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QL-SEISMOACCEL ONE

Integrated Broadband Seismometer & Accelerometer

QL-SeismoAccel One is a compact, integrated seismic sensing instrument designed to deliver complete ground-motion measurement from a single deployment point. By combining a broadband triaxial seismometer with a force-balance triaxial accelerometer, the system provides reliable recording of both weak seismic signals and strong-motion events for professional monitoring and research applications.

- **Integrated Dual-Sensor Technology:**
  QL-SeismoAccel One unifies velocity and acceleration sensing within a single instrument, eliminating the need for separate sensor installations and ensuring coherent, well-aligned seismic data across the full motion spectrum.

- **Field-Ready and Easy to Deploy:**
  The compact, robust design simplifies installation and setup, making the system suitable for permanent monitoring stations as well as temporary field deployments in a wide range of environments.

KEY FEATURES

SENSOR TYPE: Integrated broadband seismometer and force-balance accelerometer
MEASUREMENT CONFIGURATION: Triaxial (3-component) sensing
MEASUREMENT OUTPUTS: Simultaneous velocity and acceleration
GROUND-MOTION RANGE: Weak motion to strong-motion seismic events
DYNAMIC RANGE: Wide dynamic range suitable for seismic monitoring
NOISE PERFORMANCE: Low self-noise design optimized for high-resolution seismic data
OPERATION MODE: Continuous seismic monitoring
INSTALLATION OPTIONS: Posthole, vault, or surface installation
ENCLOSURE DESIGN: Compact, integrated, field-ready construction
DEPLOYMENT TYPE: Permanent and temporary field deployments

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QL-SEISMOACCEL ONE
Technical Specifications

Specifications subject to change without notice

Seismometer Power Consumption
< 200 mW

Seismometer High-Frequency Bandwidth
108 Hz (–3 dB)

Seismometer Clip Level
≥ 26 mm/s (up to 10 Hz)

Seismometer Dynamic Range @ 1 Hz
≥ 159 dB

Required Digitizer & Accessories Package
6-ch digitizer + GNSS timing + cables + surge protection + metadata generation

LEVELING AND ALIGNMENT
Digital Bubble Level: Available via compatible digitizer software
Physical Leveling: Precision-machined base with alignment reference marks

HARDWARE INTERFACE
Connector: Multi-pin circular, submersible, environmentally sealed
Mounting: Connector mounted into enclosure base

CALIBRATION INPUTS
Seismometer: Single control input enabling calibration of all three channels
Accelerometer: Single control input for auto-zero, self-test, or calibration

OUTPUT SIGNALS
Seismometer Velocity Output:
- Differential analog output
- ±40 Vpp
- Selectable XYZ orientation

Accelerometer Acceleration Output:
- Differential analog output
- ±40 Vpp

PHYSICAL
Diameter: ≈ 100 mm
Height: ≈ 230 mm (excluding connector)
Housing: Stainless steel, sealed enclosure

Accelerometer Dynamic Range
≥ 166 dB

Accelerometer Bandwidth
DC to 430 Hz

Accelerometer Measurement Range Options
±0.25g, ±0.5g, ±1g, ±2g, ±4g

CONTROL & STATUS OUTPUTS
Accelerometer Status Output:
- **OK:** Output signal valid
- **Not OK:** Auto-zero, self-test, or calibration in progress

DIGITAL COMMAND & CONTROL INTERFACE
Serial Control (via digitizer):
- Sensor mode selection
- Calibration control
- Auto-zero initiation
- Status and health monitoring
- Sensor metadata access

POWER
Supply Voltage: ±12 V DC (isolated)
Power Consumption (Typical):
- Seismometer module: < 1.0 W
- Accelerometer module: < 0.5 W
- Total system: < 1.5 W

Protection: Reverse-voltage, over-voltage, self-resetting over-current
Isolation: Sensor power isolated from signal ground

ENVIRONMENT
Operating Temperature: –20 °C to +60 °C
Storage Temperature: –40 °C to +70 °C
Humidity: 0–100% RH, non-condensing
Shock: Survivable transport shock, no mass locks required
Magnetic Sensitivity: Insensitive to natural variations of Earth's magnetic field
Ingress Protection: Sealed enclosure suitable for vault, posthole, or surface installation

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WHY QL-SEISMOACCEL ONE?

- **INTEGRATED MEASUREMENT APPROACH:**
  QL-SeismoAccel One combines broadband seismic velocity sensing and force-balance acceleration measurement in a single instrument, providing complete ground-motion characterization from one unified deployment point.
- **WIDE MOTION COVERAGE:**
  The dual-sensor architecture enables accurate recording of both weak seismic signals and high-amplitude strong-motion events, supporting reliable monitoring across diverse seismic conditions.
- **SIMPLIFIED DEPLOYMENT:**
  By integrating multiple sensing technologies into one compact enclosure, QL-SeismoAccel One reduces installation complexity, alignment effort, and overall system footprint compared to traditional multi-sensor configurations.

APPLICATIONS

- **Earthquake and Seismic Monitoring:**
  Ideal for continuous monitoring of seismic activity, including detection and analysis of weak ground motion and strong-motion events.
- **Strong-Motion Recording Stations:**
  Suitable for capturing high-amplitude ground acceleration during earthquakes for engineering and safety analysis.
- **Structural and Infrastructure Monitoring:**
  Supports assessment of structural response and vibration behavior in buildings, bridges, and critical infrastructure.
- **Microseismic and Site Characterization Studies:**
  Provides high-resolution data for local seismic studies, site response evaluation, and geophysical investigations.
- **Academic and Geophysical Research:**
  Well suited for research institutions and laboratories requiring reliable broadband seismic and acceleration measurements.

CONTACT US

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