ZEN High-Resolution Geophysical Receiver

The Electromagnetic Network (ZEN)™ receiver is a high-resolution, multi-channel receiver for acquisition of controlled- and natural-source geoelectric and EM data.

- 32-bit analog system
- ARM processor
- Native GPS synchronization
- Wireless and USB data transfer

UNIQUE CAPABILITIES

- Distributed acquisition
- Broadband time-series recording

FEATURES

- 1 to 6 channels, user expandable
- 60 MHz ARM CPU
- Resistivity, Time/Frequency Domain IP, CR, CSAMT, Harmonic analysis CSAMT (HACSAMT), AMT, MT
- Time schedule program for remote operation with the XMT-32G transmitter controller
- Embedded GPS time synchronization with transmitter
- Use as a data logger for analog data, borehole data, etc.
- 0.015625 Hz to 1 KHz frequency range standard, 0.0001 Hz minimum for MT
- One 32-bit A/D per channel for maximum speed and phase accuracy
- 4 GB data per channel storage for program and data storage, sufficient to hold many days’ data.
- Auto gain setting and internal calibration
- Rugged, portable, and environmentally sealed
- Modular design for upgrades and board replacement
- Complete support, field peripherals, service network, software, and training
## General

Broadband, multi-channel, multi-function digital receiver  
Frequency range: 1/64Hz - 1KHz (0.0001Hz - 1KHz for MT)  
Number of channels:  
  - Large case 1 to 6 (user expandable)  
  - Small case 1 to 2 (user expandable)  
Standard Survey capabilities:  
  - Resistivity, Frequency- and Time-Domain IP,  
  - Complex Resistivity, CSAMT (scalar, vector, tensor),  
  - Harmonic Analysis (CSAMT, Frequency-Domain EM, MMR, Magnetic IP, Magnetotellurics,  
  - Downhole Logging.  
Software language: C++  
Size: Large case 20x 15.5x 13cm (9x7x6”)  
  - Small case 20x 11 x 13cm (9x6x6”)  
Weight: (including batteries and meter/connection panel):  
  - Large case 6 channel: 2.8 Kg (6.4 Kg with battery for 20 hrs. recording)  
  - Small case 2 channel: 2.2 Kg (6.4 Kg with battery for 20 hrs. recording)  
Enclosure: Heavy-duty, environmentally sealed aluminum  
Power: 7-36V rechargeable batteries (external pack)  
  - Over 20 hours nominal operation at 20oC  
  - (6 channels, 24 amp-hr batteries).  
Temperature range: -40o to +50oC (-40o to +122oF)  
Humidity range: 5% to 100%  
Internal temperature sensors  
Time base: GPS Synchronization

## Displays & Controls

- Power On-Off  
- Color coded LEDs  
- Wireless or USB Control from external computer

## Acquisition Software

- MT, CR, RDIP graphical interfaces for Windows based computers  
- External Control: Serial String based interface enables easy custom development  
- Real-time programmable through download of BASIC scripts

## Standard Analog

- Input impedance: >10 MΩ at DC  
- Board dynamic range: 180 db  
- Minimum detectable signal: 20 ηV  
- Maximum input voltage: ±2.5V  
- Automatic gain ranging in binary steps from 1 to 64  
- Common-mode rejection at 1000 Hz: >100 db  
- Phase accuracy: ±0.1 milliradians (0.006 degree)  
- Adjacent channel isolation at 100 Hz: >90 db  
- Analog to digital converter (standard channel)  
  - Resolution: 32 bits  
  - Conversion time: 0.25 msec  
  - One A/D per channel for maximum speed and phase accuracy  
- Analog connection via Pomona or 16 Pin waterproof Mil-Spec connector

## Digital Section

- Microprocessor: 60 MHz ARM per channel  
- Mass Storage: 4 GB per channel  
  - Data storage device with capacities to 16 GB/channel optional  
- Serial ports: USB connection to each channel  
- Distributed Control: Long range mesh network (Unlic 2.4 GHz)