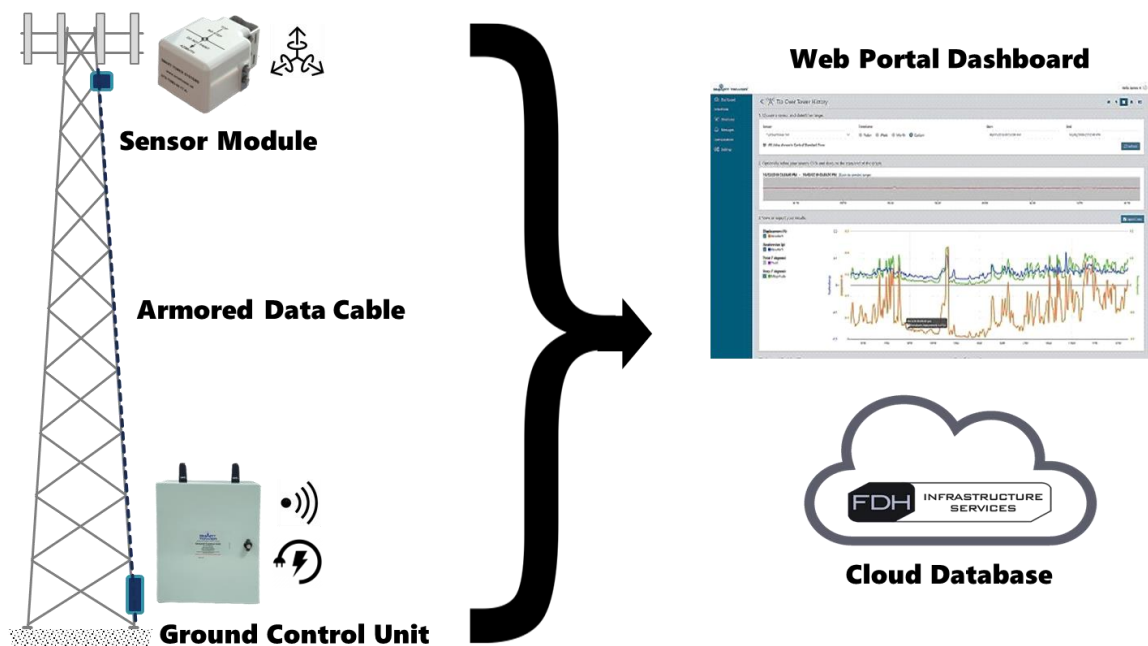# Smart Tower™ Structural Health Monitoring System

Smart Tower is a purpose-designed suite of sensors and software developed for continuous structural health monitoring of a variety of structures.

Key Features

- Easily installed sensor module that measures structure lateral displacement, twist and sway rotations

- Negligible structural loading impact from sensor and cable

- Connects to cloud server via 4G Cellular or terrestrial LAN connection

- Browser-based dashboard user interface for system setup and live remote condition monitoring

- Alert and Alarm generation based on preset or user-defined conditions

- Data can be viewed live

- Historical data can be viewed and downloaded

Sensor Module (SM)

The Sensor Module accepts power from the Ground Control Unit (GCU) and generates structure motion data which it passes to the GCU via a field hardened communication cable.

Measurements:	Lateral displacement, twist and sway outputs at 20 Hz sample rate
Power supply input voltage:	24 VDC Line powered from GCU
Mounting:	Through-hole expansion bolts or metal strap at area of interest on structure
Electrical interconnections:	Military Style (MS) Connectors Double-shielded, PUR jacketed CAT 5E cable, .354 in. (9mm) O/D, mated to MS connector
Operating temperature range:	-40°F to 185°F (-40°C to 85°C)
Ingress ratings:	IEC 60529 IP67 / NEMA 6
Size:	8x6x4.1 inches (203x154x104 mm)
Weight:	9.4 lbs. (4.3 kg) including mounting bracket

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All specifications are subject to change without notice.

Ground Control Unit (GCU)

The Ground Control Unit accepts standard AC ground power and provides wireless or LAN system configuration management and data transmission to the cloud. The GCU provides DC power to the SM and a means of transmitting data from the SM via the Through the system communication cable.
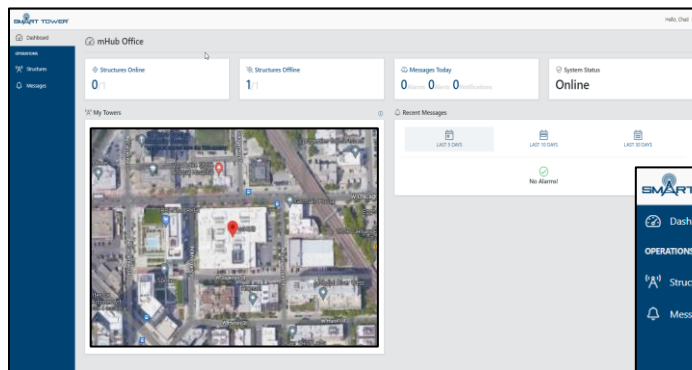

Power Input:	100-240 VAC 50/60 Hz, Single Phase, 20 Watts
	Auxiliary solar or battery sources optional
AC branch breaker requirement:	5 Amps minimum
Mounting:	Interior or exterior mounting to panel or wall
Back up battery:	Two 12V gel-cell, 10 Ah batteries, series connected (24 VDC)
Back up battery duration:	Up to 10 hours (single sensor configuration at 70°F [21°C] ambient)
Internet Connection:	Direct LAN Ethernet or 4G Cellular Radio
Operating temperature range:	-40°F to 149°F (-40°C to 65°C)
Ingress ratings:	IEC 60529 IP66 / NEMA 4
Size:	20x16x8 inches / 508x406x203 mm
Weight:	50 lbs. (22.7 kg)

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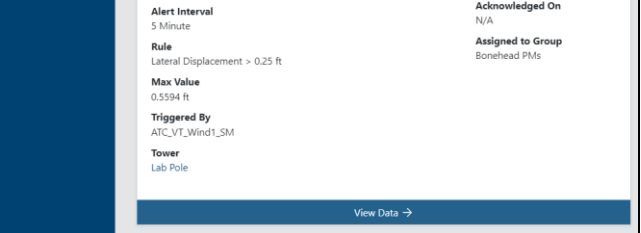*All specifications are subject to change without notice.*

Software

Smart Tower software combines embedded data acquisition and wireless communication with a proprietary structure motion sensing algorithm. Users manage system setup, data and alerts via a web portal dashboard.

Data Storage: Cloud-based server

Interface: Browser based web portal

Maintenance: Remotely upgradeable via internet connection

Alerts: Based on default or user-defined thresholds of structure Lateral Displacement, Twist, Sway or Wind speed.
                                 Notifications via email

Data Access: Live viewing or historical data visualization and downloading

Diagnostics: Automatically reported to cloud. Immediately available to Smart Tower administrators.

Portal Dashboard

Alert Messaging

Data Visualization

All specifications are subject to change without notice.