# ON/OFF TEMPERATURE CONTROLLER

$C \in$

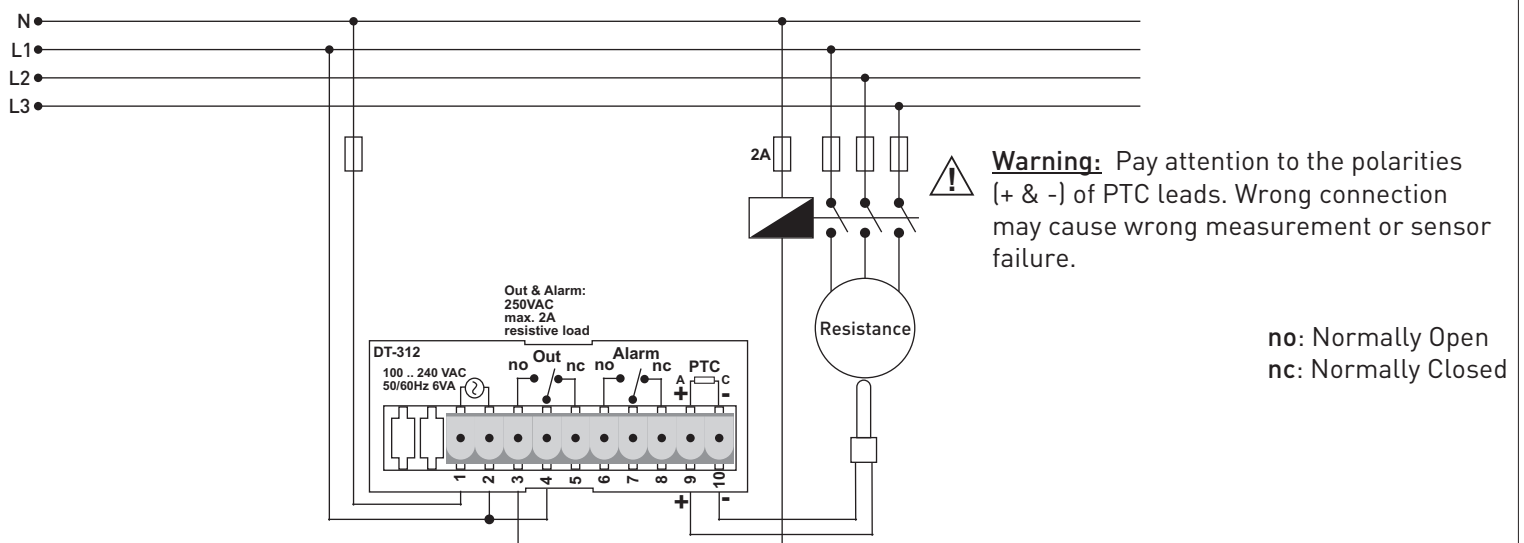## General Specifications

- µP based, temperature controller with HEAT and ALARM outputs
- Sensor type: PTC
- Measuring scale:-19.9 °C.....+99.9 °C
- ON-OFF control form
- OUT and ALARM outputs
- Selectable heating and cooling function
- Upper limit for SET and ALARM settings
- Lower limit for SET and ALARM settings
- Adjustable separate hysteresis for SET and ALARM settings
- Selectable relative, absolute or sensor failure alarm types
- Adjustable delay timer before OUT ON for cooling function
- Adjustable ON/OFF timers for OUT output in case of sensor failure (for both heating and cooling function)
- Input "Offset" feature
- Excellent linearity with °C/Ω look-up tables
- Password protection
- High accuracy
- EEPROM memory to store settings
- Easy connection with plug-in connectors

## ⚠ Warning:

- Use shielded and twisted signal cables and connect shield to ground on device side. Keep all signal cables away from contactors, devices/cables emitting electrical noise, power cables.
- Keep device away from contactors, devices/cables emitting electrical noise, power cables. Take precautions agains environmental conditions like humidity, vibration, pollution and high/low temperature during installation.
- Use fuse (slow 250mA 250VAC) on mains/supply input of the device. Use appropriate cables for mains connections. Apply safety regulations during installation.

## Connection:



**Warning:** Pay attention to the polarities (+ & -) of PTC leads. Wrong connection may cause wrong measurement or sensor failure.

no: Normally Open
nc: Normally Closed

**MADE IN TURKEY**

# Dimensions:
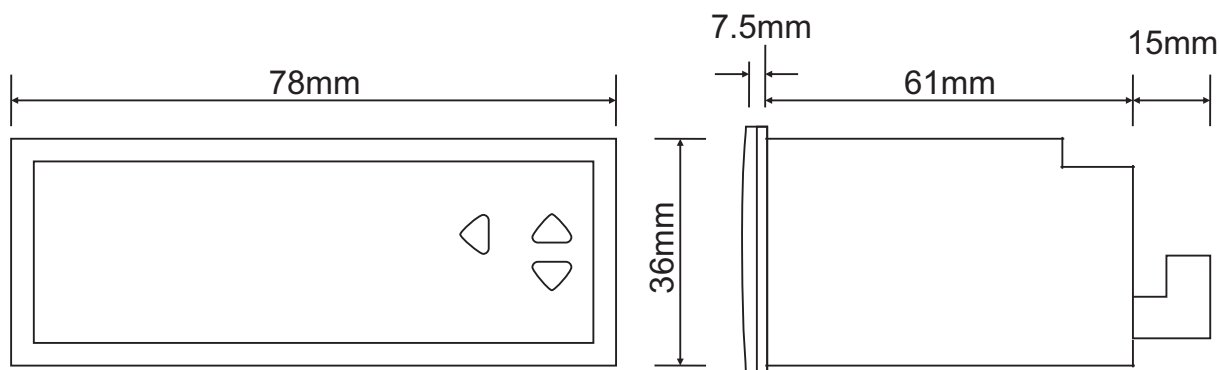


# Technical Specifications:

- **Panel Hole Sizes** : for DT-311 29x71mm
- **Display** : 3 Digits 7 Segment
- **Sensor Type** : PTC
- **Measuring Scale** : -19.9.....+99.9 $^{\circ}$C
- **Resolution** : ±0.1 $^{\circ}$C
- **Accuracy** : ± %1 (Over full scale)
- **Control Form** : ON-OFF
- **Out Output** : Relay (NO + NC), 250VAC, 2A, Resistive Load
- **Alarm Output** : Relay (NO), 250VAC, 2A, Resistive Load
- **Heat SET** : LoL.....UPL $^{\circ}$C (Hst)
- **Alarm SET** : AtP = Abs, -Ab; LoL.....UPL $^{\circ}$C (Ast)
  AtP = rEL, -rL; (HSt+rAL), (HSt-20).....(HSt+20) $^{\circ}$C
- **Heat Hysteresis** : 0.1.....20.0 $^{\circ}$C (Hhs)
- **Alarm Hysteresis** : 0.1.....20.0 $^{\circ}$C (Ahs)
- **Offset** : -19.....+20 $^{\circ}$C (OFS)
- **Function** : H-C; Ht (Heating), CL (Cooling); selectable
- **Suppyle Voltage** : 100....240VAC, 50/60Hz
- **Power Consump.** : < 6VA
- **Operating Temp.** : -20 $^{\circ}$C....55 $^{\circ}$C
- **Operating Altitude** : < 2000m
- **Failure** : In case of sensor failure, measurement out of range or hardware fails, OUT output is first OFF for TOf and then ON for Ton periodically. For continuous OFF, enter TOn=0 & TOf=0. For continuous ON, enter TOn=1 & TOf=0. In case of sensor failure, measurement out of range or hardware fails, and ALARM type is selected as "SnS", ALARM output is always ON, otherwise under normal in scale measurement, always OFF.

Error Message:

- **or** : Displays "or" message in case of sensor failure, measurement out of range or hardware fails.

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# Programming Parameters:

**Press 2 sec.**  [SET] **+** [△]
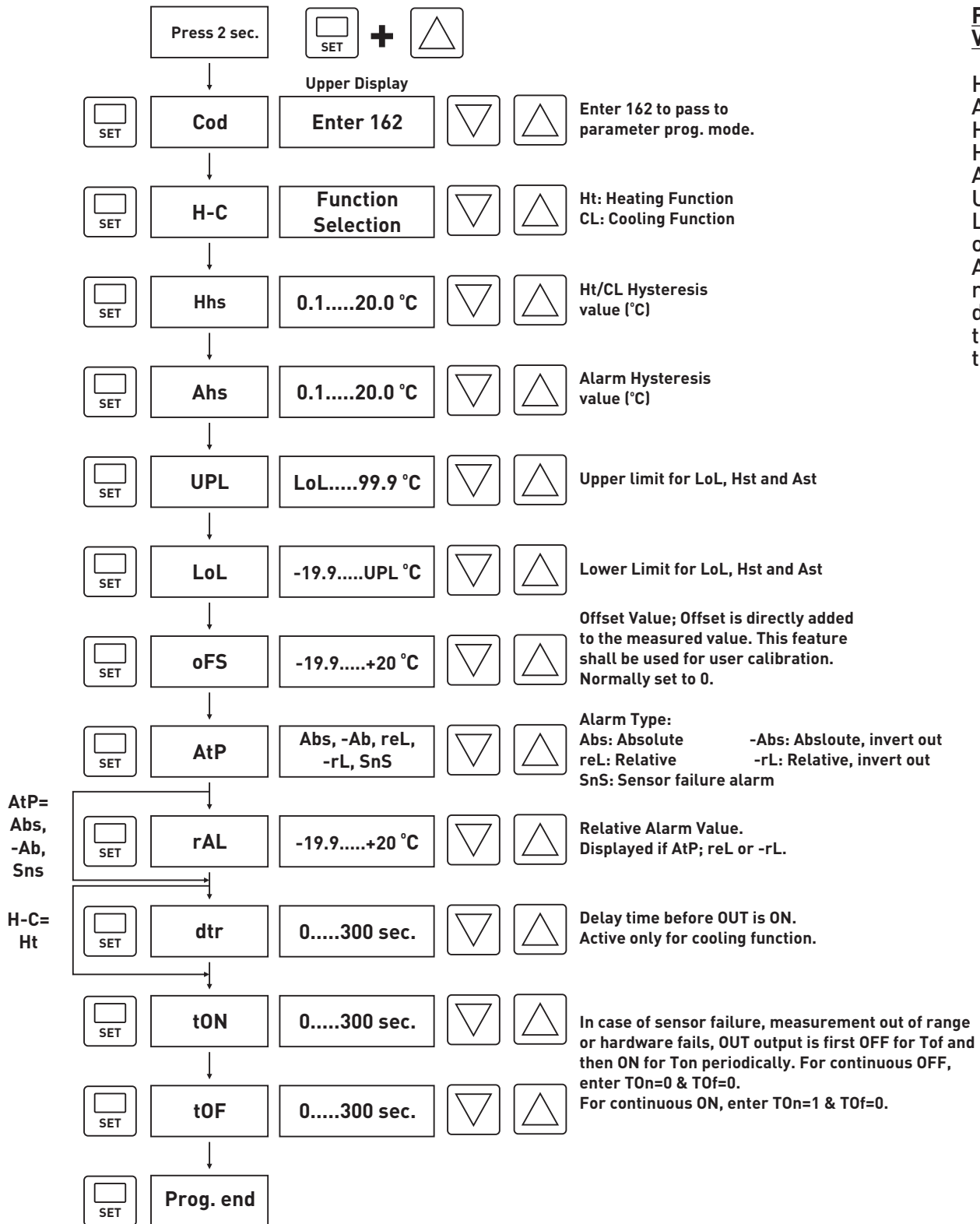
**Factory SET Values:**

HSt: 50.0 °C
ASt: 90.0 °C
H-C: Ht
Hhs: 0.5 °C
Ahs: 0.5 °C
UPL: 99.9 °C
LoL: -19.9 °C
oFFS: 0.0 °C
AtP: Abs
rAL: 0.5 °C
dtr: 25 sec.
tOn: 0
tOF:0

**Upper Display**

| [SET] | Cod | Enter 162 | [▽] [△] | Enter 162 to pass to parameter prog. mode. |

| [SET] | H-C | Function Selection | [▽] [△] | Ht: Heating Function  CL: Cooling Function |

| [SET] | Hhs | 0.1.....20.0 °C | [▽] [△] | Ht/CL Hysteresis value (°C) |

| [SET] | Ahs | 0.1.....20.0 °C | [▽] [△] | Alarm Hysteresis value (°C) |

| [SET] | UPL | LoL.....99.9 °C | [▽] [△] | Upper limit for LoL, Hst and Ast |

| [SET] | LoL | -19.9.....UPL °C | [▽] [△] | Lower Limit for LoL, Hst and Ast |

| [SET] | oFS | -19.9.....+20 °C | [▽] [△] | Offset Value; Offset is directly added to the measured value. This feature shall be used for user calibration. Normally set to 0. |

| [SET] | AtP | Abs, -Ab, reL, -rL, SnS | [▽] [△] | Alarm Type:  Abs: Absolute     -Abs: Absloute, invert out  reL: Relative     -rL: Relative, invert out  SnS: Sensor failure alarm |

**AtP= Abs, -Ab, Sns**

| [SET] | rAL | -19.9.....+20 °C | [▽] [△] | Relative Alarm Value. Displayed if AtP; reL or -rL. |

**H-C= Ht**

| [SET] | dtr | 0.....300 sec. | [▽] [△] | Delay time before OUT is ON. Active only for cooling function. |

| [SET] | tON | 0.....300 sec. | [▽] [△] | In case of sensor failure, measurement out of range or hardware fails, OUT output is first OFF for Tof and then ON for Ton periodically. For continuous OFF, enter TOn=0 & TOf=0. For continuous ON, enter TOn=1 & TOf=0. |

| [SET] | tOF | 0.....300 sec. | [▽] [△] | |

| [SET] | Prog. end | | | |

## Programming Heat SET and Absolute Alarm SET:

```
                        Press 2 sec.    ┌────┐
                                        │    │
                                        └────┘
                                         SET
                            │
                            ▼
                                        Upper Display
        ┌────┐                          ┌──────────────┐  ┌───┐ ┌───┐   Heat SET;
        │    │           HSt            │ LoL .. UPL ℃ │  │ ▽ │ │ △ │   (Process SET) is set LoL.....UPL.
        └────┘                          └──────────────┘  └───┘ └───┘
         SET
                  │
  AtP=   ┌────────┘
  rel,   │       ┌────┐
  -rel,  │       │    │           ASt            ┌──────────────┐  ┌───┐ ┌───┐   Displayed if AtP=abs, -ab.
  SnS    │       └────┘                          │ LoL .. UPL ℃ │  │ ▽ │ │ △ │   Absolute Alarm SET value is set LoL.....UPL.
         │        SET                            └──────────────┘  └───┘ └───┘
         └──────────┐
                    ▼
                Prog. end
```

## ALARM Output:

AtP= Abs, -Ab; X = ASt
AtP= reL, -rL; X = HSt + rAL
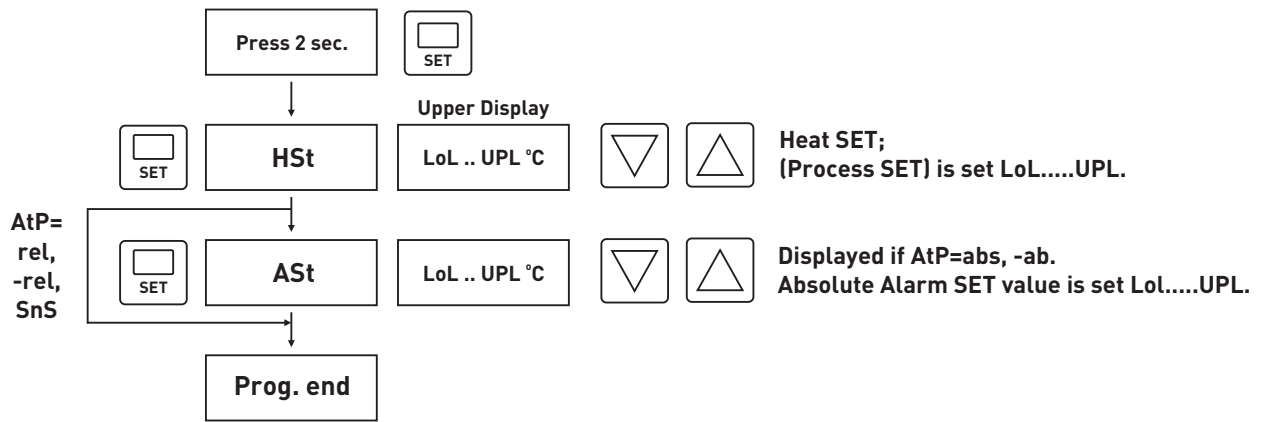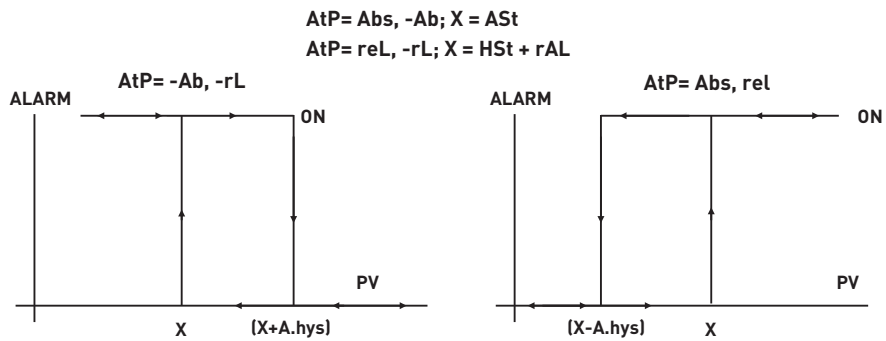


If **Alarm mode (AtP)** is selected as ˝**SnS**˝; in case of sensor failure, measurement out of range or hardware fails (when ˝or˝ is displayed), OUT output is first OFF for Tof and then ON for Ton periodically. For continuous OFF, enter TOn=0 & TOf=0.
For continuous ON, enter TOn=1 & TOf=0.

## ON-OFF Control:



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