



## 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  |
| Range         | ± 5 g                                  |
| Dynamic range | 91 dB 0.1-20 Hz<br>85 dB 0.1-80 Hz     |
| Offset error  | < ±1% over operating temperature range |
| Linearity     | < ±0.5%                                |
| Gain error    | < ±1% over operating temperature range |

### A/D Conversion

|                         |                                                          |
|-------------------------|----------------------------------------------------------|
| Sampling                | Zero skew autonomous sampling<br>1ppm time-base (0-60°C) |
| Anti-Alias              | 1-pole RC filter (fc = 10 kHz)                           |
| Sensor data output rate | 50 Hz, 100 Hz, 200 Hz                                    |
| A/D type                | 24-bit $\Sigma$ - $\Delta$ A/D                           |
| Integral non-linearity  | < 0.0006% (full range)                                   |
| Resolution              | 24 bits                                                  |
| SNR                     | 101 dB (200 Hz) 104dB (100 Hz) 107dB (50 Hz)             |

### Signal Processing

|                        |                                                       |
|------------------------|-------------------------------------------------------|
| Filtering              | FIR digital anti-alias filter/decimator, Linear phase |
| Measurement bandwidth  | DC to 20, 40 or 80 Hz                                 |
| Recorded dynamic range | 101dB (80 Hz BW), 104dB (40 Hz BW), 107dB (20 Hz BW)  |

### Size

|            |                  |
|------------|------------------|
| Dimensions | 140 x 84 x 50 mm |
| Weight     | 0.8 kg           |

### Power

|                        |                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------|
| Input range            | 10.5 – 30.0 V DC                                                                              |
| Typical consumption    | 2.5 W @ 13.8 V input                                                                          |
| External battery / UPS | 12 V SLA, 7.0 Ah 36h with plug-pack 230 VAC – 13.8 VDC charger, (Option: 24 V 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<br>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 | < 1 $\mu$ s of UTC with GPS lock or PTP, < 5 ms NTP timing (typical), 50 ppm 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) |
|--|-------------------------------------------------------------|