MT Observation Instrument ELOG-MT Rev.B
24bit Magnetotelluric Observation Instrument

The ELOG-MT Rev.B is a 24-bit magnetotelluric observation system designed for simultaneous recording of three magnetic field components and two electric field components. It supports two types of induction sensors (Phoenix and Metronix). The device features differential inputs protected by surge protection elements for measuring ground potential differences.

Key Features:

- **High Precision Timing:** Utilizes a temperature-compensated crystal oscillator with GNSS time signals, achieving synchronization to UTC with a precision of ±31ns.

- **Flexible Sampling Rates:** Two selectable modes for data acquisition:
  ADU Mode: High-speed at 1024Hz, low-speed at 32Hz
  PHX Mode: High-speed at 2400Hz, medium-speed at 150Hz, low-speed at 15Hz

- **Advanced AD Conversion:** 24-bit resolution delta-sigma ADC with oversampling frequencies of 14.4kHz (PHX mode) and 14.336kHz (ADU mode), processed by FIR digital filters and stored on an SD card (up to 512GB).

- **Low Power Consumption:** Operates on a 12V DC battery with power consumption below 3.0W, enabling extended observations with smaller batteries.

- **Automatic Operation:** Automatically starts low-speed recording upon synchronization with GNSS signals. High and medium-speed recordings are based on timer information from the SD card, minimizing field setup.

- **Durable and Portable:** Housed in a waterproof, compact, and lightweight case (2.8kg), making it easy to transport and install.

For pricing and inquiries, please contact us.

ELOG-MT Rev.B Specifications

Input	- Channels: <mark>2 channels for electric field (E-field), 3 channels for magnetic field (B-field)</mark>
	- E-field Input Range: ±2.5V, differential input
	  Surge protection provided by gas discharge tube arresters.
	- B-field Input Range: Selectable from ±10V, ±1V, ±500mV, ±333mV, ±250mV, differential input
	  Both E-field and B-field inputs are protected against surges with semiconductor surge absorbers.

Recording Rates	Two modes selectable via SD card configuration file: - PHX Mode: High-speed <mark>2400Hz</mark>, mid-speed 150Hz, low-speed 15Hz - ADU Mode: High-speed <mark>1024Hz</mark>, low-speed 32Hz *Note: Low-speed mode allows uninterrupted recording if the SD card is swapped within 15 seconds.*
Dynamic Range	- E-field: ≥130dB @ 15Hz - B-field: ≥140dB @ 15Hz
Noise Level (Input Equivalent)	- E-field: ≤0.75μVrms @ 15Hz, ≤3.8μVrms @ 2400Hz - B-field: ≤1.5μVrms @ 15Hz, ≤15μVrms @ 2400Hz
Input Impedance	- E-field & B-field: 200 GΩ

AD Converter	- Type: Delta-sigma, 24-bit resolution
	  Oversampling frequency: 14.4kHz (PHX mode), 14.336kHz (ADU mode)
	  The driving clock is always synchronized with the internal reference clock.

Anti-aliasing Filter	- Type: 2nd order Butterworth low-pass filter (LPF), cutoff frequency at 200Hz
Digital Filter	- Type: FIR low-pass filter (LPF), up to 400 taps The filter characteristics can be modified by editing the SD card configuration file.

Internal Reference Clock	- Synchronization: GPS + GLONASS + Galileo + QZSS (Quasi-Zenith Satellite System)
	  Accuracy: ±31 nanoseconds to UTC.
	  The location of the observation point is also recorded on the SD card.

Data Recording Media	- Type: SD Card
	  Compatible formats: SD/SDHC/SDXC
	  Supported capacity: Up to 512GB
	  File system: FAT16/FAT32/exFAT

Connector Types	- E-field: Johnson terminal - B-field: MIL standard circular female, 18 pins (Model: PT02E-14-18S) - Power Output for Sensors: ±12V, maximum output current ±250mA
Compatible Magnetic Field Sensors	- Phoenix: MTC-50H, MTC-80H (direct connection) - Metronix: MFS-06e/07e (requires optional adapter ELOG-MT-CBL-ADU)
On-device Display	- Type: Reflective LCD, 20 characters x 4 lines to display operational status and other information
Power Supply Voltage	- Range: DC 9.3V to 16V
Power Consumption	- Without Magnetic Field Sensors: <mark>3.0W</mark> (0.25A @ 12.0V) - With Three Phoenix MTC-50H Sensors Connected: 4.2W (0.35A @ 12.0V)
Enclosure	- Material: Waterproof plastic Waterproof Rating: IP67 (enclosure only, excluding electrode terminals)
Dimensions	- Size: 270mm x 246mm x 174mm
Weight	- Main Unit: <mark>2.8kg</mark>
Op. Temperature	- Range: −20˚C to +50˚C
Accessories	- GNSS Antenna: 1 patch-type, cable length 2.5m - SD Card: 1pcs. (64GB)