xSense

Voltage Sensor Digitizer

Key Features:

- Rugged aluminum enclosure with IP67 protection
- Distributed digitizer unit for monitoring wide range of voltage sensors (Displacement, Temperature, Humidity, Wind Speed/Direction, Inclination, Air Blast, Corrosion, ...) required in specific SHM installation
- High quality AD conversion
- 8 channel (±10VDC), for connecting any voltage sensor in the range
- User configurable sampling rate
- Ethernet/Wi-Fi/DigiMESH® or GSM communication protocols
- Internal Micro SD card for local storing of the event files
- GPS or RTC time and data synchronization
- Easy installation, wireless or using simple CAT5e cable
- POE capability
- Ultra low power consumption
- Wide range of Operating Temperature: -40°C ~ 85°C

xSense: The Ultimate Digital Solution for Sensor Data Acquisition

xSense is a state-of-the-art, fully digital solution for acquiring data from any sensor with a voltage, current or RTD output. It provides an affordable and adaptable system for field or remote data acquisition, making it an ideal choice for monitoring environmental sensors or any other voltage-output sensor required for structural health monitoring.

Designed to excel in harsh environments and confined spaces, xSense prioritizes size, weight, and simplified cabling—key factors for virtually any installation. With its compact, rugged design, xSense delivers unparalleled data control and acquisition capabilities. It meets extreme industrial standards, offering certifications and ratings for operation in challenging industrial settings.

Whether used as a standalone digitizer or as part of a daisy-chained SHM network, xSense adapts effortlessly to your needs. Multiple xSense units can be connected using standard CAT5e cables, ensuring quick and easy installation. It supports various sensor types commonly required for SHM instrumentation, including: Displacement transducers, Temperature sensors, Humidity sensors, Wind speed and direction sensors, etc.

xSense is built to operate continuously for extended periods—days, months, or even years—without interruption. Its robust design and advanced capabilities make it the perfect solution for a wide range of applications where reliability and precision are paramount.

Technical Information

Software

Proprietary Digitex Software included with xSense. Fully compatible with xPlorer hardware and server software, xSense can work as part of xDAS SHM system. Available Digitex PC software for data acquisition, streaming, data archiving, reporting, etc.

Hardware

General	
Type	16/24-bit ADC
Sampling Rate	200 sps(100, 500,1000)
Filters	Software
Communication	Ethernet, Wi-Fi, GSM
Channels	Configurable (options)

Power	
Powering	From CAT5e data cable
Input Voltage	12-24 VDC or PoE
PowerCons.	1-2W (w/o sensor)
Sensor Power	Supplied from digitizer

Environmental	
Operating Temp.	-40°C to 55°C
Humidity	90% non-condensing

Acquisition Modules - Options	
Voltage - 16 bit	8/16; 0-5, 0-10, ±5, ±10V
Voltage - 24 bit	4/8; ±10V
Current - 24 bit	4; 0-20mA, 4-20mA
RTD	4; PT100, Pt1000

User Interface
Informational LED
System Configuration Panel
Web Application Panel

Physical	
Packaging	Rugged aluminum
Protection	IP66/IP67
Weight	700g
Dimensions	130x120x65mm

DIGITEX INNOVATIVE SYSTEMS

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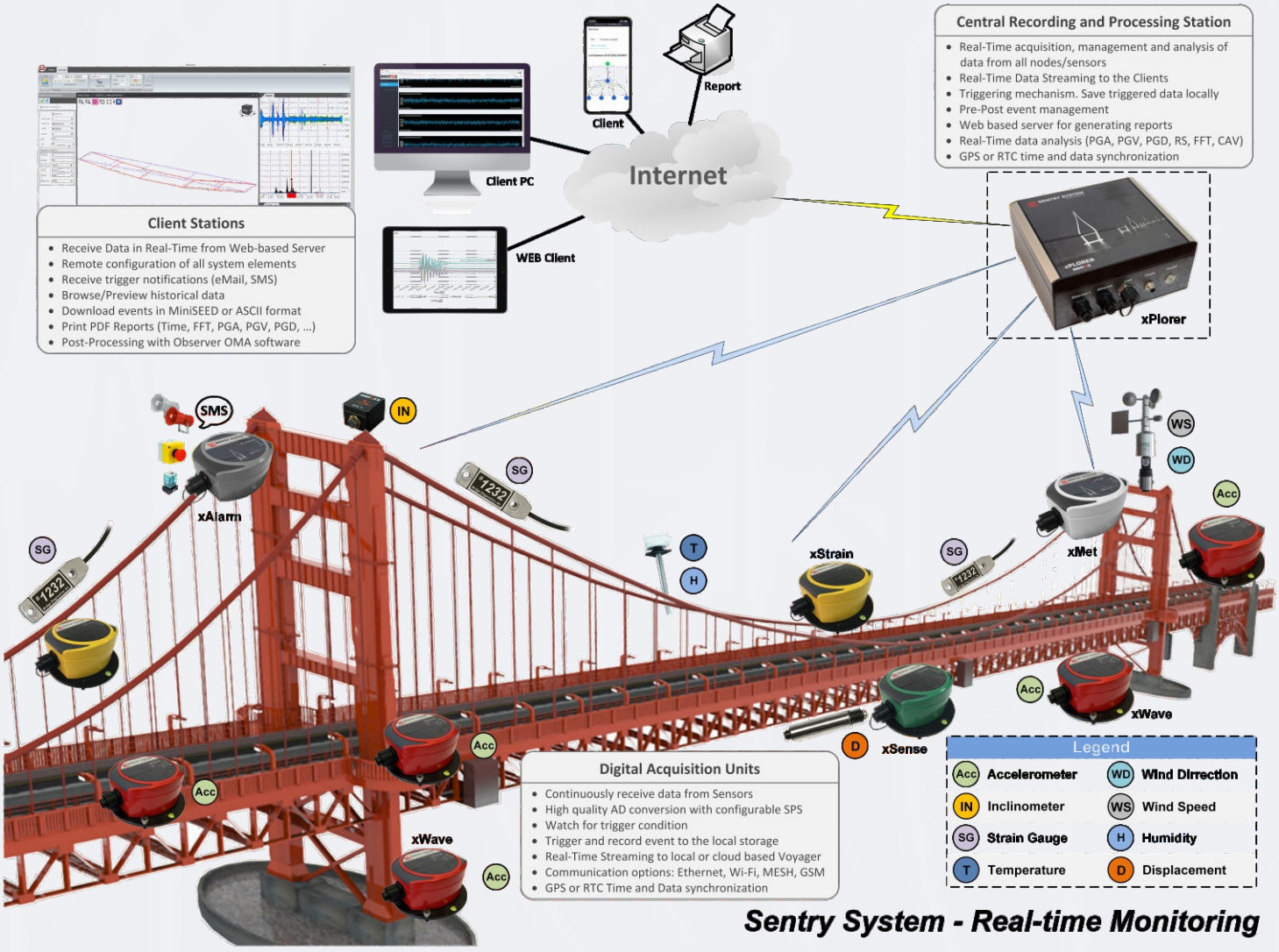
Real Time Monitoring System Architecture

The Digitex monitoring system is based on a highly efficient, multithreaded software design that allows the system to acquire data from a large number of xDAS units, monitor and condition this data, and distribute it, in real time, over the Internet to multiple remote locations.

Sensors on the structure continuously send out data to the system. If an event such as an earthquake occurs, pre-assigned thresholds of drift are exceeded in one or multiple locations, thus triggering the recording and analyzing of data (including pre-event memory). Once an event is recorded, the system notifies a list of users (via e-mail) and uploads the event via FTP to another site.

Using the “quick analysis” capability of the Digitex system, various measures of the monitored system’s response can be distributed to multiple locations and displayed in real time. The system can cross correlate data, plotting useful information about the interaction between the dynamic loads on the structure and its modal characteristics. It can be used for a rapid (rough) estimation of the dominant structure mode being observed in the selected time window, as well as an estimator of the corresponding structure damping parameters.



About Digitex

Digitex is a company specialized in design and development of real time structural health monitoring systems for a variety of industries and applications including: bridges, tall buildings, campuses, windmills, oil rigs and more. Digitex's innovative solution for ambient vibration measurements and quick health assessment of structures is jointly developed and validated with our partners and advisors from the Universities. When properly configured, the Digitex system is capable of measuring and responding to both natural and man-made events such as: earthquakes, wind, explosions and accidental heavy impacts.

Rev 01/25

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