

MEMS

Seismic and strong-motion monitoring in a compact, low-noise accelerometer

ORDER CODE	REVISION	ISSUED
SQ-MEM-3C	A	2026-09-14



DESCRIPTION

Low-noise high-resolution accelerometer with intelligent edge processing for seismic networks where node count matters — instrumenting a building or a city block rather than a handful of vaults. This is the instrument that enables scalable seismic networks.

KEY CAPABILITIES

Low-noise 3-component sensing

A 20-bit accelerometer sensitive enough for seismic event detection, not only strong-motion recording.

Configurable acquisition

40–500 SPS selectable sampling and a selectable 2, 4 or 8 g range, so the same hardware suits structural and seismic work.

Standard Ethernet

Deploy in buildings, tunnels or field enclosures without pulling a dedicated data run to every node.

Sub-millisecond timing, no antenna per node

A tailored NTP implementation disciplines the clock over the network. No GNSS antenna, no cable run, no sky-view requirement. That is what makes dense arrays affordable, and indoor deployment possible at all.

SPECIFICATIONS

SENSOR

Type	3-component MEMS accelerometer
ADC resolution	20-bit
Sampling rate	40–500 SPS, selectable
Acceleration range	±2 g, ±4 g or ±8 g, selectable
Dynamic range	~102 dB at ±2 g (~17 ENOB)
Self-noise	22.5 µg/√Hz at ±2 g
Noise density	-82 dB flat relative to 1 m²/s⁴/Hz
Frequency response	flat

CONNECTIVITY, POWER & TIMING

Network	Ethernet
Power	5 V USB
Power consumption	1 W
Time synchronisation	Tailored NTP; Temperature compensated with subsample accuracy < 1 ms

PHYSICAL

Dimensions	50 × 50 × 40 mm
Operating temperature	-20 °C to +70 °C
Storage temperature	-20 °C to +70 °C

COMPUTING, STORAGE & INTERFACES

Processor	Quad core
Storage	Industrial pSLC NAND
Firmware	Customizable SeismiQ firmware, OTA A/B updates
Data access	MiniSeed, SeedLink, FDSN Webservice, StationXML
Real-time products	PGA/PGV, instrument intensities, PPSP, H/V spectra and more
Custom processing	Project-specific plugins run on the instrument itself
Calibration	Factory-calibrated, optional site calibration through local and remote interfaces

COMPUTED ON THE INSTRUMENT

STA/LTA trigger

Event detection on the instrument itself with configurable thresholds

Real-time RMS

Local noise conditions, continuously

PGA / PGV

Peak ground acceleration and velocity

Instrument intensities

Spectral and Mercalli scales

PPSP

Probabilistic power spectral densities

H/V spectra

Spectral ratios for site response and resonance tracking

Autocorrelation

Single-station ambient noise autocorrelation, for rapid change detection

... and more

New products arrive by firmware update, on instruments already in the field

IN DEVELOPMENT — NOT AVAILABLE TODAY

AI de-noising (DeepDenoiser)

Real-time seismic noise reduction, streamed via SeedLink.

AI phase detection and annotation

Continuous scanning for P and S arrivals using PhaseNet and SeisBench.

WHAT YOU OWN

You own the instruments Direct sale. The hardware is yours, the network is yours, and platform access comes with it. There is no per-seat licence and no subscription standing between you and your own sensors.

You own the data MiniSEED waveforms, StationXML metadata, QuakeML catalogs. Everything the network produces is in a format your existing tooling already reads, and will still read in twenty years.

Your workflows stay portable Customizable firmware supports project-specific processing. SeedLink and FDSN keep live and archived data accessible through established tools rather than a proprietary export path.

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