

OVERVIEW

xRover® is the flagship central acquisition and digitizer unit of the Sentry System's Centralized Acquisition (xCAS) family. Designed for permanent installations, it combines high-channel, low-noise A/D conversion with integrated Voyager® software for real-time configuration, triggering, storage, reporting, and streaming—delivering a complete SHM platform in one rugged device.

DESCRIPTION

Built for projects that prefer a centralized topology, xRover accepts a broad range of analog inputs—accelerometers and geophones, bridge/strain sensors, voltage/current transducers, RTD temperature probes, and supported weather stations. It supports up to four plug-in ADC or I/O modules so channel count and signal conditioning can be tailored to each project. Continuous Ring Buffer recording (user-configurable duration, up to 60 days) guarantees no missing events, while MiniSEED/SeedLink streaming and optional secure FTP/cloud uploads provide redundancy and remote access. GPS/DigiSync® ensures sub-millisecond timing alignment across all channels.

Users can access data directly through a web browser, preview and analyze recordings, generate automated PDF reports, or stream live data to client applications. Optional alarming features include SMS and email notifications, relay outputs, and integration with third-party safety systems. The integrated UPS battery provides more than 20 hours of autonomy, ensuring continuous operation during power outages.

xRover MAX retains the same modular, high-channel architecture and sensor compatibility as xRover while maximizing usability for on-site engineers. Local operators can configure triggers, preview live charts, review events, and generate reports at the cabinet—while remote users access the same system via web browser.

APPLICATIONS

- Long-term monitoring of bridges, buildings, tunnels, dams, and stadiums
- Earthquake engineering and vibration monitoring of critical infrastructure
- Industrial assets and energy facilities requiring central, high-channel acquisition
- Research & teaching laboratories, proof-of-concept and acceptance testing
- Sites that require immediate local visualization and control (xRover MAX only)

KEY FEATURES

- High-performance central acquisition: up to 4 modular ADC/I&O boards (24-/32-bit converters)
- Broad sensor compatibility: vibration, velocity, strain/bridge (full-bridge incl. 6-wire sense), voltage/current, RTD, weather (RS-485/Modbus)
- Sampling rates: user-selectable (50, 100, 200, 500, 1000 sps; 200 sps default)
- Integrated Voyager®: configuration, triggering (Levelling, STA/LTA, Above Max, Below Min, Relative, OMA-assisted), Ring Buffer, automated PDF reports, streaming
- Data integrity & redundancy: local SSD Ring Buffer + events, MiniSEED/SeedLink, optional secure FTP/cloud backup
- Alarming & notifications: up to 10 outputs (relay/TTL), SMS/email; pre/post-event buffers
- Connectivity: multi-port Ethernet, optional Wi-Fi, DigiMESH®, GSM/4G
- Time synchronization: GPS/DigiSync® sub-millisecond alignment
- Rugged & serviceable: industrial enclosure, wide temperature range, OTA firmware updates, embedded UPS (~20 h autonomy)
- LED Indicators: Status LEDs for Power, Battery, and Sync for quick field diagnostics.
- Display: Integrated 10" industrial touchscreen with full Voyager® UI (xRover MAX only)
- Permanent Installation: Industrial-grade device designed for permanent SHM deployments in harsh environments.



SPECIFICATIONS

Function

Type: High-channel, low-noise central acquisition and digitizer unit designed for permanent Structural Health Monitoring installations, integrating Voyager® software for configuration, triggering, storage, and real-time streaming. It supports connection of multiple analog sensors through its built-in precision digitizers. xRover MAX® enhances this system with a 10-inch industrial touchscreen, providing a complete all-in-one SHM solution without the need for an external PC.

Supported digitizers: xRover can accept up to seven (7) digitizer modules from all members of the xDAS family: xWave, xSense, xStrain, xGeo, xInc, xAlarm, xMet. Natively supports D-Series Analog accelerometers.

Interface

10.1" Touchscreen Industrial-grade, high-brightness touchscreen for direct display: system control, real-time visualization, and configuration via the integrated Voyager® interface

Connectivity: Single Ethernet (10/100 Base-T) interface operating in DHCP mode for external access.

LED interface: Indicators for AC power, synchronization status, and battery level, plus three additional LEDs on the internal acquisition unit showing Power, Streaming Type, and State of Health.

External Sensors: Up to eight 12-pin MIL standard circular connectors for external sensor connections, offering secure, vibration-resistant coupling and environmental sealing for reliable field operation. Can also be used in combination with 4-pin connectors of the same type for digital output signals.

On/Off: Illuminated power button for system activation and status indication.

GPS : SMA connector for external GPS antenna connection.

AC Input: Rugged metal-housing connector with IP67 protection and screw-lock coupling.

Synchronization

Time base: GPS-disciplined timing and DigiSync® synchronization for connected digitizers, utilizing proprietary hardware for precise time alignment of acquired signals.

Accuracy: Sub-microsecond for timing precision across distributed networks.

Software Updates

Software: Updated by Digitex Support team through secure internal procedure.

Power

Supply Voltage: 110-220 VAC input

Power Consumption: ~18 W (average)

Backup: Integrated 12 V SLA battery providing up to ~20 hours of autonomous operation.

Protection: Short circuit, Overload, Over Voltage

Physical

Dimensions: 250 × 380 × 120 mm (9.84 × 14.96 × 4.72 in)

Weight: 7.5 kg (with battery included)

Enclosure: Rugged coated aluminum housing, IP65 rated (indoor use recommended)

Mounting: Horizontal or vertical using mounting plate (not supplied)

Environmental

Operating Temp.: -20 °C to +40 °C

Humidity: 0 - 90 % RH (non-condensing)

Certification & Calibration

Standards: CE, RoHS, ISO9001, ISO14001

Calibration: Factory calibrated; individual calibration certificate included

AVAILABLE OPTIONS

SSWiFi: Wi-Fi Communication Module

SSGPS: GPS Module for time and data synchronization

SSGSM: 4G GSM module for streaming and/or SMS alarming

SSDIFF: Differential PS for external sensors ±12VDC (30W)

SSDO-TTL: Digital Relay Outputs Module with ext. JB (4, NO/NC). Or 10 TTL module (for up to 10 Relays).

SSDO-REL: Single Digital Relay with connector. Applicable Up to 10 Relays. Required SSDO-TTL module.

SSDO-RCC: Single pigtail connector for SSDO-REL module (2m).

SSD6P: Pigtail Connector with 6 pair twisted pair double shielded cable (1m). Suitable for xRover and Analog accelerometer.

BENEFITS:

- Combines high-density acquisition, processing, analysis, and reporting in one box
- Scales with the project via modular channel expansion and configurable input ranges
- Reduces data-loss risk with Ring Buffer and Store&Forward® workflows
- Improves measurement confidence with synchronized, low-noise digitization
- Enhances safety and responsiveness with built-in alarming (relay/SMS/email)
- Lowers lifecycle cost by including Voyager®—no additional PC software required
- Simplifies deployment and operations with intuitive touchscreen control (xRover MAX only)