

# INSTRUCTION MANUAL

## T30



1MN0107 REV. 0



operates with ISO9001 certified quality system

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ENGLISH

“Translations of the original instructions”

# INTRODUCTION

First of all we wish to thank you for choosing to use a **TECSYSTEM** product and recommend you read this instruction manual carefully: You will understand the use of the equipment and therefore be able to take advantage of all its functions.

ATTENTION! THIS MANUAL IS VALID AND COMPLETE FOR THE T30 CONTROL UNIT

# CONTENTS

	PAGE
1) SAFETY REQUIREMENTS .....	3
2) ACCESSORIES .....	4
3) TECHNICAL SPECIFICATIONS .....	—
4) FRONT .....	5
• POWER SUPPLY .....	6
• L1 - ALARM RELAY OPERATION .....	—
• L2- TRIP RELAY OPERATION .....	—
• PTC SENSOR FAULT DIAGNOSIS .....	—
• "PTC" TYPE TEMPERATURE SENSORS .....	7
5) SENSOR / RELAY ELECTRICAL CONNECTIONS .....	—
6) WARRANTY CONDITIONS .....	8
7) TROUBLESHOOTING .....	—
8) EQUIPMENT DISPOSAL .....	—
9) USEFUL CONTACTS .....	—

## SAFETY REQUIREMENTS



### ATTENTION :

Read the manual carefully before starting to use the control unit. Keep the instructions for future reference.



Do not open the device, touching any internal components can cause electric shock. Contact with over 50 Volts can be fatal. To reduce the risk of electric shock, do not dismantle the device for any reason. Moreover its opening would void the warranty.

**Before connecting the device to the power supply, make sure that all the connections are correct. Always disconnect the unit from the supply before any cabling modification.**



Any work on the equipment must be entrusted to a qualified engineer.

**Failure to comply with these instructions can cause damages, fires or electric shock, and possible serious injuries!**

### POWER SUPPLY

The T30 control unit can be supplied by 230Vac or 120Vac 50/60HZ, according to the model purchased. Before using it, make sure the power cable is not damaged, knotted or pinched. Do not tamper with the power cable. Never disconnect the unit by pulling the cable, avoid touching the pins. Do not carry out any connecting/disconnecting with wet hands. To disconnect the device, do not use objects such as levers. Immediately disconnect the device if you smell burning or see any smoke: contact technical service.

### LIQUIDS

Do not expose the equipment to splashes or drops, do not position it in places with humidity exceeding 90% and never touch with wet or humid hands during storms. If any liquid penetrates the control unit, disconnect it immediately and contact technical service.

### CLEANING

Disconnect the power cable before cleaning the control unit, use a dry cloth to dust it, without any solvent or detergents, and compressed air.

### OBJECTS

Never insert any objects into the cracks of the control unit. If this happens, disconnect the control unit and contact an engineer.

### USE RESERVED TO QUALIFIED PERSONNEL

The purchased goods are a sophisticated electronic device that is totally unsuitable to be used by non-qualified personnel. Any intervention must be carried out by a specialist engineer.

### ACCESSORIES

The use of non-original accessories or spare parts can damage the unit and endanger users safety. In the event of faults, contact technical service.

### LOCATION

Install the control unit indoors, in a place protected from water splashes and sun rays. Do not place near heat sources exceeding the parameters stated in this manual. Position on a stable surface, far from any possible vibrations. Position the unit as far as possible from any intense magnetic fields.

### REPAIRS

Do not open the control unit. For any fault, always use qualified personnel. The opening of the control unit and/or the removal of the series identifying label entails the automatic forfeiture of the warranty. The Warranty seal is applied to all devices, any attempt to open the unit would break the seal and cause the consequent automatic forfeiture of the warranty.

### TECHNICAL INFORMATION

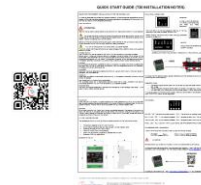
**Mail: [ufficiotecnico@tecsystem.it](mailto:ufficiotecnico@tecsystem.it) — tel: 02/4581861**

## ACCESSORIES

The following objects are present inside the box:  
Control unit



Start guide and QR code

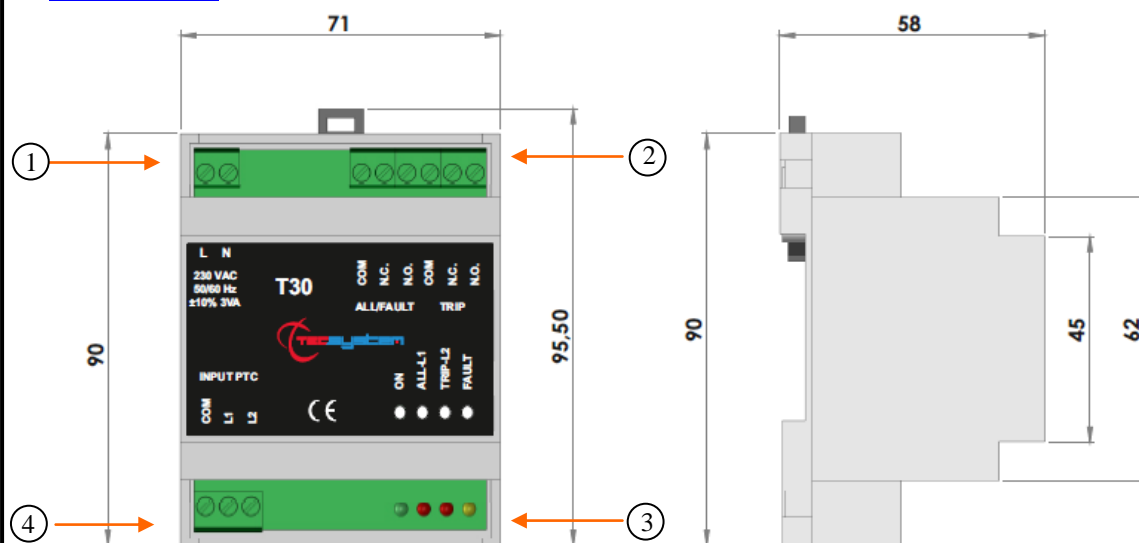


TECHNICAL SPECIFICATIONS	T30 230 Vac	T30 120 Vac
<b>POWER SUPPLY</b>		
Supply rated values	240Vac 50/60HZ	120Vac 50/60HZ
<b>INPUTS</b>		
2 series of PTC inputs	•	•
-1 series for L1 (ALL1)	•	•
-1 series for L2 (TRIP)	•	•
Input channels protected against electromagnetic interference	•	•
<b>OUTPUT</b>		
2 alarm relays (ALL1 / FAULT AND TRIP) SPDT	•	•
Output relays with 5A-250Vac-res COSΦ=1 contacts.	•	•
<b>DIMENSIONS</b>		
71x90mm-depth 58mm (DIN track assembly)	•	•
<b>TESTS AND PERFORMANCES</b>		
Construction in accordance with CE regulations	•	•
Protection from electrical interference EN 61000-4-4	•	•
Dielectric strength 1500 Vac for a min. between output relays and sensors, relays and power supply, power supply and sensors	•	•

## TECHNICAL SPECIFICATIONS

	T30 230 Vac	T30 120 Vac
Ambient operating temperature from -20°C to + 60°C	•	•
Humidity 90% non-condensing	•	•
Self-extinguishing PPO UL94V0	•	•
Absorption 2 VA	•	•
Self-diagnostic circuit	•	•
Protection treatment of the electronic part	Option	Option
<b>DISPLAY AND DATA MANAGEMENT</b>		
2 LEDs showing: ALL-L1 and TRIP-L2	•	•
1 LED showing the FAULT	•	•
1 LED indicating ON	•	•

## FRONT



1)	Control unit supply (230 Vac or 120 Vac) according to the model purchased.	3)	LED signal (ON-ALL L1-TRIP L2-FAULT)
2)	Relays (ALL1/FAULT-TRIP)	4)	L1 - L2 PTC sensor lines

### LED SIGNAL:

#### LED ON:

"ON" The device is powered correctly, "OFF" The device is not powered correctly

#### ALL-L1 LED:

"ON" L1 trip threshold exceeded, "OFF" temperature below the L1 trip threshold.

#### TRIP-L2 LED:

"ON" L2 trip threshold exceeded, "OFF" temperature below the L2 trip threshold.

**FAULT LED - ALL1 LED and TRIP-L2 LED flashing, see PTC SENSOR FAULT DIAGNOSIS on page 6.**

**POWER SUPPLY**

The T30 control unit can be supplied by 230 Vac or 120 Vac terminals L-N, according to the model purchased 50/60Hz ±10%. Before powering the device, always check the supply parameters printed on the label.

When the unit is supplied directly by the secondary of the transformer to protect, it can be burnt out by strong overvoltages. This happens if the main switch is closed and the transformer has no load (blank test).

The above-mentioned problems are much more evident when the 220 Vac voltage is taken directly from the transformer secondary bars and there is a fixed capacitor battery to phase the transformer itself.

*To protect the monitoring device from line overvoltages, we suggest using the PT-73- 220 electronic discharger, designed by TECSYSTEM S.r.l. for this specific purpose.*

**L1 - ALARM RELAY OPERATION**

The L1 relay operates normally when the unit is powered and therefore the N.O. contact is closed.

In case of an alarm on the L1 PTC or a fault in the monitoring unit itself, the relay gets de-energised with consequent closing of the N.C. contact.

The L1 relay also has the same function as the PTC sensor FAULT. If this relay is triggered when the PTC sensor FAULT LED is FLASHING, it means that there is an error in the reading of a PTC sensor. It is possible to find it, thanks to a second LED flashing which corresponds to the FAULT channel.

**TRIP-L2 RELAY OPERATION**

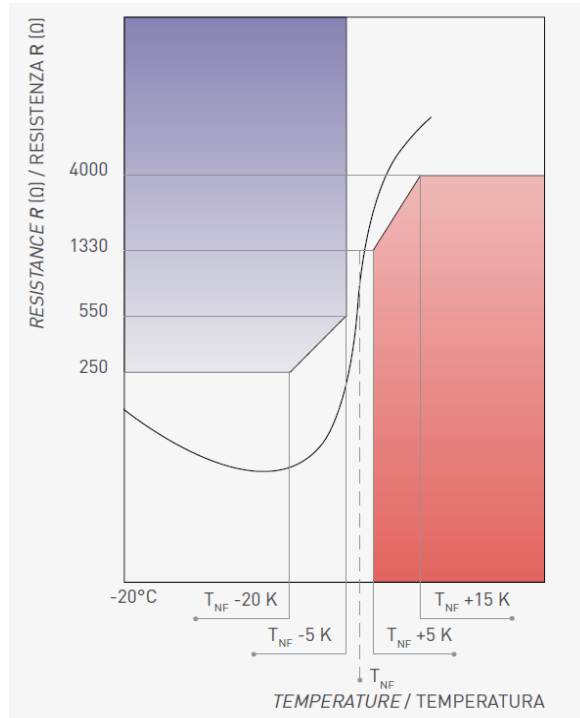
The L2 relay is normally de-energized and energizes when there is an alarm on the L2 PTC.

**PTC SENSOR FAULT DIAGNOSIS**

If one of the PTCs is short-circuited or open you get the following warnings:

PTC alarm	ALL-L1	FAULT + ALL-L1 LEDs are flashing
PTC TRIP release	TRIP-L2	FAULT+TRIP-L2 LEDs are flashing

Table 1



Characteristic values	Resistance for PTC	Measured voltage
Resistance in the temperature span -20°C D NAT -20K	From 20 to 250 ohms	< 2.5 V-
D NAT -5K resistance	< 550 ohms	< 2.5 V-
D NAT+5K resistance	> 1330 ohms	< 2.5 V-
D NAT+15K resistance	> 4000 ohms	< 7.5 V - impulsive



**IMPORTANT NOTICE**

Before carrying out the isolation test of the electrical panel the control unit is installed on, disconnect it and the sensors from the power supply to prevent it from being seriously damaged.

**"PTC" TYPE TEMPERATURE SENSORS**

The PTCs can be compared to bimetallic thermostats where the contact opens and closes at the approximate temperature, defined as their operating characteristic ( $\delta NAT = \text{operating temperature}$ ).

The sensor is calibrated for one temperature only that can vary from 60°C to 190°C, in 10°C (In relation to the acquired probe), in 10°C steps (60-70-80-90-100-110-120-130-140-145-150-155-160-170-180-190).

The PTCs are electronic thermometric sensors made with a chemical mixture that vary their electrical resistance according to the recorded temperature.

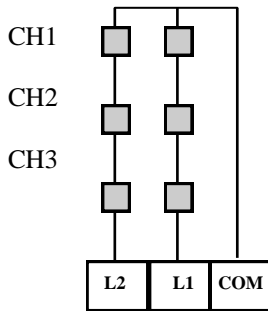
There is a  $\delta NAT$  (operating temperature) for the PTCs as well as for the bimetallic thermostats. The PTCs do not allow precision adjustments since the characteristic resistance values are fixed at  $-5^\circ C$  and  $+5^\circ K$  of  $\delta NAT$ .

The PTC characteristic resistance values are set by the DIN 44081 and 44082 standards.

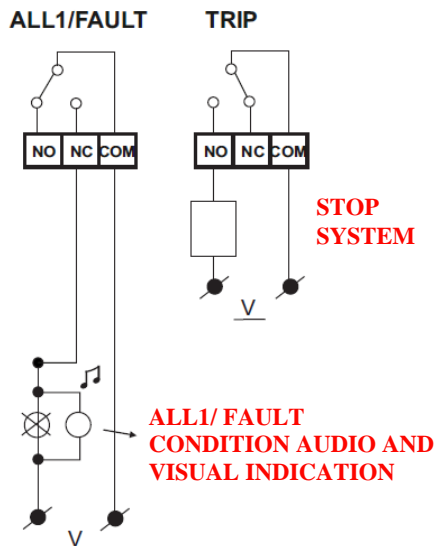
Since the PTC resistance curve is very rapid, in the section between  $\delta NAT -5^\circ C$  and  $\delta NAT +5^\circ K$ , it is quite difficult to make adjustments in a temperature span of less than  $\pm 5^\circ K$ .

**SENSOR / RELAY ELECTRICAL CONNECTIONS**

**PTC SENSORS**



**RELAYS**



The ALL1/ FAULT relay operates normally when the unit is powered, therefore contact N.O. is closed. The above picture shows the state of the relays in non-alarm condition.

## WARRANTY CONDITIONS

The Product purchased is covered by the manufacturer's or seller's warranty at the terms and conditions set forth in the "Tecsystem s.r.l.'s General Conditions of Sale", available at [www.tecsystem.it](http://www.tecsystem.it) and / or purchase agreement.

The warranty is considered valid only when the product is damaged by causes attributable to TECSYSTEM srl, such as manufacturing or components defects.

The warranty is invalid if the Product proves to have been tampered with / modified or incorrectly connected and causing voltages outside the set limits and does not comply with the technical data for use and assembly, as described in this instruction manual.

The warranty is always ex Corsico as stated in the "General Conditions of Sale".



Tecsystem Srl is not responsible for damages caused by the monitoring unit due to PTC sensors which do not have the resistance features of the DIN44081 and 44082 standards.

**N.B.** To verify the correct operation of the monitoring unit in all its functions, we suggest you use the SIM-PTC simulator.

TROUBLESHOOTING	CAUSES AND SOLUTIONS
The control unit does not switch on, the corresponding LED is OFF.	Switch the unit off and check that: the connecting wires are tightened and there are no obvious burns on the connectors.
One of the two PTC lines is in FAULT alarm	Check the continuity and connection of the relative PTC line.

## EQUIPMENT DISPOSAL

European directives 2012/19/EC (WEEE) and 2011/65/EC (RoHS) have been approved to reduce electrical and electronic waste and promote the recycling and reuse of the materials and components of this equipment, cutting down on the disposal of the residues and harmful components of electrical and electronic materials.



All the electrical and electronic equipment supplied after 13 August 2005 is marked with this symbol, pursuant to European directive 2002/96/EEC on electrical and electronic waste (WEEE). Any electrical or electronic equipment marked with this symbol must be disposed of separately from normal domestic waste.

Returning used electrical devices: contact TECSYSTEM or your TECSYSTEM agent for information on the correct disposal of the devices.

TECSYSTEM is aware of the impact its products have on the environment and asks its customers active support in the correct and environmentally-friendly disposal of its devices.

## USEFUL CONTACTS

TECHNICAL INFORMATION : [ufficiotecnico@tecsystem.it](mailto:ufficiotecnico@tecsystem.it)

SALES INFORMATION : [info@tecsystem.it](mailto:info@tecsystem.it)

