

# ELTH17

## DIGITAL TEMPERATURE CONTROLLER



### OPERATING INSTRUCTIONS

Vr. 03 (ENG) - cod.: ISTR ELTH17EN-08103

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#### FOREWORD

This manual contains the information necessary for the product to be installed correctly and also instructions for its maintenance and use; we therefore recommend that the utmost attention is paid to the following instructions.

Though this manual has been issued with the greatest care, EL.CO. S.r.l. will not take any responsibility deriving from its use.

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#### 1 - INSTRUMENT DESCRIPTION

##### 1.1 - GENERAL DESCRIPTION

ELTH17 is a digital temperature controller with ON/OFF control mode. The instrument has one relay output and one input for NTC temperature probes that. The instrument is equipped with 2 programme keys, a 2-digit display.

##### 1.2 - FRONT PANEL DESCRIPTION



**1 – Key “ + ”:** It's used for set point programming, for parameters' selection and for changing values to set.

**2 – Key “ - ”:** It's used for set point programming, for entering programming and to save operating parameters.

**3 - Led L1 :** It indicates the negative temperature value.

**4 - Led OUT1 :** It indicates input in the mode of parameters' modification, more other it indicates output state ,on / off .

#### 2 - PROGRAMMING

##### 2.1 - PROGRAMMING OF THE SET POINT

Press “ + ” or “ - ” button then release it and the display will show the programmed value and it will flash in order to indicate that we are programming set point.

To modify it, use the button “ + ” to increase or “ - ” to decrease the value.

These buttons work with one digit steps but if you keep them pressed more than one second the value increases or decreases in a quick way.

Exit from the Set programming mode happens automatically without pressing any button for round about 5 seconds, then the display will go back to the normal operating mode.

The maximum value of set point that we can code, depends if we use instrument's or external probe and on minimum or maximum programmed differential.

Instrument's probe: min.-20°.....max +65°C

External probe: min.-35°....max+98°C

Maximum programmable value=set point + positive differential

Minimum programmable value=set point - negative differential

Example: with 5°C positive differential, the maximum programmable set-point will be of 60°C with probe on instrument and 93°C with external probe.

With 5°C negative differential, the minimum programmable set-point will be of -15°C with probe on instrument and -30°C with external probe.

## 2.2 - PARAMETERS PROGRAMMING

To enter the working parameters of instrument, we need to press “+” and “-” buttons simultaneously and to keep them pressed for 5 seconds, after whom the display will visualize the code that identify the first parameter and with “+” button will be possible to select the parameter that we intend to modify.

Once we have selected the wished parameter, press “-” button, “out1” led will light up and the display will visualize parameter's code and its setting can be modified by “+” button.

Once the wished value is programmed, press “-” button: the new value will be saved and the display will visualize once again the code of the selected parameter and “out1” led will turn off.

Working on “+” button then, it will be possible to select another parameter and modify it as described above.

To exit the programming mode keep “+” and “-” buttons pressed simultaneously for 3 sec. till to exit the way of programming. During the set-point programming (flashing display) we can not enter parameters' programming.

## 3 - INFORMATION ON INSTALLATION AND USE

### 3.1 - PERMITTED USE

The instrument CANNOT be used in dangerous environments (flammable or explosive) without adequate protection. The installer must ensure that EMC rules are respected, also after the instrument installation, if necessary using proper filters. Whenever a failure or a malfunction of the device may cause dangerous situations for persons, thing or animals, please remember that the plant has to be equipped with additional devices which will guarantee safety.

### 3.2 - MECHANICAL MOUNTING

The instrument, in case 1 DIN Modules, is designed for mounting on DIN OMEGA rail.

Avoid placing the instrument in environments with very high humidity levels or dirt that may create condensation or introduction of conductive substances into the instrument.

Ensure adequate ventilation to the instrument and avoid installation in containers that house devices which may overheat or which may cause the instrument to function at a higher temperature than the one permitted and declared.

Connect the instrument as far away as possible from sources of electromagnetic disturbances such as motors, power relays, relays, solenoid valves, etc.

### 3.3 - ELECTRICAL CONNECTION

Carry out the electrical wiring by connecting only one wire to each terminal, according to the following diagram, checking that the power supply is the same as that indicated on the instrument and that the load current absorption is no higher than the maximum electricity current permitted.

As the instrument is built-in equipment with permanent connection inside housing, it is not equipped with either switches or internal devices to protect against overload of current: the installation will include an overload protection and a two-phase circuit-breaker, placed as near as possible to the instrument, and located in a

position that can easily be reached by the user and marked as instrument disconnecting device which interrupts the power supply to the equipment.

It is also recommended that the supply of all the electrical circuits connected to the instrument must be protect properly, using devices (ex. fuses) proportionate to the circulating currents.

It is strongly recommended that cables with proper insulation, according to the working voltages and temperatures, be used.

Furthermore, the input cable of the probe has to be kept separate from line voltage wiring. If the input cable of the probe is screened, it has to be connected to the ground with only one side.

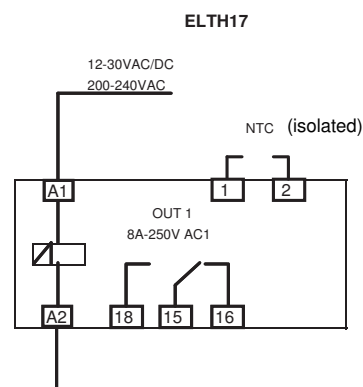
For the power supply it's recommended to use an external transformer TRE, or with equivalent features, and to use only one transformer for each instrument because there is no insulation between supply and input. **For the probe it is recommended to use an isolated NTC.**

We recommend that a check should be made that the parameters are those desired and that the application functions correctly before connecting the outputs to the actuators so as to avoid malfunctioning that may cause irregularities in the plant that could cause damage to people, things or animals.

**EL.CO. S.r.l. and its legal representatives do not assume any responsibility for any damage to people, things or animals deriving from violation, wrong or improper use or in any case not in compliance with the instrument's features.**

## 3.4 - ELECTRICAL WIRING DIAGRAM

**PS. The neutral must always be connected to terminal A2**



## 4 - FUNCTIONS

### 4.1 - MEASURING AND VISUALIZATION

The instrument only works with a NTC probe( 10K 25°C)

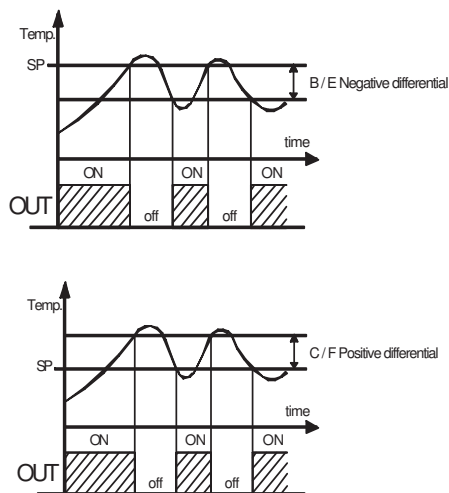
Through “A” parameter is possible to choice whether working with the probe on the instrument or with an external probe ( AI : instrument one– AE : external one).

If during the setting of parameters we switch from external probe “AE” to the instrument's one “AI”, it's necessary to programme set-point once again, seeing that the working temperature range changes depending on the way of using the probe. The instrument allows the measure's calibration, which can be used in order to adjust the device once again by “H” par, on the basis of application necessities.

PS. Wait 3 minutes before checking the correct measurement of temperature.

### 4.2 - TEMPERATURE CONTROL

The regulating mode of instrument is ON/OFF type and it works on OUT output depending on the probe's measure, on the Set Point and on the negative “B” or positive “C” operating differential.



When it occurs an error for short circuit or interruption of the probe, the device is going to deactivate the output and the display will flash visualizing two dashes “ - - ”.

Through “ D ” parameter we can regulate, operating mode of output relay till reaching set point : OFF “ D1 ” o ON “ D2 ” .

## 5 - PROGRAMMABLE PARAMETERS TABLE

Here below is a description of all the parameters available on the instrument.

Par.	Descrizione	Range	Def.	Note
1	<b>A</b> Probe range I : On the instrument E : Outside	-20....+65 °C -35....+98 °C	I	
2	<b>B</b> Negative differential	0 – 9 °C	0	
3	<b>C</b> Positive differential	0 – 9 °C	0	
4	<b>D</b> Output relay operation D1=OFF / D2=ON	D1 D2	D1	
5	<b>H</b> Probe calibration	-5.....+5 °C	0 °C	

## 6 - PROBLEMS, MAINTENANCE AND GUARANTEE

### 6.1 - SIGNALLING

#### Error Signalling:

Error	Reason	Action
- - -	The probe may be interrupted or in short circuit, or may measure a value outside the range allowed	Check the correct connection of the probe with the instrument and check the probe works correctly

In probe error status, the output will be off.

### 6.2 - CLEANING

We recommend cleaning of the instrument with a slightly wet cloth using water and not abrasive cleaners or solvents which may damage the instrument.

### 6.3 - GUARANTEE AND REPAIRS

The instrument is under warranty against manufacturing flaws or faulty material, that are found within 12 months from delivery date. The guarantee is limited to repairs or to the replacement of the instrument.

The eventual opening of the housing, the violation of the instrument or the improper use and installation of the product will bring about the immediate withdrawal of the warranty's effects.

In the event of a faulty instrument, either within the period of warranty, or further to its expiry, please contact our sales department to obtain authorisation for sending the instrument to our company.

The faulty product must be shipped to EL.CO. with a detailed description of the faults found, without any fees or charge for EL.CO., except in the event of alternative agreements.

## 7 - TECHNICAL DATA

### 7.1 - ELECTRICAL DATA

Power supply: 24 VAC/VDC, 200..240VAC +/- 10%

Frequency AC: 50/60 Hz

Input/s: 1 input for isolated temperature probes NTC (103AT-2, 10KΩ @ 25 °C)

Output/s: 1 relay output SPDT 8A-AC1 (10A max. current switching),  
2A – AC15 25 °C

Electrical life for relay outputs: 100.000 op. ( AC1 nominal load)

### 7.2 - MECHANICAL DATA

Housing: Self-extinguishing plastic, UL 94 V0

Dimensions: 1Din module, depth 64mm

Mounting: Enclosure on DIN OMEGA rail

Connections: 2,5 mm<sup>2</sup> screw terminals block

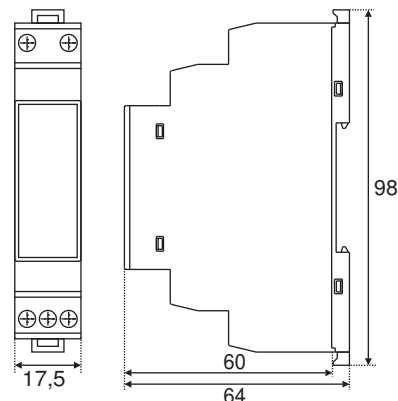
Degree of front panel protection : IP 20

Operating temperature: 0 ... 65 °C

Operating humidity: 30 ... 95 RH% without condensation

Storage temperature: -10 ... +65 °C

### 7.3 – MECHANICAL DIMENSIONS, PANEL CUT-OUT AND MOUNTING [mm]



### 7.4 - FUNCTIONAL FEATURES

Temperature Control: ON/OFF mode

Measurement range NTC probe : -20....+65 °C probe on the instrument / -34....+98 °C outside probe

Display resolution: 1 °C

Overall accuracy: +/- 0,5 % fs

Sampling rate: 12 samples per second

Display: 2Digit Red h 12 mm

Compliance: ECC directive EMC 89/336 (EN 61326), ECC directive LV 73/23 and 93/68 (EN 61010-1)

### 7.5 - INSTRUMENT ORDERING CODE

**ELTH17 a b cc d**

#### **a : POWER SUPPLY**

**240** = 200..240 VAC

**24** = 24 VAC/VDC

#### **b : OUTPUT OUT TYPE**

**R** = Relay SPDT 8A-AC1

#### **cc : SPECIAL CODES**

#### **d : SPECIAL VERSIONS**