

## Structural Health Monitoring

- SAVE TIME AND MONEY BY ASCERTAINING THE SAFETY OF A BUILDING IMMEDIATELY AFTER AN EARTHQUAKE •

### Overview

The cost effective **Palert** seismic sensor can be installed in strategic locations of a building or structure with the purpose of monitoring performance of key load bearing elements following an earthquake.

This is accomplished by a comparative analysis of the before and after resonant-frequency-profiles and rigidity to ascertain the possibility of structural damage. Even with only 3 units in a building, the system can provide accurate analysis of structural health.

Further structural modelling using **Palert** data will allow engineers to quickly establish a detailed picture of the impact that a seismic event might have had on a given building or structure.

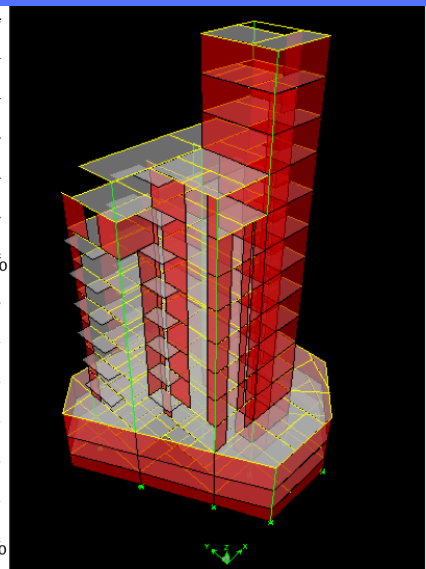
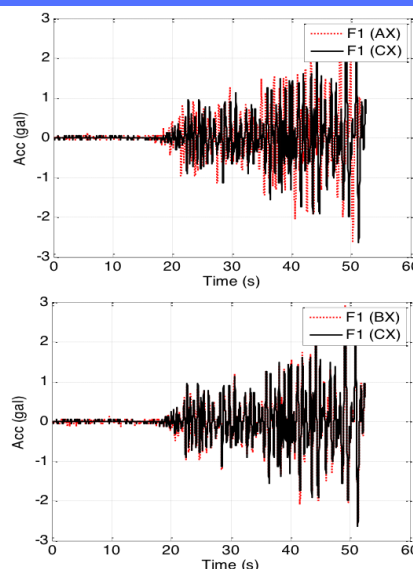


### Key Features

- Warning before shock waves arrive (pre-earthquake)
- Emergency shut-down of vital devices (pre-earthquake)
- Structural assessments for safety (post-earthquake)
- Suitable for: Multi-story Buildings, Damns, Bridges, Tunnels, Railways, Subways, etc.
- Most cost effective solution available in the market
- Easily scalable to enhance data collection
- Easy to integrate with industrial applications using PLC, HMI and SCADA

### Structural Analysis from Palert data:

- Structural System Identification
- ETAB Simulation
- Stochastic Subspace Identification Method
- Engineering Software for Building Analysis
- Damage assessment from Modal and Real Building



# Specifications

## Accelerometer

- Type: Tri-axial MEMS
- Range:  $\pm 2$  g (b, c Axes);  $+ 1$  g /  $-3$  g (a Axis)
- Frequency Response: 0.05~20 Hz
- Displacement Frequency: 0.075 HPF
- Response: 3000 g 0.5ms
- Shock: 10000 g 0.1ms

## Resolution

- Output Resolution: 16 Bits

## Earthquake Gauge

- Algorithm: Pd, PGA, Displacement, STA/LTA
- STA Setting Range: 0.1~100 seconds
- LTA Setting Range: 0.1~200 seconds
- Event Duration Time: 1~200 seconds

## Switch Set-points

- Digital Output Numbers: 2
- Set-point Range: 1~1960 gal
- Contact Type: Normal Open
- Contact Capacity: 60V / 0.6A DC
- Hold-On Time: User defined

## Power

- Supply Voltage: 10~30 V C
- Power (12V): 3.5 W

## Input/Output

- Modbus RTU: RS-232 or RS-485 format 19200, N, 8, 1
- Modbus TCP: 5 Hosts Simultaneously
- Modbus ID: Default 101, settable
- Modbus Function: Function 3 and 16
- Active Connect to TCP Server: Support 2 TCP Servers
- Time Calibration: Via NTP or PC Utility
- Data Recording: Via Network by PC Utility

## Size

- Dimensions: 125 x 105 x 30 mm
- Weight: 450g (without Power and Cable)

## Environment

- Operation Temperature:  $-10\sim 60^{\circ}\text{C}$
- Storage Temperature:  $-20\sim 70^{\circ}\text{C}$



## Palert

### Background

**Palert** is one of a family of advanced earthquake P-wave alarm detector systems developed by San Lien in Taiwan and represented by Jenlogix in Oceania.

**Palert** is a P-wave sensor equipped with MEMS accelerometers for 16 bit output resolution. When integrated into a network using SCADA or the dedicated controller, the **Palert** provides the ability to trigger digital outputs enabling warnings and other actions to occur before or during an earthquake.

With Modbus TCP/RTU capabilities, it is very easy to integrate **Palerts** with industrial applications, such as PLC, HMI and SCADA. The **Palert** can stream to 2 hosts and connect to 5 Modbus clients at the same time.

See [www.earthquakeearlywarning.systems](http://www.earthquakeearlywarning.systems) for more information.

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