

A complete, rapid appraisal of earths

MULTI-FUNCTION

- Earth resistance
- Earth coupling
- Soil resistivity
- Continuity / Resistance

ERGONOMIC

- Rugged, water-tight field casing
- Giant back-lit LCD display
- Direct access to the measurements by selector switch
- Battery can be recharged from mains or vehicle cigar lighter

RELIABLE & ACCURATE

- Uses conventional rod methods
- Automatic recognition of poor connections or presence of parasitic voltage

EFFECTIVE

- Extensive measurement range: resistance from 0.01Ω to $100 \text{ k}\Omega$
- Possibility of selecting measurement frequency from 41 Hz to 512 Hz
- Automatic calculation of earth coupling coefficient and of soil resistivity



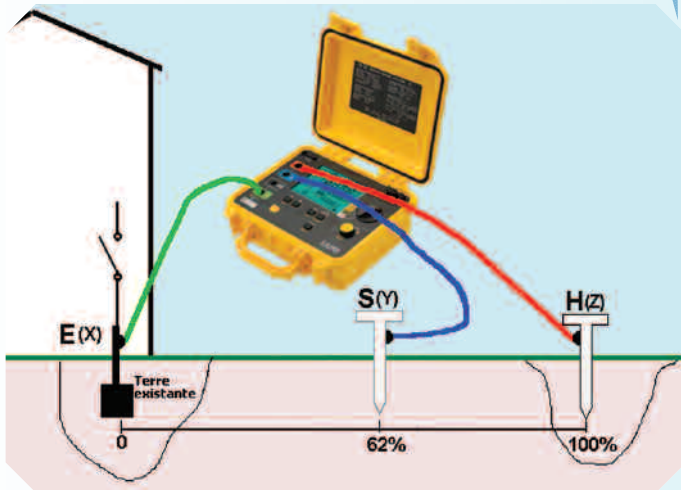
EARTH MEASUREMENT BY 3-ROD METHOD

Traditional method using rods to measure the resistance R_E of an existing earth electrode
The resistances of the auxiliary rods, R_S and R_H , can also be measured.

The user can choose the measurement frequency between 41 Hz and 512 Hz;
the instrument also does this automatically.

CHARACTERISTICS

- range of resistance R_E : from 0.01 Ω to 100 k Ω
- choice of measurement voltage: 16 or 32 Vrms
- adjustable measurement frequency: 41 to 512 Hz
- R_S and R_H : measurement from 0.01 Ω to 100 k Ω
- $U_{\text{parasitic}}$ maximum 60 V_{peak}



UTILITY OF CHOOSING THE MEASUREMENT FREQUENCY:

the instrument or the user chooses the measurement frequency at which the influence of parasitic voltage is least.

Particular measurement:

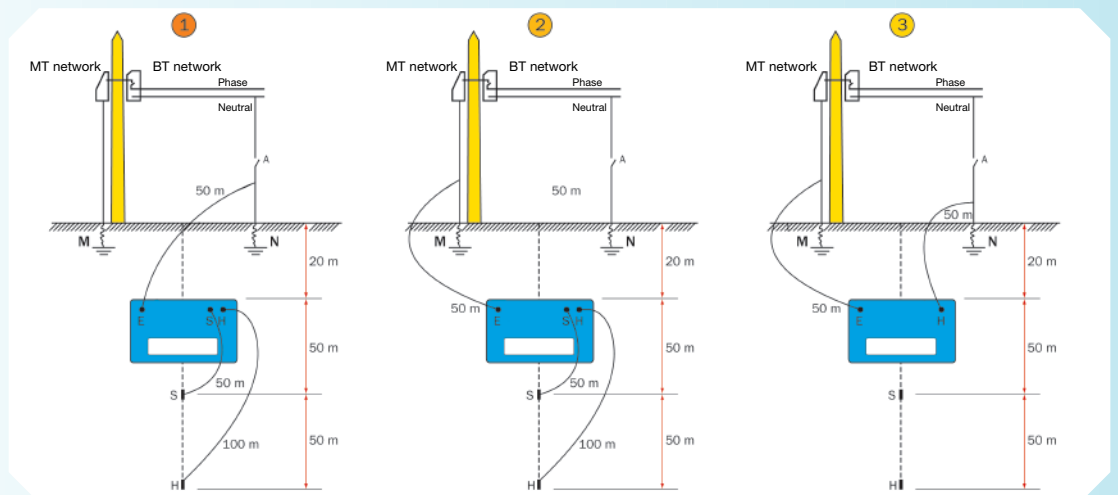
EARTH COUPLING MEASUREMENT

To estimate the mutual influence of 2 earth resistances that are not connected to one another, it is essential to calculate the coupling coefficient, which must be as low as possible.

The operator makes 3 successive measurements (2 conventional earth measurements by the 3-rod method - R_1 & R_2 - and 1 earth measurement by the 2-rod method - $R_{1,2}$) and the instrument automatically calculates the coupling resistance:

$$R_c = (R_1 + R_2 - R_{1,2}) / 2$$

(Same characteristics as the conventional earth measurement by the 3-rod method)



SOIL RESISTIVITY MEASUREMENT

When it is possible to choose the location of the earth electrode, the resistivity measurement serves to qualify the soil and so determine the location where the earth resistance will be lowest (optimization of construction costs).

The C.A 6470 automatically calculates the soil resistivity ρ by the Wenner or Schlumberger method, as soon as the distances between the rods have been programmed.

The resistances of the rods, R_E , R_{ES} , R_S and R_H , can also be measured.

The measurement frequency can also be chosen.

CHARACTERISTICS

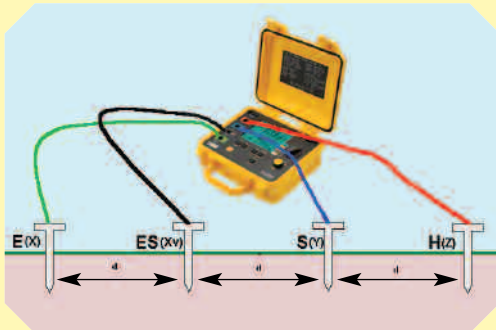
- range of resistance R_{S-SE} : from 0.01Ω to $100\text{ k}\Omega$
- choice of measurement voltage: 16 or 32 Vrms
- adjustable measurement frequency: 41 to 128 Hz
- R_E , R_{ES} , R_S and R_H : measurement from $0.01\ \Omega$ to $100\text{ k}\Omega$
- $U_{\text{parasitic}}$ maximum $60\text{ V}_{\text{peak}}$
- automatic calculation of ρ by the Wenner or Schlumberger method if distances entered

Reminder

methods of calculation of soil resistivity ρ

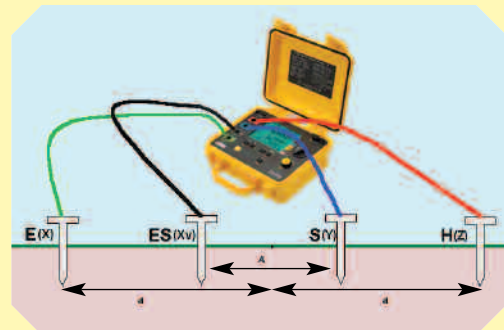
• WENNER METHOD:

- the distances between the 4 rods are identical: d
- $\rho_W = 2 \cdot \pi \cdot d \cdot R_{S-ES}$



• SCHLUMBERGER METHOD:

- the distance between the 2 inner rods S & ES is A
- the distance between the 2 outer rods E & H is $2d$
- $\rho_S = (\pi \cdot (d^2 - A^2/4) \cdot R_{S-ES}) / 4$



RESISTANCE / CONTINUITY MEASUREMENT

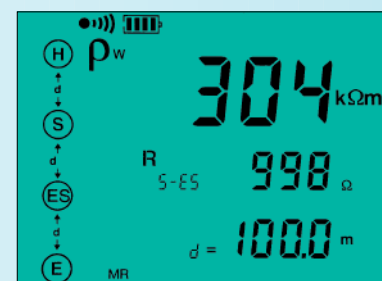
Four-wire or two-wire method, possibly with reversal of the measurement current; this measurement serves to check:

- the condition of the measurement cables
- the connections between the cables and the measurement rods
- the cross links in a network of earths in parallel

CHARACTERISTICS

- methods: two-wire or four-wire (compensation leads possible in 2-wire method)
- range of resistance: from $0.001\ \Omega$ to $100\text{ k}\Omega$
- measurement current $\geq 200\text{ mA DC}$ for $R < 20\ \Omega$

MEASUREMENT CONVENIENCE FUNCTIONS



- **Large back-lit LCD display** for excellent legibility of the results, with 3 simultaneous numerical display levels and many symbols and indicators for a better idea of the measurement and of the actions on the various keys.



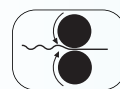
- **Programmable alarms (continuity function only)**

Because an audible signal is sometimes all that is needed to interpret and judge a measurement, a high or/and low alarm threshold can be activated. When it is crossed, an audible warning device is triggered.



- **Extended memory**

The C.A 6470 has a time-stamped internal memory to store 512 complete measurements. Storage is done using indexes that store the results in an orderly manner: OBJ:TEST for earth and continuity measurements, OBJ:TEST:1,2,3,4 for earth coupling, and OBJ:TEST: DISTANCE for resistivity measurements.



- **SMOOTH function**

When the measurements are unstable, the Smooth function smoothes the display of the values measured for easier reading and faster interpretation.

OTHER CHARACTERISTICS

- **Water-tight field casing, IP 53** in accordance with NF EN 60529; dimensions: 260 x 240 x 120 mm; weight: approximately 2.7 kg
- **Power supply:** the instrument operates with an NiMH battery that can be recharged from mains or a DC source (vehicle cigar lighter).
- **Communication interface:** two-way, optical, for connection to a PC.
- **Electrical safety:** instrument with double insulation, Cat. IV 50 V_{rms}, compliant with EN 61326-1 / EN 61010-1 and IEC 61557-1-4-5.

TO ORDER

- **C.A 6470 EARTH AND RESISTIVITY TESTER**(P01.1265.03)
Delivered with an external charger and a charging cord with mains plug, a user manual in 5 languages on a CD-ROM, a data export software, and a communication cord.

ACCESSORIES

- **100M EARTH AND RESISTIVITY KIT**(P01.1020.24)
Prestige carrying bag with compartments containing 4 earthing rods, 4 coils of cable (100 m red, 100 m blue, 100 m green, 30 m black), 1 flat spool of 10 m cable green, 1 hammer, 4 mm Ø banana jack / fork plug adapters (x5), and a space for the tester.
- **150M EARTH AND RESISTIVITY KIT**(P01.1020.25)
Prestige carrying bag with compartments containing 4 earthing rods, 4 coils of cable (150 m red, 150 m blue, 150 m green, 30 m black), 1 flat spool of 10 m cable green, 1 hammer, 4 mm Ø banana jack / fork plug adapters (x5), and a space for the tester.
- **CONTINUITY KIT**(P01.1020.37)
Plastic pouch containing 4 x 1.5 m cables (4 mm Ø. banana jack / 4 mm Ø. banana jack), 4 alligator clips, and 2 test probes.
- **ADAPTER FOR CHARGING BATTERY FROM CIGAR LIGHTER**(P01.1020.36)
- **DATAVIEWER PRO PC SOFTWARE**(P01.1020.06)



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