wirelessSEISMIC

The Wireless Remote Unit

The Wireless Remote Unit, or WRU, is the heart of the RT System 2. These small units contain a complete seismic acquisition and radio relay system inside the waterproof aluminum case. The analog-to-digital converter is state of the art, one that has been widely adopted by most manufacturers of seismic systems because of its outstanding analog performance and low power consumption.

The WRU contains an orientation sensor. When carried by its attached rope, its power is off and can be laid flat for transport. To power up the unit, the user holds it vertical for a few seconds. It rapidly performs a series of tests when placed on the ground, locates its position with the internal GPS, and establishes radio communication with its neighbors on the line. To turn it off, just pick it up by its attached rope. The advantage of this system is that the least-skilled personnel can deploy the WRUs without using complex keyboard/display devices. The LED status indicators on the unit provide complete, easy-to-interpret diagnostics.

The WRU runs from either one or two rechargeable lithium-ion batteries. In the two-battery configuration, its intelligent power management system initially chooses the battery with the least amount of charge available. When this battery is depleted, the system switches to the higher capacity battery. Depleted batteries can be replaced in the field, but in most field operations, the batteries will last until the WRU is picked up. The status of the batteries is monitored continuously from the Central recording system, and LED indicators tell the field crew which batteries to replace first.

Antennas are available for use with the system to fit the local conditions and the group interval. For longer group intervals in brushy conditions, extensions may also be used to raise the antenna element.

If radio connectivity is partially lost, the Hybrid Radio Telemetry immediately allows stranded WRUs to switch to operating autonomously, buffering data into local flash memory. When radio connectivity is restored, buffered data are wirelessly transmitted to the Central recorder.

Features

- Single-station, 24-bit data acquisition
- Built-in self tests
- Built-in GPS for self organization
- License-free, 2.4 GHz ISM band
- Autonomous deployment with LED status indicators
- Auto skip-healing telemetry
- Synchronous and asynchronous recording
- Hybrid radio telemetry acquisition
- Continuous and real-time data collection
- Scalable system architecture
- 32-bit diversity stack in the WRU
- Industry-standard geophone connector
- Intelligent Lithium-Ion battery with self-contained charging circuitry
- Low power consumption
- Operating temperature: -40° C to +75° C
- Humidity: 0 to 100%
- Gain Selections: x1, x4, x16, x64
- Sample Interval: ½, 1, 2, 4 milliseconds
- 0.1% channel-to-channel matching error
- Stackable, rugged aluminum enclosure
- Integral hot-swappable battery packs
- Distributed clock discipline to GPS
- Compatible with anchor plate

Specifications

- Maximum input signal level: 1.768 VRMS @ x1 gain
- Total System Dynamic Range: 143 dB @ 2 msec
- Instantaneous Dynamic Range:
  - » 125 dB @ x1 gain
  - » 124 db @ x4 gain
  - » 117 dB @ x16 gain
  - » 106 dB @ x64 gain
- Anti-alias filter:
  - » Passband edge (0.01dB ripple) 0.75 Nyquist
  - » Stop band attenuation: >120 dB at Nyquist
  - » -3dB point is at 0.8 Nyquist
  - » Linear or minimum phase
- Common Mode Rejection: >100 dB
- Equivalent Input Noise @ 2 msec:
  - » 0.93 µV @ x1 gain
  - » 0.27 µV @ x4 gain
  - » 0.14 µV @ x16 gain
  - » 0.13 µV @ x64 gain
- Total Harmonic Distortion @ 2 msec: 0.0002% @ 15.625 Hz
- Rating: IP67

Dimensions

- 14.7 W x 7.2 H x 22.9 L cm (5.79 W x 2.83 H x 9.01 L in.)
- With 2 batteries:
  Standard– 19.58 W cm (7.71 W in.)
  High capacity– 26.66 W cm (9.17 W in.)

Weight

- 1.86 kg (4.10 lbs.)
- With 2 batteries & antenna:
  Standard– 3.32 kg (7.31 lbs.)
  High capacity– 3.90 kg (8.59 lbs.)

Model Number

- 01-0001

All specifications are typical at 25°C.
All specifications are subject to change without prior notice.

Wireless Seismic, Inc.
13100 Southwest Frwy., Suite 150
Sugar Land, TX 77478 USA
1-832-532-5080
info@wirelessseismic.com

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