

DIGITAL TEMPERATURE MONITOR – MASTERTEMP
ANSI - 23 – 26 – 45 – 49 – 49I – 62 – 74 – 77 – 94



CATALOG



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INTRODUCTION



The temperature monitor **MASTERTEMP™** was developed to monitor the oil temperature and the winding in transformers and reactors immersed in oil, activation the fans and protect the power and distribution transformer (ANSI 49I and ANSI 49). The **MASTERTEMP™** was built obeying strict quality standards and uses electronics components of the last generation (SMD), your hardware was projected to endure several works conditions, can be directly installed in the panel transformer, reactor, in the yard of power substations, offshore platforms and chemical industry. It attends to the requirement levels, supportability and reliability according to the standards IEC, DIN, IEEE, ABNT.

As input signal the **MASTERTEMP™** allows until 02 (two) temperature sensor Pt100 and until 03 (three) input signal current from the secondary of CT bushing for winding temperature calculation, 05 (five) analog output configurable that can be 0 to 1mA, 0 to 5mA, 0 to 10mA, 0 to 20mA or 4 to 20mA, for remote temperature readings of the oil and winding temperatures, one digital output (RS485) with protocol Modbus RTU and DNP 3.0 (Level 2) chosen by the user that allow the access to the all parameters of **MASTERTEMP™** including the remote command of the monitoring in real time, it has set points to the parametrization of the temperature to the oil alarm, winding alarm, shutdown oil, shutdown winding, actuation of the 1º(first) and 2º (second) ventilation group, the signs are made through 13 (thirteen) isolated relays of actuation and potential free, being 02 (two) auxiliary relays that can be configured to work at any temperature inside the equip range and by the sensor chosen by the user, including the auxiliary relay 01 (one) can operate for command of the 3º (third) ventilation group or pumps.

The presentation mode of **MASTERTEMP™** display is completely configurable, that can show the highest temperature at the moment, or fix on display the temperature of the channel that the operator chose, or using the scan function, that do a full scan at all the channels continuously. Through the front indicators Led's and through the communication port data is possible identify which channel caused the alarm, the shutdown or the actuation of the fans, all the functions and parameterizations are easily configured directly on the panel or using the USB port with the software (UseEasy™) that accompany the equipment or through the communication port Rs485 with the protocols Modbus or DNP 3.0 (L2) that are natives of the equipment.



INPUT MICROCARD SD 2Gb TO DATA
LOGGER AND DATA STORAGE



USB INPUT FOR PARAMETERIZATION
THROUGH UseEasy™ software



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Only full version

- Memory card MICROSD 2Gb input to data logger and data storage;
- Internal clock powered with super-capacitor (don't need maintenance);
- Intelligent Exercise fan function with working programmable;
- Timing of fans working (hour meter);
- Pre-cooling function, the fans work through load percentage and also temperature;

Full and lite version

- High brightness display with 04 (four) digits of 0,78 inch (20 mm) height, and decimal display of 0,51 inch (13 mm) height;
- Accuracy 0,25% (FS) and decimal indication;
- Simultaneous indication of the display of the 05 monitored temperatures (oil and winding and environment);
- Range of temperature measurement -55 to 200°C (-67 to 392°F);
- 02 compensated input for sensors Pt100 to 03 wires for measurement of two point of the temperature, environment and oil, or top and bottom oil, or top oil and OLTC with possibility of alarm differential temperature by auxiliary relay;
- 03 Current inputs (TRUE RMS) 0 to 10 Amperes with external CT (Split-core) connected on secondary CT of bushing;
- Universal power supply 48 to 265 Vcc/Vca;
- Digital output Rs485 with protocol **Modbus RTU** and **DNP 3.0** (Level 2) to remote access for all measured parameters;
- Auto Baud Rate 1200 to 57.600 bps (Automatically detects the communication network speed);
- Analog output configurable can be 0 to 1, 0 to 5, 0 to 10, 0 to 20 or 4 to 20mA for all measured channels;
- USB 2.0 communication port front to data parameterization through UseEasy™ software;
- Actuation until 03 groups of fans or pumps, directly in front, remote through the serial port or automatic;
- Winding Temperature calculated based on standards IEC 354-1991, IEEE C 57.91-1995 and NBR 5416-1997;
- Consultation by display and output serial of the final gradient of temperature to the actual load (oil/winding);
- Consultation by display and output serial of the percentage transformer load;
- Consultation by display and output serial of the transformer primary current (kA);
- Consultation by display and output serial of the transformer secondary current (A);
- Consultation by display and output serial of the maximum temperatures reached (oil, windings and environment);
- Consultation by display and output serial of the faults occurred in the equipment and sensors;
- 01 Contact relay (NO) with capacity of 6 amperes potential free for temperature oil alarm (NC request);
- 03 Contacts relay (NO) with capacity of 6 amperes potential free for temperature Winding alarms (NC request)
- 01 Contact relay (NO) with capacity of 6 amperes potential free for temperature Oil trip (NC request), with programmable timing;
- 03 Contacts relay (NO) with capacity of 6 amperes potential free for temperature Winding trips (NC request), with programmable timing;
- 01 Contact relay (NC) with capacity of 6 amperes potential free for signaling fault monitor (watchdog);
- 02 Auxiliary contacts relay (NO) with capacity of 6 amperes potential free that can be programmable to use as actuation fans, alarms, trips or alarm of differential of temperature;
- 02 Contacts relay (NC with reverse logical) with capacity of 6 amperes potential free for actuation of fans or pumps (NO request), with programmable hysteresis, interlock than start the 2 groups and function of Intelligent Exercise fan programmable;
- High mechanical resistance enclosure, built entirely in aluminum ;
- Size reduced 3,8x3,8x3,8 INCH(98x98x98mm);
- Easy parameterization and utilization;
- 02 years warranty;



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TECHINCAL DATA

Temperature Monitor	
Power Supply	48 to 265 Vdc/Vac 50/60 Hz
Operation Temperature	-40°C to + 85°C (-40° to 185°F)
Power Consumption	< 15 W
Temperature measuring input	2 – Pt100 Ohm to 0°C 3 wires
Measurement Range	-55 to 200°C (-67 to 392°F)
Input to Current Measurement	TC Split Core de 0 a 10A (True RMS)
Analog Output / Max. Loop Resistance	0 ... 1mA - 8000 Ohms
	0 ... 5mA - 1600 Ohms
	0 ... 10mA - 800 Ohms
	0 ... 20mA - 400 Ohms
	4 ... 20mA - 400 Ohms
Maximum Error Measurement Temperature	0,25% end of the scale
Maximum Error Analog Output	0,25% end of the scale
Output Contact	13 relays – Potential free
Maximum Switching Power	70 W / 250 VA
Maximum Switching Voltage	250 Vac/Vdc
Maximum Conduction Current	6,0 Amperes
Serial Communication Port	RS 485 – 2 wire
Communication Protocols	Modbus RTU and DNP 3.0 Level 2 (Slave)
Auto Baud Rate	1200 a 57.600 bps
USB Front Port	USB Serial – 2.0
Enclosure	98 x 98 x 98 mm – Aluminum
Fixation	Fixed at the door panel
Current Transformer - TC Split core	
Output Signal	4 to 20mA
Measurement Range	0 to 10 A
Maximum Error of Measurement Inputs	1% end of the scale
Linearity	1% end of the scale
Operation Temperature	-40°C to +85°C (-40° to 185°F)
Storage temperature	-50°C to 60°C (-58° to + 140°F)

TYPE TEST

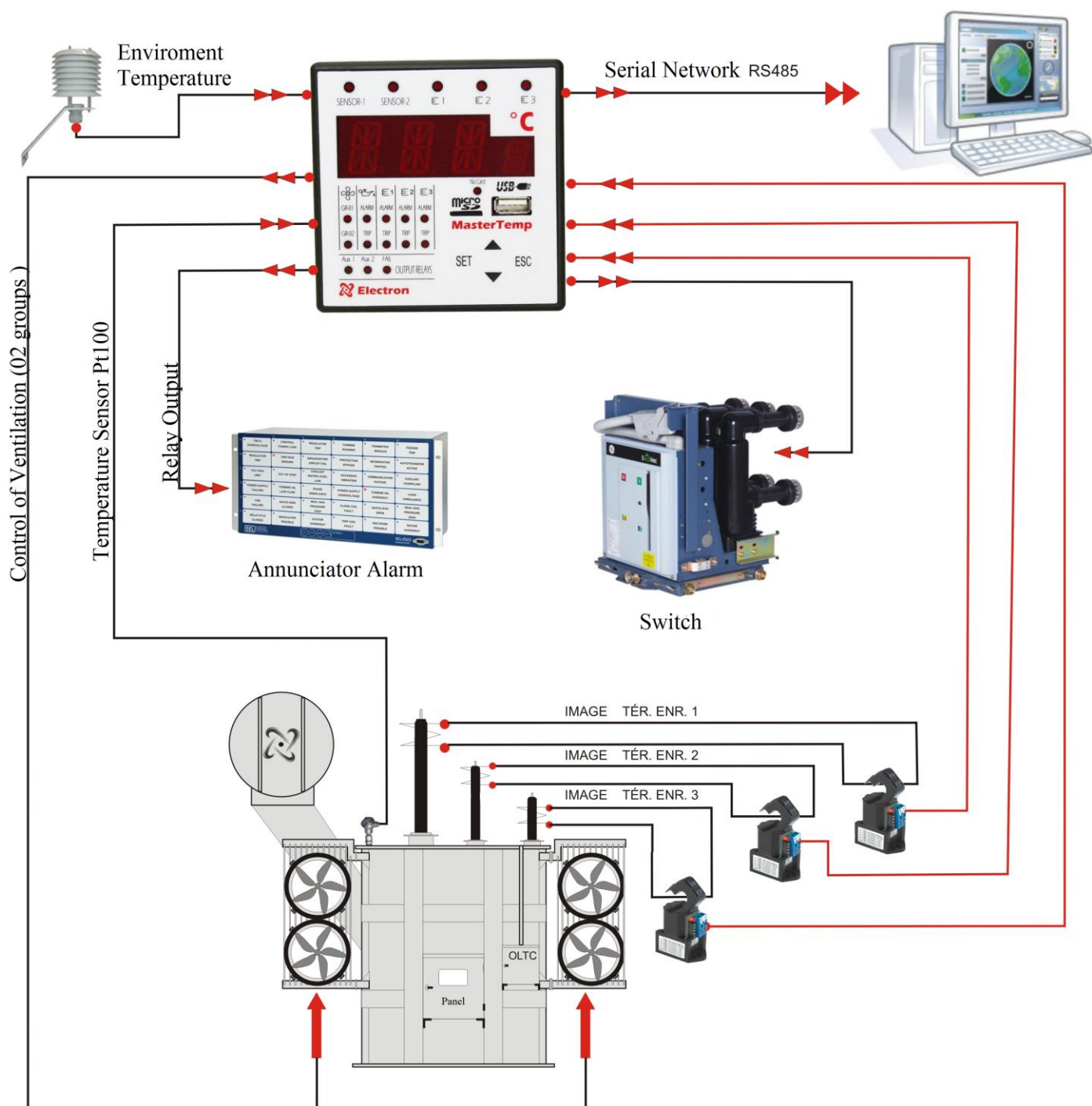
- Insulation Voltage (IEC 60255-5): 2kV / 60Hz / 1 min. (to ground);
- Voltage Impulse (IEC 60255-5): 1,2/50 µseg. / 5kV / 3 neg. e 3 pos. / 5 seg. Interval;
- Electrostatic Discharge (IEC 60255-22-2): Air mode = 8kV / Contact mode = 6 kV;
- Irradiated electromagnetic field immunity (IEC61000-4-3): 80 a 1000 MHz / 10V/m;
- Fast electrical transient immunity (IEC60255-22-4): Power./Input./Output=4KV/Serial port. 2kV;
- Surge immunity (IEC60255-22-5): phase/neutral 1kV, 5 per polar. (±) - phase-ground/neutral-ground 2kV, 5 per polar (±);
- Conducted electromagnetic perturbations immunity (IEC61000-4-6): 0,15 a 80 MHz / 10V/m;
- Climatic test (IEC60068-21-14): -40°C + 85°C / 72 hours;
- Vibration resistance (IEC60255-21-1): 3 axis / 10 a 150Hz / 2G / 160min/axis;
- Vibration response (IEC60255-21-1): 3 axis / 0,075mm-10 a 58 Hz / 1G de 58 a 150 Hz / 8min/axis;



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APPLICATION EXAMPLE



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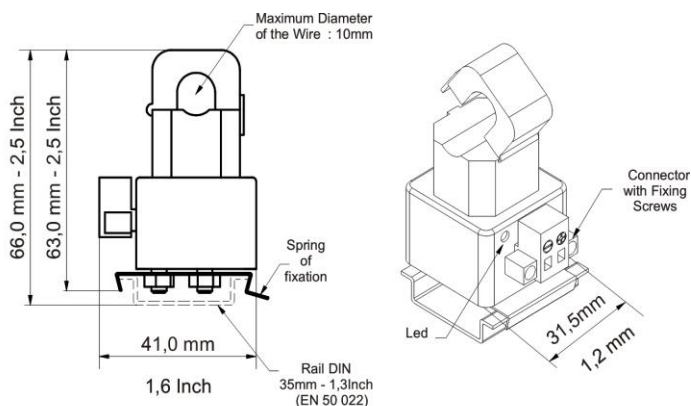
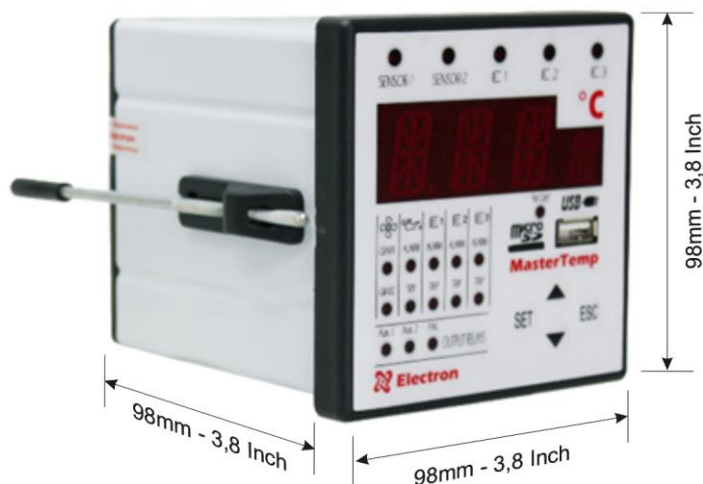


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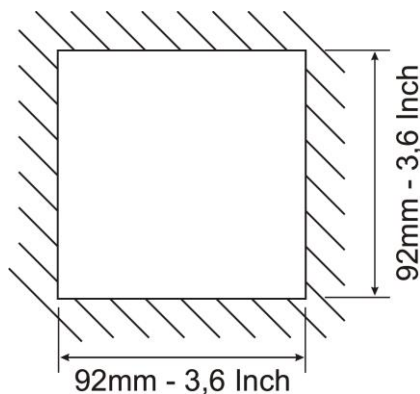
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DIMENSIONS

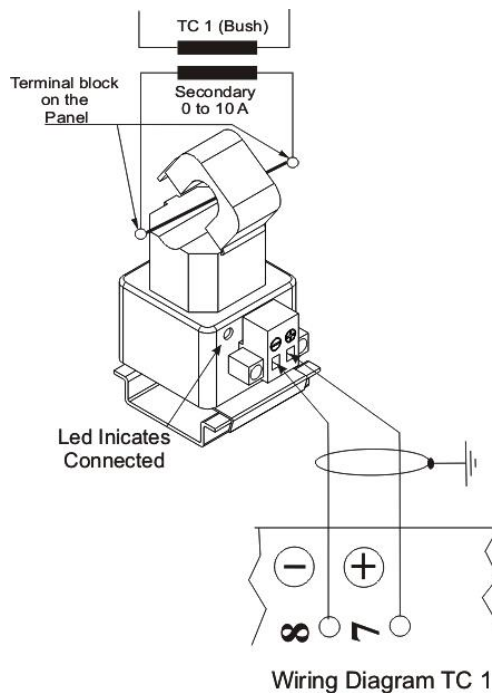
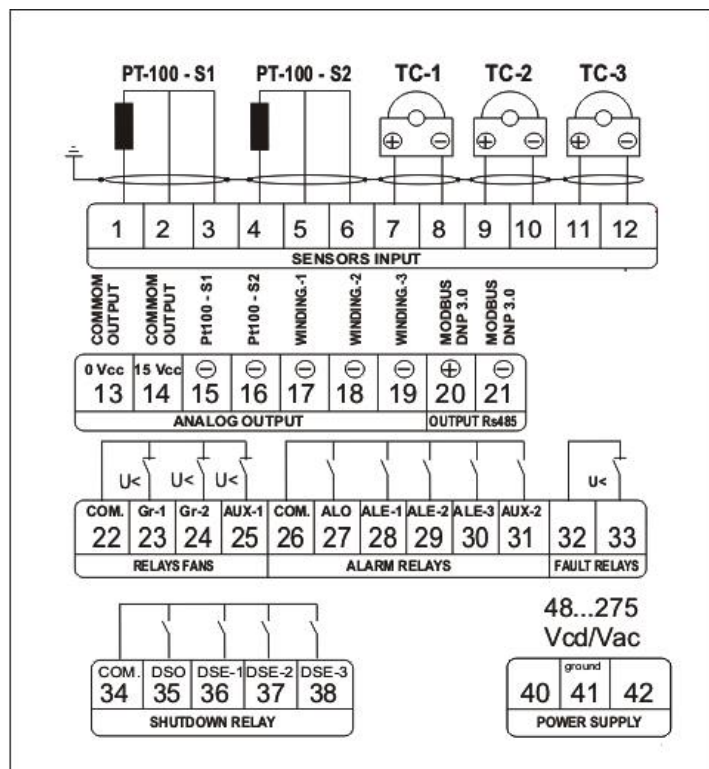


CT Split core

TEAR PANEL



WIRING DIAGRAM



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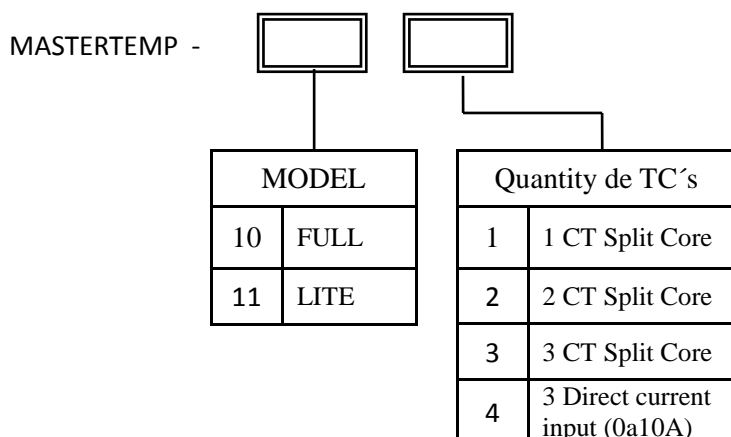
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REQUEST SPECIFICATION



Example:

MASTERTEMP-103 = **Model FULL** - 2 pt100 input, 3 CT input, 5 Universal analog output, 13 output relay RS485, Modbus RTU and DNP3.0, with Data logger, FRONT USB, Temperature exercise, hour meter and inter clock, 3 Tc's Split core.

MASTERTEMP-111 = **Model LITE** - 2 pt100 input, 3 CT INPUT, 5 Universal analog output, 13 output relay RS485, Modbus RTU and DNP3.0, and 1 CT Split Core.



Sensor Pt100



Enclosure for external use IP54



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REVIEW CONTROL

Review Nº 0 November 2012.

- Emission.

Review Nº 1 May de 2013.

- Added TC's buy code
- Right scale of some variable table

Review Nº 1.1 May de 2014.

- Added key to configure the equipment
- Added menu key change
- Register map update

