MicroLog Solution

Specifications

MicroLog Solution Models

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

Built-in Sensors

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

MicroLog Humidity
Range: 0-100 %
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: 0 to 100%
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 IRDA - interface to portable HP printer
- PC with 19200 kbps
- RS-232 communication to the PC with 19,200 kbps with MicroLog and MicroLogPRO
- USB 1.1 (no water & dust proof) for Temp/Hum data logger only

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

- **Thickness:** 22.9mm
- **Diameter:** 72mm
- **Weight:** 55gr

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 avilable disk space
- CD ROM drive for software installation
- Available communication port

MicroLog Solution 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.

To receive more case studies on multiple applications visit www.fouriersystems.com

About Fourier Systems

Fourier Systems Ltd. is a worldwide leader of compact portable data logging devices and accessories for the industrial market. Fourier's robust line of advanced products is designed to automate and simplify daily data logging tasks. Beyond delivering quality products, Fourier is dedicated to providing sophisticated 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 equipment.

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Committed to Quality

MicroLog Solution

General data logging

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

Temperature and Temperature/RH PLUS 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 54,000 samples
- External sensors include: Temperature, pH, 4-20 mA, 0-10 V and more
- 4-20 mA and 0-10 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

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MicroLog Solution

Compact 8-bit Data Logger

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

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

External Sensors

Temperature DT132 (2.5m); DT093 (8m)
MicroLog Range:
-50 to 100 °C
MicroLogPRO Range:
-50 to 110 °C
MicroLog Resolution: <1 °C
MicroLogPRO Resolution:
<0.3 °C

DT252 PT100
Range: -10 to 10 °C

DT253 PT100
Range: -100 to 120 °C

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

DT140 Voltage Adaptor
Range: 0-10 V
MicroLog Resolution: 0.05 V
MicroLogPRO Resolution:
0.01 V

DT139 Current Adapter
Range: 4-20 mA
Resolution: ±0.1 mA

For full sensor specifications please visit our Web pages www.fouriersystems.com

Microlog and MicroLogPRO Comparison Table

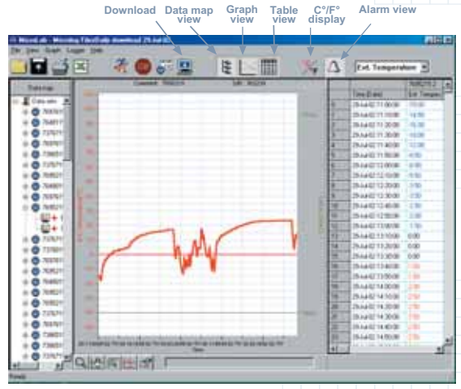
	MicroLog		MicroLogPRO	
	EC600	EC650	EC700	EC750
Sampling resolution	8-bit		10-bit	
Internal range	-30 to +50 °C	-30 to 50 °C (T), 0 to 100% (RH)	-40 to 80 °C	-40 to 80 °C (T), 0 to 100% (RH)
Temperature accuracy	±0.6 °C		±0.2 °C	
Humidity accuracy	N/A	±3%	N/A	±2%
Resolution	0.5 °C (-30 to -29 °C) 0.4 °C (-28 to -22 °C) 0.3 °C (-21to 22 °C) 0.4 °C (23 to 32 °C) 0.5 °C (33 to 39 °C)	0.5%	0.2 °C (-40 to -20 °C) 0.1 °C (-21 to 50 °C) 0.2 °C (51 to 80 °C)	0.1%
Memory capacity	1 sensor -16,000 samples 2 sensors - 8000 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, mS, AL-H, AL-L	
RS-232	Cable connection to the PC with 19200 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 printout up to 128 last values OR Wireless report to portable thermal printer HP82240B	
Power supply	Internal Lithium battery 3.6V, 1/2AA, 1.2AH			
Battery life	Approximately 24 months (may vary with number of sensors connected and the sampling rate settings)			
Dimensions	72mm diameter, 22.9mm thickness			
Weight	55g		55g	

MicroLab Software

MicroLab Features

- Downloads from MicroLog
- Graph & table displays
- Alarm levels per MicroLog displays
- Ability to set-up 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.

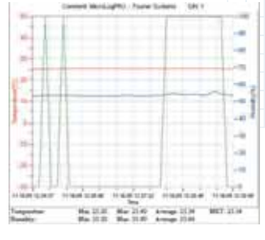


Data Management

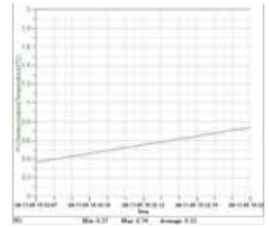
Data records can be exported to Excel or CSV file format using the Export to Excel feature

Data Analysis

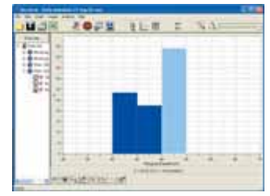
Mean kinetic temperature, an expression of cumulative thermal stress in different temperatures during storage, transportation and distribution.

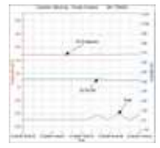


Pasteurization provides analysis for the most common methods of pasteurization in Industry: High Temperature Short Time (HTST); Ultra Pasteurization (UP) and Ultra High Temperature (UHT) pasteurization.



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.

DatPass 21 CFR Part 11 Compliance
All MicroLab software when used in conjunction with DatPass software provides FDA Title 21 CFR Part 11 compliance.The software not only stores the data of each MicroLog but can also set the MicroLog alarm level, sampling rate and all other necessary parameters.

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