

PORTABLE CU/CUSO₄ REFERENCE ELECTRODES IN ANTIFREEZE GEL FOR SOIL.

Portable Saturated Copper/Copper Sulfate (Cu/CuSO₄) electrodes for monitoring Cathodic Protection systems, equipped with a plastic container, ceramic porous plug, and high-purity Copper rod, for use on soil surfaces, with a flat porous plug, filled with gel solution



GENERAL INFORMATION

- Dimensions: Approximately 200x34mm (LxØ);
- Weight: Approximately 0.5 kg;
- Use: Natural soil (with low content of soluble chlorides);
- Temperature Range: 0 ÷ 55°C;
- Storage Period: Indefinite if stored empty, approximately 6 months if stored with gel filler.

Portable copper/copper sulfate (CSE) reference electrodes filled with antifreeze gel are used as sensors to read the polarization values of buried metal structures with cathodic protection. They are essential when measurements are required at points not covered by fixed electrodes. Filled with antifreeze gel, they eliminate solution loss during transport and do not require frequent cleaning or refilling, unlike liquid-filled electrodes. Furthermore, the gel has a significantly lower freezing point than liquid solutions, which can be crucial for measurements in particularly cold environments.

When the electrode's porous junction is placed on the ground above a buried metal structure (typically a pipeline), an electrical potential difference is created between the electrode's measuring terminal and the surface of the structure. This difference can be measured with a common high-impedance multimeter, and its value correlates with the structure's protection status. Portable electrodes do not require external power, are simple to use and, if properly maintained, guarantee a long operating life.