Terraplus

ZEN High-Resolution Geophysical Receiver

New 32-bit ADC

The Electromagnetic Network (ZEN)^{TM} receiver is a high-resolution, multi-channel receiver for acquisition of controlled- and natural-source geoelectric and EM data.
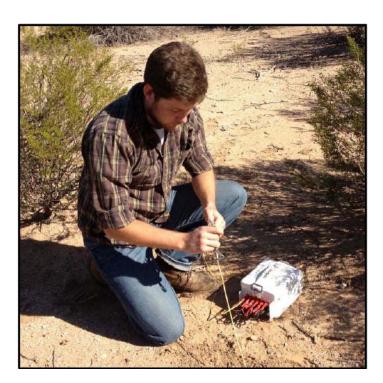
- 32-bit analog system

- 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

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Specifications for ZEN^{TM} High-Resolution Receiver

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)

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