**Structural-\(X\)**: is a static and dynamic structural health monitoring system fully customizable and portable. The measured and calculated data are automatically sent to remote sites/servers by optional HSDPA/UMTS router.

**Product**

*Structural-\(X\)* is a structural monitoring system that allows easy, quick data acquisition and automatic computation of derived parameters by means of professional structural analysis. The monitoring system acquires signals from: accelerometers, strain gauges/load cells, resistive, inductive and optical displacement sensors, inclinometers, ambient sensors (temperature, humidity, wind speed, ..).

The product consists of a portable metal enclosure for signal conditioning and analog-to-digital conversion (connected to an optional industrial PC via USB), and of a software application for channels setup, data visualization, analysis, storage and remote management. The box is already configured for easy plugging of accelerometer sensors through BNC connectors, and multipolar connectors for all the other analog sensors. Optional GPS and speed-trap modules are available.

Software functions included: per channel configuration (threshold setting, triggering, input ranging, buffering, digital filters, ..) and calibration; graphical visualization of acquired measurements in time and frequency domains (FFT); data storage on local hard drive and upload to remote sites via optional HDSPA/UMTS/GPRS router, e-mail notification on threshold or alarm, local and system diagnostic.

**Applications**

*Structural-\(X\)* the structural health monitoring system is specifically suited to:

- Monitoring of historical or significant buildings
- Monitoring of public and industrial buildings
- Monitoring of foundation, bridges, dams and tunnels
- Fatigue sample tests

**Target customers**

*Structural-\(X\)* is the right solution for all customers interested in automated diagnostic of structures, even from remote sites:

- Planning and designing engineering companies
- Mechanical and civil firm
- Technical specialists and structural consultants
- Research laboratories
• Structural health monitoring system with a large number of high bandwidth data acquisition channels
• Rugged and reliable
• Automated data transfer on threshold or alarm
• Data visualization and analysis

Structural-χ – Technical specifications

Structural-χ is a system for static and dynamic structural health monitoring comprising a device for easy data acquisition and a specialized PC software for data analysis and management.

Signals from piezo-electric/capacitive/MEMS accelerometers

| Channels | 4-16 |
| - Nominal range | ± 5 V, ± 10V, 0-10 V |
| - Resolutions | 24 bit |
| - Sampling frequencies | max 10 KHz per channel |
| - Anti-aliasing filter | Automatic |
| - Dynamic range | 102 dB |

Signals from strain gauge /load cell

| Channels | 8-24 |
| - Nominal range | 25 mV/V |
| - Resolutions | 24 bit |
| - Sampling frequencies | 2 KHz per channel |
| - Anti-aliasing filter | Automatic |
| - Bridge compensation | ¼, ½ e 1/1 per 120 o 350 Ω |

Generic analog signal : ambient sensors, displacement measurement, inclinometer, ...

| Channels | 16 - 32 |
| - Nominal range | 4-20 mA, ± 10V |
| - Resolutions | 16 bit |
| - Sampling frequencies | 100 sample/s per channel |
| - Power supplies | 10 V DC/ 24 V DC |

Physical dimensions

| Weight | 9 Kg |
| Dimensions | 0.47 m x 0.36 m x 0.14 m |
| Temperature | -25°C ... +50°C |

Structural monitoring software functions

Graphical data interface with user defined pre/post trigger buffer
Frequency analysis on acquired signal
Digital filter and threshold configuration on amplitude and frequency values
Data storage on local Hard Disk
Notification, data transfer or report e-mailing via HDSPA/UMTS on threshold or alarm
System diagnostic

System requirements

PC with Windows XP Professional OS o later and qualified hardware

Accessories

Sensors: accelerometer, strain gauges/load cells, displacement sensors, inclinometer, environmental sensors (temperature, humidity, wind speed. ..)
Speed trap and GPS modules
Actuators (hammer, shaker, ..)
HDSPA/UMTS/GPRS Router

Services

On-site installation
Offline data interpretation and analysis

Structural-χ-r01

Per ogni informazione sui prodotti distribuiti da I.R.S. :
www.irsweb.it - info@irsweb.it - tel. 049 8705156 – fax 049 7625206


IRS
Ingegneria Ricerca Sistemi