

Conductivity Meter

HIGH-SENSITIVITY & PORTABLE

The **GCM-2** is a world first, hand-held Conductivity Meter that measures the inductive and galvanic conductivity of rock samples, mine faces and drill-core, displaying it graphically and numerically in analog and digital format.

The unit is microprocessor controlled allowing flexibility in display, auto ranging, auto-calibration in free air, and serial output.

PRINCIPLE OF OPERATION

As the impedance of an inductor will alter when placed in close proximity to a conductive body, the GCM-2 measures the in-phase and quadrature components of this impedance change. A large dynamic range is obtained by utilising a measuring frequency appropriate to the conductivity and correcting for magnetic effects.

MAGNETIC EFFECTS

High values of magnetic susceptibility in samples will reduce the apparent conductivity. The GCM-2 corrects for this effect in software for the digital display and stored data.

SENSOR TYPE

Measurements can be made inductively using either the flat rectangular sensor or optional drill-core coils, or galvanically using supplied test leads.

The Sensor Type option on the menu selects internally stored calibration constants specific to the indicated sensor. In Automatic Select mode the GCM-2 measures the sensor impedance matching it to the correct sensor on an internal list.

CONDUCTIVITY VARIATIONS & ANISOTROPY

The conductivity of a heterogeneous sample of many different minerals and gangue varies greatly depending on the relative proportions of each mineral and texture and moisture content of the rock. These textural changes can generate anisotropy and differences between inductive & galvanic mode measurements can be used to assist in the determination of anisotropy of conductive samples.



MEMORY & DATA STORAGE

The unit allows for the storage of up to 10,000 readings in a circular buffer and subsequent recalling and dumping through the menu. Storage intervals can be varied from 1 sec up to 2 min, or on command.

RS-232 INTERFACE

The GCM-2 has an in-built RS-232 interface to store conductivity readings on a PC either in realtime or downloaded from memory.

Download is menu driven in ASCII format allowing storage of sequence number, conductivity value, and frequency.

APPLICATIONS

- Field Geological Mapping
- Core Logging using Air-Cored Coil Sensors

- Follow-up to Ground & Airborne Electromagnetic Surveys
- Mine Faces
- University Studies
- Laboratory Measurements

FEATURES

- Digital & Analog Display with Auto-Scaling
- Wide Dynamic Range
- Coil Sensors for Drill-Core Measurements
- Galvanic Measurements to supplement Induced Measurements
- Auto-Correct for Magnetic Effects of samples
- Memory for 10,000 readings
- RS-232 Output



GCM-2 Specifications

Sensitivity

Inductive Mode - 0.1 Siemens/metre
Galvanic Mode - 1 ohm

Dynamic Range

Inductive Mode - 10^{-1} to 10^5 S/m
Galvanic Mode - 1 to 10^5 ohms

Sensor Type

Standard - Flat coil for planar measurements and test leads for galvanic measurements
Optional - Air-cored coils specific to standard core sizes.

Sensor Frequency

Inductive Mode - 15.625 kHz to 2 MHz
Galvanic Mode - 15.625 kHz

Response Time

Less than 1 second after zeroing has been performed. (Zeroing takes 8 seconds.)

Display Type

2 line x 16 character LCD.
Display menus and readings in analog and digital form with frequency used.

Display Rate

Analog - 5Hz
Digital - 1Hz

Controls

6 key membrane keypad

Memory

10,000 readings in a circular buffer

Baud Rate

Selectable 300 to 9600 baud

Storage Interval

Storage Interval - Continuous at 1, 2, 10, 30sec, 1min, 2min or on command.

Data Output

Digital Output via inbuilt RS-232 Interface in ASCII format giving sequence number, conductivity, and frequency.

Power Source

4 x 1.5Volt "AA" Alkaline Batteries

Battery Life

6 hours continuous operation @ 70mA
Low battery indicator and auto shutdown.

Meter Case

Water Resistant - 'O' ring sealed

Environmental

Temperature Range
Operating: 0°C to +50°C
Storage: -40°C to +70°C
Relative Humidity
10 to 90% (non condensing)

Weight & Dimensions

Weight: 600 grams
Length: 180mm
Width: 100mm
Height: 45mm

Accessories included:

- Serial Interface download cable
- Plastic waterproof carrying case
- User's Manual

Optional Accessories:

Drill-core Coils
To suit AQ, BQ, NQ, HQ, & PQ cores.
Custom sizes on request.
Standard Set "A"
BQ 36.5mm
NQ 47.6mm
HQ 63.5mm
Standard Set "B"
PQ 85.0mm
AQ 27.0mm

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