

LandMapper® ERM-01

Throw away your augers and soil samplers! Well, not quite. LandMapper ERM-01 is here to help you delineate areas with contrasting soil properties within the fields quickly, non-destructively, and cost-efficiently. Using the device prior to soil sampling you can significantly reduce the amount of samples required and precisely design a sampling plan based on the site spatial variability.

LandMapper measures electrical resistivity or conductivity of soils and related media for express non-destructive mapping and monitoring of agricultural fields as well as construction and remediation sites. In a typical setting, a four-electrode probe is placed on the soil surface and an electrical resistivity value is read from the digital display. The device measures electrical resistivity in a surface soil layer of the depth from 2 cm down to 5 m, which is set by varying the size of a four-electrode probe.



Key Features

- Compact** and **portable** design (weights only 250 g without the probe)
- Fast** (one measurement takes 5 sec.)
- Accurate** (automatically accounts for spontaneous potential arising from grounding of the electrodes)
- Safe** and **economical** (uses a standard 9 V battery)
- Seamless connection** with personal computer for data transfer (stores 999 data values)
- Modular** and **interchangeable** the 4-electrode probes and detachable measuring unit
- Versatile** (the same unit can be used in field mapping and laboratory experiments)
- Affordable** (enquire about our very [competitive prices and available discounts](#))

Equipment measures potential difference ($\Delta\phi$), which arises between two electrodes (M and N), when electrical current (I) is applied to two other electrodes (A and B) as in well-known in geophysics four-electrode principle. Device then calculates electrical resistivity from the voltage/current measurements and supplied geometrical coefficient. Direct output from the LandMapper ERM-01 is electrical resistivity in Ohm m, which is easily converted into electrical conductivity ($S\ m^{-1}$) by data post-processing. Advanced scientific research supports versatile applicability and usefulness of our equipment. Our team was working on a theory of the electrical fields in soils, applications of electrical resistivity measurements in soil science, and electrical geophysical data interpretation for 20 years; combined work of several Ph.D. scientists in the area is about 50 years. More than ten dissertations and five books were published on the topic in Russia and USA.

Technical Specifications

- Range of measurement.....0.1-1M Ohm m
- Automatically switches electrical resistivity ranges. Precision and error of measurements:

Range, Ohm	Precision	Relative error, max
0.1 - 1	0.01	4%
1 - 10	0.01	2%
10 - 100	0.1	2%
100 - 999	0.1	0.1-1%
1,000 - 5,000	0	0.1-1%
5,000 - 9,999	0	2.5%
10,000 - 25,000	100	2.5%
25,000 - 100,000	100	4.5%

- User-defined K (geometrical coefficient).....0.1 up to 99.9
- Quantity of changeable K-coefficients.....10
- Quantity of data storage locations.....999
- Range of operation temperatures.....from - 10 up to + 40 C⁰ or 14 to 100 F
- Air humidity no more than.....65 %
- Weight of the device no more.....250 g or 8 oz
- Current of consumption no more.....7.0 mA
- Output voltage, no more.....5 V
- Measurements comparable with DC methods, frequency.....1.25 Hz
- Computer connection.....serial port

Applications of the equipment

- Mapping of soil surface electrical resistivity or conductivity, which is shown to be related with soil texture, salinity, stone content, pollution by oil products, etc.
- Measuring electrical resistivity in soil pits to better diagnose genetic horizons.
- Possibility to monitor electrical resistivity distribution in soil profiles without excavation to study freezing-melting, drying-wetting, and solute redistribution processes.
- Measuring electrical resistivity in soil columns in model experiments to account for spatial variability and to outline solute flow.
- Measuring electrical resistivity of liquids, solid, and semisolid media, such as soil samples, pastes, and slurries; wood; food; and others.

