MAX (100%)	Maximum time during fuel feeding when power of modulation is 100% or power number is 2 on every 20 seconds.
Power MIN (FL2)	Minimal burner power during modulation.
Power MAX (FL2)	Maximal burner power during modulation.
Modulation type	Burner mode, power modulation or two power levels.
Photo threshold	Brightness in the the burner over which is recognized as a fire.
Igniter test*	Turn on igniter for testing.
Heater feeder test*	Turn on burner feeder for testing.
Storage feeder test*	Turn on storage feeder for testing.
Blower test*	Turn on blower for testing.
Test fuel mass	Fuel mass obtained during continuous fuel feeder work through 1 hour (in kg).
Fuel calorific value	Fuel calorific value (in kWh/kg).
Lambda control	Determine whether regulator consider or not oxygen concentration.
Oxygen MIN (20%)	Oxygen target for minimal power.
Oxygen MAX (100%)	Oxygen target for maximal power.
Fuel start dose	Feeding time in order to ignite fuel.

* testing equipment in the menu "BURNER" is only possible when the controller is in the OFF mode.

12.7 Alarms



This menu contains a history of up to 20 alarms that occurred during the controller work. The importance of alarm codes was presented in table below.

12.7.1. Alarm codes

CODE	Short description	Explanation
1	Processor overheating	Processor overheating. The reason may be improper installation location of the controller.
2	No fire / fuel	The controller detected a lack of flame in the burner. The reason could be the end of the fuel or the flame goes out.
3	Burner overheating	The temperature of the burner has reached its maximum value!
4	Boiler sensor shorted	The controller detected shorted boiler temperature sensor. The reason may be damaged sensor or connection cable.
5	Boiler sensor open	The controller detected open boiler temperature sensor. The reason may be damaged sensor or connection cable.
6	Burner sensor shorted	The controller detected shorted burner temperature sensor. The reason may be damaged sensor or connection cable.
7	Burner sensor open	The controller detected open burner temperature sensor. The reason may be damaged sensor or connection cable.
8	Boiler overheating	Boiler temperature has exceeded the maximum value!
9	Processor reset	Probable damage the controller! Possible to loss of power supply.
10	STB	
11	Communication with module 0	
12	Communication with module 1	
13	Communication with module 2	
14	Communication with module 3	
15	Communication with module 4	
16	Communication with module 5	
17	Communication with module 6	
18	Communication with module 7	
19	HW sensor shorted	

CODE	Short description	Explanation
20	HW sensor open	
21	Room temp. sensor shorted	
22	Room temp. sensor shorted	
23	Quenching error	
24	Lambda communication	
25	Solars overheating	
26	Solars freezing	
The codes of the modules		
33	Shorted IN1 Module 0	
34	Shorted IN2 Module 0	
35	Shortede IN3 Module 0	
36	Shorted IN4 Module 0	
37	Shorted IN5 Module 0	
38	Shorted IN6 Module0	
39	--	
40	--	
41	--	
42	--	
43	Zwarcie IN11 Module 0	
44	--	
45	Open IN1 Module 0	
46	Open IN2 Module 0	
47	Open IN3 Module 0	
48	Open IN4 Module0	
49	Open IN5 Module 0	
50	Open IN6 Module 0	
51	--	
52	--	
53	--	
54	--	
55	Open IN11 Module0	
56	--	
57	--	
58	Overheating Module 0	

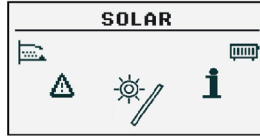
CODE	Short description	Explanation
65	Shorted IN1 Module 1	
66	Shorted IN2 Module1	
67	Shorted IN3 Module 1	
68	Shorted IN4 Module 1	
69	Shorted IN5 Module 1	
70	Shorted IN6 Module 1	
71	--	
72	--	
73	--	
74	--	
75	--	
76	--	
77	Open IN1 Module1	
78	Open IN2 Module 1	
79	Open IN3 Module 1	
80	Open IN4 Module 1	
81	Open IN5 Module 1	
82	Open IN6 Module 1	
83	--	
84	--	
85	--	
86	--	
87	--	
88	--	
89	--	
90	Overheating Module 1	
97	Shorted IN1 Module 2	
98	Shorted IN2 Module 2	
99	Shorted IN3 Module 2	
100	Shorted IN4 Module2	
101	Shorted IN5 Module 2	
102	Shorted IN6 Module 2	
103	--	

CODE	Short description	Explanation
104	--	
105	--	
106	--	
107	--	
108	--	
109	Open IN1 Module 2	
110	Open IN2 Module 2	
111	Open IN3 Module 2	
112	Open IN4 Module 2	
113	Open IN5 Module 2	
114	Open IN6 Module 2	
115	--	
116	--	
117	--	
118	--	
119	--	
120	--	
121	--	
122	Overheating Module 2	
129	Shorted IN1 Module 3	
130	Shorted IN2 Module 3	
131	Shorted IN3 Module 3	
132	Shorted IN4 Module 3	
133	Shorted IN5 Module 3	
134	Shorted IN6 Module 3	
135	--	
136	--	
137	--	
138	--	
139	--	
140	--	
141	Open IN1 Module 3	
142	Open IN2 Module 3	
143	Open IN3 Module 3	

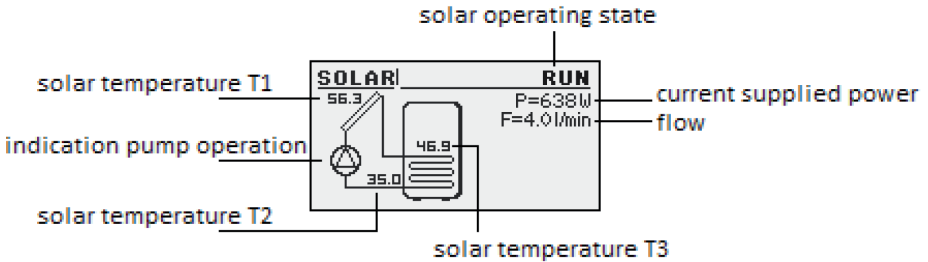
CODE	Short description	Explanation
144	Open IN4 Module 3	
145	Open IN5 Module 3	
146	Open IN6 Module 3	
147	--	
148	--	
149	--	
150	--	
151	--	
152	--	
153	--	
154	Overheating Module 3	
161	Shorted IN1 Module 4	
162	Shorted IN2 Module 4	
163	Shorted IN3 Module 4	
164	Shorted IN4 Module 4	
165	Shorted IN5 Module 4	
166	Shorted IN6 Module 4	
167	--	
168	--	
169	--	
170	--	
171	--	
172	--	
173	Open IN1 Module 4	
174	Open IN2 Module 4	
175	Open IN3 Module 4	
176	Open IN4 Module 4	
177	Open IN5 Module 4	
178	Open IN6 Module 4	
179	--	
180	--	
181	--	
182	--	
183	--	

CODE	Short description	Explanation
184	--	
185	--	
186	Overheating Module 4	
193	Shorted IN1 Module 5	
194	Shorted IN2 Module5	
195	Shorted IN3 Module5	
196	Shorted IN4 Module 5	
197	--	
198	Shorted IN6 Module 5	
199	Shorted IN7 Module 5	
200	Shorted IN8 Module 5	
201	Shorted IN9 Module 5	
202	--	
203	--	
204	--	
205	--	
206	Overheating Module 5	

12.8 Solar (option available only with external module CAN)



12.8.1 State



12.8.2 Settings

Function	Description
Turn on delta	Temp. difference between solar and accumulator needed for solar pump turn on.
Turn off delta	Temp. difference between solar and accumulator needed for solar pump turn off.

12.8.3 Service

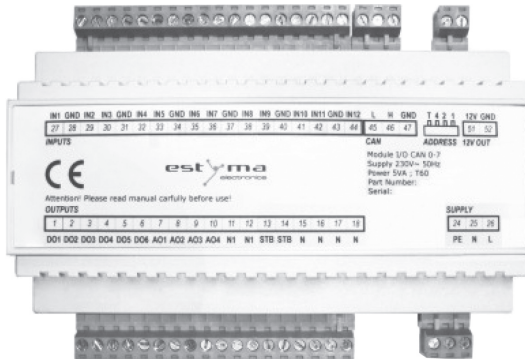
Function	Description
Schematic	Solar system schematic.
Flow [l/min]	Heating fluid flow in l/min.
Fluid specific heat	Specific heat of heat-transfer fluid [kJ/ (kg*K)].
MAX HW temp.	Over this hot water temp. solar pump is turn off.
Solar alarm temp. MAX	Maximal temp. of solar collector. Alarm and damage preservation procedure are taken over this temp.
Solar alarm temp MIN	Minimal temp. of solar collector. Alarm and antifreeze procedure are taken under this temp.
Solar pump test	Allow for solar pump testing.

12.9 Info



There you will find useful information about the controller, including the version of software.

13. Expansion of the system - CAN bus



The controller is equipped with a high bandwidth CAN bus used to communicate with the modules. Thanks to the well-known for their reliability, widely used in automotive bus system is expandable to the highest level.

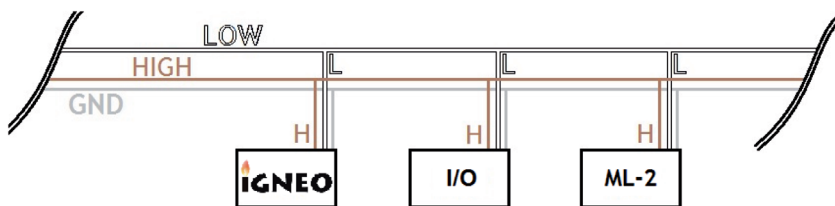
Use of CAN bus carries several advantages. Gain above all the possibility of using broadband Lambda oxygen sensor and the using additional of expansion modules rozszerzeniowych I/O we can install throughout the system:

- to 16 are heating circuits,
- 2 circuits of hot water,
- heat storage tank (buffer),
- solar system (solars).

Socket CAN bus is on the left side of the device. Connecting cable must be connected according to the following designation.

Cable connection:
L – line LOW (white)
H – line HIGH (brown)
GND – ground (grey)

For connections on the CAN bus should be only used cable **LiYCY 2x0,25**. Only this type of cable gives the proper work of devices. Connections perform in a serial manner, this represents a figure below.



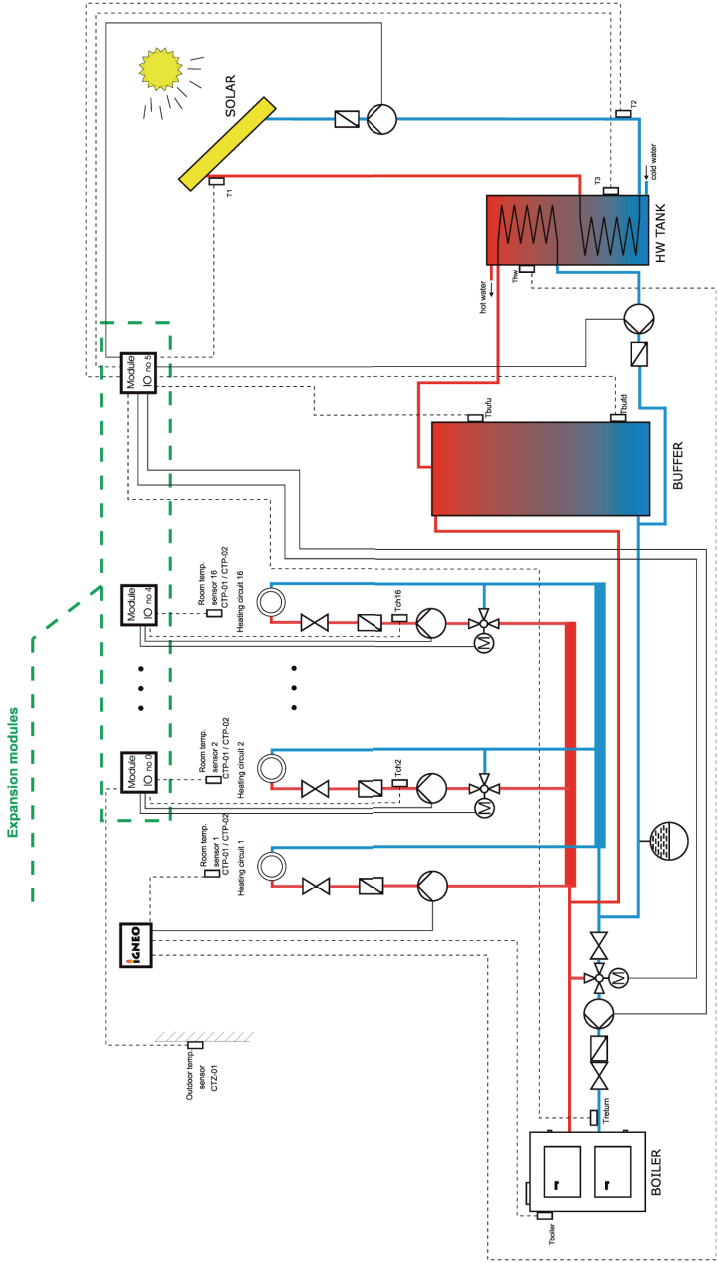
Plugging in expansion modules you need to remember to correctly set the terminator, which should be attached only at the last module throughout the system, even if the module is the only one.

After performing all the connections you must configure the module settings. Make this by selecting the modules that are connected to the network. More about the configuration each of expansion modules can be found in chapter 6.5.4.1 and instruction of the enlargement module I/O.

After finishing configuration of expansion modules to do remains only a change the system settings. Menu is used to configuration the heating system and the possibility of settings is dependent of number of arranged expansion modules. The table describing the functions refer to chapter 6.5.4.2.

On the next page is a sample diagram of the system. Please Warning that this is only overhead view, not containing all the elements of the system.

IMPORTANT!
Scheme does not include all elements of the system.



13.1 Sonda Lambda

Lambda sensor we can connect to the system in two ways:

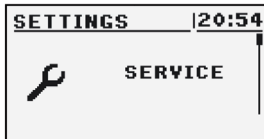
- directly to the controller, if the entire system with CAN bus module will only use Lambda oxygen sensor,
- through enlargement module I/O with the number 5, if in the system there are other modules enlargement.

After connecting the module configure the controller yet. For this purpose, proceed as explained below.

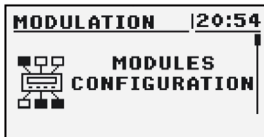
From the main menu select **SETTINGS**



Then in the mode **SERVICE** enter the access code



After inputting the correct code, run the **MODULES CONFIGURATION**

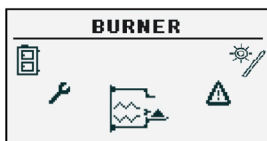


Find **Lambda Module** and turn it on by changing the option to **YES**

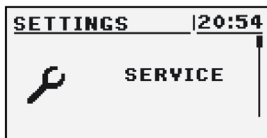
MODULATION		20:54
Module 6	NO	
Module 7	NO	
Module Lambda	YES	

At this point, turned on the module Lambda. The second step is a change the configuration settings for the burner.

From the main menu by selecting **BURNER** we get to the settings.



Here you can again enter the mode **SERVICE** and if required, enter the access code.



In the list, you can locate the position **Lambda control**, which switches on **YES**.

It is also possible working with switched off Lambda control mode. Then Lambda oxygen sensor module will be responsible only for displaying the measurements.

BURNER		20:54
Test fuel mass	0.0	
Fuel calorific value	0.0	
Lambda control	YES	

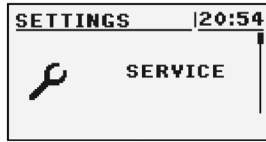
13.2 Solars

Solar collectors are supported only by enlargement module I/O number 5th. After performing all the connections you must configure the controller to work with collectors proceed as described below. The first step is to enable module number 5.

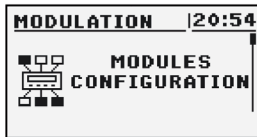
From the main menu select **SETTINGS**



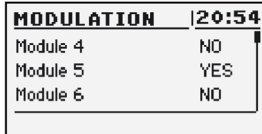
Then in the mode **SERVICE** enter the access code



After inputting the correct code, run the **MODULES CONFIGURATION**



Find **Module 5** and activate it by changing the settings to **YES**

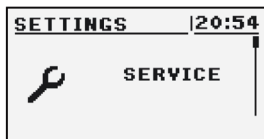


Now enable the solar handling. As the main menu select **SETTINGS** and then enter the access code in the **SERVICE** mode

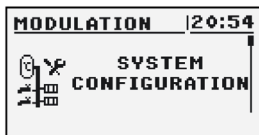


Now enable the solar handling.

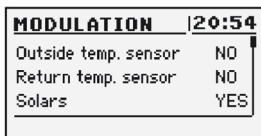
As the main menu select **SETTINGS** and then enter the access code in the **SERVICE** mode



After entering the code run **SYSTEM CONFIGURATION**



Find the position **Solars** and activate them by changing the settings to **YES**



After finishing configuration the controller we can start to change the adjustment and settings for Solars. Description of the configuration these elements can be found in chapter12.8.

14. Specification

Technical data	
Module supply voltage	~230V/50Hz ±10%
Power input (module)	<6VA
Temperature measurement accuracy	±4°C
Sensors	NTC 10kΩ B25/85=3877K±0,75% VISHAY BC components
Ambient temperature	0-60 °C
Moisture	5-95% non-condensing
Software class	A
Module output load capacity	
CH pump	100W
HW pump	100W
Igniter	400W
Blower	150W
Burner feeder	150W
Feeder tank	150W

15. Ending



Present appliance is marked according to European Directive 2002/96/EC on waste electrical and electronic equipment.

Symbol placed on the components or attached documents means that appliance is not classified as a household waste.

Scraping should take place in special collection point in order to reuse electrical and electronic components.

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