

# ALLNEC

Earth Resistance Meter Verifier and Grounding Simulator

## INSTRUCTION MANUAL

Model: TPA10K



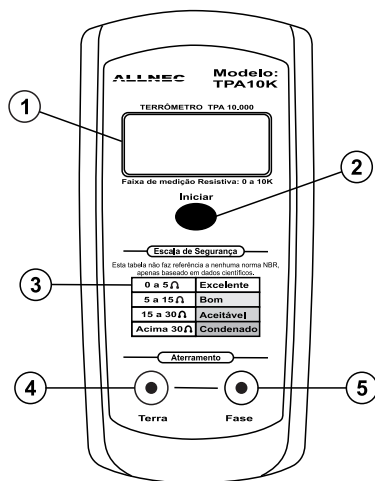
Brazilian technology

# INTRODUCTION

With the unique technology utilized in this earth resistance meter, it became possible to develop a product that is practical, versatile, precise, and, most importantly, eliminates the need for auxiliary stakes. Another significant advantage of this technology is that, being designed using a microcontroller where calculations are performed through programming and not by an integrated circuit, it never loses calibration.

## Just touch:

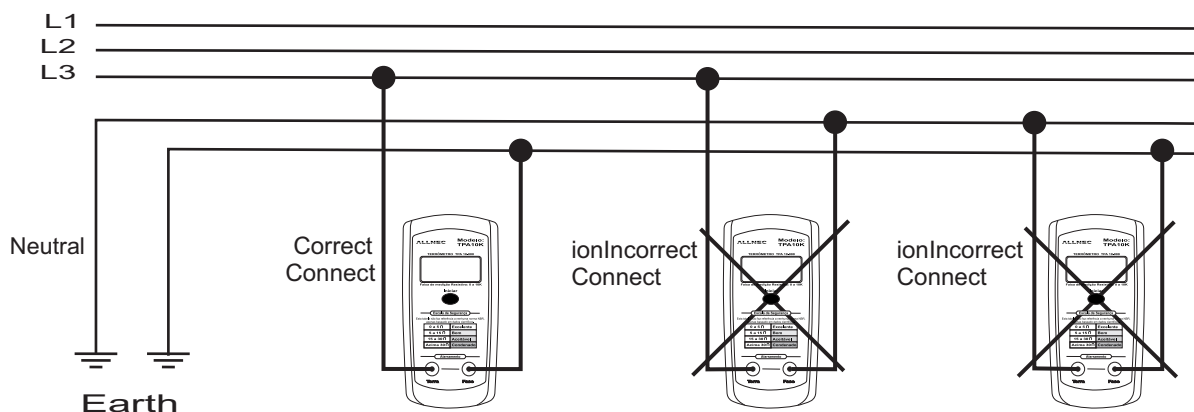
Allnec's TPA10K digital earth resistance meter is the only instrument on the market that measures the resistance of a grounding by simply touching the test probe to any metal body grounded to the soil, without the need to drive auxiliary stakes. It can be used in hospital, commercial, and industrial equipment, SPDAs, and general power outlets. Just touch.



Nº	Nome	Functions
1	Display LCD	Display 4 digits
2	Start button	Botão Push Button with the function to start measurements.
3	Reference Table	Safety reference based solely on scientific data.
4	Ground Terminal	Connect the green test lead to the body to be measured.
5	Phase Terminal	Connect the gray test lead to the energized phase of the utility company.

## Important Detail:

The TPA Now-Pin technology does not use batteries or cells; it powers up by connecting to a phase with the ground, neutral, or another phase. If the display does not turn on when connecting the test probes: First, check if the phase used is not a neutral. Second, verify if there is indeed a ground connection in the system. If you want to check if the device is working, simply insert both test probes into an electrical outlet. If it lights up, it means you used the neutral or there is no connection to the ground.



**Observations:** No earth meter device measures the ground with the neutral connected; it will measure the lower value.

## IMPORTANT OBSERVATIONS IN TN, TT, AND IT CONNECTIONS.

Make sure, before starting the measurements, which grounding method was adopted in the installation. In the TN-C method (the most common in the market), the Utility Neutral is linked to the Local Grounding in the BEP (Equipotential Bar). Measurements in this configuration will be measuring the value of the neutral and not the ground. If it is necessary to measure the ground, it will be necessary to uncouple the ground. In TT and IT grounding methods, where connections are independent, readings will be real. Remember that this condition applies to any model of earth meter.

### WHEN TO CALIBRATE

Due to its technology, Allnec's TPAs earth meters never lose their accuracy, unlike conventional meters on the market.

### OPERATING MODE

Look for an energized phase from the utility company; it cannot be a phase generated by wind systems, photovoltaic systems, diesel generators, etc.

Pull an extension cord to the location where measurements will be taken.

Then, insert the gray probe into the energized phase of the utility company, and with the green probe, firmly touch the point where you intend to measure.

Press the push button on the device. Wait for the result after 4 seconds.

Note: If the display does not turn on, it is because the phase used is not energized, or you caught the neutral, or the grounding is broken, or there is none.

### BRANCHES EQUIPPED WITH RESIDUAL CURRENT DEVICES (RCDs)

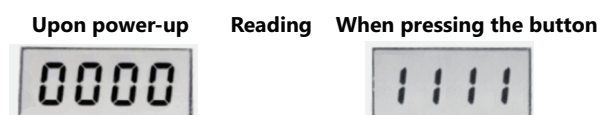
There is a possibility that the device may trip the RCDs when connecting the instrument probes to a Phase and the Earth terminal. As it introduces an electric current, it will be interpreted by this device as a leakage current to the ground, activating it. If this occurs, you should reverse the probes of the device so that it does not trip. If it continues to trip even after this, it indicates that there is a leakage current in the grounding system. To proceed with the measurements, it will be necessary to use the phase before the RCD.

### Reading the Results

The display will show the result as it is, without the need for interpretation! A comma will always appear up to the value 099.0 (ninety-nine ohms). Above this value, the comma disappears. Examples: Result 001.0 (one ohm), 010.0 (ten ohms), 0100 (one hundred ohms), and so on.

### Display

At the moment of probe contact, '0000' will appear on the display. After pressing the start button, the display will show the numbers '1111', indicating that it is in the reading process. After 6 seconds, the result of the soil resistivity in ohms will appear on the display.



## INNOVATIVE FEATURES

- a. Does not require the use of auxiliary stakes.
- b. Portable, pocket-sized device.
- c. Immune to network voltage. Small leaks will not interfere with readings.
- d. Does not require batteries or power supply.
- e. Bi-voltage Earth Tester.
- f. Tests DR by disarming them.
- g. Detects current leaks in grounding systems with DR.

## OPERATING PRINCIPLE

The device is developed with a state-of-the-art microcontroller, enabling the execution of complex calculations and commands in seconds. The measurement of earth resistance is performed by checking the voltage drop ratio when applying a known load between a voltage source of known value (phase of the utility's electrical network) and the grounding circuit. The operating principle of the Allnec TPA earth resistance meter is based on voltage drop, like any other conventional earth resistance meter. Our differentiator: Allnec earth resistance meters require a reference for soil resistance. Conventional meters use auxiliary stakes for this purpose. In the case of Allnec's earth resistance meters, we obtain this resistive reference from the utility's phases, which universally have resistance close to zero.

## WHEN TO CALIBRATE

Due to its microcontrolled technology, Allnec's TPA earth resistance meters never go out of calibration, remaining consistently accurate.

## TECHNICAL SPECIFICATIONS

Reading Method:	Voltage drop.
Accuracy:	From 0.0Ω to 100Ω (0.2Ω), 101Ω to 300Ω (0.5Ω), 301Ω to 2000Ω(50Ω) and from 2001Ω to 10KΩ (500Ω).
Measurement Pulse:	2.5rms in 100ms, approximately 1Hz. Alternating current.
Frequency:	50/60Hz. According to the local network.
Waveform:	Sinusoidal with square pulses (Burst).
Display:	Liquid Crystal Display (LCD) with 4 digits and decimals.
Operating Range:	90Vac to 240Vac.
Power Consumption:	1 Watt.
Scales:	From 000.0Ω to 99.9Ω with decimals. Above, the decimals disappear.
Reading Time:	6 seconds.
Operating Temperature:	From -15°C to 45°C.
Operating Humidity:	Up to 90% RH.
Dimensions:	76 x 35 x 157mm (L x H x W).
Weight:	170 grams.
Warranty:	5 years.