EUROSTER 11Z
CENTRAL HEATING / UTILITY HOT WATER PUMP CONTROLLER

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1 INTRODUCTION

Carefully study this user manual to learn how to correctly operate the EUROSTER 11Z central heating / utility hot water pump controller.

2 FIELD OF APPLICATION

EUROSTER 11Z is a modern microprocessor-based controller used to control central heating (CH) system circulation pump and utility hot water (UWH) tank pump. The controller may be turned in the UHW priority mode.

The controller will turn the CH system circulation pump OFF if the boiler temperature has dropped below some defined preset temperature. The controller will turn the UHW tank pump ON if the tank temperature has dropped below some defined preset temperature. Additionally the controller protects the UHW tank against chill-out in case temperature of the heat source is too low (e.g. since the boiler is extinct).

The UHW priority mode may be used to heat the UHW tank up as soon as possible.

The **EUROSTER 11Z** controller features the ANTY STOP function that prevents idle pump rotors against seizing. Once the heating season is over, every 14 days the function automatically turns ON the pumps for 30 seconds. To that end the controller must be left powered up.

3 VISIBLE CONTROLLER ELEMENTS

1. 230 VAC~ mains input
2. 230 VAC~ power supply to CH pump
3. 230 VAC~ power supply to UHW pump
4. Input for UHW temperature sensor cable
5. Input for CH water temperature sensor cable
6. Mains switch
7. LCD display
8. Knob

4   INSTALLATION

⚠ **Hazardous voltages may be present inside the controller and on its cables. Therefore it is expressly forbidden to install the device prior to disconnecting its mains power supply. Only qualified technicians may install the controller. Do not install any devices showing signs of any mechanical damage.**

The procedure:

a) Mount the controller:
- using a pair of supplied nylon nail-it fasteners (anchors) mount the controller box on a wall (or any other suitable supporting structure)
- using fasteners fix controller cables to the wall.

b) Install temperature sensors:
- **do not immerse sensors in liquids nor install them within stream of flue gases**
- install boiler temperature sensor at the boiler point specially designed for that purpose or else on an unshielded boiler outlet pipe (as close to the boiler as possible)
- install UHW tank temperature sensor at the tank point specially designed for that purpose
- using hose clips tighten the sensors to their pipes and cover them with thermal insulation.

c) Hook up pump power supply cables:
- connect yellow (or yellow-green) PE wire with the ⏚ terminal
- connect blue wire with the N terminal
- connect brown wire with the L terminal.

d) Verify the connections:
- check up all cable connections and tighten terminal box lids.

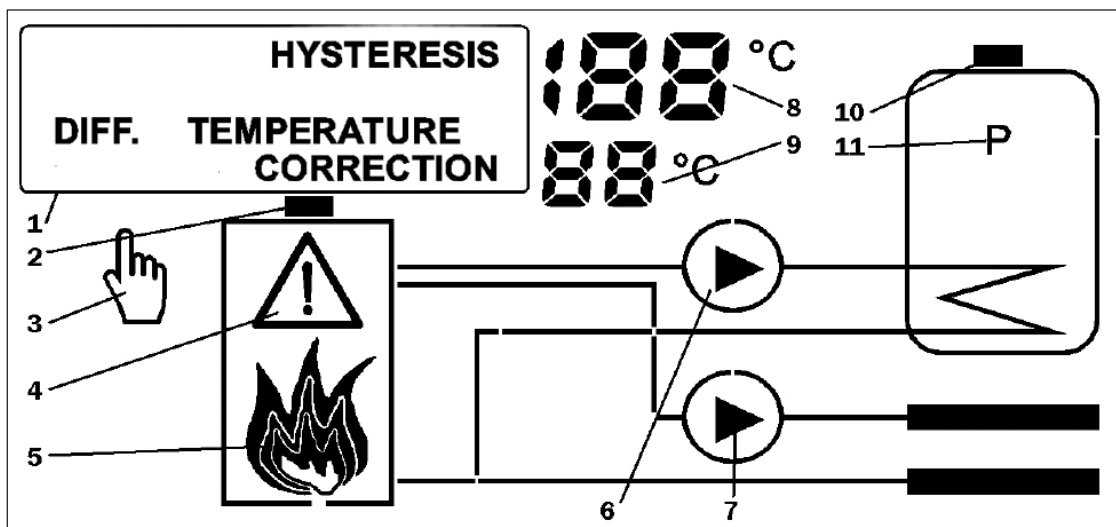**e) Hook up the controller:**
- **make sure controller cables are protected against incidental cut off**
- plug the controller power supply cable into a 230V/50Hz mains socket equipped with a grounding pin.

⚠ **The controller must not be installed in a place where the ambient temperature may exceed 40ºC.**
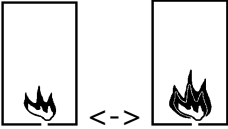
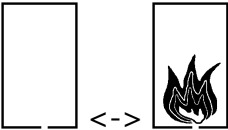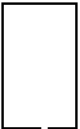### 5   CONTROLLER DISPLAY

Elements of the controller display:

1. Name of the controlled parameter (displayed while set point values are browsed/set)
2. Boiler temperature sensor icon

3. Manual operation mode (icon lit while the temperature is manually controlled)
4. Alarm (icon blinks in case of an alarm)
5. State of the heat source (boiler) furnace – animated icon, see description below
6. UHW pump icon lit while the pump is running
7. CH system pump icon lit while the pump is running
8. Boiler temperature / other displayed parameter value
9. UHW tank temperature / menu option number (displayed while set point values are browsed/set)
10. UHW tank temperature sensor icon
11. Symbol of the "UWH priority" mode of operation

Animated icon that visually presents state of the boiler furnace.

- Normal operation: <-> supply temperature between 35ºC and 90ºC

- Overheating: <-> supply temperature > 90ºC

- Furnace put out: supply temperature < 35ºC

6 TURNING THE CONTROLLER ON

- Turn the controller mains switch (6 in section 3) into the "I" position.
  - ➢ Device firmware version No. and compilation date are sequentially displayed for 2 s.
  - ➢ "AS" letters are blinking on the display while the ANTY STOP function turns on the pump.
  - ➢ State of the system is shown on the display.

- If the controller is being turned on for the first time: set the desired controller presets (see section 8 below).

7 FACTORY (DEFAULT) PRESETS

Proceed as follows to restore factory presets:
- Press the knob and while holding it depressed turn the controller off and on.
  "**Fd**" (factory defaults) is displayed.
- Release the knob. Digit 0 is displayed.
- Select digit 1 and accept the selection.
- Check and correct the presets if needed.

8 CONTROLLER PRESETS

Shortly after power supply of the controller is turned on, current state of the system is shown on the display. Turn the knob to the right to enter the preset browse/edit mode. General procedure to edit a preset:

1. Turn the knob to select the desired preset (parameter). The controller displays current value of the selected parameter (top) and its number (bottom).

2. Press the knob. The displayed parameter value starts to blink.

3. Set the desired new value and press the knob to accept it
   or
   Wait 10 seconds until the displayed parameter value stops blinking in order to abort the edit procedure (to leave the current value intact)

Configuration windows are numbered to facilitate manipulations. User may edit the following controller parameters (presets):

1. **CH pump TURN ON temperature**
   See section 12 for detailed description of conditions in which CH pump is turned ON/OFF.

2. **CH pump hysteresis**
   Difference between the temperature at which the controller turns the pump on and the temperature at which the controller turns it off. See section 12 below for details.

3. **UHW temperature**
   Mean tank temperature that the controller will attempt to maintain manipulating the pump.

   ATTENTION: Too low tank temperatures (35-40ºC) help to grow various bacteria within the tank, including the *Legionella* bacteria.

4. **UHW pump hysteresis**
   Difference between the temperature at which the controller turns the pump on and the temperature at which the controller turns it off. See section 12 below for details.

5. **Boiler-tank temperature surplus**
   The preset tells how much the boiler temperature should exceed the tank temperature (plus a constant value 3ºC) to enable UHW pump engaging without a risk that the tank will chill out. Alternatively the preset tells how close tank/boiler temperatures (minus a constant value 3ºC) will interrupt operation of the UHW pump.

6. **UHW priority**
   Cold UHW tank may heat up faster if this mode of operation is activated: the CH system pump is unconditionally turned OFF.

7. **Boiler temperature sensor correction**
   A constant added to all values measured by boiler temperature (external) sensor to compensate for differences in respect to water temperature inside the boiler.

8. **UWH tank temperature sensor correction**
   A constant added to all values measured by tank temperature (external) sensor to compensate for differences in respect to water temperature inside the tank.

9. **CH pump manual operation (test)**
   Display current pump status commanded by the controller (0/1 = pump disengaged/engaged). Press the knob and modify the parameter value to manually control the pump. Press the knob once more or leave it inactive for 10 seconds to resume automatic mode of control.

10. **UHW pump manual operation (test)**
    Display current pump status commanded by the controller (0/1 = pump disengaged/engaged). Press the knob and modify the parameter value to manually control the pump. Press the knob once more or leave it inactive for 10 seconds to resume automatic mode of control.

All controller presets are listed below:

No	Parameter Name	Preset value default	min	max	Unit
1	CH pump TURN ON temperature	40	20	80	°C
2	CH pump hysteresis	4	2	10	°C
3	UHW temperature	60	20	70	°C
4	UHW pump hysteresis	4	2	10	°C
5	Boiler-tank temperature surplus	10	3	10	°C
6	UHW priority	1 (ON)	0 (OFF)	1 (ON)	-
7	Boiler temperature sensor correction	0	-5	5	°C
8	UWH tank temperature sensor	0	-5	5	°C

	correction				
9	CH pump manual operation (test)	as calculated by the controller	0 (OFF)	1 (ON)	-
10	UHW pump manual operation (test)	as calculated by the controller	0 (OFF)	1 (ON)	-

9   CONTROLLER OPERATION

CH pump is engaged as soon as boiler temperature T_{boiler} exceeds preset temperature T_{preset} by more than half of hysteresis H_{pump}:

$$T_{boiler} > T_{preset} + H_{pump}/2$$

The pump is disengaged as soon as the temperature drops down below the preset by more than half of the hysteresis:

$$T_{boiler} < T_{preset} - H_{pump}/2$$

Decision to turn UHW pump is made in two stages:

- The pump is turned ON if the tank temperature T_{tank} has dropped below the preset by more than half of the pump hysteresis H_{pump}:

    $$T_{tank} < T_{preset} - H_{pump}/2$$

    If the UWH priority mode of operation is activated, the CH pump is then unconditionally turned OFF. The pump is disengaged as soon as the tank temperature has exceeded the threshold by more than half of the hysteresis:

    $$T_{tank} > T_{preset} + H_{pump}/2$$

- The pump may be disengaged without a risk of chilling out the tank provided that the difference between the boiler temperature and the tank temperature is at least by 3 ºC higher than the preset boiler-tank temperature surplus $T_{boiler} - T_{tank} > T_{surplus} + 3ºC$. The pump should run (to prevent chilling out the tank) until the difference decreases to the surplus minus 3ºC, $T_{boiler} - T_{tank} < T_{surplus} - 3ºC$.

10 THE ANTY-STOP FUNCTION

The ANTY-STOP function turns on the pump immediately after the controller is turned on, then every 14 days. "AS" letters are blinking on the controller display while the function is active.

Any alarm generated while the ANTY-STOP function is active (overheating or temperature sensor failure) aborts the function execution.

11 TROUBLESHOOTING

a) Device is dead
Burnt mains fuse or ROM failure. Replace the fuse or have the controller serviced.

b) Sensor icon on the display blinks, "Sh" or "OP" letters next to the icon
Sensor circuit shorted (Sh) or opened (OP). Check/replace the sensor cable or ship the controller (together with the sensor) to service.

c) Pump does not operate
Turn on the controller and make sure that pump icon is displayed. If so, check pump connections. Otherwise check presets or restore factory ones (see section 7)

d) Controller knob operates erratically
Pulse generator failure. Have the controller serviced.

12 COMPATIBILITY WITH STANDARDS/CERTIFICATES

The **EUROSTER 11Z** controller meets all requirements of the EMC and the LVD EU Directives. The CE Conformity Declaration is available on the **http://www.euroster.com.pl** Internet webpage.

13 SPECIFICATIONS

a) Mains   230 V 50Hz
b) Current consumption   max. 7 mA (1.6 W)
c) Output rated load   3 A
d) Length of cables:
    Controller power supply   1.5 m
    CH pump power supply   1.5 m
    UHW pump power supply   1.5 m
    UHW tank temperature sensor   5 m
    CH boiler temperature sensor 1,5 m
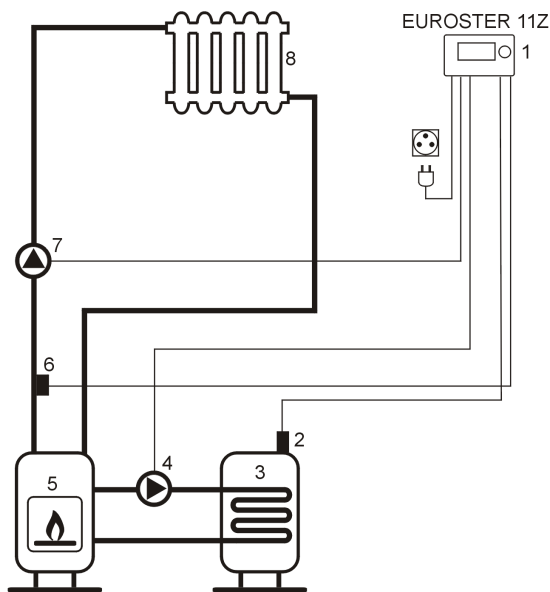e) Dimensions (width x height x depth) 150 x 90 x 54 mm

14 KIT CONTENTS

a) controller box with 2 temperature sensors
b) sensor hose clips
c) box fasteners/anchors
d) this Installation & Operation Manual
e) template to drill holes for fasteners/anchors

15 CONNECTION DIAGRAM

Diagram presented below is simplified (not every element necessary to correctly operate the system is shown).

Central heating pump control mode

1. EUROSTER 11Z controller
2. UHW tank temperature sensor
3. UHW tank
4. UHW pump
5. CH boiler
6. CH Temperature sensor
7. CH pump
8. Radiator (heat load)

16 ELECTRONIC WASTE MANAGEMENT INFORMATION

We made every effort to get as a long controller lifetime as possible. However, the device is subject to natural tear and wear. We ask you to have a controller that will not meet your requirements any more brought in to an electronic waste management facility. Electronic waste is collected free of charge by local distributors of electronic equipment.

Inappropriate management of electronic waste may lead to an unnecessary environment pollution.

Cardboard boxes should be disposed of at a paper recycling facility.

EUROSTER 11Z CONTROLLER WARRANTY CERTIFICATE

Warranty terms:

1. Warranty is valid for 24 months from the controller sale date.
2. Warranty is valid exclusively on the territory of Poland.
3. Claimed controller together with this warranty certificate must be supplied to the seller or directly mailed via *Poczta Polska* mail operator to the manufacturer.
4. Warranty claims shall be processed within 14 business days from the date the manufacturer has received the claimed device.
5. Controller may be repaired exclusively by the manufacturer or by other party clearly authorized by the manufacturer.
6. Warranty becomes invalidated in case of any mechanical damage, incorrect operation and/or making any repairs by unauthorized persons.
7. This consumer warranty does not exclude, restrict nor suspend any right of the Buyer ensuing if the product would not meet any of the sale contract terms.

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sale date   serial number/date of manufacture   signature/stamp

Service phone (48) 655-71-20-12

Business entity that issued this warranty certificate:
P.H.P.U. AS Agnieszka Szymańska-Kaczyńska, Chumiętki 4, 63-840 Krobia, Poland