



# Structural-X

IRS solution for Structural Health Monitoring



## IRS profile

IRS aims to be the company leader in design and development of test, measurement and control systems. Thanks to technological innovation, advanced modeling and design as well as professional production and after sales service, IRS systems represent the real added value for customer needs.

IRS is an Engineering, Research and Development company founded by a group of engineers in 1993. Some IRS milestones must be highlighted:

- **1994: IRS became National Instruments Alliance member**, the most important worldwide supplier of data acquisition and software tools;
- 1998: IRS office was located at Galileo Innovation centre;
- 2003: UNI EN ISO 9001:2000 certification;

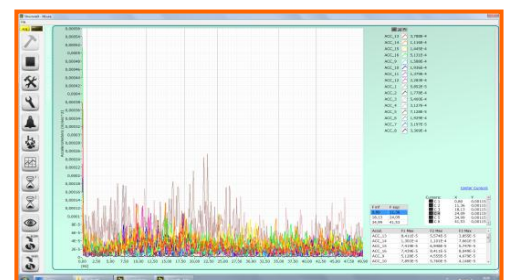
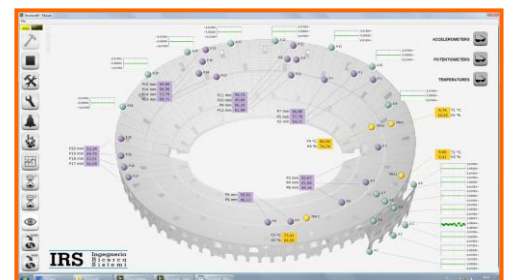
Since the beginning IRS has been cooperating with universities and research centers in Italy and foreign countries.

## Structural-X platform: the Structural Health Monitoring solution

Structural-X platform is a complete hardware-software structural health monitoring solution that allows to quickly define parameters configuration and sensors type, easy set data acquisition informations (sampling frequency, number of samples, trigger conditions), get data from sensors with different kinds of visualization (graphs, indicators, synoptics), process data with professional structural analysis libraries, log data or send relevant informations to clients via internet.

IRS designed two Structural-X options:

- 1- *Structural-X Monitoring*, specifically suited for long term and in situ applications as **monitoring of historical or significant buildings, monitoring of foundation, bridges, dams and tunnels**.
- 2- *Structural-X Lab*, the portable release of Structural-X for **laboratory tests** and one shot structural assessments. It's an all in one solution based on modular data acquisition hardware with a built-in 12" panelPC and a dedicated software application.



## Monitoring



### Structural-X Monitoring

Structural-X Monitoring is a rugged solution for static and dynamic long-term structural health monitoring applications based on an expandable and distributed master-slave hardware architecture. It consists of a real-time industrial-grade embedded controller (master) and many wired or wireless peripheral chassis (slaves) with flexible number of channels. Each wired chassis can acquire both high and low bandwidth signals coming from accelerometers, strains, displacement and environmental sensors and send data to the master via LAN. Thanks to the EtherCAT standard all the chassis can be synchronized simply using Ethernet cables. Zigbee based wireless nodes can acquire low bandwidth informations too. Data can be displayed on an industrial pc or directly sent to remote client via internet.

### Features

- Continuous monitoring of more than 200 synchronized high speed sensors (up to 200Hz bandwidth);
- Master or slave Industrial-grade enclosures with embedded uninterruptible power supply;
- Remote management and Web monitoring of the system using UMTS modem or standard internet connection;
- A three-levels software application for slaves, master and remote clients.
- Platform completion with all the structural sensors or industrial 3G router

## Lab



### Structural-X Lab

Structural-X Lab is a the portable solution for static and dynamic in-lab measurements. The all in one system is based on flexible data acquisition hardware and signal conditioning with a built-in 12" slim panel PC and dedicated software application for data management, analysis and log to disk.

### Features

- Easily transportable and compact
- Instant Plug & Play capability for lab structural test and measurements
- No need of external PCs or displays thanks to the all-in-one touch screen option
- Platform completion with all the structural sensors