

ELECTRIC LOGGING PROBE

The electric log is the classic water-well combination probe combining shallow, medium and deep penetrating resistivity measurements with self-potential (SP) and natural gamma (optional).

PRINCIPLE OF MEASUREMENT:

Resistivity The down-hole probe is equipped with electrodes, measurement electronics and an insulated bridge. A low-frequency bi-directional electric current from a source electrode on the probe returns through the formation to the cable armour above the bridge. Potentials due to this current flow are measured on various sense electrodes on the probe with respect to a voltage-reference 'fish' normally located at the surface. The spacing between the source and individual sense electrode determines the depth of investigation of the measurement. These measurements are converted to apparent formation resistivities within the probe and digitally transmitted to the surface.

SP The SP is a voltage measurement between a non-polarising down-hole electrode and a reference 'fish' at the surface.

FEATURES

- Digital down-hole measurement avoids errors due to cable effects in deeper boreholes
- Constant-power down-hole current source give 4 decades of measurement without manual range switching
- Optional natural-gamma measurement and temperature

MEASUREMENTS

- 16" Normal resistivity
- 64" Normal resistivity
- Single-point resistance
- Self potential SP
- Natural-gamma
- Temperature
- Optional 8" and 32" Normal resistivity

APPLICATIONS

- Water**
 - Determination of water quality
 - Indication of permeable zones and porosity
- Minerals/Engineering**
 - Bed-boundary positions
 - Strata correlation between boreholes

OPERATING CONDITIONS

- Borehole type:** open-hole, water-filled
- The bridge top must be immersed in well fluid, restricting top logging depth to 10m below the fluid level. A short bridge may be used to allow resistivity logging to within 3m of the fluid surface. However, 64" normal results in this case will be qualitative. Best results are obtained in fresh mud with low to medium formation resistivities.

SPECIFICATIONS

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|--------------------------------|---|
| Diameter: | 44mm |
| Length: | 2.55m (standard) 2.70m (with temperature) 2.94m (with 8"/32") |
| Weight: | 9.8kg |
| Max. temperature: | 70°C (extended ranges available) |
| Max. pressure: | 20MPa (extended ranges available) |
| Resistivity range: | 1 to 10,000 ohm-m (alternative ranges available) |
| Range SP: | -1V to +1V |
| Current return: | Cable armour |
| Voltage reference: | Surface fish |
| Natural-gamma detector: | 50mm x 25mm NaI(Tl) scintillation crystal (larger crystals available) |

SALES INFORMATION

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| Probe: | |
| 25 055 000 | Electric logging probe |
| 25 056 000 | Electric logging probe with natural gamma |
| 25 054 000 | Electric logging probe with natural gamma and temperature |
| 25 067 003 | Electric logging probe with natural gamma, temperature, 8" and 32" normal resistivity 10m bridge |
| 20 015 000 | Surface earth stake (fish) |
| 20 101 000 | ELOG testbox |
| 24 001 000 | Sinker bar |
| Accessories: | |
| 20 074 000 | Natural-gamma calibrator without source |
| 30 010 000 | 3.7MBq ¹³⁷ Cs source for natural-gamma calibrator |

