Committed to Quality

fourier

Fourier Systems
Data Acquisition Solutions

fourier

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Fourier Systems Ltd.
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Fourier Systems is recognized as an innovative developer, manufacturer and distributor of compact portable data logging devices and accessories for advanced data acquisition, communications and analysis. Our products are the ideal cost effective solution across the full spectrum of industry, including pharmaceutical, food transportation, storage, air conditioning and ventilation, clean rooms, warehouses and galleries.

Fourier Systems data acquisition solutions include:

- MicroLite: Multi-trip plug-and-log USB temperature data logger
- DataNet: Wireless RF network logger, based on ZigBee protocol
- DaqPRO: 8-channel, stand-alone, multi-data acquisition logger
- MicroLog/MicroLogPRO: Temperature and humidity, long-term, portable data logger

Fourier is dedicated to providing sophisticated quality solutions that integrate the most advanced technologies. When it comes to professional data logging, leading companies around the world count on Fourier to provide them with the most up-to-date, cost effective equipment.

Fourier's Competitive Advantage:

Product Advantages	Company Advantages
• **Immediate ROI:** Zero implementation and infrastructure costs • **Quality:** Better specifications in inputs, accuracy, memory, sampling rates • **Flexibility:** Data transfer to PC • **Independence:** On-site monitoring via graphic displays • **Intuitive:** Simple keypads & icon driven menus	• **Nearly 20 Years of Experience:** Established knowledge-base & proven applications • **In-house Wireless Technology:** Reducing cost & time to market • **Responsive:** High R&D investment meeting distributor feedback and market needs • **Low Pricing:** Efficient operation & outsourced manufacturing

2 Fourier Systems Distributors

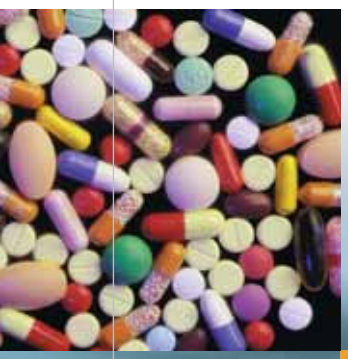
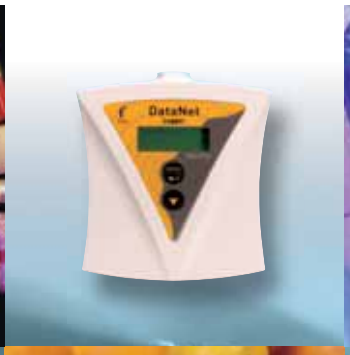
Fourier Systems partners with value added resellers in more than 60 countries across all continents. Our distributors have sales experience and expertise in the data acquisition market and understand the importance of commitment to excellence.

"The intuitive, easy to use MicroLab software facilitates detailed analysis of the shipment from origin to destination and allows Sea Star to optimize its shipping process. The MicroLite has paid for itself many times over in shipping and materials savings."

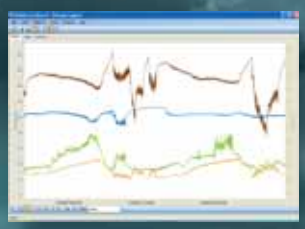
Robert Soares, Marketing Administrator, Sea Star Seafood Corporation

"The singular difference with Fourier, is that they approached our business needs the same way we approach those of our clients…they got on our team and helped as find solutions."

Bob Belveal, President ShelfLife Distributors, USA




"I have applied the DataNet system in dozens of different applications: Government buildings, hotels chains, museums, hospitals and laboratories have found the DataNet to be a key solution for wireless, cost effective and accurate monitoring."

Marcial Ferro, Director MF Instruments, Spain

"We settled with Fourier because they met our three most important criteria: value for money, flexibility and aesthetics."

Hans Oosterling, Managing Director of CaTeC Bv, Netherlands

"Fourier Systems enable us to meet brewery and winery regulatory guidelines within our budget, with ease and efficiency and very little staff maintenance."

Andy Correa, Operations Manager Dienst Distributing Co., USA

"I feel my feedback from the field is listened to and acted upon. They really listen to their customers and develop products according to the market need."

Amir Antebi, Managing Director, SITEST, Australia

Today, companies face more stringent commercial and hazard analysis standards than ever before. Whether centrally monitoring data from a fleet of trucks or numerous workstations in a Lab, they all face rigid restrictions and tightening profit margins. It is these challenges that Fourier's wireless and cost effective solutions cater to.

PT100

TC-J, K, T

Frequency/Pulse

Temp/RH

Temperature

DataNet Solution

Wireless intelligent logging network

DataNet is a multi-unit data acquisition system. Data transmission from end units to the central computer utilizes the ZigBee wireless telemetry protocol. DataNet data loggers feature 16-bit resolution, with four external channels supporting direct measurement and recording of PT-100, thermocouple, voltage, current, dry contact, frequency and pulse. Internal sensors include temperature and humidity.

ZigBee wireless protocol uses a 2.4 GHz license-free frequency RF Band. Each DataNet unit also serves as a transmission repeater to neighboring units, forming a reliable mesh network of up to 65,000 units. The ZigBee key features include:

- Reliable bi-directional transmission ensuring no data loss
- Transmission range can be constantly expanded by adding additional network units
- Minimal costs thanks to wire-free infrastructure
- Portable units facilitating easy deployment in various environments
- Receiver, recognizing up to 8 end units and 16 Repeaters
- Repeaters, recognizing up to 24 end units and 16 Repeaters (simultaneously)

DataNet System Contains:

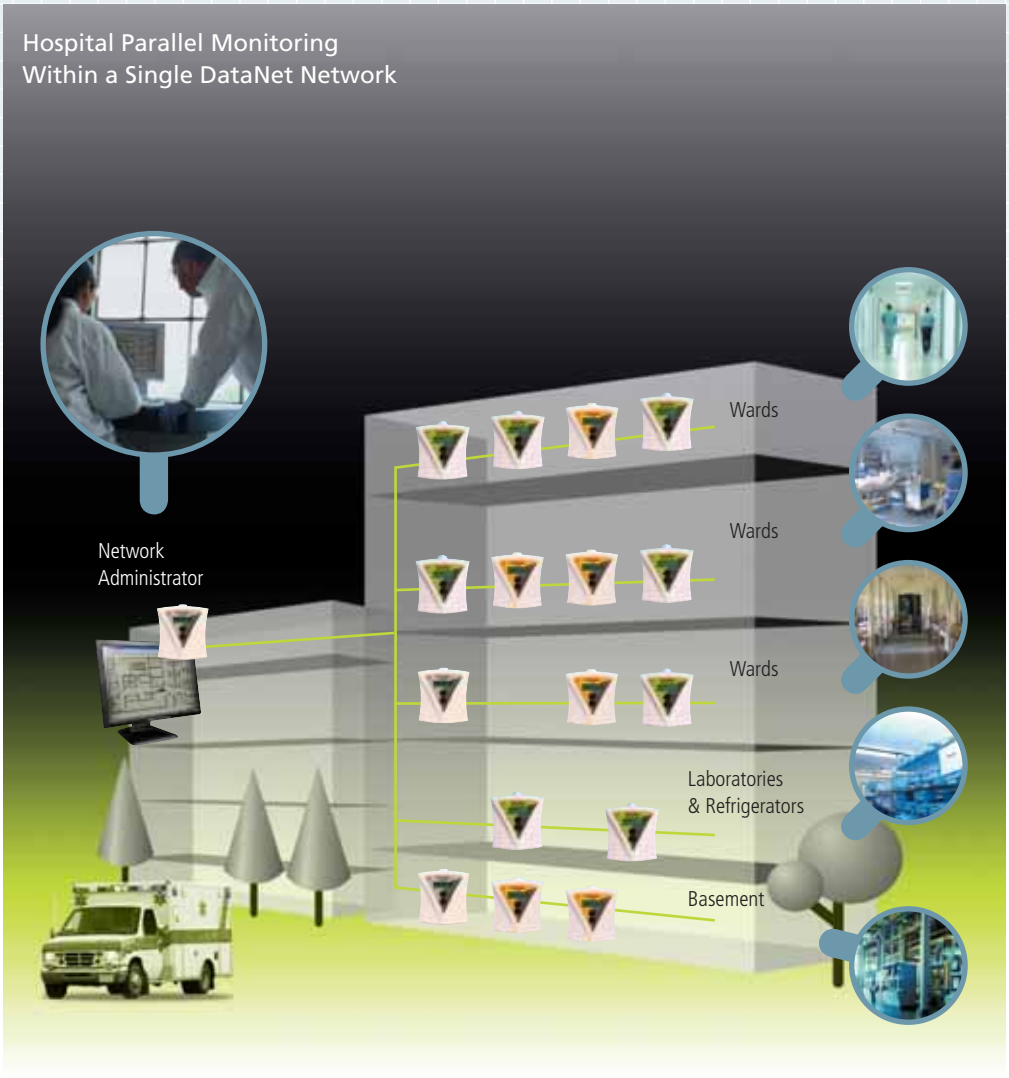
Temperature
data logger
with 4 external inputs

RH/Temperature
data logger
with 4 external inputs

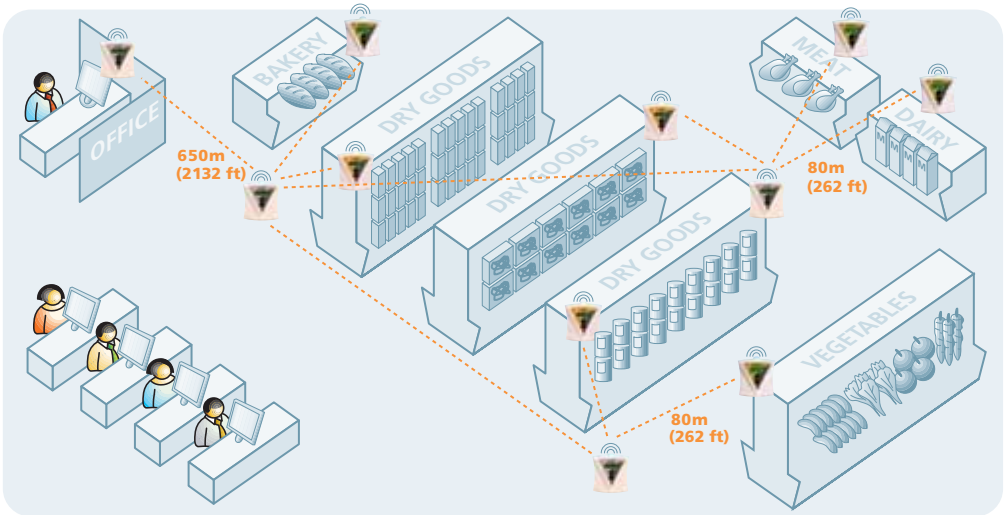
Receiver/Repeater

Mini DataNet
DNL810
(RH/Temperature)
DNL808
(external NTC 10 KΩ)

DataNet Infrastructure Network



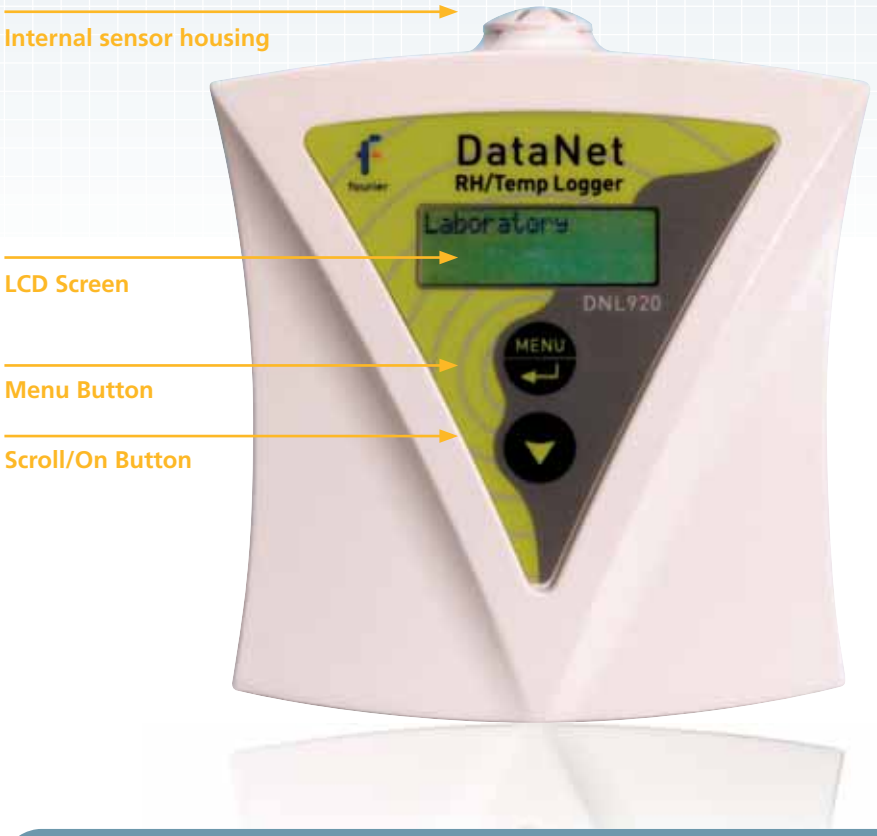
DataNet Network - Supermarket

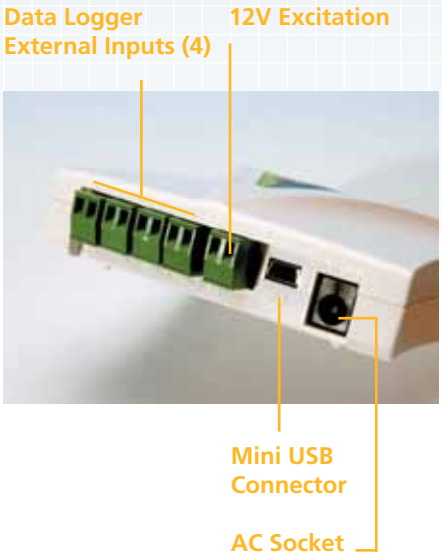


DataNet Features

DataNet system comprises two models meeting a wide range of industry applications:

- DNL910 logger with four external inputs and one internal Temperature sensor.
  Supported external inputs: 4 to 20 mA, 0 to 1 V, 0-50 mV, PT-100 2-wires, Thermocouples (J, K and T), Dry Contact, Pulse Counter and Frequency.
- DNL920 logger with four external inputs and one internal Temperature and Humidity sensor.
  Same supported external inputs as DNL910 logger.





DataNet Solution Case Study

Company:
Teva Pharmaceutical Industries Ltd. One of the top 20 Global pharmaceutical companies in the world. Develops and markets branded pharmaceuticals & active ingredients.

Challenge:
- 10 large storage facilities in separate cities with perishable pharmaceuticals.
- Temperature must be measured wirelessly but external RF interference threatened data loss.

Requirements:
- Online multiple point monitoring and alert system.
- Avoid costly infrastructure by using wireless network.
- Maintain reliable RF transmission.

Solution:
- DataNet provides a secured intelligent data logging system.
- Overcomes RF interference, recovering data losses.

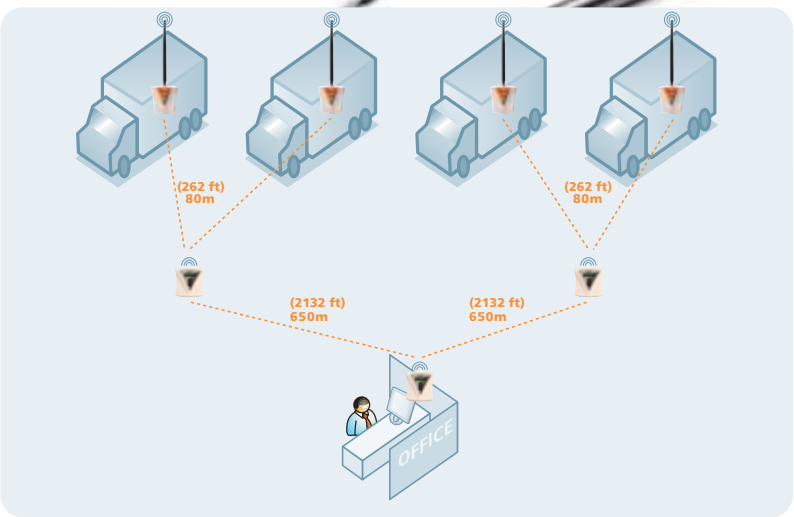
Method:
Multiple DataNet units with external PT100 temperature probes monitor ambient temperature every 15 minutes. Repeaters are used to cover distances of 200 to 300m inside the warehouse. Data is exported to Microsoft Excel for further analysis.

Mini DataNet Loggers

Supported by the DataNet wireless ZigBee network

The Mini DataNet, a single and dual channel data monitoring system, reduces potentially redundant costs of the four-channel monitoring system.

- Dual channel internal Temperature and Humidity sensor for cost effective data acquisition
- Also supports external NTC sensor, providing an easily extended solution
- External antenna, increasing transmission distance
- Runs up to 12 months on a single battery



Mini DataNet Network

USB DataNet Stand Alone Solution

Broadening the functionality of the DataNet system, the low-cost, stand-alone USB DataNet is an ideal solution for non-wireless applications. Users requiring just 4 external inputs and internal temperature and humidity can still leverage the benefits of the DataNet system. With this simpler and more budget-friendly option, customers only need a single USB DataNet unit and PC software suite to start recording and analyzing data.

The USB DataNet extends the DNL910 and DNL920 to offer both wireless and non-wireless operational modes with full functionality including:

- Manual operation (Run/Stop)
- Long battery life - 6 months between recharges
- Option to include DatPass software meeting 21 CFR Part 11 requirements
- Four alarm levels with unit external visual and audio alarm
- External AC power operation and internal rechargeable batteries
- Periodical download of data
- Real-time operation with live data results appearing on screen
- Firmware updates via the software
- Option to work in parallel to the ZigBee wireless network

DataNet specifications apply but wireless features are not enabled.

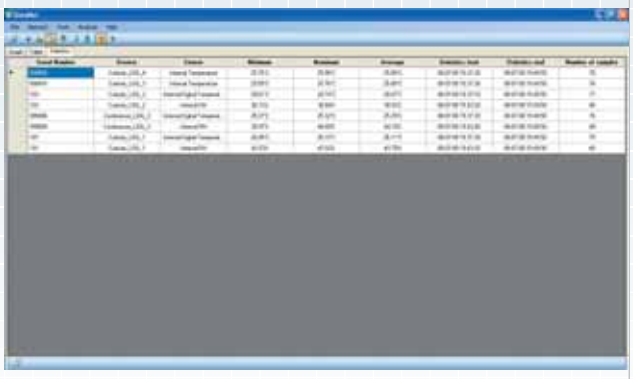
DataNet Software PC Suite

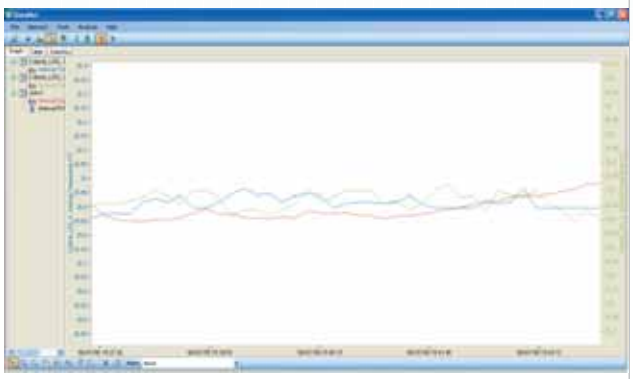
Operating System:
Windows 2000 SP3/ 2003/XP SP2/Vista
Internet Explorer 5.01 or higher
Pentium 800 MHz or higher
256 MB RAM
250 MB available disk space

The DataNet PC Suite Software provides security for your products with online monitoring and control of the entire intelligent DataNet system.

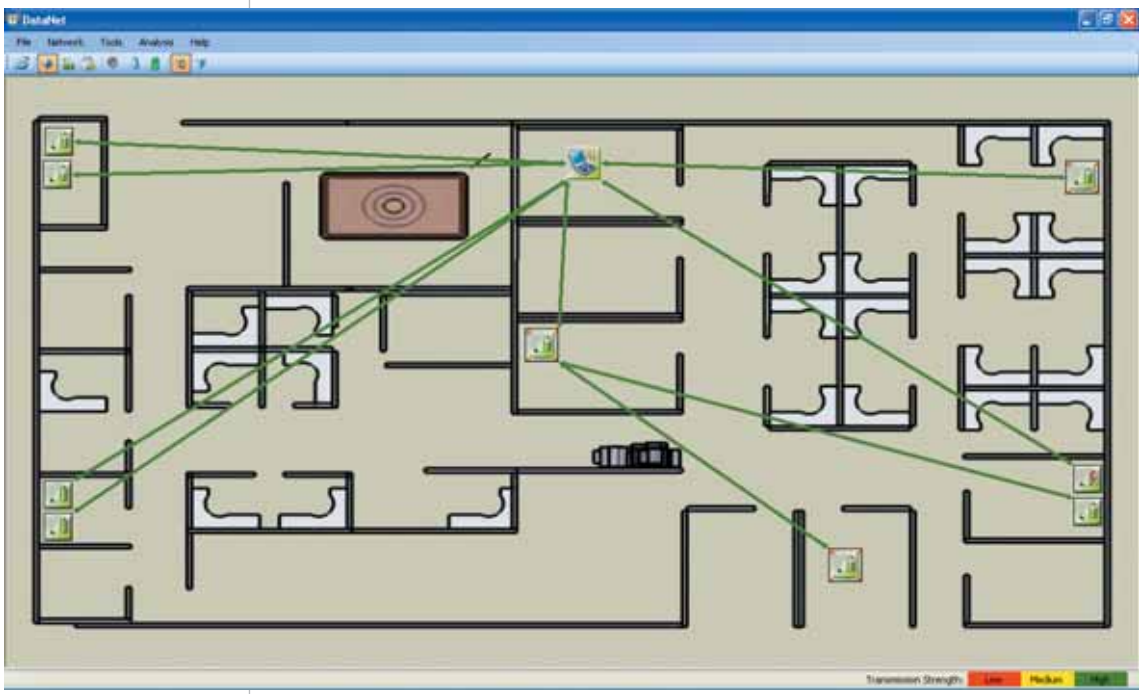
Data View Features

Real-time data in multiple displays (show table, graph, Excel)



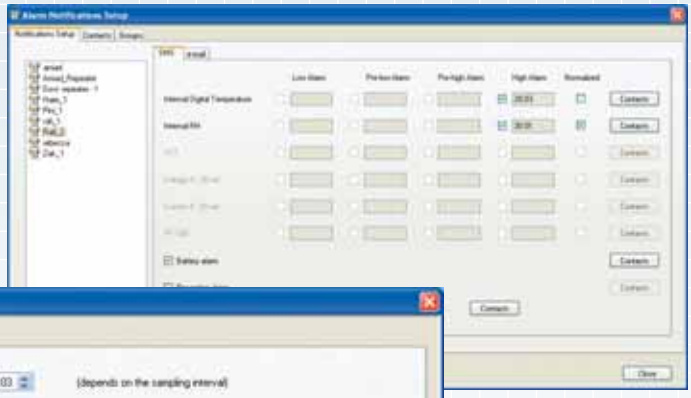


- International date format
- Ability to rename every logger and external input
- Map View displaying unit location, signal path and signal strength to the PC

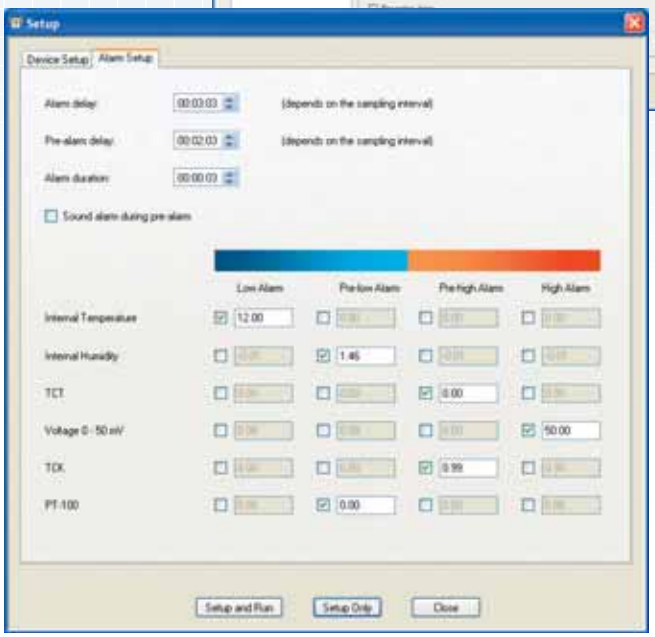


Alarm Features

Alarm level setup with email & SMS notifications

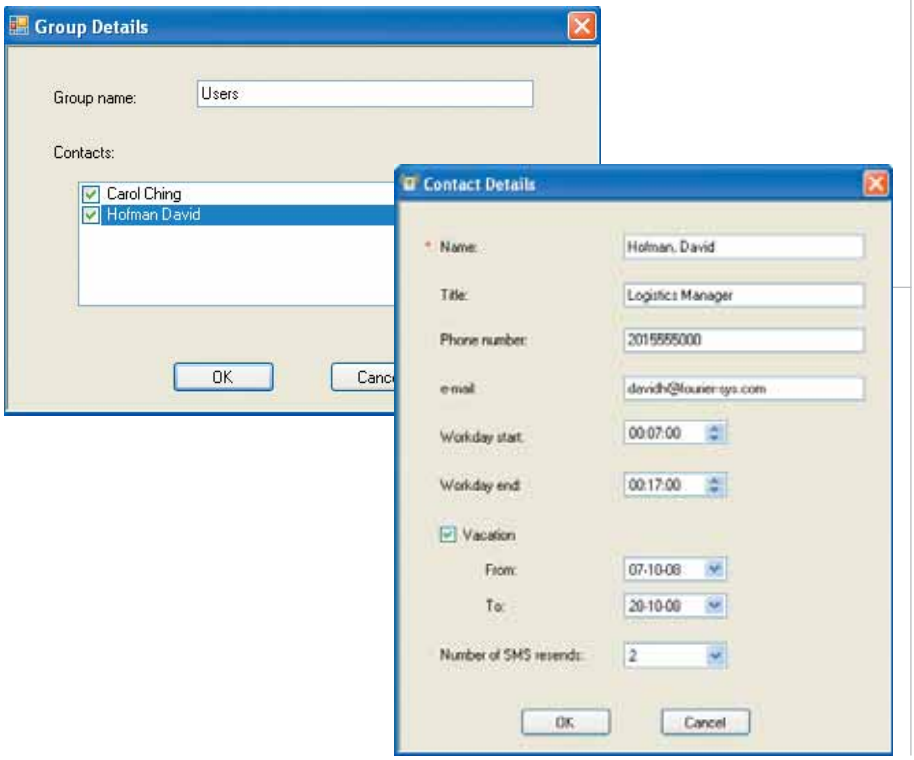


Four alarm levels, allowing for programming of 4 separate parameters, with alarm delay and duration



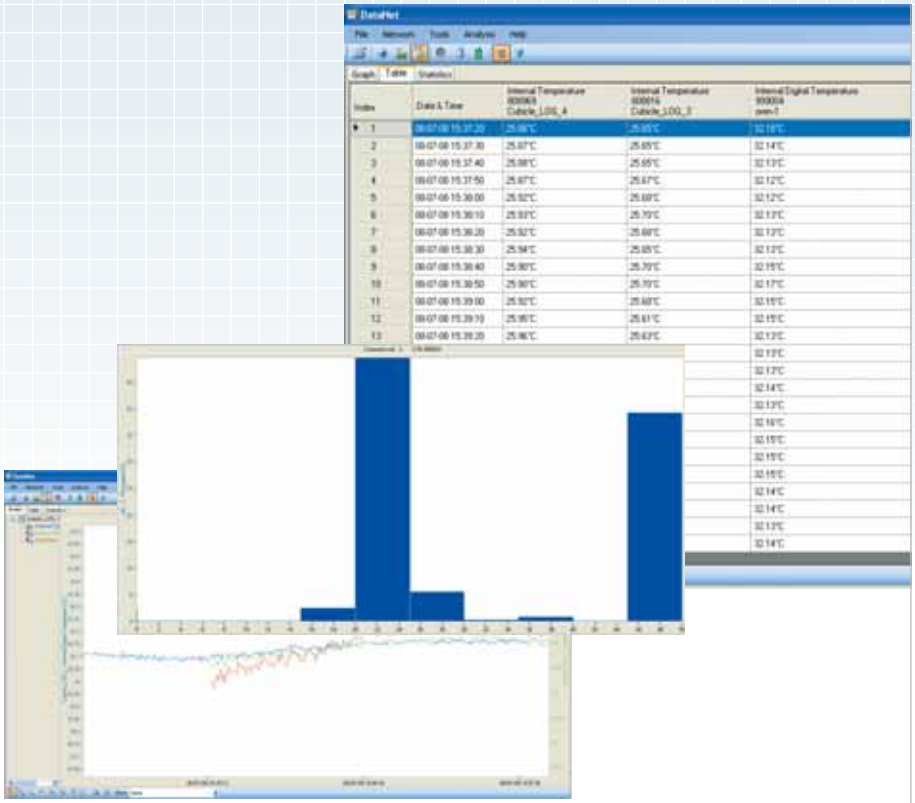
Alarm Notification Setup

Alarm notifications sent to selected Contacts and Groups during working hours



Analysis Features

Dew point analysis, FO Pasteurization, histogram, statistics with export to Excel and CSV formats

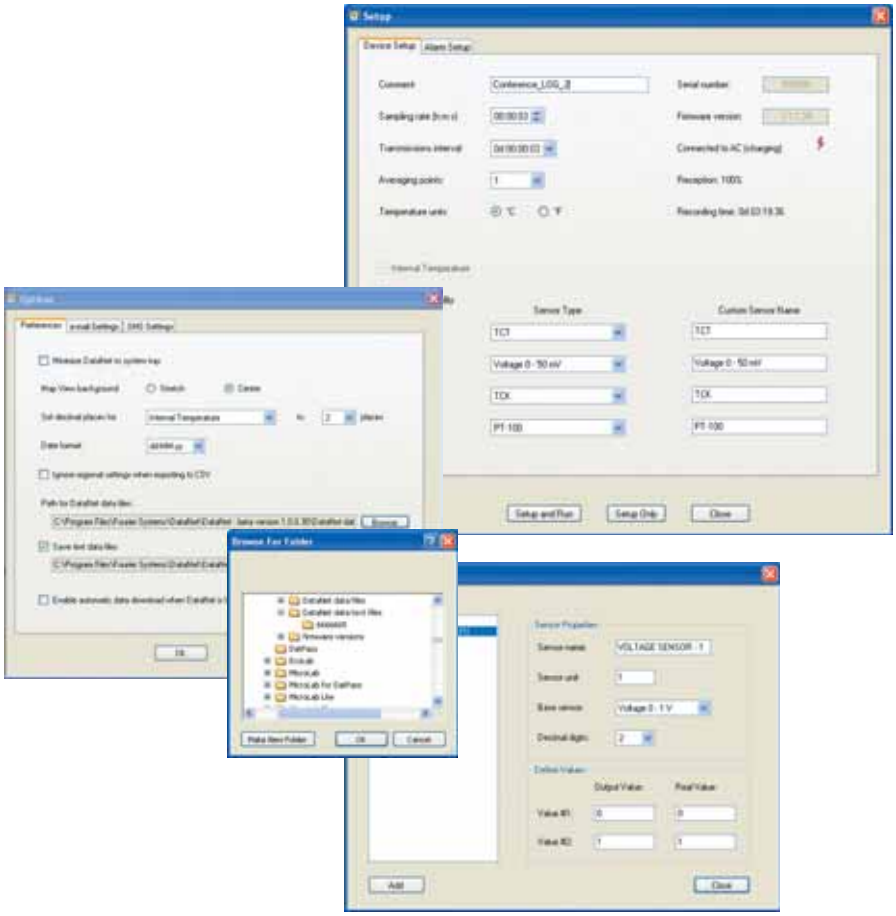


Setup Features

Logger setup with Celsius or Fahrenheit view

User configurable data file and text file storage path

Ability to define custom sensors based on current, voltage and pulse inputs



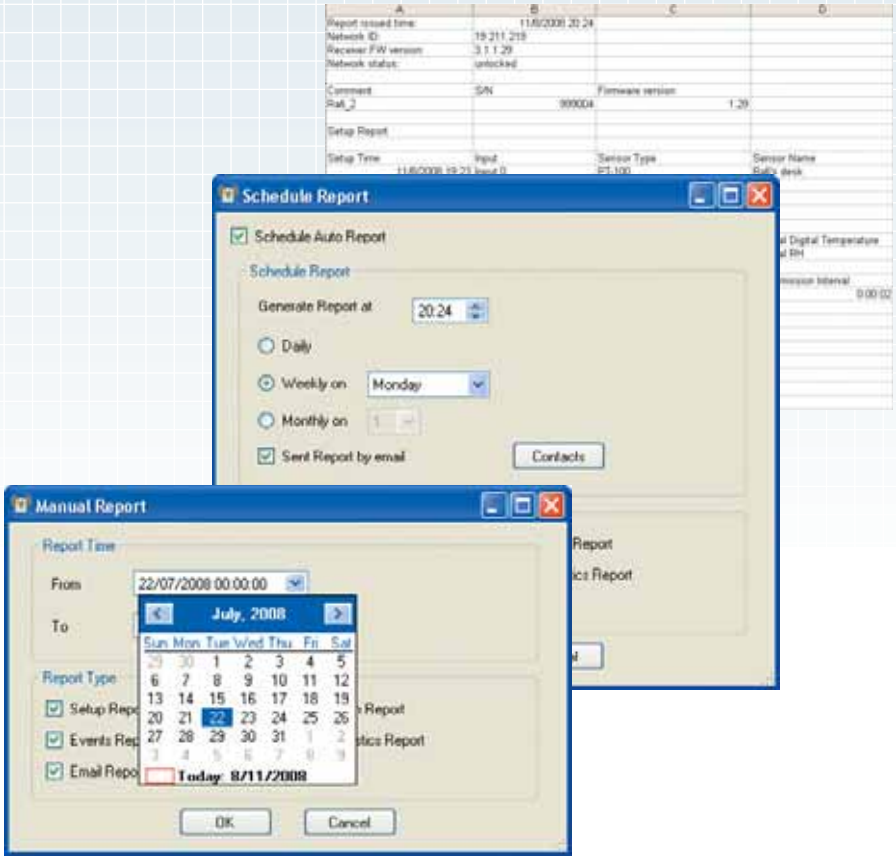
Reporting Features

Individual Report Profile Manager:

- User can define up to 10 report profiles
- Report generated and automatically sent to multiple defined user profiles
- Reports received according to predefined date interval selection
- Configurable report periods (start/ end dates)
- Daily, weekly and monthly reports available
- Report file formats available in Excel and PDF

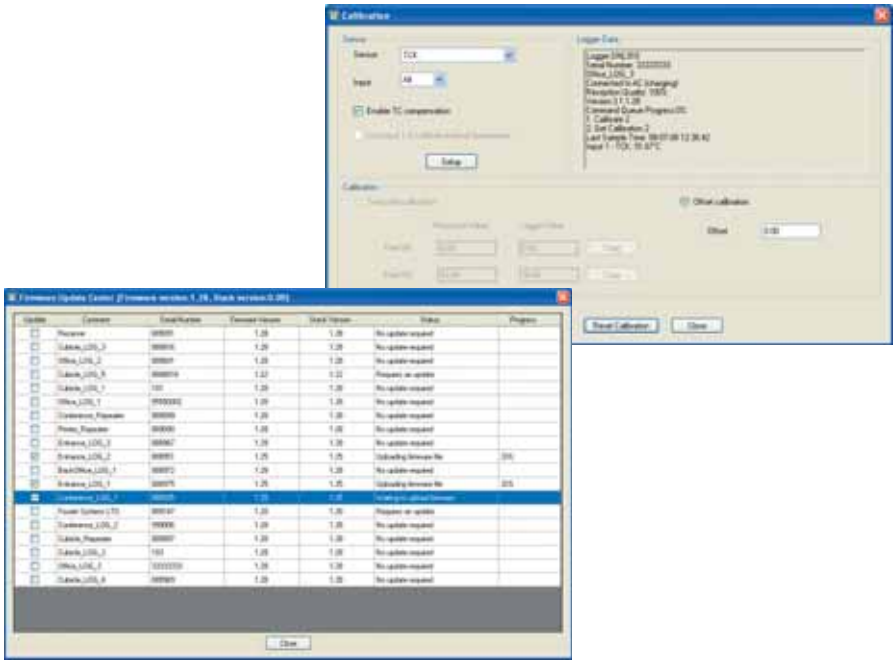
Report Content:

- Alarm and Event log
- Data and Graph (Sensor histogram) Views
- Email and SMS log



Hardware Communication Features

Over-the-air firmware updates and calibration

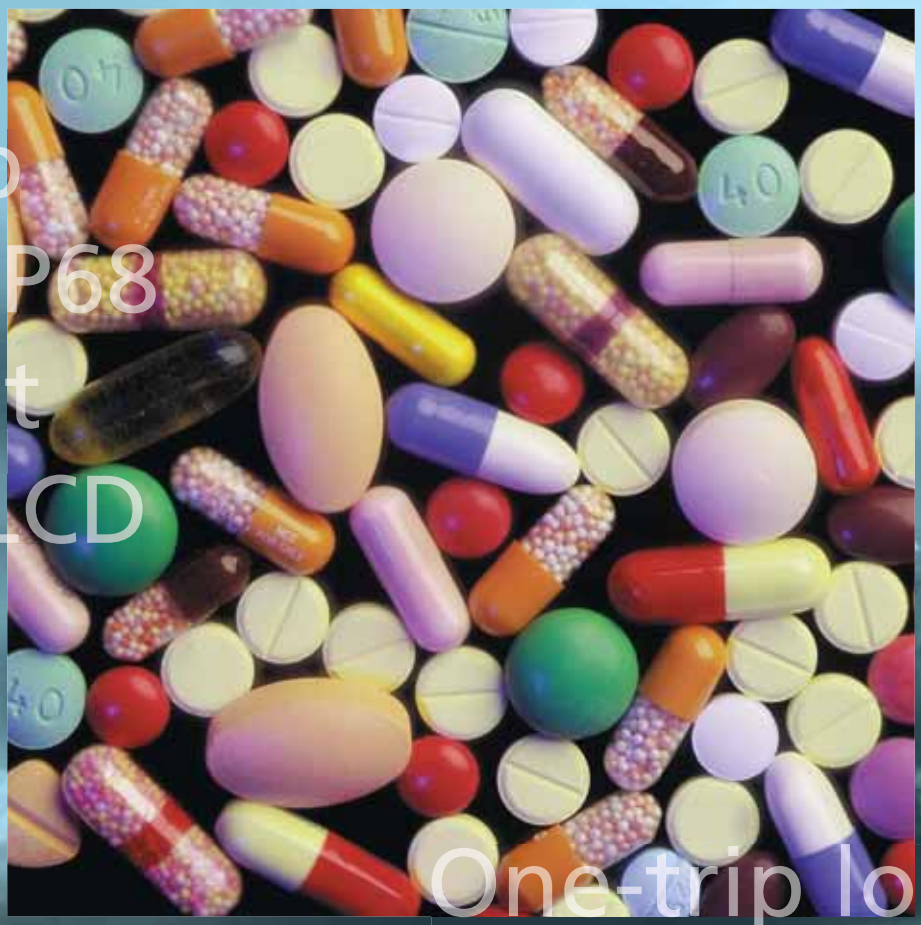


Temp

IP68

16-bit

LCD



One-trip logger

Portable

Cold-chain

fourier

www.fouriersystems.com

MicroLite Solution

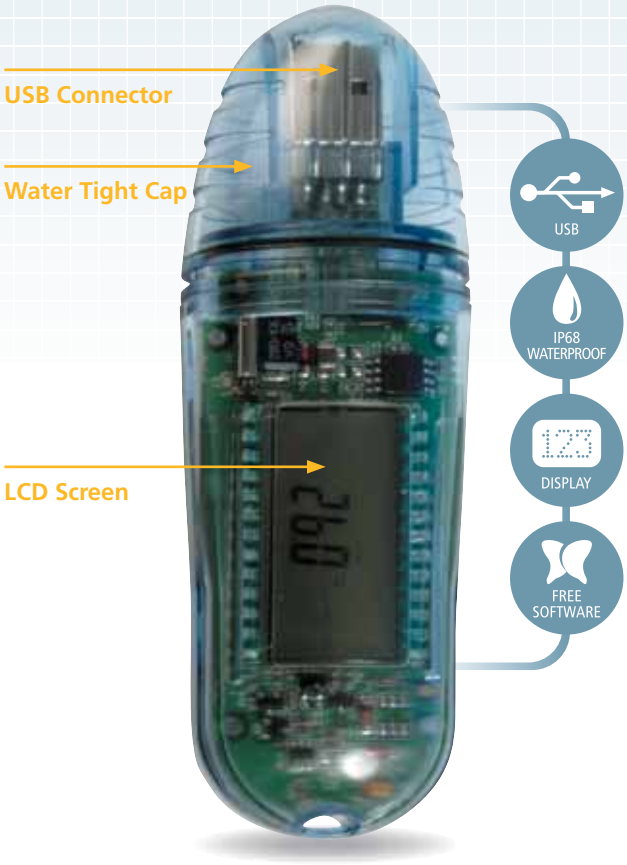
The plug & record mini data logger

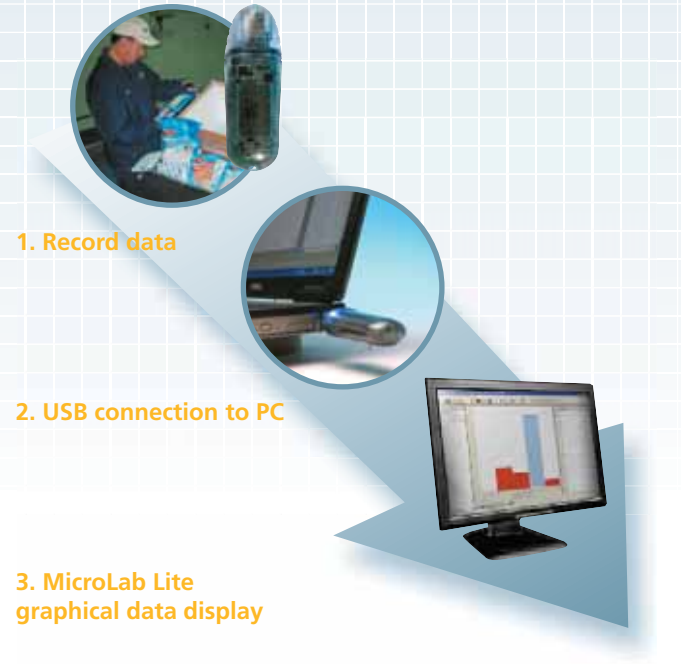
Aesthetic and innovative, MicroLite is a small data logger for monitoring and recording temperature. MicroLite is the ultimate plug and record data logger with direct USB connection to the computer. Despite the compact design, MicroLite data is clearly displayed on the logger's numeric screen. In addition, the MicroLite stored data can be downloaded automatically to the MicroLab Lite software. The MicroLite has been dustproof and waterproof tested to meet highest market standards (IP68). To further ensure easy global usage, the battery is easily replaceable since it is a standard model used worldwide.

The product is designed for ultimate application accessibility, whether mobile or static. Typical applications for this product include transportation as well as warehousing of food, drugs and hi-tech equipment.

- High functionality, multi-trip plug-in logger
- Dust and water proof, IP68/NEMA6 ; 30 minutes at 0.5 m (1.7 ft) depth
- LCD numeric decimal point display - showing min/max and current values
- Real-time, accurate historical data indicator
- Long battery life with easily replaceable industry standard
- Supports USB 2.0 interface enabling fast track communication
- High resolution 16-bit (0.1 °C) and high accuracy of 0.3 °C
- Large sample memory: Optional 8,000 or 16,000 samples
- Fast sampling rate of once per second
- Range -40 °C to 80 °C (-40 °F to 176 °F)
- Start sampling options: Magnet key, automatic and timer
- Fast automatic data download to graph, table, export to Excel

MicroLite Features





MicroLite Case Study

Company:
Sea Star, Established in 1983
Ships highly perishable frozen seafood samples to brokers and customers across the United States.

Challenge:
Using correct quantities of frozen gel packs during shipments. Too few would result in product spoilage, and too many causing excessive air freight charges.

Requirements:
- A water resistant logger that is compact, accurate, low cost and easy-to-use.
- Data analysis software that could provide detailed analysis of the shipment from origin to destination, allowing Sea Star to optimize its shipping process.

Solution:
MicroLite: Accurate and reliable temperatures monitoring during shipping

Result:
Substantial cost savings in air freight, refrigerant packs, and minimized product loss.

Method:
- MicroLite placed inside insulated shipping boxes with a postage-paid return envelope to Sea Star after shipment delivery.
- The logger is programmed to start when the courier arrives to pick up the package.
- Samples are recorded at 1 minute intervals during the overnight shipment.
- Once the logger is returned to Sea Star, data is downloaded for analysis.

MicroLab *Lite* Software for MicroLite

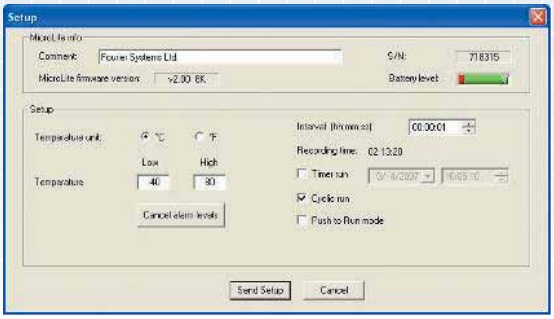
Operating System:
Windows 2000/ME/XP/Vista
16 MB RAM
10 MB Disk space
Screen resolution 800/600 or higher

Download for Free

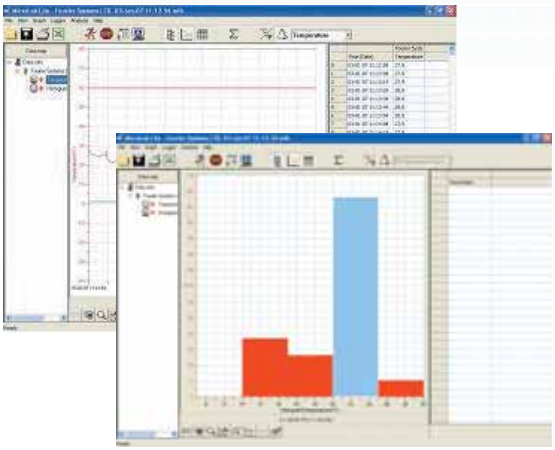
MicroLite works with MicroLab *Lite* software whose features have been designed specifically in response to requests from the field enabling a broader and more complex range of application environments. Features include analysis functionality such as Statistics – maximum, minimum and average, enabling a quick glance summary of the environment and historical analysis. This is typically useful for applications requiring a constant bird's eye picture of the conditions their materials are kept in.

Download MicroLab *Lite* software from Fourier Systems website:
www.fouriersystems.com

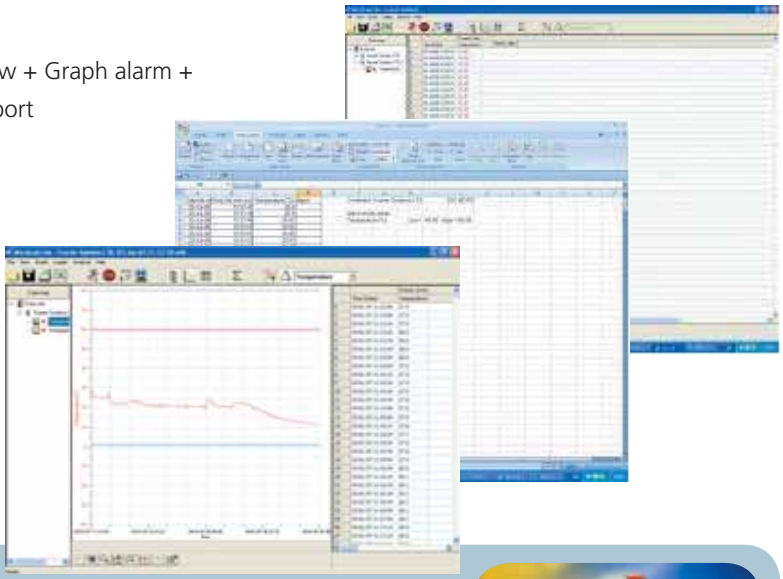
Setup
MicroLite configuration



Analysis
Histogram + Statistics



Output
Table view + Graph alarm + Excel export



GMT Recording
Setting data recording to meet with GMT - Greenwich Mean Time for use in international environments, particularly export and import.

Voltage

Current

16-bit

8-channel

Stand-alone

Portable

TC-J, K, T

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DaqPRO Solution

All-in-one system for universal data acquisition and analysis

The DaqPRO™ is a portable, battery operated data acquisition and logging system offering 16-bit, high-resolution, 8 channel data logging. The DaqPRO features powerful graphical display and analysis functions for measuring voltage, current and temperature. It is designed to provide a professional, compact, stand-alone low cost data logging system for a wide variety of applications.

- High-end data acquisition hand-held mobile solution
- 8 channels each capable of measuring seven popular parameters
- Setup on every port makes it viable for all industries
- Stand-alone operation: Display and keyboard for field programming and analysis (graph/table)
- Rechargeable 7.2V battery with over 500 charging cycles
- High sampling rate – up to 4,000 samples/second
- Large data storage 512 KB RAM
- Fast communication channels: USB
- Multiple logging storage of up to 100 sampling sessions
- Scales readings into meaningful engineering units e.g. bar, ppm
- Built-in clock and calendar keeps track of time and date for each data recording
- On screen text editing to annotate collected data

DaqPRO LCD Screens

DaqPRO provides truly independent data acquisition with full setup, data display and analysis all on the DaqPRO.

DaqPRO Features

DaqPRO Solution Case Study

Company:
American Honda Car Manufacturer

Challenge:

- Honda technicians perform onsite Honda engine compatibility tests
- Measuring different engine location operating temperatures

Requirements:

- Simple, turn-key, independent, battery operated
- Onsite data display and analysis without PC connection

Solution:
DaqPRO can provide on-the-spot accurate and complete information

Method:

- 6 different scenarios are used on the DaqPRO when testing, each at default setting
- Ambient temperature sensor in I/O-1 and anywhere from 2 to 5 type K thermocouples for other inputs

DaqLab Software for DaqPRO

Operating System:
Windows 95/98/2000/XP/Vista
16 MB RAM
10 MB Disk space
Screen resolution 800/600 or higher

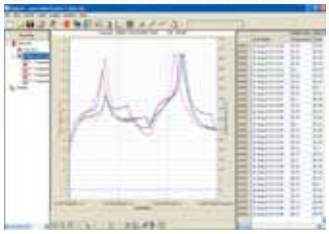
- Runs on Windows 95/98/2000/ME/XP and VISTA, as well as PDA platforms
- Fast data download from the DaqPRO
- Data displayed in numeric or graphical display forms
- Graphical analysis tools such as Zoom and Cursors
- Storage of selected data on disk files
- Hard copy printing of the collected data
- Direct data export to EXCEL
- On-line retrieval and display of data in real-time
- Incorporating data processing functions
- Setting up the DaqPRO
- Calibrating the DaqPRO
- Defining new sensors

Analysis Wizard
Scientific Functions - Statistics

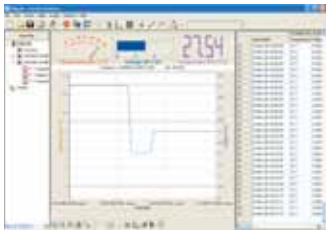
Sensor Calibration

Online Logger Setup

Online Graph & Table View



Meter View
For Analog, Bar or Digital data display



Export to Excel

Define New Sensors:
Defining a custom sensor


Dental

8-bit

IP65

10-bit

LCD

Current, Voltage

Compact

Temp, RH

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MicroLog Solution

General data logger

The MicroLog solution family offers two low-cost portable data loggers:


Microlog


MicroLogPRO

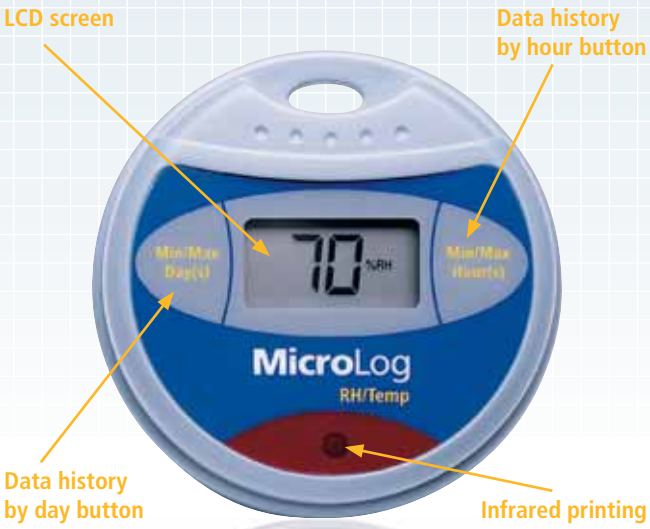
Internal sensor models for:

- **Temperature**
- **Temperature/RH**

Plus selected range of external sensors

- 8 year legacy of customer satisfaction, reliability and application experience
- Up to 3 parameters: Temp, RH and external sensors
- Accurate, portable 8-bit (MicroLog) and 10-bit (MicroLogPRO) data loggers
- All data viewing, export, and printing is done via two function keys
- View up to 30 days min/max history on LCD screen
- Water and dust proof (IP65/NEMA 4)
- Infrared communication to portable thermal printer
- Records months of data – up to 16,000 or 52,000 samples
- External sensors include: Temperature, pH, 4 to 20 mA, 0 to 10 V
- 4 to 20 mA and 0 to 10 V inputs allow for connection with any industry standard sensors
- Sensor values are displayed in their own units on the LCD
- MicroLab analysis software enabling powerful monitoring and data analysis capability

Compact 8-bit Data Logger
-30 to 50 °C (-22 to 122 °F)



A compact 8-bit data logger capable of recording data for months, even long-term shipping and storage. All data viewing, data export, and printing is done via two function keys.

- External input enables additional data collection from a variety of external sensors
- View up to 30 days min/max history
- Built-in quality sensors for temperature and humidity
- Programmable sampling rate
- Records months of data - up to 16,000 samples
- Low and high alarm level programming

Compact 10-bit Data Logger
-40 to 80 °C (-40 to 176 °F)

The 10-bit MicroLogPRO has all of the benefits of the 8-bit MicroLog in addition to the following enhancements:

- Higher sampling resolution for more accurate readings
- Increased memory - 52,000 samples
- Enhanced 4 digit LCD

MicroLog Case Study

Company:
Company: Exporter Greenwings and Wageningen
Industry: Agro technologists - Cut flowers exporter Holland to Japan

Challenge:
High temperature and humidity levels during worldwide export journeys of up to a week reduce quality and humidity, causing botrytis.

Requirements:
Tracking and tracing system charting delivery from supplier to customer and determine where obstacles occur to enable proactive, preventative measures.

Solution:
MicroLog humidity and temperature data logger monitor the journeys' climate conditions and help structurally reduce quality loss of the flowers by developing a quality progress report.

Method:
MicroLog data loggers are attached to the flowers, measuring temperature and humidity every 30 minutes. Upon arrival in Japan, the data loggers are removed by the customer and mailed back to Greenwings in attached envelopes. The data on the data loggers is then uploaded via an Internet site to a central database.

MicroLog Operating Method

1. Record data
2. Connect to PC via RS232 cable
3. Display data graphically in MicroLab

1. Record data
2. Recorded data is printed via infrared beam
3. Data printout displays Min, Max, Average and Duration

MicroLog External Sensors

MicroLog Temperature DT132 (2.5 m)
MicroLog Temperature DT093 (10 m)
Range: -50 to 100 °C (-58 °F to 212 °F)
Resolution: <1 °C (33.8 °F)

MicroLogPRO Temperature DT132 (2.5 m)
MicroLogPRO Temperature DT093 (10 m)
Range: -50 to 110 °C (-58 °F to 230 °F)
Resolution: <0.3 °C (37.4 °F)

MicroLog DT168 pH Adapter & Electrode
Range: 1 to 14 pH
Resolution: 0.116 pH

MicroLogPRO DT168 pH Adapter & Electrode
Range: 1 to 14 pH
Resolution: 0.02 pH

MicroLog DT140 Voltage Adaptor
Range: 0 to 10 V
Resolution: 0.05 V

MicroLogPRO DT140 Voltage Adaptor
Range: 0 to 10 V
Resolution: 0.01 V

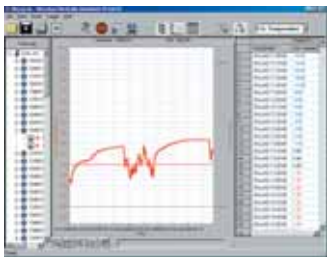
MicroLog/MicroLogPRO DT139 Current Adapter
Range: 4 to 20 mA
Resolution: ±0.1 mA

MicroLab Software for MicroLog & MicroLogPRO

Operating System:
Windows 98/2000/ ME/XP/Vista
16 MB RAM
10 MB Disk space
Screen resolution 800/600 or higher

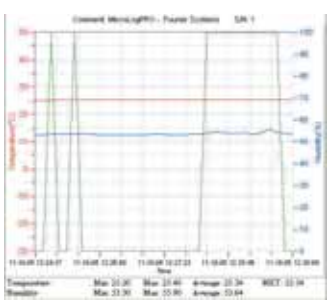
- Downloads from MicroLog
- Graph & table displays
- Alarm levels per MicroLog displays
- Ability to configure MicroLog
- Sensor definition
- Comments for each data logger
- Automatic data saving
- Daily status reports in various formats

Data can be clearly identified according to the ID number of the logger it came from and the threshold relevant to that logger. MicroLab automatically saves the data and produces daily status reports of your environment.

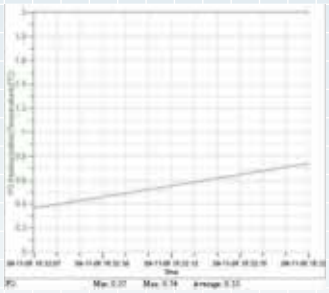


Data Management
Data records can be exported to Excel or CSV file format using the Export to Excel feature

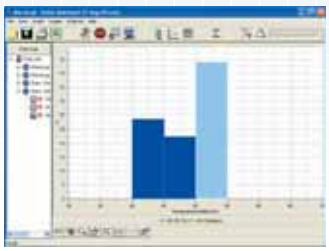
Data Analysis
Mean kinetic temperature, an expression of cumulative thermal stress in different temperatures during storage, transportation and distribution.



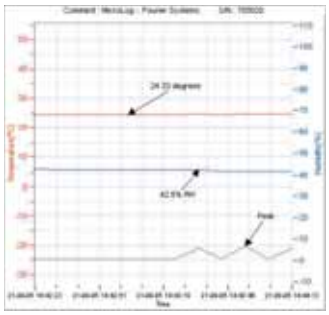
Pasteurization provides analysis for the most common methods of pasteurization in Industry: High Temperature Short Time (HTST); Ultra Pasteurization (UP) and Ultra High Temperature (UHT) pasteurization.



Histogram provides a graphical view of historical results presented according to defined parameters of periods of time and percentage levels. This provides a level of analysis which can be tailored to specific environment needs for an immediate picture. For example, this can be used in a museum environment where the percentage of time the humidity reached certain levels can be viewed.



Annotation feature enables text marks to be placed on the graph at relevant points where certain information needs to be highlighted.



GMT Recording
Setting data recording to meet with GMT - Greenwich Mean Time for use in international environments, particularly export and import.

MicroLog & MicroLogPRO Comparison Table

	MicroLog		MicroLogPRO	
	EC600	EC650	EC700	EC750
Sampling resolution	8-bit		10-bit	
Internal range	-30 to 50 ˚C/-22 to 122 ˚F	-30 to 50 ˚C/-22 to 122 ˚F (T), 0 to 100 % (RH)	-40 to 80 ˚C/-40 to 176 ˚F	-40 to 80 ˚C/-40 to 176 ˚F (T), 0 to 100 % (RH)
Temperature accuracy	±0.6 ˚C / ±1.08 ˚F		±0.2 ˚C / ±0.36 ˚F	
Humidity accuracy	N/A	±3 %	N/A	±2 %
Resolution	0.5 ˚C (-30 to -29 ˚C)/0.9 ˚F (-22 to -20 ˚F) 0.4 ˚C (-28 to -22 ˚C)/0.76 ˚F (-18 to -7 ˚F) 0.3 ˚C (-21 to 22 ˚C)/0.54 ˚F (-5 to 71 ˚F) 0.4 ˚C (23 to 32 ˚C)/0.76 ˚F (73 to 89 ˚F) 0.5 ˚C (33 to 39 ˚C)/0.9 ˚F (91 to 102 ˚F)	0.5 %	0.2 ˚C (-40 to -20 ˚C)/0.36 ˚F (-40 to 4 ˚F) 0.1 ˚C (-21 to 50 ˚C)/0.18 ˚F (-5 to 122 ˚F) 0.2 ˚C (51 to 80 ˚C)/0.36 ˚F (123 to 176 ˚F)	0.1 %
Memory capacity	1 sensor -16,000 samples 2 sensors - 8,000 samples 3 sensors - 5,312 samples		1 sensor - 52,000 samples 2 sensors - 26,000 samples 3 sensors - 16,000 samples	
Sampling rate	Minimum - 1 per 10 seconds Maximum - 1 per 2 hours			
LCD display	Two digit, 7-segment LCD		Four digit, 7-segment LCD with decimal point	
LCD units/icons	˚C, ˚F, % RH, Ext		˚C, ˚F, % RH, pH, V, mA, AL-H, AL-L	
RS-232	Cable connection to the PC with 19,200 kbps			
USB - optional	N/A	N/A	USB 1.1 Option for quantities over 200 units with low water & dust protection	USB 1.1
Infrared printout	Minimum, maximum and duration up to 30 days Wireless report to portable thermal printer HP82240B		Minimum, maximum and duration up to 30 days OR Real-time data print-out up to last 128 values OR Wireless report to portable thermal printer HP82240B	
Power supply	Internal Lithium battery 3.6 V, 1/2 AA, 1.2 AH			
Battery life	Approximately 24 months (may vary with number of sensors connected and the sampling rate settings)			
Dimensions	72 mm diameter, 22.9 mm thickness			
Weight	55 g		55 g	

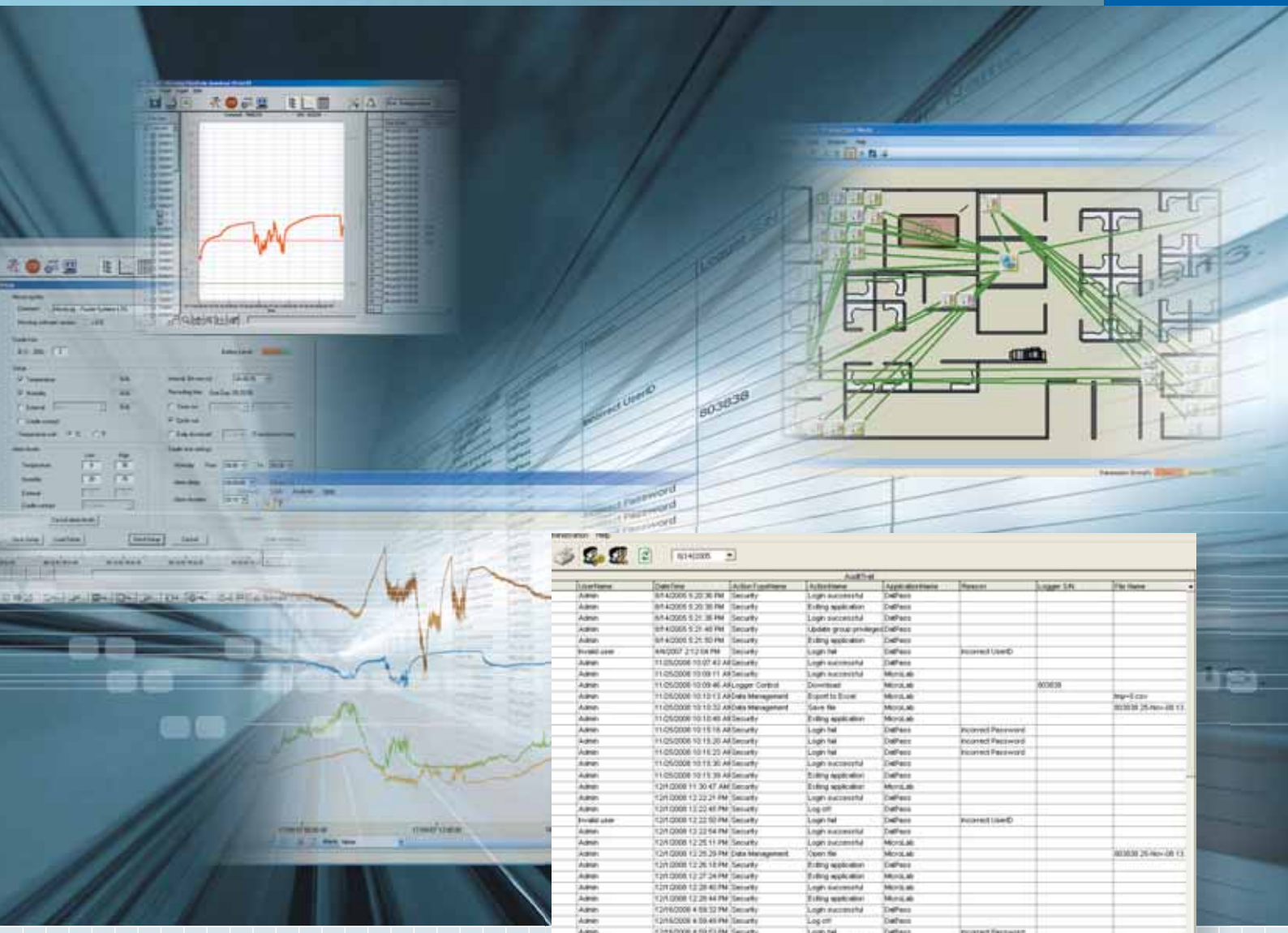
Password

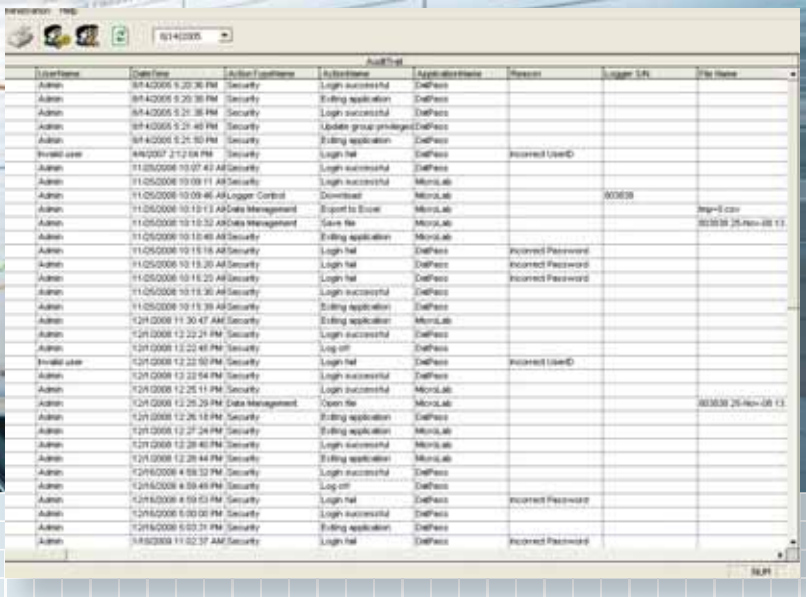
21 CFR Part 11

DatPass

Administration Software

Digital Signature





DatPass

FDA Title 21 CFR Part 11 Compliant
Supporting DataNet & MicroLab software

What is Title 21 CFR Part 11?

CFR is a Food and Drug Administration (FDA) issued regulation Title 21 Code of Federal Regulations, Part 11. This provides the criteria for acceptance by FDA, under certain circumstances, of electronic-records, electronic-signatures, and handwritten signatures which have been executed to electronic records as equivalents to paper records and handwritten signatures executed on paper. The intention of these regulations, which apply to all FDA program areas, are to permit the widest possible use of electronic technology, compatible with FDA's responsibility to promote and protect public health.

Part 11 applies to any record governed by an existing FDA predicate rule that is created, modified, maintained, archived, retrieved, or transmitted using computers and/or saved on durable storage media.

What is DatPass

DatPass is a user administration software which supports the assignment of passwords and operating privileges for Fourier industry application software. DatPass works with MicroLab and DataNet software. DatPass defines the users that can log onto the DatPass being used, their passwords and digital signatures needed for electronic records.

Accessories

Data Loggers

Ordering Info

Sensors

DataNet Solution Ordering Information

	Part Number	DataNet System
	DNL910	**Internal Temperature RF logger + 4 external inputs** • External Inputs: 0 to 1 V, 4 to 20 mA, Thermocouple (J, K, T), PT-100 (2-wire), Pulse Counter, Dry Contact, Frequency • 12 V power excitation • Includes AC power adapter
	DNL920	**Internal Temperature/Humidity RF logger + 4 external inputs** • External Inputs: 0 to 1 V, 4 to 20 mA, Thermocouple (J, K, T), PT-100 (2-wire), Pulse Counter, Dry Contact, Frequency • 12 V power excitation • Includes AC power adapter
	DNL810	**Internal Temperature/Humidity RF logger** • Temperature range: -20 to 50 °C (-4 to 122 °F) • Humidity range: 5 to 95 % • Internal 3.6 V battery • External antenna
	DNL808	**External NTC 10 KΩ RF logger** • NTC 10 kΩ probe • Range: -50 to 150 °C (-58 to 300 °F) • Internal 3.6 V battery • External antenna • NTC probe length 240 cm
	DNR900	**Receiver / Repeater *** • Built-in amplifier • Includes AC power adapter * Every ZigBee DataNet wireless network requires one DNR900 Receiver.
	12504	**GSM Modem (for SMS alerts)** • RS232 • Frequency Bands: GSM-850/EGSM-900/DCS-1800 PCS-1900 MHz Quad-Band

Ordering Tips!

1.
Every DataNet network purchased must be ordered with at least one DNR900 Receiver unit, in order to create and manage the network.

2.
Add more Repeaters to your network in order to cover potential RF blind spots.

3.
Stand alone DNL910 and DNL920 loggers run on the same software as the wireless DataNet loggers. No Receiver is needed to download the data to the PC.

	Part Number	DataNet Accessories
	12753	**PT-100 sensor (2-wire)** • Range: -70 to 400 °C (-94 to 752 °F) • 2.5 m (8.2 ft) Teflon cable length • Teflon cable range: -65 to 200 ˚C (-85 to 392 ˚F)
	12752	**PT-100 sensor (2-wire)** • Range: -70 to 400 °C (-94 to 752 °F) • 4 m (13 ft) Teflon cable length • Teflon cable range: -65 to 200 °C (-85 to 392 °F)

DataNet Solution Ordering Information

	Part Number	DataNet Accessories
	12751	**PT-100 sensor (2-wire)** • Range: -70 to 400 ˚C (-94 to 752 ˚F) • 6 m (19 ft) Teflon cable length • Teflon cable range: -65 to 200 ˚C (-85 to 392 ˚F)
	11304	**Internal battery pack** 4.8 V 800 mAh NiMH (2 batteries in series)
	DN-PCSUITE	**PC Suite** • DataNet software CD • Mini USB communication cable (for DNR900) • User guide * One DN-PCSUITE is needed in every ZigBee DataNet network
	SFTMCL025A-2	**DatPass for DataNet**, meeting 21 CFR Part 11 compliance • DatPass software CD • USB security dongle • Validation manuals
	12655	**Mini USB communication cable** For DNR900 • 5-pin Mini USB to Type A • 1 m cable length
	DT246	**110/12V AC/DC US adapter** For DNR900, DNL910 and DNL920
	DT245	**220/12V AC/DC European adapter** For DNR900, DNL910 and DNL920
	DT282	**220/12V AC/DC UK adapter** For DNR900, DNL910 and DNL920

DataNet Solution Ordering Information

	Part Number	Mini DataNet Accessories
	13129	**Mini DataNet external antenna** 2.4 GHz SMA 5 DBI
	12928	**Mini DataNet internal battery** 2/3 AA 3.6 V lithium
	DT332	**Temperature probe** • NTC 10 kΩ • Range: -50 to 150 °C
	DN-PCSUITE	**PC Suite** • DataNet software CD • Mini USB communication cable (for DNR900) • User guide * One DN-PCSUITE is needed in every Mini DataNet network
	SFTMCLO25A-2	**DatPass for DataNet**, meeting 21 CFR Part 11 compliance • DatPass software CD • USB security dongle • Validation manuals
	12655	**Mini USB communication cable** For DNR900 • 5-pin Mini USB to Type A • 1 m cable length

MicroLite Solution Ordering Information

Ordering Tips!

1.
MicroLite is defined as IP68. You can submerge the logger to a depth of half a meter for up to half an hour only.

2.
No need to purchase MicroLab Lite software since it is available for free download from www.fouriersystems.com.

	Part Number	MicroLite
	LITE5008	MicroLite USB Temperature logger • Range: -40 to 80 °C (-40 to 176 °F) • 8,000 sample memory
	LITE5016	MicroLite USB Temperature logger • Range: -40 to 80 °C (-40 to 176 °F) • 16,000 sample memory

	Part Number	MicroLite Accessories
	11597	Replacement magnet key
	13052	Replacement O-ring
	10734	Replacement lithium battery • Range: -40 to 80 °C (-40 to 176 °F) • 3V CR2032

DaqPRO Solution Ordering Information

	Part Number	DaqPRO
	DB5301	**DaqPRO 8-channel data acquisition device** Measuring 0-10 V, 4-20 mA, TC / J, K, T, PT-100 (2 and 3-wire), NTC 10 k and 100 k, Pulse Counter, Frequency Bundle includes: DaqPRO data logger, DaqLab software, USB communication cable, user guide and carrying case

Ordering Tips!

When ordering the DaqPRO, all necessary accessories (e.g. AC adapter, USB cable, etc.) are bundled together with the logger. There is no need to order them separately.

	Part Number	DaqPRO Accessories
	DT332	**DaqPRO compatible NTC Temperature probe** • NTC 10 kΩ • Range: -25 to 150 °C (-13 to 302 °F)
	12753	**PT-100 sensor (2-wire)** • Range: -70 to 400 °C (-94 to 752 °F) • 2.5 m (8.2 ft) Teflon cable length • Teflon cable range: -65 to 200 °C (-85 to 200 °F)
	12752	**PT-100 sensor (2-wire)** • Range: -70 to 400 °C (-94 to 752 °F) • 4 m (13 ft) Teflon cable length • Teflon cable range: -65 to 200 °C (-85 to 200 °F)
	12751	**PT-100 sensor (2-wire)** • Range: -70 to 400 °C (-94 to 752 °F) • 6 m (19 ft) Teflon cable length • Teflon cable range: -65 to 200 °C (-85 to 200 °F)
	11460A	**Weather box** IP67 standard compliant
	AC040	**10 W solar panel** (DaqPRO must be modified)
	11791	**6A charging regulator**

DaqPRO Solution Ordering Information

	Part Number	DaqPRO Accessories
	DT084	**Rechargeable battery** 12 V, 1.2 AH for solar panel (2 batteries required)
	DT180	**USB communication cable**
	DT246	**110/12 V AC/DC US adapter** For DaqPRO
	DT245	**220/12 V AC/DC European adapter** For DaqPRO
	DT282	**220/12 V AC/DC UK adapter** For DaqPRO
	11599	**Replacement rechargeable battery pack** (GP1600MA 7.2 V battery pack)

MicroLog Solution Ordering Information

Ordering Tips!

1.
For the MicroLogPRO EC750 only, you can order the PC Kit which includes a mini USB cable instead of a Serial cable.

2.
MicroLog bundle includes the logger only. The software must be ordered separately.

	Part Number	MicroLog/MicroLogPRO
	EC600A	**MicroLog Temperature logger** • Range: -30 to 50 °C (-22 to 122 °F) • 8-bit resolution
	EC650A	**MicroLog Temperature and Humidity logger** • Range: Temperature -30 to 50 °C (-22 to 122 °F) Humidity 10 to 90 % rH • 8-bit resolution
	EC700A	**MicroLogPRO Temperature logger** • Range: -40 to 80 °C (-40 to 176 °F) • 10-bit resolution
	EC750A	**MicroLogPRO Temperature and Humidity logger** • Range: Temperature -40 to 80 °C (-40 to 176 °F) Humidity 5 to 95 % rH • 10-bit resolution

	Part Number	MicroLog/MicroLogPRO Accessories
	BK041	**User Guide** For MicroLog/MicroLogPRO system
	DT058	**MicroLog/MicroLogPRO communication cable** Connecting to Serial port only

MicroLog Solution Ordering Information

	Part Number	MicroLog/MicroLogPRO Accessories
	DT239	**Mini USB communication cable** For MicroLogPRO EC750A only
	DT132A	**External Temperature sensor** • MicroLog range: -50 to 100 °C (-58 °F to 212 °F) • MicroLogPRO range: -50 to 110 ° C (-58 °F to 230 °F) • 2.5 m (8.2 ft) cable length
	DT093A	**External Temperature sensor** • MicroLog range: -50 to 100 °C (-58 °F to 212 °F) • MicroLogPRO range: -50 to 110 °C (-58 °F to 230 °F) • 10 m (32.8 ft) cable length
	DT132N	**External Temperature needle sensor** • MicroLog range: -50 to 100 °C (-58 °F to 212 °F) • MicroLogPRO range: -50 to 110 °C (-58 °F to 230 °F) • 2.5 m (8.2 ft) cable length
	DT139A	**External 4-20 mA adapter**
	DT140A	**External 0-10 V adapter**
	DT168A	**External pH adapter** 1-14 pH (electrode not included)
	DT018	**pH electrode**
	DT086	**3.6 V Lithium battery**

MicroLog Solution Ordering Information

	Part Number	MicroLog/MicroLogPRO Accessories
	AC004	**Infrared printer for data print-out**
	11199	**Calibration certificate** Available through advance order *Price is per channel*
	PC-KIT	**PC Kit** • MicroLab software CD • MicroLog communication cable
	PC-KIT-750-USB	**PC Kit for EC750** • MicroLab software CD • Mini USB communication cable for EC750
	SFTMCL025A	**DatPass for MicroLab**, meeting 21 CFR Part 11 compliance • DatPass software CD • USB security dongle

Accessories

Data Loggers

Specifications

Sensors

DataNet Solution Specifications

Length and Temperature specifications are provided in Metric and Celsius units

INPUTS

- 4 channel inputs
- **Selectable type for each input:** 4 to 20 mA, 0 to 50 mV, 0 to 1 V, PT-100,Thermocouple, Dry Contact, Pulse Counter (Input 4 only), Frequency (Input 4 only) and user defined sensors

INPUT TYPES

4 to 20 mA
- Range: 4 to 20 mA
- Resolution: 4.76 µA
- Accuracy: ±0.5 %
- Loop impedance: 21 Ω
- Maximum load: 30 mA, 5.2 V

0 to 50 mV
- Range: 0 to 50 mV
- Resolution: 3 µV
- Accuracy: ±0.5 %
- Input impedance: 25 MΩ
- Maximum voltage: 5.2 V

0 to 1 V
- Range: 0 to 1 V
- Resolution: 200 µV
- Accuracy: ±0.5 %
- Input impedance: 25 MΩ
- Maximum voltage: 5.2 V

Temperature PT-100 (2-wires)
- Range: -200 to 400 ˚C
- Resolution: 0.1 ˚C
- Accuracy: -200 to -60 ˚C ±0.5 %
  60 to 400 ˚C ±0.5 %
  -60 to 60 ˚C ±0.3 ˚C

Temperature Thermocouple J
- Range: -200 to 1,000 ˚C
- Resolution: 0.1 ˚C
- Accuracy: -200 to -60 ˚C ±0.5 %
  60 to 1,000 ˚C ±0.5 %
  -60 to 60 ˚C ±0.5 ˚C
- Cold junction compensation error: ±0.3 ˚C

Temperature Thermocouple K
- Range: -200 to 1,000 ˚C
- Resolution: 0.1 ˚C
- Accuracy: -200 to -60 ˚C ±0.5 %
  60 to 1,000 ˚C ±0.5 %
  -60 to 60 ˚C ±0.5 ˚C
- Cold junction compensation error: ±0.3 ˚C

Temperature Thermocouple T
- Range: -200 to 400 ˚C
- Resolution: 0.1 ˚C
- Accuracy: -200 to -60 ˚C ±0.5 %
  60 to 400 ˚C ±0.5 %
  -60 to 60 ˚C ±0.5 ˚C
- Cold junction compensation error: ±0.3 ˚C

Dry Contact
- Range: Open/Closed

Pulse Counter (input 4 only)
- Zero crossing detector
- Range: 1 to 65,536 counts
- Resolution: 1 count
- Frequency range: 0 to 4,000 Hz
- Input signal: 0 to 5 V
- Input impedance: 470 Ω

Frequency (input 4 only)
- Zero crossing detector
- Range: 20 Hz to 4 KHz
- Input signal: 0 to 4,000 Hz
- Input impedance: 470 Ω

Internal Temperature
- Type: DNL 910: PT-100
  DNL 920: Digital
- Range: -20 to 50 ˚C
  (-5 to 50 ˚C while using the batteries w/o AC)
- Resolution: 0.1 ˚C
- Accuracy: DNL 910: ±0.3 ˚C
  DNL 920: ±0.5 ˚C

Internal Humidity
- Range: 5 to 95 %
- Resolution: 0.5 %
- Accuracy: ±3 % at 10 to 90 %
  ±5 % at 5 to 10 %
  and 90 to 95 %

EXTERNAL SENSORS

PT-100 Sensor
- Range: -70 to 400 ˚C
- Cable length: 2.5m/4m/6m
- Teflon cable range: -65 to 200 ˚C
- Probe: Diameter 6 mm, Length 81 mm

CONNECTIVITY

External Power Excitation (transducers usage)
- 12 VDC @ 2 A

Alarm Output (output 1)
- Open collector
- Close position resistance: 50 Ω
- Max. Load: 50 mA, 3 V DC
- Overload protection
- 50 mA reset fuse

PC Communication
- USB 2.0 compliance

Type of USB Cable
- Mini USB type B

RF Network Communication
- Frequency: 2.4 GHz
- Network units: 65,000
- Data rate: 250 Kbps
- Full mesh network architecture supported
- 128-bit network security encryption
- Worldwide license-free
- RF Transmission range boost mode 80 m (line of sight)
- RF Transmission range power amplifier 800 m (line of sight)

Sampling Features
- Memory capacity: 59,000 samples
- Sampling rate: 1 per sec to 1 per every 2 hours
  (For PT-100 or Thermocouple sensors: Max Sampling rate with more than two sensors connected 1 sample per 2 secs)
- Sampling resolution: 16 bit
- Channel separation: 80 dB

Man Machine Interface
- Full keyboard operation

Display
- 2 row LCD
- 16 character display

Power Supply
- Internal rechargeable 4.8 V NiMH battery
- Built-in battery charger
- External 12 V DC input

Operating Temperature Range
- -20 to 50 ˚C

Casing
- Plastic ABS box
- Dimensions: 97 x 93 x 27 mm
- Weight: 200 gr

Standards Compliance
- CE, FCC
- Internal battery specs: 4.8 V 800 mAh NiMH battery (2 batteries in series)
- External voltage specs: DC 12 V @ 300 mA 3.6 VA

GSM MODEM EZ-10

Frequency Bands
- GSM-850/EGSM-900/DCS-1800 PCS-1900 MHz Quad-Band

GPRS
- Class 10

RJ11 AUX Connector
- GPIO

Interface Configurations
- RS232: Serial Interface
- Power: 12V DC

Dimensions
- 83 x 107 x 64 x 33 mm

Temperature Range
- Normal: -10 to +55 ˚C
- Extreme: -20 to +70 ˚C
- Storage: -30 to +85 ˚C

DATANET SOFTWARE

Main Features
- Windows® based software
- Data displayed in numeric or graphical display of all inputs
- On-line retrieval and display of the collected data in real-time
- Definition of new sensors
- Ability to read the defined sensor's units on the logger's display
- Full calibration of the loggers via the software
- Documentation and filing
- Alarm levels on graphs
- Export to spreadsheets
- Analytical functions, for professional analysis of the collected data
- Manual backup of calibration settings
- Over-the-air firmware update

Mini DataNet Solution
Specifications

DNL808 External Temperature Sensor

• Range:	-50 to 150 °C	
• Resolution:	0.06 °C	
• Accuracy:	-50 to 60 ˚C	±0.3 ˚C
	60 to 150 ˚C	±0.5 %

DNL810 Internal RH/Temperature Sensors

• Temp range:	-20 to 50 °C
• Temp resolution:	0.04 °C
• Temp accuracy:	±0.4 °C
• Humidity range:	5 to 95 %
• Humidity resolution:	0.5 %
• Humidity accuracy:	±3 %

MicroLite Solution
Specifications

Internal Sensor
Temperature: -40 to 80 °C
Thermal conductor enabling fast response time

Outputs USB 2.0 communication

Sampling
Resolution: A/D resolution: 16-bit, 0.1 °C
Capacity: Memory capacity: 8 KB,16 KB
Sampling rate: 1 per second to 1 per 2 hours
Accuracy: 0.3 °C

Power Supply
Battery life: 2 years at 1 sample per minute
Replaceable 3 V lithium battery CR2032

Design
Dimensions: 11 x 3.9 x 2.6 cm
Strap-on capabilities

Weight 45.5 gr

Display LCD with decimal point
Visual Alert - Alarm icon when crossing predefined thresholds
Low battery indication

Operation Data scroll on the LCD
Reed switch to start measuring

Software MicroLab Lite for Windows 2000/XP/Vista
Also available – DatPass 21 CFR Part 11 Standards Compliance Software

Standards Compliance
CE, FCC compliance
IP68/NEMA6 30 minutes for 0.5 m depth

DaqPRO Solution
Specifications

Length and Temperature specifications are provided in Metric and Celsius units

INPUTS (DAQPRO 5300)

Selectable type for each input: 0-24 mA, 0-50 mV, 0-10 V, NTC, PT-100, Thermocouple, Pulse and Frequency (Input 1 only)

0 to 24 mA

Range:	0 to 24 mA
Resolution:	4.76 µA
Accuracy:	±0.5 %
Loop impedance:	21 Ω

0 to 50 mV

Range:	0 to 50 mV
Resolution:	3 µV
Accuracy:	±0.5 %

0 to 10 V

Range:	0 to 10 V
Resolution:	200 µV
Accuracy:	±0.5 %
Input impedance:	125 KΩ

Temperature NTC

NTC:	10/100 KΩ resistor
Range:	-25 to 150 °C
Resolution:	0.05 °C
Accuracy:	±0.5 %

Temperature PT-100

Range:	-200 to 400 °C
Resolution:	0.1 °C (7 mΩ)
Accuracy:	-200 to -50 ±0.5 %
	50 to 400 ±0.5 %
	-50 to 50 ±0.5 °C

The DaqPRO offers up to 8 PT-100 2 wire channels or 4 PT-100 3 wire channels

Temperature Thermocouple J

Range:	-200 to 1200 °C
Resolution:	0.1 °C (1 µV)
Accuracy:	-200 to -50 ±0.5 %
	50 to 1,200 ±0.5 %
	-50 to 50 ±0.5 °C
Cold junction compensation error:	±0.3 °C

Temperature Thermocouple K

Range:	-250 to 1,200 °C
Resolution:	0.1 °C (1 µV)
Accuracy:	-250 to -50 ±0.5 %
	50 to 1,200 ±0.5 %
	-50 to 50 ±0.5 °C
Cold junction compensation error:	±0.3 °C

Temperature Thermocouple T

Range:	-200 to 400 °C
Resolution:	0.1 °C (1 µV)
Accuracy:	-200 to -50 ±0.5 %
	50 to 400 ±0.5 %
	-50 to 50 ±0.5 °C
Cold junction compensation error:	±0.3 °C

Internal Temperature

Range:	-25 to 70 °C
Resolution:	0.1 °C (1 µV)
Accuracy:	±0.3 °C

Pulse Counter (Input 1 only)
Optocoupler input

Range:	0 to 65,000
Input signal:	0 to 5 V
Input impedance:	470 Ω
Bandwidth:	0 to 25 Hz

Frequency Meter (Input 1 only)
Optocoupler input

Range:	20 to 4,000 Hz
Input signal:	0 to 5 V
Input impedance:	470 Ω

General A to D Specifications

Noise:	30 µV rms
Internal linearity error:	±0.08 % of FSR
Offset error:	0.1 %

Open Collector Output (Output 8)

Maximum current sink:	50 mA (fuse protected)
Maximum input voltage:	5 V
Input impedance:	50 Ω

Communication
USB 1.1 compliant

Sampling

Capacity:	512 KB
Analog sampling rate:	Variable, 1 sample/hour to 4,000 samples/sec, 1 channel
Analog sampling resolution:	16-bit
Channel separation:	80 dB

Man Machine Interface
- Full keyboard operation - enables manual programming of the logger
- Graphic LCD 64 x 128 pixels

Power Supply
- Internal rechargeable 7.2 V NiMH battery
- Built-in battery charger
- External 9 to 12 V DC input
- Battery life: 25 hours between charges

Operating Temperature
Range: 0 to 50 °C

Casing
Plastic ABS box

Dimensions:	182 x 100 x 28 mm
Weight:	450 gr

Standards Compliance
CE, FCC

DaqLab Analysis Software
- Windows based software: 2000 SP3/2003/XP SP2/Vista Internet Explorer 5.01 or higher
- Data displayed in numeric or graphical display forms
- Graphical analysis tools such as Zoom and Cursors
- Storage of selected data on disk files
- Hard copy printing of the collected data
- Direct data export to EXCEL
- On-line retrieval and display of data in real-time
- Incorporating data processing functions
- Setting up and alibrating the DaqPRO
- Defining new sensors

Accessories
- Carrying case
- Solar cell and battery for field data logging
- Weather box complying with the IP-67 standard for protecting the DaqPRO while working in field applications

MicroLog Solution Specifications

Length and Temperature specifications are provided in Metric and Celsius units

MICROLOG SOLUTION MODELS

MicroLog EC600	Temperature plus external sensor
MicroLog EC650	Temperature, relative humidity plus external sensor
MicroLogPRO EC700	Temperature plus external sensor
MicroLogPRO EC750	Temperature and relative humidity plus external sensor

BUILT-IN SENSORS

MicroLog Temperature

Range:	-30 to 50 ˚C
Resolution:	0.5 ˚C
Accuracy:	±0.6 ˚C

MicroLog Humidity

Range:	10 to 90 %
Resolution:	0.5 %
Accuracy:	±3 %

MicroLogPRO Temperature

Range:	-40 to 80 ˚C
Resolution:	0.2 ˚C (-40 to -20 ˚C) 0.1 ˚C (-21 to 50 ˚C) 0.2 ˚C (51 to 80 ˚C)
Accuracy (all ranges):	±0.2 ˚C

Software calibration is possible

MicroLogPRO Humidity

Range:	5 to 95 %
Resolution:	0.1 %
Accuracy:	±2 %

Software calibration is possible

OUTPUT

MicroLog Display:	2 digit 7-segment LCD
MicroLogPRO Display:	4 digit 7-segment LCD with decimal point

Communication

- MicroLog IR - interface to portable HP printer
- RS232 communication to the PC with 19,200 kbps with MicroLog and MicroLogPRO
- USB 1.1 (MicroLogPRO)

Memory

MicroLog:	16,000 samples
MicroLogPRO:	1 sensor - 52,000 samples 2 sensors - 26,000 samples 3 sensors - 16,000 samples

Power Supply

Internal lithium battery:	3.6V TL5902
Battery life:	Approximately 2 years (depending on sampling rate)

Sampling Rate

User defined: From 1 every 10 seconds to 1 every two hours

Dimensions

Width:	22.9 mm
Diameter:	72 mm
Weight:	55 gr

Standards

- Water and dust proof IP65 standard compliance, for EC600 and EC700 models
- CE and FCC standard compliance
- FDA Title 21 CFR Part 11 Compliance

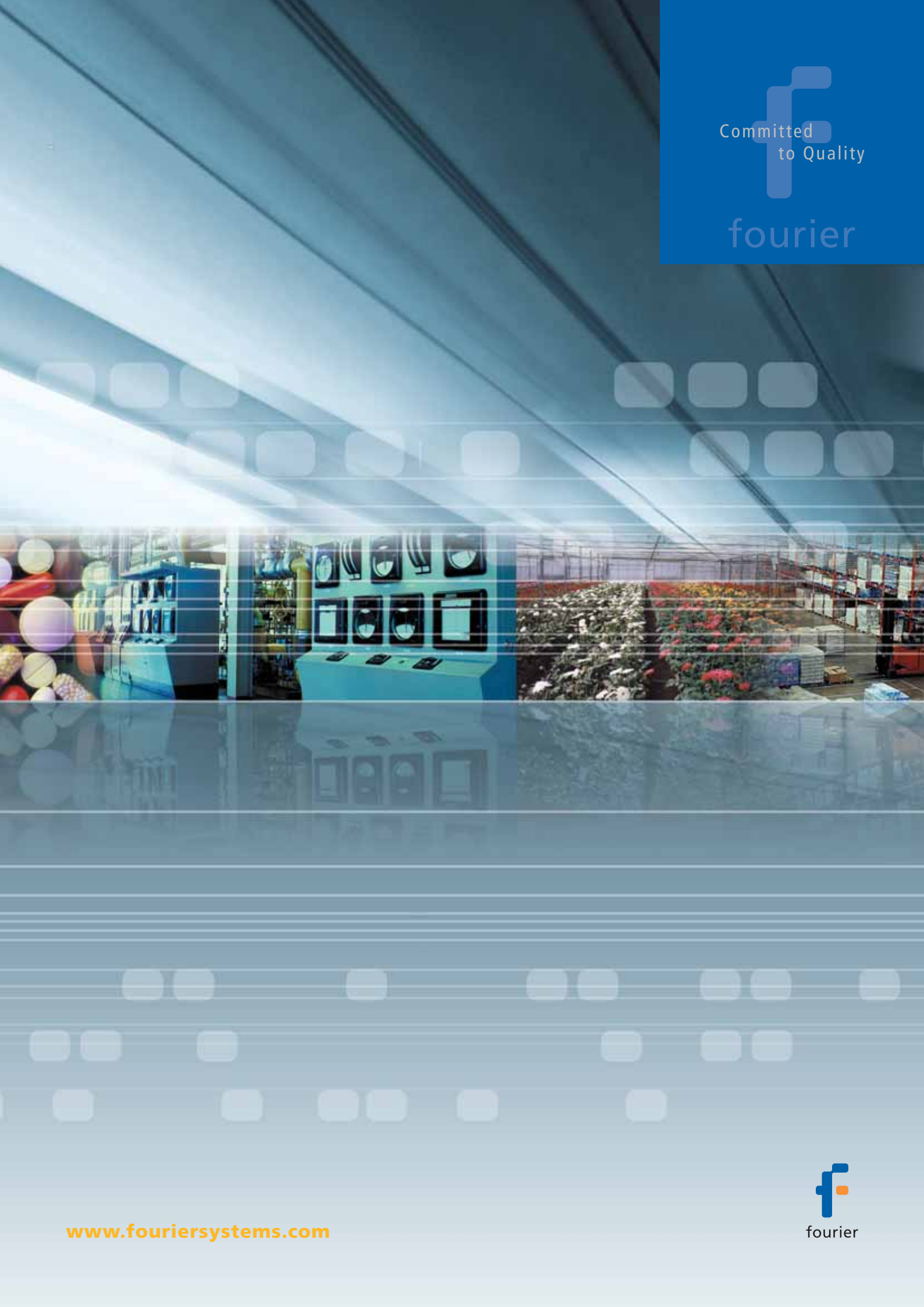
MICROLAB SOFTWARE

- Runs on Windows® 95/98/2000/XP/Vista
- Fast data download from the MicroLog
- Graphic visualization of the MicroLog data
- Data displayed in graphs and tables
- Data Export to EXCEL
- Graphic analysis tools such as Markers, Zoom
- Data Map allowing the users to easily see many MicroLog data loggers in one screen
- MicroLog SETUP windows, for setting up the MicroLog sample rate, sensors and alarm level
- MicroLog sensor calibration
- Display of MicroLog battery level
- Showing daily reports of a fleet of data loggers
- Visual alarm levels on the graph and table

Minimum PC requirements

- Windows® 95 or later
- Pentium 300 MHz or higher
- 32 MB RAM
- 6 MB available disk space
- Available communication port

Notes



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