

OVERVIEW

xPlorer Ambient® is Digitex Systems' portable central acquisition unit, designed as the core of the xDAS Ambient family. It enables engineers, researchers, and contractors to perform high-quality, temporary structural health monitoring (SHM) campaigns without the need for permanent installations. The unit is fully self-contained, battery-powered, and rugged, offering unmatched portability and functionality for Ambient Vibration Measurements (AVM) in the field.

DESCRIPTION

The xPlorer Ambient central unit is housed in a rugged copolymer, crushproof IP55 enclosure and weighs only 9.2 kg including its internal battery. It supports up to eight connected Sentry System or Pulse units via Ethernet, and can extend communication over Wi-Fi, DigiMESH®, or GSM. The device features continuous Ring Buffer recording with user-configurable duration (up to 60 days), ensuring no data is lost. It provides real-time data streaming, web-based reporting, and automated uploads to secure FTP servers for redundancy.

xPlorer Ambient is designed for autonomy with an internal battery offering up to 24 hours of operation and can charge up to 8 connected nodes directly. Equipped with GPS/DigiSync® time synchronization, it guarantees precise alignment of measurements across distributed networks.

APPLICATIONS

- Bridge and building modal testing campaigns
- Rapid post-earthquake or disaster condition assessments
- Periodic inspections where permanent monitoring is not feasible
- Construction monitoring during piling, blasting, or retrofitting
- Academic and research projects requiring mobile SHM solutions

KEY FEATURES

- Portable & Rugged: Compact IP55 copolymer enclosure; 9.2 kg with integrated battery.
- Integrated Voyager®: Full data acquisition, triggering, storage, and reporting suite built in.
- Power Autonomy: Internal battery for 24h operation; provides charging for up to 8 nodes.
- Flexible Connectivity: Ethernet (8 ports + Internet), Wi-Fi, DigiMESH®, and GSM for versatile communication.
- Reliable Storage: Local SSD for Ring Buffer (up to 60 days); automated FTP backup.
- Advanced Triggering: Supports Leveling, STA/LTA, Above MAX, Below MIN with pre/post event buffers.
- Digital Accuracy: MiniSEED format with embedded SeedLink server; GPS/DigiSync® synchronization.
- Real-Time Access: Web server for configuration, reports, preview of data, and remote management.
- Seamless Integration: Works with xWave-Ambient sensors, xNet-Ambient extenders, and Observer® software.
- User Friendly: Automated PDF reporting, OTA firmware updates, intuitive configuration interface.



SPECIFICATIONS

Function

Type: Central recording & processing unit (central station) for portable SHM campaigns; integrates rugged hardware with full Voyager® software suite for real-time acquisition, storage, synchronization, alarming, and reporting.

Supported Units : xWave Ambient, xNet Ambient

Synchronization

Time Base: GPS-disciplined timing and DigiSync® network synchronization for distributed arrays, utilizing proprietary hardware for precise time alignment across all connected devices

Accuracy Sub-microsecond for timing precision across distributed networks

Front Panel

Sensor Connection: 8 Ethernet (10/100 Base-T) interfaces operating in DHCP mode for sensor connection

Sensor charging: 8 barrel-type connectors providing 24 V DC for sensor battery charging via PoE injector cables, each featuring an individual LED indicator showing charging status. Needs AC power to work

Service: 1 dedicated Ethernet (10/100 Base-T) port operating in DHCP mode for remote configuration, support and software updates

LED interface: Indicators for battery level, battery status and synchronization state

On/Off: Rocker switch for system activation.

GPS: SMA connector for external GPS antenna connection

Wi-Fi: Dual SMA connectors for Wi-Fi network interface, supporting external 5 dBi gain antennas for extended coverage

Cooling: Two internal fans with opposing airflow design for efficient heat dissipation, equipped with protective fan guards

Power: Three-pin panel plug for 220 VAC power input

Power

Supply Voltage: 110-220 VAC input

Power Consumption: ~20 W (average)

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

Protection: Short circuit, Overload, Over Voltage

Physical

Dimensions: 406 x 335 x 174mm (16.0 x 13.2 x 6.9 in)

Weight: 9.1 kg (with battery included)

Enclosure: Rugged Copolymer Enclosure, Crushproof Protection, IP55 rated.

Environmental

Operating Temp.: -20 °C to +40 °C

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

Certification

Standards: CE, RoHS, ISO9001, ISO14001

Software Updates

Software: Updated by Digitex Support team through secure internal procedure

BENEFITS

- Provides the full power of Voyager® SHM acquisition in a fully portable form factor
- Saves cost and time by eliminating the need for permanent installations in temporary tests
- Increases reliability with continuous Ring Buffer storage and GPS/DigiSync® synchronization
- Enhances usability with web-based configuration, automated reports, and remote access
- Ensures robustness with rugged IP55 enclosure and 24h internal battery autonomy
- Improves efficiency with integrated charging for connected sensor nodes
- Offers flexibility through multiple communication protocols (Ethernet, Wi-Fi, DigiMESH®)
- Simplifies SHM campaigns with seamless integration into the xDAS Ambient family and Observer® software