xMet
Weather Station Gateway

Key Features:

- **Rugged aluminum enclosure with IP67 protection**
- **RS-485 bus for connecting wide range of professional weather stations**
- **Standard Modbus protocol**
- **User configurable number of used channels from connected Weather Station**
- **Configurable via Voyager interface**
- **One or more units on different locations at single Voyager account**
- **Ethernet/Wi-Fi/DigiMESH® or GSM communication protocols**
- **Easy installation, wireless or using simple CAT5e cable. POE capability**
- **Ultra low power consumption**
- **Wide range of Operating Temperature: -40°C ~ 55°C**

Overview

xMet is an advanced gateway unit used to integrate Weather Station Sensors into your SHM System for complete Real-Time environmental monitoring. It allows digital connection of almost any weather station that supports standard Modbus protocol. User can choose from number of predefined weather stations for automatic integration. Also, there is a custom setting for integrating any other Modbus capable unit.

Weather data from different sensors such as wind speed and direction, temperature, humidity, barometric pressure, solar radiation, precipitation, etc. is acquired in Real-Time by xMet and then integrated into your Sentry System. Depending on user needs, Sentry System can be equipped with one or more xMet units on different locations.

xMet is designed for applications in harsh environments and small places. Size, weight, and cabling are critical design requirements in almost any installation. By taking advantage of different type of supported communication interfaces the extreme performance and small size, xMet is able to deliver Real-Time data from connected weather sensors in a compact, rugged package with extreme industrial certifications and ratings for operation in harsh industrial environments. Temperature ranges of -40° to 55° C (-40° to 131° F) and a variety of international safety, electromagnetic compatibility (EMC), and environmental certifications and ratings are all available with xMet.

Technical Information

Software
Proprietary Digitex Software included with xMet. Fully compatible with xPlorer hardware and server software, xMet can work as a part of Sentry System.

Hardware
xMet is a Gateway to Sentry System for almost any weather station that supports MODBUS protocol.

General	
Sensor Interface	RS-485
Protocol	MODBUS
Communication	Ethernet, Wi-Fi, GSM
Storage	SD Card (optional)
Streaming	Voyager (Real-Time)
Channels	User configurable

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

User Interface
Informational LED
System Configuration Panel
Web Application Panel

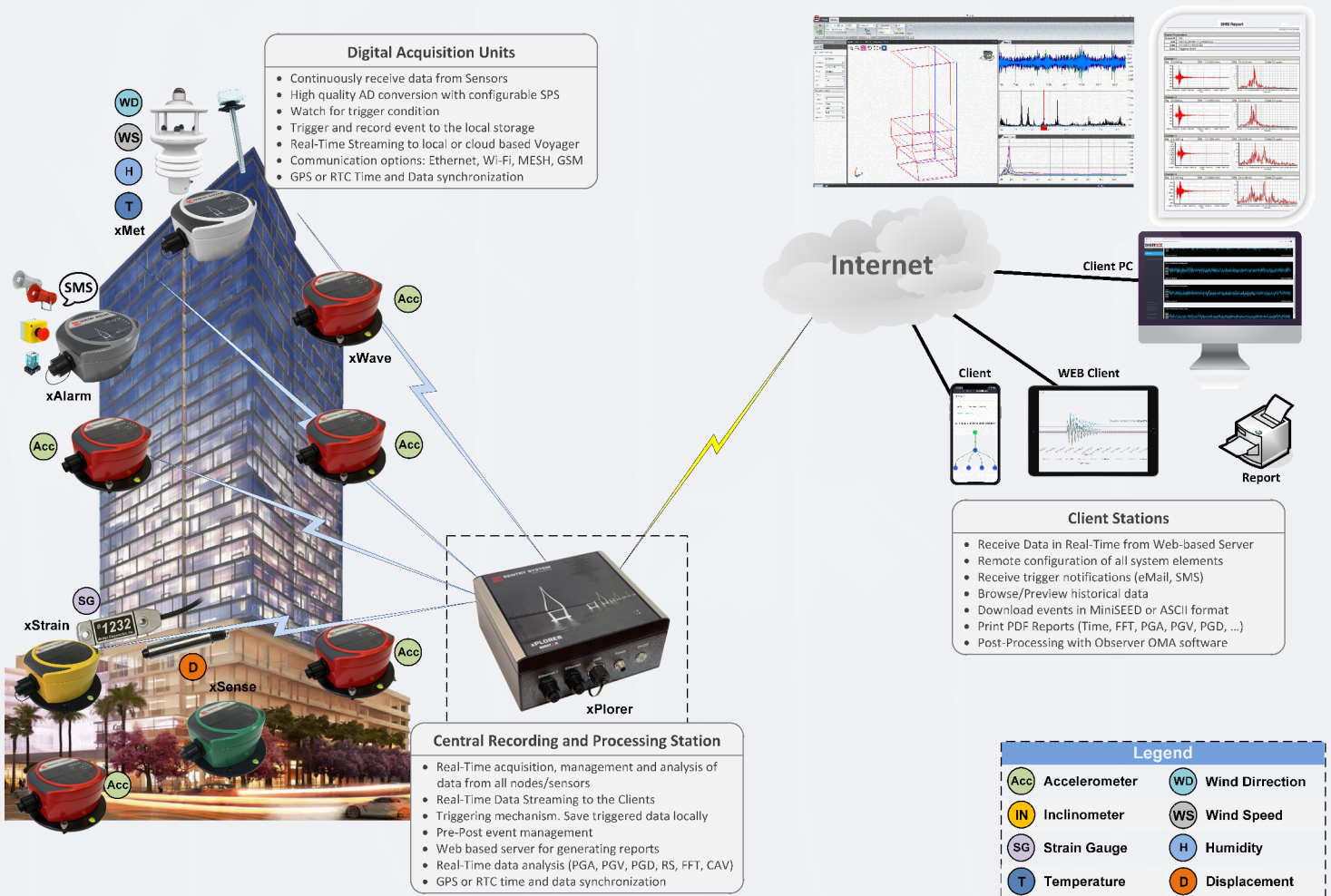| Physical	
Packaging	Rugged aluminum
Protection	IP66/IP67
Weight	700g
Dimensions	130x120x65mm

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

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.

Digital Acquisition Units

- Continuously receive data from Sensors
- High quality AD conversion with configurable SPS
- Watch for trigger condition
- Trigger and record event to the local storage
- Real-Time Streaming to local or cloud based Voyager
- Communication options: Ethernet, Wi-Fi, MESH, GSM
- GPS or RTC Time and Data synchronization

Central Recording and Processing Station

- Real-Time acquisition, management and analysis of data from all nodes/sensors
- Real-Time Data Streaming to the Clients
- Triggering mechanism. Save triggered data locally
- Pre-Post event management
- Web based server for generating reports
- Real-Time data analysis (PGA, PGV, PGD, RS, FFT, CAV)
- GPS or RTC time and data synchronization

Client Stations

- Receive Data in Real-Time from Web-based Server
- Remote configuration of all system elements
- Receive trigger notifications (eMail, SMS)
- Browse/Preview historical data
- Download events in MiniSEED or ASCII format
- Print PDF Reports (Time, FFT, PGA, PGV, PGD, …)
- Post-Processing with Observer OMA software

Legend

Acc	Accelerometer	WD	Wind Direction
IN	Inclinometer	WS	Wind Speed
SG	Strain Gauge	H	Humidity
T	Temperature	D	Displacement

Sentry System Real-time Monitoring

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.

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