

# ***INTIEL***

## ***THE ELECTRONICS ON YOUR SIDE***

### **Electronic Differential Thermostat** **TD-3**

#### **User's Manual**



## I. Application

The Electronic Differential Thermostat DT-3 is designed to control the operation of the circulation pump and electrical heating elements of the water heater in relation to the temperature difference between the solar panel (fireplace) and the water heater.

## II. Elements for indication, settings and signalization

The main elements for indication, settings and buttons are shown below (see Figure 1)

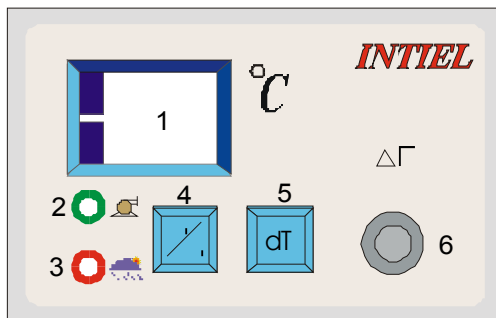


Figure.1

### Indications

|   |   |
|---|---|
| 1 | digital display indication  |
| 2 | indication for a switched on circulation pump   |
| 3 | indication for a low solar panel temperature  |
| 4 | button for switching over the digital display indication between solar panel and water heater temperature |
| 5 | button for indication of the adjusted temperature difference between the solar panel and the water heater |
| 6 | knob for adjusting the temperature difference between the solar panel and the water heater                |

## III. Operation

The Electronic Differential Thermostat DT-3 controls the solar panel (fireplace) and the water heater temperature by means of two sensors. If the temperature difference between them is within the range of 2...20°C (adjusted by means of element 6, see Figure 1) in favor of the solar panel (fireplace), the circulation pump will start working until both temperatures will be equalized. The pump operation is being shown by a light indication marked with “pump” symbol (see position 2 of Figure 1).

When the solar panel temperature is lower than 40 °C, the Differential Thermostat DT-3 will not allow the circulation pump to operate and that state is being shown by a light indication for a low solar panel temperature (position 3 of Figure 1).

When no one button is pressed the digital display shows the solar panel temperature (fireplace) and after pressing the button for switching over the digital display state (position 4 of Figure 1) the water heater temperature will be indicated.

The temperature difference (from 2 °C up to 20 °C) can be fixed by pressing the button for indication of the adjusted temperature difference (position 5 of Figure 1) and by turning the knob for adjusting that temperature difference (position 6 of Figure 1), thus selecting its value from 2 up to 20 °C.

### Technical data

|   |  |
|---|--|
| Supply voltage:                           | 230V/ AC /50Hz                         |
| Maximal rated current of terminals:       | 10A/250V                               |
| Inputs:                                   | 2 temperature sensors LM335            |
| Outputs:                                  | 1 standard relay (changeover contacts) |
| Switch-on difference:                     | ΔT 2...20 °C adjustable                |
| Water temperature that blocks the system: | 40 °C (±2 °C)                          |
| Range of temperature measuring:           | от -40 до +100 °C                      |

#### IV. Installation

The sensors are semi-conductors and polars, type LM335 which can be made longer, taking into account their polarity.

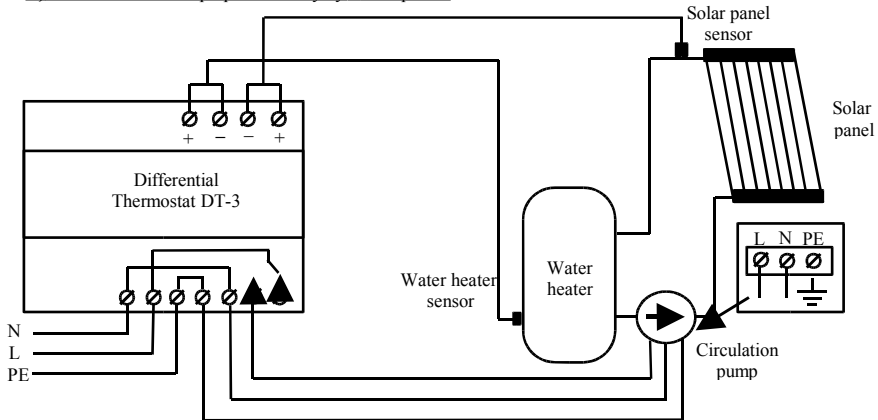
The solar panel sensor has to be mounted in thermal contact with the heated water from the solar panel outlet.

The water heater sensor has to be installed in a thermal contact with the heated water at the lowermost possible place of the water heater to prevent any impact of the water heater heat-exchanger operation. It has not to be installed on the water heater inlet pipe or close to it.

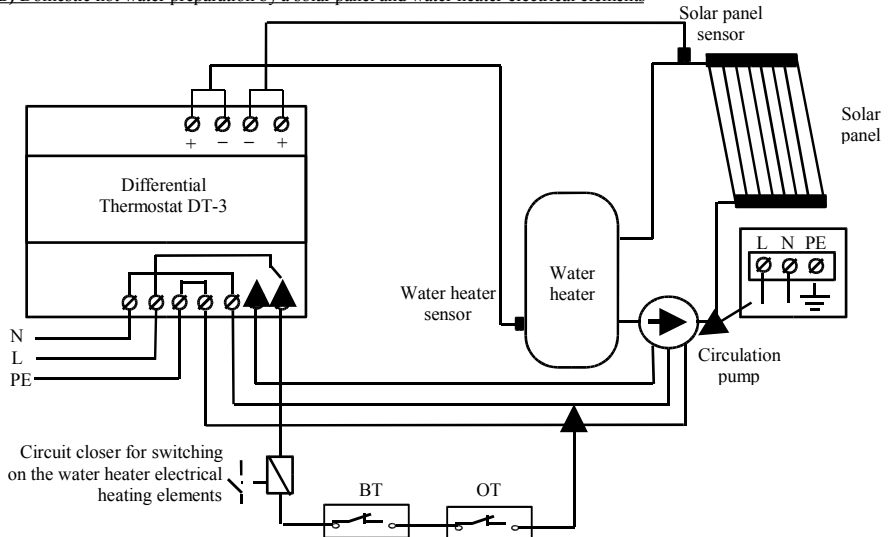
**Attention!** In order to obtain better results with the sensors, place them in immersion pockets. In case you do not have immersion pockets you can install the sensors directly on the pipes, wrapping them with an insulation tape.

#### V. Wiring schemes

##### A) Domestic hot water preparation only by a solar panel



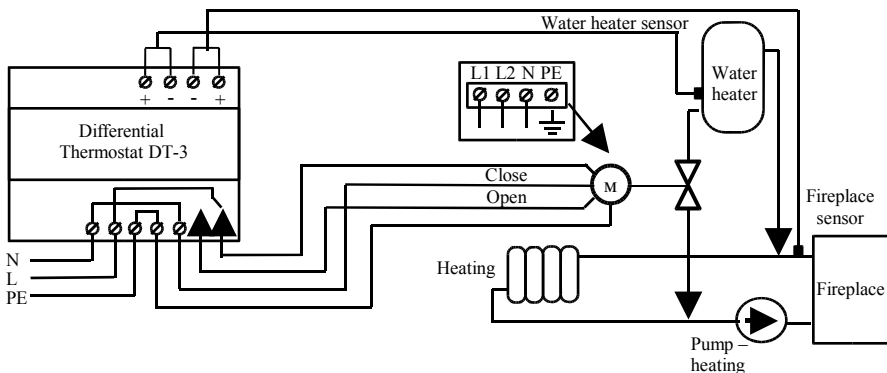
##### B) Domestic hot water preparation by a solar panel and water heater electrical elements



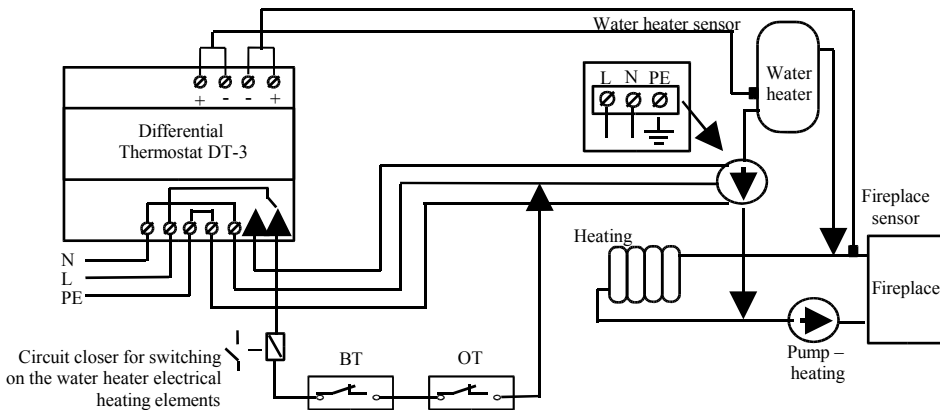
OT – water heater operation thermostat

BT – water heater safety (blocking) thermostat

C) Domestic hot water preparation by a fireplace and a motor actuator “open – close” for the water heater.



D) Domestic hot water preparation by a fireplace and water heater electrical elements.



OT – water heater operation thermostat  
BT – water heater safety (blocking) thermostat

## VI. 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*

### Warranty Card

|   |                              |
|---|------------------------------|
| <b>Manufacturer: INTIEL</b>             |                              |
| <b>Product type</b>                     | Differential Thermostat DT-3 |
| <b>Production number</b>                |                              |
| <b>Production date</b>                  |                              |
| <b>Dealer confirmation</b>              |                              |
| <b>Purchase date</b>                    |                              |
| <b>Invoice number</b>                   |                              |
| <b>Dealer's name, address and stamp</b> |                              |
| <b>Seller's name and signature</b>      |                              |