The SMHR2 combines Reftek's latest generation of universal broadband seismic recorder, with the advanced high resolution, force-balance accelerometer, model 147. Designed to facilitate installation, security and maintenance in a single, secure enclosure optimized for early warning system installations.

The SMHR2 features a 32-bit A/D performance boost and boasts a large dynamic range. The enhanced dynamic range enables the SMHR2 to record very small vibrations from its integrated seismic sensor, providing detailed data for seismic analysis.

The internal triaxial accelerometer is a force-balance accelerometer which converts acceleration signals into voltage signals to measure low frequency and ultra-low frequency motion. It features high sensitivity, large linear range, high resolution and high dynamic range making it perfectly suited to Earthquake Early Warning systems. The force balance feedback technique mitigates for mechanical characteristic limitations of conventional accelerometers and overcomes shortcomings in nonlinear distortion and threshold of sensitivity of elastic measuring parts.

Communications
Using the Seedlink server, your system can be configured to automatically import the MiniSeed data straight into the analysis software. The SMHR2 has a large non-volatile internal memory providing a substantial data buffer for when the connection is not available or when you require historical data from the recorder.

With smart setup options, the SMHR2 gives you the choice between automatic data transfer of Seedlink data or the option to transmit ultra low latency data for Earthquake Early Warning applications (EEW). For EEW applications, simply set up your SMHR2 to send data via REF TEK’s RTPD software in near real time to your EEW software – resulting in answers for quick decision making when it counts.

BENEFITS
» >135 dB dynamic range for detailed event data & high quality scientific analysis
» Ultra low latency for Earthquake Early Warning Systems
» Built-in Seedlink server for robust data transmission
» Precise & accurate timing
» Low-noise, force balance accelerometer
» Sensitivity & offset stable

RELIABLE PERFORMANCE FOR:
» Earthquake Early Warning
» Local and regional broadband seismic networks
» Structural health monitoring
SMHR2

**A/D CONVERTER**
- **Type**: 32-bit SAR A/D converters
- **Dynamic Range**: >135 dB @100 sps
- **Input Channels**: 3
- **Gain Options**: Available with x1 or x2 gain
- **Input Full Scale**: Matched @ x1 gain
- **Input Impedance**: 26 Kohms, 0.002 uFd, differential @ x1
  2 Mohms, 0.002 uFd, differential @ x64
- **Common Mode Rejection**: >90 dB
- **Sample Rates**: 1000, 500, 250, 125, 100, 50, 40, 20, 10, 5, 1 sps
- **Multiple Sample Rates**: Supported for rates in the group 1000, 200, 100, 50, 40, 20, 10, 5, 1
- **Sampling**: Simultaneous on all channels
- **FIR Filter**: 140 dB down in the stopband

**TIME BASE**
- **Type**: GNSS Receiver with Internal Disciplined Oscillator
- **Accuracy with GNSS**: ±10 μsec after validated 3-D Fix and Locked
- **Free-Running Accuracy**: 0.1 ppm over the temp. range of 0°C to 70°C
  0.2 ppm from -30°C to 0°C
- **Alternate Time Sources**: PTP or NTP

**POWER**
- **Input Voltage**: 9–24 VDC
- **Average Power**: 2.4 Watts
  - (3 channels, accelerometer, no communication, GNSS duty cycle)
  - 2.7 Watts
  - (3 channels, accelerometer, with communication, GNSS duty cycle)
- **Internal Battery**: 1.2 Ah, Lead Acid
- **Low Voltage Disconnect**: User-programmable. Additional hardware cut-off fixed at 9.0 Volts

**RECORDING**
- **Format**: Miniseed, MRF
- **Transmission**: SeedLink Server, RTP
- **Trigger Types**: Continuous, STA/LTA, Level, Time, External and Cross
- **Internal Capacity**: 8 Gb internal Flash memory data buffer, USB

**COMMS**
- **Ethernet**: 10/100 Base-T, TCP/IP, UDP/IP, FTP, RTP DHCP, Static, Link-Local
- **WiFi**: Access-point mode for local command & control
- **WebUI**: Accessible via WiFi or Ethernet

**UI**
- **Screen**: 2.8” TFT

**ELECTRICAL**
- **Full-scale Range**: ±4 g, (Optional ±2 g)

**PERFORMANCE**
- **Self-Noise**: <1 μm/s/s
- **Dynamic Range**: >155 dB (DC to 10 Hz)
- **Linearity**: <0.1%
- **Frequency Response**: DC – 250 Hz (+/- 3 dB)
- **Damping**: 0.7
- **Self-test Response**: Logic level input will produce consistent g level output
- **Lightning Protection**: Built-in surge protection
- **Cross Axis Sensitivity**: <1%
- **Hysteresis**: <0.1% of full-scale
- **Thermal Drift**: ≤600 μg/°C

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**MECHANICAL**
- **Dimensions**: 7.3”L x 6”W x 5.3”H
- **Weight**: 3.5 Kg
- **LEDs**: √
- **Magnetic Switch**: √
- **Wetargh Integrity**: IP 68
- **Humidity Range**: 0-100% (non-condensing)
- **Shock**: Bubble level
- **Operating Temp**: -20 °C to 60 °C
- **Storage Temperature**: -40 °C to 85 °C
- **Mounting**: Single Point
- **Levelling**: 3 Adjustable Feet
- **Compliance**: CE, FCC, RoHS