



# WSGIS™

## WIRELESS STRAIN GAUGE INSTRUMENTATION SYSTEM

INVOCON, INC.

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### The *High-Speed Synchronized* Wireless Strain Gauge Instrumentation System

The Wireless Strain Gauge Instrumentation System (WSGIS) is a wireless, high-speed, synchronized data acquisition network for dynamic strain sensing, processing, and recording applications. The system includes WSGIS Remote Units, a WSGIS Receiver Unit, and the Graphical User Interface (GUI).

The **WSGIS Remote Unit** (pictured at right) is a small, battery-powered, autonomous, wireless device designed for acquisition and recording of high-speed strain data. The units acquire high-speed strain data from four external strain gauges and lower-speed data from four external resistive or voltage transducers (strain, pressure, temperature, etc.).

Event setup commands and data downloads are performed either wirelessly or through a standard USB connection from the **WSGIS GUI** running on a PC. The wireless connection is through a **WSGIS Receiver Unit** that connects to the PC via a standard RS-232 serial port.

The WSGIS system is currently being used by NASA to monitor stresses on the Space Shuttle robotic arm. Additional platforms where this system may be appropriate to determine fatigue and remaining life are airframes, structures, and other vehicles.



#### Specifications

<b>DATA ACQUISITION RATE</b>	4 channels factory set up to 20KHz. 4 channels factory set up to 0.1Hz.
<b>SYNCHRONIZATION</b>	±4µs between remote units on the four high-speed channels
<b>SENSORS</b>	4 high-speed channels and 4 low-speed channels are factory settable for a wide range of resistive and voltage output transducers.
<b>INTERNAL TEMPERATURE</b>	10-bit A/D with one quarter degree C resolution—Sample Rate 0.1Hz.
<b>PROCESSING</b>	RMS Signal Analysis, Frequency Analysis, Decimation, Peak Detection
<b>POWER</b>	Battery powered, 3.0-4.0V input range.
<b>OPERATING TEMPERATURE RANGE</b>	-40°C to +85°C (Reduce battery life by 50% when continuous operation at -35°C.)
<b>BATTERY LIFE</b>	50-120 cumulative hours of data acquisition or trigger mode (depending on sample rate). Extended-life external batteries are available.
<b>MEMORY</b>	256M-byte non-volatile
<b>PACKAGING</b>	Flange enclosure (pictured) with replaceable internal battery Approximately 7cm x 3.8cm x 8.3cm (not including flanges & antenna).

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*System specifications subject to change without notice.*

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