

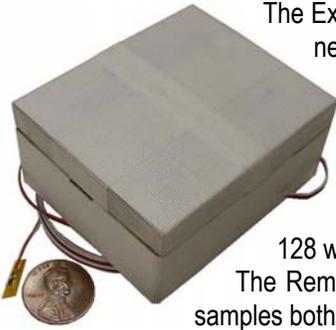


EXTENDED-LIFE MICRO-MINIATURE WIRELESS INSTRUMENTATION SYSTEM **ELMWIS™**

INVOCON, INC.

TECHNOLOGY PROFILE – MARCH 2003

Invocon's Premier Miniature Wireless Network



The Extended-Life Micro-Miniature Wireless Instrumentation System (ELMWIS) is a wireless data acquisition network for near-static sensing *and recording* applications. The **ELMWIS Remote Unit** is a small, extremely low power, autonomous, wireless device designed for long-duration data acquisition and recording. The units can be configured for any resistive sensor: strain gages, resistive thermal devices (RTDs), pressure sensors, humidity sensors, accelerometers, etc. The internal temperature of the enclosure is monitored, compensating for the thermal drift of internal components. Sample rates are programmable through the GUI from 1 sample per 15 seconds to 1 sample per day. Up to 128 wireless sensors can be placed within a single RF coverage area.

The Remote Sensors remain in an extremely low-power state until the specified sample time. The unit then samples both an external sensor and the internal temperature. There are three modes of data transfer:

1. A remote unit transmits data to the Receiver allowing for both error detection and retransmissions in real-time. The Receiver passes this information to the GUI for immediate graphical display and storage to an ASCII file.
2. A remote unit stores data onto internal 2Mbytes of non-volatile memory (capable of storing 1 year of data sampled once each minute). This data is later downloaded via RF to the receiver and GUI for graphical display and storage on the PC.
3. A combination of 1 and 2 above; the unit transmits information in real-time while storing it locally.

ELMWIS is Invocon's premier miniature wireless network; each unit can serve as a relay for any other unit. Relays can pass configuration commands, real-time data, or post-acquisition data transfers. This capability allows units to be spread out beyond direct line-of-sight with the receiver.

The ELMWIS Remote Unit is truly designed as an *extended-life* device. ELMWIS utilizes the latest in low-power technology, enabling the units to be applied to a wide range of data acquisition scenarios for extended periods. The standard battery has enough capacity for a ten-year uninterrupted operation (at one sample per minute).

The **ELMWIS Receiver** attaches to the standard RS-232 serial port of a computer. This unit receives and acknowledges transmissions from the Remote Sensors. Each transmission is passed onto the PC where the Graphical User Interface decodes, time-stamps, saves, and plots the incoming data in real-time. The GUI incorporates unique calibration coefficients for each Remote Sensor allowing for accurate simultaneous conversion to engineering units for any type of sensor.

DATA ACQUISITION RATE	Programmable via wireless link: 1 sample per 15 sec to 1 sample per day
EXTERNAL SENSOR	Optional full-bridge completion; 1.2V excitation; 16-bit A/D; factory programmable gain & filter
MEMORY	2Mbyte internal non-volatile memory (Capable of storing 1 year of 1 sample/min data)
INTERNAL TEMPERATURE	10-bit A/D with quarter degree C resolution
NETWORKING	Any unit can serve as a relay for any other unit, relaying both commands and data. A linking mode allows one unit to store local and remote data in a real-time mode.
POWER	Battery powered, 2.8-4.0V input range.
OPERATING TEMPERATURE RANGE	-35°C to +85°C (Reduce battery life by 50% when continuous operation at -35°C.)
BATTERY LIFE	Standard battery has a 10-year capacity at one sample per minute. (Actual accelerated testing indicates a possible 17-year life. The standard battery has a 10-year shelf life)
PACKAGING	Snap enclosure with replaceable internal battery. Ruggedized housing with non-replaceable internal battery.
SENSOR TYPES	ELMWIS can accommodate strain gages, RTDs, pressure sensors, humidity sensors, accelerometers, or any other sensor with an active resistive element.

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System specifications subject to change without notice.
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