

Pulse

Personal SHM Monitoring

Pulse

Key Features:

- Build your SHM System with one or as many as you need Pulse units
- Real-Time streaming for all data from all Pulse units
- Supported by Voyager®, Cloud-based data acquisition and processing software
- Recordings: triggered, scheduled, ring-buffer, manual
- Security web access to your system on cloud
- DigiSync® time and data synchronization
- Wireless communication
- GSM communication
- Supported by DigiMESH® for easy wireless connectivity without expensive network infrastructure
- High quality AD conversion
- Embedded 3 channel accelerometer with very low noise level
- User selectable accelerometer range
- User selectable sampling rate
- Powered through Micro-USB port or at/af POE network
- Battery backup option
- Easy installation (only two screws)



Keep Your Property Safe!

No matter if you own one-story house, multi-story building or a special structure, it needs to be monitored. Now Digitex have inexpensive SHM solution suitable for any structure.

Industrialized nations have a huge investment in the pervasive civil infrastructure on which our lives rely. To properly manage this infrastructure, its condition or serviceability should be reliably assessed. For condition or serviceability assessment, Structural Health Monitoring (SHM) has been considered to provide information on the current state of structures by measuring structural vibration responses and other physical phenomena and conditions. Civil infrastructure is typically complex, exhibiting a wide variety of complex behavior, therefore estimation of a structure's state is a challenging task. While SHM has been and still is intensively researched, further efforts are required to provide efficient and effective management of civil infrastructure. **Pulse**, with their cloud integration and on-board computational and communication capabilities, offer new opportunities for SHM. Without the need for communication cables, installation cost can be brought down drastically. **Pulse** make monitoring of structures with a dense array of sensors economically practical. Single, or even better densely installed, **Pulse** units are rich information sources for SHM.

SHM system employing **Pulse** units, is designed considering both the characteristics of the smart sensor and the structures to be monitored.

Services such as cloud-based data aggregation, reliable communication, and synchronized sensing are developed by Digitex. SHM Algorithms are extended to improve practicability and implemented on our system. Careful attention has been paid to integrating these software components so that the system possesses identified desirable features.

Now our SHM system containing one or more **Pulse** units connected at cloud-based **Voyager**, data acquisition and processing software, are available for your structure.

General		Embedded Accelerometer	
Type	20-bit	Full Scale	$\pm 2/4/8g$ (user selectable)
Sampling Rate	200 sps (100, 500, 1000)	White Noise	22.5 $\mu g/\sqrt{Hz}$
Filters	Anti-aliasing, Software	Dynamic Range	87dB
Communication	Wi-Fi, Ethernet, GSM	Scale Factor	900mV/g
No. of Channels	3	Bandwidth (3dB)	Up to 1kHz (selectable)

Power		Physical	
Powering	USB port, AT/AF POE	Packaging	ABS enclose (UL94V-0)
Input Voltage	5 VDC (UPS battery opt)	Protection	IP40/IP67
Power Cons.	Less than a watt	Weight	100g
Sensor Power	Internal	Dimensions	100x100x25mm

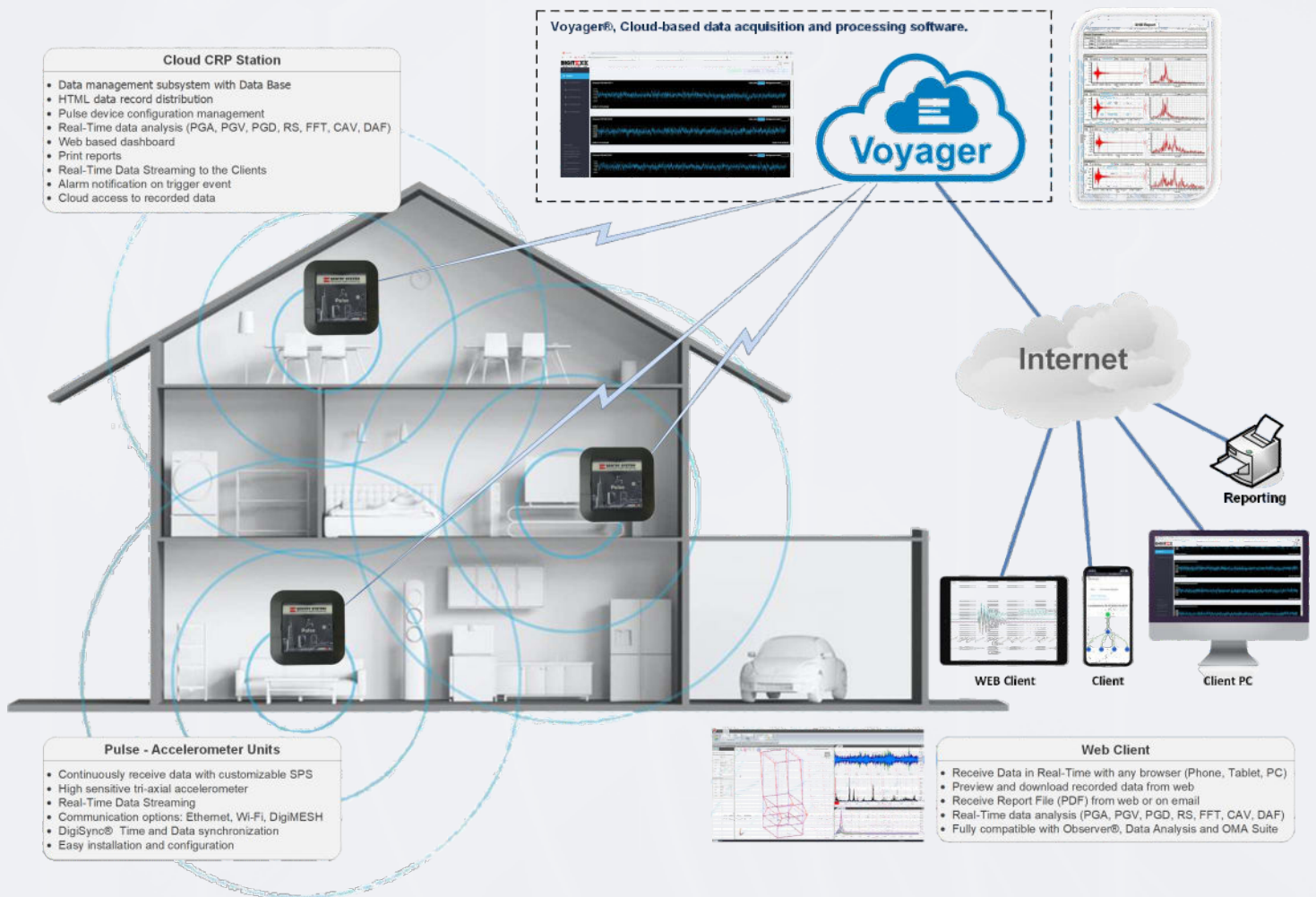
User Interface		Environmental	
Informational LED		Operating Temp.	-40°C to 55°C
System Configuration Panel		Humidity	90% non-condensing
Web Application Panel			

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 **Pulse** units, monitor and condition this data, and distribute it, in real time, over the Internet to multiple remote locations.

Pulse - 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 sends preliminary PDF report.

Using the “quick analysis” capability of the Digitex cloud 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.



Sentry System with Pulse - Real-time Structural Health 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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