SPECIFICATIONS

Symphonie
INTERNET ENABLED

Internet-Enabled Data Loggers

The revolutionary Symphonie data logger gives you all the accuracy and durability of other NRG loggers but allows you to collect data without ever leaving your desk. Symphonie works with a standard data card or with any NRG manufactured iPack that sends data reports to your internet provider over an embedded standard, cellular or satellite phone. You get an email with an attached data file at any interval you choose.

Symphonie has been engineered to be simple to set up and use. Three anemometer and two wind direction channels are built in, and plug-in Signal Conditioning Modules that are pre-configured to work with sensors from NRG or other manufacturers may be installed for additional sensors. The Symphonie logger stores over a year's worth of data on non-volatile Multi-Media Cards (MMC). iPacks are "plug and play" with battery, modem and phone already installed. A real-time display and keypad are built into the logger to facilitate set-up and site visits.

Symphonie directly interfaces with your choice of communication iPacks to transfer data to your local Internet Service Provider (ISP). With an added communication iPack (AMPS Analog, GSM, CDMA, DoCoMo, satellite or Dial-up), it is not necessary to make a site visit to change the MMC Card.

As with all products from NRG, the Symphonie system is rugged, straightforward, and allows for a wide variety of customized preferences for sensor inputs and data processing to meet your individual needs and specifications.

FEATURES

- Wind energy specific and pre-configured to industry standards. All features for wind energy assessment built in. No complex configuration.
- Easy to install. Convenient "plug and play" Signal Conditioning Modules (SCM) for additional sensor inputs. Pre-configured for sensor type.
- Voice call feature allows on-site programming and testing of iPack communications.
- Antenna test feature allows verification of phone signal strength.
- Uses non-volatile Multi-Media FLASH cards. Cards are available almost anywhere in the world and are safer for data storage than RAM memory cards.
- Average, Standard Deviation, Maximum and Minimum values for all sensor channels at every 10 minute interval. Set-up is done for you.
- Free Symphonie Data Retriever software is included and produces versatile, tab-delimited text files. Data files can be used with wide range of data processing software, including SQL databases, MS Excel, MS Access, and more. Supports international numeric formats.
- Easy to read 4 line x 20 character display provides easy to understand real-time data and configuration information.
- Dedicated navigation buttons (up, down, left, right, home), plus a data entry keypad. Full-text, menu-driven display is easy to use.
- Separate lithium battery-backed real-time clock for accurate and reliable time stamping.
- Runs on two standard alkaline D-cells (included) for up to one year, depending on sensor configuration.
- Rugged, non-corroding, weatherproof polycarbonate enclosure.
- Optional iPacks provide solar/battery power and automatic remote data download capabilities via email. Support for AMPS cellular, GSM cellular, CDMA cellular, DoCoMo cellular, satellite and dial-up phone lines.

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NRG
systems

SPECIFICATIONS

Description	Instrument type	12 channel internet-enabled micropower wind energy data logger	
	Applications	• wind resource assessment • turbine power performance verification	
	Sensor compatibility - counter channels	• NRG #40 anemometer • rain gauge • opto anemometer • reed switch anemometer	
	Sensor compatibility - analog channels	• NRG 200P direction vane • NRG 110S temperature • Li-Cor 200SA pyranometer • NRG BP-20 absolute pressure (requires optional iPack power) • RH-5 relative humidity (requires optional iPack power)	
Data Collection	Counter channels	Channels 1 - 6 are always counter inputs: • channels 1 - 3 dedicated for NRG #40 anemometer or compatible • channels 4 - 6 use counter Signal Conditioning Modules (SCMs) to configure the channel for a particular sensor	
	Analog channels	Channels 7 - 12 are always analog inputs: • channels 7 and 8 dedicated for NRG 200P (potentiometer) direction vane • channels 9 - 12 use analog Signal Conditioning Modules (SCMs) to configure each channel for a particular sensor	
	Sampling interval	2 seconds	
	Averaging interval	10 minute fixed	
	Real time clock	internal battery-backed with leap year correction, Y2K to 2099	
	Storage medium	16 MB MultiMedia Card (MMC), non-volatile FLASH	
	Maximum data storage	664 days	
	Parameters recorded for each channel	• each data interval is time-stamped • average • standard deviation • min • max	
	File format	• Windows compatible • (1) 14 KB binary file per day • header includes site, serial number and sensor information	
	Software	Symphonie Data Retriever for Windows (included) • scales raw data • creates measurement database for each site • creates basic reports • maintains site and sensor information • configures iPacks	
	Reader	Windows compatible MMC reader accesses data stored on MMC as disk files	

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	Data delivery	• MMC cards • internet email via GSM, AMPS or dial-up with optional iPack
Resolution	Analog measurement resolution	0.1% of full scale (1024 counts)
	Counter average stored resolution	0.1% of the value stored
	Analog average stored resolution	0.1% of the value stored
	Min / Max stored resolution	0.3% of the value stored
	Standard deviation stored resolution	4% of the value stored
Configuration	User interface	• Liquid Crystal Display (LCD) 4 x 20 characters • 16 key pad (6 navigation keys plus numeric/phone pad) with audible feedback
	Configurable parameters	• clock • time zone • site number • display scaling (defaults are provided for each channel based on channel type)
	iPack options	• iPack configured via serial port connection to your PC • serial connection direct to iPack or through logger's iPack access port • Symphonie Data Retriever for Windows integrates iPack settings
Connections	Sensor wiring	• sensors connect to field wiring panel • field wiring panel plugs into logger • ground stud to connect to earth ground • male DB25 interfaces to one optional iPack communications module • iPack access port facilitates field programming and accepts headset for voice calls • 3 SCM slots for counter SCMs • 4 SCM slots for analog SCMs
Power requirements	Batteries	(2) 1.5 Volt D-Cell Batteries (included) • nominal voltage: 1.5 Volts • minimum voltage: 0.9 Volts • battery life approximately one year, depending on configuration
	External power input	provided by any iPack
	External solar input	provided by any iPack
	Other	optional iPacks provide 12V power required by some sensors. PV/Battery only iPack provides power to sensors and logger for stand alone configurations.
Installation	Mounting	• mounts with 4 bolts (included) to keyed slots inside of metal shelter box • shelter box attaches to tower with hose clamps
	Tools required	• screwdriver for input terminals, included • 8 mm (5/16 inch) wrench or nut driver for logger mounting screws • 3/8 inch wrench or nut driver for logger ground nuts

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Environmental	Operating temperature range	-40 °C to 65 °C (-40 °F to 149 °F) Note: display readable -30 °C to 55 °C (-22 °F to 130 °F)
	Operating humidity range	0 to 100% RH non-condensing
	Lifespan	10 years +
Physical	Weight	1.3 kg (2.6 pounds), including batteries
	Dimensions	(Including Field Wiring Panel) 22.2 cm height, 18.8 cm width, 7.7 cm depth (8.7 x 7.4 x 3.0 in.)
Materials	Faceplate	injection molded black ABS
	Buttons	white elastomer dome keypad
	Wiring panel	fiberglass-epoxy terminal board, sealed gold plated pins, zinc plated screws and terminals
	Enclosure	weatherproof polycarbonate, meets the following specifications: • NEMA type 4, 4X and 13 • IEC: IP65