



Benefits and Features

- Remote acquisition of instrumentation data at high speed
- Works with most sensors that use DC excitation
- Built-in bridge completion for strain gages
- 8 analog inputs per logger
- Ethernet TCP/IP communications
- Expandable to unlimited units per remote network
- Built-in filtering feature for noise rejection
- Precise timing option
- Easy installation
- Reduces wires and saves money

Remote Instrumentation Monitoring System for Structural Health Monitoring

The *iSite™ HS* data logger is designed for use in high-speed monitoring applications with the need to access data from remote instrumentation quickly and inexpensively. The unit consists of a standalone eight-channel, 24 bit data logger, which takes and stores synchronized readings at programmed intervals up to 1,000 readings per second per channel. Units can be networked with Ethernet connections. Software on a networked computer can receive data in streaming mode and save it to files. The only limitation to the number of data loggers placed on a network is the bandwidth to download the data. Any channel can be remotely configured using the included software.

Each channel on a logger is read simultaneously, pulling global time from the GPS network. An option to sync each data logger to a networked grandmaster clock using the IEEE 1558 standard can be provided. This allows sensors across multiple data loggers to read at the same time with a precision of better than one microsecond.

The *iSite™ HS* unit can be programmed to run multiple data logging sessions simultaneously. A common use of this option is to run one session to log readings of each sensor every hour over a long time period and run a second session to take readings at a higher sampling rate. High-speed data logging is user selectable from 35 to 280 Hz (or optional 125 to 1000 Hz). Trigger events can be dispatched to the central server if any of the sensor readings exceed a preset threshold value. The event can include up to 2 MB of pre-trigger and post-trigger data. When a sensor shows a reading outside its limit values, this option greatly reduces the data transferred in high-speed mode to just events.

Each logger can store up to 128 MB of data. Software on a server can pull data for specified times from this memory to develop a complete data record across multiple loggers with all readings synchronized and then evaluate characteristics of the complete data set.

The *iSite™ HS* unit is compatible with any sensor with DC voltage output of up to ± 2.5 volts, including $\frac{1}{4}$ - and full-bridge strain gages. Each data logger can excite and read up to eight sensors. The unit provides sensor excitation that is adjustable by software between 5 and 12 VDC for each channel. Built-in, three-staged lightning and surge protection on each sensor can be provided as an option. All components, including options, are preassembled inside the weather resistant NEMA 4 (IP-65) enclosure. Sensors are connected via external terminal blocks.

Installation is simple and quick: install the unit, adjust the excitation level by software to that required by a particular sensor, connect the sensor, set the reading interval, and initiate data logging.

iSite™ HS removes the need for wires connecting sensors to a central data logging unit. This greatly lowers the materials and installation costs for most field monitoring applications. *iSite™ HS* is useful in many field monitoring applications that use DC-based sensors and require high-speed data logging, including monitoring structural loads and strains, impact load effects, extreme weather event effects, vibrations, and blast monitoring.

iSite™ HS unit is provided with menu driven software to configure units and collect data, as well as an API to support use of the product in customer's systems.

Remote Data Acquisition System Specifications

Input Channels	8 differential, individually configured	
Analog Inputs	Accuracy: $\pm 0.002\%$ of FSR (25°C to 85°C)	
Range and Resolution	Range Configurable by Each Channel	
	<u>Input Range</u>	<u>Resolution</u>
	(mV)	(μ V)
	± 2560	0.15
	± 1280	0.075
	± 640	0.037
	± 330	0.019
	± 160	0.009
	± 80	0.005
	± 40	0.002
± 20	0.001	
Sampling Frequency	User selectable from 35 to 280 Hz (optional 125 to 100 Hz) in high speed session and from 2 per day to 1 Hz in slow sampling session (Rates per channel)	
Input Polarity	Software selectable unipolar or bipolar	
Common Mode Rejection	1.2 to 4.05 volts 120 dB DC	
Input Current	50 nA buffer enabled	
Input Resistance	2.5 Gohms buffer enabled	
A/D Output Noise	425nV at 2 gain and 50 Hz 840nV at 2 gain and 200 Hz 55nV at 128 gain and 50 Hz 105nV at 128 gain and 200 Hz	
A/D Resolution	24 bit, 1 part in 16,777,216	
Noise Free Resolution	19 bits at 2 gain and 50 Hz 18.5 bits at 2 gain and 200 Hz 17 bits at 128 gain and 50 Hz 16 bits at 128 gain and 200 Hz	
Digital Filters on Data	12-tap FIR and IIR	
Sensor Excitation	Programmable per channel 5-12 VDC, 100 mA maximum per channel	
Digital Input / Output	1 opto-isolated input	
CPU and Interface	32 bit ARM Processor	
Internal Storage	512 MB FLASH	
Data Flow	Simultaneous logging of data to internal storage and streaming to Ethernet	
Limit States	User programmable high and low triggers on each input channel	

Network Interface	Ethernet using 100 mbps TCP/IP protocol Deterministic, Low Transmit and Receive Latency 10/100 Mbps packet BIST (Built-in Self Test) Auto-MDIX for 10/100 Mbps Error-Free Operation up to 150 Meters CAT5 cable ESD Protection - 8 kV Human Body Model Industrial Temperature Range -40C to +85C With precise timing option: <ul style="list-style-type: none"> • Meets IEEE 802.3 specifications IEEE 1588 and IPv4 • IEEE 1588 Clock Synchronization Timestamp Resolution of 8 ns • 10 μs Synchronization to Master Reference
Clock	± 1 minute per month Optional IEEE 1588 V2 accurate to 8 ns
Operating Temperature	-25°C to +85°C
Battery Backup	CR2032 lithium battery for clock
Typical Current Drain	90 mA @ 18 VDC
External Power Source	12 to 20 VDC or 9 to 12 VAC
Sensor Connectors	Terminal Blocks outside enclosure
Enclosure	Plastic with clear see through cover Size: 11.1 x 8.3 x 4.5 inches 283 x 203 x 114 mm Weight: 3 lb (1.4 kg) NEMA 1, 2, 4, 4x, 12, and 13 UL-508, UL94-HB, IP65, IP66 Service temperature: -40 to 120°C
Lightening and Surge Protection	Gas discharge tubes; voltage/current limiting protection
Remote Access	TCP/IP via wired Ethernet; USB port
Software	iSiteCC for Windows menu interface iSiteCC API for user programming
Warranty	Three years against defects in materials and workmanship. Damage from abuse, misuse or direct lightning strike not covered.

Specifications subject to change without prior written notice.

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Customized units can be built to order in many but not all cases