GEMO

LT172 / LT172N / LT177 / LT177N ON/OFF TEMPERATURE CONTROLLER

| Attention Risk of Danger, Warning	High Voltage, Risk of Electric Shock	Double / Reinforced Insulation	NOT Litter	CE Mark

TECHNICAL SPECIFICATION

- **Dimensions** : LT172, LT172N; 36x72mm, LT177, LT177N; 35x77mm
- **Panel Cut-out** : LT172, LT172N; 32x67mm, LT177, LT177N; 29x71mm
- **Display** : 3 Digits 7 Segment
- **Sensor Type** : NTC
- **Measuring Scale** : -30 .. 150 ºC (LT172 / LT177), or -19,9 .. 99,9 ºC (LT172N / LT177N)
- **SET interval** : LoL .. UPL ºC (HSt)
- **Hysteresis Interval** : 1 .. 20 ºC (LT172 / LT177), veya
  0,1 .. 20,0 ºC (LT172N / LT177N); (Ahs, Hhs)
- **Alarm interval** : AtP = Abs, -Ab; LoL .. UPL ºC (ASt)
  AtP = rEL,-rL; (HSt+rAL) , (HSt-20)..(HSt+20) ºC
- **Offset** : -20 .. 20 ºC (LT172 / LT177), or -19,9 .. 20,0 ºC (LT172N / LT177N)
- **Resolution** : ± 1 ºC (LT172 / LT177), or ± 0,1 ºC (LT172N / LT177N)
- **Accuracy** : ± 3 % (Over full scale)
- **Control Form** : ON-OFF
- **Heating / Cooling** : H-C; Ht (heating), CL (cooling); selectable
- **Out Output** : Relay (NO), 250VAC, 2A, Resistive load
- **Alarm Output** : Relay (NO), 250VAC, 2A, Resistive load
- **Sensor 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.
- **Supply Voltage** : 100..240VAC, 50-60Hz - or
  (optional 12 / 24VDC - no isolation - for LT172, LT172N), or
  (optional 24VDC/AC; max. isolation voltage 40VAC)
- **Power Consumption** : < 6VA
- **Humidity** : < 70% (non-condensing)
- **Altitude** : < 2000 m
- **EMC** : EN 61000-6-1, EN 61000-6-3 (Only light industrial environment)
- **Safety** : EN 61010-1; Pollution degree 2, measurement category II
  (Only light industrial environment, double/reinforced isolated)
- **Protection Class** : IP20; according to EN 60529
- **Operation Temp.** : 0 .. 50 ºC
- **Storage Temperature** : -10ºC .. 60ºC (no icing)
- **Weight** : < 0.5 kg
- **Keys** : Micro switch
- **Torque for screwing** : Max. 0.5 N.m

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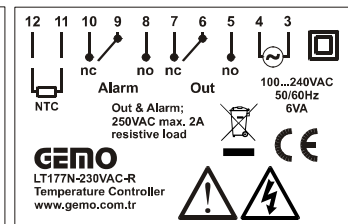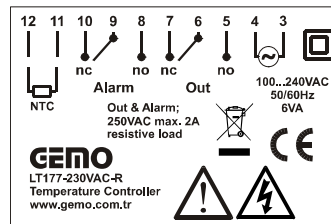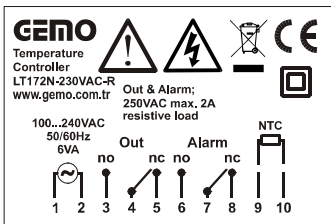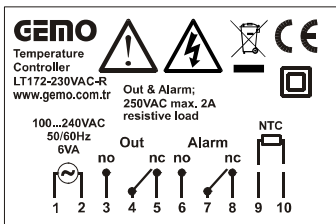
INSTALLATION, USE and WARNINGS

- This device and its packing is NOT litter and may NOT be disposed of with domestic waste. Please return this device and its packing to an appropriate recycling point at the end of its service life.
- Please read this user manual carefully and completely before installation and use. Please take into consideration all warnings mentioned in this manual.
- LT172, LT172N, LT177, LT177N are suitable only for permanent panel type mounting
- Installation and use of this device must be done by qualified, authorized and trained technical personnel only.
- Inspect device carefully before installation. Do not install and use broken and defective devices.
- Do not disassemble device. Do not make any repair on any part of the device. There is no accessible part inside the device. Please contact to manufacturer for broken and defective devices.
- Do not use device in environments subject to flammable, explosive and corrosive gases and/or substances.
- This device is designed for applications only in light industrial environments. This device is not suitable for medical and residential use. This device is not suitable for use related with human health and safety. This device is not suitable for automotive, military and marine use.
- Do not allow children and unauthorized people to use this device.
- Before installation and any technical work, disconnect the power supply and mains connections.
- Check the power supply voltage level before power on, and make sure voltage level is in specified limits. Check quality of neutral line. Improper neutral line may give permanent damage to the device.
- Connect an external power switch and an external fuse (1A, 250VAC) to the power supply line that are easily accessible for rapid intervention. Connect an external fuse (2A, 250VAC) for each relay output separately.
- Use appropriate cables for power supply and mains connections. Apply safety regulations during installation.
- Install the device in a well ventilated place. Install the device permanently into a proper panel cut-out. Fix the device with two fasteners supplied with the device. Only front panel must be accessible after installation is completed.
- Do not operate the device other then the environmental conditions given in Technical Specification.
- Do not operate the device in environments that may cause conductive pollution.
- Take precautions against negative environmental conditions like humidity, vibration, pollution and high/low temperature during installation.
- Keep device, signal cables and communication cables away from circuit breakers, power cables and devices/cables emitting electrical noise. Use shielded and twisted signal and communication cables and connect shield to earth ground on device side. Keep length of signal and communication cables less than 3m.
- In your applications, always use separate and independent mechanical and/or electromechanical devices/apparatus to support LT172, LT172N, LT177, LT177N to handle emergency cases..
- Use insulated cable end-sleeves at the end of cables screwed to the device connector terminals.
- Maximum torque for screwing; 0.5 N.m.
- Please check www.gemo.com.tr for latest device and documentation updates regularly. All updates and all information are subject to change without notice.

GENERAL SPECIFICATION

- This device is designed for basic temperature control applications only in light industrial environments.
- µP based, digital temperature controller with control and alarm output
- Sensor: NTC
- ON-OFF control form
- Outputs: Out and Alarm
- Heating and Cooling Function
- Adjustable delay timer before OUT ON for cooling function
- Adjustable Hysteresis Value
- Adjustable Upper and Lower Limit for SET and Alarm Value
- Offset feature
- Password Protection
- Displays SET and PROCESS values
- Excellent linearity with $^{\circ}$C/Ohm look-up table
- High accuracy
- EEPROM memory to store settings
- Easy connection with plug-in connectors

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PROGRAMMING HEAT SET VE ABSOLUTE ALARM SET

Press 2 sec. **SET**

SET | **HSt** | Display: **LoL .. UPL °C** △ ▽ | Heat SET, (Proses SET) is set LoL...UPL.

AtP = rel, -rel SnS

SET | **ASt** | **LoL .. UPL°C** △ ▽ | Displayed if AtP=abs, -ab. Absolute Alarm SET value is set LoL...UPL.

Prog. end
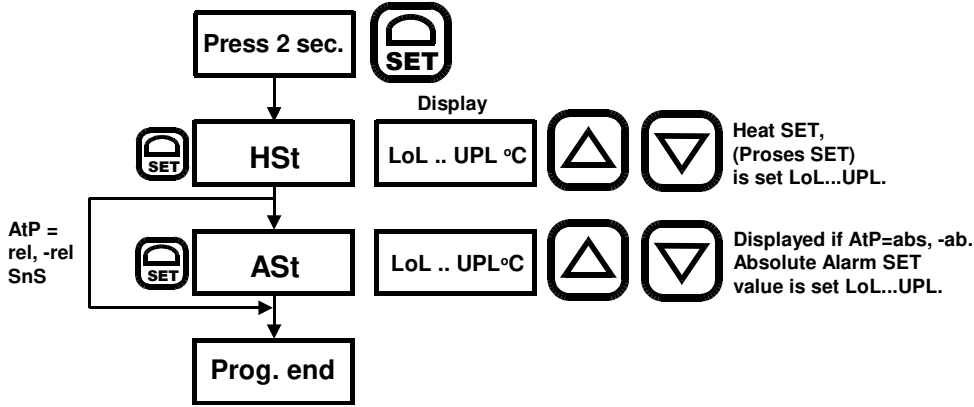
PROGRAMMING OTHER PARAMETERS

Press for 2 sec. **SET** + △

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** | **1 .. 20°C / 0,1 .. 20,0°C** ▽ △ | Ht/CL Hysteresis value. (°C)

SET | **Ahs** | **1 .. 20°C / 0,1 .. 20,0°C** ▽ △ | Alarm Hysteresis value (°C)

SET | **UPL** | **LoL .. 150 °C / LoL .. 99,9 °C** ▽ △ | Upper limit for LoL, HSt and ASt.

SET | **LoL** | **-30 .. UPL °C / -19,9 .. UPL °C** ▽ △ | Lower limit for Up.L, HSt and ASt.

SET | **oFS** | **-20 .. +20 °C / -19,9 .. +20,0 °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 **-Ab:** Absolute, invert out **reL:** Relative **-rL:** Relative, invert out **SnS:** Sensor failure alarm.

AtP= Abs,-Ab,SnS

SET | **rAL** | **-20 .. +20 °C / -19,9 .. +20,0 °C** ▽ △ | Relative Alarm Value. Displayed if AtP is 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** ▽ △ |

Prog. end

Factory SET Values:
HSt: 50 °C / 30,0 °C
ASt: 100 °C / 80,0 °C
H-C : Ht
Hhs: 3 °C / 0,5 °C
Ahs: 3 °C / 0,5 °C
UPL: 150 °C / 99,9 °C
LoL: -30 °C / -19,9 °C
oFS: 0 °C / 0,0 °C
AtP : Abs
rAL: 3 °C / 0,5 °C
dtr: 25 sn
tOn: 0
tOF: 0

OPERATION; ALARM OUTPUT

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

ALARM   AtP= -Ab, -rL
ON

PV

X   (X+A.hys)

ALARM   AtP=Abs, rel
ON

PV

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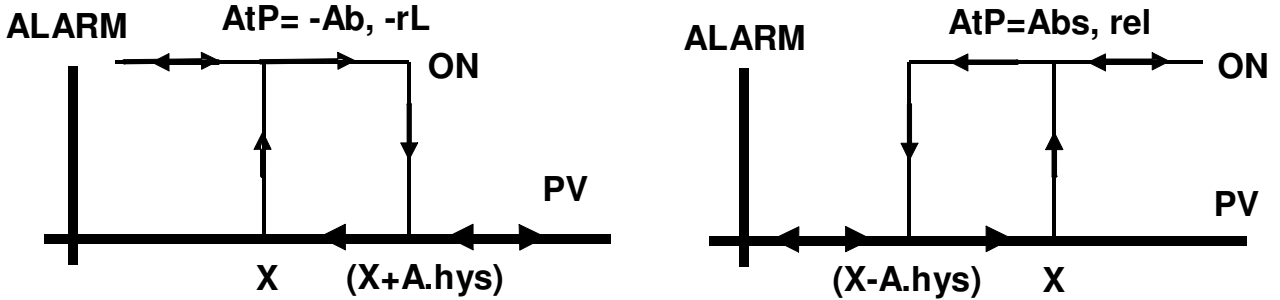
If Alarm mode (AtP) is selected as **"SnS"**; in case of sensor failure, measurement out of range or hardware fails (when "or" is displayed), OUT output is first OFF for TOf and then ON for Ton periodically. For continuous OFF, enter TOn=0 & TOf=0. For continuous ON, enter TOn=1 & TOf=0.

OPERATION; ON / OFF CONTROL

COOLING   OUT   HEATING
ON   ON

PV

HSt   (HSt + Hhs)   (HSt - Hhs)   HSt
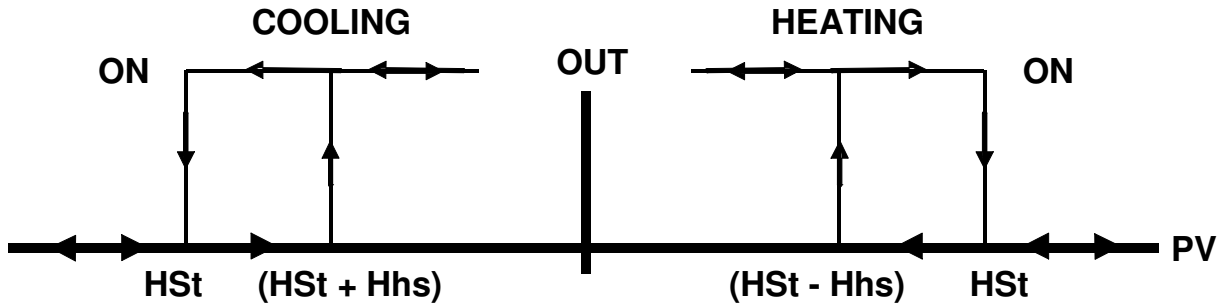
Heating Function: OUT relay is OFF when process value (PV) is greater then or equal to SET value. OUT relay is ON when PV is less then or equal to (SET-Hhs) value.

Cooling Function: OUT relay is OFF when process value (PV) is less then or equal to SET value. OUT relay is ON when PV is greater then or equal to (SET-Hhs) value.

ERROR MESSAGE

or: Displays "or" message in case of sensor failure, measurement out of range or hardware fails to measure input signal.

CLAEANING

Do not use any solvents (alcohol, thinners, benzine, acid, etc.) or corrosive substances to clean the device. Use only a dry and clean non-abrasive cloth. Before cleaning, disconnect the power supply and mains connections.