

MEASURING EQUIPMENT

Soil box, Test cell

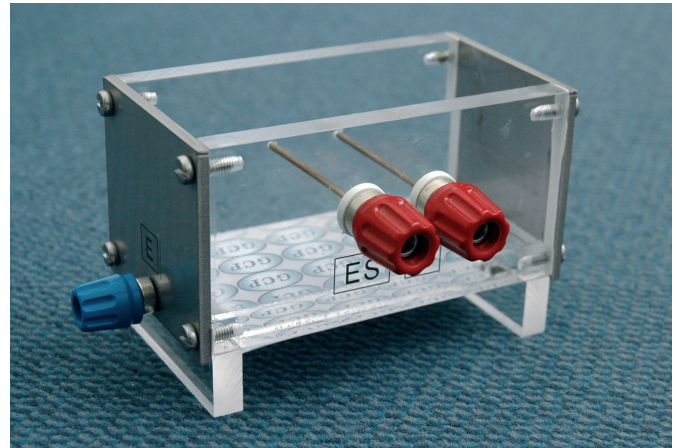
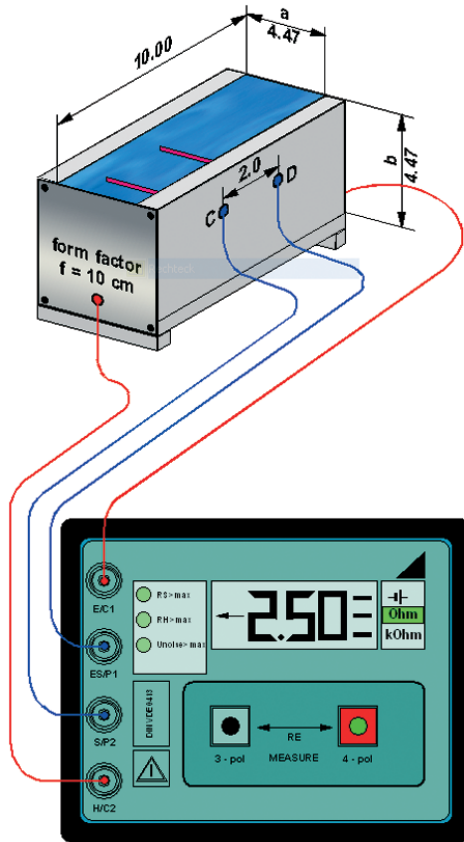
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Sheet: 1 of 1

German Cathodic Protection



Measuring arrangement, soil box with earthing tester



The soil box can be used for the measurement of specific resistivity of electrolytes ie. soil sample, water and conducting fluids.

The specific resistivity is measured by using a normal 4 -terminal earth resistance meter in accordance with Wenner's 4 - electrode method.

The soil box consists of a plastic container with metal end plates for passing current through the soil sample packed into the box and potential terminals permitting measurement of voltage drop across a section of the soil sample,

The dimensions of the box and position of electrodes are designed so that resistivity of electrolyte sample in the box is obtained by multiplying the resistance value in Ohm indicated by the meter by the form factor (printed on box).

The test sample should be filled up to the top of the box. The soil samples should be carefully filled and compacted to ensure proper contact with the plates and rod electrodes and also to remove air bubbles and voids.

The test box method gives very accurate results for fluids but the value measured for soil samples may differ from those measured at actual site due to variations of natural conditions including moisture, compaction, void ratio, particle size etc..

CALCULATION OF FORM FACTOR (f)

$$f = \frac{a \times b}{C D} = \frac{4.47 \text{ cm} \times 4.47 \text{ cm}}{2.0 \text{ cm}} = 10 \text{ cm}$$

SPECIFIC SOIL RESISTIVITY (p)

$$p = R \times f$$

Example:

Soil box filled with salty liquid

Indicated R = 2.5 Ω

SPECIFIC SOIL RESISTIVITY (p)

$$p = R \times f = 2.5 \Omega \times 10 \text{ cm}$$

$$p = 25 \Omega \text{ cm}$$

Dimensions

| Length | Height | Depth | Weight |
|--------|--------|-------|---------|
| 168 mm | 55 mm | 60 mm | 0.38 kg |