The Three-Channel Wireless Remote Unit

The 3-channel Wireless Remote Unit, or 3C-WRU, of the RT System 2 is used when multi-component recording is required for a survey. These compact units contain a complete seismic acquisition and radio relay system inside a rugged 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 3C-WRU contains an orientation sensor. To power up the unit; the user holds it vertical for a few seconds. After it is placed on the ground, it rapidly performs a series of self tests, 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 rope. The advantage of this system is that the least skilled personnel can deploy the 3C-WRUs without using complex keyboard/display devices. The LED status indicators on the unit provide complete, easy-to-interpret diagnostics.

The 3C-WRU operates with either one or two rechargeable, high-capacity, lithium-ion batteries. The intelligent power management system in the two-battery configuration initially chooses the battery with the least amount of charge available. When this battery is depleted, it switches to the battery with the higher capacity. Depleted batteries can be replaced in the field, but in most field operations, the batteries will last until the 3C-WRU is picked up. The status of the batteries is monitored continuously by 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 WRRUs 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
- Mix and match 3-channel WRRUs with 1-channel WRRUs on the same survey
- Built-in self tests
- Built-in GPS for self organization
- License-free, 2.4 GHz ISM band
- Simple 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
- Intelligent high-capacity lithium-ion battery with self-contained charging circuitry
- Low power consumption
- Gain Selections: x1, x4, x16, x64
- Sample Interval: 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
- Operating temperature: -40°C to +75°C
- Humidity: 0 to 100%
- Compatible with anchor plate
- 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:
  > 0.002% @ 15.625 Hz
- Rating: IP67

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 (0.01 dB ripples) 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
- Crossfeed isolation: >120 dB
- 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 two high-capacity batteries: 26.66 W cm (9.17 W in.)
- Weight:
  > 1.86 kg (4.10 lbs.)
  > With two high-capacity batteries and antenna:
    > 3.90 kg (9.59 lbs.)

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