WARRANTY COUPON

THERMOSTAT TP 600

Release date : _____

The thermostat TP 600 has been manufactured and tested according to TU 3428-725-68134775-2011 has passed the acceptance test and is certified disposable for service.

QCD stamp

Seller stamp here

Date of sale _____ Seller signature _____

Buyer signature _____

CERTIFICATION

Certificate of Conformity No. _____

MANUFACTURER: "Special Systems and Technologies", LLC
141008 Proektiruemyj proezd 5274, build. 7, Mytischi, Moscow region, RUSSIA
Hot line: 8 (800) 775-40-42

THERMOSTAT

TP 600

TO CONTROL THE GROUND WARMING SYSTEM GREEN BOX AGRO

USER'S MANUAL

РЭА.00038.02 П(ИМ)

ME67

РОСС RU.ME67.B07980

CONTENTS

NOTES

DEAR CUSTOMER!

Thank you for purchasing the thermostat TP 600!
We are confident that our production will be equal
to your expectations and ensure a fair yield!

FUNCTIONAL DESCRIPTION

The thermostat TP 600 is designed to control electrical warming systems for ground under cover: in greenhouses, conservatories and other greenery chambers.

The thermostat ensures the maintenance of the ground temperature preset by user basing on data of the remote temperature sensor.

The device is equipped with a dust- and waterproof enclosure with the ingress protection rating IP 56.

The warming control is carried out by one button

TECHNICAL DATA

Power supply	220 V
Maximum load current	16A (3,5 kW)
Power consumption	450 mW
Weight	350 g
Dimensions	140×135×65 mm
Ingress protection rating	IP56
Protection class	II
Temperature sensor (TST02)	NTC 6,8 kOhm
Length of the sensor installation wire	2 m
Allowable ambient temperature	from +5°C to +45°C
Allowable related air humidity	80%
Temperature control limits	from +18°C to +27°C

DELIVERY KIT

❶ Thermostat TP 600	1 pcs
❷ Ground temperature sensor	1 pcs
❸ External screw terminal to connect earthing wire	1 pcs
❹ User's Manual	1 pcs
❺ Packing box	1 pcs

WARRANTY OBLIGATIONS

The manufacturer guarantees compliance of the thermostat quality to the requirements of TU 3428-725-68134775-2011 if the transportation recommendations and installation and usage instructions are followed.

Warranty period for the product – 24 months from the date of beginning of operations.

During the warranty period the Buyer has the right for repair or replacement of the unit when detecting failures occurred through the manufacturer's fault and if recommendations for installation and operation are followed.

The warranty doesn't cover thermostats with defects due to mechanical damages, improper installation, connection and breaching of the operation conditions provided for this device (see User's Manual).

When asking for the warranty repair it is obligatory to provide the filled warranty coupon with the name of the article and the Seller's stamp

CLAIMS

If the defects are detected during the period of warranty service, the Buyer is recommended to address request to the service centre of the manufacturer or its authorized representatives in regions.

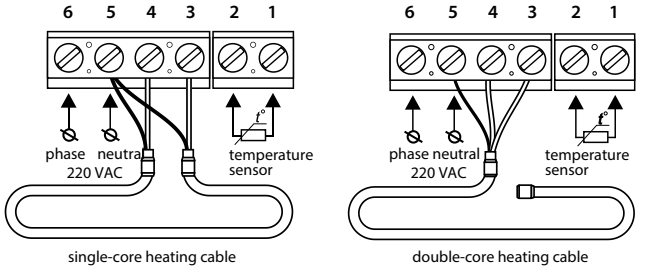


Fig. 4. Diagram of the thermostat connection to 2-wire electric network

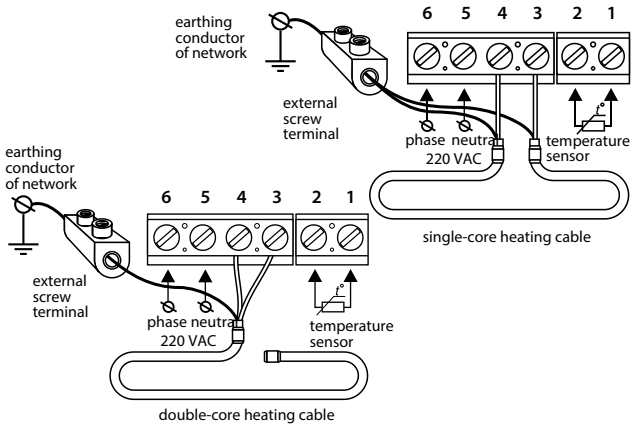
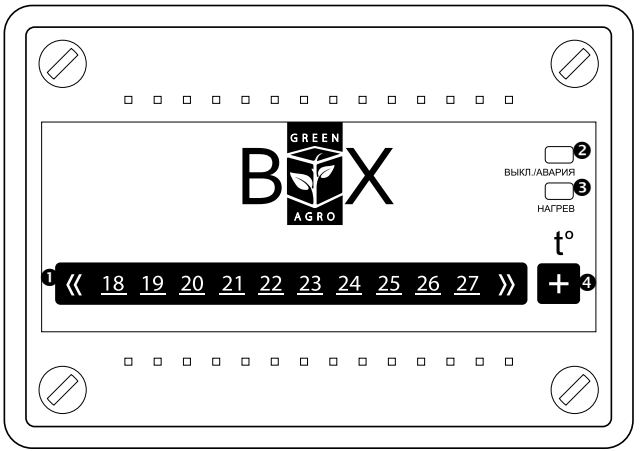


Fig 5. Diagram of the thermostat connection to 3-wire electric network

CONTROLS AND INDICATION

View of the thermostat front panel with controls and indication is shown in fig. 1.



❶ Temperature scale
❷ LED indicator, "SWITCH OFF/EMERGENCY"
❸ Indication of warming switched ON condition "WARM"
❹ Control button

Fig. 1. External view of the thermostat TP 600

Regulation of the required warming temperature and switching OFF the thermostat is carried out by pushing of the button t° «+». One button-push corresponds to one temperature step on the device scale.

Running over the scale values is recycled:
18-19-20-21-22-23-24-25-26-27°C - SWITCH OFF -18-19-20-21-...

General regulation range is 18-27°C.

At the shifting of the thermostat to its "SWITCH OFF" position, heating sections are to be de-energized but the device stays ON .

While in operation, the device indicates on the front panel the following:

Actual ground temperature
A corresponding value on the scale blinks green color. In the event that an actual ground temperature falls outside the scale limits, symbols «<<» (temperature below 18°C) and «>>» (temperature above 27°C) are blinking.

Required preset warm temperature
A proper value on the scale blinks constantly.

Warming
The "WARM" indicator gets red color when the thermostat applies voltage to heating sections.

Switching OFF
The "SWITCH OFF/EMERGENCY" indicator gets green color in case if user has switched OFF the warming system selecting "SWITCH OFF" on the temperature scale.

Alarm signaling
While in operation, the thermostat controls operability of temperature sensors. All the system parameters are controlled the same by the especial algorithm and at breaking-down, shorting, overwarming they are to be diagnosed by the switching on the "SWITCH OFF/EMERGENCY" indicator of red color.

The thermostat is installed directly in a greenhouse on its rigid constructions. Fix the thermostat enclosure by four screws though the holes ❶.

Pass electrical wires through appropriate gland entries of the enclosure:

- supply leading wire to thermostat - through top entry D16 (big);
- wire from heating section – through bottom entry D16 (big)*;
- wire from ground temperature sensor – through bottom entry D9 (small).

Perform the connection of wires to terminals of the thermostat board (fig. 4 – for electrical networks without earthing; fig. 5 – for electrical networks with earthing):

- power cable – to terminals "L" and "N";
- heating section – to terminals "Warm";
- the temperature sensor wire is connected to the thermostat by using of terminals "Sensors" installed on the board.

Upon completion of all necessary connections, install the front panel of the thermostat into home place and turn all fixers in a clockwise direction in the "0" position (slots of fixers in vertical position).

After the installation of the thermostat front panel, the thermostat can be supplied with power voltage 220 V.

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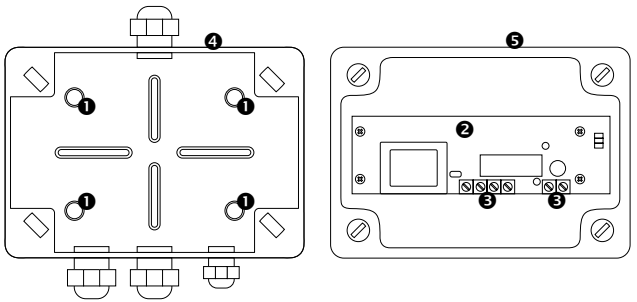
* One bottom entry can be used for double-core heating sections, two entries - for single-core heating sections.

MOUNTING OF THE THERMOSTAT ENCLOSURE

Remove a cover of the thermostat enclosure. To do this, turn four fixers on the cover in position "1" by using of a straight-edge screwdriver (slot of the fixer is to be in horizontal position), thereafter the thermostat front panel with the mounted plate can be removed (Fig. 3).



❶ Holes for fixing the enclosure to the wall
❷ @m_pb
❸ Terminals
❹ Thermostat enclosure
❺ Enclosure cover

Fig. 3. Enclosure and cover of the thermostat

TEMPERATURE CONTROL

At the ground warming till the temperature preset by user (with the tolerance till +1°C above the preset) the commutation relay of heating sections and the "WARM" indicator are switched OFF; supply voltage of sections is de-energized.

At decrease of ground temperature below the preset one (with the tolerance till –1°C below the preset) the commutation relay of sections is closed and switches the warming ON. The "WARM" indicator is switched ON at that. The process of switching ON/OFF repeats itself cyclically to maintain the preset temperature.

Temperature regulation is performed by signals of the ground temperature sensor installed in soil.

INSTALALTION OF THE THERMOSTAT

Installation and connection of the thermostat must be performed by a skilled electrician. All the connection works must be performed when supply voltage 220V is completely powered OFF.

A list of tools and materials necessary for installation:

❶ Corrugated plastic tube of diameter not less than 16 mm (a length depends on a place of the thermostat installation)

❷ Standard plastic kmslrglebox

❸ Flat blade screwdriver

❹ Phase glbga_rmp of supply voltage

PREPARING OF ELECTRICAL CONNECTIONS

Lead a power wire into the place of coming out of installation wires of ground warming sections. The wire with a cross-section of not more than 2,5 mm^2 can be connected to the thermostat.

Apply power tmjr_ec to the wire; find a phase power conductor by using of a phase gIbga_rmp and mark it.

Power off the supply voltage. All the works on the thermostat installation are performed only when power voltage is off.

Attention! We recommend to connect only one ground warming section to one thermostat in order that plant beds could be controlled separately by maintenance of temperature conditions best suited for each plant.
At the connection of several heating sections to one thermostat and accordingly to one temperature sensor, overheating or an insufficient bed warming, where temperature can not be measured by the sensor, is possible because of various heat exchange conditions.
Connection of several heating sections to one thermostat is possible only when the section laying pitch is identical on different beds!
In this case a parallel connection of several heating sections should be performed in an independent connection box and one wire should be laid out of this box in order to connect it to the thermostat (diameter of the thermostat terminal screws allows to directly connect only one heating section).

It is necessary to make sure that total power of heating sections, connected to the thermostat, doesn't exceed 3500 W!

INSTALLATION OF TEMPERATURE SENSOR

Installation of the ground temperature sensor is performed at the stage of installation of ground warming sections. The temperature sensor is to be placed into a corrugated plastic tube, the bearing face of which is closed with a qc_jgle plug preventing ground and moisture ingress inside.
The corrugated tube with the sensor inside is placed on the level of the laid heating cable between its loops equally spaced from them. Another tube end with the installation wire inside is laid to the thermostat installation place. Excesses of the tube and the installation wire are to be cut as needed (Fig. 2).

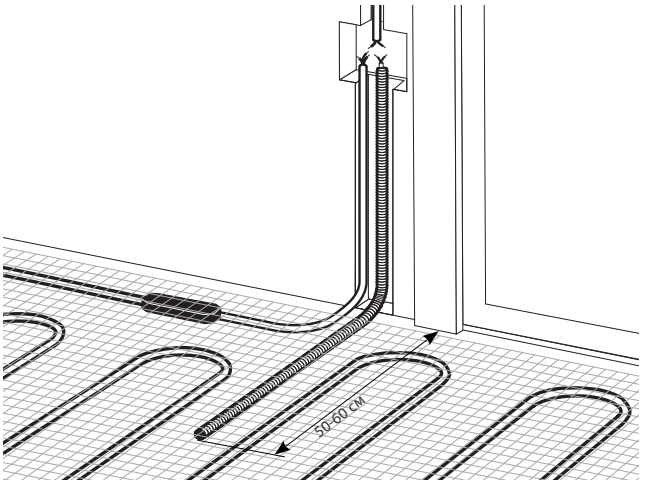


Fig. 2. Diagram of the temperature sensor installation