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**Controller for accumulation tanks
INT0129-2**

User's Manual

1. Technical description

The controller is designed to manage the heating of an accumulating tank in a central heating system, thus providing a smooth operation of the boiler, decreasing the number of its starts and stops.

It manages directly the operation of a circulation pump between the boiler and the accumulation tank, as well it sends a signal for a boiler start and stop, and measures the temperatures at the top and lower part of the accumulation tank.

2. Operation

The two temperature sensors are mounted respectively on the top and bottom of the tank, thereby to monitor the temperature of the output and return water.

In case the temperature of the top part of the tank ($t°1$) is lower than the adjusted one (**t ° 1set**), then the controller starts the boiler and the circulation pump.

If the temperature at the bottom part of the tank ($t°2$) exceeds the adjusted one (**t ° 2set**), then the controller stop the operation of the boiler and the circulation pump.

STOP mode is being activated by means of pressing and keeping „**Prog**" button, as the boiler and the circulation pump are being switched off by force despite of the values of the measured temperatures. To escape this mode button „**Prog**" is to be pressed and kept again.

The circulation pump remains running 10 after Stop signal has being sent.
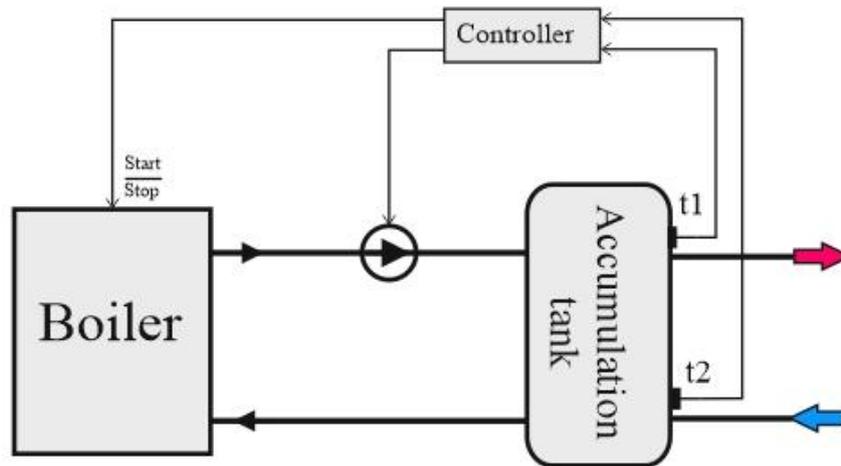
Example connecting of the controller.

Figure 1

3. Front panel

The indications and program elements are located on the front panel. These are two digital display, seven LED indications and three buttons - „▲" , „▼" and „**Prog**". The front panel view is shown at Figure 2.
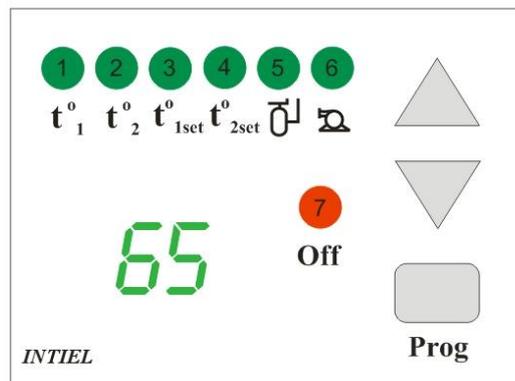

Figure 2.

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2

3.1 LED **t 1°** – Indication about the actual temperature of the top part of the tank;

3.2 LED **t 2 °**- Indication about the actual temperature at the bottom part of the tank;

3.3 LED **t ° 1set** - Indication about the adjusted temperature at the top part of the tank t ° 1;

3.4 LED **t ° 2set** - Indication about the adjusted temperature at the bottom part of the tank t ° 2;

3.5 LED **5** – Indication about the boiler state On / Off

3.6 LED **6** - Indication about the circulation pump state On / Off

3.7 LED **7** - Off – Indication about STOP mode activation.

In case the temperature measurement is out of the display range, the following symbols appear:
- "Hi" concerning temperatures higher than +99 ° C;
- "Lo" concerning temperatures lower than +0 ° C;

4. Programming
4.1 Review of temperature and time.
The adjusted temperatures and parameters can be reviewed by means of pressing buttons „▲" or „▼" only if the controller is not in programming mode**.** By means of subsequent pressing of previous mentioned buttons the display switches between the different parameters as the LED indication of the relevant parameter is being activated, starting from 3.1 up to 3.4.

4.2 Programming of the parameters.
The adjustment of the temperatures can be made as the desired one is to be selected. Then „**Prog**" button is to be pressed, as the value on the digital display will starts blinking. By means of buttons „▲" or „▼" the value is able to be increased or decreased until the desired one will be reached. In case the button is kept and pressed for more than 3 sec. then the value is being changed automatically. Once the value is being selected then „**Prog**" button is to be pressed again, to confirm and save the changes as the display will stop blinking.

t ° 1set can be adjusted from 0 to 99 ° C;

**t ° 2set** - from **t ° 1set** to 99 ° C

To ensure optimum performance, the temperature setting at the bottom of the buffer tank must be higher than the temperature at the top. For this reason, a restriction is introduced and an error message „**Er**" will be displayed when trying to set a value for **t ° 1set** higher than **t ° 2set**.

Invert signal **stop** and **start** to the boiler. Select position **t ° 2set** - 3.4 and press the „▲" button. The display will indicate „C1" or „C0". Press the „**Prog**" button to change.

Setting „C1" - signal **start** to the boiler when the output is closed (Terminals 5 and 6);

Setting „C0" - signal **start** to the boiler when the output is open.

5. The electrical connection
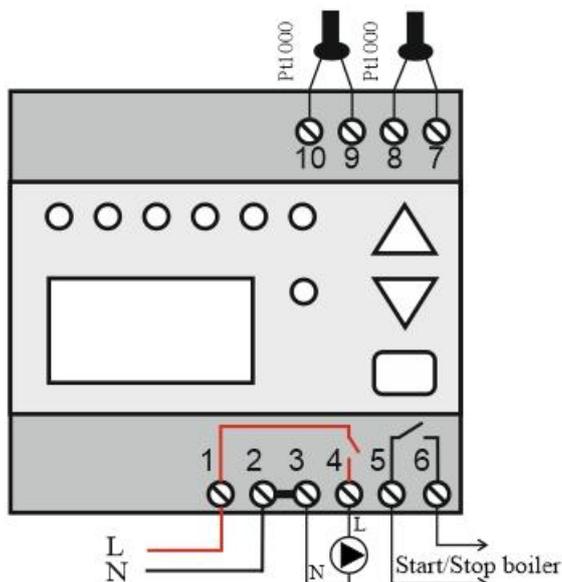
The electrical connection comprises connection of temperature sensors, power supply and the controlled units according Figure 3. The temperature sensors are Pt-1000 type, non-polar ones. If necessary the senor cable is able to be prolonged as the total resistance of both wires is to be considered, as the indication sensibility is **1°C/4Ω**.

Terminals 7, 8 (t ° 1) and 9, 10 (t ° 2) are inputs for temperature sensors Pt-1000 type.

Terminals 1 and 2 are being used for connection of the power supply. Terminal 3 is internally connected to Neutral and it can be used for connection of pump Neutral terminal.

Phase terminal / L / of the pump is to be connected to terminal 4. Terminals 5 and 6 are independent output, which send a signal about the boiler stop and start.

Figure 3.

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3

Technical data	
Power supply voltage:	~ 230V/50Hz
Commutated Rated current:	3A / ~ 250V
Number of contacts:	two relay
Sensor: 2 x Pt1000	(-50 ° to +250 ° C)
Measuring range:	0 ° to +99 ° C
Display:	2 digit, digital
Environmental humidity	0 - 80%
Protection level:	IP 20

6. Warranty

The warranty period is 24 months following the purchase date of the unit or its installation by an authorized Engineering Company, but not exceeding 28 months after the production date. The warranty is extended to the malfunctions that occur during the warranty period and are result of the production reasons or defective used parts.

The warranty does not relate to malfunctions corresponding to not-qualified installation, activities directed to the product body interference, not regular storage or transport.

The repairs during the warranty period can be done after correct filling of the manufacturer warranty card

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4