

MEMS-SH

Seismic monitoring for buildings and structures

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



DESCRIPTION

The compact intelligent accelerometer for seismic and structure health monitoring enabling scalable large seismic networks. The accelerometer is based on the low-noise high-resolution MEMS technology to sense impacts of earthquakes and induced vibrations.

KEY CAPABILITIES

Both jobs, one deployment

Continuous seismic monitoring shows how the building or structure behaves, and over months that is what reveals a shift in its resonance frequencies. Strong-motion recording captures what it went through when something shook it. The same nodes do both, so you instrument the structure once.

Power over Ethernet / External DC

One cable carries both data and power, so nodes go wherever there is a network run — no separate power provisioning per sensor. Optionally, DC power to the device can be provided from a local power supply over the dedicated cable.

IP68 Polycarbonate enclosure

Sealed to IP68 and packaged for mounting on structural elements — outdoor decks, plant rooms and exposed positions, not just conditioned interiors.

Sub-millisecond timing over the network

Tailored NTP implementation. The nodes are synchronised to sub-millisecond accuracy.

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 m ² /s ⁴ /Hz
Frequency response	flat

CONNECTIVITY & POWER

Network	Ethernet
Power	PoE IEEE 802.3af 48 V; or 9–48 V DC direct, separate cable/power supply
Time synchronisation	Tailored NTP; Temperature compensated with subsample accuracy < 1 ms

PHYSICAL

Enclosure	Polycarbonate, 150 x 100 x 45 mm, wall mounting latches
Ingress rating	IP68
Operating humidity	0–100 % RH (IP68)
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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