Electronic thermostat

IB – Tron 350 HT

Products is CE marked

and has been produced in accordance with ISO 9001 standard

„INSBUD"
ul. Niepodległości 16a
32-300 Olkusz
Poland
sales department: +48 (32) 626 18 00
sales department: +48 (32) 626 18 18
technical department: +48 (32) 626 18 07
technical department: +48 (32) 626 18 08
fax: +48 (32) 626 18 19
e-mail: insbud@insbud.net

WWW.INSBUD.NET

v1.1

Contents

IB-TRON 350 HT

Basic information

IB-Tron 350HT thermostat is independent microprocessor controller with large LCD display. The thermostat is designed to control work of valves, air dampers, electric air heaters, pumps and other appliances controlled on the base on/off.

IB-Tron 350HT thermostat allows to maintain in the desired temperature in building/room by regulation of heating room.

IB - Tron 350HT thermostat allows to save energy costs. Thermostat contributes to protect environment. IB-Tron 350HT thermostats can be commonly used in: hotels, offices, supermarkets, factories, hospitals, houses and other buildings.

Features

- Readable LCD display which shows current temperature and other information.
- Esthetic and modern design
- Easy, intuitive operating.
- Power supply from network - it doesn't reguire batteries.
- Support of two temperature sensor:
  - **RT** - buit-in room temperature sensor.
  - **FT** - additional external temperature sensor e.g. floor area, hot water tank.
- Three modes of thermostat operating:
  - **A** - Device control is based only on built-in temperature sensor (**RT**)
  - **F** - Device control is based only on connected external sensor (**FT**).
  - **AF** - Device control is based on built-in sensor (**RT**) and connected external sensor (**FT**). Thermostat is trying to keep desired air temperature and simultaneously prevents the floor reaching higher temperature than limit of **FT** temperature (when limit of **FT** temperature is exceeded, actuating device is disabled).
- Displayed temperature with 0,1 °C accuracy.
- The possibility of calibrate device (external sensors on long wires).
- Adjustable hysteresis.
- Temperature limit on **FT** sensor.
- Large load - to 3,5 kW - allows to direct connection most of electrical appliances without the use of contactor.
- Variable, adjustable and wide temperature range.
- Thermostat is configurated by microswitches - no worrying about the memory settings of the device after a power failure. The current temperature setting is remembered and restored when power returns. similarly, if thermostat was turned off before power failure, after return of power, thermostat will be also turned off.

Technical Data

Energy consumption:	< 2 W
Storage temperature:	-20 ÷ 60 °C
Setting range:	-15 ÷ 99 °C every 0,5 °C
Accuracy:	2 °C
Hysteresis:	0,1; 0,5; 1 or 2 °C
Maximum load:	3500 W
Power supply:	230V ± 15% 50/60 Hz
Casing:	ABS
Type of sensor:	NTC 10 kΩ
Control:	Electronic
Protection rating:	IP30
Moisture conditions:	5 ÷ 90%

Scope of delivery

- 1x Thermostat (the main panel)
- 1x Built-in temperature sensor
- 1x External temperature sensor
- 1x Operating manual

General considerations

Due to the fact that thermostat has power adapter without transformer (it isn't galvanically separated from the power supply 230V), it can be connected only to power supply, which has got differential-current protection.

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

The 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.

Temperature sensors

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:

- to 50m — 2x 0,75 mm^2
- above 50m — 2x 1,50 mm^2

- The controller is compatible with NTC 10kΩ sensors having the following characteristics:

Temperature [°C]	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.

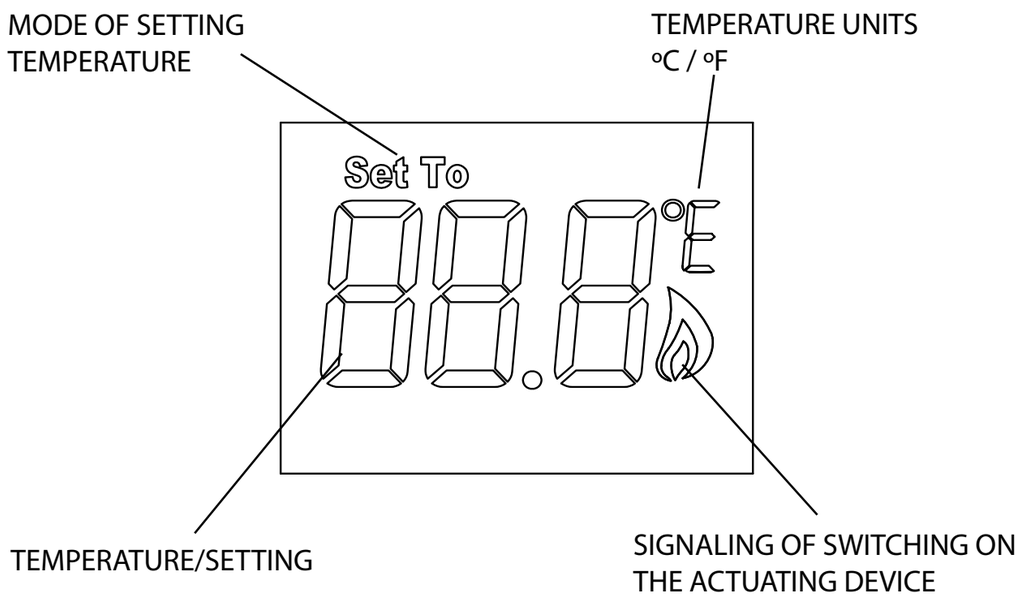
Thermostat may be used in refrigeration by a reversed connection of cooling device than in case of connection of heating device (using additional relay).

EXAMPLE OF APPLICATIONS

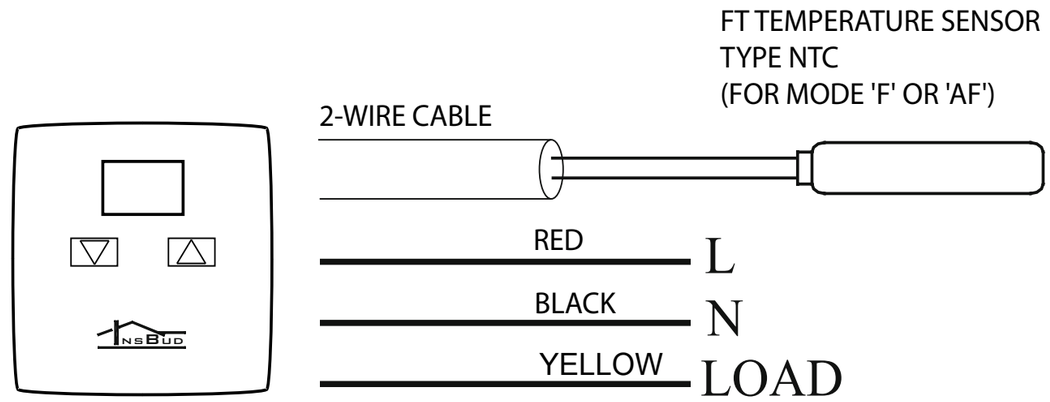
- ☞ Room thermostat - controlling of temperature in room or entire building (mode **A**).
- ☞ Tank thermostat - controlling of temperature in the hot water tank (mode **F**).
- ☞ Floor thermostat - controlling of floor temperature (mode **F** or mode **AF**).
- ☞ Pump controller - switching on the pump after reaching suitable temperature by the boiler (cooling, mode **F**).

STRUCTURE

LCD DISPLAY

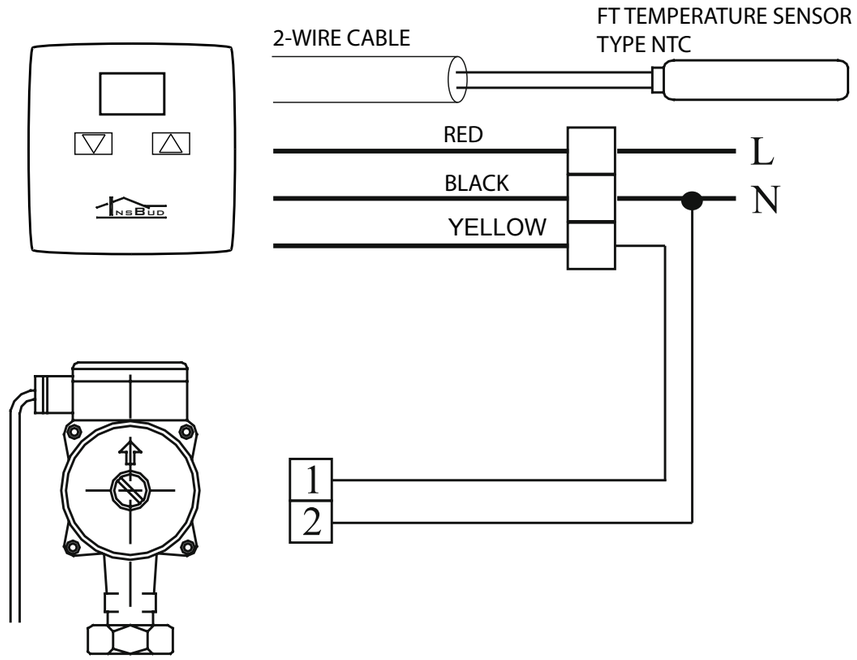


CONNECTION

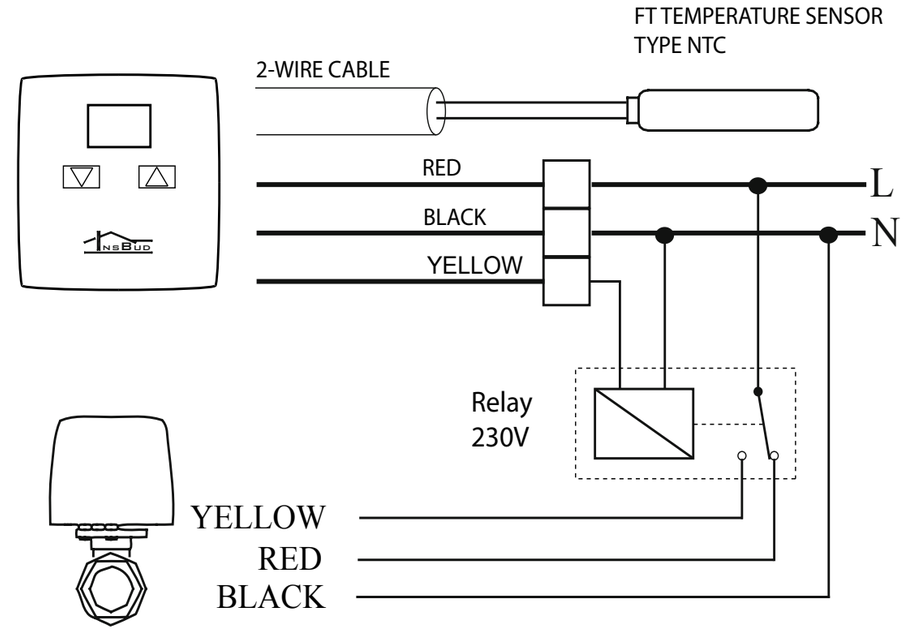


EXEMPLARY CONNECTION DIAGRAMS

CONNECTING OF THE THERMOSTAT AND PUMP



CONNECTING OF THE THERMOSTAT AND VALVE WITH ACTUATOR (TYPE IB-QXX)



TURNING ON/TURNING OFF THERMOSTAT

To turn on or turn off the thermostat, press and hold for about 5 seconds both buttons: UP and DOWN.

TEMPERATURE SETTING

In normal mode of thermostat work (when current temperature is displaying), press button 'UP' or 'DOWN'. On display will appear inscription 'Set to' and starts flashing desired value of temperature, which can be changed up or down, pressing buttons 'UP' or 'DOWN'. After setting the desired temperature, wait a few seconds, then thermostat will automatically move to normal work mode.

or

Set correct value by using buttons: 'UP' and 'DOWN'. Thermostat will return to normal work mode after a few seconds.

CALIBRATION

After proper connection the controller is ready to work. The controller 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:

Press and hold button 'DOWN' for about 3 seconds. On display starts flashing value indicating how many degrees we have to change to get correct indication.

READING OF FT TEMPERATURE IN AF MODE

Thermostat, working in mode **A**, indicates temperature of built-in sensor (**RT**), working in mode F- indicates temperature of external sensor (**FT**). In **AF** mode, default is displaying **RT** temperature. To read **FT** temperature, please:

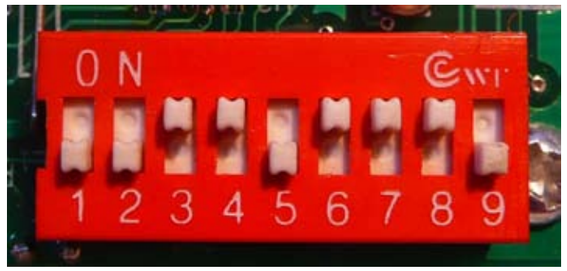
Press and hold for about 5 seconds button 'UP'. On display will show **FT** temperature and thermostat will automatically return to displaying **RT** temperature.

CONFIGURATION OF THERMOSTAT

Device is configurated by using 9 switches (SW1-SW9) type DIP-SWITCH. Access to the switches is possible by removing the back part of casing. To do this, lift the latch at the bottom of casing and separate its two parts. All of switches are default set in position 'OFF'.

OFF - switch in the bottom position

ON - switch in the top position



Temperature units

Thermostat allows to display temperature in ºC or ºF, depending on settings of switch SW1.

SW1	Operating description
OFF	Temperature in ºC
ON	Temperature in ºF

Hysteresis

Hysteresis means a difference (in ºC or ºF)between threshold of switching on and switching off the actuating device.For example: If set temperature is 20ºC and hysteresis is set on 1ºC, the actuating (heating) device will be switched on when the temperature falls below 19ºC and device will be switched off after temperature increase above 21ºC. Next switching on of actuating device will be again after temperature decrease below 19ºC.

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

To set hysteresis are used switches SW2 and SW3:

SW2	SW3	Operating description
OFF	OFF	Hysteresis 2ºC / 4ºF
ON	ON	Hysteresis 0.1ºC / 1ºF
OFF	ON	Hysteresis 0.5ºC / 2ºF
ON	OFF	Hysteresis 1ºC / 3ºF

Work mode

Thermostat can work in three modes:

- **A** - Control of device is based only on built-in temperature sensor (**RT**).
- **F** - Control of device is based only on connected external sensor (**FT**).
- **AF** - Device control is based on built-in sensor (**RT**) and connected external sensor (**FT**). Thermostat is trying to keep desired air temperature and simultaneously prevents the floor reaching higher temperature than limit of **FT** temperature (when limit of **FT** temperature is exceeded, actuating device is disabled).

To set work mode of thermostat are used switches SW6 and SW7:

SW6	SW7	Operating description
OFF	OFF	Work mode A
ON	ON	Work mode A
OFF	ON	Work mode AF
ON	OFF	Work mode F

Limit of FT temperature

To set limit of FT temperature in mode AF are used switches SW4 and SW5. When limitation is activated, heating device is priority turned off.

SW4	SW5	Operating description
OFF	OFF	Temp. limit FT 20ºC / 68ºF
ON	ON	Temp. limit FT 20ºC / 68ºF
OFF	ON	Temp. limit FT 28ºC / 82ºF
ON	OFF	Temp. limit FT 40ºC / 104ºF

Range of temperature settings

Depending on application of thermostat, user can use different setting temperature ranges. Thermostat has 3 ranges of temperature settings.

To set range of temperature settings are used switches SW8 and SW9:

SW8	SW9	Operating description
OFF	OFF	Range 5~45ºC / 41~113ºF
ON	ON	Range 5~45ºC / 41~113ºF
OFF	ON	Range 0~80ºC / 32~176ºF
ON	OFF	Range -15~99ºC / 5~212ºF

Errors

On display may appear symbols that signify:

- **Err** - current sensor is not connected or is damaged.

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 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.
- Due to the natural consumption of consumables, some of them are not covered by warranty (for example: cables, battery, loader, micro contacts, buttons).
- In the event of unjustified claim for warranty repair, all additional cost are on customer's side.
- Service has right to refuse to perform warranty repairs for following: differences between documents and goods marks, make repairs on their own by

WARRANTY

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 equal 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.

„INSBUD"
ul. Niepodległości 16a
32-300 Olkusz
Poland
sales department: +48 (32) 626 18 00
sales department: +48 (32) 626 18 18
technical department: +48 (32) 626 18 07
technical department: +48 (32) 626 18 08
fax: +48 (32) 626 18 19
e-mail: insbud@insbud.net