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Compact Data Loggers

January 2004

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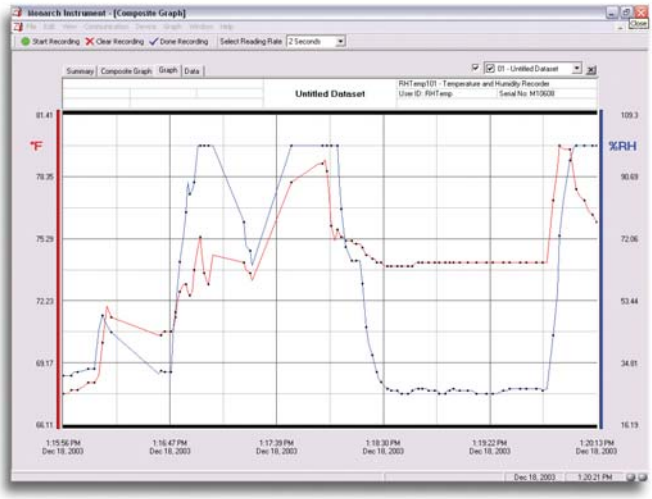
MONARCH INSTRUMENT

Innovation in Instrumentation

CE

The heart of our all of our data loggers is our Windows-based software package which allows the user to collect, display and analyze data effortlessly. A variety of powerful tools allow the user to examine, export and print professional looking reports with just the click of a mouse. Our cutting-edge software is designed for the continuous monitoring and alarming of all Data Chart data loggers. The software can collect and display real-time data from any logger directly connected to the user's PC, a local area network, or even remotely through the use of our radio frequency transceivers.



Key Features

Annotation: Easily annotate specific data points on the graph with a click of the mouse.

Real-Time Recording: Collect and display data in real-time while continuing to log.

Scaling Options: Autoscale function fits data to the screen or allows user to manually enter their own values

Overlay Multiple Graphs: Simultaneously analyze data from several units or deployments; easily switch to a single data series.

Automatic Time Synchronization: Automatically aligns and synchronizes data from multiple loggers on a single graph.

Other Features

Summary:
View statistics and alarm information in a simplified report format.

Data Table:
Instantly access tabular view for detailed dates, times, values, and annotations.

Zoom:
Magnify data of interest with powerful zoom and drag tools. Supports multiple zoom in and zoom out. Features extended zoom capabilities; box zoom, vertical zoom, and horizontal zoom as well as point and click.

Formatting Options:
Change colors, line styles, plotting options, show or hide channels in an instant.

Engineering Units:
Define the type of units to be displayed on the graph using the Engineering Units Wizard. User defined engineering units may be applied to voltage, current, pulse, event and state loggers.

Menu Accessibility:
Right click on the graph for easy access to all formatting, measurement units and graphing tools menu options.

Printing:
Automatically print graphical or tabular data.

Communications:
Automatically sets up communications port or lets user set configuration.

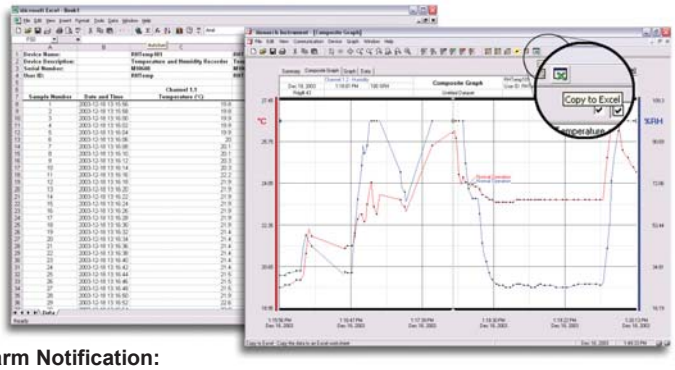
Logger Configuration:
Easy set up and launch of data loggers with immediate or delayed start, preferred sample rate, and device ID.

Calibration:
Fully digital calibration function automatically stores parameters in device. A calibration wizard is provided in the software to simplify the calibration procedure.

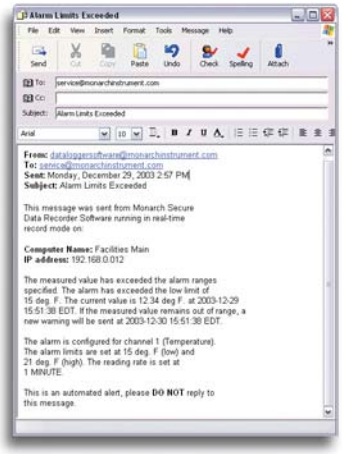
Uninterrupted Data Retrieval:
Data may be downloaded from the logger without interrupting the operation of the unit as it continues to log data.

Statistics: Automatically calculates averages, minimum, maximum, standard deviation, and mean kinetic temperature.

Export to Excel®:
Excel button on toolbar allows simple ***one click*** data export to Microsoft Excel. One click of the Excel Icon will automatically open Excel and format the data into a spread sheet. This command will automatically synchronize, in time, data from multiple data loggers and store the data in an Excel spreadsheet. It doesn't get any simpler than that....



Alarm Notification:
Our data logger software offers a real-time alarm notification function which lets the user monitor user defined alarm limits. This is ideal for applications where notification of out-of-range conditions is required. Alarm messages can be sent in real-time right to your desktop or sent remotely via email or pager.



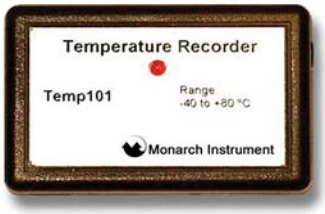
PC Requirements:
Pentium or higher processor, Win 95/98/NT/2000/XP, 16MB Extended RAM, Color 800 x 600 monitor, 10MB free disk space, CDROM drive
Available 9 pin male serial (COM) port 2400 Baud. 57,600 Baud for 110 and EB Models.

TEMPERATURE

All of our Temperature Data loggers are miniature, battery powered, reusable, stand alone devices. These all-in-one compact, portable, easy to use recorders will measure and record up to 32,767 measurements, depending upon model. The storage medium is non-volatile, solid state memory, providing maximum data security even if the battery becomes discharged. As with all our data loggers, these devices are programmed, started/stopped with a PC and our graphical Windows® compatible software. Check each model for unique features and specifications.

TEMP100 SERIES GENERAL SPECIFICATIONS

Temperature Sensor:	Semiconductor
Calibration:	Digital calibration with software
Temperature Range:	-40 ºC to +80 ºC
Calibration Date:	Automatically recorded in device
Temperature Resolution:	0.1 ºC
Calibrated Accuracy:	±0.5 ºC (0 to +50ºC)
Data Format:	Date/ time stamped ºC, ºF, ºK, ºR
Time Accuracy:	±1 minute/month (RS232 cable not in use)
Real Time Recording:	May be used with PC.
Operating Environment:	-40 to +80 ºC, 0 to 95 %RH non-condensing
Reading Interval:	1 every 2 sec. to 1 every 12 hrs.
Alarm:	Programmable high and low limits; activated when temp. reaches or exceeds set limits
Computer Interface:	PC serial or RS232C COM (cable required). 2400 baud. 56,700 baud for 110 models.

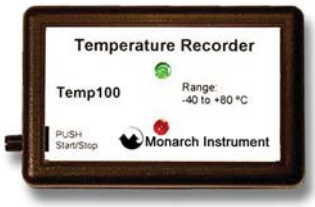


TEMP101 FEATURES

Memory	**32,767**
Form Factor	**A**
Battery Factor	**1**
Battery Life	**2 yr.**
Weight	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0101	Temp101	Miniature Temperature Recorder



TEMP100 FEATURES

Memory	**32,767**
Form Factor	**A**
Battery Factor	**1**
Battery Life	**2 yr.**
Weight	**2 oz (60 g)**
External Start/Stop Button	

ORDERING INFORMATION

Item No.	Name	Description
5399-0102	Temp100	Same as Temp101 with push button Start/Stop.

TEMP110 FEATURES

Memory	**32,767**
Form Factor	**B**
Battery Factor	**2**
Battery Life	**10 yr.**
Weight	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0116	Temp110	Miniature Temperature Recorder

THERMOCOUPLE RECORDERS SPECIFICATIONS

Internal Channel

Temperature Range:	-40 ºC to +80 ºC
Temperature Resolution:	0.1 ºC
Calibrated Accuracy:	±0.5 ºC (0 to +50ºC)

External Channel(s)

Thermocouple Types:	J,K,T,E,R,S,B,N
Thermocouple connection:	Female subminiature (SMP)
Cold Junction Compensation:	Automatic, based on internal channel.

Thermocouple	Range (ºC)	Resolution	Accuracy
J	-210 to +760	0.1 ºC	±0.5 ºC
K	-270 to +1370	0.1 ºC	±0.5 ºC
T	-270 to +400	0.1 ºC	±0.5 ºC
E	-270 to +980	0.1 ºC	±0.5 ºC
R	-50 to +1760	0.5 ºC	±2.0 ºC
S	-50 to +1760	0.5 ºC	±2.0 ºC
B	+50 to +1820	0.5 ºC	±2.0 ºC
N	-270 to +1300	0.1 ºC	±0.5 ºC

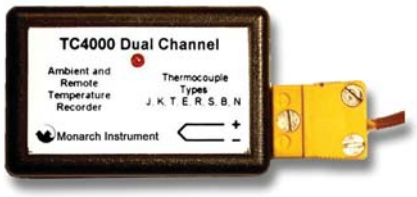
Reading Interval:	1 every 2 sec. to 1 every 12 hrs.
Calibration:	Digital Calibration through software
Calibration Date:	Automatically recorded within device
Data Format:	Date/ time stamped ºC, ºF, ºK, ºR
Time Accuracy:	±1 min/mon (at 20 ºC, no RS232 in use)
Environment:	-40 to +80 ºC, 0 to 95%RH non-condensing

QUADTEMP FEATURES

Channels	**1 internal, 4 external**
Memory	**26,214/channel**
Form Factor	**B**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight	**13 oz. (370 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0113	QuadTemp	4 Channel Thermocouple Recorder.

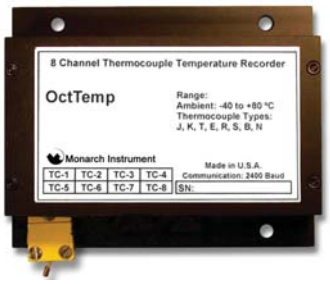


TC4000 FEATURES

Channels	**1 internal, 1 external**
Memory	**16,383/channel**
Form Factor	**A**
Battery Factor	**1**
Battery Life	**2 yr.**
Weight	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0104	TC4000	Thermocouple-based Temperature Recorder.

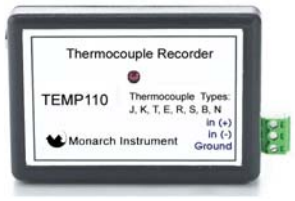


OCTTEMP FEATURES

Channels	**1 internal, 8 external**
Memory	**14,563/channel**
Form Factor	**B-1**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight	**13 oz. (370 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0114	OctTemp	8 Channel Thermocouple Recorder.

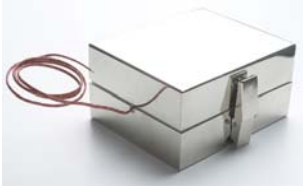


TC110 FEATURES

Channels	**1 internal, 1 external**
Memory	**16,383/channel**
Form Factor	**A-2**
Battery Factor	**1**
Battery Life	**1yr.**
Weight	**2 oz. (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0117	TC110	Same as TC4000 with 10 Yr. Battery



THERMOVAULT FEATURES

Memory	**16,383**
Form Factor	**G**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight	**32 oz. (910 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0115	ThermoVault	Oven Thermal Profiler Temp. Recorder. Insulated box w/ TC4000

Maximum Exposure Time for THERMOVAULT

Ambient Temperature	Max Duration in Minutes
100 ºC (212 ºF)	52
150 ºC (302 ºF)	30
200 ºC (392 ºF)	22
250 ºC (482 ºF)	17
260 ºC (500 ºF)	16
300 ºC (572 ºF)	15
350 ºC (662 ºF)	12
400 ºC (752 ºF)	10

SAFETEMP SPECIFICATIONS

Temperature Sensor:	Semiconductor (internal)
Temperature Range:	-40 to +176 ºF (-40 to +80 ºC)
Temperature Resolution:	0.2 ºF
Calibrated Accuracy:	±0.1 ºF
Thermocouple Probe:	Type K probe (not included)
Thermocouple Connection:	Female subminiature (SMP)
Thermocouple Range:	-148 to +500 ºF (-64 to 260 ºC)
Resolution:	0.2 ºF
Calibrated Accuracy:	±1.0 ºF (-148 ºF to +500 ºF)
Cold Junction Compensation:	Automatic, based on internal channel
Start Time:	Multiple start stop feature using push button or software.
Real Time Recording:	May be used with PC to monitor and record data in real time.
Reading Interval:	Factory set. Specify from every 5 seconds to once/hour.
Alarm:	Programmable high and low limits; Alarm is activated when temp. reaches or exceeds set limits or when data memory is full.
Calibration:	Digital calibration through software
Calibration Date:	Automatically recorded in device
Replaceable Battery:	1 year typical
Data Format:	Date/time stamped ºC, ºF, ºK, ºR
Time Accuracy:	±1 min/mon (at 20 ºC, no RS232)
Computer Interface:	PC serial or RS232C COM @ 2400 baud
Operating Environment:	-40º to +80 ºC, 0 to 95%RH
Dimensions:	1.4 x 2.2 x 0.6" (36 x 56 x 16mm)

SAFETEMP FEATURES

Memory	**9,362 per channel**
Form Factor	**A**
Battery Factor	**1**
Battery Life	**6 months**
Weight:	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0105	SafeTemp	Multi start/stop Temp. Recorder, requires External probe.

TEMP1000 SERIES temperature loggers are rugged, water proof, battery powered, stand alone devices. We offer numerous models based upon this compact, portable, easy to use device. Storage medium is nonvolatile solid state memory, providing maximum data security even if the battery becomes discharged.

TEMP1000 GENERAL SPECIFICATIONS

Temperature Sensor:	Semiconductor
Temperature Range:	-40 ºC to +125 ºC
Temperature Resolution:	0.1 ºC
Calibrated Accuracy:	±0.5 ºC (0 to +50ºC)
Start Time:	Software programmable start time and date.
Real Time Recording:	When used with PC.
Reading Interval:	1 every 2 sec. to 1 every 12 hrs.
Calibration:	Digital calibration in software
Calibration Date:	Automatically recorded in device.
Replaceable Battery:	1 year typical at 25 ºC, 1 min. reading intervals
Data Format:	Date and time stamped ºC, ºF, ºK, ºR
Time Accuracy:	±1 minute/month at 20ºC (RS232 cable not in use)
Computer Interface:	PC serial or RS232C COM (Interface cable required); 2400 baud
Operating Environment:	-40 to +80 ºC, 0 to 100 %RH
Dimensions:	4.3" x 1.0" Dia.(108mm x 26mm)
Weight (Aluminum):	4 oz (110 g)
Weight (Stainless):	8 oz (230 g)

TEMP1000 FEATURES

Memory	**32,767 readings**
Form Factor	**D**
Battery Factor	**4**
Battery Life	**1 yr.**

ORDERING INFORMATION

Item No.	Name	Description
5399-0106	Temp 1000	Submersible Temp. Recorder Aluminum Case
5399-0107	Temp1000SS	Same as above with Stainless Steel Case
5399-0109	Temp1000IS	Intrinsically Safe version of 5399-0106 in Aluminum Case.
5399-0121	Temp1000IS-SS	Same as above in Stainless Steel Case.

TEMP1000P SPECIFICATIONS

Temperature Sensor:	100 Ohm Platinum RTD
Temperature Range:	-40º to +125 ºC
Temperature Resolution:	0.05 ºC
Calibrated Accuracy:	±0.5 ºC (0 to +50ºC)
Start Time:	Software programmable start time/date. Up to six months in advance
Real Time Recording:	Used with PC to monitor and record data in real time
Reading Interval:	1 every 2 sec. to 1 every 12 hrs.
Calibration:	Digital calibration through software
Calibration Date:	Automatically recorded within device.
Memory:	32,767 readings
Power:	3.6V lithium battery included
Replaceable Battery:	1 yr. (1 reading/min. at 25 ºC)
Data Format:	Date and time stamped ºC, ºF, ºK, and/or ºR
Time Accuracy:	±1 minute/month at 20ºC (RS232 cable not in use)
Computer Interface:	PC serial or RS232C COM (Interface cable required); 2,400 baud
Operating Environment:	-40 ºC to +125 ºC, 0 to 100 %RH
Dimensions:	4.5" + probe x 1.0" dia (292mm + probe x 26mm)
Weight:	8 oz (225g)

TEMP1000S temperature logger is a rugged, water proof, battery powered, stand alone device which can be used to automatically record temperatures between -40 °C and 150 °C. The TEMP1000S features a 1" rigid external probe and is ideal for use in harsh environments.

TEMP1000S FEATURES

Memory	**32,767 readings**
Form Factor	**E**
Battery Factor	**7**
Battery Life	**1 yr.**

ORDERING INFORMATION

Item No.	Name	Description
5399-0112	Temp1000S	Same as Temp 1000 w/1" rigid Probe

TEMP1000P temperature logger is a rugged, water proof, battery powered, device. Automatically record temperatures between -40 °C and 125 °C. The TEMP1000P features a 7" rigid external probe and is ideal for use in harsh environments.

TEMP1000P FEATURES

Memory	**32,767 readings**
Form Factor	**F**
Battery Factor	**4**
Battery Life	**1 yr.**

ORDERING INFORMATION

Item No.	Name	Description
5399-0108	Temp1000P	Same as TEMP 1000 with a 7" rigid probe.

TEMP1000FP temperature logger is a rugged, water proof, battery powered, stand alone devices. The TEMP1000FP features a 12" flexible external probe and is ideal for use in harsh environments. Features are similar to the TEMP1000S.

TEMP1000FP FEATURES

Memory	**32,767 readings**
Form Factor	**F**
Battery Factor	**4**
Battery Life	**1 yr.**
Dimensions:	**5.6" + probe x 1.25" dia (143 mm + probe x 31.75 mm)**
Weight:	**9 oz (250 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0110	Temp1000FP	Same as Temp 1000 with 12" flexible probe.

TEMPERATURE

All of our RTD-based temperature recorders are miniature, battery powered, stand alone, precision devices. As with all our designs, these are all-in-one compact, portable, easy to use and fully supported by our Windows® based graphical software. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged.

GENERAL RTDTEMP SPECIFICATIONS

Temperature**

Measurement Range:	-200 to +850 ºC
Resolution:	0.01 ºC
Calibrated Accuracy:	±0.05ºC @ 25 ºC
Specified Accuracy Range:	-200 to +850 ºC

Resistance

Nominal Range:	0 to 5000 Ohm
Resolution:	0.001 Ohm
Calibrated Accuracy:	±0.015 Ohm
Specified Accuracy Range:	0 to 500 Ohm @ 25 ºC
Input Connection:	Removable screw terminal; 2,3 or 4 wire interface
Temp. Effect on Span:	< 25 ppm/ºC; < 10 ppm/ºC typical
Temp. Effect on Offset:	< 10 ppm cumulative over -40 ºC to +80 º
Real Time Recording:	When used with PC.
Memory:	21,845 readings
Reading Interval:	1/ 2 sec. to 1 every 12 hrs.
Calibration:	Digital through software
Calibration Date:	Automatically recorded in device
Replaceable Battery:	1 year typical (1 minute reading rate at 25 ºC)
Data Format:	Date and time stamped ºC, ºF, ºK, ºR, Ohm
Time Accuracy:	±1 min/month (at 20 ºC, (RS232 not in use)
Computer Interface:	PC serial or RS232C COM (Interface cable required); 2,400 baud
Operating Environment:	-40 to +80 ºC, 0 to 95%RH non-condensing

**Temperature specifications based on 100 ohms Pt RTD compliant with IEC 751 (1983) and ITS-90.

RTDTemp101 FEATURES

Memory	**21,845**
Form Factor	**A-1**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight:	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0111	RTDTemp101	RTD Temp Recorder with 2,3 or 4 wire RTD's. External RTD required.

RTDTemp110 FEATURES

Memory	**21,845**
Form Factor	**A-2**
Battery Factor	**6**
Battery Life	**10 yr.**
Weight:	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0118	RTDTemp110	RTD Temp Recorder with 2,3 or 4 wire RTD's. External RTD required.

QUADRTD FEATURES

Memory	**21,845/channel**
Form Factor	**B**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight:	**13 oz (370 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0119	QUADRTD	4 chanel RTD Temp Recorder with 2,3 or 4 wire RTD's. External RTD required.

OCTRTD FEATURES

Memory	**21,845/channel**
Form Factor	**B-1**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight:	**13 oz (370 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0120	OCTRTD	8 channel RTD Temp Recorder with 2,3 or 4 wire RTD's. External RTD required.

RELATIVE HUMIDITY/TEMPERATURE

GENERAL RHTEMP SPECIFICATIONS

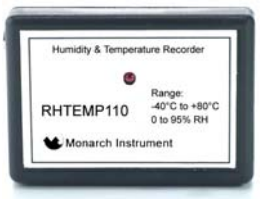
Temperature Sensor:	Semiconductor
Temperature Range:	-40 ºC to +80 ºC
Temperature Resolution:	0.1 ºC ±0.5 ºC (0 to +50 ºC) ±1.0 ºC (-10 to +80 ºC) ±2.0 ºC (-40 to +80 ºC)
Humidity Sensor:	Semiconductor
Humidity Range:	0 to 100% RH
Humidity Resolution:	0.5% RH
Calibrated Accuracy:	±3%RH (±2% RH typical at 25 ºC)
Response Time:	90% change in 60 sec., slow moving air.
Start Time:	Software programmable start time and date. Up to six months in advance
Real Time Recording:	When used with PC.
Reading Interval:	1/2 sec. to 1 every 12 hrs
Calibration:	Digital, through software
Calibration Date:	Automatically recorded within device
User Replaceable Battery:	1 year typical
Data Format:	Date and time stamped ºC, ºF, ºK, ºR ; %RH, mg/ml water vapor concentration
Time Accuracy:	±1 minute/month (at 20 ºC, RS232 cable not in use)
Computer Interface:	PC serial or RS232C COM (Interface cable required); 2,400 baud min.
Operating Environment:	-40 ºC to +80 ºC, 0 to 95% RH non-condensing)

RHTEMP101 FEATURES

Memory	**10,922**
Form Factor	**A**
Battery Factor	**6**
Battery Life	**1 yr.**
Weight:	**1 oz (30 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0201	RHTEMP101	Humidity & Temperature Recorder



RHTEMP110 FEATURES

Memory	**21,845**
Form Factor	**A-2**
Battery Factor	**6**
Battery Life	**10 yr.**
Weight:	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0207	RHTEMP110	Humidity & Temperature Recorder

RHTEMP1000 SERIES FEATURES

Memory	**21,845**
Form Factor	**E-1**
Battery Factor	**4**
Battery Life	**10 yr.**
Weight:	**2 oz (60 g)**
Dimensions:	**5.4 x 1.0" dia. (138 x 26mm dia.)**
Weight (Aluminum):	**5 oz (145 g)**
Weight (Stainless):	**10 oz (285 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0203	RHTemp1000	Rugged Humidity & Temp Recorder with Aluminum Case
5399-0204	RHTemp1000SS	Same as RHTemp1000SS with Stainless Steel Case
5399-0205	RHTemp1000IS	Intrinsically Safe Rugged Humidity & Temp Recorder with Aluminum Case
5399-0206	RHTemp1000IS-SS	Intrinsically Safe Rugged Humidity & Temp Recorder with Stainless Steel Case

RELATIVE HUMIDITY/TEMPERATURE

MICRORHTEMP Series are the world's smallest, battery powered, stand alone humidity and temperature recorders. It's ultra-miniature size allows the user the ability to use the device in the smallest spaces.

MICRORHTEMP SERIES SPECIFICATIONS

Temperature Sensor:	Semiconductor
Temperature Range:	-20 ºC to +70 ºC
Temperature Resolution:	0.1 ºC
Calibrated Accuracy:	±0.5 ºC
Accuracy Range:	0 to +50 ºC
Humidity Sensor:	Semiconductor
Humidity Range:	0 to 100% RH
Humidity Resolution:	0.5% RH ±3%RH (±2% RH typical at 25 ºC)
Accuracy Range:	10 to 80% RH, +10 to +40ºC
Real Time Recording:	When used with a PC.
Calibrated Accuracy:	90% change in 60 sec. in slow moving air.
Accuracy Range:	10 to 80% RH, +10 to +40ºC

MICRORHTEMP FEATURES

Memory	**21,845**
Form Factor	**AA**
Battery Factor	**3**
Battery Life	**4 months**
Weight	**1 oz (30 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0202	MicroRHTEMP	Miniature RH & Tem. Recorder

MICRORHTEMP-EB FEATURES

Memory	**21,845**
Form Factor	**AA-1**
Battery Factor	**5**
Battery Life	**10 months**
Weight	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0208	MicroRHTEMP-EB	Miniature RH & Temp.Recorder

pH/TEMPERATURE

The pHTEMP101 shares all the characteristics of our other Compact data loggers. It will directly connect to many commonly used pH electrodes, and ORP electrodes. Sensor and probe not included.

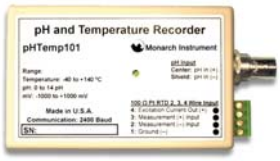
pHTEMP101 SPECIFICATIONS

Temperature

Measurement Range:	-200 to +850 ºC (0 to +5000 ohms)
Resolution:	0.01ºC (0.001 ohms)
Calibrated Accuracy:	±0.1ºC @25 ºC ambient (±0.015 ohms)
Input Connection:	Removable screw terminal; 2, 3 or 4-wire interface for 100 ohm Pt RTD
Reading Interval:	1 every 2 sec. to 1 every 12 hrs.
Calibration:	Digital, through software

pH

Measurement Range:	0.00 to 14.00 pH (-1000 to +1000 mV)
Resolution:	0.01 pH (0.1 mV)
Calibrated Accuracy:	±0.1 pH (±1 mV)
Input Connection:	Female BNC jack
Input Resistance:	10^{12} ohms (typical)
Data Format:	Date and time stamped ºC, ºF, ºK, ºR, ohms, pH, V, mV, engr. units specified through software
Time Accuracy:	±1 minute/month (at 25 ºC; RS232 cable not in use)
Operating Environment:	-5 to +50 ºC, 5 to 95%RH (non-condensing)



phTEMP101 FEATURES

Memory	**13,107 per channel**
Form Factor	**C-1**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight	**4 oz (120 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0401	pHTEMP101	pH and Temperature Recorder

VOLT

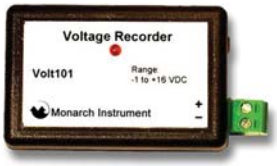
GENERAL VOLT/CURRENT SPECIFICATIONS

Input Connection: Removable screw terminals.

Model:	100 mV (Diff)	2.5V	15V	30V
Voltage Range:	±100 mVDC	-0.25 to +2.75	-1.0 to +16.0	-2.0 to +32.0
Resolution:	5 µVDC	0.1 mV	0.5 mV	1.0 mV
Calibrated Accuracy:	±0.01% FS	±0.01 %FS	±0.10 % FS	±0.10 %FS
Input Impedance:	>1 Kohm*	>1 Kohm	>10 Kohm	>10 Kohm
Overload Protection:	5 VDC	±5 V	±30 V	± 48 V
Temperature Coefficient:	< 25 ppm/ºC	< 25 ppm/ºC	< 250 ppm/ºC	< 250 ppm/ºC

User Analog Conversion Time: 133 ms
Frequency Rejection: 60 Hz
Temperature Coefficient: < 25 ppm/ºC; <10ppm/ºC typical
Specified Accuracy Range: Nominal range @ 25 ºC
Engineering Units: User may define units up to 10 characters in length. This value is stored in the device.
***1 Mohm during acquisition.**

Our Volt Recorders are all miniature, battery-powered, stand alone devices. These all-in-one compact, easy to use devices will measure and record up to 32,767 measurements. The storage is non-volatile, solid state . Each device may be started/stopped from a PC. They all interface with our Windows-compatible software.



VOLT101 FEATURES

Memory	**32,767**
Form Factor	**A-1**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight	**1 oz (30 g)**
Terminal	**2 except 100 Mv is 3 wire**

ORDERING INFORMATION

Item No.	Name	Description
5399-0507	VOLT101-100mV	±100 mV Differential Voltage
5399-0509	VOLT101-2.5	2.5 Vdc Voltage Recorder
5399-0510	VOLT101-15	15 Vdc Voltage Recorder
5399-0511	VOLT101-30	30 Vdc Voltage Recorder

VOLT110 FEATURES

Memory	**32,767**
Form Factor	**A-3**
Battery Factor	**1**
Battery Life	**10 yr.**
Weight	**2 oz (60 g)**
Terminals	2 except 100 mV (3-wire)

ORDERING INFORMATION

Item No.	Name	Description
5399-0508	VOLT110-100mV	±100 mV Differential Voltage
5399-0519	VOLT110-2.5	2.5 Vdc Voltage Recorder
5399-0520	VOLT110-15	15 Vdc Voltage Recorder
5399-5021	VOLT110-30	30 Vdc Voltage Recorder

QUADVOLT FEATURES

Memory	**32,767**
Form Factor	**B**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight	**13 oz (370 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0515	QUADVOLT-2.5	4 channel 2.5Vdc Voltage Recorder
5399-0503	QUADVOLT-15	4 channel 15 Vdc Voltage Recorder
5399-0516	QUADVOLT-30	4 channel 30 Vdc Voltage Recorder

OCTVOLT FEATURES

Memory	**16,383**
Form Factor	**B**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight	**17 oz (480 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0517	OCTVOLT-2.5	8 channel 2.5 Vdc Voltage Recorder
5399-0505	OCTVOLT-15	8 channel 15 Vdc Voltage Recorder
5399-0518	OCTVOLT-30	8 channel 30 Vdc Voltage Recorder

CURRENT

GENERAL PROCESS SPECIFICATIONS

Nominal Range	**±1 mA**	**±25 mA**	**±100 mA**
Measurement Range	±1.25 mA	±30 mA	±120 mA
Max. Common Mode Voltage	0 to 2.5 V	0 to 2.5 V	0 to 2.5 V
Resolution	0.05 µA	1.0 µA	5.0 µA
Calibrated Accuracy	±0.5% FSR	±0.1% FSR	±0.1% FSR
Specified Input Impedance	50 ohm	10 ohm	2 ohm
Overload Protection	±20 mA	±100 mA	±125mA

Input Connection: Removable screw terminal
Analog Conversion Time: 133 ms
Frequency Rejection: 60 Hz
Temperature Coefficient: <100 ppm/ºC; <50 ppm/ºC typical
Scale Factor: User may program any desired scaling factor from ±1.000E-31 to ±9.999E+31.
Engineering Units: User may define units up to 10 characters in length. This value is stored in the device.

PROCESS101 FEATURES

Memory	**32,767**
Form Factor	**A**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight	**1 oz (30 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0502	PROCESS101	Low Level Current Recorder 100 mA

PROCESS110 FEATURES

Memory	**32,767**
Form Factor	**A-6**
Battery Factor	**1**
Battery Life	**10 yr.**
Weight	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0512	PROCESS110-1	Low Level Current Recorder
5399-0513	PROCESS110-25	Low Level Current Recorder
5399-0514	PROCESS110-100	Low Level Current Recorder

STATE/EVENT

All our STATE/EVENT recorders are devices which sense input transitions or contact closures from external sources such as transducers and/or state initiators. STATE recorders time stamp when any change of state (+ and -) occurs. EVENT recorders time stamp when predefined unidirectional change (+ or -) occurs. Memory is nonvolatile solid state. The device can be started and stopped directly from your PC and is fully supported by our graphical Windows® based software.

GENERAL STATE SPECIFICATIONS

Input Connection: Removable screw terminal
Input Low: < 0.4 V
Input High: > 2.7 V
Input Range: 0 to 30 V
Input Impedance: > 1Kohm
Time Resolution: 1 second (reading rate dependent)
Visual Indicator: LED flashes at selected reading rate.
Engineering Units: User may define units up to 10 characters in length. This value is stored in device.
Scale Factor: User may program any desired scaling factor from ±1.000E-31 to ±9.999E+31. The scaling factor is stored within the device.
Real Time Recording: When used with PC.
Reading Interval: 1/second to 1 every 12 hours.
Replaceable Battery: 1 year typical life at 25 ºC
Data Format: Date and time stamped state changes (on/off)
Time Accuracy: ±1 minute/month at 20 ºC, no RS232 in use.
Computer Interface: PC serial or RS232C COM (Interface cable required); 2400 baud
Software: Windows 95/98/ME/NT/2000/XP compatible.
Operating Environment: -40 to +80 ºC, 5 to 95 %RH non-condensing

STATE101 FEATURES

Memory	**13,107**
Form Factor	**A-1**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight	**1 oz (30 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0707	STATE101	State Recorder

STATE110 FEATURES

Memory	**13,107**
Form Factor	**A-2**
Battery Factor	**1**
Battery Life	**10 yr.**
Weight	**1 oz (30 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0708	STATE110	State Recorder

QUADSTATE FEATURES

Memory	**52,484 state changes**
Form Factor	**B**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight	**13 oz (370 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0704	QUADSTATE	4 Channel State Recorder

OCTSTATE FEATURES

Memory	**104,857 state changes**
Form Factor	**B-1**
Battery Factor	**2**
Battery Life	**1 yr.**
Weight	**17 oz (480 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0705	OCTSTATE	8 Channel State Recorder

GENERAL EVENT SPECIFICATIONS

Input Connection: Removable screw terminal
Input Low: < 0.4 V
Input High: > 2.7 V
Input Range: 0 to 30 V
Input Impedance: > 1Kohm
Minimum Input Active (Low) Time: 1 ms
Time Resolution: 1 second (reading rate dependent)
Visual Indicator: LED flashes at selected reading rate
Engineering Units: User defined units up to 10 characters in length. This value is stored in device
Scale Factor: User may program any desired scaling factor from ±1.000E-31 to ±9.999E+31. The scaling factor is stored within the device.
***Reading Interval:** 1 every second to 1 every 12 hours.
Data Format: Date and time stamped events (true/false)
Time Accuracy: ±1 minute/month (at 20 ºC, no RS232 use.)

*Device records one event per user defined reading interval.

EVENT101 FEATURES

Memory	**13,107**
Form Factor	**A-1**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight	**1 oz (30 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0703	EVENT101	Event Recorder

EVENT110 FEATURES

Memory	**13,107**
Form Factor	**A-2**
Battery Factor	**1**
Battery Life	**10 yr.**
Weight	**10 oz (30 g)**

ORDERING INFORMATION

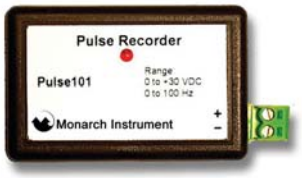
Item No.	Name	Description
5399-0706	EVENT110	Event Recorder

PULSE

PULSE101 is a miniature, recording device which records the number of pulses within a time period. Store up to 16,383 readings. In addition, the PULSE 101 allows the user to store user defined units such as gallons/min in the device as well as scale factors and offset values. This enables the user to easily linearize and scale any transducer that provides a pulse or contact closure output. Once activated the PULSE101 senses and records the number of pulses/ contact closures that occur over the user defined period. Storage is non-volatile solid state memory.

PULSE101 SPECIFICATIONS

Maximum Pulse Rate: 100 per second (10 ms)
Minimum Pulse Width/Contact Closure Time: 1 ms
Input Signal: TTL, Internal pull-up, +30 Volts max
Input Connection: Removable screw terminal
Input Impedance: >1 Kohm
Start Time: Software programmable start time and date, up to six months in advance.
Real Time Recording: When used with a PC.
Engineering Units: Software programmable. User may program any desired units up to 10 characters. Value is stored in device.
Scale Factor: Software programmable to any desired scaling factor from ±1.0000E-31 to ±9.9999E+31. The factor is stored in the device.
Offset Value: Software Programmable to any value from ±1.0000E-31 to ±9.9999E+31. The factor is stored in the device.
Memory: 16,383 readings
Reading Interval: 1/sec. to 1 every 12 hours
Visual Indicator: LED flashes at reading rate.
Power: 3.6V lithium battery, included
Data Format: Date and time stamped, V, mV, µV, user defined engineering units.
Time Accuracy: ±1 minute/month at 20 ºC (RS232 cable not in use)
Operating Environment: Same as EVENT101



PULSE101 FEATURES

Memory	**16,383**
Form Factor	**A-1**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight:	**1 oz (30 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0701	PULSE101	Pulse Recorder

PRESSURE/TEMPERATURE

Both these miniature, battery powered, stand alone pressure and temperature recorders measure and record up to 13,107 measurements per channel. Storage is non-volatile solid state, retained even if battery becomes discharged. Either can be started and stopped directly from your computer and their small size allows them to fit almost anywhere.

PRTEMP SERIES SPECIFICATIONS

Temperature Range: -40 to +80 ºC
Temperature Resolution: 0.1 ºC
Calibrated Accuracy: ±0.5 ºC(0 to +50ºC)
Pressure Range: 0 to 30 PSIA
Pressure Resolution: 0.002 PSIA
Calibrated Accuracy: ±1.0% FSR at 25 ºC; ±0.2% typical
Real Time Recording: When used with a PC.
Reading Interval: 1 per 5 sec. to 1 every 12 hrs.
Calibration: Digital through software
Calibration Date: Auto recorded in device
Data Format: Date and time stamped ºC, ºF, ºK, ºR ; PSIA, inHg, mmHg, bar, atm, Torr, Pa, kPa, MPa, altitude
Time Accuracy: ±1 min/mon (20 ºC, no RS232)
Computer Interface: Serial or RS232C COM (Interface cable required); 57,600 Baud for 110 Model.
Operating Environment: -40 to +80 ºC, 0 to 95%RH g

PRTEMP101 FEATURES

Memory	**13,107**
Form Factor	**A-1**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight:	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0301	PRTEMP101	Pressure/Temp. Recorder

PRTEMP110 FEATURES

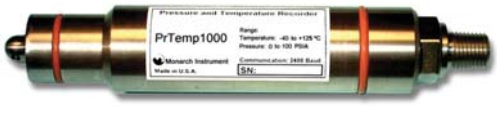
Memory	**13,107**
Form Factor	**A-2**
Battery Factor	**1**
Battery Life	**10 yr.**
Weight:	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0306	PRTEMP110	Pressure/Temp. Recorder

PRTEMP 1000 SERIES SPECIFICATIONS

Temperature Sensor: Semiconductor
Temperature Range: -40 ºC to +125 ºC
Limited Temp. Range: 80 ºC to 125 ºC; 15 minutes
Temperature Resolution: 0.1 ºC
Calibrated Accuracy: ±0.5 ºC
Pressure Sensor: Semiconductor strain gauge
Pressure Range: 0 to 30 psia, 100 psia, 300 psia, 500 psia
Pressure Resolution: .002, .005, .02 and .05 psia/g
Calibrated Accuracy: 0.2 % FSR, .25 % @ 25 ºC typical
Pressure Response Time: 0.1 ms (10% to 90% FSR)
Repeatability: ± 0.5 % FSR; ± 0.2 % typical
Adaptor: 1/4" male NPT or fully submersible
Start Time: Software programmable start time and date.
Real Time Recording: When used with PC.
Memory: 16,383
Reading Interval: 1 every 2 sec. to 1 every 12hrs
Calibration: Digital through software.
Calibration Date: Automatically recorded in device
Power: 3.6V lithium battery included
Replaceable Battery: 1 year typical
Data Format: Date and time stamped ºC, ºF, ºK, ºR PSIA(g), inches, feet, mmHg, bar, Torr, kPa,
Time Accuracy: ±1 minute/month (at 20ºC, RS232 port not in use)
Computer Interface: PC serial or RS232C COM (Interface cable required); 2,400 baud.
Operating Environment: -40 ºC to +125 ºC, 0 to 99% RH



PRTEMP 1000 SERIES accommodate numerous adaptors for various pressure ranges and pipe fittings. Stainless Steel construction includes water resistant o-rings.The real time clock ensures that all data is time and date stamped. The storage medium is non-volatile solid state memory. PRTEMP1000P has a 1" rigid probe with platinum 100 ohm RTD.

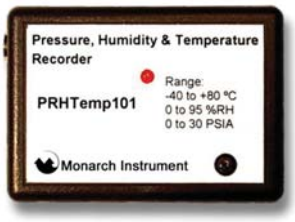
ORDERING INFORMATION

Item No.	Name	Description	Range		Form Factor	Battery Form
5399-0303	PRTemp1000-30	Pressure/Temperature Recorder	0-30 psia,	-40 to +125°C	EE-4	4
5399-0308	PRTemp1000-100	Pressure/Temperature Recorder	0-100 psia,	-40 to +125°C	EE-4	4
5399-0309	PRTemp1000-300	Pressure/Temperature Recorder	0-300 psia,	-40 to +125°C	EE-4	4
5399-0310	PRTemp1000-500	Pressure/Temperature Recorder	0-500 psia,	-40 to +125°C	EE-4	4
5399-0304	PRTemp1000P-30	Pressure/Temperature Recorder	0-30 psia,	-40 to +150°C	EE-5	4
5399-0311	PRTemp1000P-100	Pressure/Temperature Recorder	0-100 psia,	-40 to +150°C	EE-5	4

PRESSURE/HUMIDITY/TEMPERATURE

PRHTEMP SERIES GENRAL SPECIFICATIONS

Temperature Range:	-40 to +80 ºC
Temperature Resolution:	0.1 ºC
Calibrated Accuracy:	±0.5 ºC(0 to +50ºC)
Humidity Range:	0 to 100% RH
Humidity Resolution:	0.5% RH
Calibrated Accuracy:	±3%RH (±2% RH at 25 ºC)
Pressure Range:	0 to 30 PSIA
Pressure Resolution:	0.002 PSIA
Calibrated Accuracy:	±1.0% FSR at 25 ºC; ±0.2% typical
Real Time Recording:	When used with a PC.
Reading Interval:	1 per 5 sec. to 1 every 12 hrs.
Calibration:	Digital through software
Calibration Date:	Auto recorded in device
Data Format:	Date and time stamped ºC, ºF, ºK, ºR ; %RH, mg/ml water vapor concentration; PSIA, inHg, mmHg, bar, atm, Torr, Pa, kPa, MPa, altitude
Time Accuracy:	±1 min/mon (20 ºC, no RS232)
Operating Environment:	-40 to +80 ºC, 0 to 95%RH g



PRHTEMP101 FEATURES

Memory	**13,107**
Form Factor	**A-2**
Battery Factor	**1**
Battery Life	**1 yr.**
Weight	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0302	PRHTEMP101	Pressure/Humidity/Temp. Recorder

PRHTEMP110 FEATURES

Memory	**16,383**
Form Factor	**A-2**
Battery Factor	**1**
Battery Life	**10 yr.**
Weight	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0307	PRHTEMP110	Pressure/Humidity/Temp. Recorder

SHOCK

Our shock devices are battery powered, stand alone 3-axis shock recorders. They measure and record shock as the peak acceleration levels over the user defined interval. Designed for documenting dynamic environments such as moving vehicles, trucks, containers, ships, etc. These devices are valuable in characterizing environments such as production and assembly lines of delicate equipment, IC fabrication, communications and computer components.

SHOCK100 SERIES SPECIFICATIONS

Acceleration Range:	±50 g
Acceleration Resolution:	0.1g (12 bit)
Calibrated Accuracy:	±1 g
Sampling Rate:	2 millisecond (> 500 Hz)
Reading Interval:	8 readings every sec. to 1/hr.
Real Time Recording:	When used with a PC.
Calibration:	Digital, through software
Calibration Date:	Automatically recorded in device
Data Format:	Date and time stamped g
Time Accuracy:	±1 minute/month (at 20 ºC, RS232 port not in use)
Operating Environment:	-20 to +70 ºC, 0 to 90%RH

SHOCK101 FEATURES

Memory	**43,690 per channel**
Form Factor	**B**
Battery Factor	**2**
Battery Life	**7 days**
Weight	**15 oz (435 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0601	SHOCK101	Tri-axial Shock Recorder

SHOCK101-EB FEATURES

Memory	**43,690 per channel**
Form Factor	**B-2**
Battery Factor	**8**
Battery Life	**60 days**
Weight	**5 lbs (2.3 kg)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0606	SHOCK101-EB	Tri-axial Shock Recorder

ULTRASHOCK is a battery powered, stand alone temperature, pressure, humidity and 3-axis shock recorder. The ULTRASHOCK measures and records temperature, pressure and humidity at the selected reading rates, while shock is recorded as the peak acceleration levels over the same interval. Measure and record up to 23,831 measurements per channel. Non-volatile solid state memory, Device is compatible with our software.

ULTRASHOCK SPECIFICATIONS

Measure 3 axis Shock, Temperature, Pressure and Humidity	
Temperature Range:	-40 ºC to +80 ºC
Temperature Resolution:	0.1 ºC
Calibrated Accuracy:	±0.5 ºC (0 to +50ºC)
Humidity Range:	0 to 100% RH
Humidity Resolution:	0.5% RH
Calibrated Accuracy:	±3%RH (±2% RH at 25 ºC)
Pressure Range:	0 to 30 PSIA
Pressure Resolution:	0.002 PSIA
Calibrated Accuracy:	±1.0% FSR at 25 ºC; ±0.2% typical
Acceleration Range:	±50 g
Acceleration Resolution:	0.1g (12 bit)
Calibrated Accuracy:	±0.5 g
Sampling Rate:	2 millisecond (> 500 Hz).
Operating Environment:	-20º to +70 ºC, 0 to 90%RH non-condensing

ULTRASHOCK FEATURES

Memory	**23,831 per channel**
Form Factor	**B**
Battery Factor	**2**
Battery Life	**7 days**
Weight	**15 oz (435 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0603	ULTRASHOCK	Tri-axial Shock Recorder

ULTRASHOCK-EB FEATURES

Memory	**23,831 per channel**
Form Factor	**B**
Battery Factor	**8**
Battery Life	**60 days**
Weight	**15 oz (435 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0605	ULTRASHOCK-EB	Tri-axial Shock Recorder

TILT

Tilt101 is a 3-axis, battery powered, stand-alone, programmable tilt recorder. Tilt101 records tilt angles along with date and times of readings. Ideal for documenting dynamic environments such as moving vehicles, trains, containers, ships, etc. It is also useful in characterizing environments such as production and assembly lines of delicate electronics, IC fabrication, communications and computer components. Measure and record 43,690 time-tagged tilt angle levels per axis. Memory is non-volatile solid state.

TILT101 SPECIFICATIONS

Calibrate Angle Accuracy:	±3 degrees
Angular Resolution:	0.5 deg. (12 bit)
Tilt Range:	-90 to +90 degrees
Acceleration Calibration:	Digital , through software.
Recording Interval:	1/second to 2/day selectable.
Start Time:	Start time/ date programmable with software.
User-Replaceable Battery:	9V battery, 1 week typical.
Time Accuracy:	±1 minute per month at 20°C when RS232 not in use.
Data Format:	Date and Time stamped, Degrees
Computer Interface:	RS232 Serial Port
Operating Environment:	0° to +80°C, 5 to 95% RH.

TILT101 FEATURES

Memory	**43,690 per channel**
Form Factor	**B**
Battery Factor	**6**
Battery Life	**1 week**
Weight	**15 oz (425 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-0607	TILT101	Triaxial Recorder

BRIDGE/STRAIN

BRIDGE110 is a miniature, battery powered, stand alone, bridge/strain gauge recorder. The BRIDGE110 features a real-time clock module that extends the battery life to > 10 years and allows for high speed downloads. The storage medium is non-volatile solid state memory.

BRIDGE110 SPECIFICATIONS

	Nominal Range (mV)			
	±10	**±25**	**±100**	**±1000**
Measurement Range:	±15	±37.5	±150	±1200
Resolution:	1 µV	2.5 µV	5 µV	50 µV
Calibrated Accuracy (%) @ 25° C	±0.25	±0.10	±0.05	±0.01
Reference and Input Range:	0 to 2.5 V			

Input Connection: 6-position screw terminal
Input Impedance: >1 Mohm during acquisition, low impedance when inactive
Power Output: 2.5 VDC, 2.5 mA (100 ohm) max. load
Maximum Input Signal Impedance: 5 Kohm
Temperature Effect on Span: < 25 µV over -40 º to +80 ºC
Temperature Effect on Offset: < 25 µV over -40 º to +80 ºC
Engineering Units: stored in device, user may define any desired scale and offset from ±1.0000E-31 to ±9.9999E+31

Reading Interval: 1 every 2 sec. to 1 every 12 hrs.
Calibration: Digital calibration through software
Calibration Date: Automatically recorded in device
Data Format: Date and time stamped %, ppm; strain, µstrain; V, mV, µV, engineering units specified through software
Time Accuracy: ±1 minute/month (at 20 ºC to 30 ºC)
Computer Interface: PC serial or RS232C COM (Interface cable required); 57,600 baud
Operating Environment: -40 ºC to +80 ºC, 0 to 95 %RH non-condensing

**350 ohm sensors may be used with series resistors to produce >1 Kohm; 120 ohm gauges may be used in half and quarter bridge configurations.

BRIDGE110 FEATURES

Memory	**32,767**
Form Factor	**A-3**
Battery Factor	**1**
Battery Life	**10 years**
Weight	**2 oz (60 g)**

ORDERING INFORMATION

Item No.	Name	Description	Accuracy	Resolution	Range
5399-1001	Bridge 110-10	10 mV Bridge/Strain Gauge Recorder	± 0.25%	1 uV	± 10 mV
5399-1002	Bridge 110-25	25 mV Bridge/Strain Gauge Recorder	± 0.10%	2.5 uV	± 25 mV
5399-1003	Bridge 110-100	100 mV Bridge/Strain Gauge Recorder	± 0.05%	5 uV	± 100 mV
5399-1004	Bridge 110-1000	1000 mV Bridge/Strain Gauge Recorder	± 0.01%	50 uV	± 1000 mV

WATER LEVEL/TEMPERATURE

Both LEVEL1000 and 2000 are battery powered, stand alone, submersible and vented submersible water level and temperature recorders. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. The device can be started and stopped directly from your computer.

GENERAL LEVEL SPECIFICATIONS

Temperature Sensor:	Semiconductor
Range:	-40 ºC to +80 ºC
Resolution:	0.1 ºC
Calibrated Accuracy:	±0.5 ºC(0 to +50ºC)
Pressure Sensor:	Semiconductor strain gauge
Media Compatibility:	Must be compatible with 303 stainless steel
Nominal Range:	0 to 30 feet
Resolution:	0.05 inches
Calibrated Accuracy:	Nominal range ±0.3% max @ 25 ºC
Response Time:	90% change in 1 ms
Repeatability:	±0.5% FSR; ±0.2% typical
Proof Pressure:	90 PSIA/170 ft. damage limit
Real Time Recording:	When used with a PC.
Reading Interval:	1 every 2 sec. to 1 every 12 hrs.
Calibration:	Digital, through software
Calibration Date:	Automatically recorded in device
Date and time stamped	ºC, ºF, ºK, ºR; PSI, inches, feet, millimeters, centimeters, meters (of water column)
Operating Environment:	-40º to +80ºC, 0 to 100%RH
Allowable Over Range:	0 to 100 feet (reduced specifications)

LEVEL 1000 FEATURES

Memory	**16,383**
Form Factor	**EE-1**
Battery Factor	**4**
Battery Life	**1 year**
Weight	**8 oz (220 g)**

ORDERING INFORMATION

Item No.	Name	Description
5399-1101	LEVEL1000	Water Level/Temperature Recorder-Submersible

LEVEL2000 SPECIFICATIONS
Same as LEVEL1000 except:

Resolution:	0.02 inches
Proof Pressure:	75 PSIG/170 ft. damage limit
Allowable Over Range:	0 to 60 feet (reduced specifications)

LEVEL 2000 FEATURES

Memory	**16,383**
Form Factor	**EE-2**
Battery Factor	**4**
Battery Life	**1 year**
Weight	**3 lbs (1.4 kg)**

ORDERING INFORMATION

Item No.	Name	Description
5399-1102	LEVEL2000	Water Level/Temperature Recorder-Vented

DataChart® Compact Data Loggers available in a variety of form factors and materials.

FORM AA Available in Stainless Steel or Delrin

AA	1.5" x 0.6"(dia)
AA-1	1.5" x 0.75"(dia)

1.5" (39 mm)

0.6" (16 mm) diameter

Form C	**Size(s)**
C	3.8"x2.4"x1.0"
C-1	4.5"x2.4"x1.0"

Available in ABS Plastic

3.8" (96 mm)

2.4" (61 mm)

1.0" (26 mm) depth

Form F	**Size(s)**
F	4.5"x1.0"Dx7"Probe
F-1	5.6"X1.25"Dx12"Probe

4.5" (114 mm)

Probe 7" (177 mm)

1.0" (26 mm) diameter

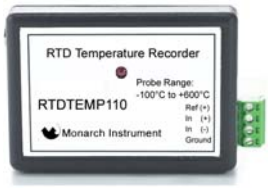
Form A	**Size(s)**
A	2.3" x 1.4" x 0.6"
A-1	2.6" x 1.4" x 0.6"
A-2	2.3" x 1.5" x 0.9"
A-3	2.7" x 1.7" x 0.8"

Available in ABS Plastic

2.3" (55 mm)

1.4" (35 mm)

0.6" (16 mm) depth



Form D	**Size**
D	4.3"x1.0" D

Available in 303 Stainless Steel

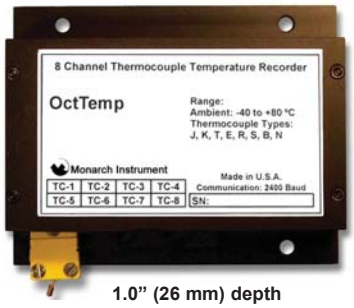
4.3" (108mm)

1.0" (26 mm) diameter

Form B	**Size(s)**
B	4.4"x3.5"x1.0"
B-1	4.4"x3.5"x1.5"
B-2	8.75"x5.5"x1.875"

Available in Billet Aluminium

4.4" (111mm)



3.5" (89 mm)

1.0" (26 mm) depth

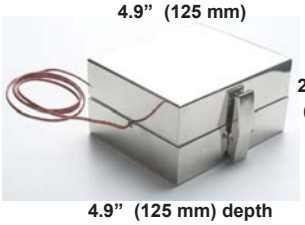
Form E	**Size(s)**
E	5.8"x1.0"D
E-1	5.4"x1.0"D
E-2	5.5"x1.25"D
E-3	7.5"x1.25"D
E-4	6.4"x1.25"D

Available in 303 Stainless Steel

Form G	**Size**
G	4.9" x 4.9" x 2.5"

ThermoVault Box available in 303 Stainless Steel

4.9" (125 mm)



2.5" (64 mm)

4.9" (125 mm) depth

General Information

All our recorders require the purchase of an interface cable and our Windows® compatible software. Please keep this in mind when placing your order.

Terms:

EB means extended battery life and you should consider these devices if your application requires longer recording periods. If you plan to record and process a lot of data, consider the 110 Models, where available, as these devices provide much higher communication speeds for up-loading recorded data, in addition to increased battery life.

ACCESSORIES

Item No.	Name	Description
5399-9903	IFC110	Interface Cable and Software for all loggers except Micro models.
5399-9902	IFC102	Interface Cable and Software for Micro models.
5399-9908	Palm Relay PDA101	Software & Cable for Palm Handhelds.
5399-9940	pH-1	Gen. Purpose Laboratory pH Electrode.
5399-9904	RFEXT-KIT	Total Transceiver Package for PC and Logger sites. Includes (2) Transceivers, antennas, AC P/S, Serial and IFC Cables
5399-9905	RFEXT-REMOTE	Transceiver and cables for Logger site. Includes Transceiver, antenna, AC P/S and IFC Cable.
5399-9906	RFEXT-BASE	Tranceiver for PC Site Only Includes Transceiver, antenna, AC P/S and Serial Cable.
5399-9907	RF EXT	Spare Transceiver and cables for either site Includes Transceiver, antenna, AC P/S, Serial and IFC Cables.
5399-9930	USB-1	USB to RS232 Converter
5399-9931	USB101	USB Kit includes USB-1 and IFC110 Cable
5399-9932	NET-1	Serial to Ethernet Converter
5399-9933	NET101	NET-1 package and IFC110 Cable
5399-9999	N.I.S.T.Cert	NIST Certificate of Calibration. Priced per parameter.

IFC110

Palm Relay PDA101

RFEXT-KIT