EQResponder

Strong Motion Accelerograph

A next generation plug-and-play strong motion accelerograph

The EQResponder series by Canterbury Seismic represents the next generation of high-fidelity, digitally integrated accelerographs and structural monitoring recorders. Designed for cost-effective performance and deployment versatility, EQResponder instruments are engineered to capture and process a wide dynamic range of ground motion and structural response data in real time to aid immediate post-event decision making.

Whether deployed in free-field seismic networks, integrated into structural health monitoring systems, or connected to an EQResponder Central Recorder, the EQResponder offers robust and scalable capabilities. The EQR-90 offers a cost-effective solution for urban deployments whilst the EQR-120 delivers high-resolution accuracy ideal for structural health monitoring and research.

EQResponder instruments support multiple recording formats, real-time streaming via SeedLink, and advanced triggering and filtering logic to ensure precise capture of seismic events. Flexible networking options, including Ethernet, Wi-Fi, and cellular support, enable seamless integration into modern monitoring systems. An intuitive, self-hosted web interface provides dynamic monitoring and configuration capabilities.

Key Features

- Credible data from full-function seismic accelerograph - USGS ANSS Class B or Class C
- Operate as standalone units or within an array
- Built-in GNSS and PTP timing options
- Run as PTP master clock or slave clock
- Cable, Wi-Fi, or cellular communication
- Monitor and manage programmatically via API
- Convenient data storage in MiniSEED or CSV

Specifications

	EQR-90	EQR-120
Accelerometer		
Type	Tri-axial MEMs silicon accelerometers	3 x uni-axial MEMs servo silicon accelerometers
Range	± 5g	± 4g
Dynamic range	91 dB 0.1-20 Hz 85 dB 0.1-80 Hz	128 dB 0.1-20 Hz 120 dB 0.1-100 Hz
Offset error	< ±1% over operating temperature range	< ±0.02% over operating temperature range
Linearity	< ±0.5%	< ±0.1%
Gain error	< ±1% over operating temperature range	< ±0.08 % over operating temperature range
A/D Conversion		
Sampling	Zero skew autonomous sampling 1ppm time-base (0-60°C)	Zero skew autonomous sampling 1ppm time-base (0-60°C)
Anti-Alias	1-pole RC filter (fc = 10kHz)	1-pole RC filter (fc = 10kHz)
Input	3 channels	3 channels
Sensor data output rate	50Hz, 100Hz, 200Hz	50Hz, 100Hz, 200Hz.
A/D type	24-bit Σ-Δ A/D	24-bit Σ-Δ A/D
Integral non-linearity	< 0.0006% (full range)	< 0.0004% (full range)
Resolution	24 bits	31 bits
SNR	101 dB (200Hz) 104dB (100Hz) 107dB (50Hz)	130 dB (200Hz) 133dB (100Hz) 136dB (50Hz)
Signal Processing		
Filtering	FIR digital anti-alias filter/decimator, Linear phase	FIR digital anti-alias filter/decimator, Linear phase
Measurement bandwidth	DC to 20, 40 or 80Hz	DC to 20, 40 or 80Hz
Recorded dynamic range	101dB (80 Hz BW), 104dB (40 Hz BW), 107dB (20 Hz BW)	130dB (80 Hz BW), 133dB (40 Hz BW), 136dB (20 Hz BW)
Size		
Dimensions	140 x 84 x 50 mm	140 x 84 x 85 mm
Weight	0.8 kg	1.0 kg
Power		
Direct supply	10.5 – 30.0V DC, 2.0 W	10.5 – 30.0V DC, 5.5 W
External Battery / UPS	12V SLA, 7.0 Ah 36h with plug-pack 230 VAC – 13.8 VDC charger, (Option: 24V SLA compatible)	12V SLA, 7.0 Ah 16h with plug-pack 230 VAC – 13.8 VDC charger, (Option: 24V SLA compatible)
Communication		
Type	Integrated LAN, External 3/4/5G cellular modem, Wi-Fi via USB or Ethernet	
Protocol	TCP-IP	
Services	TLS-encrypted HTTPS web server, Programmatic HTTPS API, SeedLink, Email outputs	
Triggering		
Type	Trigger recordings based on PGA or channel value Trigger transmission to EQResponder Central Recorder array management systems	
Pre-trigger filter options	0.1, 1.0 Hz high-pass, 5.0, 10.0, 20.0 Hz low-pass, or any band-pass combination	
Absolute level	Independent thresholds on each channel, selectable AND / OR channel triggering	
Pre-event length	10 to 60 seconds	
Post event length	10 to 600 seconds	
Relay output upgrade	(Option) Up to 2 solid state relay output, latching or non-latching, active high or active low	
Data Storage		
Format	MiniSEED, CSV (compressed or uncompressed), JSON metadata file	
Metadata	Flash disk, PGA, peak channel accelerations, and trigger duration	
Storage	32 GB MLC Flash disc (SLC option), Triggered / Continuous data, SeedLink ring buffer >90 days	
Timing		
Type	Synchronised to UTC. Internal GPS, NTP, IEEE1588v3 PTP master or slave, backup real-time clock	
Accuracy	<1µs of UTC with GPS lock or PTP, <5ms NTP timing (typical), 50ppm with backup real-time clock	
User Interface		
Type	Desktop / tablet / mobile browser compatible web server, Windows / MacOS / Linux supported	
Features	Parameter configuration, live data and diagnostics display, data downloads, mapping	
Environmental		
Housing	Aluminium case, IP54 rated, IP65 rated enclosure option	
Temperature range	-10 to +60°C standard, non-condensing. -40 to +60°C option	
Mounting	Separate mounting plate with level adjustment and protective dust cover, IP65 rated enclosure option	
Warranty	1 year standard, extended option (up to 6 additional years)	

CANTERBURY Seismic

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