Four-channel electronic thermostat

IB – Tron 3100HT-4Z

to operate two and three-point devices

PRODUCT IS CE

MARKED AND HAS BEEN PRODUCED IN ACCORDANCE WITH ISO 9001 STANDARD

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v1.5

Contents

IB-TRON 3100HT-4Z

BASIC INFORMATION

IB-Tron 3100HT-4Z thermostat is independent microprocessor thermostat with large LCD display. The thermostat is designed to control work of valves, air dampers, electric air heaters, pumps, fans and other two- and three-point controlled appliances.

IB-Tron 3100HT-4Z thermostat allows to control process of heating and cooling. It allows to maintain the desired temperature in four independent places according to fixed weekly work scheduler.

IB - Tron 3100HT-4Z thermostat allows to save energy costs. Thermostat contributes to protect environment. IB-Tron 3100HT-2Z thermostats can be commonly used in: hotels, offices, supermarkets, factories, hospitals, houses and other buildings.

FEATURES

☞ Large, blue backlit LCD display which shows current temperature, a day of the week and other information.
☞ Esthetic and modern design
☞ Blue backlight (backlight is activated by pressing any button and deactivated after set period of inactivity)
☞ Easy, intuitive operating and programming.
☞ Power supply from network 230V with baterry memory backup and clock backup.
☞ Comprehensive programming process in a weekly cycle with an accuracy of 1 minute and with possibility of programming four time periods each day for each of channel.
☞ Manual or automatic work mode.
☞

FEATURES

☞ Adjustable three temperatures:

» Comfortable
» Economic
» Holiday

☞ Support of four temperature sensors (one per channel, all sensors are supplied with thermostat):

» one sensor built-in control panel of thermostat (for channel **1**).
» three sensors connected to the actuating module of thermostat (for channels from **2** to **4**).

☞ Displayed temperature with 0,1 ºC accuracy
☞ The possibility of calibrate device (external sensors on long wires, independent calibration of each channel)
☞ Adjustable hysteresis.
☞ **FROST PROTECTION** function - protection of installation against freezing.
☞ Large load - to 2 kW for each output - allows to direct connection most of electrical appliances without the use of contactor.
☞ Wide range of temperature settings.

TECHNICAL DATA

☞ Energy consumption: < 2 W
☞ Storage temperature: -5 ÷ 50 ºC
☞ Displayed temperature: -20 ÷ 100 ºC
                            every 0,1 ºC
☞ Setting range: 5 ÷ 90 ºC
                            every 0,5 ºC
☞ Accuracy: 1 ºC
☞ Hysteresis: 10 ºC co 1 ºC
☞ Maximum load: 2kW
☞ Power supply: 230V AC
☞ Casing: ABS
☞ Display: LCD (3,2``)
☞ Control: Electronic
☞ Protection rating: IP30
☞ Battery settings protection: 36 months

SCOPE OF DELIVERY

☞ 1x Thermostat (the main panel)
☞ 1 x Actuating module
☞ 1 x Built-in temperature sensor
☞ 3 x External temperature sensor
☞ 1 x Connection wire (1meter)
☞ 1 x Operating manual

GENERAL CONSIDERATIONS

⚡ During installation of thermostat, the supply of electricity should be turned off. It's recommended to entrust the installation a specialized institution.

⚡ Thermostat gives 230V voltage on the output (support of pump, valve, air damper, heating mat etc.). If thermostat has to operate normally open/normally closed device, so-called: contact device (for example: gas heating stove), it will be required additional normally open/normally closed relay. We have these relays in our offer.

GENERAL CONSIDERATIONS

⚠ The sensors can be extended to any length but we should remember that extension above 10m may cause a deviation of measurement with each meter and falsifying results. Therefore, for distance above 10m device has to be calibrated. Sensors have to be extend of wires: 2x 0,75 mm2.

☞ The thermostat is compatible with NTC 10kΩ sensors having the following characteristics:

Temperature [ºC]	Resistance [Ω]
-50	687 803
-40	346 405
-30	181 628
-20	99 084
-10	56 140
0	32 960
10	20 000
20	12 510
25	10 000
30	8 047
40	5 310
50	3 588
60	2 476
70	1 743
80	1 249
90	911
100	647

OPERATING PRINCIPLE

Thermostat measures the temperature. If this temperature is below the current desired value, the thermostat wants to run heating device to raise temperature to the desired level.

Thermostat may be used in refrigeration by a reversed connection of cooling device than in case of connection of heating device (using additional relay).

Thermostat has 4 channels. It means that it integrates four independent devices. Each has its own temperature sensor and output for actuating device. All four channels operate simultaneously. On display at the moment is shown state of one of them. User can switch, which of channels is presented o display.

EXAMPLE OF APPLICATIONS

☞ **Room thermostat** - controlling of temperature in room or entire building (using built-in temperature sensor).

☞ **Tank thermostat** - controlling of temperature in the hot water tank (external temperature sensor).

☞ **Floor thermostat** - controlling of floor temperature (external temperature sensor).

☞ **Pump controller** - switching on the pump after reaching suitable temperature by the boiler (cooling, external temperature sensor).

☞ Independent control of temperature in 4 rooms, if each room has own heating device (e.g. radiator) or regulatory device (e.g. valve).

STRUCTURE OF THERMOSTAT

IB-Tron 3100HT-4Z thermostat consists of two parts: main panel with LCD display, keyboard and actuating module, with input terminals and output terminals.

Control panel is adapted to surface-mounting, actuating module is predicted to be placed on a DIN 35 mm rail.

Both of modules are connected with each other by Ethernet wire (twisted pair, 8-wire cable), connected to the **RJ-45** connector.

white-green
green
white-orange
blue
white-blue
orange
white-brown
brown

Ethernet wire should be identically clamped on both sides

Wire with a length 1 meter is supplied with thermostat. It is possible to extend wire to any length.

CONTROL PANEL OF THERMOSTAT

SOCKET RJ-45

LCD DISPLAY

Wed
07:00
25℃
20.5℃
Auto

BUTTON „M"

BUTTON „DOWN"

BUTTON „P"

BUTTON „UP"

TEMPERATURE SENSOR

BUTTON „OK"

INFRARED SENSOR

LCD DISPLAY

DESIRED TEMPERATURE

HOUR   DAY OF THE WEEK

OPERATING RANGE

KEYBOARD LOCK

MonTue Wed Thu Fri Sat Sun
PM
Menu

SWITCHING ON THE ACTUATING DEVICE

INFORMATION

HOLIDAY TEMPERATURE

TEMPERATURE/ SETTING

ECONOMIC TEMPERATURE

INDICATED CHANNEL

override

PROTECTION AGAINST FREEZING

MANUAL MODE

AUTO

COMFORTABLE TEMPERATURE

AUTOMATIC MODE

TEMPERATURE DIFFERENCE

SEMI-AUTOMATIC MODE

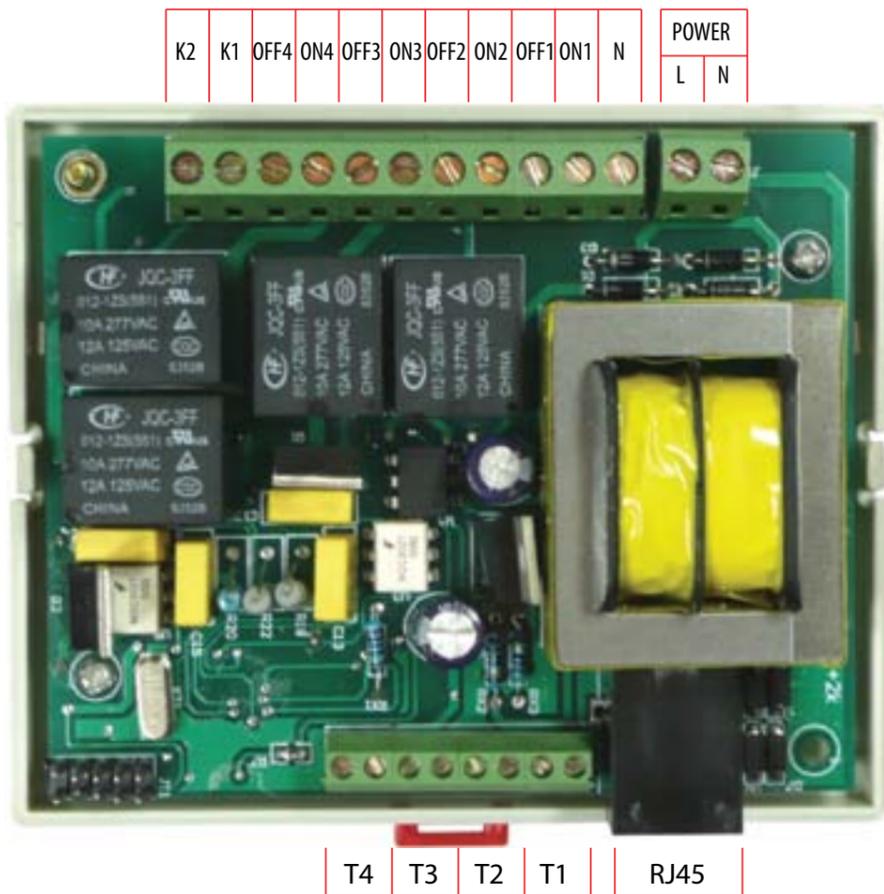## ACTUATING MODULE OF THERMOSTAT

STRUCTURE OF OUTPUTS

Network power supply 230V is given to screw clamp **POWER** of thermostat. Outputs marked from **ON1** to **ON4** and from **OFF1** to **OFF4** (with a separate summary terminal **N**, internally connected with terminal **N** of **POWER** connector) are used to control work of actuating devices in each channel.

If actuating relay of the channel is switched on, phase is given to the output **ON** which corresponds to this channel. Otherwise, phase is given to the output **OFF**.

CONNECTION TERMINALS

☞ **T2 ÷ T4** - connection of temperature sensors for channels **2÷ 4**.

☞ **POWER** - power supply of thermostat (and actuating devices, by using outputs **ON/OFF**).

☞ **ON1-ON4** - outputs, on which is given phase, when thermostat switches the channel.

☞ **OFF1-OFF4** - outputs, on which is given phase, when thermostat does not switch the channel.

☞ **RJ-45** - socket for connecting control panel.

☞ **other -** unused in this model.

K2	K1	OFF4	ON4	OFF3	ON3	OFF2	ON2	OFF1	ON1	N	POWER	
											L	N

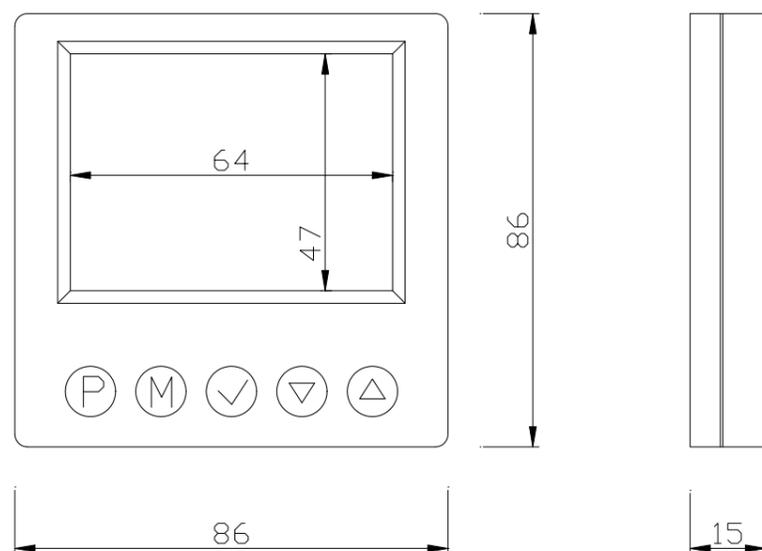| T4	T3	T2	T1	RJ45

EXEMPLARY CONNECTION OF THERMOSTAT

Exemplary connection of thermostat is presented below. Different actuating devices are connected to the thermostat, which are controlled the following way:

channel 1 - **3**-way ball valve IB-Qxx-3 which is switched when temperature **T1** (sensor built--in the control panel) is below the set value;

channel 2 - circulating pump, which is turned on when temperature **T2** is below the set value;

channel 3 - air damper IB-Fxxx, which is closed when temperature **T3** reaches the set value. Air damper is opened when temperature **T3** is below the set value;

channel 4 - valve **IB-73xx**, which is opened when temperature **T4** reaches the set value;

BALL VALVE IB-Qxx

POWER SUPPLY 230V L N

YELLOW-
RED
BLACK

| K2 | K1 | OFF4 | ON4 | OFF3 | ON3 | OFF2 | ON2 | OFF1 | ON1 | N | L | N |

CIRCULATING PUMP

ACTUATING MODULE

| T4 | T3 | T2 | T1 | RJ45 |

AIR DAMPER IB-FXXX

SENSOR T4

SENSOR T3

SENSOR T2

BROWN-
GREEN-
BLACK-

ETHERNET WIRE

VALVE IB-73XX

CONTROL PANEL
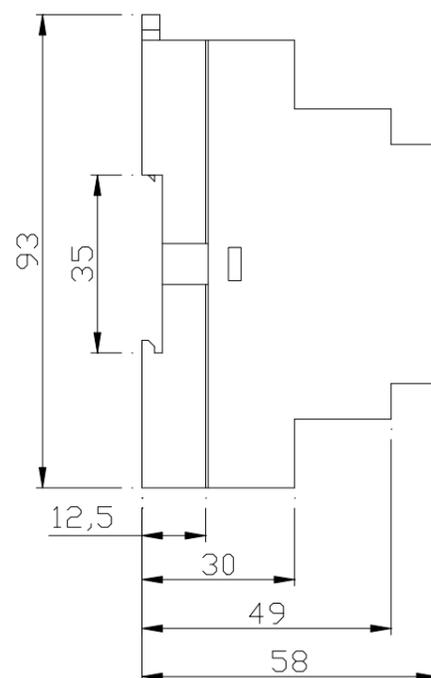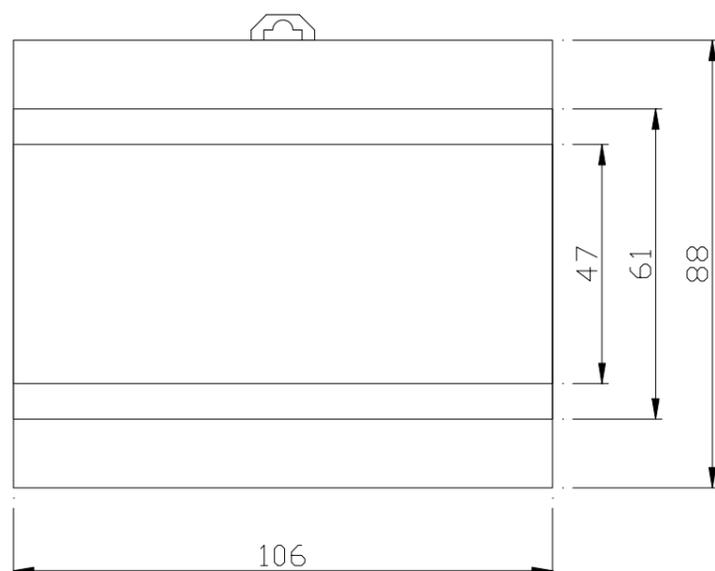
P M ∨ ▽ △
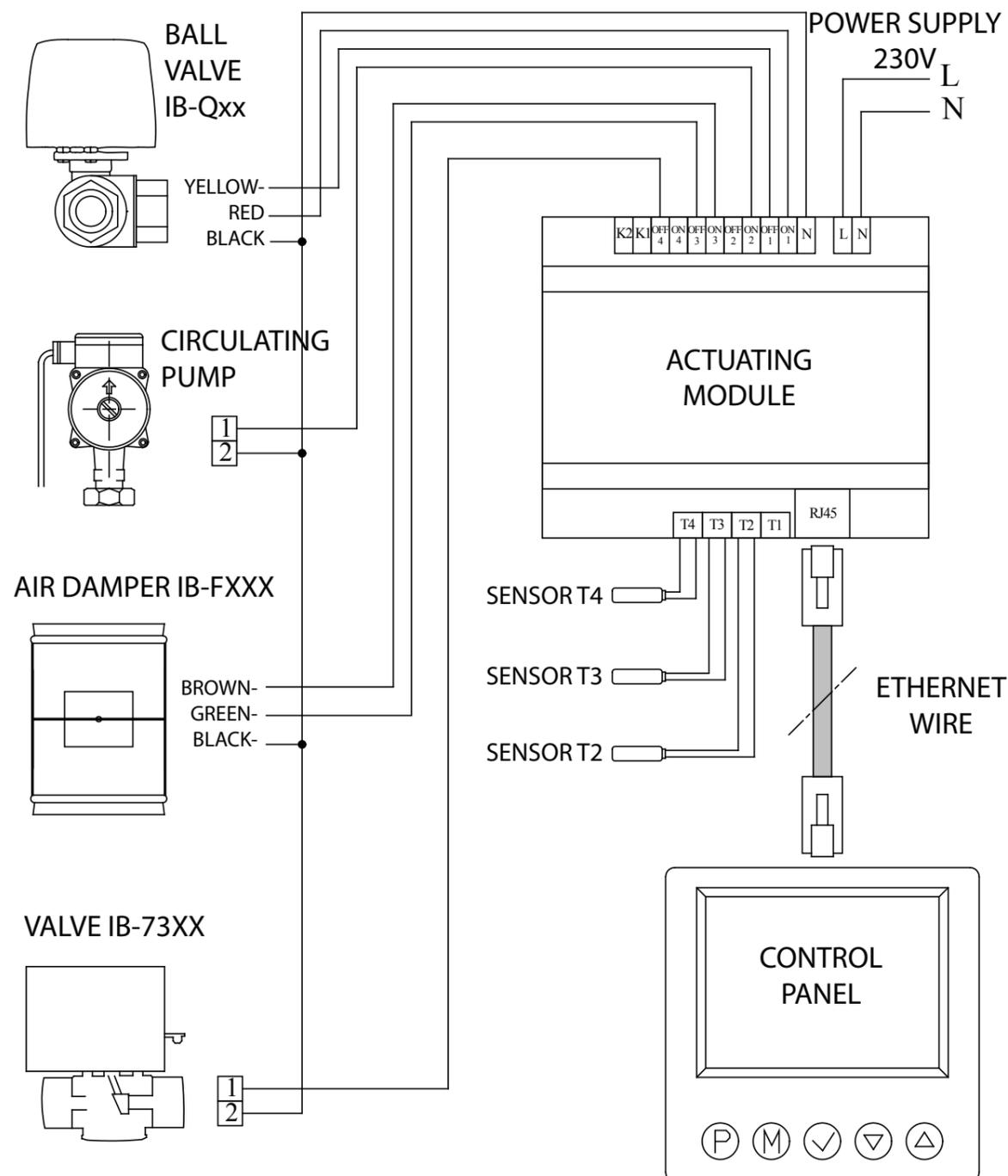
DIMENSIONS

Dimensions of control panel (in mm):

Dimensions of actuating module (in mm):

TURNING ON THERMOSTAT

P To turn on or turn off thermostat, you have to press button **‚P'**.

When the thermostat is turned off, on display is shown only current temperature selected channel. Temperature is not regulated, relays are set in the position **OFF**.

CONFIGURATIONAL MENU

In configurational menu are set parameters of thermostat work for currently indicated channel. Each channel may have individual settings. To enter to the configurational menu, please:

P If thermostat is turned on, please turn it off by pressing button **‚P'**.

M When the thermostat is turned off, press and hold for about 3 seconds button **‚M'**.

Thermostat is in configurational mode. Displayed are: inscription **‚Menu'**, setting number (from **01** to **08**), code shortcut of setting (e.g. **‚Sd'**), value and unit of setting.

▽ △ To change value of indicated setting, press button **‚DOWN'** or **‚UP'**.

M To move to the next setting, press button **‚M'**. After reaching the last (eighth) setting, pressing the button **‚M'** again causes return to the first setting.

Thermostat comes out of the configurational menu after a set time of inactivity or after pressing the buttons **‚P'**.

HYSTERESIS

Hysteresis means a difference (in ℃ or ℉) between threshold of switching on and switching off the actuating device.For example: If set temperature is 20℃ and hysteresis is set on 1℃, the actuating (heating) device will be switched on when the temperature falls below 19,5℃ and device will be switched off when the temperature incresases above 20,5℃. Next switching on of actuating device will be again after temperature decrease below 19,5℃.

Higher value of hysteresis reduces number of cycles switch on/switch off of actuating device (saving device), but it causes greater temperature fluctuations.

To change value of hysteresis, please:

M Enter to the configurational menu. Press button **‚M'** until you see on display setting number **01**, marked as **‚Sd'**.

▽ △ Set desired value. Hysteresis may be set from the range 1÷10℃. Exit the configurational menu or move to other setting.

CALIBRATION

After proper connection the thermostat is ready to work. The thermostat is factory calibrated to work with standard sensor. However, with long wires, displayed temperature may be different from real temperature.

In this case you have to calibrate the device by yourself.

CALIBRATION

To calibrate sensor, please:

M — Enter to the configurational menu. Press button **'M'** until you see on display setting number **02**, marked as **'TC'**.

▽ △ — Set value indicating, how many degrees we have to change current indication of temperature to get correct measurement. Value may be set from the range -5÷5ºC, with step 1ºC. Exit the configurational menu or move to other setting.

TIME OF INACTIVITY

It is the time, counted from the last press of any button, after which the controller comes out from the settings mode of parameters to default mode. Higher value gives the user more time to enter settings.

To set time of inactivity, please:

M — Enter to the configurational menu. Press button **'M'** until you see on display setting number **03**, marked as **'PTD'**.

▽ △ — Set desired value. Value may be from the range 5÷30s with step 5s.. Exit the configurational menu or move to other setting.

TIME OF BACKLIGHT

This is a time, after which is fading of LCD backlight, counted from the last press of a button.

TIME OF BACKLIGHT

To set time of backlight, please:

M — Enter to the configurational menu. Press button **'M'** until you see on display setting number **04**, marked as **'BL'**.

▽ △ — Set desired value. Value may be from the range from 0 (backlight is always turned on) to 10s with step 1s. Exit the configurational menu or move to other setting.

TEMPERATURE UNITS

User has ability to choose if the temperature must be in ºC or ºF. To change temperature format, please:

M — Enter to the configurational menu. Press button **'M'** until you see on display setting number **05**, marked as **'TF'**.

▽ △ — Select temperature unit. Exit the configurational menu or move to other setting.

TIME FORMAT

User has ability to choose if the time must be displayed in 12-hour format or 24-hour. To change time format, please:

M — Enter to the configurational menu. Press button **'M'** until you see on display setting number **06**, marked as **'TF'**.

TIME FORMAT

▽ △ — Select format 12-hour or 24-hour. Exit the configurational menu or move to other setting.

NUMBER OF TEMPERATURE SETTINGS

Thermostat, in automatic mode, has the ability to program four different time segments during the day, each of them with assigned temperature setting. There are two ways of selection the temperature settings:

» Each segment has independent temperature setting (there are four different temperature settings)
» There are two different temperature settings: comfortable setting (for segments 1 and 3) and economic setting (for segments 2 and 4)

To set number of independent values of temperature settings, please:

M — Enter to the configurational menu. Press button **'M'** until you see on display setting number **07**, marked as **'SC'**.

▽ △ — Select number of different temperature settings: 2 or 4. Exit the configurational menu or move to other setting.

FROST PROTECTION FUNCTION

FROST PROTECTION function protects installation against freezing.

When measured temperature falls below 5ºC, actuating device is activated.

FROST PROTECTION FUNCTION

To turn on FROST PROTECTION function, please:

M — Enter to the configurational menu. Press button **'M'** until you see on display setting number 08, marked as **'FP'**.

▽ △ — Select value **'On'** (function is turned on) or value **'OFF'** (function is turned off). Exit the configurational menu or move to other setting.

WERSJA OPROGRAMOWANIA

Aby sprawdzić wersję oprogramowania, należy:

M — Enter to the configurational menu. Press button **'M'** until you see on display setting number 09, marked as **'VER'**. This value is read-only.

AN HOUR AND A DAY OF THE WEEK

To set current hour and a day of the week, please:

P — Turn on thermostat.

✓ — Press and hold for about 5 seconds button **'OK'**. Displayed hour starts flashing.

▽ △ — Set current hour.

✓ — Press button **'OK'** again. A day of the week starts flashing.

AN HOUR AND A DAY OF THE WEEK

Set day of the week:

Mon - Monday
Tue - Tuesday
Wed - Wednesday
Thu - Thursday
Fri - Friday
Sat - Saturday
Sun - Sunday

Confirm settings.

FACTORY SETTINGS

To reset thermostat and go back to factory settings, please:

Turn off thermostat.

Press and hold for about 3 seconds both buttons: **,M'** and **,OK'** simultaneously. On display will show for about 5 seconds inscription **,RESET'**.

KEYBOARD LOCK

To protect thermostat from unwanted change settings, you can lock thermostat keyboard.

When keyboard lock is activated, on display is visible a padlock symbol and keyboard doesn't respond to pressing keys.

To activate/deactivate keyboard lock, please:

Press and hold for about 3 seconds both buttons: **,DOWN'** and **,UP'** simultaneously.

WORK SCHEDULER

In automatic mode we can set a work scheduler. It means setting suitable temperature at concrete hour.

With scheduler you can set lower temperature (economic temperature) in periods when e.g. building/room is not used or in nocturnal periods, and higher temperature (comfortable temperature) when building/room is used.
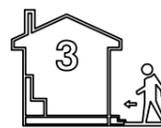
You can program four time segments each day of the week, which were symbolically presented on display:

Comfortable temperature e.g. 7:00 a.m. - reveille

Economic temperature e.g. 9:00 a.m. - outgo the house

Comfortable temperature e.g. 3:00 p.m. - return to house

Economic temperature e.g. 9:00 p.m. - sleep

A temperature symbol is visible together with the time segment symbol to know what type of temperature the time range concerns:

Comfortable   Economic

Symbol will be displayed, if thernostat operates in mode with two temperatures' settings (comfortable and economic). If thermostat operates in mode with individual value of setting for each time segment (with four values of settings, parameter SC in the configurational menu with value 4), these symbols are not presented.

WORK SCHEDULER

To make your own work scheduler, please:

Turn on the thermostat. Make sure, that thermostat is set in automatic work mode (on display is shown inscription **,AUTO'**).

If instead inscription **,AUTO'** on display is hand symbol (manual mode), press button **,M'**. Pressing this button when thermostat is turned on, causes switching between manual mode and automatic mode.

Press and hold for about 5 seconds button **,P'**. On display will show inscription **,PROG'** and current day of the week starts flashing.

Select a day of the week by buttons **,DOWN'** and **,UP'**, which concerns setting. To select all days of the week, press and hold for about 5 seconds button **,DOWN'**.

Confirm choice with the button **,P'**.

The following steps describe programming one of time segments. You have to repeat these steps for all four time segments. On the right on display is shown segment symbol, which concerns the setting.

On display starts flashing an hour, about which work segment will start. Set the hour.

Confirm choice with the button **,P'**.

WORK SCHEDULER

On display starts flashing temperature set for the work segment. Set the temperature.

Confirm choice with the button **,P'**.

After programming all four time segments the thermostat returns to standard displaying mode.

The fourth time segment lasts until the beginning of the first time segment the next day (e.g. from 9:00 p.m. on Monday to 7:00 a.m. on Tuesday).

If there is no need to use all four time segments, you can set short time segments for example:

» 1.   7:00
» 2.   7:01
» 3.   7:02
» 4.   15:00

MANUAL MODE

In manual mode the thermostat constantly keeps desired temperature (without work timetable).

If thermostat works in manual mode, on display is visible hand symbol and time segment symbol is not visible.

Thermostat is in the manual mode until user doesn't change it to automatic mode.

To change mode to manual/automatic, please:

MANUAL MODE

When thermostat is turned on, press button **'M'**.

To set desired temperature in manual mode, which the thermostat has to keep, please:

Press button **'DOWN'** or **'UP'**. On display will appear current temperature setting. Enter a new value.

Confirm choice with the button **'OK'**.

SEMI-AUTOMATIC MODE

In semi-automatic mode is manual correction of desired temperature in current time segment. After the end of the current time segment, thermostat returns to the automatic mode and works with the timetable.

⚠ You can move to semi-automatic mode only from automatic mode.

To enter manual temperature correction for current time segment, please:

When thermostat is in the automatic mode, press button **'DOWN'** or **'UP'**. On display will appear current temperature setting. Enter a new value.

Confirm choice with the button **'OK'**.

SEMI-AUTOMATIC MODE

⚠ When thermostat is in the semi-automatic mode, on display is inscription **'override'**. Symbol of the current time segment dissappears.

To cancel temperature correction before the end of current time segment and return to the scheduler, please:

Press and hold for about 3 seconds button **'UP'**.

HOLIDAY MODE

In holiday mode the thermostat constantly keeps desired holiday temperature (default 10ºC).

⚠ If thermostat works in holiday mode, on display is visible suitcase symbol.

To turn on/turn off holiday mode, please:

When thermostat is turned on, press and hold for about 3 seconds button **'DOWN'**.

To change desired value of temperature for holiday mode, please:

When thermostat is in the holiday mode, press button **'DOWN'** or **'UP'**. On display will appear current temperature setting. Enter a new value.

Confirm choice with the button **'OK'**.

STATE OF WORKING

When the thermostat is working, on display is visible a flame symbol.

Additionally, bar ratio symbolically presents difference between prevailing temperature (indicated temperature) and desired temperature (it shows how much heat is missing).

SWITCHING CHANNELS

⚠ Previously described thermostat's support and settings refer to one regulation channel.

⚠ User's interface (keyboard and display) allows to read and write data only for one channel at the moment, although both channels are controlled simultaneously in equivalent way.

⚠ Programming and support for both channels is independent. Turning off thermostat by button **'P'** is exception, because it causes turning off all channels simultaneously.

To switch to the reading/setting another channel, please:

When the thermostat is turned on, press and hold for about 5 seconds button **'M'**. It causes switching between channel to another channel. Switching from the channel 4 is back on channel 1.

ERRORS

On display may appear symbols that signify:

☞ **LO** - temperature in current channel is lower than -20ºC.
☞ **HI** - temperature in current channel is higher than 100ºC.
☞ **ERR** - temperature sensor of current channel is not connected or is damaged.

⚠ In cases above, for safety, actuating device is turned off (phase is given to terminal **OFF**).

Jeżeli komunikacja pomiędzy panelem kontrolnym a modułem wykonawczym nie działa poprawnie, w polu temperatury wyświetlane są trzy poziome linie „- - -". W przypadku utraty komunikacji pomiędzy panelem kontrolnym a modułem wykonawczym, stan wyjść modułu wykonawczego pozostaje taki sam, jaki był przed utratą komunikacji.

WARRANTY

☞ Warranty is granted on 24 months from the date of purchase of goods.
☞ Any defect disclosed during the warranty period will be removed within 21 working days, from the date of adoption of goods for service.
☞ In case of necessity of import goods or components from abroad, repair time is extended by the time needed to bring them.
☞ Customer provides product to service at his own cost. If the product is shipped at the expense of the service, it won't be received.
☞ At time repair service has no obligation to provide substitute product.

WARRANTY

☞ Warranty repair will be made upon presentation of properly and legibly filled your warranty card, signed by guarantor and with sales document.

☞ Warranty covers only defects arising from causes inherent in goods. Damage resulting from external causes such as: mechanical damade, pollution, flooding, weather, improper installation or improper wiring and operations. Warranty does not apply in case unauthorized repair by customer, changes in software (firmware) and device formatting.

☞ In the event of unjustified claim for warranty repair, all additional cost are on customer's side.

☞ Due to the natural consumption of consumables, some of them are not covered by warranty (for example: cables, battery, loader, micro contacts, buttons).

☞ Service has right to refuse to perform warranty repairs for following: differences between documents and goods marks, make repairs on their own by customer, changes in product construction without authorization.

☞ Warranty repair refusal is equivalent to loss your warranty.

☞ If it is not possible to test product before its purchase (distance selling), it is possible to return goods within 10 days. Returned goods cannot bear signs of exploitation, it must contain all elements with which it was delivered.

☞ In the case of return of purchased goods all shipping costs are on buyer side. For shipment please enclose purchase document and give precise details of the buyer with account number on which will be refunded an amount equ-

WARRANTY

al to the value of the returned goods, no later than 21 days from the date of delivery of the goods. This amount is reduced by shipping costs if these costs were incurred by the seller. Delivery of copy of document correction is necessary to a refund. Before return of goods please contact with seller.

☞ Warranty terms may be changed by local InsBud company partner.

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