



# Geotester 3.0



STRUMENTI E MISURE GEOTECNICHE  
E STRUTTURALI



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# Geotester 3.0



## WARNINGS



This instrument must be utilized only for the application it has been designed for, OTR declines all responsibility for any improper use;



Do not use the instrument in water where an electric dissipation is in progress;



Do not use instrument near potentially explosive gases;



Don't connect geotester 3.0 to instruments' placed in water during an electrical dissipation;



Use protective gloves;

## Furthermore

- Do not open the instrument, contact the manufacturer for checks and repairs;
- Keep out of reach of children;
- Do not connect the instrument to the readout unit with wet hands;
- Clean the instrument and its cable with alcohol or water, do not use acetone or aggressive liquids for plastics or labels;

## Applications

Geotester 3.0 has application in reading sensors for construction and geotechnical engineering

- Electrical and Vibrating wire Piezometers;
- Crack meters, Inclinometers and Thermistores;
- Electrolines and Vibrating wires strain gauges.



## Identification

Every Geotester has a plate that indicates:

- Serial number;
- Model;
- Full scale:
- Input/Output;



## Technical Features

| Function       | Input             | Resolution        |
|----------------|-------------------|-------------------|
| mV             | 0-2V 4-20 mA      | 0-2V 4-20 mA      |
| mV/V           | +15V , 2.048 Vref | +15V , 2.048 Vref |
| Potentiometer  | 6V dc             | 6V dc             |
| Vibrating Wire | 0-2V 4-20 mA      | 0-2V 4-20 mA      |
| Thermistors    | +15V , 2.048 Vref | +15V , 2.048 Vref |

| Excitation Signals |                                                  |
|--------------------|--------------------------------------------------|
| mV and 4-20 mA     | +15 Vdc                                          |
| mV/V               | 2.0480 Vdc                                       |
| Vibrating Wire     | Universal, a band selection, auto centering band |
| Potentiometers     | 2.0480 Vdc                                       |

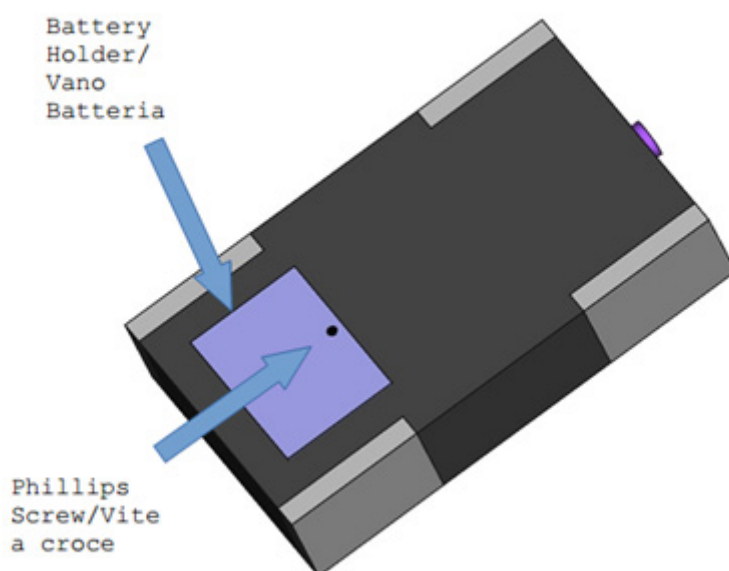
| General Functions |                                                            |
|-------------------|------------------------------------------------------------|
| Display           | Backlit, graphic                                           |
| Power Supply      | 9V alkaline Battery                                        |
| Autonomy          | > 4 hours                                                  |
| Box               | ABS UL94-V0                                                |
| Dimensions        | 185x110x35 mm                                              |
| Weight            | 400 gr battery included                                    |
| Help              | With indication of clamps / colors for each kind of sensor |

## Description

Instrument is delivered with following accessories:

- mV/V cable and clamps ;
- mV/VW/POT/mA cable and clamps ;
- Protective Box;
- Two 315 mA Protection Fuses;
- A 9 Volt alkaline batteries

Geotester 3.0 is delivered fully calibrated and ready to use, for battery installation refers to the following figure.



1. Remove Phillips screw indicated in the figure;
2. Open the battery holder;
3. Install a 9V battery PP3 Alkaline:
  - a. Do not use lithium Batteries with similar shape;
  - b. Zinc Carbon Batteries are not recommended;
  - c. Use just Alkaline PP3 9V Batteries
4. Close battery holder and screw the box.

## Power on

Keyboard Layout with multifunction Keys

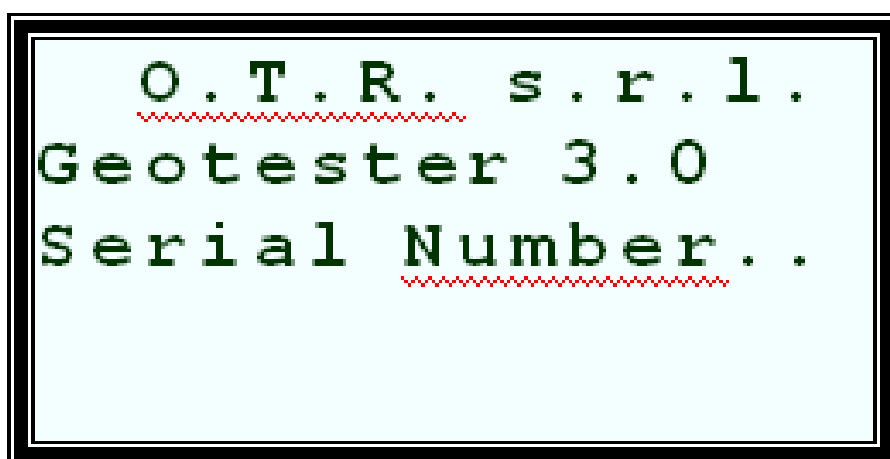


Press the key :

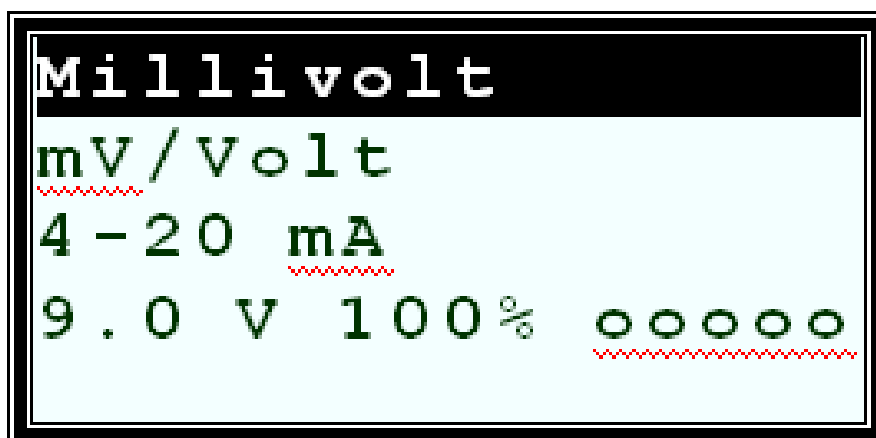


## Main Menù

Geotester will turn on indicating:



After few seconds a menu will appear:



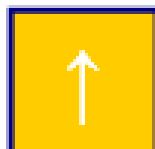
## Active Key:



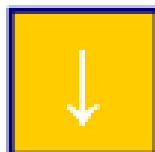
Keep pressed off button to turn off the device



Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory



Press upper arrow to change the function to be selected



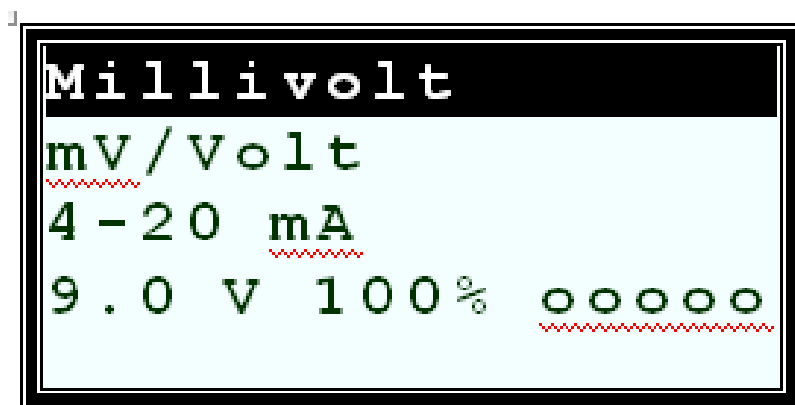
Press lower arrow to change the function to be selected



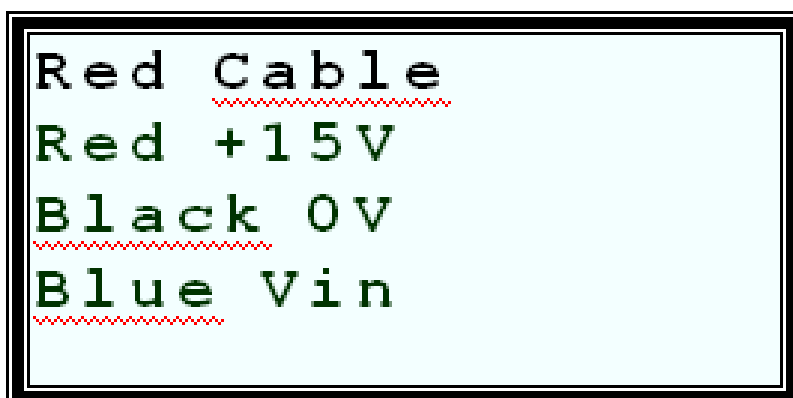
Press OK to select the function

## Millivolt Readout

Connect to Geotester 3.0 the Red cable.



Press OK to enter in Millivolt reading menu and it will appear:



Red    Sensor positive Supply (15Vdc)

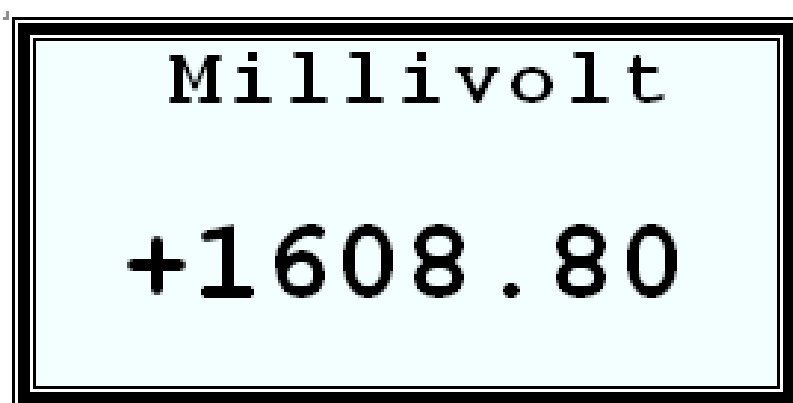
Black   Sensor negative supply/signal

Blue    Positive Signal ( $\pm 5000.0$  mV)

Refer always to sensor manual before connecting Geotester 3.0. An improper connection could damage your sensor.

OK

Press OK to enter in measure modality after learning connections and colours.



Geotester will measure the signal in mV. For other features of these function refer to Stability Option paragraph.

## Active Key:



Keep pressed off button to turn off the device. If battery charge allows it when geotester will be turned on again it will start directly in this function.

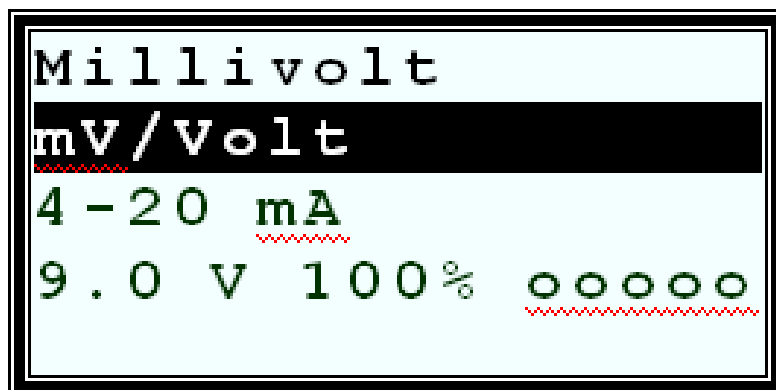


Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory

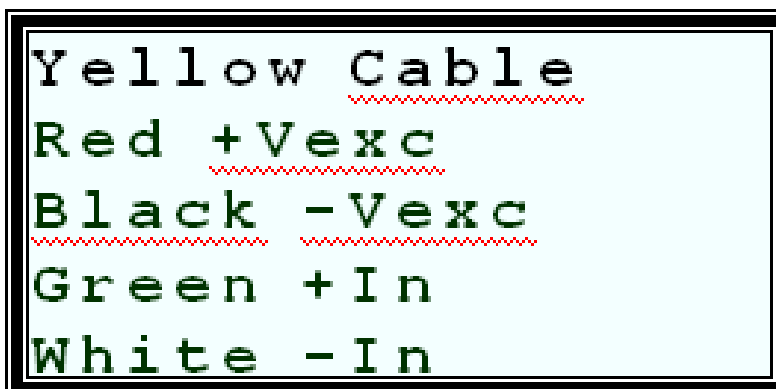


Press esc button to return to general menu.

## mV/Volt Readout



Connect to Geotester 3.0 the Yellow cable.  
 Press OK to enter in Millivolt reading menu and it will appear:

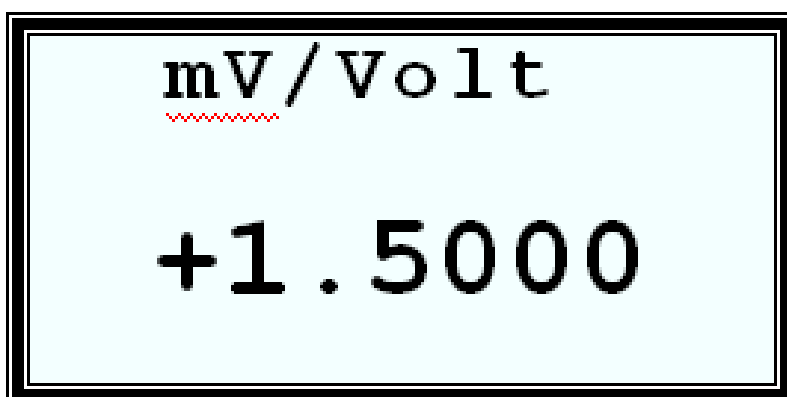


- Red Sensor Positive Supply (2.0000 V)
- Black Sensor Negative Supply
- Green Differential Positive Output signal ( $\pm 2\text{mV/V/FS}$ )
- White Differential Negative Output signal ( $\pm 2\text{mV/V/FS}$ )

Refer always to sensor manual before connecting Geotester 3.0. An improper connection could damage your sensor.

OK

Press OK to enter in measure modality after learning connections and colours.



Geotester will measure the signal in mV/V. For other features of these function refer to Stability Option paragraph.

### Active Key:

off

Keep pressed off button to turn off the device. If battery charge allows it when geotester will be turned on again it will start directly in this function.

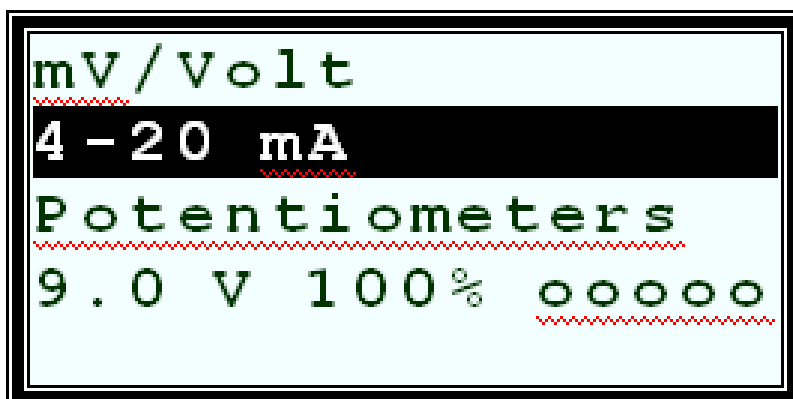
fn

Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory

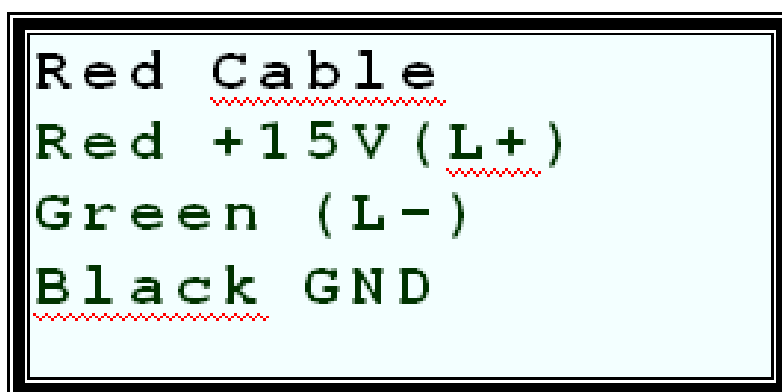
esc

Press esc button to return to general menu.

## 4-20mA Readout



Connect to Geotester 3.0 the Red cable.  
Press OK to enter in mA reading menu and it will appear:



Red    Sensor positive Supply (15Vdc, L+)

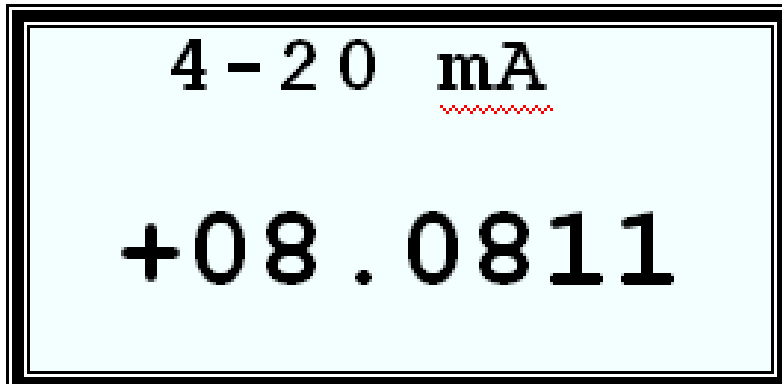
Green   Sensor signal return (L-)

Black   Sensor negative supply (3 Wires 4-20 mA sensors only)

Refer always to sensor manual before connecting Geotester 3.0. An improper connection could damage your sensor.



Press OK to enter in measure modality after learning connections and colours.



Geotester will measure the signal in mA. For other features of these function refer to Stability Option paragraph.

### Action Key:



Keep pressed off button to turn off the device. If battery charge allows it when geotester will be turned on again it will start directly in this function.



Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory.

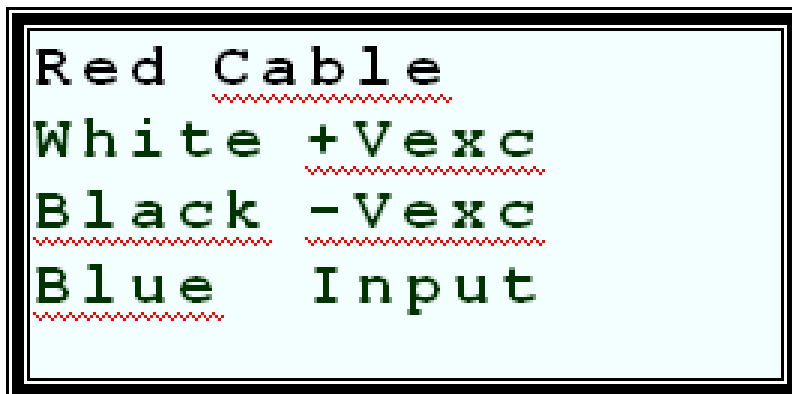


Press esc button to return to general menu.

## Potentiometric sensors Readout



Connect to Geotester 3.0 the Red cable.  
 Press OK to enter in Potentiometer reading menu and it will appear:

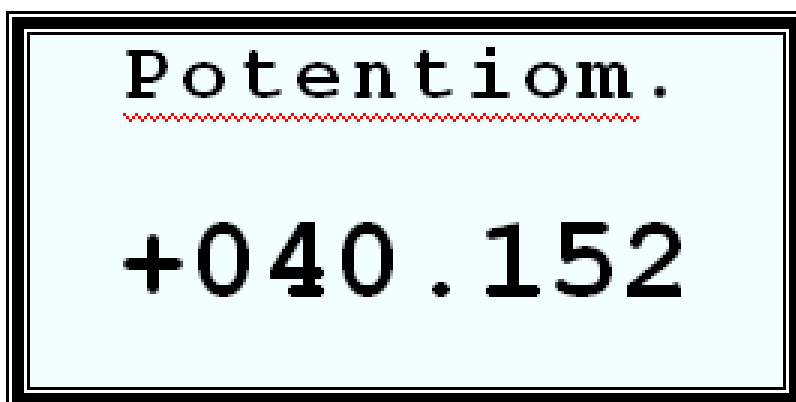


|       |                                                |
|-------|------------------------------------------------|
| Red   | Sensor positive Supply of the sensor (2.0000V) |
| Black | Sensor negative supply of the sensor           |
| Blue  | Sensor Output (0 to positive supply)           |

Refer always to sensor manual before connecting Geotester 3.0. An improper connection could damage your sensor.



Press OK to enter in measure modality after learning connections and colours.



Geotester will measure the signal of potentiometer in % considering 0% zero value and 100% full scale value.  
For other features of these function refer to Stability Option paragraph.

### Action Key:



Keep pressed off button to turn off the device. If battery charge allows it when geotester will be turned on again it will start directly in this function.

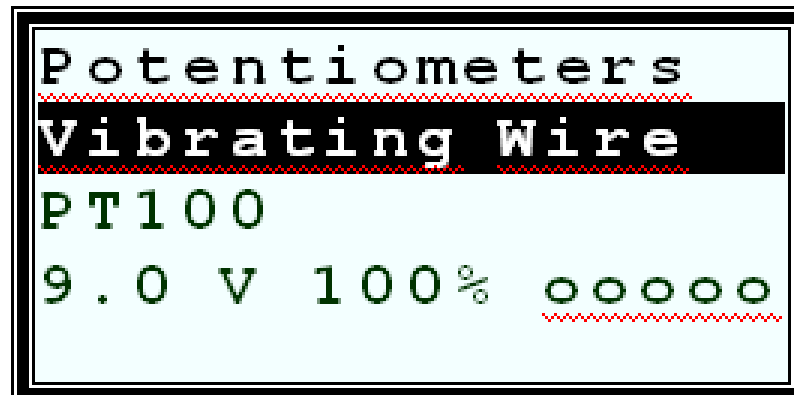


Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory

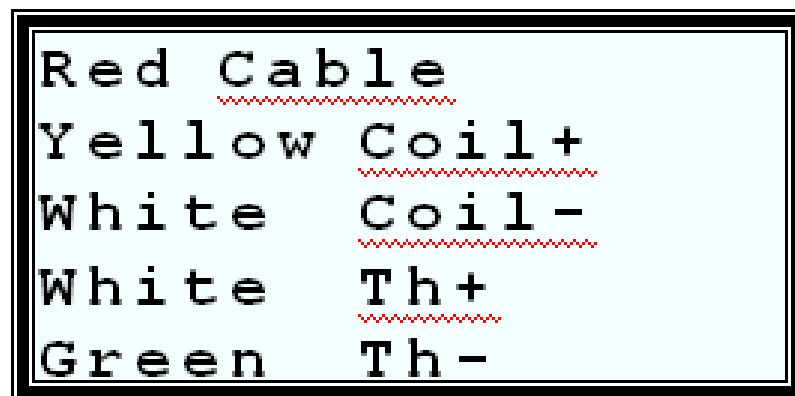


Press esc button to return to general menu.

## Vibrating wire Readout



Connect to Geotester 3.0 the Red cable.  
 Press OK to enter in Vibrating wire reading menu and it will appear:



Yellow Coil + of the sensor

White Coil - of the sensor

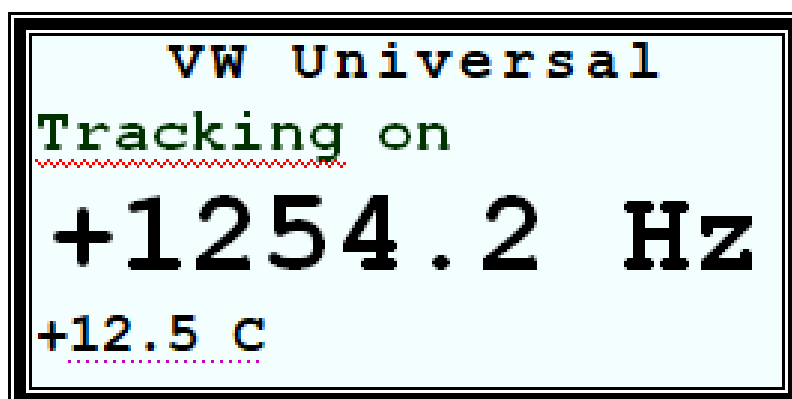
White Thermistor of the sensor

Green Thermistor of the sensor

Refer always to sensor manual before connecting Geotester 3.0. An improper connection could damage your sensor.



Press OK to enter in measure modality after learning connections and colours.



Geotester will measure the signal of vibrating wire in Hz or Digits (see Setting Paragraph).

For other features of these function refer to Stability Option paragraph.

## Active Key:



Keep pressed off button to turn off the device. If battery charge allows it when geotester will be turned on again it will start directly in this function.



Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory



Press esc button to return to general menu.



Tracking of Vibrating wire On/Off



Press upper arrow to change the band of VW sensor



Press lower arrow to change the band of VW sensor

## Vibrating Wire's Bands

- Universal (500-5000 Hz);
- 500-1200 Hz;
- 1000-2200 Hz;
- 2000-3000 Hz;
- 2800-4000 Hz;
- 3800-6000 Hz.

### N.B.

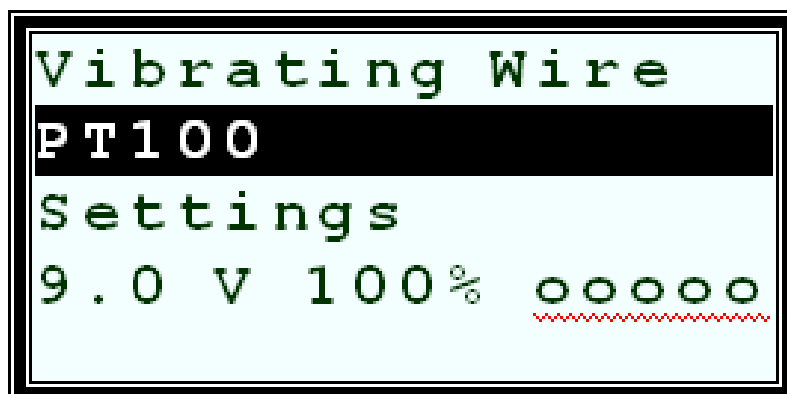
Please note that band is always expressed in Hz even if output can be selected in Digits in Settings Menu.

If Tracking Option is selected Geotester 3.0, after having found a stable output, will concentrate the sweep in the values near to sensor oscillation.

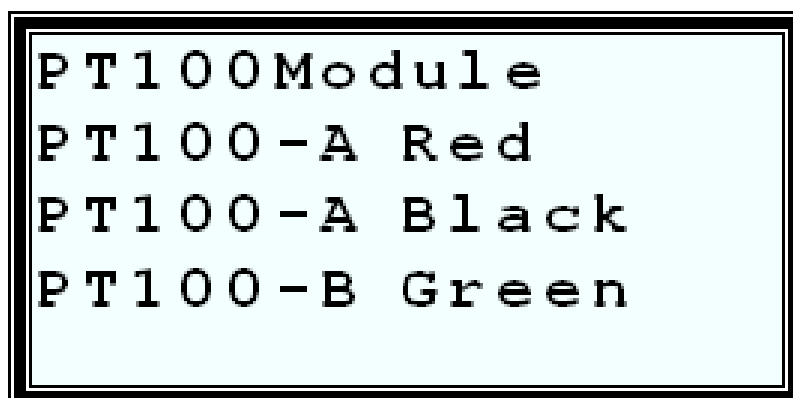
Tracking Option and Band Selection are independent , they can work together or not.

## PT100 Readout

Direct reading of PT100 sensors is possible using dedicated cable (P/N 2018004 and firmware after 1.1). Geotester has been calibrated for reading PT100 in a range  $-30^{\circ}\text{C}$  /  $+75^{\circ}\text{C}$  (effective full scale is possible  $-100^{\circ}\text{C}/+100^{\circ}\text{C}$ ).

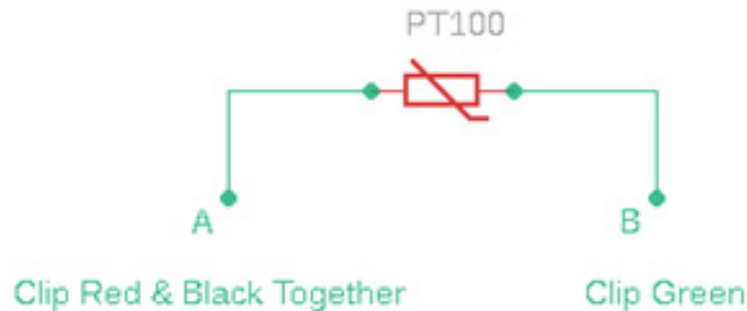


Connect to Geotester 3.0 the cable with dedicated module.  
Press OK to enter in  $^{\circ}\text{C}$  reading menu and it will appear:



## Reading PT100 with 2 wires

It is possible to read a 2 wires PT100 (not recommended for long wirings) using the following scheme:

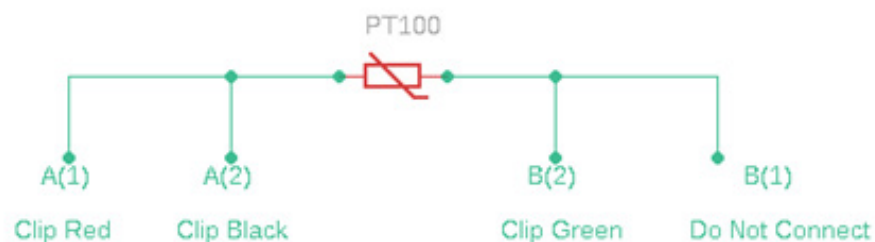


Red A  
Black A  
Green B

Reading a PT100 with just 2 wires is recommended only for short cables. Cable resistance modify precision and readings. Refer always to sensor manual before connecting Geotester 3.0. An improper connection could damage your sensor.

## Reading PT100 with 3 wires

It is possible to read a 3 wires PT100 (not recommended for long wirings) using the following scheme:

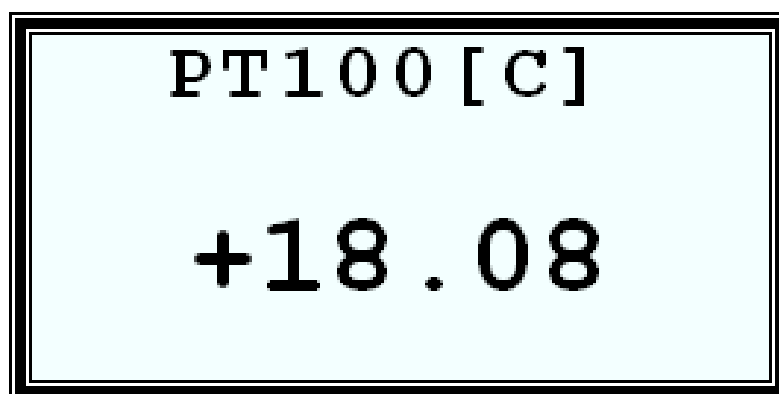


Red A (1)  
Black A (2)  
Green B (2\*)  
Not connected if available B (1\*)    - \*1 and 2 are not different.-

It is possible to read a PT100 sensor with 4 wires also do not connecting one of the wires (in the sample is B(1)). Readings will not have a significant difference in precision also with long wires. It is absolutely important do not connect the wire that will not be used, resistance would not be balanced correctly and precision would decrease.

OK

Press OK to enter in measure modality after learning connections and colours.



Geotester will measure the signal in °C. For other features of these function refer to Stability Option paragraph.

## Active Key:

off

Keep pressed off button to turn off the device. If battery charge allows it when geotester will be turned on again it will start directly in this function.)

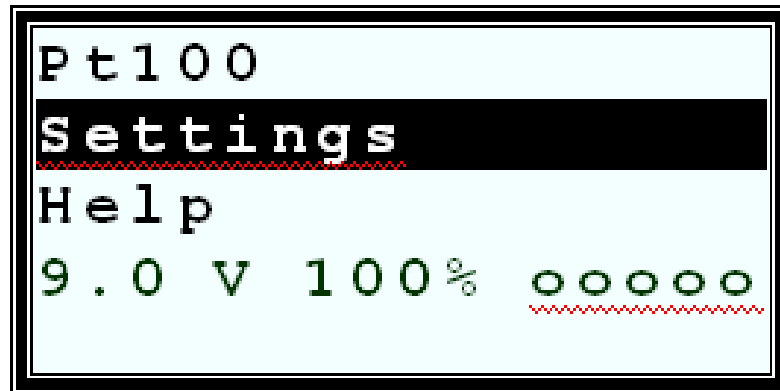
fn

Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory.

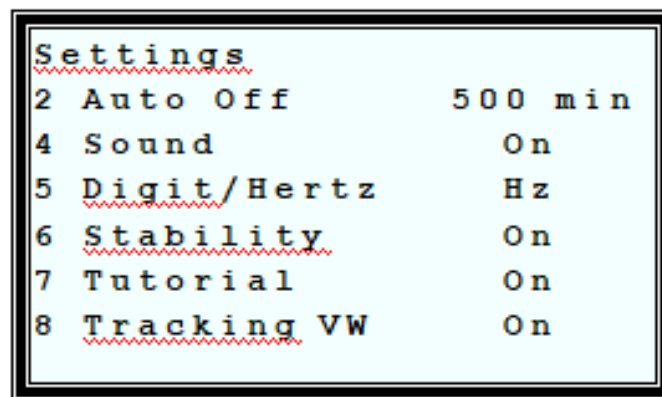
esc

Press esc button to return to general menu.

## Menù settings



Press OK to enter in Settings menu:



### Active Key:



Keep pressed off button to turn off the device. If battery charge allows it when geotester will be turned on again it will start directly in this function.



Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory.



Press esc button to return to general menu.

## Active Key:



Press upper arrow (2) to select auto off option: you can set the minutes of inactivity after which Geotester 3.0 will turn off automatically



Press left arrow (4) to change Sound option (On beep, Off click)

- On -> Beep;
- Off -> Click.



Press OK (5) to change output of vibrating Wire in Hz or Digits.



Press right arrow (6) to change stability options:

- On: Geotester will give values just when they are stable, at the beginning or during the measurement if the values are not stable "Reading.." will appear;
- Off: Geotester will give values always, at the beginning or during the measurement if the values are not stable the symbol \* will appear;
- Off option can be useful with signals that change quickly or to evaluate the stability of the system/sensor.



Press canc (7) to change the option Tutorial:

- On: Geotester will indicate before taking readings the connection and the cable to use;
- Off: Geotester will not indicate the connection and the cable to use;



Press lower arrow (8) to change the option of tracking in VW modality:

- On: measure will start always with this option;
- Off: measure will start always without this option;

## Menù Help



Press OK to enter in Help.  
Geotester will display all options and utilization of menu and device.

### Action Key:



Keep pressed off button to turn off the device. If battery charge allows it when geotester will be turned on again it will start directly in this function.



Press fn button to change luminosity, this value will be automatically recorded in Geotester Memory



Press esc button to return to general menu.



Press upper arrow to return to previous section



Press upper arrow to return to following section

## Battery Indication

Geotester indicate battery voltage:

Under 6.0 V battery must be changed as soon as possible to continue measurements, it can happen that Geotester:

- decide to turn off during measurement if battery gives no more enough power;
- do not turn on in the last measurement option cause it has not enough power;
- turn off immediately entering in mA/,mv/Volt, Millivolt menu;
- has not enough power to excite correctly VW sensors.

## Fuse Replacement

Internal Protection Fuse of Geotester could isolate power supply of the device in the next cases:

- protracted short circuit of external cables;
- Overloaded inputs with signals not compatible with the application.
- Make use of batteries or power supplies not expected.

If internal protection fuse must be replaced:

- Contact technical service of OTR ([assistenza@otr-geo.it](mailto:assistenza@otr-geo.it));
- If you decide to replace independently the fuse use only 315 mA 5x20 mm cartridge Fuses.

**An incorrect use with inputs/outputs not compatible with the specifications of the device or repeated short circuits could damage the instrument.**