

## EUROSTER 11Z

### Operation and assembly manual



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#### 1. INTRODUCTION

In order to guarantee correct operation of central heating and hot usable water controller and installations one should familiarize oneself with the present user manual.

#### 2. INTENDED USE

**EUROSTER 11Z** is a modern controller that independently controls operation of two pumps: central heating circulating pump and hot water tank loading pump with the possibility of prioritizing hot water pump.

The controller switches off central heating pump if temperature of the heating boiler falls below a predefined value.

If tank temperature falls down, tank loading pump will be switched off. Moreover, the controller protects the tank against cooling down in case of low temperature of boiler extinction. Hot water priority function allows for the fastest possible way of heating the tank.

#### 3. CONTROLLER FUNCTION

- prevents boiler sweat
- keep constant temperature in the tank
- switches on the hot water priority function
- blocking function against tank cool down
- anti-stop function to protect pumps against stoppage
- frost protection
- pump operation test
- temperature reading correction



The **EUROSTER 11Z** controller has been equipped in an ANTY STOP system to prevent seizing of rotors of unused pumps. After finishing heating season it automatically launches the pumps for 30 seconds every 14 days. In order for the system to work out of season, the controller must be left on.

#### 4. EXTERNAL VIEW



1. Controller power supply cable, 230 V, 50 Hz
2. Power supply cable for the central heating pump, 230 V 50 Hz
3. Power supply cable for the tank loading pump, 230 V 50 Hz
4. Tank temperature sensor cable
5. Central heating boiler temperature sensor
6. Mains switch
7. LCD screen
8. Knob

Screen backlight turns off by default after a minute of finishing controller operation. Controller makes it possible to set permanent backlight. (chapter 8).

#### 5. CONTROLLER ASSEMBLY



**On outlet cables of the controller there is voltage at life hazard level therefore energy supply should be switched off during installation and only qualified people should perform assembly. Do not assemble a controller with mechanical damage.**

##### a) fixing the controller:

- fix the controller on a wall and other support with the use of two screws (rawbolts with screws come with the regulator),
- attach the cables lead out of the controller to the wall with the use of grips.

##### b) fixing sensors:

- **sensors must not be immersed in liquids and installed on exhaust fume outlets to the chimney,**
- install boiler temperature sensor in an appropriate place on the boiler or in an uncovered part of central heating pipe (as close to the boiler as possible),
- install temperature sensor of the tank in an appropriate place in the tank,
- press the sensors to the pipe with the use of bands, put thermal insulation on.

##### c) connecting supply cables to the pumps:

- connect yellow or yellow-green conductor (protective cable) to the clamp ( $\perp$ ),
- connect blue conductor to the clamp (N),
- connect brown conductor to the clamp (L),

##### d) checking the connection:

- check whether the cables have been connected correctly and turn pump clamp box covers.

##### e) connecting the controller:

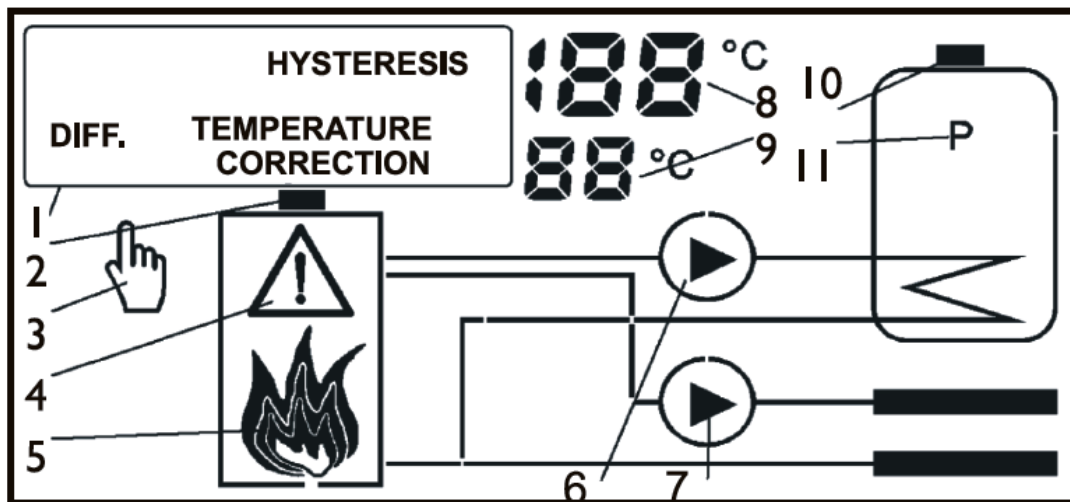
- after securing cables against accidental rupture, connect power supply cable to 230V/50hz socket with earthing pin.



**Ambient temperature in controller installation place should not exceed 40°C.**

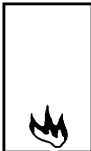

## 6. SCREEN DESCRIPTION

Active LCD screen elements have been presented below:




1. Names of the set parameter - displayed during setting monitoring or changing
2. Heat source (boiler) temperature sensor symbol
3. Test operation symbol - on during tests
4. Alarm symbol - pulsating in case of an emergency situation
5. Furnace condition presentation (heat source temperature) - description below
6. Hot water pump symbol - on during pump operation
7. Central heating pump symbol - on during pump operation
8. Boiler temperature / Values of the presented parameter
9. Tank temperature / Menu item number
10. Tank temperature sensor symbol
11. Hot water priority on signalling

**Animated presentation of furnace condition only serves information purposes - it does not influence controller operation.**

Operation:  <->  - supply temperature ranging between 35 - 90°C

Overheating:  <->  - supply temperature > 90°C

Damping:  - supply temperature < 35°C

## 7. TURNING THE CONTROLLER OFF

- Set power switch (6.) into position I.
- After turning off software version and compilation date are displayed for 2 seconds.
- ANTY STOP system for switching on the pump - AS displayed on the screen.
- System condition is being displayed on the screen.
- After first switch on, correct controller setting (chapter 9).

## 8. RESTORING FACTORY SETTINGS / PERMANENT SCREEN LIGHT-UP

If it is needed to restore factory settings, the following steps should be taken:

- Keep the knob pressed and turn the controller on and off. "Fd" (Factory defaults) will appear on the screen, once the knob is released, 0 will appear.
- Use the knob to select 0 or 1 and confirm.
- By selecting 0 you will be able to change screen backlight functions without restoring factory defaults. By selecting 1 you will restore factory defaults.
- Next, "bl" (Backlight) will appear on the screen, once the knob is released, 0 will appear.
- Use the knob to select 0 or 1 and confirm. Selecting 0 will result in automatic screen backlight switch off after 1 minute of finishing controller operation, and selecting 1 will result in permanent screen backlight.
- control and possibly correct the remaining controller settings.

In case of lack of confirmation within 5s the controller resumes operation as if no changes have been introduced.

## 9. CONTROLLER SETTINGS

After being switched on the controller shows system condition. Turning the knob right result in entering setting overview and change mode.

Controller configuration follows a method specified below: Chose the required parameter by turning the knob. The controller will show the value (at the top) and number (at the bottom). In order to change value of the shown parameter, push the knob (parameter value will start pulsing), set the required value and confirm selection by pressing the knob. If the value should not be changed (cancellation of changes), do not push the knob, but wait 10 seconds for the setting to stop pulsing.

Setting windows have been number for convenience.

User can change the following parameters:

### 1. Central heating circulation temperature

This is medium temperature for central heating pump to switch on.

### 2. Central heating circulation hysteresis

Temperature difference at which central heating pump is switched on and off. Conditions for pump switching on and off have been described in detail in chapter 10.

### 3. Hot water tank temperature

This is tank temperature that the controller is trying to keep.

**REMARK: Keeping low tank temperature (about 35-40°C) facilitates development of bacteria including Legionella.**

### 4. Tank temperature regulation hysteresis.

Hysteresis is equal to temperature difference at which the controller switches the pump on and off. Conditions for pump switching on and off have been described in detail in chapter 10.

### 5. Temperature difference between heat source and the tank

Heat source should have a higher temperature than the tank for two reasons: First, to guarantee appropriate heating efficiency and second, to compensate heat losses resulting from imperfect insulation of pipes connecting the boiler and the tank. If heat source temperature is not high enough, hot water tank loading pump will not be switched on.

### 6. Hot water heating priority

If hot water heating priority is switched on, the controller directs all the available power for heating the tank. Therefore, till the moment the tank is heated up, central heating circuit is switched off.

### 7. Reading correction - heat source temperature

This is the value which is added or deduced from the measured temperature. it allows for correction of readings between the sensor placed on the pipe and the thermometer on the boiler.

**8. Reading correction - tank temperature**

This is the value which is added or deduced from the measured temperature. it allows for correction of temperature difference between the sensor placed on the pipe and water temperature.

**9. Central heating pump operation / test**

it shows current pump condition, calculated by the controller (0 or 1).

Outlet testing function can be switched on by pressing the knob. After 10s of inactivity or after pressing the knob again, the controller resumes operation according to its settings.

**10. Hot water tank loading pump operation / test**

it shows current pump condition, calculated by the controller (0 or 1).

Outlet testing function can be switched on by pressing the knob. After 10s of inactivity or after pressing the knob again, the controller resumes operation according to its settings.

A list of all the settings has been shown below.

Setting		Value			unit
no	default	name	minimum	maximum	
1.	Central heating circulation temperature	40	20	80	°C
2.	Central heating circulation hysteresis	4	2	10	°C
3.	Hot water tank temperature	60	20	70	°C
4.	Hot water tank hysteresis	4	2	10	°C
5.	Excess	10	3	10	°C
6.	Hot water heating priority	1 (on)	0 (off)	1 (on)	-
7.	Temperature correction - boiler	0	-5	5	°C
8.	Temperature correction - tank	0	-5	5	°C
9.	Central heating pump operation	value calculated by the controller	0 (switching off)	1 (switching on)	-
10.	Hot water pump operation	value calculated by the controller	0 (switching off)	1 (switching on)	-

**10. CONTROLLER OPERATION**

The controller constantly monitors tank and boiler temperatures.

Central heating pump will be switched on, if temperature exceeds settings by half of the set hysteresis value  $T_{\text{boiler}} \geq T_{\text{set cent.heat.}} + H_{\text{cent.heat.}}/2$

Central heating pump will be switched off, if temperature falls below settings by half of the set hysteresis value  $T_{\text{boiler}} \leq T_{\text{set cent.heat.}} - H_{\text{cent.heat.}}/2$

The decision on switching hot water tank pump, on the other hand is taken in two steps:

- Tanks should be heated, if tank temperature is lower than the set value about at least half of the hysteresis value,  $T_{\text{tank}} \leq T_{\text{hot.water.set.}} - H_{\text{hot.water.}}/2$  In such a case, if hot water priority is on, operation of central heating pump is interrupted. Tank heating can be interrupted, if tank temperature is higher than the set value about at least half of the hysteresis value,  $T_{\text{tank}} \geq T_{\text{hot.water.set.}} + H_{\text{hot.water.}}/2$
- The pump can be switched off without risking cooling down, if heat source temperature

is higher than tank temperature by at least the setting **Difference (5.)** + 3°C,  $T_{\text{boiler}} - T_{\text{tank}} \geq T_{\text{difference}} + 3$

The pump cannot be switched off (it will result in cooling down the tank), if heat source temperature is not higher than tank temperature by at least the setting **Difference (5.)** - 3 °C,  $T_{\text{boiler}} - T_{\text{tank}} \geq T_{\text{difference}} - 3$

### **Protecting the tank against overheating**

If the tank is loaded by another, supplementary heat source and if tank temperature exceeds 85°C, then the central heating loading pump will be switched on until tank temperature falls below 85°C.

### **Special attention should be paid when using hot water to avoid burning.**

#### **Feeder alarm temperature.**

Once alarm temperature (90°C) is reached at heat source sensor, central heating and hot water pumps will be switched off regardless of priorities. Screen backlight keep pulsating until the temperature falls down.

#### **Frost protection**

Frost protection function gets activated when temperature of a given sensor falls to 4°C. If boiler sensor (central heating) reaches such a temperature, central heating and hot water pumps are activated and "AF" (Anti freeze) gets displayed on the screen. In case of tank sensor (hot water) only hot water pump is being switched on. Protection is switched off, when the temperature raises above 6°C.

### **11. ANTY-STOP**

Pump anty-stop system switches the pumps on for 30 seconds immediately after each controller switch on (also after restoring to factory default or change of backlight mode) and then every 14 days. During its operation, "AS". keeps pulsating on the screen.

If during activity of the ANTY STOP system an emergency situation occurs (overheating or damage to the sensor), operation of the ANTY STOP system will be interrupted.

### **12. TYPICAL DAMAGES AND REPAIR METHODS**

#### **Device is not working**

Burnt fuse or memory software fault - send the device to service.

#### **Screen and sensor symbol blinking, "Sh" or "OP" appears**

Short sensor (**Short**) or open sensor (**OPen**) - check sensor cable for which a symbol is pulsating or send the device together with the sensor for service.

#### **Pump is not working**

Device switched off - make sure that relevant symbols on the device are visible. If not, check the settings. Restore to factory settings (chapter 8).

Connection error - check.

#### **Knob works in an unforeseeable manner**

Pulse generator damage - send device to service.

### **13. NORMS AND CERTIFICATES**

The **EUROSTER 11Z** controller conforms with UE directives: EMC and LVD.

CE conformity declaration has been published and made available at:

**<http://www.euroster.com.pl>**

**14. TECHNICAL DATA**

Controlled device	central heating pump and hot water pump
Supply voltage	230 V 50 Hz
Maximum inlet and outlet load	3 A 230 V 50 Hz
Maximum power consumption	1.6 W
Temperature measurement range	from -5°C to +120°C
Temperature adjustment range	from +20°C to +80°C in central heating mode from +20°C to +70°C in hot water tank mode
Temperature adjustment precision	1°C
Hysteresis range	2°C - 10°C
Visual signalling	backlit LCD screen
Operation temperature	from -5°C to +40°C
Storage temperature	from 0°C to +65°C
Protection level	IP40
Colour	black
Assembly method	wall, rawbolts
Controller weight with cables	0.72 kg
Cable length	controller feeder cable: 1.5 m central heating pump feeder cable: 1.5 m hot water pump feeder cable: 1.5 m tank temperature sensor: 5 m boiler temperature sensor: 1.5 m
Norms, approvals, certificates	Conformity with EMC and LVD directives, RoHS
Warranty period	2 years
Size (width/height/depth) mm	150/90/52

**15. COMPOSITION OF THE SET**

- a) sensor with 2 temperature sensors
- b) sensor bands
- c) rawbolts
- d) instructions
- e) fixing scheme

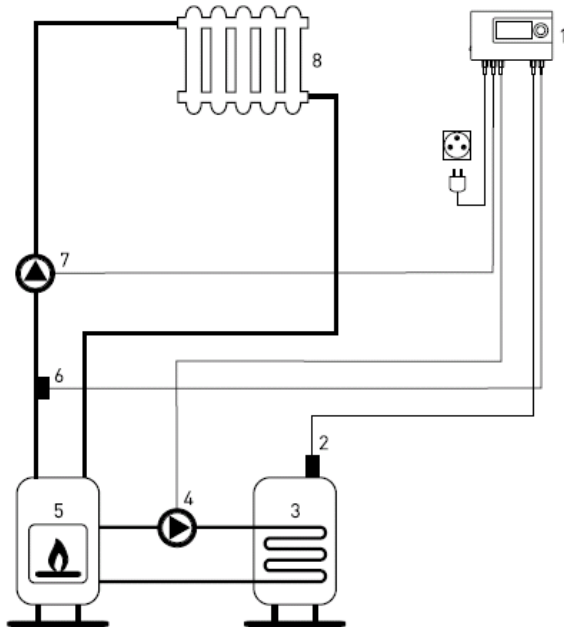
**16. INFORMATION ON ELECTRONIC WASTE MANAGEMENT**

We did our best to make our controller work as long as possible. The device is subject to natural wear and tear. If it does not meet your requirements any longer, please bring it to electronic waste collection point. Local electronic equipment distributors offer free waste collection services. Incorrect management of electronic waste result in environmental pollution. Cardboard packages should be collected as scrap paper.

## 17. CONNECTION SCHEME

The scheme presented is simplified and does not include all the elements necessary for correct installation operation.

### In an installation with central heating and hot water pumps



1. **EUROSTER 11Z** controller
2. Hot water tank temperature sensor
3. Hot water tank
4. Hot water tank load pump
5. Central heating boiler
6. Central heating temperature sensor
7. Central heating pump
8. Heat receiver - heater

## WARRANTY CARD

### EUROSTER 11Z controller

Warranty conditions:

1. Warranty is granted for 24 months counted from sales day.
2. In case of a complaint, the controller together with warranty card should be delivered to sales point.
3. A warranty claim will be answered within 14 business days of the date of receipt of the device by the manufacturer.
4. Only the manufacturer or a body acting upon explicit authorization of the manufacturer is entitled to make any repairs.
5. Warranty loses its validity in case of mechanical damage, inappropriate operation and repairs made by unauthorized persons.
6. Warranty for sold consumptions products does not exclude, or limit, or suspend buyer's rights resulting from nonconformity of product with the agreement.

.....  
sales date

serial no / production date

company stamp and signature

### Warranty granting body

P.H.P.U. AS Agnieszka Szymańska-Kaczyńska, Chumiętki 4, 63-840 Krobica, Poland