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# MoniTemp

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Catalogue

## INDEX

INDEX .....	2
INTRODUCTION .....	3
KEY FEATURES.....	4
TECHNICAL DATA .....	4
TYPE TESTS.....	5
CONNECTION DIAGRAM .....	5
DIMENSIONS.....	6
APPLICATION EXAMPLE.....	7
OPERATION CHART .....	8
PREVENTIVE MAINTENANCE .....	9
INSTALLATION SOFTWARE FOR PARAMETERIZATION - USEEASY .....	10
INSTALLATION ACCESSORIES.....	11
GETTING TO KNOW MONITEMP .....	13

**INTRODUCTION**

The **MoniTemp Temperature Monitor** was developed to supervise 3 (three) temperature channels simultaneously, it is used to protect and monitor transformers (ANSI 49) to Dry or oil, machines, ovens or any other type of process that requires high precision and reliability equipment, Monitemp also commands ventilation and Heating (on/off), Alarms and Trip.

MoniTemp was built in compliance with strict quality standards and uses state-of-the-art electronic components (SMD), its hardware was designed to withstand severe working conditions, and can be installed directly in power transformers and reactors, in panels in the yard of power substations, offshore platforms and chemical industries. Meets the levels of demands, supportability and reliability according to IEC, DIN, IEEE, ABNT standards.

As a signal input, **MoniTemp** allows 3 (three) Pt100 temperature sensors, 1 (one) universal analog output configurable between 0 to 1; 0 to 10; 0 to 20 or 4 to 20 mA, which mirrors the highest temperature measured at the time or any of the channels, all functions and parameterizations are easily configured directly on the instrument panel or using the USB port with the UseEasy™ Software that comes with the equipment or through of the RS485 communication port (ANSI/TIA/EIA-485-A) with the MODBUS and DNP3.0 (Level 1) protocols including remote control of the drives in real time, it also has 3 (three) independent temperature setpoints for each sensor and 3 (three) isolated (NAF) and independent trigger relays that can be used for alarm, shutdown and activation of fans or pumps, And it also has 1 (one) relay for fault indication (watchdog).

## KEY FEATURES

- High-brightness 4-digit LED display (red);
- Accuracy of 0.5% (FS) and indication of 1 decimal place;
- Temperature measurement range from 0 to 200°C;
- Compensated input for 3-wire Pt100 sensors;
- RS-485 Digital Output with Modbus RTU or DNP 3.0 protocol;
- Auto Baud Rate from 1,200 to 57,600 bps (Automatically Detects Communication Network Speed)
- Analog output from 0 to 1, 0 to 5, 0 to 10, 0 to 20 and 4 to 20 mA configurable for any of the measured channels;
- Stores in memory the maximum temperatures reached;
- NAF Alarm Contact for temperature that reaches the configured value;
- Timed NAF Shutdown Contact, for temperature that reaches the configured value;
- Vent or NAF pump drive contact, with programmable hysteresis;
- Contact for Fault Indication (watchdog);
- High mechanical resistance case, built entirely in aluminum;
- Reduced size 98x50x83.5mm;
- UBS Type-C for parameterization;
- 2 years warranty.

## TECHNICAL DATA

Operating Voltage	48 a 265 Vcc/Vca 50/60 Hz
Operating Temperature	-40 to +85°C
Consumption	<15 W
Temperature Measurement Input	3 - Pt100 Ohm a 0°C a 3 fios
Measurement Range	0 to 200°C
Analog Output and Maximum Load Options (see note below)	0 ... 1 mA - 8000 Ω
	0 ... 5 mA - 1600 Ω
	0 ... 10 mA - 800 Ω
	0 ... 20 mA - 400 Ω
	4 ... 20 mA - 400 Ω
Maximum Error of Measurement Inputs	0.25% of end-of-scale
Maximum Analog Output Error	0.25% of end-of-scale
Outgoing Contacts	4 – Free of Potential
Maximum Switching Power	70 W / 250 VA
Maximum Switching Voltage	250 Vac/Dc
Maximum Driving Current	6.0 A
Communication Port	RS485 e USB tipo-C
Communication Protocol	RTU Modbus and DNP 3.0 (Slave)
Auto Baud Rate	2,400 to 57,600 bps
Box	98 x 50 x 83.5 mm – Aluminum
Fixation	Flush Panel Mounting
Parameterization	Software - Useeasy

Table 1 – Technical Data

- Applied Voltage (**IEC 60255-5**): 2kV / 60Hz / 1 min. (against land);
- Voltage Impulse (**IEC 60255-5**): 1.2/50  $\mu$ sec. / 5kV / 3 sec. and 3 sec. / 5 sec. Interval;
- Electrostatic Discharges (**IEC 60255-22-2**): Air mode = 8kV / Counted mode = 6 kV;
- Immunity to radiated electromagnetic disturbance (**IEC61000-4-3**): 80 to 1000 MHz / 10V/m;
- Immunity to Fast Electrical Transients (**IEC60255-22-4**): Alim/Input/Outputs=4KV/common. 2kV;
- Immunity to Surtos (**IEC60255-22-5**): phase/neutral 1KV, 5 per polar. ( $\pm$ ) - phase-earth/neutral-earth 2KV, 5 by polar ( $\pm$ );
- Immunity to conducted Electromagnetic disturbances (**IEC61000-4-6**): 0.15 to 80 MHz / 10V/m;
- Climate Ensaio (**IEC60068-21-14**): - 10°C + 70°C / 72 hours;
- Vibration Resistance (**IEC60255-21-1**): 3-axis / 10 to 150Hz / 2G / 160min/axis;
- Vibration Response (**IEC60255-21-1**): 3-axis / 0.075mm-10 at 58 Hz / 1G from 58 to 150 Hz / 8min/axis;

PT-100			PT-100			PT-100												
12	13	14	15	16	17	18	19	20	21	22	23	24	25					
Sensor 3			Sensor 2			Sensor 1			Analog Output 15Vdc		GND	Rs485						
<div style="display: flex; justify-content: space-around;"> <div style="border: 1px dashed black; padding: 5px;"> <b>Fan</b>  </div> <div style="border: 1px dashed black; padding: 5px;"> <b>Alarm</b>  </div> <div style="border: 1px dashed black; padding: 5px;"> <b>Trip</b>  </div> <div style="border: 1px dashed black; padding: 5px;"> <b>Fault</b>  </div> </div>																		
48 ~ 265 Vdc/Vac																		
⏏	A	B	1	2	3	4	5	6	7	8	9	10	11					

Figure 1 - Diagram and connection illustration and technical data

DIMENSIONS

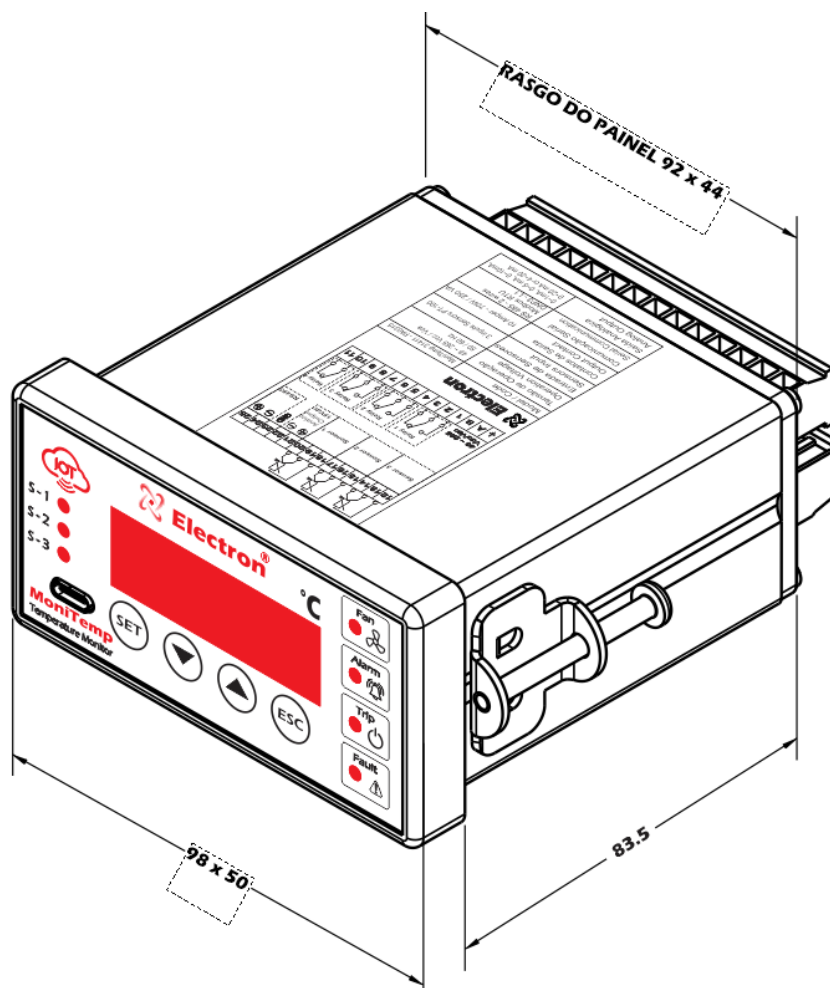


Figure 2 - Illustration of Monitemp Dimensions

APPLICATION EXAMPLE

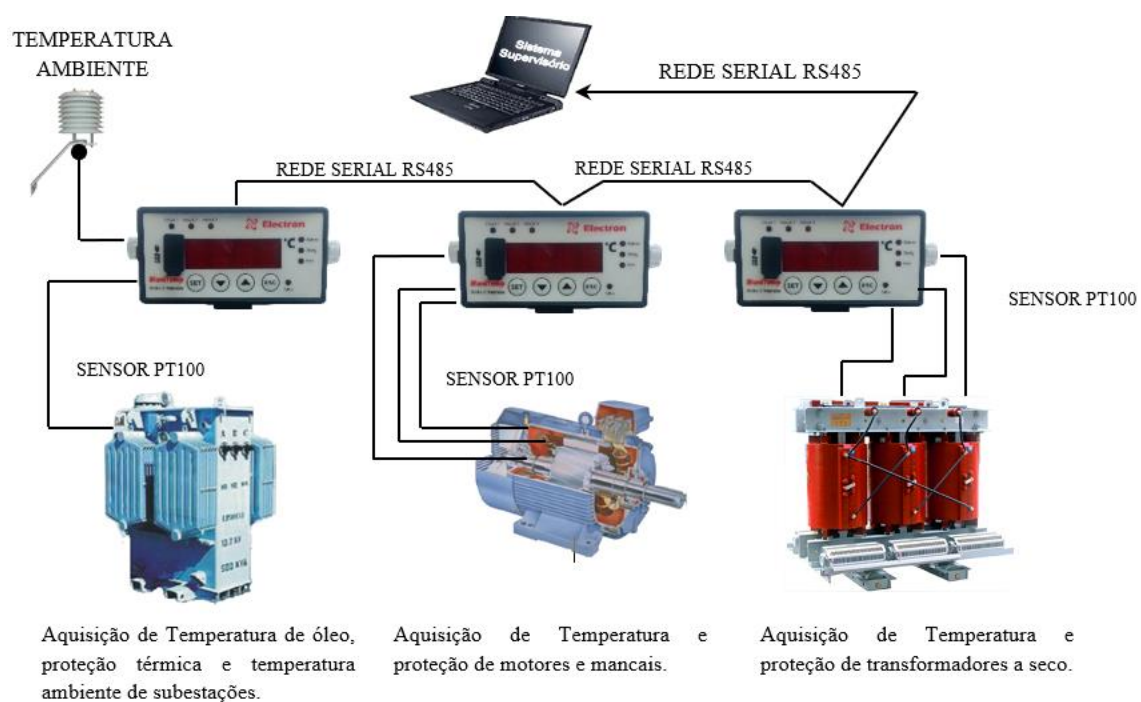


Figure 3 - Application Illustration

## OPERATION CHART

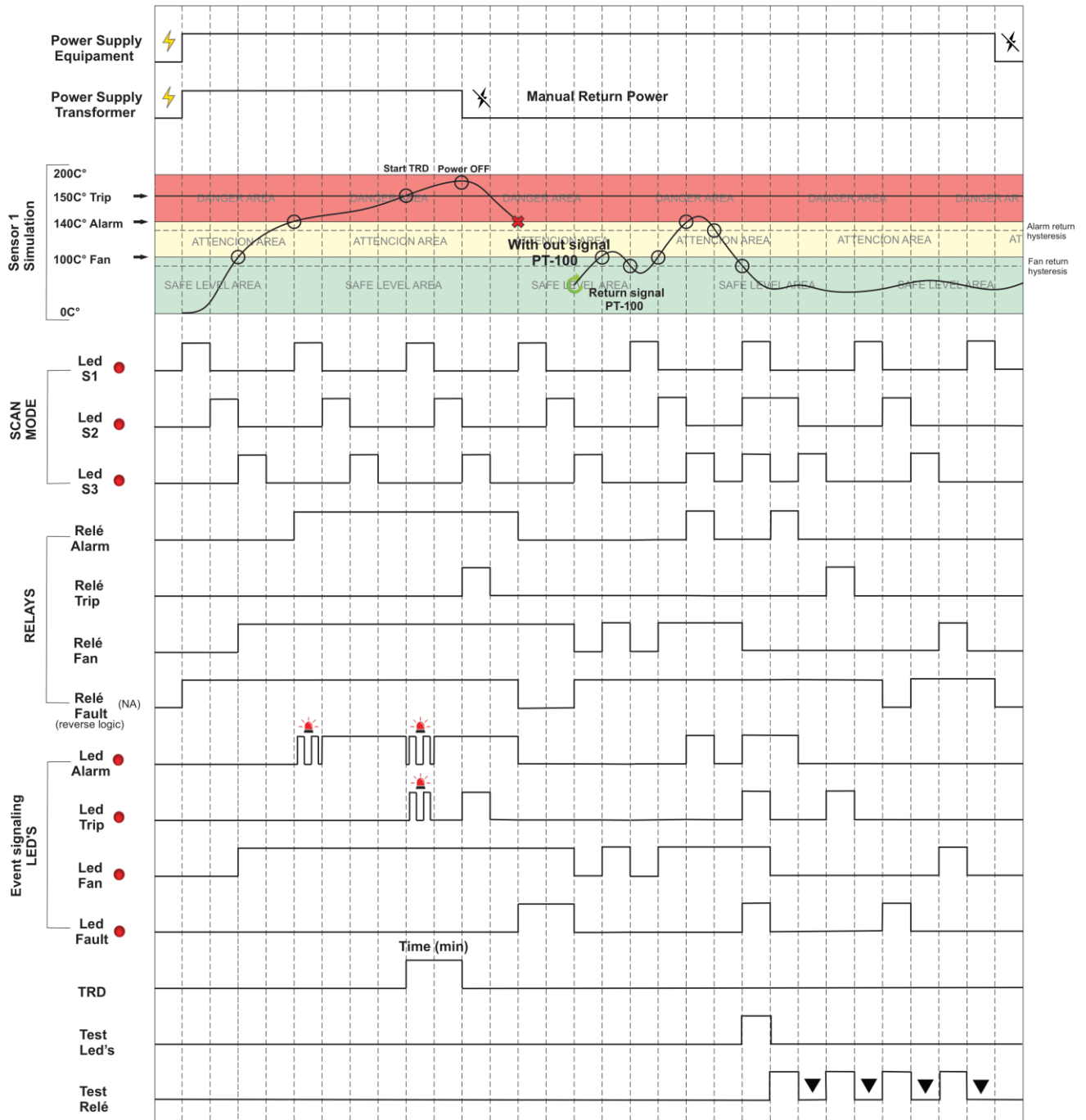


Figure 4 – Operation Graph

## PREVENTIVE MAINTENANCE


PREVENTIVE AND CORRECTIVE MAINTENANCE							
Items to be checked preventively			Verification Frequency				Corrective action
SHARE	Verification Elements	ACTIVITIES	Every Month	Every 3 Months	Every 6 Months	Every 1 Year	When Needed
VERIFICATION	Fastening clip and snapping to the rail	Fixing to the panel door or panel bottom		X			Retightening, Fitting, Terminal Change, or Screw Change
	Terminal blocks and connector pente	Attachment and attachment to equipment		X			
		Tightening of the screws in the fastening of the conductors		X			
	Sensors	Integrity / Positioning / Fastening			X		Replacement, repositioning and/or fixing of sensors
	Sensor well in oil transformers	Oil level in the well			X		Oil filling to indicated level
TESTS & MEASUREMENTS	Relays and Digital Outputs	Individual drive test			X		Forward to Electron do Brasil technical assistance
	Led's e Displays	Test Triggering Led's and Display Segments			X		
	Navigation buttons	Navigation test of the navigation buttons			X		
	Sensor Input	Gauge sensor inputs using a standard				X	
	Input voltage of equipment supply	Measure Supply Input Voltage			X		Override voltage input values according to equipment model
	RS-485 Communication Outputs	Communication and command testing in the supervisory system			X		Forward to Electron do Brasil technical assistance
	Milliampere running Sinal inputs	Measure, compare and measure input signal in passive and/or active mode			X		
	Signal Outputs of milliampere current	Measure, compare and measure input signal in passive and/or active mode			X		
CLEANING	Terminal blocks and connector comb and connection box	Debris, Impurities and Moisture	X				Cleaning with a dry cloth, compressed air and vacuum cleaner
	Aluminum Equipment Enclosure		X				
	Front of the Equipment Display		X				
 ATENÇÃO	<div>1 - Keeping the equipment within the ideal working temperature (50°C to 60°C) extends the useful life and avoids corrective maintenance.</div> <div>2 - The accumulation of dust and impurities in the facilities can cause short-circuiting and burning of equipment and sensors.</div> <div>3 - After 10 years of use, it is recommended to replace the equipment.</div>						

Table 2 – Preventive maintenance


## INSTALLATION SOFTWARE FOR PARAMETERIZATION - USEEASY

- 1) Go to the software page on our Website <https://electron.com.br/site/software/>
- 2) Find your equipment and download the corresponding software

MoniTemp - Monitor de  
Temperatura

Solicite Orçamento

SOFTWARE USE EASY

**Use\_Easy\_Cloud**Versão: 1.0  
Tamanho: 286.83  
KB  
Data de  
modificação  
12/04/2023Baixar 

## INSTALLATION ACCESSORIES

Electron do Brasil has a line of accessories that can be purchased together aiming to offer a complete solution to meet your application with practicality. We have listed some of the main accessories that can be used for Monitemp operation.



**PT-100 STFE Temperature Sensor:** This sensor can be constructed with silicone, stainless steel, or Teflon bulb. With electrical insulation capacity options of 2 kV, 10 kV or 15 kV. The PT-100 STFE temperature sensor has as its measurement principle to evaluate the variation of electrical resistance with temperature using the temperature coefficient of pure platinum (0.385 Ohm/K), according to IEC 751 (DIN 43760). Ideal for temperature monitoring of windings of dry-type transformers due to its high precision and quality of materials, the PT-100 3-wire sensor is widely used in the market, as it greatly reduces the possibility of measurement error due to the compensation principle of the third terminal of the sensor.

Electron PT100 STFE Temperature Sensor Page Link:

<https://electron.com.br/site/produtos/rtd-pt100-2/>



**PT-100 STE Temperature Sensor:** This sensor is constructed of AISI-304 stainless steel bulb, injected aluminum pumphead (IP 65) and adjustable gland with 3/4" and 1/2" BSP threads, or can be manufactured according to design. Its measurement principle is to evaluate the variation of electrical resistance with temperature using the temperature coefficient of pure platinum (0.385 Ohm/K), according to IEC 751 (DIN 43760). Ideal for installations subject to weather and electrical disturbances for temperature monitoring of transformers and machines that require high measurement accuracy in environments subjected to electrical noise and weather. The PT-100 3-wire sensor is widely used in the market, as the possibility of measurement error is greatly reduced due to the compensation principle of the third terminal of the sensor.

Electron PT100 STFE Temperature Sensor Page Link:

<https://electron.com.br/site/produtos/rtd-pt100/>



**Outdoor/Outdoor Double Door Panel:** Outdoor box with double door for mounting instruments, accessories and power transformer control and power wires. The external door contains a glass viewer with UV protection for viewing the quantities measured by the temperature monitor and the panel contains special paint that is resistant against weather and its degree of protection is IP 55, according to NBR IEC 60529:2017.

Dual Port Panel for Outdoor Use – IP 55 Page Link:

<https://electron.com.br/site/produtos/painel-para-uso-externo-ip55/>



**PT-100 signal reference card:** This accessory was developed to verify the temperature value displayed by equipment with PT-100 3-wire RTD sensor input. It consists of precision resistors that send an equivalent fixed and constant resistance signal for selection between 3 different ranges, 0 °C (100 Ohms), 26 °C (110.9 Ohms) and 200 °C (175.86 Ohms).

Reference Card page link for PT-100 signal:

<https://electron.com.br/site/produtos/>

GETTING TO KNOW MONITEMP

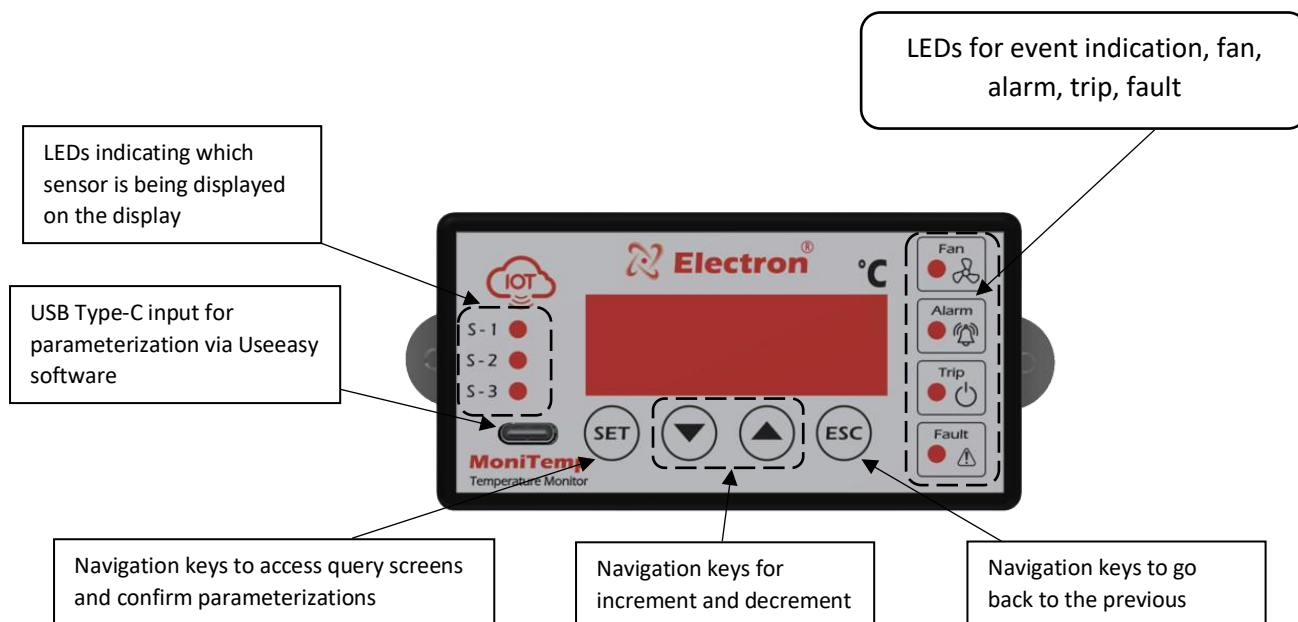


Image 4 – getting to know Monitemp