GUTTER HEATING THERMOSTAT DT230

SIMPLE
RELIABLE
HIGH QUALITY
SAFE
ECONOMICAL

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ELECTRONIC THERMOSTAT FOR GUTTER HEATING

DT230

3 YEARS WARRANTY

- electronic thermostat with a **microcontroller** and a **safety transformer**
- turns on load if $T_{HIGH} > T_{SENSOR} > T_{LOW}$
- temperature control from **15 to 0 °C and from 0 to -15 °C**, fixed hysteresis **0,4 °C**
- relay output **25 A** continuous / 250 V AC
- power supply **85-230 V AC 50/60Hz**
- thermostat has an ON/OFF button and an ALARM output
- DIN rain mounting 2 modules wide

SPECIFICLY DESIGNED FOR:

- Control of de-icing cables in gutters of small buildings
- Prevention of icicle formation in gutters
- Reduction of electric energy consumption used for gutter heating

Electronic thermostat DT230 is specifically designed for gutter heating and icicle prevention of small buildings such as family houses. The thermostat has two knobs by which upper (**T_{HIGH}**) and lower (**T_{LOW}**) temperature limit is set. By turning the knobs, users can set two threshold temperatures, lower **T_{LOW}** (from -15 °C to 0 °C), and upper **T_{HIGH}** (from 0 °C to 15 °C). When the sensor temperature (e.g., ambient air) is between the set limits, e.g., greater than -6 °C (T_{LOW}) and less than + 10 °C (T_{HIGH}), the thermostat will turn on the heating. The thermostat is controlled by a microcontroller, which ensures a high accuracy of ± 1 °C throughout the entire temperature range.

The temperature sensing element is an **NTC temperature sensor** (10 kΩ at 25 °C). The thermostat output is a high-quality **relay** with a **changeover** contact and **25 A / 250 V** ~ continuous current (35A instantaneous) **switching capacity**. The thermostat is powered by universal AC voltage from 85 – 230 V AC (50 or 60 Hz) by an internal safety transformer. The safety transformer enables **electrical isolation of the temperature sensor** from mains power supply, thus offering **increased electrical safety.**

Because of digital filtering the thermostat will work properly even with high electromagnetic interference. This enables the cable of the **NTC temperature sensor** to be positioned nearby to power cables (**length up to 100 m**). If the interference level exceeds the maximum permissible value, the ON/OFF light indicator will flash orange and draw attention to the cause of incorrect sensor positioning.

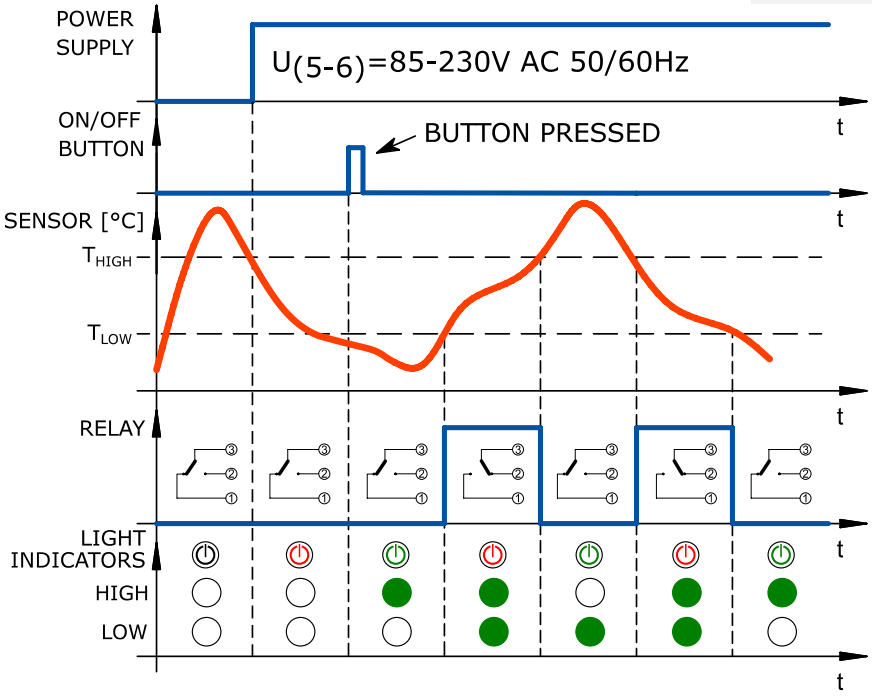
In addition, when the NTC temperature sensor is an open or short circuit (sensor failure) the ALARM light indicator flashes red to warn the user about the error. In both cases, the heating is switched off (contacts 2 and 3 are open).

The width of the thermostat is **2 DIN modules** and is ready for mounting on the **35 mm DIN mounting rail**. All thermostats of DT2xx series have been designed and tested to **withstand voltage surges of more than 4 kV**, which guarantees their long-time reliable, safe and accurate operation.

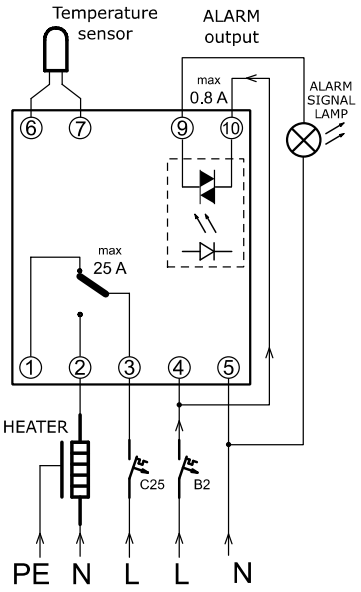
Parameter	Value / Description
Name	DT230
Type of functionality	thermostat for gutter heating
Temperature range	from -15 °C to 0 °C and from 0 °C to +15 °C
Temperature accuracy	± 1 °C
Type of mounting	DIN rail 35 mm (according to EN 60715)
Power supply	85-230 V AC, 50/60 Hz
Power supply connection	4-5
Internal power supply type	galvanically separated SELV safety transformer
Internal power consumption	< 2 VA
Temperature sensor type	NTC thermistor 10 kΩ / 25 °C
Temperature sensor connection	6-7
Device on indicator	ON/OFF button lights GREEN
Load energized indicator	HIGH and LOW indicators light GREEN
Temperature sensor fault detection	ALARM indicator flashes RED, (sensor short circuit or open circuit)

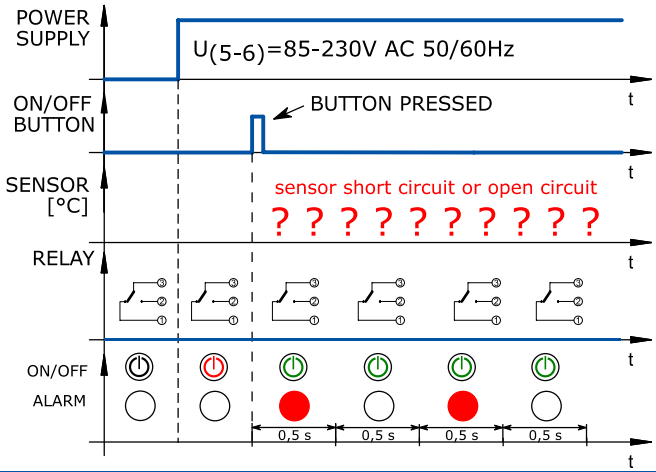
Parameter	Value / Description
Output type	relay
Output relay contacts	SPDT 
Max. continuous load current and breaking voltage	25 A / ~ 250 V / cosφ ≥ 0.8, 25 A / ⎓ 24 V
Relay mechanical durability	10^7 switches
Relay electrical durability	10^5 switches
Maximum ambient temperature	-20 °C to +55 °C
Alarm output connection	9-10
Alarm output type	triac (max 0,8A 250Vac) AC only
Protection degree	IP 40 front board with dial IP 20 connectors
Overvoltage category	III
Pollution degree	2
Dimensions	D= 90.6 mm, W= 35.8 mm, H= 61.4 mm (2 DIN modules)
Connection wire cross section	Relay connection ≤ 4 mm^2 All other connections ≤ 2.5 mm^2
Mass	126 g
Complies with standards	IEC/EN 60730-2-9

OPERATING PRINCIPLE DIAGRAM



DT230 thermostat wiring diagram





When the sensor is faulty (open or short circuit) the **ALARM indicator flashes** RED. Relay contacts (2 and 3) are open and the heating is not turned on.

At the same time the alarm output is active (terminal 9 is connected to terminal 10).

Customers can use the alarm signal to light an auxiliary signal lamp or a buzzer in order to indicate to end users that the heating system is not operating correctly. During the alarm state the output relay is off.

If the users wish to turn off the thermostat, they can simply press the ON/OFF button. When the thermostat if OFF the button lights red. Likewise when the thermostat is ON the button lights green.