TLV 10

MICROPROCESSOR-BASED DIGITAL ELECTRONIC THERMOMETER

OPERATING INSTRUCTIONS

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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 and to save it.

TECNOLOGIC S.p.A. reserves the right to make any formal or functional changes at any moment and without any notice.

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.

Tecnologic S.p.A. 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.

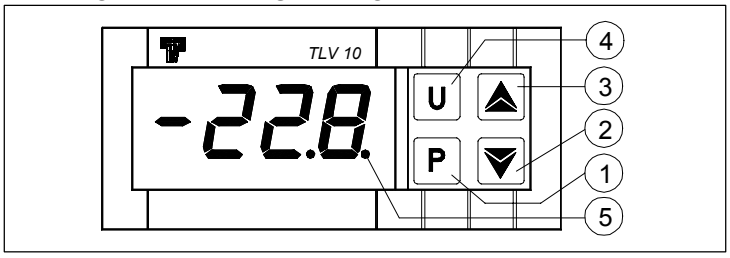
INDICE

1 - INSTRUMENT DESCRIPTION

1.1 - GENERAL DESCRIPTION

TLV 10 is a digital microprocessor based thermometer. The instrument has one input for PTC or NTC temperature probes that can be configured. The instrument is equipped with 4 programme keys and a 4-digit display. Other important characteristics of the instrument are: programme parameters protection using personalised password, configuration of parameters via the KEY 01 device and the possibility of power supply in the range 100 ... 240 VAC.

1.2 - FRONT PANEL DESCRIPTION



1 - Key P : Used for programming the function parameters
2 - Key DOWN : Used for decreasing the values to be set and for selecting the parameters.
3 - Key UP : Used for increasing the value to be set and for selecting the parameters.
4 - Key U : In the "hidden" parameter programming mode it's used to modify the visibility of the parameters (see par. 2.3).
5 - Led SET : Indicates the input in programming mode and the programming level of the parameters.

2 - PROGRAMMING

2.1 - PARAMETERS PROGRAMMING

To access the instrument's function parameters, press the key **P** and keep it pressed for about 5 seconds, after which the SET led will light up, the display will visualised the code that identifies the first parameter.

Using the UP and DOWN keys, the desired parameter can be selected and pressing the P key, the display will alternately show the parameter code and its setting that can be changed with the UP and DOWN keys.

Once the desired value has been set, press the key P again: the new value will be memorised and the display will show only the code of the selected parameter.
Pressing the UP and DOWN keys, it is possible to select another parameter and change it as described.
To exit the programming mode, do not press any key for about 20 seconds, or keep the UP or DOWN key pressed until it exits the programming mode.

2.2 - PARAMETER PROTECTION USING THE PASSWORD

The instrument has a parameter protection function using a password that can be personalised, through the **"PASS"** parameter.
If one wishes to have this protection, set the password number desired in the parameter "PASS".
When the protection is working, press the P key to access the parameters and keep it press for about 5 seconds, after which the LED SET will flash and the display will show "0" .
At this point, using the UP and DOWN keys, set the password number programmed and press the key "P".
If the password is correct, the display will visualise the code that identifies the first parameter and it will be possible to programme the instrument in the same ways described in the previous section.
Protection using a password can be disabled by setting the parameter "PASS" = OFF.

2.3 - PARAMETERS PROGRAMMING LEVELS

The instrument has two parameter programming levels.
The first level ("visible" parameters) is accessed according to the procedure described above (with or without password request) while the second level ("hidden" password) can be accessed according to the following procedure.
Remove the power supply to the instrument, press the key P and return power to the instrument, keeping the key pressed.
After about 5 sec. the SET led will light up, the display will show the code that identifies the first parameter and it will be possible to set the parameters of the instrument using the same programming procedure described previously.
Once the parameter has been selected and the SET is on, it means that the parameter can be programmed even on the first level ("visible").
If the LED is off it means that the parameter can only be programmed on this level (i.e. "hidden").
To change the visibility of the parameter, press the key U: the led SET will change status, indicating the accessibility level of the parameter (on = parameter "visible"; off = parameter "hidden").
The access procedure for "hidden" parameters allows the "PASS" parameter to be checked and changed, and is useful therefore if the password set has been forgotten.

3 - INFORMATION ON INSTALLATION AND USE

3.1 - PERMITTED USE

The instrument has been projected and manufactured as a measuring and control device to be used according to EN61010-1 for the altitudes operation until 2000 ms. The use of the instrument for applications not expressly permitted by the above mentioned rule must adopt all the necessary protective measures. 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.

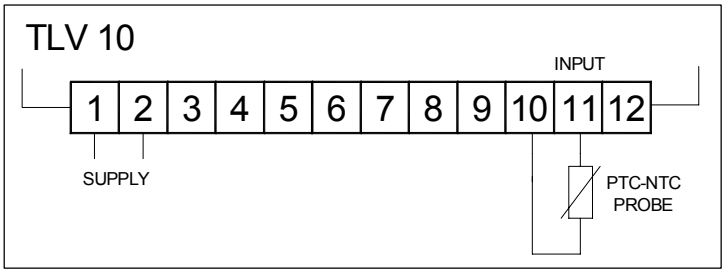
3.2 - MECHANICAL MOUNTING

The instrument, in case 33 x 75 mm, is designed for flush-in panel mounting. Make a hole 29 x 71 mm and insert the instrument, fixing it with the provided special bracket. We recommend that the gasket is mounted in order to obtain the front protection degree as declared. 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. Whether the instrument is 12 V version it's recommended to use an external transformer TCTR, or with equivalent features, and to use only one transformer for each instrument because there is no insulation between supply and input. 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.

3.4 - ELECTRICAL WIRING DIAGRAM



4 - FUNCTIONS

4.1 - MEASURING AND VISUALIZATION

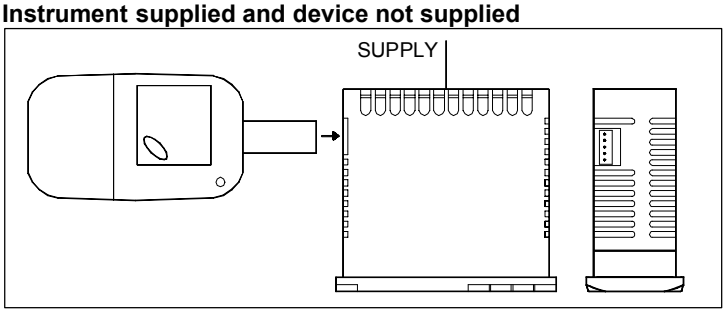
Via the parameter **"SEnS"** it is possible to select the type of probes that one wishes to use and which can be: thermistores PTC KTY81-121 (Ptc) or NTC 103AT-2 (ntc).
Once the type of probe used has been selected, through the parameter **"Unit",** it is possible to select the temperature unit of measurement (°C or °F) and, through the parameter **"dP"**, the resolution of the desired measurement (OFF=1°; On =0,1°).
The instrument allows the measuring to be calibrated, that can be used for re-calibrating the instrument according to application needs, through the parameters **"OFS"**.
Using the parameter **"FiL",** it is possible to set the time constant for the software filter for measuring the input values to be able to reduce the sensitivity to measurement disturbances (increasing the time).

4.2 - PARAMETERS CONFIGURATION BY "KEY01"

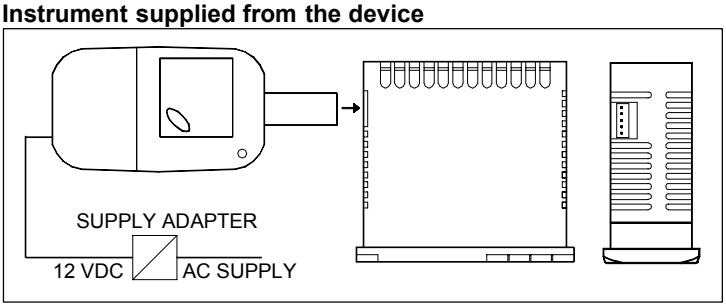
The instrument is equipped with a connector that allows the transfer from and toward the instrument of the functioning

parameters through the device **TECNOLOGIC KEY01** with **5 poles** connector.
This device it's mainly useable for the serial programming of the instruments which need to have the same parameters configuration or to keep a copy of the programming of an instrument and allow its rapid retransmission.
To use the device KEY01 it's necessary that the device or instrument are being supplied.

Instrument supplied and device not supplied



Instrument supplied from the device



For additional info, please have a look at the KEY01 instruction manual.

5 - PROGRAMMABLE PARAMETERS TABLE

Par.		Description	Range	Def.	Note
1	**SEnS**	Probe Type	Ptc - ntc	ntc	
2	**OFS**	Probe Calibration	-30.0 ÷ 30.0 °C/°F	0.0	
3	**Unit**	Unit of measurement	°C - °F	°C	
4	**dP**	Decimal point	On - OFF	On	
5	**FiL**	Measurement filter	OFF ÷ 20.0 sec	2.0	
6	**PASS**	Access Password to parameter functions	OFF ÷ 9999	OFF	

6 - PROBLEMS, MAINTENANCE AND GUARANTEE

6.1 - SIGNALLING

Error Signalling:

Error	Reason	Action
E1 **-E1**	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
EEPr	Internal memory error	Check and if necessary re-programme the parameters function.

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 TECNOLOGIC with a detailed description of the faults found, without any fees or charge for Tecnologic, except in the event of alternative agreements.

7 - TECHNICAL DATA

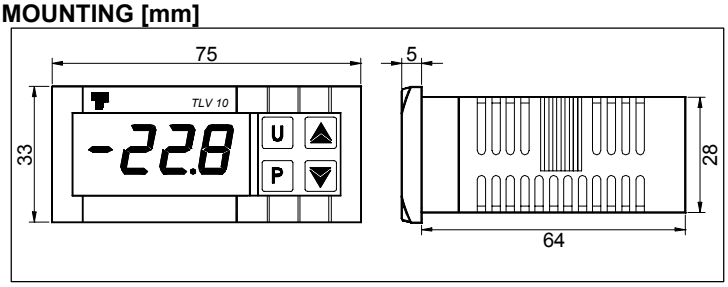
7.1 - ELECTRICAL DATA

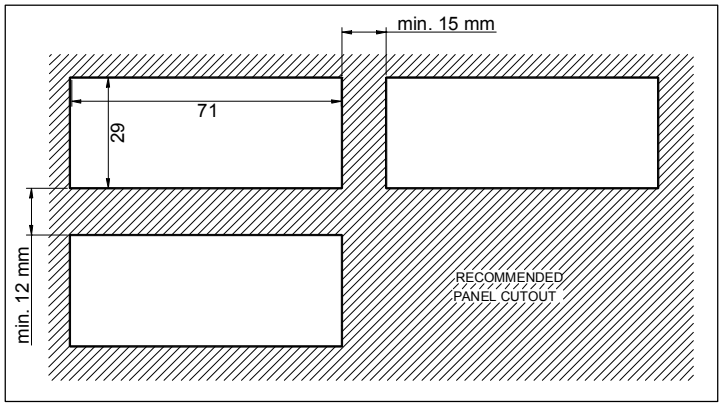
Power supply: 12 VAC/VDC, 24 VAC/VDC, 100..240 VAC +/- 10%
Frequency AC: 50/60 Hz
Power consumption: 3 VA approx.
Input/s: 1 input for temperature probes: PTC (KTY 81-121, 990 Ω @ 25 °C) or NTC (103AT-2, 10KΩ @ 25 °C)
Installation category: II
Measurement category: I
Protection class against electric shock: Class II for Front panel
Insulation: Reinforced insulation between the low voltage part (supply) and front panel; Reinforced insulation between the low voltage section (supply) and the extra low voltage section (input); No insulation between supply F type and input.

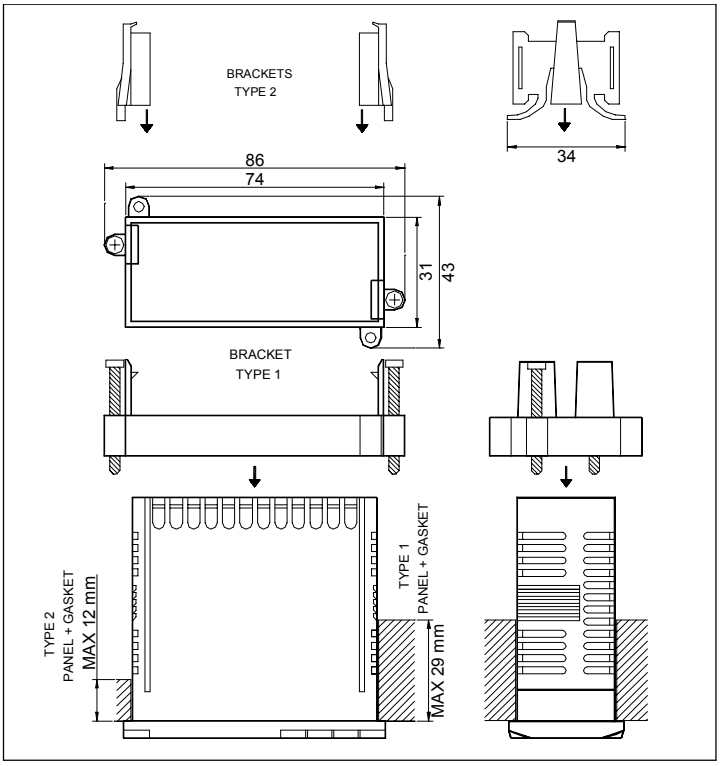
7.2 - MECHANICAL DATA

Housing: Self-extinguishing plastic, UL 94 V0
Dimensions: 33 x 75 mm, depth 64 mm
Weight: 100 g approx.
Mounting: Flush in panel in 29 x 71 mm hole
Connections: 2,5 mm^2 screw terminals block
Degree of front panel protection : IP 65 mounted in panel with gasket
Pollution situation: 2
Operating temperature: 0 ... 50 °C
Operating humidity: 30 ... 95 RH% without condensation
Storage temperature: -10 ... +60 °C

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







7.4 - FUNCTIONAL FEATURES

Measurement range: PTC: -50...150 °C / -58 ... 302 °F;
NTC: -50...109 °C / -58...228 °F
Display resolution: 1 ° or 0,1°
Overall accuracy: +/- (0,5 % fs + 1 digit)
Sampling rate: 130 ms.
Display: 4 Digit Red h 12 mm
Compliance: ECC directive EMC 2004/108/CE (EN 61326), ECC directive LV 2006/95/CE (EN 61010-1)

7.5 - INSTRUMENT ORDERING CODE

TLV 10 a bb c

a : POWER SUPPLY
H = 100...240 VAC
L = 24 VAC/VDC
F = 12 VAC/VDC

bb : SPECIAL CODES

c : SPECIAL VERSIONS