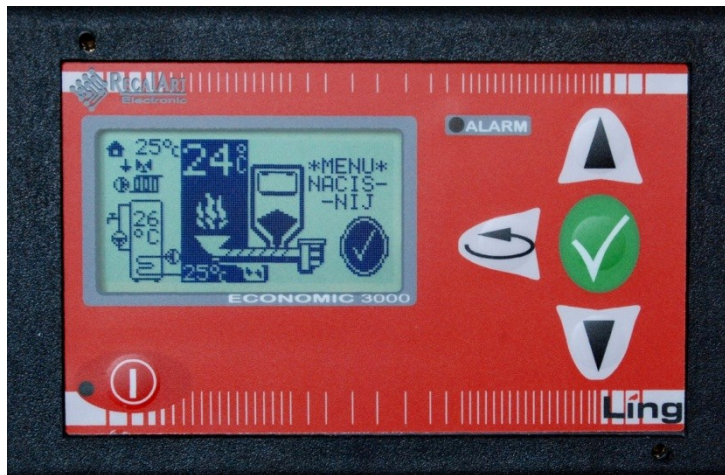


ECONOMIC 3000 WEATHER CONTROLLER



OPERATION MANUAL

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(DD20071025)

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Intended use and capacity of the controller

General information

INTRODUCTION:

Economic 3000 boiler controller is a state of the art microprocessor based device controlling not only the boiler, but also the central heating system in weather and hot tap water mode.

The device controls the amount of fuel being fed through cyclic operation of the feeder motor as well as the amount of air provided for the combustion process. Semiconductor based controlling circuits ensure smooth fan power control; additionally reliability of the feeder motor controlling system has been significantly improved.

Weather control ensures improved heat comfort as the heating temperature is controlled through outdoor temperature function. Control is executed by the servomotor of the mixing valve.

Application of a temperature sensor for the water returning from the Central Heating system as well as temperature control through the mixing valve limits steam condensation in the boiler, which translates into prolonged life cycle.

Thanks to the advanced operation algorithm as well as the ability to control numerous parameters, the unit may be easily adjusted to requirements of any heating system.

The controller has the TEST function. The function is available once the user enters the MENU and allows for checking correctness of electric connections as well as temperature sensors connections. The user can check operation of the executive devices (pump, fan, feeder, servomotor of the mixing valve) before starting the boiler.

Graphic display makes operation of the device very easy.

PRECAUTIONS

Warning – electric shock hazard.

- Disconnect the power supply at the switchgear before assembly or disassembly of the device.
- Read thoroughly the operation manual provided before using the device.
- Keep the operation manual for reference in the case of any future operations on the device.
- Observe all principles and warnings included in the device operation manual.
- Make sure the device is undamaged. Contact the supplier and do not use the device in case of any doubts.
- Contact the supplier in case of any doubts related to direct operation of the device.
- Pay particular attention to all warnings on the enclosure or packaging of the device.
- Adhere to the intended use of the device.
- The device is not a toy, keep out of reach of children.
- Keep out of reach of children any parts of the device packaging.
- Keep out of reach of children any small parts, e.g. fixing bolts or pins. The abovementioned elements may be provided along with the device and may cause choking if swallowed.
- Do not modify the device mechanically or electrically. Such modifications may cause malfunctioning of the device, nonconformity to applicable standards as well as have negative effect on the device operation.
- Do not stick any objects through openings in the device enclosure (e.g. ventilation openings), this may result in a short circuit, electric shock, fire or damage to the device.
- Protect the inside of the device from water, humidity or dust; these elements may result in a short circuit, electric shock, fire or damage to the device.
- Ensure appropriate ventilation of the device, do not cover the device or ventilation openings, ensure free flow of air around the device.
- Install the device indoor, unless it is an outdoor model.
- Protect the device against impacts and vibrations.
- Make sure mains electric parameters conform to these of the device before plugging the device.

- Plug the device into an outlet with the earthing pin to avoid the risk of electric shock. Earthing of the outlet must be made correctly by an authorised electrician.
- Make sure the device will not cause an overload of the electric circuit. Avoid connecting the device to one circuit with motors and other machines generating impulse interference (e.g. washing machines, refrigerators etc.)
- Disconnect the power supply before connecting any leads and peripheral devices to the device.
- To disconnect the power supply completely, pull out the plug from the outlet; this should be observed particularly if the device is to be idle for a longer period of time.
- Protect the power supply lead against any damage; it should be laid in such a manner as to make sure nobody steps on it, do not place any objects on the power supply lead.
- Any connections must be in line with the assembly electric diagram of the installation as well as national or local regulations applicable in the case of electric connections.
- No part of the device is to be replaced independently by the user. All service operations, excluding cleaning, replacing a fuse (after disconnecting the power supply) or setting appropriate function should be carried out by the authorised service.
- Disconnect the power supply before attempting any maintenance operations.
- Do not use any fuel, solvent or any other chemical agents which might damage the enclosure for cleaning the device. Using a soft cloth is recommended.
- Do not use the device in the event power supply lead is damaged. The damaged power supply lead must be replaced by an authorised service employee with a new one of identical specification.

DISPOSAL

The device is made of partially recyclable materials. Thus a used device must be delivered to a recycling facility handling electric and electronic devices or returned to the manufacturer. Do not dispose of the device with other domestic waste.



ELECTRIC SYSTEM

GENERAL REQUIREMENTS

- Read thoroughly the operation manual provided before using the device.
- The person responsible for the installation should display technical experience.
- Connections made of copper lead should be suitable for operation at +75°C.
- Any connections must be in line with the assembly electric diagram of the installation as well as national or local regulations applicable in the case of electric connections.

LOCATION

Devices are to be installed indoor only. Once the location for installing the device has been selected, make sure it meets the following requirements:

- Installation location must be free of excessive humidity as well as flammable or corrosive vapours.
- The device must not be installed near high output electric devices, electric machines or welding equipment.
- Ambient temperature at the installation site must not exceed 60°C and must not be lower than 0°C. Humidity should range between 5% and 95%, without condensation.

CONNECTING THE DEVICE

2-module device includes the following elements:

- **operator's panel**, the part of the device visible to the user along with the keyboard and the display. The panel is installed in the front part of the boiler.
- **executive module** which must be installed on a DIN rail in a switchgear or another cover. All sensors, devices as well as the operator's panel are connected to the executive module.
- **the tape connecting** the operator's panel with the executive panel

In order to enable basic operation of the device, the following sensors, necessary for boiler operation, must be connected to the executive module:

- feeder temperature sensor [Tpod]
- boiler power supply temperature sensor [Tzas]

In order to enable remaining functions of the controller, the following sensors must be connected to the executive module:

- hot tap water temperature sensor [Tcwu] – in the case the user wants to use hot tap water heating function
- heating agent temperature sensor behind the mixer [Tco] – in the case the user wants to control the mixing valve
- return temperature of the heating agent [Tpow] – in the case the user wants to provide additional protection against corrosion (the function is enabled only if the mixing valve is installed)

ECONOMIC 3000 Operation Manual

- external temperature sensor [Tzew] – in the case the user wants to use the weather function (lack of external sensor will result in malfunctioning of the weather function).
- room thermostat [Ter. pok] - if the user wants the room temperature to influence heating parameters.

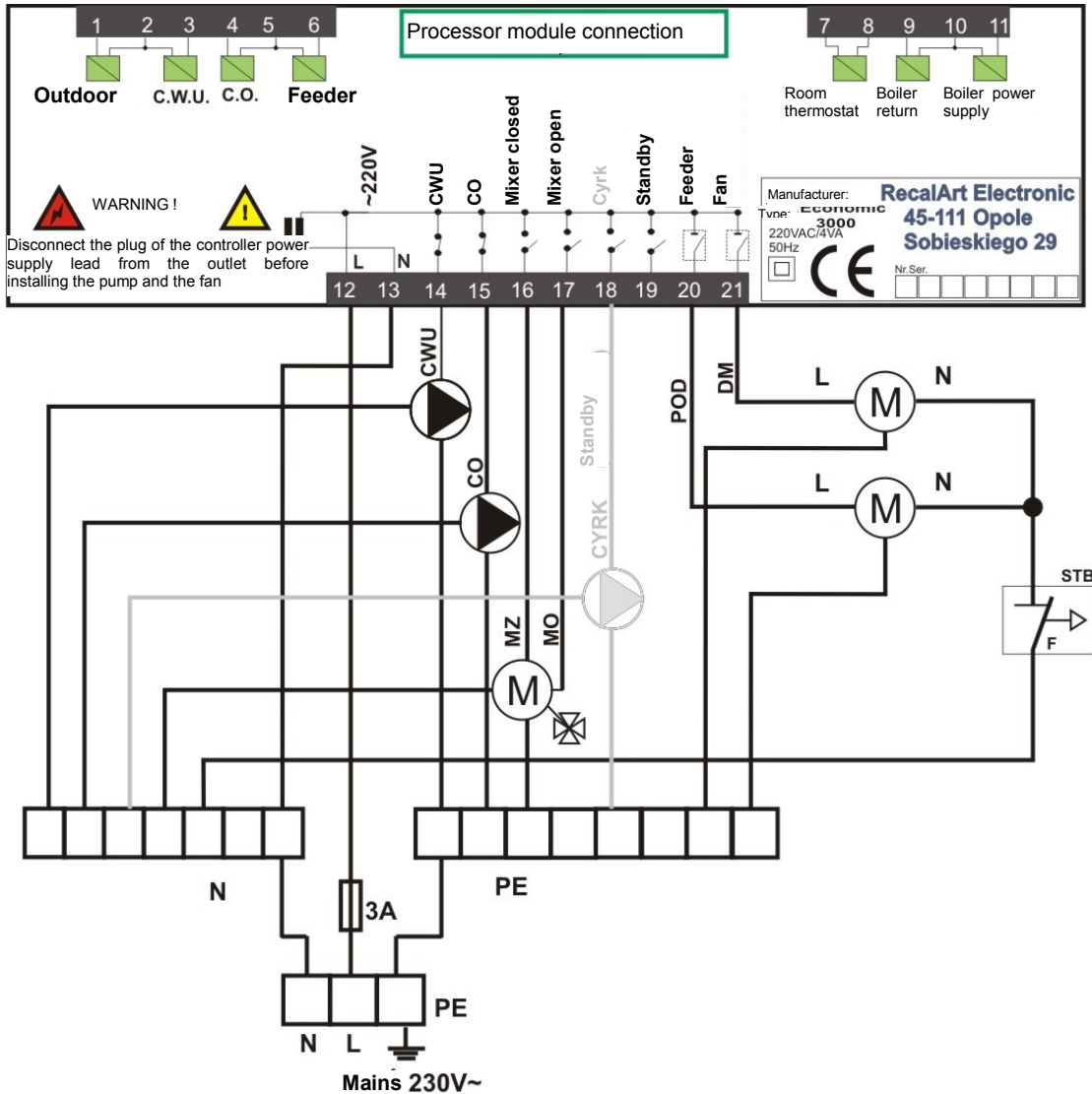


Fig. 1: devices connection diagram.

Warning!!!: do not connect the protection lead (PE) with the neutral (N).

OUTPUTS DESCRIPTION:

DESCRIPTION	DEVICE
MZ	servomotor of the four-way mixer – MZ-closing
MO	servomotor of the four-way mixer – MO-opening
CWU	hot tap water pump
CO	central heating pump

CYRK	circulating pump
DM	fan
STB	boiler thermal protection
POD	feeder motor

Table 1: outputs description.

MEASUREMENT INPUTS DESCRIPTION:

DESCRIPTION	SENSOR DESCRIPTION
BOILER POWER SUPPLY	measurement input of the boiler temperature sensor, the sensor installed in the boiler measurement opening.
BOILER RETURN	heating agent temperature sensor on the return from the heating system, the sensor should be mounted on the return tube at the boiler, in the special boiler measurement opening or on the tube. Make sure there is appropriate contact between the sensor and the tube.
HOT TAP WATER	measurement input of the hot tap water temperature sensor, the sensor installed in the hot tap water exchanger measurement opening.
CENTRAL HEATING	heating agent temperature sensor behind the mixing valve, mount the sensor on the tube, behind the mixing valve using a clamping ring and insulate. Make sure there is appropriate contact between the sensor and the tube.
OUTDOOR	measurement input of the outdoor temperature sensor. Mount the sensor outside of the building in such a manner as to reflect the temperature outdoor.
FEEDER	measurement input of the fuel feeder temperature sensor, mount the sensor in such a location as to reflect the feeder temperature.
ROOM THERMOSTAT	room thermostat input. Install a room thermostat with closing contacts. Contacts closed when heating is required.

Table 2: measurement inputs description.


Use appropriate leads suitable for the electric system with maximum section of 2.5mm². OMY 3x0.75 lead is recommended in the case of the pump.

WARNING!!! Connect the device to a separate circuit equipped with a suitable overcurrent and differential switch.




WARNING!!! The above connection is to be carried out while the device is not connected to the mains. The connection should be carried out by an authorised person.

OPERATION

MOVING THROUGH THE MENU

Press "  " to enter the menu.



-the menu which the user can browse through using "  " "  " and "  " buttons.

Data is saved on exiting the menu by pressing

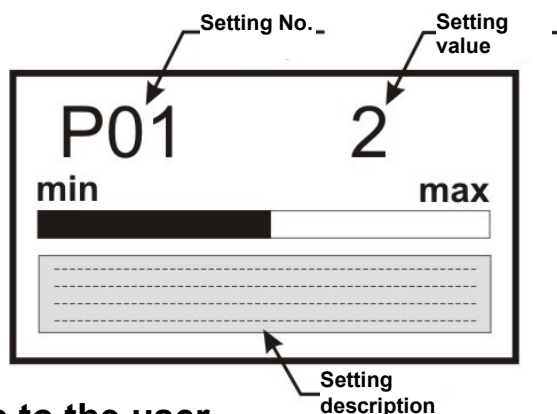


, "SAVE CHANGES" will be displayed

and the user may save changes by pressing



CONTROLLER CONFIGURATION



Settings available to the user

P01 - heating temperature

If there is a mixing valve and a servomotor, temperature at boiler will be higher than the set temperature.

The set temperature value will be maintained in the central heating system. In the case a mixing valve with a motor is installed, the controller will increase the temperature at the boiler by several degrees in order to streamline the valve operation.

WARNING: in the case weather operation (P9) is set, the user can not set the temperature manually and parameter P1 is unavailable. Disable weather operation in P9 parameter in order to switch to setting boiler temperature manually.

P02 - feeder - feeding

Time for which fuel feeder will be turned on in automatic mode [seconds]

The controller feeds the fuel for the time set in P02 and waits for the fuel combustion for the time set in P03. Meanwhile the fan operates with the output set in the P05 parameter. The said parameters determine coal combustion quality and the amount of energy generated by the boiler. Approximate settings recommended by the boiler manufacturer are stipulated in the boiler documentation.

Setting P03 – feeder - pause

Time between subsequent fuel feeding cycles in automatic mode [seconds]

Description in parameter P02

Setting P04 – feeder – keeping the fire

Time after which the controller turns on the feeder and the fan in order to keep the fire burning [minutes].

Once the required temperature level has been reached, the auxiliary burner goes into “keeping the fire” mode, the fan and the feeder are activated only for a short time in order to keep the fire burning. Downtime is set in minutes in the abovementioned parameter.

Setting P05 – fan – output

Fan output – adjust to fit the fuel, boiler and chimney draught (boiler documentation)

Setting P06 – hot tap water temperature

Set hot tap water temperature in the storage vessel.

Setting P07 – SUMMER/WINTER heating

Determines controller performance. The user can choose from three options described in the following section.

SUMMER

The controller heats the Hot Tap Water. Central Heating Pump is off and the mixing valve (if installed) is closed.

WINTER

Central heating is on and Hot Tap Water is being heated. Appropriate settings allow for configuring Central Heating and Hot Tap Water. The controller remains in this operation program until it is manually changed to another one (e.g. SUMMER program).

AUTO

The controller automatically selects SUMMER or WINTER program based on the outdoor temperature (Summer ->Winter and Winter -> Summer automatic transition temperature is set by the service).

Setting P08 – firing up the boiler

Manual control over the fan and the feeder in order to fire up the coal.

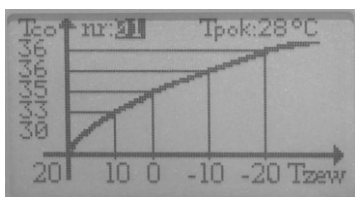


Activated devices are visible against black background (STOP in the above picture)

Setting P09 – weather characteristics

Selection of the characteristics menu for the building should be made based on the table presented below, taking into account insulation type.


Approximate settings table:



Building	Heating	Curve
Any	Floor	1..4
Cold	Heaters	9..13
Warm – without thermal insulation	Heaters	7..9
With thermal insulation	Heaters	5..7

WARNING: Setting No. 0 – turns operation – temperature may be in P01 parameter.

off weather set manually

Pressing  allows for setting required room temperature. Based on the above the controller will make an additional correction of the weather characteristics. This is to ensure fairly stable indoor temperature throughout the whole heating season.

Setting P10 – service options

Advanced parameters of the controller are available only on entering the Installer code.

Setting P11 – controller test

Controller test allows for examining all inputs and outputs. Reading temperature values measured by sensors is possible – this allows for confirming correctness of connections and location of sensors. Connecting particular connections of the controller allows for examining correctness of connections between particular elements (pump, fan, heater, and feeder).

Setting P12 – default parameters

Deleting all settings and replacing them with manufacturer default settings.

START-UP

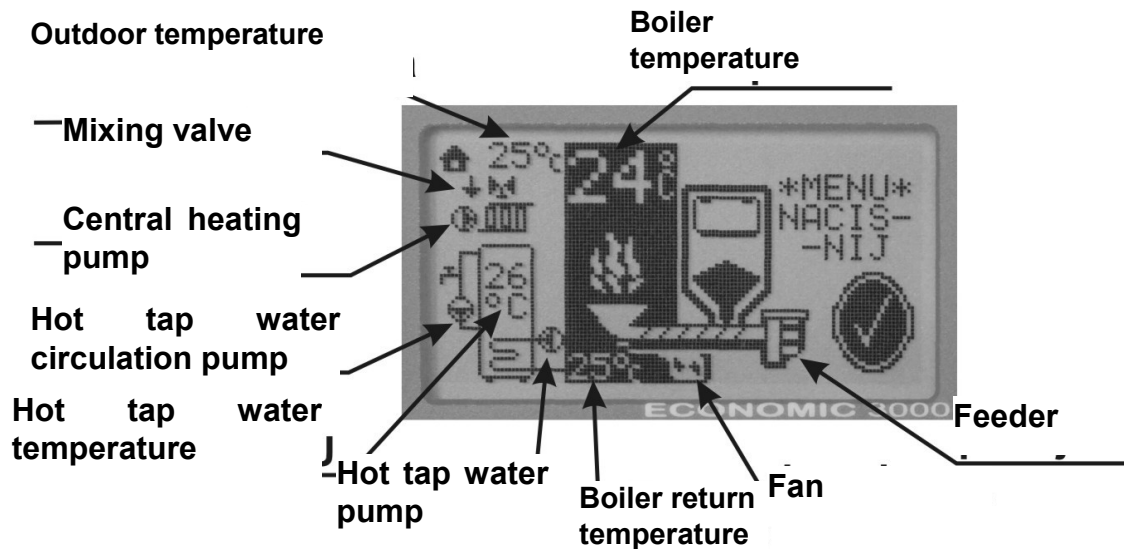
In order to turn on the device, please press “  ” button, press and hold it for 3 seconds to turn the controller off.

WARNING!!! *If the display is blank, the device is in the standby mode and is still live.*

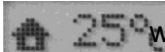

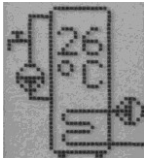
Disconnect the device from the mains in the case the boiler is to be inactive for a long period of time or in the case of any maintenance/service operations.

Current status of particular devices is indicated on the display (main display).
Displayed animation denotes activating the output controlling device operation.

Display description



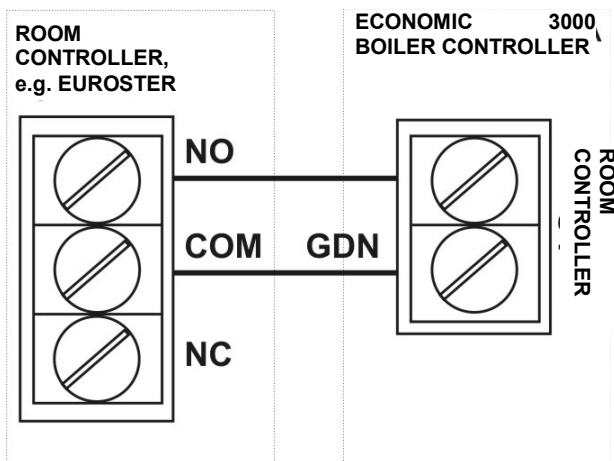
WARNING:

- symbols  will not be displayed in the case parameter No. 9 is set to 0
- symbols  will not be displayed if Central Heating sensor is not installed.
- symbols  will not be displayed if Central Heating sensor is not installed.
- boiler return temperature will not be displayed if the return sensor is not installed.

ADDITIONAL EQUIPMENT

ROOM CONTROLLER

Economic 3000 controller may cooperate with any room temperature controller with closing contacts.



Installing room controller.

Install the controller in the location representative in terms of indoor temperature, approximately 1.5 - 2 meters above the ground.

Do not mount the device near heat sources (television sets, heaters), in locations exposed to direct sunlight or draught as this will have negative impact on the system operation.

ALARMS AND SAFETY DEVICES

The controller signals an alarm situation with the red LED.

After pressing “” button information on the type of alarm will be displayed.

The controller may signal the following alarm situations:

-boiler overheating; the alarm is indicated in the case boiler temperature exceeds “boiler alarm temperature” set in “SERVICE OPTIONS”. In such a case the user should turn off circulation pumps, regardless of the operation mode, and wait until the temperature decreases.

WARNING!!! When the temperature reaches the level 2°C below the boiler alarm temperature, pumps will be switched to initial alarm mode. In the event the temperature does not exceed the alarm value, the event will not be saved in the controller memory.

-feeder overheating; the alarm is indicated in the case feeder temperature exceeds “feeder alarm temperature” set in “SERVICE OPTIONS”. In such a case the feeder motor is activated in order to push the heat from the feeding tube.

-no fire/fuel; the alarm is indicated in the case there is no fuel of flame in the burner.

WARNING!!! *In the case an alarm is triggered the user should identify the reason and fix it.*

-boiler thermal safety device independent of the microprocessor based system operation. In the event boiler temperature exceeds 95°C an independent thermal switch disconnecting fan power supply will be turned on. The safety device will turn the power supply back on when the temperature drops below 60°C.

SETTINGS, DATA

MANUFACTURER'S DEFAULT SETTINGS

available to the user

PARAMETER	RANGE OF REGULATION	MANUFACTURER'S DEFAULT SETTING
HEATING TEMPERATURE*	45-85°C **	AUTO or 60°C
FEEDER-FEEDING	0-250s	10s
FEEDER-PAUSE	0-250s	30s
FEEDER-KEEPING THE FIRE	0-250s	30m
FAN OUTPUT	10-100%	80%
HOT TAP WATER TEMPERATURE	30-70°C	50°C
HEATING (SUMMER/WINTER)	0-2	2
FIRING UP THE BOILER		
WEATHER CHARACTERISTICS*	0-13	6

* Setting parameter No. 9 (weather characteristics) to 0 will result in disabling the weather function. The minimum preset boiler temperature is set in the service mode. Default value is 60°C.

** actual range of regulation limited by the service.

TECHNICAL SPECIFICATION

PARAMETER	VALUE
Power supply	~230V/50Hz ±10%
Power consumption (controller)	<5VA
Output current carrying capacity:	
Central heating pump	100W
Hot tap water pump	100W
Fan	150W
Feeder motor	200W
Mixer motor	50W
Range of the boiler temperature settings	45-85°C
Range of hot tap water temperature settings	35-70°C
Temperature measurement precision	±4°C
Ambient temperature	0-60°C
Boiler alarm temperature	80-95°C
Feeder alarm temperature	50-80°C

Design and technical specification may change.

NOTES: