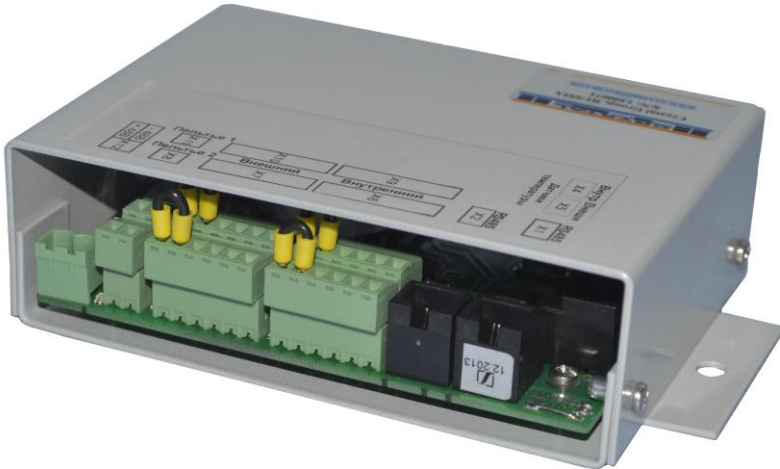


The temperature controller for the climate systems based on Peltier modules CB2-2.2.48.15-25.000.BK

APPLICATION.

The controller is designed for reversing (Heating / cooling) control one or two thermoelectric assembly. The two thermistors KTY81-110 which are present in the incoming package are used as the temperature sensors for measuring the temperature inside the cabinet – T_{in} and the outside temperature - T_{out}



FACTORY SETTINGS

Turning on the cooling mode is carried out at the T2 temperature (25°C), the heating mode at the T1 temperature (15°C). Another possible factory setting of T1, T2 is in the temperature range -50 + 70 ° C. The controller manages thermoelectric air-to-air assemblies used as the climate system for:

- Outdoor cabinets
- Thermostats for various applications
- Cold rooms and showcases
- Rack Management
- Cabinets with electronic equipment
- Other.

Specifications.

- DC management in the modes ON / OFF
- Changing of voltage polarity supplied to the thermoelectric modules during the change-over from the cooling mode to the heating mode
- In case of 2 assemblies, both assemblies operate synchronously
- Operating DC voltage - 18 – 58V
- Maximum current of each output pair to modules - 7 A at a voltage 58V.
- Maximum current of outputs to the fans - 1A at a voltage 58V.
- The controller operating depending on temperature measured by two thermistors A1 (internal) and A2 (external)
- Protection against break or short-circuit of thermistor A1 (shut off the output voltage of the controller). Break or short-circuit of thermistor A2 are ignored.
- The length of the connecting wires of thermistors are 1000 mm and 500 mm.
- The minimum temperature measured by the thermistor -55°S
- The maximum temperature measured by the thermistor + 150°S
- Another possible factory setting of T1, T2 is in the temperature range -50 + 70 ° C. T1 is smaller than T2 at least on 2 degrees.

THE OPERATING ALGORITHM.

1. When power is applied to the input terminals of the controller before starting of the thermoelectric assemblies in the cooling / heating mode independently from the thermistor readings the test run of fans and thermoelectric modules circuits takes place in the following order:

- Pause 2 s
- Turning on the internal fan 1-2 s
- Pause 2 s
- Turning on the external fan 2 s
- Pause 2 s
- Turning on the thermoelectric module for heating 2 s
- Pause 2
- The inclusion of a thermoelectric cooling unit 2c
- Pause 2

the total duration of the test cycle operation is 5-20 s and can be modified.

2. If the temperature inside the cabinet $T_{in} > T_2$ and $T_2 \leq T_{out}$ only the fans cooling the internal volume in the mode of the heat exchanger (free cooling) turn on.

3. If the temperature inside the cabinet $T_{in} > T_2$ and $T_{out} > (T_{out} + T_2) / 2$, the fans and the thermoelectric coolers for cooling are turning on. Turning off the power of the thermoelectric modules takes place at the temperature $(T_1 + T_2) / 2$

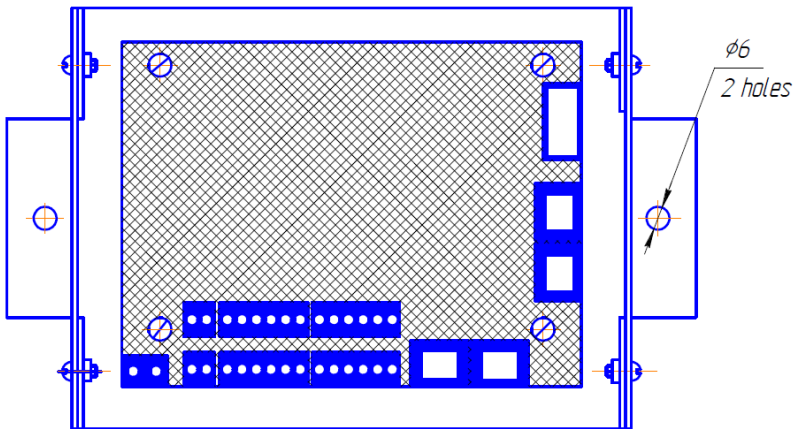
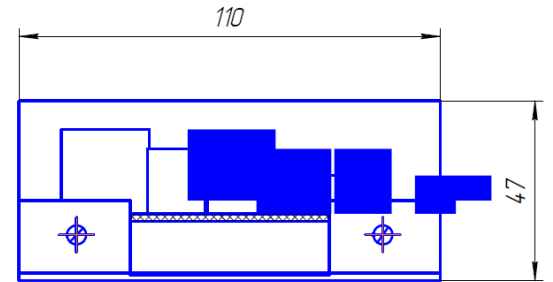
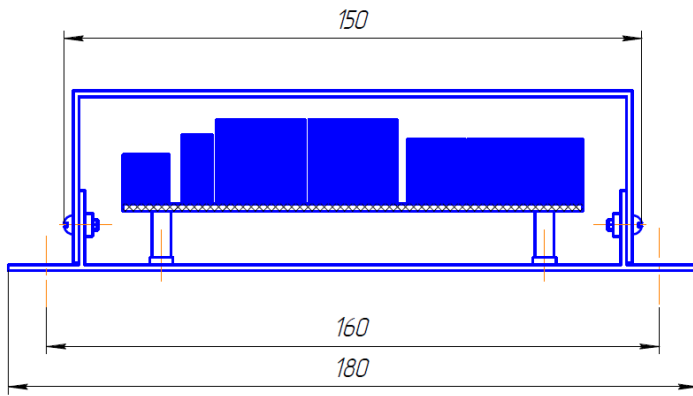
Turning off the external circuit fans is delayed 30 seconds.

4. If the temperature inside the cabinet $T_{in} < T_1$ and $T_{out} \geq T_1$, only the fans for heating of the internal volume in the heat exchanger mode turn on.

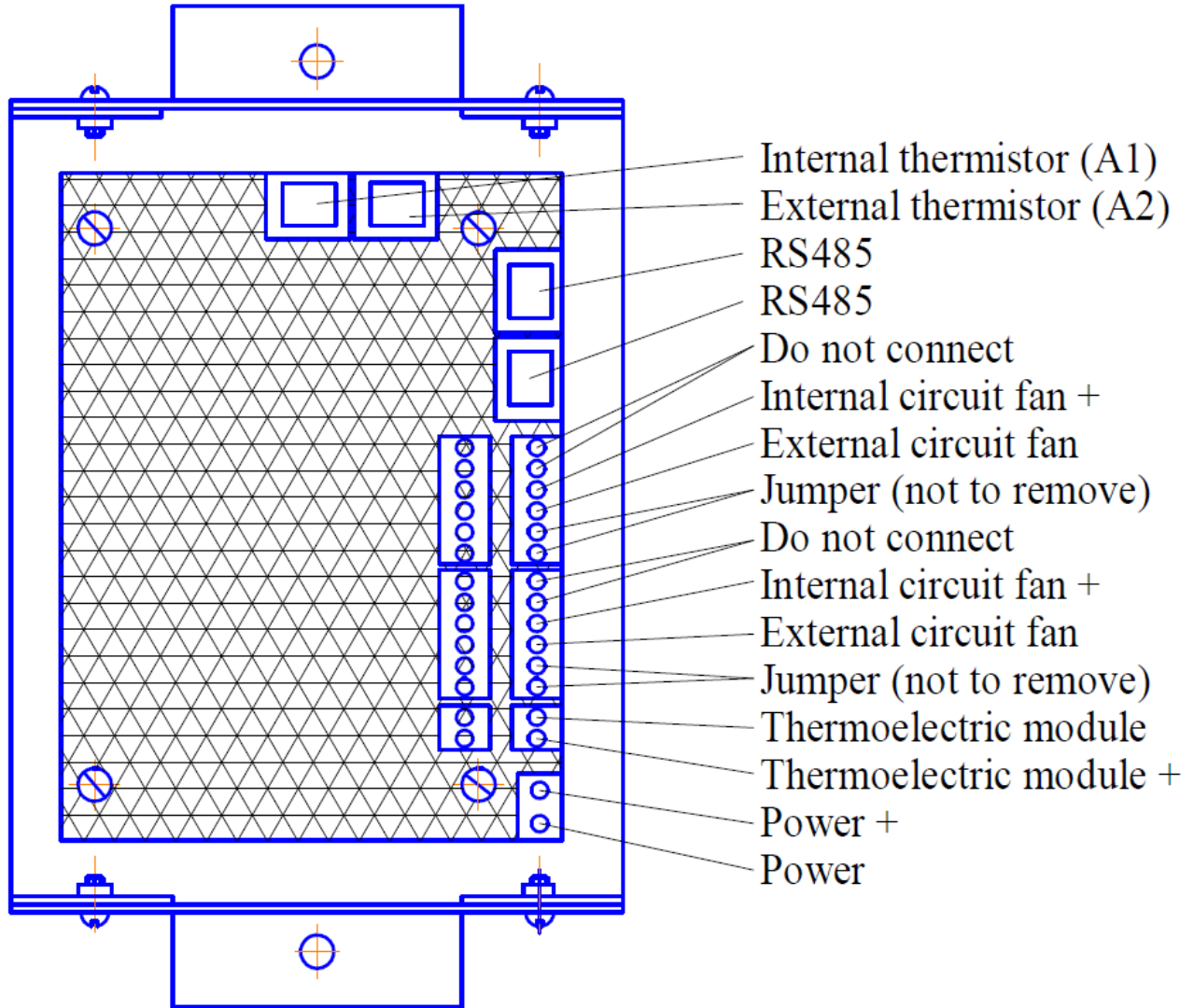
5. If the temperature inside the cabinet $T_{in} < T_1$ and $T_{out} < (T_1 + T_{out}) / 2$, the internal fan and the thermoelectric modules for heating turn on. The fans of the external circuit is not working. Turning off the power of the thermoelectric modules takes place at the temperature $(T_1 + T_2) / 2$. Turning off the inner circuit fans is delayed 30 seconds.

OVERALL AND INSTALLATION DIMENSIONS OF THE CONTROLLER.

The controller can be mounted inside a cabinet on a wall or DIN rail through a mounting clip.



WIRING DIAGRAM OF THE CONTROLLER AND THERMOELECTRIC ASSEMBLIES AIR- TO-AIR



NOTE

In case of connecting the thermoelectric assemblies TA-AA-200-48, TA-AA-250-48, TA-AA-300-48, TA-AA-350-48 the assembly «TEC» terminals (thermoelectric modules) should be connected to the two groups of the similar controller outputs in the first and second row.