

Phoenix Products



MTU SATELLITE SYNCHRONIZED DATA ACQUISITION UNIT

MTU-2E / A • MTU-3H • MTU-5 / A • MTU-5D • MTU-CL • MTU-LR •
MTU-CR • MTU-LT



GENERAL INFORMATION

The MTU is a lightweight 24-bit data acquisition unit with low power consumption, designed to operate in rugged environments. Its main applications are resistivity depth sounding and/or profiling for oil & gas, geothermal, groundwater, metals and diamond exploration; deep geophysical structure monitoring for earthquake prediction and other geological research; reservoir monitoring and management.

In general, a group of MTUs is deployed simultaneously; all units are synchronized to ± 1 microsecond by time signals broadcast by satellites of the GPS (Global Positioning System); all units start/stop data acquisition at a preprogrammed date/time. The MTU data acquisition units measure up to 2 components of electric field (MTU-2E/A); up to 3 components of magnetic field (MTU-3H), or both (MTU-5/A). The data acquisition units can be combined in any proportion, in any configuration and at any spacing from tens of meters (fine detail) to tens of kilometers (wide reconnaissance), either along profiles (2-D) or grids (3-D), or repeated measurements (4-D).

Although cable links (copper or fiber optic) are optional, in general the MTU is operated in stand-alone mode for data acquisition (no cable links) to avoid the problems associated with cables. The MTU-CL is specialized version which does not perform data acquisition, but instead uses the GPS time to provide precision timing signals to other instruments.

The MTU-LR is a version specialized for long-period MT measurements (to periods of approx. 30,000 seconds) for ultra-deep investigations. The MTU-LR uses specialized magnetic sensors. The MTU-5D is a specialized version for automated observatory operation. The MTU-CR is a version for controlled source measurements including complex resistivity (CR) [also known as Spectral Induced Polarization (SIP)] and requires a separate transmitter. The MTU-2EA and MTU-5A are designed for AMT work; the MTU-LT is for LOTEM applications.

APPLICATIONS

- MT** Standard MT frequency range from 380Hz to 2,000 Sec using MTU-5 (5 component measurement), MTU-2E (2 telluric component measurement) and/or MTU-3H (3 magnetic component measurement). All distributed MTU units including remote site are GPS synchronized.
- AMT** Frequency range of 10,000Hz to 1 Hz using MTU-5A and/or MTU-2EA
- LRMT** Specialized MT for long period as low as approx. 30,000 Sec. using MTU-LR unit
- LOTEM** LOTEM time-series data acquisition with GPS synchronized high power transmitter using MTU-LT
- SIP** Spectral IP (or Complex Resistivity) measurement with GPS synchronized transmitter using MTU-CR
- CSAMT** CSAMT measurement with GPS synchronized transmitter using MTU-CR
- CLOCK** Provides GPS-synchronized driving signal to control transmitter and/or other type of receiver for precisely synchronized operation using MTU-CL

SPECIFICATIONS

- Number of Channels:** 1 to 5
- Input range:** 25mV,..., 1200mV (Standard unit)
± 10V (MTU-CR, MTU-2EA, MTU-5A)
with practical dynamic range of 130dB
- Input Impedance:** > 1 Megohm
- Frequency range:** 10,000 Hz to 1 Hz (AMT, CSAMT)
1kHz to 1800 seconds (MT)
10 sec to 30,000 sec (long-period MT)
256 Hz to 1/16 Hz (CR, SIP)
0.25ms to 16 sec windows (LowTEM options)
- Powerline Filtering:** digital notch at all odd/even harmonics; better than 40dB
- Other Filtering:** low pass, high pass, bandpass, resampling, etc.
- Timing accuracy:** better than ±1 microsecond, locked to UTC
(very high stability oven controlled oscillator synchronized to GPS)

Calibration: automatic self calibration for box and external sensors

Data Storage Capacity: flash memory up to 192Mb (fixed or removable card option)
(larger capacity on request)

ADC: 24 bits, 4 kHz (standard); 24 bits, 48 kHz (MTU-2EA, MTU-5A, MTU-CR)

Data Transfer / Set Up: directly to PC via fast parallel port.
or removable memory card to PC
or via ordinary telephone line (MTU-5D)
or via fiber optic cable (networked monitoring systems)

Mechanical

Dimensions: 230mm x 225mm x 110mm.

Weight: Approx. 4kg

Case: Diecast aluminum, environmentally sealed.

Input Power: Any suitable 12V battery
Solar Power Option

Controls: On/Off switch

Indicators: high visibility LED to signal operating status
(GPS lock, acquisition status, etc.)

Connectors: external battery; GPS antenna; magnetic sensor input; parallel I/O port; ground;
electric field (binding posts)

Power Consumption: approx. 9 watts (6 Watts MTU-LR)

Environmental

Temperature: operating range -20°C to +50°

Shock and Vibration: suitable for transport in bush vehicles

Humidity: operable in light rain.

Representante en México:

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