DILBERT™

BLUECAT®
New Horizons® in Data Acquisition Systems

PART IV
Version No. 20

Includes 120 Dilbert Cartoons

OMB-DAQ-3000
16-bit 1-MHz USB Data Acquisition System

OM-DAQPRO-5300

MAIN MENU
Start logging
on off
ESC

OMEGA®

OM-CP-QUADTEMP
4 Channel Thermocouple Temperature Recorder

OM-EL-USB-4
4-20mA DATA LOGGER

OMEGA®

WELCOME TO OMEGA!

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For the past three decades, our handbooks have served as valuable reference tools for engineers around the world. And though we are an established direct-marketing pioneer, our people, facilities, and superior client services go well beyond the OMEGA® Handbooks. Since our inception in 1962, OMEGA has grown from manufacturing a single product line of thermocouples to being an established global leader in the technical marketplace, offering 100,000 state-of-the-art products for measurement and control of temperature, humidity, pressure, strain, force, flow, level, pH, and conductivity. OMEGA also provides customers with a complete line of data acquisition, electric heating, and custom engineered products. It is our commitment to quality instrumentation and exceptional customer service that has remained the cornerstone of our success. OMEGA's priority is clear. Our facilities exist to "facilitate" solutions to your needs.

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NEW

Microprocessor-Based Portable Universal Circular Chart SUPERECORDER™

CTXL Series

$795

PATENTED *Covered by U.S. and International Patents and pending applications*

MADE IN USA | NIST | C€ | 2 YEAR WARRANTY | OMEGA CARE Extended Warranty Program | & EMC SERVICES | WHITE BOX

NEW FEATURES!

- ✔ **3 Models Available**
  - • **Temperature and Relative Humidity**
  - • **Dual Thermocouple Input**
  - • **Dual Process Input**
- ✔ **Convenient Keypad Programming from the Front Panel**
- ✔ **Chart Rescaling Through PC Interface**
- ✔ **High and Low Audible and Visual Alarms**
- ✔ **2 Built-In Relay Contacts**
- ✔ **Chart Data is Stored in Non-Volatile Memory**
- ✔ **Data Storage**
- ✔ **RS-232 PC Interface Allows the User to Download Recorded Data**

STANDARD FEATURES

- ✔ **CAL-2 Certificate of Calibration Included Free**
- ✔ **Available in Off-White or Charcoal Gray**
- ✔ **Ranges of -17 to 49°C (2 to 120°F) and 2 to 98% RH (CTXL-TRH)**
- ✔ **Powered by 4 "D" Cell Batteries or a Universal AC Adaptor**
- ✔ **203 mm (8") Chart for 1-, 7-, or 32-Day Recording**
- ✔ **Large, Bright, Dual, Backlit Display**
- ✔ **Monitors Min/Max/Avg Values**
- ✔ **Benchtop or Wall Mount with Built-In Chart Lights**
- ✔ **Versatile Remote Temperature/ Humidity Sensor Probe [Max Distance 12.2 m (40')]**
- ✔ **Patented Double-Sided Chart Paper and Magnetic Hub**
- ✔ **1-, 2-, 3-Year Extended Warranties Come with Extra Pens, Paper, and Batteries**

CTXL-TRH, $795, shown smaller than actual size

MODELS COME WITH:

One Sensor Probe (-TRH) and Clip

120 Assorted Double-Sided Charts

2 Sets of Pens, Extra Chart Light

Universal AC Adaptor

4 "D" Cell Alkaline Batteries

1.8 m (6') Extension Cable

RS-232 Cable and Adaptor

Wall Mounting Kit

2-Year Warranty

Operator's Manual

Retaining the legendary CT-485 design, the CTXL Series xomprises state-of-the-art circular chart recorders, available in 3 models— CTXL-TRH, CTXL-DTC, and CTXL-DPR.

The CTXL-TRH is a temperature/ relative humidity chart recorder with a temperature range of -17 to 49ºC (2 to 120ºF), and a humidity range of 2 to 98%. The CTXL-DTC is a dual thermocouple input chart recorder that accepts J, K, or T Type thermocouple probes. The CTXL-DPR is a dual-process input chart recorder that accepts 0 to 1 Vdc, 0 to 5 Vdc, 0 to 10 Vdc, 0 to 20 mA, and 4 to 20 mA inputs.

SUPERECORDER™ CTXL SERIES

All models have dual-display backlit LCDs that show two inputs in real time. The charted data is stored in non-volatile memory and can be downloaded to a PC for printout. Functions include audiovisual alarms with built-in relay contacts; real-time clock; monitoring of the minimum, maximum, and average values; 1, 7, or 32-day recording; and chart rescaling.

The high and low alarm setpoints for the 2 channels are configurable through the front panel keypad. There are 2 built-in relays for high alarms, and 2 additional voltage outputs power external mechanical relays for low-alarm conditions.

Patented features include double-sided chart paper and the magnetic hub. And the linear pen and chart drives make it easy to understand the charts. All models come with a stabilizing arm for benchtop operation and a decorative foot cover for wall-mount applications.

For greater secirity, a hidden key (white box) enables/disables access to the front keypad. This will prevent unauthorized users from changing the recorder settings.

Note: *Temperature/Humidity Sensor Probe Not Recommended for Use in Corrosive Environments.*

LCD Backlite Display

Dual Thermocouple Input (CTXL-DTC)

or

Dual Process Input (CTXL-DPR)

RS232 PC Interface

CTXL-TRH

Specifications
(Temperature/Relative Humidity Model CTXL-TRH)

Temperature:
  Range: -17 to 49°C (2 to 120°F)
  Accuracy: 1°C (1.8°F)
  Display Resolution: 0.1°

Relative Humidity:
  Range: 2 to 98% RH
  Accuracy: 3% RH (@ 15 to 90% RH)
  Display Resolution: 1% RH

Distance for Remote Probe: 12.2 m (40') maximum

Display: Custom-made, 4-digit, dual LCD with backlight

Display Data Sampling Rate: Once per 2 seconds

Display Modes: Max, min, avg, T1-T2

Display °C◀ ▶°F Key: Switches between °C or °F

Display Clock: Display the time and date for 3 seconds
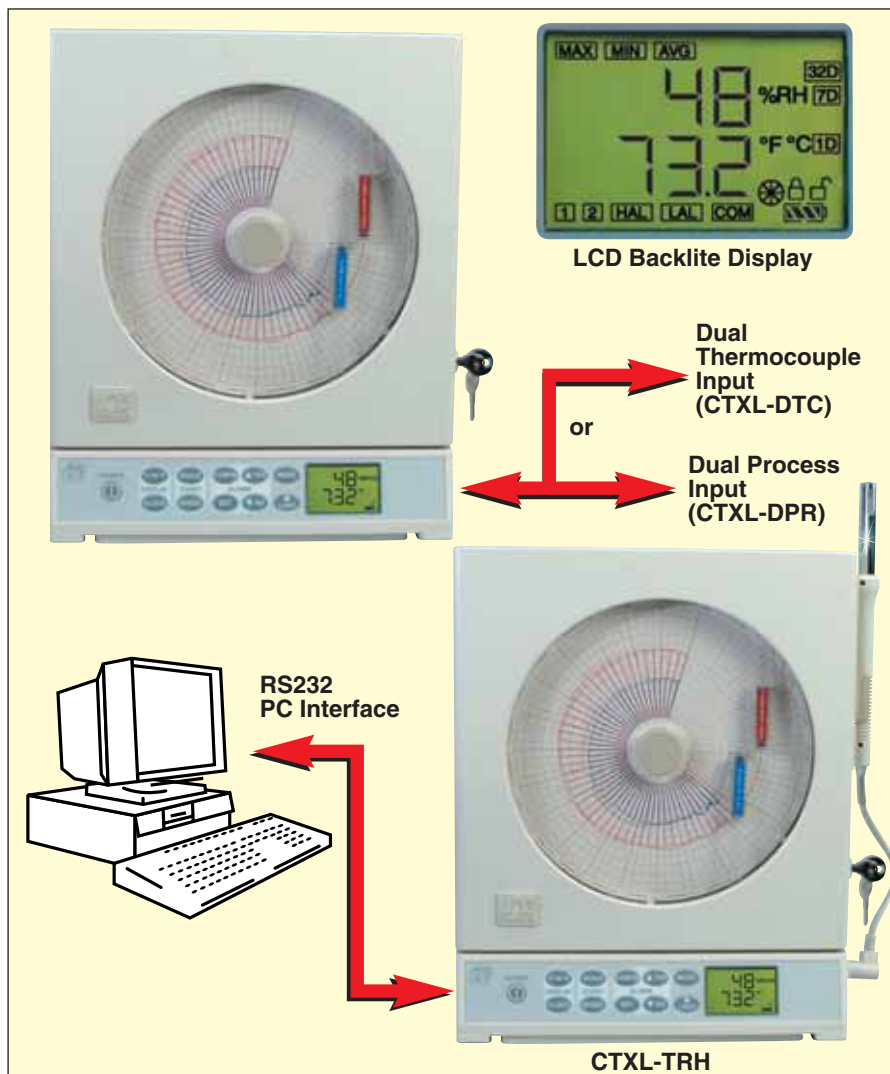
Chart Speed: 1, 7, or 32 days

Chart Response Time: 0.5 min, 3.5 min, 16 min for 1, 7, and 32 days respectively

Keypad Response: 350 ms

Chart Paper: 203 mm (8") circular, linear radial divisions, double sided

Chart Drive:
  Type: Stepper motor
  Accuracy: 1% rotation

Chart Hold-Down: Magnetic hub

Pen Drive:
  Type: Stepper motor, linear screw drive
  Deadband: 0.5°F or °C and 3% RH
  Pen Lift: Automatic on door opening—pens are door mounted and swing clear of the chart when door opens

Configuration Modes:
  High Alarm: Channel 1 (temperature)
  Low Alarm: Channel 1 (temperature)
  High Alarm: Channel 2 (humidity)
  Low Alarm: Channel 2 (humidity)
  Clock: Time (military time)
  Clock: Date

Clock Battery Backup: Holds clock information for 14 days when main power is removed

Audible Alarm: Piezoelectric beeper

Alarm Outputs: 2 separate relay contacts and 2 voltage outputs
  Relay Contacts: 2 A @ 30 Vdc (high alarm)
  Voltage Output: 100 mA to drive an external relay (low alarm)

Alarm Deadband:
  Temperature: 0.3°C (0.5°F)
  Humidity: 2% RH

Operating Temperature: 0 to 49°C (32 to 120°F)

Operating Relative Humidity: 2 to 98% RH

Power: 4 "D" alkaline batteries and DC adaptor (included)

Battery Life: 3 months under normal conditions

NEW

PATENTED
Covered by U.S. and International Patents and pending applications

Accessories shown are included with every unit

AC Adaptor: 100 to 240 Vac input, 9 Vdc @ 1.7 A output

Low-Battery Indicator: Icon on LCD

Serial PC Communications: RS232, 2-way, 9600 baud

Memory: 256K EEPROM (2.8 times worth of chart data)

Lock/Unlock (White Box) Key: Press and hold for 3 seconds to enable/ disable. When in lock mode, all keys are inactive except for the power, light, mode, clock, and the lock/unlock keys.

Mounting: Key-hole slots for wall mounting; foot cover for benchtop use

Case: Rugged ABS Plastic

Dimensions: 33.5 H x 27.1 W x 6.7 cm D (13³⁄₁₆ x 10¹¹⁄₁₆ x 2⅝")

Weight: Approx. 3.2 kg (7 lb) with batteries

Specifications
(Dual-Process Input CTXL-DPR)

Inputs: 0 to 1 V, 0 to 5 V, 0 to 10 V, 4 to 20 mA, 0 to 20 mA

Input Connection: Wire connection

Under- or Over-Range Input: Display will show "----" for current input

Standard Chart Scale: 0 to 100%

Specifications
(Dual Thermocouple Input CTXL-DTC)

Display Range:
   Type K: -100 to 1000ºC (-148 to 1832ºF)
   Type J: -100 to 700ºC (-148 to 1292ºF)
   Type T: -100 to 300ºC (-148 to 572ºF)

Display Accuracy:
   Type K: 2ºC (3.6°F)
   Type J: 1.5ºC (2.7°F)
   Type T: 1.5ºC (2.7°F)

Standard Chart Scale:
   Type K: -40 to 560ºC (-40 to 1040ºF)
   Type J: -40 to 260ºC (-40 to 500ºF)
   Type T: -40 to 160ºC (-40 to 320ºF)

Input Connection: Universal connector

T/C Break Indication: Display will show "Prb Err"

OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE℠ covers parts, labor and equivalent loaners.

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model Number	Price	Description
CTXL-TRH-W	$795	White temperature/relative humidity recorder with 2 built-in relays
CTXL-TRH-G	795	Gray temperature/relative humidity recorder with 2 built-in relays
CTXL-DTC-W*	795	White dual thermocouple input recorder with 2 built-in relays
CTXL-DTC-G*	795	Gray dual thermocouple input recorder with 2 built-in relays
CTXL-DPR-W**	795	White dual process input recorder with 2 built-in relays
CTXL-DPR-G**	795	Gray dual process input recorder with 2 built-in relays

* Add "-K", "-J" or "-T" to specify the dual thermocoule input.
** Standard dual process input is 4 to 20 mA. For other process inputs, add "-1V", "-5V", "-10V" or "-20MA".

Comes with 120 assorted double-sided charts, 2 sets of pens, 1.8 m (6') remote sensor cable, wall mounting kit, 4 "D" cell batteries, RS-232 cable and adaptor, and 9 V universal AC adaptor.

Ordering Example: CTXL-TRH-W, *white temperature/relative humidity chart recorder,* **$795,** *and* **CT485-CWF,** *package of 100, 7 day, ºF temperature charts,* **$19,** *$795 + $19 =* **$814. OCW-3,** *OMEGACARE℠ extends standard 2-year warranty to a total of 5 years,* **$203,** *$814 + 203 =* **$1017.**

NEW

Each unit includes one FREE sample pack of assorted charts:

Model No.	Sample Pack Included
CTXL-TRH	CT485-CSP, 120 charts
CTXL-DTC	CTXL-CSP-T, 150 charts
CTXL-DPR	CTXL-CSP-P, 120 charts
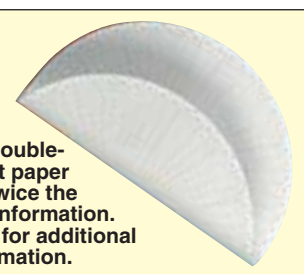
Accessories

Model Number	Price	Description
CTXL-CABLE-6	$15	1.8 m (6') extension cable
CTXL-CABLE-10	25	3.05 m (10') extension cable
CTXL-CABLE-25	40	7.6 m (25') extension cable
CTXL-CABLE-6-S	15	1.8 m (6') analog cable, stripped leads
CAL-3-CTXL	150	NIST-traceable calibration
CT485B-CAL-KIT	75	Calibration kit (33 and 75% RH salt solutions)
CT485-PS	10	Pen set, red and blue, package of 1 each
CT485-PS-6	52	Pen set, red and blue, package of 6 each
CT485B-CLIP-KIT	5	Sensor clip kit

Charts

Model Number	Price	Description
CTXL-DTC-R1-CD	$19.00	100 charts, 1 day -40/1040°F (-40/560°C)
CTXL-DTC-R1-CW	19.00	100 charts, 7 day -40/1040°F (-40/560°C)
CTXL-DTC-R1-CM	19.00	100 charts, 32 day -40/1040°F (-40/560°C)
CTXL-DTC-R2-CD	19.00	100 charts, 1 day -40/500°F (-40/260°C)
CTXL-DTC-R2-CW	19.00	100 charts, 7 day -40/500°F (-40/260°C)
CTXL-DTC-R2-CM	19.00	100 charts, 32 day -40/500°F (-40/260°C)
CTXL-DTC-R3-CD	19.00	100 charts, 1 day -40/320°F (-40/160°C)
CTXL-DTC-R3-CW	19.00	100 charts, 7 day -40/320°F (-40/160°C)
CTXL-DTC-R3-CM	19.00	100 charts, 32 day -40/320°F (-40/160°C)
CTXL-DPR-CD	19.00	100 charts, 1 day, 0 to 100%
CTXL-DPR-CW	19.00	100 charts, 7 day, 0 to 100%
CTXL-DPR-CM	19.00	100 charts, 32 day, 0 to 100%
CTXL-BLANK-CD	19.00	100 charts, 1 day, blank scale
CTXL-BLANK-CW	19.00	100 charts, 7 day, blank scale
CTXL-BLANK-CM	19.00	100 charts, 32 day, blank scale
CTXL-CSP-T	19.00	150 charts, sample pack temperature
CTXL-CSP-P	19.00	120 charts, sample pack process
CT485-CDF	19.00	100 charts, 1 day am/pm, °F
CT485-CDC	19.00	100 charts, 1 day am/pm, °C
CT485-C24F	10.00	20 charts, 24-hour clock, °F
CT485-C24C	10.00	20 charts, 24-hour clock, °C
CT485-CWF	19.00	100 charts, 7 day, °F
CT485-CWC	19.00	100 charts, 7 day, °C
CT485-CMF	19.00	100 charts, 32 day, °F
CT485-CMC	19.00	100 charts, 32 day, °C
CT485-CSP	19.00	120 charts, 20 of each style
CT485-CDF-6	87.50	600 charts, 1 day, °F
CT485-CDC-6	87.50	600 charts, 1 day, °C
CT485-CWF-6	87.50	600 charts, 7 day, °F
CT485-CWC-6	87.50	600 charts, 7 day, °C
CT485-CMF-6	87.50	600 charts, 32 day, °F
CT485-CMC-6	87.50	600 charts, 32 day, °C

Note: all charts are double sided.
Ordering Example: CT485-CWC-6, package of 600 double-sided charts, 7 days, with °C temperature measurements, *$87.50.*

Custom Charts Available

Patented double-sided chart paper provides twice the graphical information. See below for additional chart information.

CTXL-TRH Units Include
120 Double-Sided Charts FREE!
(20 each of 1-day, °F; 1-day, °C; 7-day, °F; 7-day, °C; 32-day, °F; 32-day °C)
Additional charts can be ordered as 1 pack of 100 or 6 packs of 100 (see Charts table below left)

Specialty Paper (All double-sided, packages of 20 charts)

Model No.	Price	Description
CT485-MW(*)	$20	Museums/art galleries, 7 days (in °C or °F) 18.3 to 22.2°C (65 to 72°F), 40 to 50% RH
CT485-MM(*)	20	Museums/art galleries, 32 days (in °C or °F) 18.3 to 22.2°C (65 to 72°F), 40 to 50% RH
CT485-HW(*)	20	Hospitals, 7 days (in °C or °F) 20 to 23.3°C (68 to 74°F), 40 to 50% RH
CT485-HM(*)	20	Hospitals, 32 days (in °C or °F) 20 to 23.3°C (68 to 74°F), 40 to 50% RH
CT485-LW(*)	20	Labs/clean rooms, 7 days (in °C or °F) 20 to 23.9°C (68 to 75°F), 40 to 55% RH
CT485-LM(*)	20	Labs/clean rooms, 32 days (in °C or °F) 20 to 23.9°C (68 to 75°F), 40 to 55% RH
CT485-PW(*)	20	Computer rooms/offices, 7 days (in °C or °F) 18.3 to 23.9°C (65 to 75°F), 45 to 60% RH
CT485-PM(*)	20	Computer rooms/offices, 32 days (in °C or °F) 18.3 to 23.9°C (65 to 75°F), 45 to 60% RH
CT485-WMC	20	Wine storage, 32 days, 10 to 15.6°C, 60 to 70% RH
CT485-WMF	20	Wine storage, 32 days, 50 to 60°F, 60 to 70% RH

* Insert C (for °C) or F (for °F).
Ordering Example: CT485-MWC, specialty paper for museums and art galleries, 7 days, with °C temperature measurements, *$20*.

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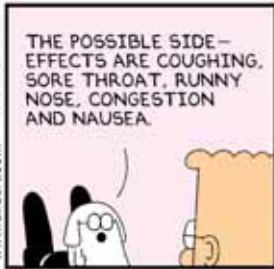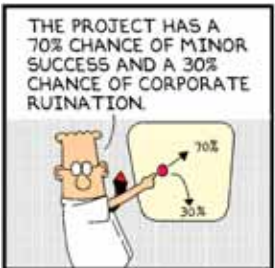07/11/05 DILBERT © United Feature Syndicate, Inc.

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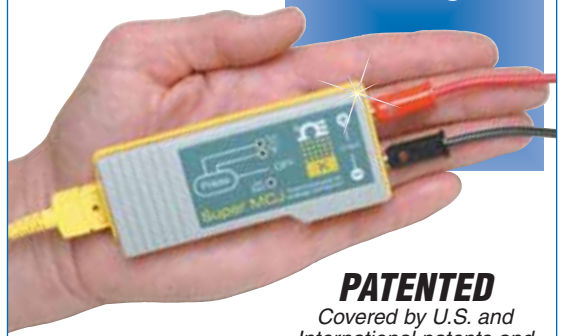07/16/05 DILBERT © United Feature Syndicate, Inc.

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5

NEW

1-MHz, 16-Bit USB Data Acquisition Modules
OMB-DAQ-3000 Series

DaqView software included with the OMB-DAQ-3000 Series

Starts at
$1399

MADE IN USA | 1 YEAR WARRANTY | OMEGACARE Extended Warranty Program | CE

- ✔ **1-MHz, 16-Bit Multifunction USB Modules**
- ✔ **Synchronous Analog Input, Analog Output, Digital I/O, and Counter/Timer I/O**
- ✔ **8 Differential or 16 Single-Ended Analog Inputs (Software-Selectable per Channel)**
- ✔ **Thermocouple or Voltage Input on Any Analog Channel**
- ✔ **User-Expandable Up to 64SE/32DE Analog Inputs, Including Thermocouple Measurements**
- ✔ **Up to four 16-Bit, 1-MHz Analog Outputs**
- ✔ **24 High-Speed Digital I/O Lines**
- ✔ **Four 32-Bit Counter Input Channels with Quadrature Encoder Capability Software**
- ✔ **Includes DaqView Software for Instant Setup, Real-Time Viewing, Data Logging, and Optional Frequency Domain Analysis**
- ✔ **Support for Visual Studio and Visual Studio.NET, including examples for Visual C++, Visual C#, Visual Basic, and Visual Basic.NET**
- ✔ **DaqCal Software Application for Easy User Calibration**

The new OMB-DAQ-3000 Series offers high-speed, multifunction data acquisition in a low-cost, portable package. The module offers synchronous and concurrent voltage input, temperature input, waveform output, counter input, quadrature encoder input, timer output anddigital I/O. Everything needed tobegin acquiring, viewing,

and storing data is included with the OMB-DAQ-3000 Series, even comprehensive software support. The OMB-DAQ-3000 features a 16-bit/1-MHz A/D converter, 16 analog input channels user-expandable to 64, up to four 16-bit/1-MHz analog outputs, 24 high-speed digital I/O, 2 timer outputs, and four 32-bit counters. All analog I/O, digital I/O, and counter/timer I/O can operate synchronously and simultaneously, guaranteeing deterministic I/O among all signal types. Unique to the OMB-DAQ-3000 is a low-latency, highly deterministic control output mode that operates independent of the PC. In this mode, digital, analog and timer outputs can respond to analog, digital, and counter inputs in as fast as 2 µs, at least 1000 times faster than similar products that rely on the PC for decision making.

Software
Included with the OMB-DAQ-3000 is new DaqView software, a comprehensive application that enables setup, data logging, and real-time data viewing without requiring any programming skills. Optional OMB-DAQVIEW-PRO software adds features such as direct-to-Excel enhancements, FFT analysis, statistics, etc.–all for a small additional price. Also included with the OMB-DAQ-3000 is a complete set of drivers and detailed sample programs for the most popular programming languages and software packages. Driver support includes Visual Basic, C/C++, LabVIEW, DASYLab, and MATLAB. DaqCOM provides Windows-based ActiveX/COM-based programming tools for Microsoft Visual Studio and Visual Studio.NET.

Analog Input
The OMB-DAQ-3000 has a 16-bit, 1-MHz A/D coupled with 16 single-ended inputs, 8 differential analog inputs, or 8 differential thermocouple inputs.

Seven software-programmable ranges provide inputs from ±10 V to ±100 mV full scale. Each channel can be software-configured for a different range, as well as for single-ended or differential bipolar input, or thermocouple input. The hybrid PGIA on the OMB-DAQ-3000 is guaranteed to settle to the specified accuracy while operating at the full 1 Msample/s rate.

Every analog input on the OMB-DAQ-3000 or on the OMB-PDQ30 expansion option can accept a thermocouple (TC) input. Built-in cold-junction sensors are provided for each of the removable screw-terminal connectors, and any TC type can be attached to any channel. When measuring TCs, the OMB-DAQ-3000 operates in an over-sample mode, where multiple readings are taken on each TC channel, digitally filtered, cold-junction compensated, and converted to temperature. As a result, channels with TCs attached are measured at a rate of 50 Hz to 10 kHz, depending on how much over-sampling is selected. Inline-cycle rejection mode, over-sampling occurs during one cycle of either 50 or 60 Hz, providing a high level of 50 or 60 Hz rejection.

Analog Channel Expansion
Adding additional analog input channels for the OMB-DAQ-3000 is easy using the optional OMB-PDQ30 expansion module. The OMB-PDQ30 connects to the OMB-DAQ-3000 by either plugging directly into the expansion connector or via a cable (OMB-CA-96) if distance is required between the two units.

NEW

OMB-PDQ30, $599, shown smaller than actual size

Thermocouple probes sold separately. Search omega.com

JMQSS-125U-12, $26.95

TMQSS-125U-12, $26.95

KMQSS-125U-12, $26.95

The OMB-PDQ30 provides an additional 48SE/24DE analog inputs or 24 differential thermocouple inputs, software-configured on a per- channel basis. The total channel capacity with an OMB-PDQ30 attached is 64 single-ended or 32 differential inputs.

Synchronous I/O
The OMB-DAQ-3000 can make analog measurements and read digital and counter inputs, while synchronously generating up to 4 analog outputs as well as digital pattern outputs. Digital and counter inputs do not affect the overall A/D rate because they use no time slot in the scanning sequencer.

Input Scanning
The OMB-DAQ-3000 has several scanning modes to address a wide variety of applications. A 512-location scan buffer can be loaded by the user with any combination of analog input channels. All analog input channels in the scan buffer are measured sequentially at 1 µs per channel. The user can also specify that the sequence repeat immediately or repeat after a programmable delay, from 0 to 19 hours, with 20.83 ns resolution.

Output Timing
The digital and analog outputs on the OMB-DAQ-3000 can be updated asynchronously or synchronously in several modes. In asynchronous mode, digital and analog outputs can be updated before, during, or after an analog input sequence. The maximum update rate in this mode is non-deterministic and entirely dependent on the PC processor speed, the operating system, and programming environment.

In synchronous output modes, outputs can be updated continuously from the PC or in response to an input from an analog channel, digital channel, or counter channel. When updated from the PC, the user can specify, in 20.83 ns intervals, the rate at which the output is updated. Outputs are updated synchronously at a maximum rate of 1 µs.

Low-Latency Setpoint Control Mode
The other synchronous method of output is when either a digital, analog, or timer output is associated with any analog, digital, or counter input. The state or level of the output is determined by the level or state of an associated input.

When analog or digital outputs are used in this mode, the user can specify two output values,determined by whether the input is above or below the limit. The slowest rate by which an analog output can respond to an input is 2 µs plus the time period of a scan sequence.

Triggering
The OMB-DAQ-3000 supports a full complement of trigger modes to accommodate any measurement application.

Calibration
Every range on the OMB-DAQ-3000 is calibrated from the factory using a digital NIST-traceable calibration method. This method works by storing a correction factor for each range on the unit at the time of calibration. The user can adjust the calibration of the board while in the system, without destroying the factory calibration supplied with the board. This is accomplished by having three distinct calibration tables in the OMB-DAQ-3000 on-board EPROM, one that contains the factory cal and two that are available for user calibration. The user can select any of the three cal tables provided: factory, user- or self- cal tables by API call, or with the software provided.

Included with each OMB-DAQ-3000 is DaqCal software, an easy-to-operate package that lets users calibrate their OMB-DAQ-3000. Two calibration modes are supported in DaqCal. Self-cal, a user cal mode for analog inputs, can be performed automatically in minutes with included software and without the use of external hardware or instruments. Self-cal derives its traceability through an on-board reference that has a stability of 0.005% per year. The second mode, user-cal, is for users that require traceability to international standards such as NIST. A 6½ digit multimeter is required and user- calibration software is included, with step-by-step instructions for full calibration. A two-year calibration period is recommended for the OMB-DAQ-3000 Series.

OMB-DAQ-3000 Series Selection Chart					
Model Number	**Analog Inputs**	**Input Ranges**	**Digital I/O**	**Analog Outputs**	**Counter/Timers**
OMB-DAQ-3005	16SE/8DE	7	24	0	4/2
OMB-DAQ-3000	16SE/8DE	7	24	2	4/2
OMB-DAQ-3001	16SE/8DE	7	24	4	4/2
OMB-DAQ-3005 & OMB-PDQ30	64SE/32DE	7	24	0	4/2
OMB-DAQ-3000 & OMB-PDQ30	64SE/32DE	7	24	2	4/2
OMB-DAQ-3001 & OMB-PDQ30	64SE/32DE	7	24	4	4/2

Analog Output (OMB-DAQ-3000 and 3001 Only)

Two or four 16-bit, 1-MHz analog output channels are built into the OMB-DAQ-3000, with an output range of -10 to 10 V. The maximum rate at which analog outputs can be updated depends on several factors, including the speed of the USB port. Typically, with the A/D operating at full 1 Mreading/s rates, one analog output can be updated continuously from PC memory at 1 MHz, two analog outputs can be updated at 500 kHz, four analog outputs can be updated at 250 kHz. If waveform output throughput is critical to the application, contact OMEGA for the most recent update on multi-channel DAC output rates. In addition, a program can asynchronously output a value to any of the D/As for non-waveform applications, assuming that the D/A is not already being used in the waveform output mode. Each of the analog outputs can be used in a control mode, in which the output level depends on whether an associated analog, digital, or counter input is above or below a user-specified limit condition. When used to generate waveforms, the D/As can be clocked in several different modes. Each D/A can be separately selected to be clocked from one of the following sources.

Asynchronous Internal Clock

The on-board programmable clock can generate updates ranging from once every 19 hours to 1 MHz, independent of any acquisition rate.

Synchronous Internal Clock

The rate of analog output update can be synchronized to the acquisition rate derived from 1 MHz to once every 19 hours.
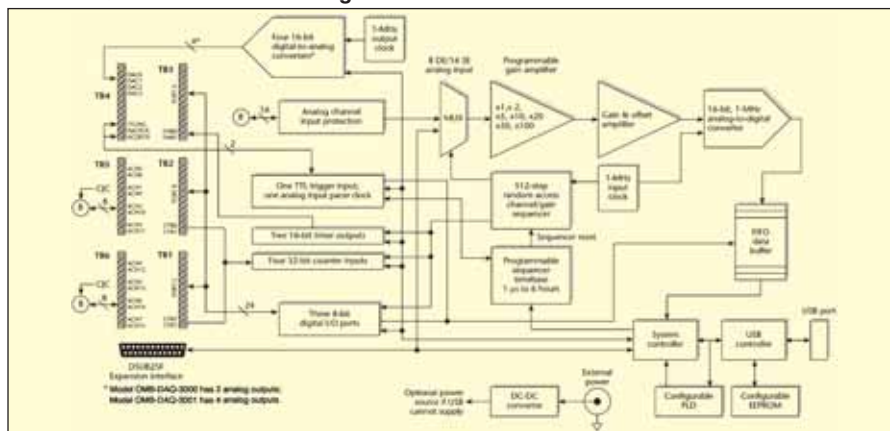
Asynchronous External Clock

A user-supplied external input clock can be used to pace the D/A, entirely independent of analog inputs.

Synchronous External Clock

A user-supplied external input clock can pace both the D/A and the analog input.

OMB-DAQ-3000 Series Block Diagram

Digital I/O

Twenty-four TTL-level digital I/O lines are included in the OMB-DAQ-3000. Digital I/O can be programmed in 8-bit groups as either inputs or outputs, and they can be scanned in several modes (see Input Scanning). Ports programmed as inputs can be part of the scan group and scanned along with analog input channels, or they can be asynchronously accessed via the PC at any time, including when a scanned acquisition is occurring. Two synchronous modes are supported when scanned along with analog inputs. In one of these modes, digital inputs are scanned at the start of each scan sequence, which means the rate at which they are scanned depends on the number of analog input channels and the delay period.

For example, if 8 analog inputs are enabled with 0 delay period, then the digital inputs in this mode would be scanned at once per 8 µs, which is 125 kHz. In the other synchronous mode, the enabled digital inputs are scanned synchronously with every analog input channel. So, in the example above, the digital inputs would be scanned at once per µs, or at 1 MHz. If no analog inputs are being scanned, the digital inputs can be scanned at up to 12 Msamples/s.

The low-latency digital output mode allows a digital output to be updated based on the level of an analog, digital, or counter input. In this mode, the user associates a digital output bit with a specific input and specifies the level of the input where the digital output changes state. The response time in this mode depends on the number of input channels being scanned and can typically be in the range of 2 to 6 µs.

Pattern Generation

Two of the 8-bit ports can be used to generate a 16-bit digital pattern at up to 1 MHz. The digital pattern can be read from PC RAM or a file on the hard disk. Digital pattern generation is clocked in the same four modes as described for analog output.

Counter Inputs

Four 32-bit counters are built into the OMB-DAQ-3000. Each will accept frequency inputs of up to 20 MHz, and each counter channel can be configured in a variety of modes, including counter, period, pulse width, time between edges, or multi-axis quadrature encoder. The counters can concurrently monitor time periods, frequencies, pulses, and other event-driven incremental occurrences from encoders, pulse generators, limit switches, proximity switches, and magnetic pick-ups. As with all other inputs to the OMB-DAQ-3000, the counter inputs can be read asynchronously under program control, or synchronously as part of an analog and digital scan group based either on an internal programmable timer or on an external clock source.

The OMB-DAQ-3000 supports quadrature encoders with up to 2 billion pulses per revolution; 20 MHz input frequencies; and x1, x2, x4 count modes. Encoder input signals must be within -15 to 15 V and the switching threshold is TTL (1.3 V).

Timer Outputs

Two 16-bit timer outputs are built into the OMB-DAQ-3000, each capable of generating different square waves with a programmable frequency range of 16 Hz to 1 MHz.

NEW

OMB-DAQ-3000, $1499,
shown smaller than actual size

Specifications

GENERAL

Environment:
Operating Temperature:
-30 to 70°C (-54 to 158°F)
Storage Temperature:
-40 to 80°C (-40 to 176°F)
Relative Humidity:
0 to 95% non-condensing
Communications: USB 2.0
high-speed mode (480 Mbps),
if available, otherwise USB1.1
full-speed mode (12 Mbps)
Acquisition Data Buffer:
1 Msample
Vibration: MIL STD 810E
category 1 and 10
Signal I/O Connector: 6 banks
of removable screw-terminal blocks
External Power:
Connector:
Switchcraft #RAPC-712
Power Range: 6 to 16 Vdc
(used when USB port supplies
insufficient power, or when
an independent power supply
is desired)
Over-Voltage:
20 V for 10 seconds, max
Expansion Connector:
25-pin DSUB, female
Dimensions:
269 W x 92 D x 45 mm H
(10.6 x 3.6 x 1.6")
Weight: 431 g (0.95 lb)

ANALOG INPUTS

Channels: 16 single-ended or
8 differential, programmable on a
per-channel basis as single-ended
or differential
Expansion: An additional
48 analog inputs per board via optional
OMB-PDQ30 module; expansion
channels have identical features as the
main board channels
Expansion Connector:
25-pin, DSUB, female
Over-Voltage Protection:
±30 V without damage
Voltage Measurement Speed:
1 µs per channel
Temperature Measurement Speed:
Programmable from
100 µs to 20 ms per channel
Ranges: Software- or sequencer-
selectable on a per-channel basis:
±10 V, ±5 V, ±2 V, ±1 V, ±0.5 V,
±0.2 V, ±0.1 V

Input Impedance: 10 MΩ
single-ended; 20 MΩ differential
Total Harmonic Distortion:
-80 dB typical for ±10 V range, 1 kHz
fundamental
Signal-to-Noise and Distortion:
72 dB typical for ±10 V range,
1 kHz fundamental
Bias Current:
40 pA typical (0 to 35°C)
Crosstalk:
-75 dB typical DC to 60 Hz;
-65 dB typical @ 10 kHz
Common Mode Rejection:
-70 dB typical; DC to 1 kHz

A/D SPECIFICATIONS

Type: Successive approximation
Resolution: 16 bit
Maximum Sample Rate: 1 MHz
Nonlinearity (Integral):
±2 LSB maximum
Nonlinearity (Differential):
±1 LSB maximum

INPUT SEQUENCER

Analog, digital and frequency inputs can
be scanned synchronously, based on
either an internal programmable timer
or an external clock source
**Programmable Parameters per
Scan:** Channel (random order), gain
Depth: 512 locations
**On-Board Channel-to-Channel
Scan Rate:**
Analog: 1 MHz maximum
Digital: 4 MHz if no analog
channels are enabled; 1 MHz with
analog channels enabled

EXTERNAL ACQUISITION SCAN CLOCK INPUT

Maximum Rate: 1 MHz
Clock Signal Range: Logical
zero 0 to 0.8 V; logical one
2.4 to 5.0 V
Minimum Pulse Width:
50 ns high, 50 ns low

TRIGGERING

Trigger Sources: 6, individually
selectable for starting and stopping an
acquisition. Stop acquisition can occur
on a different channel than start
acquisition; stop acquisition can
be triggered via modes 2, 4, 5 or
6 described below.

**1. Single-Channel
Analog Hardware Trigger**
Any analog input channel can be
software programmed as the analog
trigger channel, including any of the
analog expansion channels.
Input Signal Range:
-10 to 10 V max
Trigger Level: Programmable
(12-bit resolution)
Hysteresis: Programmable
(12-bit resolution)
Latency: 350 ns typ., 1.3 µs max
Accuracy: ±0.5% of reading,
±2 mV offset
Noise: 2 mV RMS

**2. Single-Channel Analog
Software Trigger**
Any analog input channel, including any
of the analog expansion channels, can
be selected as the software trigger
channel. If the trigger channel involves
a calculation, such as temperature, then
the driver automatically compensates
for the delay required to obtain the
reading, resulting in a maximum latency
of one scan period.
Input Signal Range: Anywhere
within range of the selected trigger
channel
Trigger Level: Programmable
(16-bit resolution), including "window
triggering"
Latency: One scan period max

3. Single-Channel Digital Trigger
A separate digital input is provided for
digital triggering.
Input Signal Range: -15 to 15 V
Trigger Level: TTL
Minimum Pulse Width:
50 ns high, 50 ns low
Latency: 100 ns typ., 1.1 µs max

4. Digital Pattern Triggering
8- or 16-bit pattern triggering on
any of the digital input ports.
Programmable for trigger on equal,
above, below or within/outside of a
window. Individual bits can be
masked for "don't care" condition.
Latency: One scan period, max

5. Counter/Totalizer Triggering
Counter/totalizer inputs can trigger an
acquisition. User can select to trigger
on a frequency or on total counts that
are equal, above, below or
within/outside of a window.
Latency: One scan period, max

6. Software Triggering
Trigger can be initiated under
program control.

7. Multi-Channel Triggering
Up to 16 channels can be used to
generate a trigger condition for any

NEW

combination of analog inputs, digital inputs or counter inputs. Multiple channels can be combined in a logical "or" or "and" condition, with hysteresis programmable per channel. Maximum latency in this mode is one scan period.

ANALOG OUTPUTS
(OMB-DAQ-3000 and 3001 Only)
Analog output channels are updated synchronously relative to scanned inputs, and clocked from either an internal on-board clock or an external clock source. Analog outputs can also be updated asynchronously, independent of any other scanning in the system. Streaming from disk or memory is supported, allowing continuous, nearly infinite-length waveform outputs (limited only by available PC system resources).
Channels:
  OMB-DAQ-3000: 2
  OMB-DAQ-3001: 4
Resolution: 16 bits
Data Buffer: PC-based memory
Output Voltage Range: ±10 V
Output Current: ±1 mA; sourcing more current (1 to 10 mA) may require OMB-TR-2 power adaptor
Offset Error: ±0.0045 V max
Digital Feedthrough: <10 mV when updated
DAC Analog Glitch: <12 mV typical at major carry
Gain Error: ±0.01%
Update Rate: 1 MHz max, 19 hrs min (no minimum with external clock), resolution 20.83 ns, 250 kHz if all 4 DACs enabled
Settling Time: 2 μs to rated accuracy
Clock Sources (4, Programmable):
  1. On-board D/A clock, independent of scanning input clock
  2. Onboard scanning input clock
  3. External D/A input clock, independent of external scanning input clock
  4. External scanning input clock

DIGITAL I/O
Channels: 24
Ports: 3 x 8 bit, each port programmable as input or output
Input Scanning Modes (2, Programmable):
  1. Asynchronous, under program control at any time relative to input scanning
  2. Synchronous with input scanning input characteristics: 10 KΩ pull-up to 5 V, 20 pF to common
Input Characteristics:
220 Ω series resistor, 20 pF to common
Input Protection: ±15 kV ESD clamp diodes

Input Levels:
  Low: 0 to 0.8 V
  High: 2 to 5 V
Output Levels:
  Low: <0.8 V
  High: >2 V
Output Characteristics:
Output 1.0 mA per pin
Sampling/Update Rate:
4 MHz max

Maximum Usable Input Voltage + Common Mode Volage	
Ranges	**Maximum (CMV + Vin)**
0.5, 1, 2, 5, 10 V	10.5 V
0.1, 0.2 V	2.1 V

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Power Consumption [1]	
Model Number	**Power Consumption (Typical) [2]**
OMB-DAQ-3000	2500 mW
OMB-DAQ-3001	3000 mW
OMB-DAQ-3005	2000 mW
OMB-DAQ-3000 & OMB-PDQ30	2900 mW
OMB-DAQ-3001 & OMB-PDQ30	3400 mW
OMB-DAQ-3005 & OMB-PDQ30	2400 mW

[1]The power consumption listed is for a single OMB-DAQBOARD-3000 Series device, or for a single device connected to an OMB-PDQ30 expansion module.
[2]An optional power adaptor (OMB-TR-2) will be required if the USB port cannot supply adequate power. USB2 ports are by USB2 standards, required to supply 2500 mW (nominal at 5 V, 500 mA).

THERMOCOUPLE TYPES AND ACCURACY [1]

Thermocouple	Temperature Range °C	Accuracy (±°C)	Noise (±°C)
J	-200 to 760	1.7	0.2
K	-200 to 1200	1.8	0.2
T	-200 to 400	1.8	0.2
E	-270 to 650	1.7	0.2
R	-50 to 1768	4.8	1.5
S	-50 to 1768	4.7	1.5
B	300 to 1400	3.0	1.0
N	-270 to 1300	2.7	0.3

[1]Assumes 16,384 over-sampling applied, CMV = 0.0V, 60- minute warm-up, still environment and 25°C ambient temperature. Excludes thermocouple error; TC_{IN} = 0°C for all types except B (1000°C); OMB-TR-2 for external power.

Voltage Range*	Accuracy ± (% of Reading + % Range) 23° ± 10°C, 1 year	Temperature Coefficient ± (ppm of Reading + ppm Range) /°C -30° to 13°C and 33° to 70°C	Noise** (cts RMS)
-10 to 10 V	0.031% + 0.008%	14 + 8	2.0
-5 to 5 V	0.031% + 0.009%	14 + 9	3.0
-2 to 2 V	0.031% + 0.010%	14 + 10	2.0
-1 to 1 V	0.031% + 0.02%	14 + 12	3.5
-500 to 500 mV	0.031% + 0.04%	14 + 18	5.5
-200 to 200 mV	0.036% + 0.05%	14 + 12	8.0
-100 to 100 mV	0.042% + 0.10%	14 + 18	14.0

* Specifications assume differential input single-channel scan, 1-MHz scan rate, unfiltered, CMV = 0.0V, 30 minutes warm-up, exclusive of noise, range -FS to +FS.
** Noise reflects 10,000 samples at 1-MHz, typical, differential short.

NEW

PATTERN GENERATION OUTPUT
Two of the 8-bit ports can be configured for 16-bit pattern generation. The pattern can also be updated synchronously with an acquisition at up to 1 MHz.

COUNTER
Each of the 4 high-speed, 32-bit counter channels can be configured for counter, period, pulse width, time between edges, or multi-axis quadrature encoder modes. Counter inputs can be scanned synchronously along with analog and digital scanned inputs, based on an internal programmable timer or an external clock source.
Channels: 4 x 32 bit
Input Frequency: 20 MHz max
Input Signal Range: -15 to 15 V
Input Characteristics: 10 KΩ pull-up, ±15 kV ESD protection
Trigger Level: TTL
Minimum Pulse Width:
25 ns high, 25 ns low
Debounce Times: 16 selections from 500 ns to 25.5 ms; positive or negative edge sensitive; glitch detect mode or debounce mode
Time Base Accuracy: 50 ppm (0° to 50°C)
Five Programmable Modes: Counter, period, pulsewidth, timing, Encoder
Counter Mode Options: Totalize, clear on read, rollover, stop at all Fs, 16- or 32-bit; any other channel can gate or decrement the counter
Period Mode Options: Measure x1, 10, 100 or 1000 periods (16- or 32-bit); 4 different time bases to choose from: 20.83 ns, 208.3 ns, 2.083 µs, 20.83 µs; any other channel can gate the period measurement
Pulsewidth Mode Options:
16- or 32-bit values; 4 different time bases to choose from: 20.83 ns, 208.3 ns, 2.083 µs, 20.83 µs; any other channel can gate the pulsewidth measurement
Timing Mode Options: 16- or 32-bit values; 4 different time bases to choose from: 20.83 ns, 208.3 ns, 2.083 µs, 20.83 µs
Encoder Mode Options:
x1, 2, 4 options, 16- or 32-bit values, Z-channel clearing of counter, any other channel can gate the counter
Multi-Axis Quadrature Encoder Inputs: 1 channel with A (phase), B (phase) and Z (index); 2 channel with A (phase) and B (phase); x1, x2 and x4 count modes; single-ended TTL

FREQUENCY/PULSE GENERATORS
Channels: 2 x 16 bit
Output Waveform: Square wave
Output Rate: 1 MHz base rate divided by 1 to 65,535 (programmable)
High-Level Output Voltage:
2.0 V min @ -1.0 mA; 2.9 V min @ -400 µA
Low-Level Output Voltage:
0.4 V max @ 400 µA
OMB-PDQ30 Expansion Module:
See the OMB-PDQ30 data sheet for complete specifications

OMB-DAQ-3000, $1499, with OMB-PDQ30, $599, shown smaller than actual size

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model Number	Price	Description
OMB-DAQ-3005	**$1399**	16-bit, 1-MHz USB data acquisition module with 16 analog inputs, 24 digital I/O, 4 counters, 2 timers; includes DaqView software, support for Visual Studio and Visual Studio.NET, with examples for Visual C++, Visual C#, Visual Basic and Visual Basic.NET; drivers for DASYLab, MATLAB and LabVIEW; DaqCal software application
OMB-DAQ-3000	1499	Same as OMB-DAQ-3005 but with two 16-bit, 1-MHz analog outputs
OMB-DAQ-3001	1599	Same as OMB-DAQ-3005 but with four 16-bit, 1-MHz analog outputs
OMB-PDQ30	599	Analog input expansion module, adds 48SE/24DE channels to OMB-DAQ-3000 Series
OMB-DAQVIEW-XLPLUS	299	DaqView add-on for seamless execution with Microsoft Excel's tool palette
OMB-DAQVIEW-PRO	599	DaqView add-on, includes all features of OMB-DAQVIEW-XLPLUS, plus frequency-domain analysis
CS-3790	20	Reference Book: McGraw-Hill Dictionary of Electrical and Computer Engineering

Each OMB-DAQ-3000 Series module is supplied with DaqView software, software drivers and complete operator's manual on CD ROM.
Ordering Example: OMB-DAQ-3000 Personal DAQ USB data acquisition module and OMEGACARE[SM] 1-year extended warranty (adds 1 year to standard 1-year warranty) for OMB-DAQ-3000 with OMB-PDQ30 expansion module and OMEGACARE[SM] 1-year extended warranty (adds 1-year to standard 1 year warranty) for OMB-PDQ30, $1499 + 149 + 599 + 59 = $2306.

Accessories and Cables

Model Number	Price	Description
OMB-CA-96	**$82**	OMB-DAQ-3000 Series to OMB-PDQ30 cable, 0.6 m (2')
OMB-CA-179-1	30	USB cable, 1 m (3')
OMB-CA-179-3	51	USB cable, 3 m (10')
OMB-CA-179-5	61	USB cable, 5 m (16')
OMB-CN-153-12	20	Spare terminal block
OMB-TR-2	41	External power supply
OMB-PDQ10	42	DIN rail mounting adaptor for OMB-DAQ-3000

NEW

Analog Input Expansion Module for OMB-DAQ-3000 Series and OMB-DAQBOARD-3000 Series
OMB-PDQ30

Starts at
$599

MADE IN USA · 1 YEAR WARRANTY · OMEGA CARE Extended Warranty Program · CE
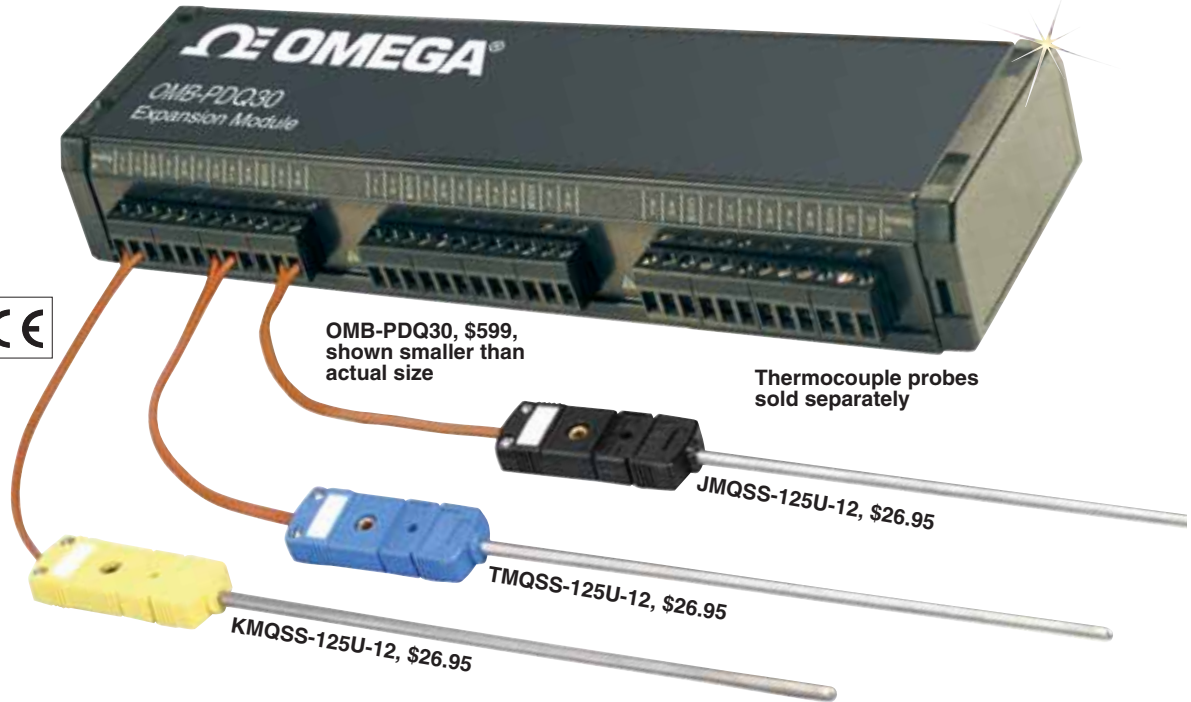
OMB-PDQ30, $599, shown smaller than actual size

Thermocouple probes sold separately

JMQSS-125U-12, $26.95

TMQSS-125U-12, $26.95

KMQSS-125U-12, $26.95

✔ **Adds 24 Differential/48 Single-Ended Inputs to OMB-DAQBOARD-3000 Series PCI Boards and OMB-DAQ-3000 Series Personal Daq USB Data Acquisition Modules**
✔ **Any Input Can be a Voltage or a Thermocouple**
✔ **Convenient Removable Screw-Terminal Connections**

The OMB-PDQ30 analog input expansion module increases total channel capacity of an OMB-DAQBOARD-3000 Series PCI bus data acquisition board or OMB-DAQ-3000 Series Personal Daq USB data acquisition module to a total of 32 differential or 64 single-ended analog inputs.

The OMB-PDQ30 attaches to an OMB-DAQBOARD-3000 Series board via an optional OMB-CA-266-3 cable, and to the OMB-DAQ-3000 Series either by plugging directly into the Personal Daq module with included clips, or via an optional OMB-CA-96 cable if it is necessary to have some distance between devices.

Voltage measurements via the OMB-PDQ30 have the same ranges as the host OMB-DAQBOARD-3000 Series PCI board or OMB-DAQ-3000 Series Personal Daq USB module.

When used with either host, the OMB-PDQ30 also adds thermocouple measurement capability, in which the A/D operates in a programmable, over-sample/digital filtering mode to provide low-noise and stable temperature measurements.

OMB-CA-266-3 cable, $49, shown smaller than actual size

OMB-DAQ-3000, $1499, attached to OMB-PDQ30, $599, expansion module, via an OMB-CA-96 cable, $82, all shown smaller than actual size

NEW

TC TYPES AND ACCURACY [1]

Thermocouple	Temperature Range °C	Accuracy (±°C)	Noise (±°C)
J	-200 to 760	1.1	0.2
K	-200 to 1200	1.2	0.2
T	-200 to 400	1.1	0.2
E	-270 to 650	1.0	0.2
R	-50 to 1768	2.5	0.2
S	-50 to 1768	2.6	0.2
B	50 to 1780	3.3	0.2
N	-270 to 1300	1.5	0.2

[1] Assumes 256 average mode applied, CMV = 0.0V, 30 minute warm-up and 25°C ambient temperature. Excludes thermocouple errors.

OMB-CA-96 cable, $82, shown smaller than actual size

Voltage Range*	Accuracy ± (% of Reading + % Range) 23°C ± 10°C, 1 year	Temperature Coefficient ± (ppm of Reading + ppm Range) /°C 0 to 13°C and 33 to 60°C	Noise** (cts RMS)
10 V	0.031% + 0.008%	14 + 8	2
5 V	0.031% + 0.009%	14 + 9	2
2 V	0.031% + 0.010%	14 + 10	2
1 V	0.031% + 0.012%	14 + 12	3
500 mV	0.031% + 0.018%	14 + 18	5
200 mV	0.036% + 0.012%	14 + 12	9
100 mV	0.042% + 0.018%	14 + 18	17

* Specifications assume differential input single channel scan, 1-MHz scan rate, unfiltered, CMV = 0.0V, 30 minute warm-up.
** Noise reflects 10,000 samples at 1-MHz, typical, differential short.

Specifications

GENERAL
Operating Temperature:
-30 to 70°C (-22 to 158°F)
Storage Temperature:
-40 to 80°C (-40 to 176°F)
Warm-Up: 30 min to rated specifications
Relative Humidity:
0 to 95%, non-condensing
Vibration: MIL STD 810E, category 1 and 10
Communications Connector: 25-pin DSUB
Signal I/O Connector:
6 removable screw-terminal blocks (12 connections each)
Dimensions:
269 W x 92 D x 45 mm H
(10.6 x 3.6 x 1.6")
Weight: 400 g (0.88 lb)
Power: Supplied by OMB-DAQBOARD-3000 Series PCI board or OMB-DAQ-3000 Series Personal Daq USB module; 400 mW max

OMB-DAQBOARD-3000, $749, attached to an OMB-PDQ30 expansion module, $599, via an OMB-CA-266-3 cable, $49, all shown smaller than actual size

ANALOG INPUTS
Channels: 48 single-ended inputs, 24 channels of differential inputs
Voltage Measurement Speed:
1 µs per channel

Temperature Measurement Speed:
Programmable from 100 µs to 20 ms per channel
Ranges: ±10 V, ±5 V, ±2 V, ±1 V, ±500 mV, ±200 mV, ±100 mV, universal thermocouple
Total Harmonic Distortion:
-80 dB typical for ±10 V range, 1 kHz fundamental
Signal to Noise and Distortion:
72 dB typical for ±10 V range, 1 kHz
Fundamental Input Impedance: 10 MΩ (single-ended); 20 MΩ (differential)
Bias Current:
40 pA typical (0 to 35°C)
Over-Voltage Protection: ±30 V
Ranges: Software or sequencer selectable on a per-channel basis
Crosstalk: -90 dB DC to 60 Hz; 86 dB @10 kHz, typical

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ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model Number	Price	Description
OMB-PDQ30	$599	Analog input expansion module, adds 24DE/48SE channels to OMB-DAQ-3000 Series acquisition modules and OMB-DAQBOARD-3000 Series PCI bus data acquisition cards
OMB-CA-266-3	49	OMB-DAQBOARD-3000 Series to OMB-PDQ30 cable, 0.9 m (3')
OMB-CA-96	82	OMB-DAQ-3000 Series to OMB-PDQ30 cable, 0.6 m (2')
CS-3790	20	Reference Book: McGraw-Hill Dictionary of Electrical and Computer Engineering

Ordering Example: OMB-PDQ30 *analog input expansion module and* ***OMEGACARE***[SM] *1-year extended warranty (adds 1-year to standard 1-year warranty) for* ***OMB-PDQ30, $599 + 59 = $658.***

NEW

8-, 16-, and 32-Channel USB Thermocouple Measurement System
OMET-USB-73T Series

**OMET-USB-73T16, $850,
shown smaller than
actual size**

Starts at
$785

1 YEAR WARRANTY **OMEGACARE℠ Extended Warranty Program**

- ✔ **USB 2.0 Interface, Full-Speed Compatible**
- ✔ **Stable Thermocouple Measurements**
- ✔ **8, 16, or 32 Thermocouple Inputs**
- ✔ **Thermocouple Accuracy: ±2°C (Includes CJC)**
- ✔ **Thermocouples Supported: Type J, K, E, T, R, S, B, C, N**
- ✔ **200 Hz Sample Rate**
- ✔ **14-Bit A/D Resolution**
- ✔ **24 Digital I/O Lines (3 x 8-bit ports)**
- ✔ **O/S Support for Windows 98/ME/2000/XP and Linux**
- ✔ **Supplied with a Universal Input 9 Vdc Power Adaptor**

The OMET-USB-73T is a USB based data acquisition device for thermocouple temperature measurement. It is available with 8, 16, or 32 thermocouple inputs.

All standard thermocouples types are supported, including J, K, E, T, R, S, B, C, and N. On-board programmable digital inputs and outputs can be used to read the status of external contacts or to control relays or external contacts in case of an event or alarm.

**OMET-USB-73T16, $850, front view, shown smaller than actual size**

A screw-terminal panel equipped with cold-junction compensation is provided with each unit to ensure accurate temperature measurements. This panel plugs into theDB-25 connector(s), and the screw-terminal connections easily interface with thermocouple wires. The OMET-USB-73T is the perfect measurement tool for users who want to measure temperature without the high cost of PLC or SCADA systems. Typical applications include monitoring of furnaces, cold storage, computer server rooms, and other environments.

Software Support
The OMET-USB-73T includes a comprehensive software suite. A simple data logging program is provided for users who want to collect data quickly and easily. This program allows the user to view thermocouple data on screen and save it to an ASCII (.CSV) file. The data file can be imported into Microsoft Excel, Microsoft Word, or any other compatible program for viewing and analysis. This data logger program works with Windows 98 and later.

OMET-USB-73T16, $850, back view, shown smaller than actual size
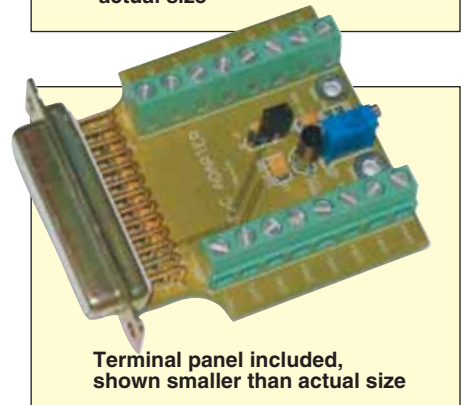
Terminal panel included, shown smaller than actual size

Although the OMET-USB-73T can support sample rates of up to 200 readings per second, the logger software only supports sample rates of up to 10 readings per second. For users who want to create their own programs for a more customized solution, software libraries are provided for most programming languages. The languages supported include Visual C/C++ 6.0, Visual Basic 6.0, Visual Studio.NET, Delphi, C++ Builder, and GNU C/C++ for Windows 2000/XP. Drivers for the Linux 2.6 operating system are also provided.

OMET-USB-73T32, $1460, front view, shown smaller than actual size

OMET-USB-73T32, $1460, back view, shown smaller than actual size

The OMET-USB-73T can also be used with other third-party software, including HPVEE, LabVIEW, DASYLab and TestPoint.

Technical Books Available Online!
books1.com
omega.com

Specifications

Input Channels: 8, 16 or 32 (model dependent)

Thermocouple Types and Ranges:
(Thermocouple Range: ±80 mV)
J: -200 to 1200°C (-328 to 2192°F)
K: -260 to 1370°C (-436 to 2498°F)
T: -260 to 400°C (-436 to 752°F)
E: -260 to 1000°C (-446 to 1832°F)
R: 0 to 1760°C (32 to 3200°F)
S: 0 to 1760°C (32 to 3200°F)
B: 0 to 1700°C (32 to 3092°F)
C: 0 to 2315°C (32 to 4199°F)
N: -260 to 1300°C (-436 to 2372°F)
Accuracy: ±2°C (including CJC)
Resolution: 14 bit
Sample Rate: 200 readings per sec, limited to 10 readings per sec when using included logger software
Input Coupling: DC
Input Impedance: 1 MΩ
System Noise: 1 LSB
Power Consumption:
500 mA @ 9 V or 4.5 W typical
Operating Environment:
0 to 70°C (32 to 158°F)
0 to 90% RH non-condensing
Storage Temperature:
-25 to 120°C (-13 to 248°F)

Weight:
OMET-USB-73T8 and OMET-USB-73T16: 280 g (9.9 oz)
OMET-USB-73T32: 400 g (14.1 oz)
Dimensions:
OMET-USB-73T8 and OMET-USB-73T16:
45 H x 80 W x 148 mm L
1.77 x 3.15 x 5.83"
OMET-USB-73T32:
65 H x 80 W x 148 mm L
(2.56 X 3.15 X 5.83"

DIGITAL I/O (DIO)
No. of TTL Lines: 24
LOGIC LEVELS:
Input Low Voltage: -0.5 V to 0.8 V
Input High Voltage: 2.0 V to 5.0 V
Output High Voltage Min: 2.4 V
Output Low Voltage Max: 0.45 V
Maximum Output Current: 2 mA

OMET-USB-73T32, $1460, shown smaller than actual size

OMET-USB-73T8, $785, shown smaller than actual size

OMET-USB-73T8, $785, front view, shown smaller than actual size

OMET-USB-73T8, $785, back view, shown smaller than actual size

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model No.)*

Model No.	Price	Description
OMET-USB-73T8	$785	8-channel, 14-bit thermocouple input module with 24 digital I/O
OMET-USB-73T16	850	16-channel, 14-bit thermocouple input module with 24 digital I/O
OMET-USB-73T32	1460	32-channel, 14-bit thermocouple input module with 24 digital I/O
OMET-USB-TERM	60	Spare screw-terminal panel for OMET-USB Series modules
CS-3767	100	Reference Book: Electrical Engineers Handbook

All **OMET-USB-73T** modules include a 1.8 m (6') USB cable, a universal AC power adaptor, screw-terminal panel(s) and user guide and software suite on CD.
Ordering Example: OMET-USB-73T16, 16-channel thermocouple input module, and **OMEGACARE**SM 1-year extended warranty for **OMB-USB-73T16** (adds 1 year to standard 1-year warranty), $850 + 85 **= $935.**

**Mini hot point®
Dry Block Probe Calibrator**

CL1000 Series
$990

**1/8 DIN Ultra High
Performance Meters**

DP41 Series
$595

**SPRTX/STCTX
Series**
$75

**Universal Temperature
Connector-Transmitter™
The Smart Connector™**

EXCLUSIVE!

PATENTED
*Covered by U.S. and
International patents and
pending applications*

*Please search omega.com
for more details on these
featured products!*

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1-800-DAS-1EEE
U.S.A. and Canada

**Sales: FAX (Toll-Free) 1-877-FAX-OMEG(A)
24 HOURS**

High-Speed 8-Channel Thermocouple Interface Card TCIC Series

Starts at
$540

1 YEAR WARRANTY | **OMEGACARE Extended Warranty Program**

☑ **8 Thermocouple Channels**
☑ **Accepts Thermocouple Types J, K, T, E, R, S, or ±500 mV Input**
☑ **High-Speed USB Interface**
☑ **Optional RS-232/RS-485 Communications**

The TCIC Series comprises low-cost, high-speed thermocouple temperature measurement data acquisition cards with USB interface. TCIC cards use an 8-channel, high-resolution A/D converter with on-board noise filters. On-board cold junction compensation and temperature conversion enable standalone operation. The card also has 8 opto-isolated outputs that can be activated based on individually programmable high/low limit setpoints for each thermocouple channel.

Each TCIC card is supplied with Windows software that displays temperature data in digital meter, analog meter, or strip chart format. Data for all 8 channels can be logged to an Excel-compatible file. A LabVIEW demonstration vi and complete programming examples in .NET are also included.

Specifications

Inputs: 8
Input Types: Each of the 8 inputs can be configured to measure ±500 mV or type J, K, T, E, R, or S thermocouple
**Millivolt Accuracy:** ±0.05% uncalibrated; gain drift 5 ppm/°C typical, 10 ppm/°C max
Outputs: 8 opto-isolated MOSFET outputs controlled based on individual channel high/low temperature setpoints; outputs can be programmed to operate in automatic, latching or manual modes. External 10 to 30 Vdc power supply required, 0.25 A max per output. Each output has an indicating LED.

TCIC-FULL-ENC, $650, shown smaller than actual size

Communications Interface: USB standard, RS-232/RS-485 optional
Sampling Rate: 400 Hz total throughput (50 Hz/channel)
Power: USB (from computer); RS-232/RS-485 (from included AC adaptor)
Enclosure Material: ABS plastic
Dimensions: 100 W x 160 mm L (3.94 x 6.30")
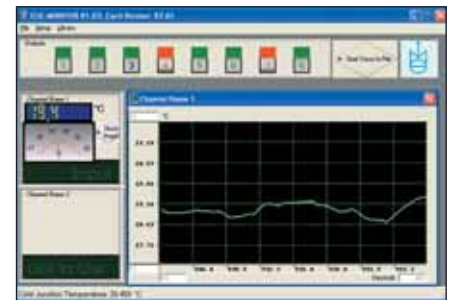
Windows software displays data in graphical or tabular format

Thermocouple Input Types and Ranges Table

Type	Range	Accuracy* (°C)	Resolution (°C)
J	-200 to 1200°C (-328 to 2192°F)	±1.5	0.019
K	-200 to 1372°C (-328 to 2501°F)	±1.5	0.024
T	-200 to 400°C (-328 to 752°F)	±1.5	0.022
E	-200 to 1000°C (-328 to 1832°F)	±1.5	0.015
R	-50 to 1768°C (-58 to 3214°F)	±2.0	0.125
S	-50 to 1768°C (-58 to 3214°F)	±2.0	0.143

Total accuracy, including CJC error.

MOST POPULAR MODELS HIGHLIGHTED!

To Order (Specify Model Number)

Model No.	Price	Description
TCIC-USB-ENC	$575	Thermocouple interface card with USB interface (with enclosure)
TCIC-FULL-ENC	650	Thermocouple interface card with USB and RS-232/RS-485 interfaces (with enclosure)
CS-3767	100	Book: Electrical Engineers Handbook

Each TCIC card is supplied with complete operator's manual, Windows and utility software on CD ROM. TCIC-FULL models include AC adaptor.
Ordering Example: TCIC-USB-ENC thermocouple interface card with enclosure and USB interface and OMEGACARE℠ 1-year extended warranty (adds 1 year to standard 1-year warranty) for TCIC-USB-ENC, $575 + 57 = $632.

Personal Daq USB Data Acquisition Modules
OMB-DAQ-Series

Starts at
$599

The compact OMB-DAQ-54/55/56 is ideal for portable data acquisition applications (laptop computer not included)

OMEGACARE^SM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE^SM covers parts, labor and equivalent loaners.
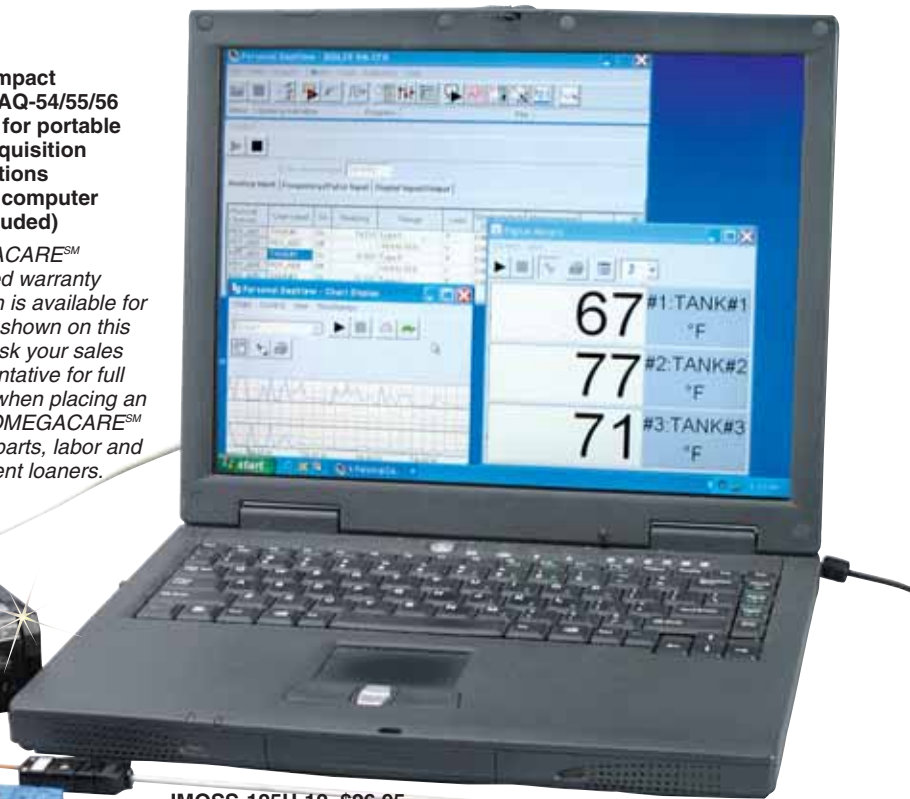
✔ **Multifunction Data Acquisition Module Attaches to PC's via Universal Serial Bus(USB)**
✔ **Ultra Low-Power Design Requires No External Power or Batteries**
✔ **Can be Located Up to 5 M (16.4') from the PC**
✔ **High-Resolution, 22-Bit A/D Converter**

OMB-DAQ-56, $1199, shown smaller than actual size

KMQSS-125U-12, $26.95

JMQSS-125U-12, $26.95

TMQSS-125U-12, $26.95

Thermocouple probes sold separately. See omega.com

✔ **Built-In Cold Junction Compensation for Direct Thermocouple Measurements**
✔ **Frequency/Pulse/Duty-Cycle Measurements Up to 1 MHz***
✔ **Convenient Removable Screw-Terminal Signal Connections**
✔ **500 V Optical Isolation from PC for Safe and Noise-Free Measurements**
✔ **Programmable Inputs from ±31 mV to ±20 V Full Scale**
✔ **Digital I/O Lines with Open Collector Output for Direct Drive Applications***
✔ **Expandable Up to 80 Channels of Analog and Digital I/O***
✔ **Up to 100 Modules Can be Attached to One PC Using USB Hubs, for a Total Capacity of 8000 Channels**
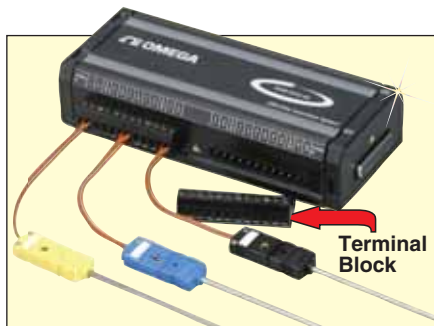✔ **Digital Calibration— No Potentiometers or Adjustments Required**

* The OMB-DAQ-54 does not have frequency, digital I/O or expansion capability.

✔ **Spreadsheet-Style Software for Setup, Acquisition, and Real Time Display; PostView for Post-Acquisition Viewing**
✔ **Drivers for Visual Basic, Delphi, and C++ for Windows 95/98/2000/ME/XP, DASYLab, and LabVIEW**

The OMB-DAQ-54, OMB-DAQ-55, and OMB-DAQ-56 Personal Daqs are full-featured data acquisition products that use the Universal Serial Bus (USB) built into almost every new PC. Designed for high accuracy and resolution, the 22-bit OMB-DAQ-54/55/56 data acquisition systems directly measure multiple channels of voltage, thermocouple, pulse, frequency, and digital I/O. A single cable to the PC provides high-speed operation and power to the OMB-DAQ-54/55/56. No additional batteries or power supplies are required, except when using bus-powered hubs.

The OMB-DAQ-54/55/56 modules are the first products in a new family of low-cost, USB-based products from OMEGA. Because of the strict power limitations of the USB, the modules incorporate special power-management circuitry to ensure adherence to USB specifications.

The OMB-DAQ-54/55/56 modules avoid many of the limitations of PC-card (PCMCIA) data acquisition devices and offer advantages over many PC plug-in data acquisition boards as well. The OMB-DAQ-54 data acquisition system offers 10 single-ended or 5 differential analog (up to ±20 V full scale) or thermocouple input channels. The OMB-DAQ-55 offers 10 single-ended or 5 differential analog (up to ±20 V full scale) or thermocouple input channels,16 programmable ranges, 500 V optical isolation, 8 digital I/O lines, and 2 frequency/pulse/duty-cycle channels.

OMB-DAQ-56, $1199, with removable terminal blocks for wiring sensors

The OMB-DAQ-56 offers twice the I/O capacity of the OMB-DAQ-55 in the same size package.

To simplify attachment of signals and transducers, the OMB-DAQ-54/55/56 modules feature convenient, removable screw-terminal input connections.

SOFTWARE
The OMB-DAQ-54/55/56 modules are supplied with Personal DaqView, a Windows 98/2000/XP-based data logging application that lets the user set up acquisition applications and save acquired data directly to disk. For additional functionality, enhanced versions of Personal DaqView are available. The enhanced Personal DaqView software is required when using more than one OMB-DAQ-54/55/56 module. The OMB-DAQ-54/55/56 modules are also shipped with PostView, a post-acquisition application that lets the user display acquired data previously saved to a file. Drivers for Visual Basic, Delphi, and C++ for Windows 98/2000/XP are included. In addition, drivers are available for icon-based software packages, such as DASYLab and LabVIEW.

ABOUT USB —
THE NEW PC CONNECTION
The Universal Serial Bus (USB) is a new standard for connecting PCs to peripheral devices such as printers, monitors, and modems. USB offers several advantages over conventional serial and parallel connections, including higher bandwidth (up to 12 Mbits/s) and the ability to provide power to the peripheral device.

USB is ideal for data acquisition applications. Since USB connections

OMB-DAQ-56 Block Diagram
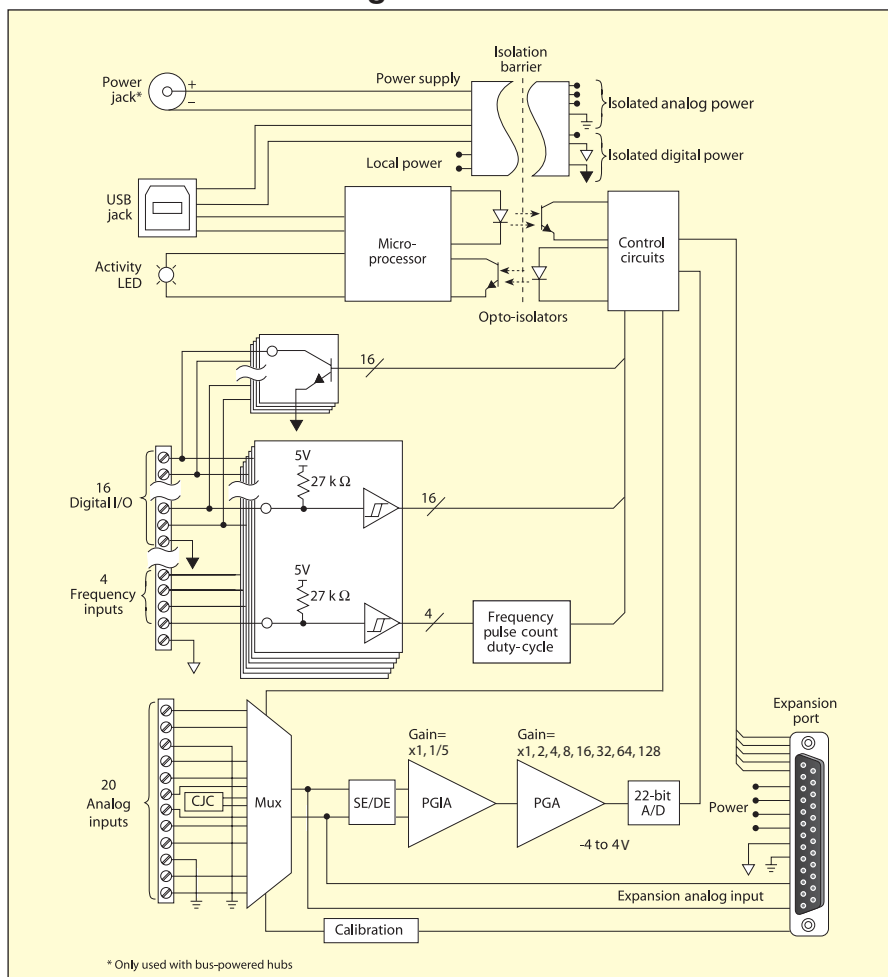
supply power, only one cable is required to link the data acquisition device to the PC, which most likely has at least one USB port. In addition, the USB's high-speed data transfer (from the data acquisition device to the PC) allows for a real-time display of acquired data, eliminating the need for expensive memory in the acquisition device.

With the backing of Intel, Microsoft, and hundreds of other computer-related companies, USB is quickly becoming a universal standard.

PERSONAL DAQ EXPANSION
The OMB-DAQ-55 and OMB-DAQ-56 can be easily expanded with one of two available snap-on expansion modules, bringing the total capacity to 60 analog or thermocouple channels, 32 digital I/O lines, and 4 frequency input channels. Furthermore, USB hubs can be used to create

multi-unit systems containing up to 100 OMB-DAQ-55/56 modules attached to a single PC. Using this strategy, a multi-unit OMB-DAQ-55/56 system can provide up to 8000 analog and digital I/O lines. See the chart on the next page for available channel capacity. The OMB-DAQ-54 does not have expansion capability. The enhanced Personal DaqView software is required when using more than one OMB-DAQ-55/56 module.

OMB-CA-179-1 USB Cable, $30

Connection to USB-Powered Hub
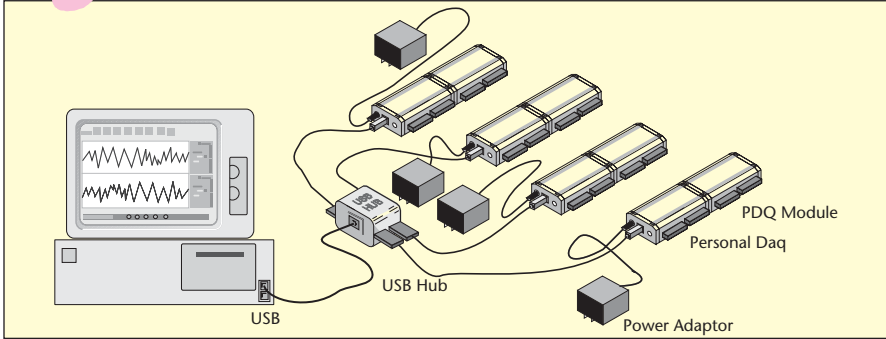
Four OMB-DAQS (with optional OMB-PDQ modules) are connected to ports of a USB-powered hub, requiring an external power source.

EXAMPLE SYSTEMS

As a USB product, an OMB-DAQ-54/55/56 data acquisition system can be located up to 5 m (16.4') from the PC, residing close to the point of measurement for improved accuracy and reduced noise. If USB hubs are used as repeaters between USB cable segments, the OMB-DAQ-54/55/56 can be located up to 30 m (98.4') from the PC.

Direct Connection to Computer USB Port(s)
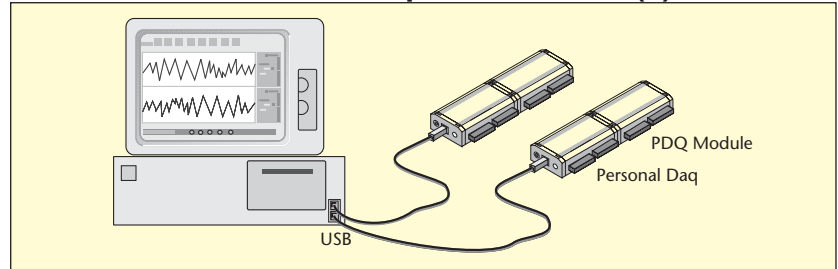
Two OMB-DAQS (with optional OMB-PDQ modules) are connected by cable to each of the computer's USB ports, requiring no external power source.

Speed vs. Resolution

| Measurement Duration | Max Sample Rate (Continous Calibration Disabled) | | | | Resolution (Bits RMS) (±4 V) |
| | Voltage | | Thermocouple | | |
	1 Channel/Scan	10 Channels/Scan	1 Channel/Scan	10 Channels/Scan	
610 ms (50/60 Hz Rejection)	1.6 Hz (625 ms)	0.16 Hz (6.25 secs)	1.5 Hz (667 ms)	0.16 Hz (6.25 secs)	22
12.5 ms	66 Hz (15 ms)	7.8 Hz (128 ms)	25 Hz (40 ms)	6 Hz (167 ms)	15

An OMB-DAQ-56, $1199, and an OMB-PDQ2, $749, simply plug together for additional channel capacity.

OMB-DAQ and Expansion System Channel Capacities			
Product or System	Volts/TC Inputs*	Digital I/O	Freq/Pulse Inputs
OMB-DAQ-54	5 DE, 10 SE	-	-
OMB-DAQ-55	5 DE, 10 SE	8	2
OMB-DAQ-56	10 DE, 20 SE	16	4
OMB-PDQ1 Expansion Module	10 DE, 20 SE	16	-
OMB-PDQ2 Expansion Module	20 DE, 40 SE	-	-
OMB-DAQ-55 + OMB-PDQ1	15 DE, 30 SE	24	2
OMB-DAQ-55 + OMB-PDQ2	25 DE, 50 SE	8	2
OMB-DAQ-56 + OMB-PDQ1	20 DE, 40 SE	32	4
OMB-DAQ-56 + OMB-PDQ2	30 DE, 60 SE	16	4

Specifications

GENERAL

Isolation: 500 V from PC

Power Requirements:
Powered from USB, or from external 6 to 16 Vdc when used with a bus-powered hub

Environmental:
0 to 50°C (0 to 122°F)
95% RH (non-condensing)

Dimensions:
92 W x 182 L x 45 mm H
(3.6 x 7.1 x 1.6")

ANALOG SPECIFICATIONS

Each channel is configurable for single-ended or differential, volts, or thermocouple inputs

OMB-DAQ-54 and OMB-DAQ-55:
10 single-ended, 5 differential; volts or TC channels

OMB-DAQ-56:
20 single-ended, 10 differential; volts or TC channels

Input Voltage Range:
Software-programmable
on a per-channel basis

Differential	Single-ended
-20 to 20 V	-10 to 20 V
-10 to 10 V	-10 to 10 V
-5 to 5 V	-5 to 5 V
-4 to 4 V	-4 to 4 V
-2.5 to 2.5 V	-2.5 to 2.5 V
-2 to 2 V	-2 to 2 V
-1.25 to 1.25 V	-1.25 to 1.25 V
-1 to 1V	-1 to 1 V
-625 to 625 mV	-625 to 625 mV
-500 to 500 mV	-500 to 500 mV
-312 to 312 mV	-312 to 312 mV
-250 to 250 mV	-250 to 250 mV
-156 to 156 mV	-156 to 156 mV
-125 to 125 mV	-125 to 125 mV
-62 to 62 mV	-62 to 62 mV
-31 to 31 mV	-31 to 31 mV

Thermocouple Type and Temperature Ranges:
J = -100 to 700°C
K = -200 to 1200°C
T = -100 to 400°C
E = -100 to 500°C
R = -400 to 1400°C
S = 400 to 1400°C
B = 700 to 1400°C
N = -100 to 700°C

Thermocouple Accuracy: In very slow mode, 22 bit resolution, includes cold junction compensation error
J = ±1.1°C
K = ±1.2°C
T = ±1.1°C
E = ±1.0°C
R = ±2.5°C
S = ±2.6°C
B = ±3.3°C
N = ±1.5°C

Cold Junction Compensation Accuracy: ±0.5°C

Over-Voltage Protection: ±45 V relative to analog Lo

AC Common Mode Rejection: >120 dB @ 60 Hz (OMB-DAQ-55/56)

Channel-to-Channel Crosstalk: <-120 dB (DC to 100 Hz) **Accuracy:**
OMB-DAQ-55/56: 0.015% of reading +0.002% of range (exclusive of noise)
OMB-DAQ-54: 0.015% of reading +0.004% of range (exclusive of noise)

Input Resistance:
>10 MΩ (SE), >20 MΩ (DE)

Bias Current: <1 nA (0 to 35°C)

Frequency Measurements (OMB-DAQ55/56 Only):
OMB-DAQ-55: 2 frequency/pulse input channels
OMB-DAQ-56: 4 frequency/pulse input channels

Operating Modes: Pulse count (totalize), duty-cycle and frequency

Frequency Response: DC to 1 MHz

Input Range: ±15 V absolute minimum, <1.3 V (low), >3.8 V (high)

Pull-Up Resistor: 27 KΩ to 5 V for switch or relay sensing

Debouncing: None, 0.8, 3.2 or 13 ms (software selectable)

Totalize: Up to 2^{32} counts/scan

Frequency and Duty-Cycle Resolution: 7 digits; actual resolution depends on scan rate. At 10 scans/s, resolution is 5 digits (10 ppm); at 1 scan/s, 6 digits (1 ppm).

Digital I/O (OMB-DAQ55/56 Only)
Each I/O line is individually programmable as input or output and includes an open-collector driver with a 27 KΩ pull-up resistor to 5 V for output, with a Schmitt-trigger input buffer
OMB-DAQ-55: 8 digital I/O lines
OMB-DAQ-56: 16 digital I/O lines

Input
Voltage Range: ±15 V thresholds: <1.3 V (low), >3.8 V (high)

Output
Maximum Switch Voltage: 0 to 15 Vdc (20 V for <1 minute)

Maximum Switch Current: 150 mA/output continuous, 500 mA/output peak (<100 µs), 150 mA total continuous (per bank of 8 outputs)

Output Resistance: 10 Ω max

MOST POPULAR MODELS HIGHLIGHTED!

To Order (Specify Model Number)

Model No.	Price	Description
OMB-DAQ-54	$599	10-channel, 22-bit data acquisition system
OMB-DAQ-55	899	10-channel, 22-bit data acquisition system with frequency measurement and digital I/O
OMB-DAQ-56	1199	20-channel, 22-bit data acquisition system with frequency measurement and digital I/O
OMB-PDQ1	649	20-channel analog and digital I/O expansion module for the OMB-DAQ-55 and OMB-DAQ-56
OMB-PDQ2	749	40-channel analog expansion module for the OMB-DAQ-55 and OMB-DAQ-56
OMB-CA-179-1	30	USB cable, 1 m (3.2')
OMB-CA-179-3	51	USB cable, 3 m (9.8')
OMB-CA-179-5	61	USB cable, 5 m (16.4')
OMB-CN-153-12	20	Terminal block (spare)
OMB-DAQ-SW-PLUS	269	Enhanced Personal DaqView, including overlapping charts and multiple display groups. Required when using more than one OMB-DAQ-54/55/56 module.
OMB-DAQ-SW-XL	269	Microsoft Excel add-in providing Personal DaqView with complete functionality within Excel's tool palette
OMB-DAQ-SW-XLPLUS	399	Combination of Personal DaqView Plus and Personal DaqView XL and XL Plus
CS-3785	150	Reference Book: McGraw-Hill Dictionary of Scientific and Technical Terms

Each unit is supplied with Personal DaqView software; drivers for Visual Basic, C++ and Delphi for Windows; terminal block and a complete operator's manual on CD.
Ordering Example: OMB-DAQ-55 data acquisition system and **OMEGACARE**[SM] 1-year extended warranty (adds 1 year to standard 1-year warranty) for **OMB-DAQ-55** with **OMB-PDQ1** expansion module and **OMEGACARE**[SM] 1 year extended warranty (adds 1 year to standard 1-year warranty) for **OMB-PDQ1** and **OMB-CA-179-1** USB cable, $899 + 89 + 649 + 64 + 30 = **$1731.**

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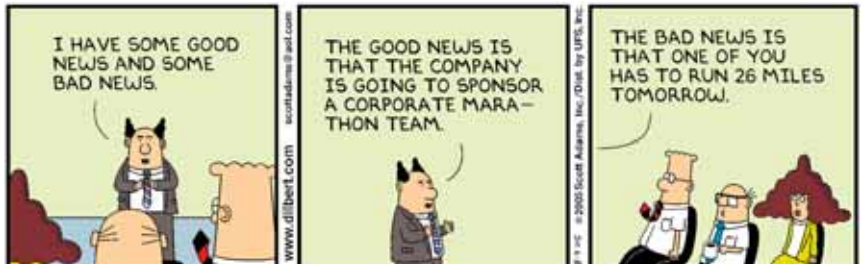
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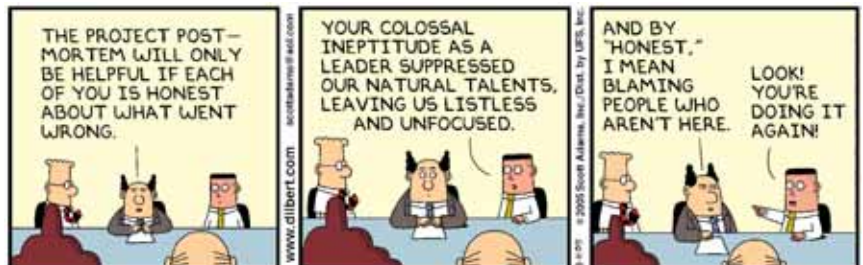**For Sales and Service, Call Toll-Free:**
1-800-327-4333 ℠
1-800-DAS-1EEE
U.S.A. and Canada

**Sales: FAX (Toll-Free) 1-877-FAX-OMEG(A)
24 HOURS**

NEW

Ethernet-Based Data Acquisition System Components
OMB-DAQSCAN-2000 Series

Starts at
$999

OMB-DAQSCAN-2005, $1999, front and back, shown smaller than actual size

✔ **Adds Analog I/O, Digital I/O, and Frequency I/O to Ethernet-Based Test Systems**

✔ **All I/O Can be Synchronous, Enabling Precise Timing Between Various I/O Functions**

✔ **8 Differential or 16 Single-Ended Inputs, Expandable up to 256 Voltage or 896 Thermocouple Channels Using Signal Conditioning and Expansion Options**

✔ **Up to 40 Built-In TTL-Level Digital I/O, Expandable Up to 256 Channels of Isolated I/O Using Low-Cost Isolation Modules**

✔ **Includes Support for Visual Basic, C/C++, ActiveX/COM, LabVIEW, MATLAB, and DASYLab**

✔ **Convenient 1U high 19" Rack-Mount Package Minimizes Rack Space in Test Systems**

✔ **Includes Out-of-the-Box DaqView Software to Facilitate Signal and Wiring Verification with No Programming Required**
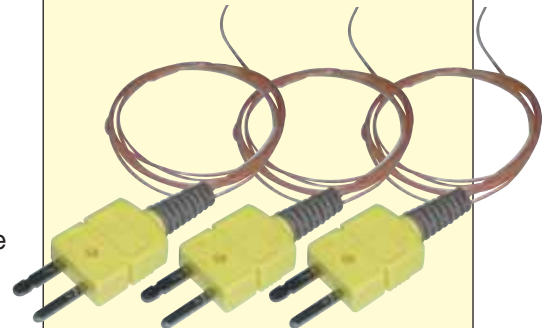
The OMB-DAQSCAN-2000 Series of Ethernet-based data acquisition system components provides analog, digital, and frequency I/O capability for Ethernet-based test systems.

All OMB-DAQSCAN-2000 models are packaged in a 1U high full-rack package and include a rack-mount kit that can attach to either the front or the rear of the enclosure. Multiple OMB-DAQSCAN models can be combined in the same system and synchronized using a simple sync connection between units. All I/O is accessed via female DB37 connectors located at the rear of the unit, making cabling easy from the OMB-DAQSCAN-2000 to the device under test.

Four models in the OMB-DAQSCAN-2000 Series are available, ranging from the OMB-DAQSCAN-2002, which offers digital/frequency I/O, to the full-featured OMB-DAQSCAN-2001, which includes 16 analog inputs, 4 analog outputs, 40 digital I/O, 4 frequency inputs, and 2 timer outputs.

5SRTC Series, $48, 5-pack basic unit. Visit omega.com for more details.

Ready made insulated thermocouples with miniature male connector and heavy duty flex strain relief.

The OMB-DAQSCAN-2000 Series includes comprehensive drivers for all popular Windows-based environments, including Visual Basic, C/C++, ActiveX/COM, LabVIEW, MATLAB, and DASYLab. Also included with the OMB-DAQSCAN-2000 Series is DaqView, an interactive spreadsheet-style application that is ideal for verifying signal connections during system design.

OMB-DAQSCAN-2000 Series Selection Chart					
Model Number	Analog Inputs	Digital I/O	Frequency/Pulse Inputs	Timer Outputs	Analog Outputs
OMB-DAQSCAN-2001	16 single-ended/8 differential	40	4	2	4
OMB-DAQSCAN-2002	0	40	4	2	0
OMB-DAQSCAN-2004	0	40	4	2	4
OMB-DAQSCAN-2005	16 single-ended/8 differential	40	4	2	0

The compact, 1U high, 19" rack packaging of the OMB-DAQSCAN-2000 make it a convenient component for rack-based systems. In addition to the built-in I/O provided by the OMB-DAQSCAN-2000 Series, a wide variety of signal conditioning and expansion options is available.

Below are some sample systems that can be derived from the OMB-DAQSCAN-2000, along with OMB-DBK options.

DaqView software real-time display
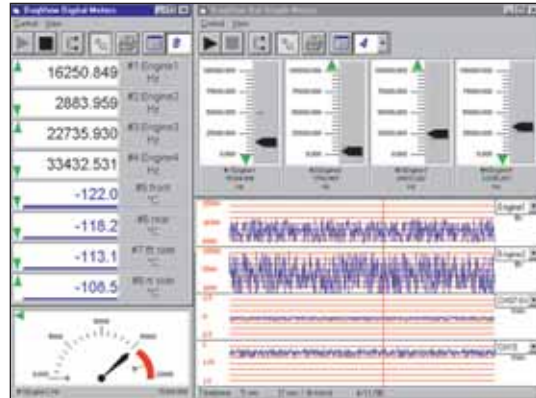
High Channel Count Thermocouple Measurements

When combined with the OMB-DBK90 thermocouple input module, the OMB-DAQSCAN-2000 Series can measure up to 896 channels of T/C input. In the example system to the right, any T/C type can be installed into any channel using standard mini T/C connectors. Each 56-channel OMB-DBK90 option consumes 2U of rack space and can be mounted on the front or rear of the rack chassis. Built-in cold junction compensation coupled with T/C conversion algorithms built into the software make temperature measurements easy. Thermocouples are measured at 1 ms/channel in a system based on the OMB-DBK90.

The 168 T/C channel system consists of one OMB-DAQSCAN-2005 plus three OMB-DK90 modules with rack-mount kits

High-Isolation Voltage and Thermocouple Measurements

The OMB-DAQSCAN can be combined with the OMB-DBK207/CJC options to create an isolated system capable of measuring up to 256 channels of voltage, thermocouple, RTD, and strain gage inputs. All input channels can be scanned up to 200 kHz and are isolated by 500 V from other channels and from system common. Any combination of input signals is possible by selecting the appropriate OM5 signal conditioning module for the OMB-DBK207/CJC.

OMB-DBK207/CJCs can be mounted at the front or rear of the rack. They attach to the OMB-DAQSCAN via a simple OMB-CA-37-10 cable.

The 24-channel isolated system includes an OMB-DAQSCAN-2005 plus two OMB-DBK207/CJC boards. The system is capable of scanning all channels and provides 500 V isolated for all inputs.

Isolated Digital I/O System

When the OMB-DAQSCAN-2002 is combined with the OMB-DBK208 options, up to 256 channels of isolated digital I/O are possible, capable of controlling AC or DC voltages up to 250 V or sensing the presence of AC or DC voltages.

All channels are isolated from one another and from the system by up to 500 V. Inputs can be scanned in 16-bit increments at speeds up to 200 Kreadings/s.

The OMB-DBK208 can be mounted at the front or rear of the rack.

The 64-channel isolated discrete I/O system consists of one OMB-DAQSCAN-2002 plus two OMB-DKB210 boards with rack-mount kits

High-Speed Voltage Measurement System

The OMB-DAQSCAN-2005 can be combined with OMB-DBK85 16-channel voltage input modules to build a 5 µs/channel voltage measurement system with up to 256 channels. All inputs can have a different software-programmable input range, from 156 mV FS to 10 V FS, programmable on a per-channel basis. The 16 BNC inputs on the OMB-DBK85 can be accessed from either the front or the rear of a rack system.

The 80-channel high-speed scanning system consists of an OMB-DAQSCAN-2005 plus five OMB-DBK85 16-channel voltage scanning modules. All channels can be measured at the maximum rate of 5 µs/channel.

OMB-DAQSCAN-2005, $1999, front and back, shown smaller than actual size
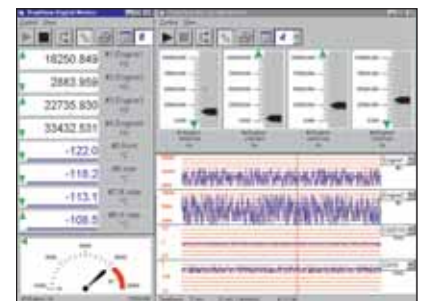
DaqView software real-time display

Multifunction I/O System

All of the foregoing capabilities can be combined into a single system using one OMB-DAQSCAN-2001 as the system centerpiece.

The system provides 56 non-isolated T/C inputs, 16 isolated voltage inputs, 4 analog outputs, 4 frequency inputs and 32 isolated discrete high-volage outputs.

Shown from top to bottom with 1 OMB-DBK208 screw-terminal board, 1 OMB-DBK207, 1 OMB-210, 1 OMG-DBK90 and 1 OMB-DBK85

Voltage Range*	Accuracy** One Year, 0 to 35°C (% reading + % range) Absolute
0 to 10 V	0.015 + 0.005
0 to 5 V	0.015 + 0.005
0 to 2.5 V	0.015 + 0.005
0 to 1.25 V	0.015 + 0.008
0 to 0.625 V	0.015 + 0.008
0 to 0.3125 V	0.015 + 0.008
-10 to 10 V	0.015 + 0.005
-5 to 5 V	0.015 + 0.005
-2.5 to 2.5 V	0.015 + 0.005
-1.25 to 1.25 V	0.015 + 0.005
-0.625 to 0.625 V	0.015 + 0.008
-0.3125 to 0.3125 V	0.015 + 0.008
-0.156 to 0.156 V	0.02 + 0.008

Specifications assume differential input single-channel scan, 2000 kHz scan rate, unfiltered.
*** Accuracy specification is exclusive of noise.*

Specifications

GENERAL
Supply Voltage Range: 90 to 250 Vac
Power Required: 15 W (assuming no OMB-DBK options)
Operating Temperature: 0 to 50°C (32 to 122°F)
Storage Temperature: -40 to 80°C (-40 to 176°F)
Relative Humidity: 0 to 95%, non-condensing
Signal I/O Connector: DB37 male for P1, P2 and P3
Dimensions: 425 W x 220 D x 45 mm H (16.75 x 8.5 x 1.75")
Weight: 2.3 kg (5 lb)
Power Available for External DBK Options: 10 W

A/D SPECIFICATIONS
Type: Successive approximation
Resolution: 16 bit
Conversion Time: 5 µs
Maximum Sample Rate: 200 kHz
Non-Linearity (Integral): ±1 LSB
Non-Linearity (Differential): No missing codes

ANALOG INPUTS
Channels
OMB-DAQSCAN-2001, OMB-DAQSCAN-2005:
16 single-ended or 8 differential, programmable on a per-channel basis as single-ended or differential and unipolar or bipolar
Expansion: Up to 896 T/C channels when used with OMB-DBK90 expansion option (1 ms/channel), or up to 256 channels when used with all other expansion options (5 µs/channel)
Settling Time: 5 µsec to 1 LSB for full scale step
Temperature Coefficient: ±(10 ppm +0.3 LSB)/°C outside the range of 0 to 35°C
Input Impedance: 10 MΩ (single-ended), 20 MΩ (differential)

Bias Current: <1 nA (0 to 35°C)
Common Mode Rejection: 86 dB, DC to 60 Hz for gains ≤8; >100 dB for gains ≥16
Maximum Input Voltage (Without Damage): ±11 V relative to analog common
Over-Voltage Protection: ±35 V
Ranges: Software- or sequencer-selectable on a per-channel basis
Crosstalk: -100 dB DC to 60 Hz; 86 dB @ 10 kHz

INPUT SEQUENCER
Analog, digital and frequency inputs can be scanned synchronously, based on either an internal programmable timer or an external clock source
Scan Clock Sources: 2
   1. Internal, programmable from 5 µs to 5.96 hours in 1 µs steps
   2. External, TTL level input up to 200 kHz max; programmable parameters per scan: channel (random order), gain, unipolar/bipolar
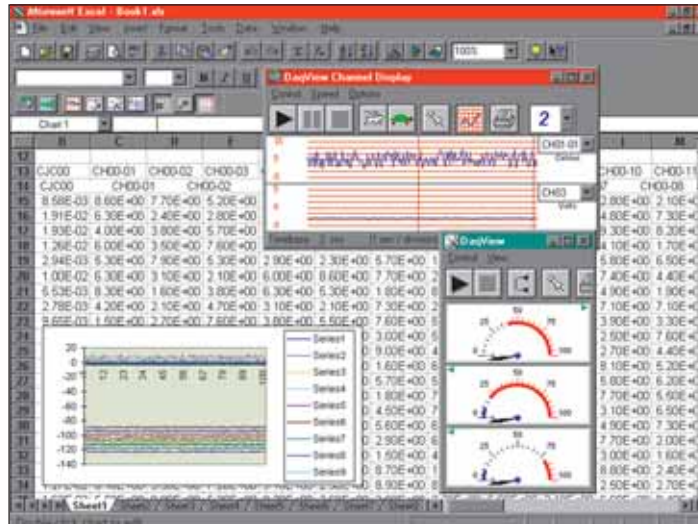**Depth:** 16,384 locations
On-Board Channel-to-Channel Scan Rate: 5 or 10 µs per channel, programmable
Expansion Channel Scan Rate: 5 µs, 10 µs or 1000 µsec per channel, programmable
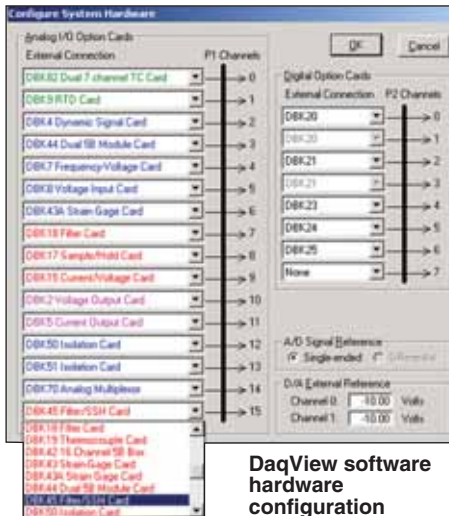
DaqView software hardware configuration

OMB-DAQVIEW-XLPLUS, $299, is a DaqView add-on for seamless execution with Microsoft Excel's tool palette

External Acquisition Scan Clock Input

Maximum Rate: 200 kHz
Clock Signal Range: 0 to 5 V
Minimum Pulse Width: 50 ns high, 50 ns low
External Sync Port: Available on rear panel, allows multiple DaqScan units to be scan-synchronous (post trigger)

TRIGGERING
Trigger Sources: 6, individually selectable for starting and stopping an acquisition. Stop acquisition can occur on a different channel than start acquisition; stop acquisition can be triggered via modes 2, 4, 5 or 6, described below.
1. Single-Channel Analog Hardware Trigger
Any analog input channel can be software-programmed as the analog trigger channel, including any of the 256 analog expansion channels.
2. Single-Channel Analog Software Trigger
Any analog input channel, including any of the 256 analog expansion channels, can be selected as the software trigger channel. If the trigger channel involves a calculation, such as temperature, then the driver automatically compensates for the delay required to obtain the reading, resulting in a maximum latency of one scan period.
3. Single-Channel Digital Trigger
A separate digital input is provided for digital-triggering.

4. Digital Pattern Triggering
8- or 16-bit pattern triggering on any of the digital input ports. Programmable for trigger on equal, above, below or within/outside of a window. Individual bits can be masked for "don't care" condition.
5. Counter/Totalizer Triggering
Counter/totalizer inputs can trigger an acquisition. User can select to trigger on a frequency or on total counts that are equal, above, below or within/outside of a window.
6. Software Triggering
Trigger can be initiated under program control.

ANALOG OUTPUT
(MODELS OMB-DAQSCAN-2001 AND OMB-DAQSCAN-2004)
The 4 analog output channels are updated synchronously relative to scanned inputs and clocked from either an internal on-board clock or an external clock source. Analog outputs can also be updated asynchronously, independent of any other scanning in the system.
Channels: 4
Resolution: 16 bits
Data Buffer: 256 Ksample
Output Voltage Range: ±10 V
Output Current: ±10 mA
Offset Error: ±0.0045 V max
Digital Feedthrough: 50 mV when updated
Gain Error: ±0.01%
Update Rate: 100 kHz max, 1.5 Hz min (no minimum with external clock)
Settling Time: 10 µsec max to 1 LSB for full-scale step
Clock Sources: 4, programmable
1. On-board D/A clock, independent of scanning input clock
2. On-board scanning input clock

3. External D/A input clock, independent of external scanning input clock
4. External scanning input clock

DIGITAL I/O
Channels: 40, expandable to 272 with external digital OMB-DBK options
Input Scanning Modes: 2
1. Asynchronous, under program control at any time relative to input scanning
2. Synchronous with input scanning

Ports: 3x 8 bit (82C55 emulation) and 1x 16 bit; each port is programmable as input or output
Input Protection: ±8 KV ESD clamp diodes parallel
I/O Levels: TTL
Sampling Rate: 200 kHz max
Update Rate: Asynchronous under program control

FREQUENCY/PULSE COUNTERS
Counter inputs can be scanned synchronously along with analog and digital scanned inputs, based either on internal programmable timer or an external clock source. Counters can be configured to clear when read or to totalize and clear under program control.
Channels: 4x 16 bit; cascadable as 2x 32 bit
Frequency Measurement Rate: 10 MHz max
Input Signal Range: -15 to 15 V
Trigger Level: TTL
Minimum Pulse Width: 50 ns high, 50 ns low
**Channels:** 4x 16 bit; cascadable as 2x 32 bit
Frequency Measurement Rate: 10 MHz max
Input Signal Range: -15 to 15 V

NEW

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model Number	Price	Description
OMB-DAQSCAN-2001	$2499	Ethernet system with 16 single-ended/8 differential 250 kHz 16-bit analog inputs, 40 digital I/O, 4 analog outputs, 4 frequency/pulse counters and 2 frequency/pulse generators
OMB-DAQSCAN-2002	999	Ethernet system with 40 digital I/O, 4 frequency/pulse counters and 2 frequency/pulse generators
OMB-DAQSCAN-2004	1499	Ethernet system with 40 digital I/O, 4 frequency/pulse counters, 2 frequency/pulse generators and 4 analog outputs
OMB-DAQSCAN-2005	1999	Ethernet system with 16 single-ended/8 differential 250 kHz 16-bit analog inputs, 40 digital I/O, 4 frequency/pulse counters and 2 frequency/pulse generators
OMB-DAQVIEW-XLPLUS	299	DaqView add-on for seamless execution with Microsoft Excel's tool palette
OMB-DAQVIEW-PRO	599	DaqView add-on includes all of the features of OMB-DAQVIEW-XLPLUS, plus frequency domain analysis
CS-3791	150	Reference Book: Standard Handbook of Electronics Engineering

All OMB-DAQSCAN-2000 models include 10/100 BaseT Ethernet interface; Daqview Software; drivers for LabVIEW, DASYLab, C++, Visual Basic and ActiveX/COM; DB37 connectors; external sync, complete operator's manual on CD ROM and rack-mount kit.
Ordering Example: OMB-DAQSCAN-2005, Ethernet system and OMEGACARE ℠ 1 year extended warranty (adds 1 year to standard 1-year warranty) and **OMB-DBK206** screw-terminal board and **OMB-CA-37-1** cable, $1999 + 150 + 249 + 51 = **$2449**.

Terminal Panels Expansion/Signal Conditioning Options

Model Number	Price	Description
OMB-DBK84*	$1099	14-channel thermocouple/mV input module, requires OMB-CA-37-x cable
OMB-DBK90*	1699	56-channel thermocouple input module, requires OMB-CA-37-x cable
OMB-DBK85*	899	16-channel differential input module with BNC connectors, requires OMB-CA-37-x cable
OMB-DBK207/CJC*	399	16-channel isolated Analog Signal Conditioning, requires OM5 signal conditioning modules and OMB-CA-137-x cable
OMB-DBK208	219	16-channel isolated discrete I/O signal conditioning, requires isolated I/O modules and OMB-CA-137-x cable
OMB-DBK206	249	Screw terminal board, requires OMB-CA-37-x cable

* Used with OMB-DAQSCAN's analog inputs, i.e., OMB-DAQSCAN-2001 and OMB-DAQSCAN-2005.

Cables and Rack-Mount Kits

Model Number	Price	Description
OMB-CA-37-1	$51	37-pin cable, 18 cm (7") long, connects OMB-DAQSCAN to expansion panels
OMB-CA-37-10	145	37-pin cable, 178 cm (70") long, connects OMB-DAQSCAN to expansion panels

Trigger Level: TTL
Minimum Pulse Width:
50 ns high, 50 ns low
FREQUENCY/PULSE GENERATORS
Channels: 2x 16 bit
Output Waveform: Square wave
Output Rate: 1 MHz base rate divided by 1 to 65,535 (programmable)
High-Level Output Voltage:
2 V min @ -3.75 mA
3 V min @ -2.5 mA
Low-Level Output Voltage:
0.4 V max @ 2.5 mA

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Other Compatible Signal Conditioner/Expansion Modules and Cards

Model Number	Price	Description
OMB-DBK1	$419	16-connector BNC interface module
OMB-DBK2	649	4-channel D/A voltage-output card
OMB-DBK4	999	2-channel dynamic signal-input card
OMB-DBK5	519	4-channel current output card
OMB-DBK7	749	4-channel frequency-input card
OMB-DBK8	749	8-channel high-voltage input card
OMB-DBK9	549	8-channel RTD measurement card
OMB-DBK15	649	Universal current/voltage input card
OMB-DBK16	649	2-channel strain-gage card
OMB-DBK18	629	4-channel low-pass filter card
OMB-DBK20	209	48-line digital I/O card with screw-terminal connectors
OMB-DBK21	209	48-line digital I/O card with screw-terminal connectors
OMB-DBK24	549	24-line optically isolated digital-output module
OMB-DBK43A	2799	8-channel strain-gage module
OMB-DBK50	2079	8-channel isolated voltage-input module
OMB-DBK80	549	16-channel differential input voltage card

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29

56-Channel Thermocouple Input Module for OMB-DAQSCAN-2000 Series
OMB-DBK90

OMB-DBK90, $1699, shown smaller than actual size

Starts at
$1699

**5SRTC Series, $48, 5-pack basic unit.
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Ready made insulated thermocouples with miniature male connector and heavy duty flex strain relief.

✔ **56 Thermocouple Channels in One Compact and Rugged Enclosure**
✔ **Supports Any Thermocouple Type on Any Channel**
✔ **Very Low Cost per Channel and Very High Channel Density**
✔ **Attach Up to 16 Units Together for Up to 896 Channels per A/D Mainframe**
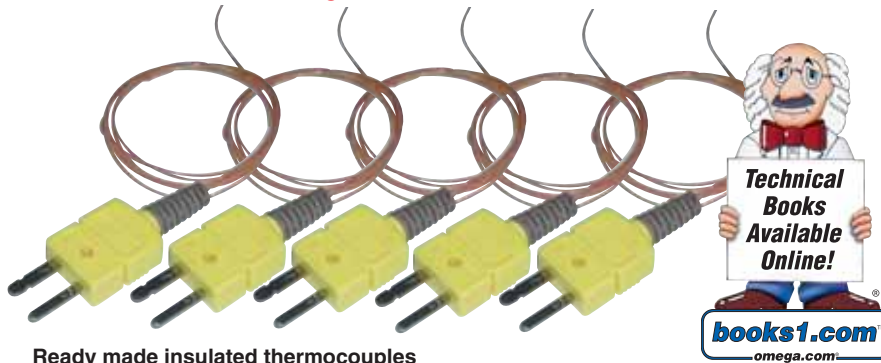
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The OMB-DBK90 module provides 56 channels of high-accuracy thermocouple (TC) inputs. The OMB-DBK90 is ideally suited for high-channel-count TC applications, with a maximum TC capacity of 896 channels per system. For larger channel-count applications, multiple mainframes can be combined for a maximum channel capacity of 3584 channels.

Thermocouples attach to the OMB-DBK90 via mini-TC input connectors, and any TC type can be installed into any channel. Each row of 14 TC inputs has a separate cold-junction sensor to ensure accurate readings.

OMB-DBK90 modules are housed in a rugged all-metal package that can be connected to an OMB-DAQSCAN-2000 and rack-mounted with an optional rack-mount kit.

When multiple OMB-DBK90s are mounted together, a male and female P1 connector on either side of the unit provide all system connections, so that only a single cable back to the A/D mainframe is required. For distributed applications, such as throughout the cabin of a vehicle, OMB-DBK90 modules can be mounted as separate units. Up to 20' of cable can be used to connect OMB-DBK90 modules.

Each OMB-DBK90 has a built-in auto-zero channel and a CJC channel. The OMB-DBK90 can measure one TC channel in 3 ms, 14 TC channels in 16 ms, and all 56 TC channels in 61 ms. An OMB-DBK90 based system of 896 channels can be measured in 976 ms. This speed is slower than other OMB-DBK modules to ensure that the TC measurements are accurate, low noise, and stable. Typical measurement accuracies are better than 0.7°C, with channel-to-channel variation typically less than 0.5°C.

If OMB-DBK90 measurements are mixed with measurements from other OMB-DBK options, the other measurements can be made at their standard 5 or 10 µs/channel rate.

To Order, Call **1-800-327-4333**SM
1-800-DAS-IEEE or Shop Online at **omega.com**SM

NEW

OMB-DBK90, $1699, and OMB-RM-DBK90, $29, rack-mount kit, shown smaller than actual size

Specifications

System Compatibility: Attaches to an OMB-DAQSCAN-2000

System Connector: Male and female DB37 for unit-to-unit mating and mating with P1 on the acquisition mainframe

TC Connector: Mini-TC connectors

ACOM Connector Type: Pomona model 5936-0

Inputs: 56 differential TC inputs, open TC detection per channel

TC Types: J, K, T, E, S, R, B, N28, N14

Speed: 1 channel in 3 ms, 14 channels in 16 ms, 56 channels in 61 ms

Dimensions: 285 W x 88 D x 52 mm H (11 x 3.44 x 2.05")

Weight: 0.96 kg (2.12 lb)

Power Requirements: 40 mA max from ±15 V; 40 mA max from 5 V; 1400 mW total

Input Impedance: 4 MΩ (differential) in parallel with 400 pF

Input Bandwidth: 1 kHz

Minimum Resolution: 0.1°C for all TC types

TC Accuracy: Valid for one year at 25°C ambient (see table)

Operating Temperature: -30 to 70°C (-22 to 158°F)

Relative Humidity: 0 to 95% non-condensing

Temperature Coefficient of Accuracy for Type T TC: ±0.05°C for every °C away from 25°C

Channel-to-Channel Crosstalk: -90 dB typ. (0 to 100 Hz)

DC CMRR: -80 dB typ.

AC CMRR: -80 dB typ. (0 to 60 Hz)

Maximum Common Mode Voltage: ±10 V

Overvoltage Protection: ±40 V

OMB-DAQSCAN-2005, $1999, front and back, shown smaller than actual size

TC Accuracy at Measurement Temperature in °C (±°C)

Type	Min	Max	-100	0	100	300	500	700	900	1100	1400
J	-200	760	0.8	0.7	0.7	0.8	0.9	0.9	-	-	-
K	-200	1200	0.9	0.8	0.8	0.9	1.1	1.1	1.2	1.3	-
T	-200	400	0.9	0.8	0.8	0.8	-	-	-	-	-
E	-270	650	0.8	0.7	0.7	0.7	0.8	-	-	-	-
S	-50	1768	-	3.1	2.4	2.0	2.0	1.9	2.0	2.1	2.1
R	-50	1768	-	3.1	2.1	2.0	1.9	1.9	1.7	1.9	2.0
B	50	1780	-	-	-	4.9	3.2	2.8	2.4	2.3	2.0
N28	-270	400	1.2	0.9	0.9	0.9	-	-	-	-	-
N14	0	1300	-	0.9	0.9	0.9	1.1	1.1	1.2	1.5	-

Accuracy conditions: exclusive of thermocouple errors, exclusive of noise, VCM = 0, 25°C ambient temperature, stabilized for 1 hour.

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OMB-DBK90	**$1699**	56-channel thermocouple input module
OMB-CA-37-1	51	37-pin cable, 0.18 m (7") long, connects OMB-DBK90 to OMB-DAQSCAN
OMB-CA-37-10	145	37-pin cable, 1.78 m (70") long, connects OMB-DBK90 to OMB-DAQSCAN
OMB-DAQSCAN-2005	1999	Ethernet system with 16 single-ended/8 differential 250 kHz 16-bit analog inputs, 40 digital I/O, 4 analog outputs, 4 frequency/pulse counters and 2 frequency/pulse generators
OMB-RM-DBK90	29	Rack-mount kit for OMB-DBK90
CS-3790	20	Reference Book: McGraw-Hill Dictionary of Electrical and Computer Engineering

Each OMB-DBK90 module is supplied with complete operator's manual on CD ROM.
Ordering Example: OMB-DBK90 *56-channel thermocouple input module and OMEGACARE* SM *1 year extended warranty for* **OMB-DBK90** *(adds 1 year to standard 1-year warranty) and* **OMB-CA-37-10** *cable, $1699 + 150 + 145 =* **$1994.**

OS-88000-K-1200
$199

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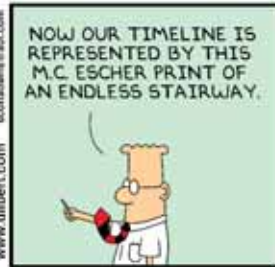

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  Analog Current 0 to 20 mA

The DIN rail iSeries is a family of microprocessor-based instruments in 3 sizes

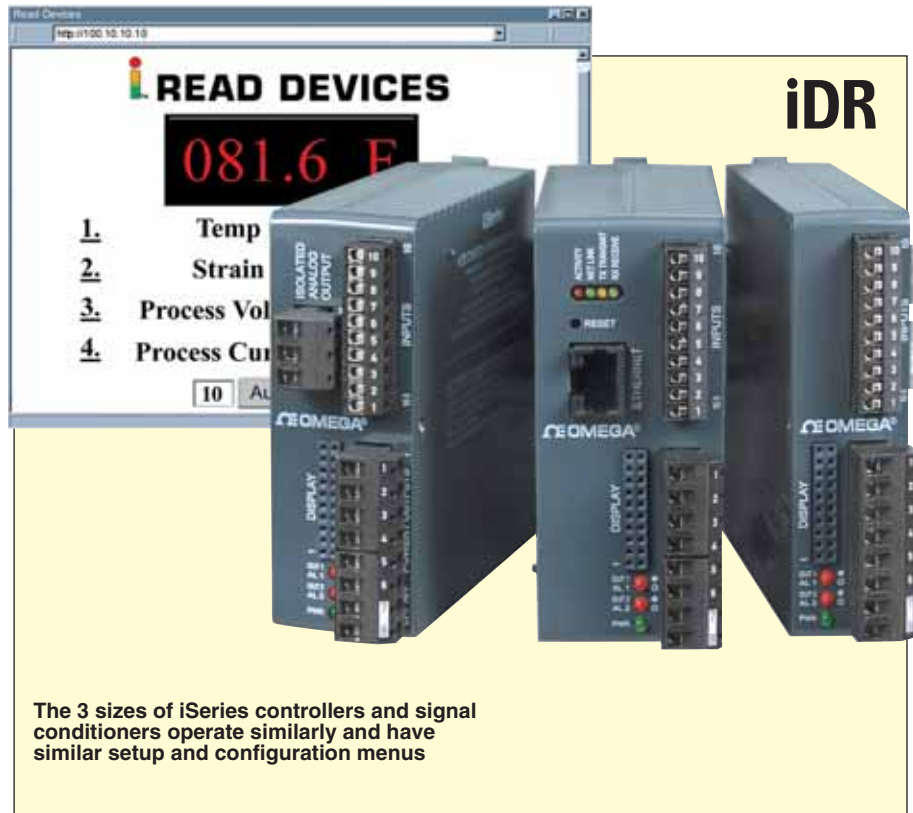iDRP optional remote programmer display, $150, shown smaller than actual size

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- ✔ **User-Friendly, Simple to Configure**
- ✔ **Embedded Ethernet**
- ✔ **OPC Server**
- ✔ **Universal Inputs: Thermocouple, RTD, Process Voltage/Current, Strain**
- ✔ **2 Control or Alarm Outputs (Optional) DC Pulse, Solid State Relays (SSRs), Mechanical Relays, Analog Voltage, and Current**
- ✔ **Built-In Excitation**
- ✔ **Plug Connectors**
- ✔ **Free Software**

iDR

READ DEVICES

081.6 F

1. Temp
2. Strain
3. Process Vol
4. Process Cur

[10] AL

The 3 sizes of iSeries controllers and signal conditioners operate similarly and have similar setup and configuration menus

NEW Controllers and Signal Conditioners with Embedded Internet

OMEGA introduces a new family of extremely accurate instruments for DIN rail mounting. The compact iDR Series signal conditioners and PID controllers are available with OMEGA's award-winning "embedded Internet" technology. With the Ethernet option, the instruments connect directly to a LAN and can even serve Web pages over the Internet. The devices are easily configured with a handheld programmer iDRP, or from a computer with an Ethernet, RS-232, or RS-485 connection. The universal signal input covers 10 thermocouples; 100 and 1000 Ω RTDs with 2, 3, or 4 wire connections; process (DC) voltage, current, and strain gage inputs. Optional outputs include Form C SPDT relays, SSRs, DC pulse, programmable isolated or non-isolated analog voltage, and current.

The innovative OMEGA® DIN rail iSeries devices feature state of the art technology, uncompromising accuracy, and quality backed by an extended 5-year warranty.

The DIN rail iSeries family includes extremely accurate signal conditioners and single loop PID controllers that are simple to configure and use, while providing tremendous versatility and a wealth of powerful features.

Embedded Internet and Serial Communications
Featuring optional "embedded Internet" (specify **"-EI"** option), the iSeries connects directly to an Ethernet network and transmits data in standard TCP/IP packets, or even serves Web pages over a LAN or the Internet. The iSeries is also available with serial communications. With the "**-C24**" option, the user can select from the optional remote programmer menu between RS-232, RS-422 and RS-485, with straightforward ASCII commands or MODBUS.

iSeries Family
The OMEGA® DIN rail iSeries is a family of microprocessor-based instruments offered in 3 sizes. The instruments have a similar setup and configuration menu and method of operation, which is a tremendous time saver for integration of a large system.

Quality and Technology
Designed and manufactured in the USA, the innovative OMEGA® DIN rail iSeries features an extended 5-year warranty at no extra charge.

The iSeries packs a wealth of power and features into the smallest of packages, employing COB (chip-on-board) and SMT (surface mount technology) assembly techniques and automation.

Every iSeries instrument is thoroughly calibrated and tested at several stages during production.

The iSeries offers the highest accuracy for industrial instrumentation: 0.03% of reading. The analog-to-digital conversion uses a proprietary 20-bit ASIC (application-specific integrated circuit), patented algorithms, and smart filtering.

Universal Inputs
The iSeries offers the broadest selection of signal inputs available on one industrial instrument. The choices are easily selected from the remote programmer menu using 4 front panel pushbuttons, or by serial or Ethernet communications.

10 Thermocouple Types
The iSeries handles 10 thermocouple types: K, J, T, E, R, S, B, C, N, and J DIN. The patented thermocouple linearization algorithms employed in the iSeries produce the highest standard of accuracy.

Most Accurate RTD Measurements
The iSeries works with the widest selection of RTDs and produces the most accurate RTD measurements. It handles both Pt 0.00385 and 0.00392 curves; and 100 Ω, 500 Ω, and 1000 Ω. A choice of 2-, 3-, and 4-wire RTD connections ensures the highest degree of accuracy.

Process Voltage and Current
The iSeries measures process voltage: 0 to 100 mVdc, 0 to 1 Vdc, 0 to 10 Vdc ranges; and process current: 0 to 20 mA.

Strain Gage
The strain/process model (**iSDR**) instruments measure inputs from load cells, pressure transducers, and almost any strain gage sensor, as well as process voltage and current ranges.

Input ranges include 0 to 100 mVdc, -100 mVdc to 1 Vdc, and 0 to 10 Vdc in addition to 0 to 20 mA.

The iSDR supports 4- and 6-wire bridge configurations, and ratiometric and non-ratiometric measurements.

The iSDR features fast and easy "in process" calibration/scaling of the signal inputs to any engineering units.

The iSDR also features 10-point linearization, which allows the user to linearize the signal input from extremely non-linear transducers of all kinds.

Built-In Excitation Standard
The temperature/process models (**iDR** and **iDRA**) come standard with built-in excitation (24 Vdc @ 25 mA). Any excitation voltage between 5 and 24 Vdc is available by special order. This means the same instrument can handle thermocouple, standard RTDs, or 4 to 20 mA transmitters, using the meter's built-in excitation.

The strain/process model (**iSDR**) comes standard with built-in excitation of 10 Vdc @ 60 mA; 5 Vdc @ 40 mA excitation is user selectable.

Built-in excitation is not available with optional isolated RS-232/RS-485 serial communications or with the DC power option.

Control Functions
The iSeries can control simple manual operation to on-off and full autotune PID control. (Selectable preset tune, adaptive tune, PID, PI, PD control modes.)

The dual control outputs can be configured for a variety of independent control and alarm applications such as heat/heat, heat/cool, heat/alarm, cool/cool, cool/alarm, or alarm/alarm.

The ramp-to-setpoint feature allows the user to define the rate of rise to setpoint, minimizing thermal shock to the load during start-up. Maximum ramp time: 99.59 (HH.MM); soak: 00.00 to 99.59 (HH.MM); damping: 1 to 8 in unit steps.

For those who only need simplified menus and no PID control, there is a limit alarm (**-AL**) option available.

Control or Alarm Outputs
Users have a choice of two control or alarm outputs in almost any combination: solid state relays (SSR) rated at 0.5 A @120/240 Vac; Form "C" SPDT (single pole, double throw) relays rated at 3 amps @ 120/240 Vac; pulsed 10 Vdc output for use with an external SSR.

Analog Output
The optional analog output can be programmed within a range of 0 to 10 Vdc or 0 to 20 mA. It is selectable as either a control output or as a calibrated retransmission of the process value—a unique feature among controllers.

Optional Remote Programmer/ Color Display
The remote programmer/display can be programmed to change color at any setpoint or alarm point. For example, the instrument can be programmed to display the process value in GREEN during warm-up, switching to AMBER to signal the normal operating range, and to RED to signal an alarm condition.

The changes in color are easily seen from a distance, and machine operators can react quickly to changing conditions. The colors can be programmed to change back when the value drops back below the alarm point or to "latch" on until being reset by the operator.

The instrument can also be programmed to display only one unchanging color: green, amber, or red.

This is a useful way to let an operator identify, at a glance, process values in three separate locations, or to display three different measurements such as temperature, pressure, and flow.

Remote Display

change color

at any setpoint*

iSeries U.S. Patent #6,243,021

Totally Programmable Color Displays

RED
AMBER
GREEN

The optional remote programmer display can be programmed to change color at any setpoint or alarm point.

iDR Common Specifications

UNIVERSAL TEMPERATURE AND PROCESS INPUT MODEL (iDR)
Accuracy:
±0.5°C temp; 0.03% rdg process
Resolution: 1°/0.1°; 10 µV process
Temperature Stability:
1. RTD: 0.04°C/°C
2. TC @ 25°C (77°F): 0.05°C/°C
   Cold junction compensation
3. Process: 50 ppm/°C
NMRR: 60 dB
CMRR: 120 dB
A/D Conversion: Dual slope
Reading Rate: 3 samples per second
Digital Filter: Programmable
Input Types: Thermocouple, RTD, analog voltage, analog current
Thermocouple Lead Resistance:
100 Ω max
Thermocouple Type (ITS 90):
J, K, T, E, R, S, B, C, N, L
RTD Input (ITS 68):
100/500/1000 Ω Pt sensor; 2-, 3- or 4-wire; 0.00385 or 0.00392 curve
Voltage Input:
0 to 100 mV, 0 to 1 V, 0 to 10 Vdc
Input Impedance: 10 MΩ for 100 mV, 1 MΩ for 1 or 10 Vdc
Current Input: 0 to 20 mA (5 Ω load)
Configuration: Single-ended
Polarity: Unipolar
Step Response: 0.7 sec for 99.9%
Decimal Selection: None, 0.1 for temperature. None, 0.1, 0.01 or 0.001 for process
Setpoint Adjustment: -1999 to 9999 counts
Span Adjustment: 0.001 to 9999 counts
Offset Adjustment: -1999 to 9999
Excitation: 24 Vdc @ 25 mA (not available with "-DC", "-C24" or "-C4EI" opt.)

UNIVERSAL STRAIN AND PROCESS INPUT MODEL (iSDR)
Accuracy: 0.03% reading
Resolution: 10/1µV
Temperature Stability: 50 ppm/°C
NMRR: 60 dB
CMRR: 120 dB
A/D Conversion: Dual slope
Reading Rate: 3 samples per second
Digital Filter: Programmable
Input Types:
Analog voltage, analog current
Voltage Input: 0 to 100 mVdc, -100 mVdc to 1 Vdc, 0 to 10 Vdc
Input Impedance: 10 MΩ for 100 mV; 1 MΩ for 1 V or 10 Vdc
Current Input: 0 to 20 mA (5 Ω load)
Linearization Points:
Up to 10 linearization points
Configuration: Single-ended
Polarity: Unipolar
Step Response: 0.7 sec for 99.9%
Decimal Selection:
None, 0.1, 0.01 or 0.001
Setpoint Adjustment:
-1999 to 9999 counts
Span Adjustment: 0.001 to 9999 counts
Offset Adjustment: -1999 to 9999

Excitation: 5 Vdc @ 40 mA; 10 Vdc @ 60 mA (not available with "-DC", "-C24" or "-C4EI" opt.)

CONTROL
Action: Reverse (heat) or direct (cool)
Modes: Time and amplitude proportional control modes; selectable manual or auto PID, proportional, proportional with integral, proportional with derivative with anti-reset windup and on/off
Rate: 0 to 399.9 seconds
Reset: 0 to 3999 seconds
Cycle Time: 1 to 199 seconds; set to 0 for on/off operation
Gain: 0.5 to 100% of span; setpoints 1 or 2
Damping: 0000 to 0008
Soak: 00.00 to 99.59 (HH:MM), or off
Ramp to Setpoint:
00.00 to 99.59 (HH:MM), or off
AutoTune:
Operator initiated from front panel

CONTROL OUTPUT 1 AND 2
Relay: 250 Vac or 30 Vdc @ 3 A (resistive load); configurable for on/off, PID and ramp and soak
Output 1: SPDT type, can be configured as alarm 1 output
Output 2: SPDT type, can be configured as alarm 2 output
SSR: 20 to 265 Vac @ 0.05 to 0.5 A (resistive load); continuous
DC Pulse: Non-isolated; 10 Vdc @ 20 mA
Analog Output (Output 1 Only):
Non-isolated, proportional 0 to 10 Vdc or 0 to 20 mA; 500 Ω max
Analog Output (Optional Output 3):
Isolated, retransmission, 0 to 10 Vdc or 0 to 20 mA, 500 Ω max. Accuracy is 1% of FS, for scaling gain from 0.03 to 100 mV per count. Isolation is 1000 Vdc. Linearity is 0.2%.

NETWORK AND COMMUNICATIONS OPTIONS (-C24, -C4EI, -EI)
Ethernet: Standards compliance IEEE 802.3 10Base-T
Supported Protocols:
TCP/IP, ARP, HTTPGET

RS-232/RS-422/RS-485/MODBUS:
Selectable from menu; both ASCII and MODBUS protocol selectable from menu. Programmable 300 to 19.2K baud; complete programmable setup capability; program to transmit current display, alarm status, min/max, actual measured input value and status
RS-485: Addressable from 0 to 199
Connection: Screw terminals

ALARM 1 AND 2 (PROGRAMMABLE)
Type: Same as output 1 and 2
Operation: High/low, above/below, band, latch/unlatch, normally open/normally closed and process/deviation
Analog Output (Programmable):
Non-isolated, retransmission 0 to 10 Vdc or 0 to 20 mA, 500 Ω max (output 1 only). Accuracy is ±1% of FS when the following conditions are satisfied:
1. Input is not scaled below 1% of input FS
2. Analog output is not scaled below 3% of output FS

GENERAL
Line Voltage/Power: 90 to 240 Vac ±10%, 50 to 400 Hz*, 110 to 375 Vdc, equivalent voltage.
No CE compliance above 60 Hz.
Low Voltage/Power Option: 24 Vac**, 12 to 36 Vdc. External power source must meet safety agency approvals.
**Units can be powered safely with 24 Vac power, but no certification for CE/UL is claimed.

INSULATION
Power to Input/Output:
2300 Vac per 1-minute test
1500 Vac per 1-minute test
(For low voltage power option)
Power to Relays/SSR Outputs:
2300 Vac per 1-minute test
Relays/SSR to Relay/SSR Outputs:
2300 Vac per 1-minute test
RS-232/485 to Input/Outputs:
500 Vac per 1-minute test
Environmental Conditions:
0 to 55°C (32-131°F), (0 to 50°C for UL)
90% RH non-condensing
Approvals:
UL, C-UL, CE per EN61010-1:2001

	Input Type	Range	Accuracy
J	Iron-Constantan	-210 to 760°C / -346 to 1400°F	0.4°C / 0.7°F
K	CHROMEGA®-ALOMEGA®	-270 to -160°C / -160 to 1372°C -454 to -256°F / -256 to 2502°F	1.0°C / 0.4°C 1.8°F / 0.7°F
T	Copper-Constantan	-270 to -190°C / -190 to 400°C -454 to -310°F / -310 to 752°F	1.0°C / 0.4°C 1.8°F / 0.7°F
E	CHROMEGA®-Constantan	-270 to -220°C / -220 to 1000°C -454 to -364°F / -364 to 1832°F	1.0°C / 0.4°C 1.8°F / 0.7°F
R	Pt / 13% Rh-Pt	-50 to 40°C / 40 to 1768°C -58 to 104°F / 104 to 3214°F	1.0°C / 0.5°C 1.8°F / 0.9°F
S	Pt / 10% Rh-Pt	-50 to 100°C / 100 to 1768°C -58 to 212°F / 212 to 3214°F	1.0°C / 0.5°C 1.8°F / 0.9°F
B	30% Rh-Pt / 6% Rh-Pt	100 to 640°C / 640 to 1820°C 212 to 1184°F / 1184 to 3308°F	1.0°C / 0.5°C 1.8°F / 0.9°F
C	5% Re-W / 26% Re-W	0 to 2320°C / 32 to 4208°F	0.4°C / 0.7°F
N	Nicrosil-Nisil	-250 to -100°C / -100 to 1300°C -418 to -148°F / -148 to 2372°F	1.0°C / 0.4°C 1.8°F / 0.7°F
L	J DIN	-200 to 900°C / -328 to 1652°F	0.4°C / 0.7°F
RTD	Pt, 0.00385, 100, 500, 1000 Ω	-200 to 900°C / -328 to 1652°F	0.4°C / 0.7°F
RTD	Pt, 0.00392, 100, 500, 1000 Ω	-200 to 850°C / -328 to 1562°F	0.4°C / 0.7°F

NEW

Temp/Process and Isolated Analog Output

MECHANICAL
Dimensions: mm (in)

-EI / -C4EI   ISOL. ANALOGUE   STANDARD

← 39.8 (1.55) → ← 32.1 (1.27) → ← 24.9 (0.98) →

FRONT VIEWS

92.5 (3.64)

SERIAL 1
DEFAULT 2
DHCP 3
TERMINAL 4

ON

125.2 (4.93)
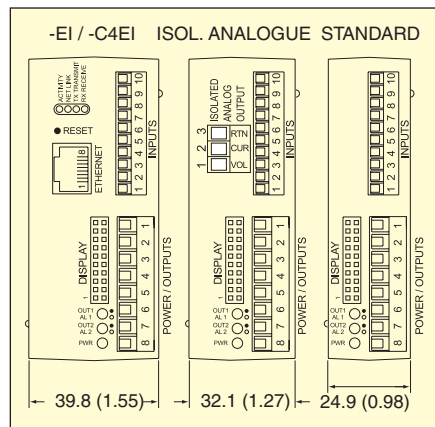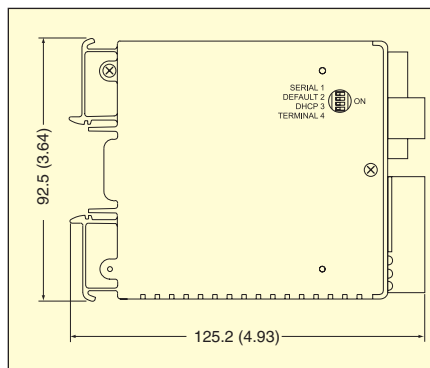
SIDE VIEW
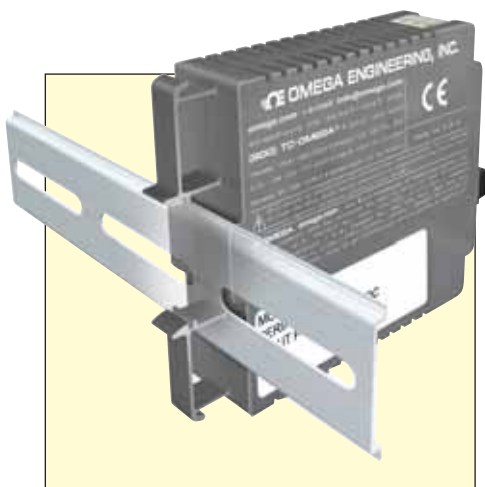
iDR mounts to 35 mm DIN rails

To Order *(*Specify Model No.)*

Model Number			Description	Price
iDR			Temperature/process (no outputs)	$240
CONTROL OUTPUTS #1 and 2 Direct (Cool) or Reverse (Heat) Acting				
iDR	(*)	(*)	Temperature/process with 2 control outputs	310
	2	2	Two solid state relays (SSRs): 0.5 A @ 120/240 Vac continuous	N/C
	2	3	SSR and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	2	4	SSR and pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	3	3	2 relays: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	4	2	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and SSR	
	4	3	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	4	4	Two pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	5	2	Analog output selectable as either control or retransmission of process value; 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and SSR	
	5	3	Analog output 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and relay	
	5	4	Analog output 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and pulse 10 Vdc	
		-AL	Limit alarm version (alarm menu; no PID control)[2]	

Model Number			Isolated Analog Output (Medium Case)	Price
iDRA			Temp/process (no outputs) w/ isolated analog output [3]	$295
CONTROL OUTPUTS #1 and 2 Direct (Cool) or Reverse (Heat) Acting				
iDRA	(*)	(*)	Temp/process w/isolated analog output and 2 outputs [3]	365
	2	2	Two solid state relays (SSRs): 0.5 A @ 120/240 Vac continuous	N/C
	2	3	SSR and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	2	4	SSR and pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	3	3	2 Relays: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	4	2	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and SSR	
	4	3	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	4	4	Two pulsed 10 Vdc @ 20 mA (for use with external SSR)	
LIMIT ALARM (*Select One Combination)				
iDRA	(0)	(*)	-AL	Temp/process with 1 output for isolated analog output, 1 output for limit alarm (alarm menu; no PID control)[3,4]	$365
		2	Solid state relay (SSRs): 0.5 A @ 120/240 Vac continuous	N/C
		3	Relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
		4	Pulsed 10 Vdc @ 20 mA (for use with external SSR)	

NETWORK OPTIONS (One Option Max)		Price
-EI	Ethernet with embedded Internet [3] (wide case)	$55
-C24	Isolated RS-232 and RS-485, 300 to 19.2K baud and MODBUS[1]	60
-C4EI	Ethernet with embedded Web server isolated RS-485/422 hub for up to 31 devices and MODBUS[1,3] (wide case)	115
POWER SUPPLY (Select One)		
*	Standard power input: 90 to 240 Vac/Vdc, 50 to 400 Hz (no entry required)	N/C
-DC	12 to 36 Vdc (20 to 36 Vdc for iDRA), 24 Vac[1]	N/C
FACTORY SETUP (Requires Network Option)		
-FS	Factory setup and configuration	N/C

ACCESSORIES		Price
iDRP	Remote programmer/display	$95

SOFTWARE (Requires Network Option)		Price
OPC-SERVER LICENSE	OPC server/driver software license	$295

*1 **"-DC", "-C24"** or **"-C4EI"** not available with excitation.
*2 Analog output (option 5) is not available with -AL units.
*3 Ethernet options are not available for the iDRA controller.
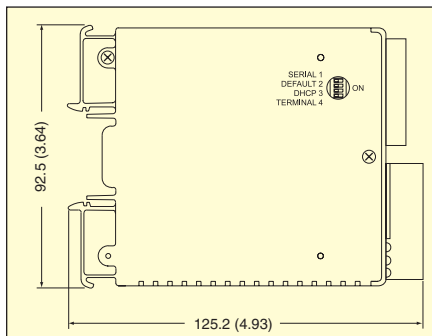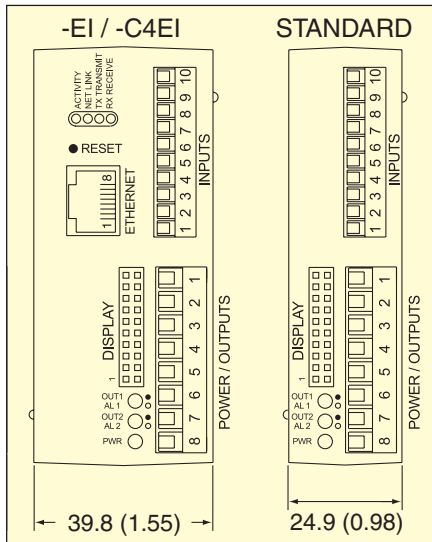*4 **"iDRA0*-AL"**: 1 analog retransmission and 1 alarm.
Ordering Examples: iDR33-EI, controller with 2 Form C relays and Ethernet, **$365.**
iDRA03-C24, limit alarm meter with isolated analog out, Form C relay and serial comm, **$425.**

NEW®

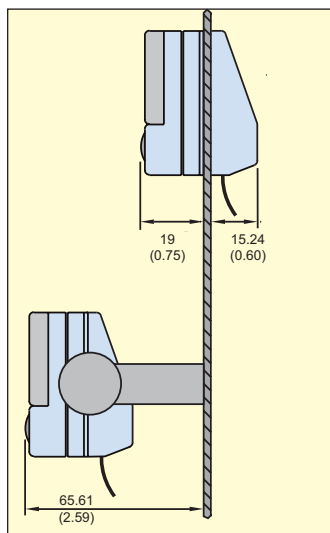## iSDR Strain/Process

MECHANICAL
Dimensions: mm (in)

-EI / -C4EI   STANDARD

39.8 (1.55)   24.9 (0.98)

92.5 (3.64)

125.2 (4.93)

PANEL MOUNT

To Order (*Specify Model No.*)

Model Number			Description	Price
iSDR			Strain/process (no outputs)	$300
CONTROL OUTPUTS #1 and 2 Direct (Cool) or Reverse (Heat) Acting				
iSDR	(*)	(*)	Strain/process with 2 control outputs	370
	2	2	Two solid state relays (SSR's): 0.5 A @ 120/240 Vac continuous	
	2	3	SSR and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	2	4	SSR and pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	3	3	2 Relays: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	4	2	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and SSR	
	4	3	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	N/C
	4	4	Two pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	5	2	Analog output selectable as either control or retransmission of process value; 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and SSR	
	5	3	Analog output 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and relay	
	5	4	Analog output 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and pulse 10 Vdc	
		-AL	Limit alarm version (alarm menu; no PID control)[1]	
NETWORK OPTIONS (One Option Max)				
-EI			Ethernet with embedded Internet (wide case)	$55
-C24			Isolated RS-232 and RS-485, 300 to 19.2K baud and MODBUS [2]	60
-C4EI			Ethernet with embedded Web Server and isolated RS-485/422 hub for up to 31 devices and MODBUS (wide case) [2]	115
POWER SUPPLY (Select One)				
*			Standard power input: 90 to 240 Vac/dc, 50 to 400 Hz (no entry required)	N/C
-DC			12 to 36 Vdc, 24 Vac[2]	N/C
FACTORY SETUP (Requires Network Option)				
-FS			Factory setup and configuration	N/C

ACCESORIES		Price
iDRP	Remote programmer/display	$95

SOFTWARE (Requires Network Option)		Price
OPC-SERVER LICENSE	OPC server/driver software license	$295

*1 Analog output (option 5) is not available with **"-AL"** units.
*2 **"-DC"**, **"-C24"**, or **"-C4EI"** not available with excitation.
Ordering Examples: iSDR33-EI,** with 2 Form C relays and Ethernet, **$425.

iDRP Remote Programmer/Display

MECHANICAL
Dimensions: mm (in)

R 1.5 (0.06) 4 PLCS

45.00 +0.61/-0.00
(1.772 +0.024/-0.000)

92.00 +0.81/-0.00
(3.622 +0.032/-0.000)

PANEL THICKNESS
6.4 (0.25) MAX
0.8 (0.03) MIN

PANEL CUT-OUT

119.4 (4.70)
15.2 (0.60)
88.9 (3.50)
31.8 (1.25)
63.5 (2.50)
ø3.7 (0.15) 2 PLCS
DISPLAY TEMPLATE

BAIL MOUNT

19 (0.75)   15.24 (0.60)

65.61 (2.59)

SIDE VIEWS

**Mounts on a panel or surface
with included bail bracket**

96.0 (3.78)
48.0 (1.89)

Model No.	Description	Price
iDRP	Remote Programmer/ Display, 4-digit, 9-segment LED 21 mm (0.83")	$95

CATBERT: EVIL DIRECTOR OF HUMAN RESOURCES

I CALL IT A STEALTH LAYOFF.

WE MOVE ALL OF THE WORTHLESS EMPLOYEES TO THE SAME PROJECT. WHEN IT'S DONE, WE TELL THEM THAT THEIR JOBS NO LONGER EXIST.

I DON'T LIKE THE LOOKS OF THIS.

08/27/05 DILBERT © United Feature Syndicate, Inc.

I DECIDED TO START A DISCOUNT RELIGION.

THE TITHING WOULD ONLY BE 5% AND I'D LET PEOPLE SIN AS MUCH AS THEY WANTED.

THE ONLY PROBLEM IS THAT I DON'T WANT TO SPEND TIME WITH ANYONE WHO WOULD JOIN THAT SORT OF RELIGION.

08/29/05 DILBERT © United Feature Syndicate, Inc.

PER COMPANY POLICY, I GOT YOU THE LEAST EXPENSIVE FLIGHT AVAILABLE.

YOUR TRIP WILL HAVE 17 CONNECTING FLIGHTS AND YOU'RE REQUIRED TO SPEND AT LEAST ONE NIGHT "IN AN ELBONIAN PRISON, DRESSED AS A BALLERINA."

HOW MUCH WOULD I HAVE TO DESECRATE A NATIONAL MONUMENT TO GET ONE NIGHT IN JAIL?

08/30/05 DILBERT © United Feature Syndicate, Inc.

I HAVE COMPLETED ALL OF MY PROJECTS AND I AM READY FOR A NEW CHALLENGE.

YOU CAN HELP TINA WRITE THE DEPARTMENT NEWSLETTER.

BUT THE NEWSLETTER JOB IS ONLY GIVEN TO THE MOST WORTHLESS EMPLOYEE.

AND HER ASSISTANT.

09/02/05 DILBERT © United Feature Syndicate, Inc.

I'M THE EDITOR OF THE DEPARTMENT NEWSLETTER. THAT MAKES YOU MY CUB REPORTER.

CUB REPORTER??? I HAVE AN ENGINEERING DEGREE FROM THE INDIA INSTITUTE OF TECHNOLOGY — THE MOST CHALLENGING UNIVERSITY ON THE PLANET.

THAT'LL COME IN HANDY DURING THE COPYING PHASE. WE GET SOME FIERCE PAPER JAMS.

09/03/05 DILBERT © United Feature Syndicate, Inc.

I MADE A FORTUNE BY BEING AN INCOMPETENT CEO. EVERYONE CALLED ME CRAZY WHEN I PUT MY ENTIRE PERSONAL WEALTH INTO PIGS AND GARBAGE DUMPS.

YOU INVESTED ALL OF YOUR MONEY IN PIGS AND DUMPS?

INVESTED? NOW THAT WOULD HAVE BEEN A GOOD IDEA TOO.

09/05/05 DILBERT © United Feature Syndicate, Inc.

Thermocouple Virtual Chart Recorder
iTCX

Starts at
$295

MADE IN USA CE FCC-B

☑ **Virtual Chart Recorder**
☑ **Two Thermocouple Channels**
☑ **Web Server**
☑ **10 Popular T/C Types**
☑ **Accurate**
☑ **Email Alarms**
☑ **Data Logging**
☑ **No Special Software Required**

iTCX-W, $295, and 5SRTC miniature connectors with strain relief (sold seperately; visit omega.com), shown smaller than actual size

View Temperature from One or Two Thermocouples with a Web Browser

The OMEGA® iTCX transmitter lets the user monitor temperature from two independent thermocouple channels over an Ethernet network or the Internet with no special software except a Web browser.

This virtual chart recorder serves active Web pages to display real-time readings and temperature charts. It logs data in standard formats for use in a spreadsheet or data acquisition program such as Excel or Visual Basic.

The virtual chart viewed on the Web page is a JAVA™ Applet that plots a chart over the LAN or Internet in real time. With the OMEGA iTCX, there is no need to invest time and money learning a proprietary software program to log or chart the data.

The OMEGA® iTCX is available in an industrial DIN rail package (iTCX-D) that is powered by 10 to 32 Vdc, and in a benchtop or wall-mount package (iTCX-W) with a universal (100 to 240 Vac) power adaptor included.

Adjustable Charts

Chart scales are fully adjustable on the fly. For example, the chart can display one minute, one hour, one day, one week, one month, or one year. Temperature can be charted across the full span or within any narrow range such as 20 to 30°C.

You can chart temperature from one thermocouple, two thermocouples, and/or the differential between the two.

The iTCX transmitters can take thermocouple Types J, K, T, E, R, S, B, C, N, and L, measuring temperatures up to 1820°C (3308°F). They can display and chart absolute measurements in two locations and a differential measurement between the two locations.

Award-Winning Technology

The OMEGA® iTCX is simple to install and use, and features OMEGA®'s award-winning iServer technology that requires no special software except a Web browser.
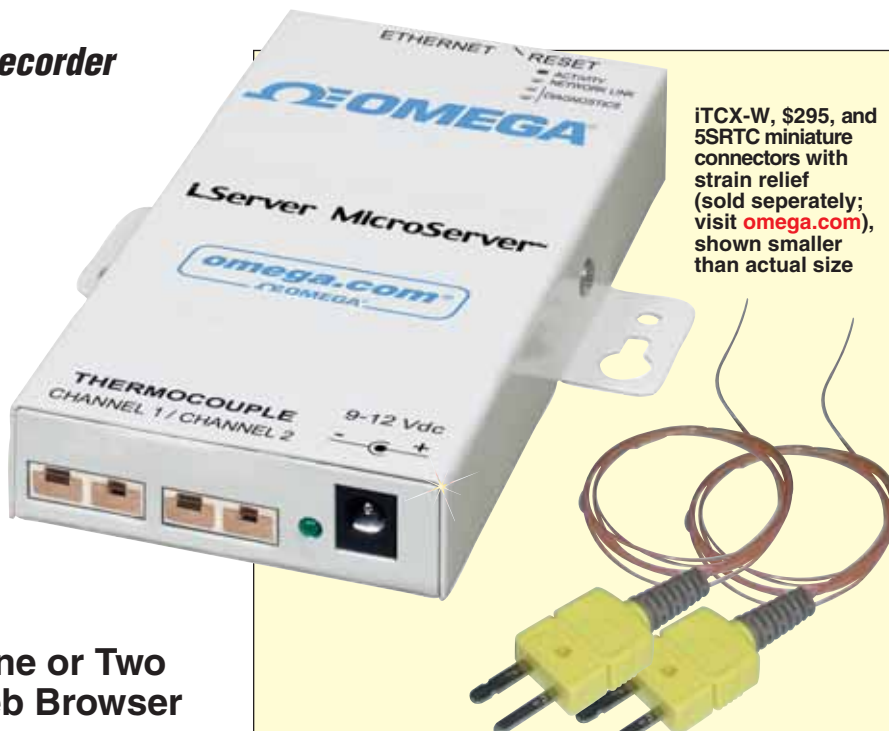
The iTCX connects to an Ethernet network with a standard RJ45 connector and sends data in standard TCP/IP packets. It is easily configured with a simple menu and can be password protected.

From within an Ethernet LAN or over the Internet, the user simply types an IP address or an easy to remember name in any Web browser, and the iTCX serves a Web page with the current readings.

Email Alarms

The iTCX can send an email or text messages over the Internet, reporting the status or an alarm condition to any individual or distribution list.

OMEGA iServer products are designed and manufactured in the U.S.A.

Adjustable Chart Web Page

iServer MicroServer™

iTCX

Specifications
TEMPERATURE
Range: 0 to 70°C (32°F to 158°F)
Accuracy: ±0.5°C (±1°F)
Response Time: 5 seconds
Repeatability: ±0.1°C
Resolution: 0.01°C, 18 bit

iServer Specifications
Interfaces:
Ethernet: 10Base-T (RJ45)
Supported Protocols:
TCP/IP, UDP/IP, ARP, ICMP, DHCP, DNS, HTTP and Telnet
Indicators (LEDs)
Network activity, network link, transmit and receive/diagnostics

Memory
512 KB flash, 16 KB SRAM
Management:
Device configuration and monitoring through embedded Web server
Software:
Firmware upgradable. Includes an Excel program for automatic data logging within definable time intervals, compatible with all Windows operating systems.

Engineering		
Temperature 1	**59.74**	°F
Temperature 2	**31.61**	°F
Differential	**28.13**	°F

Main Menu
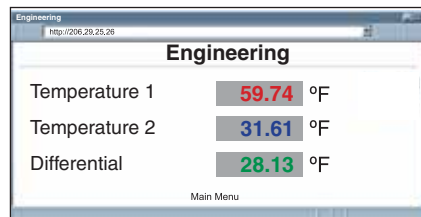
Embedded Web Server:
Serves Web pages containing real-time data and live updated charts within definable time intervals
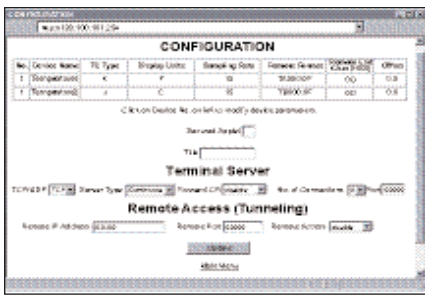### ENVIRONMENTAL
Operating Temperature:
0 to 70°C (32 to 158°F)
Storage Temperature:
-40 to 125°C (-40 to 257°F)

Power Input
iTCX-W: 9 to 12 Vdc
iTCX-D: 10 to 32 Vdc
Safety Qualified AC Power Adaptor—Nominal Output:
9 Vdc @ 0.5 A (included for iTCX-W)
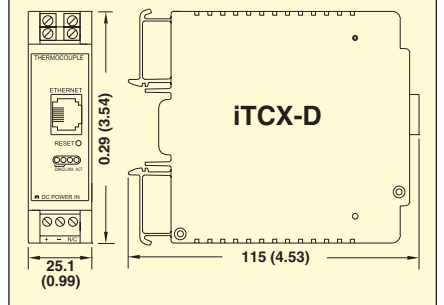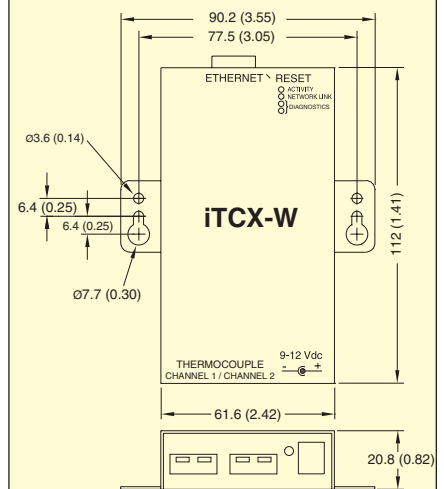**Input:** 100 to 240 Vac, 50/60 Hz.
Switching power supply
(sold separately for iTCX-D).
Consumption: 2.5 W max
Packaging Material: Metal case with flange mount for iTCX-W; polycarbonate case with DIN rail mount for iTCX-D

Mechanical Specifications
Dimensions: mm (in)

iTCX-W

iTCX-D

	Input Type	Range	Accuracy
J	Iron - Constantan	-210 to 760°C / -346 to 1400°F	0.4°C / 0.7°F
K	CHROMEGA®- ALOMEGA®	-270 to -160°C / -160 to 1372°C -454 to -256°F / -256 to 2502°F	1.0°C / 0.4°C 1.8°F / 0.7°F
T	Copper - Constantan	-270 to -190°C / -190 to 400°C -454 to -310°F / -310 to 752°F	1.0°C / 0.4°C 1.8°F / 0.7°F
E	CHROMEGA®- Constantan	-270 to -220°C / -220 to 1000°C -454 to -364°F / -364 to 1832°F	1.0°C / 0.4°C 1.8°F / 0.7°F
R	Pt / 13% Rh-Pt	-50 to 40°C / 40 to 1768°C -58 to 104°F / 104 to 3214°F	1.0°C / 0.5°C 1.8°F / 0.9°F
S	Pt / 10% Rh-Pt	-50 to 100°C / 100 to 1768°C -58 to 212°F / 212 to 3214°F	1.0°C / 0.5°C 1.8°F / 0.9°F
B	30% Rh-Pt / 6% Rh-Pt	100 to 640°C / 640 to 1820°C 212 to 1184°F / 1184 to 3308°F	1.0°C / 0.5°C 1.8°F / 0.9°F
C	5% Re-W / 26% Re-W	0 to 2320°C / 32 to 4208°F	0.4°C / 0.7°F
N	Nicrosil - Nisil	-250 to -100°C / -100 to 1300°C -418 to -148°F / -148 to 2372°F	1.0°C / 0.4°C 1.8°F / 0.7°F
L	J DIN	-200 to 900°C / -328 to 1652°F	0.4°C / 0.7°F

Model No.	Description	Price
iTCX-W	iServer MicroServer™ for dual thermocouple input, includes 2 Type K thermocouples with 1 m (36") of 36 AWG Teflon® insulated wire and a molded mini-connector with snap-on strain relief and universal (100 to 240 Vac) power adaptor	**$295**
iTCX-D	DIN rail iServer industrial MicroServer™ (not pictured) for dual thermocouple input	295

Accessories		Price
iDRN-PS-1000	DIN rail power supply (switching), 95 to 240 Vac input, 24 Vdc out @ 850 mA (power up to 7 units)	**$150**

NEW®

CNiTH-i16D33-2, $490

CNiTH-i8DV33-5, $490

Humidity + Temperature Controllers

i.Series®

Ω MONOGRAM®

Starts at
$390

SENSOR INCLUDED!

MADE IN USA · 5 YEAR WARRANTY · CE

All models shown smaller than actual size

CNiTH-i8DH33-2, $490

CNiTH-i3233-5, $490

- ✔ **Dual Loop Control**
- ✔ **Humidity + Temperature**
- ✔ **High Accuracy: ±0.5°C and ±2% RH**
- ✔ **4 Popular DIN Sizes**
- ✔ **Ethernet and Serial Communications (Optional)**
- ✔ **2 Control or Alarm Outputs (Optional)**
- ✔ **Choice of Relays, SSR, DC Pulse, Analog Voltage, and Current**
- ✔ **User-Friendly, Simple to Configure**
- ✔ **Full Autotune PID Control**
- ✔ **Programmable Ramp and Soak for Humidity and/or Temperature**
- ✔ **Includes Temp/RH Sensor**

The OMEGA® iTH Series instruments monitor and control both temperature and relative humidity.

All meters and controllers in the series are high-quality, highly accurate instruments featuring OMEGA's award-winning iSeries technology, uncompromising accuracy, and "made in the U.S.A." quality, backed by an extended 5-year warranty.

These instruments are simple to configure and use, while providing tremendous versatility and a wealth of powerful features. They are available either as monitors or controllers. The monitors are extremely accurate programmable digital panel meters displaying humidity, temperature, or dew point. The controllers also provide dual loop control for both humidity and temperature and are easily programmed

for any control or alarming requirement, from simple on-off to full autotune PID control.

The iTH family of meters and controllers is available in 4 true DIN sizes with NEMA 4 (IP66) splash-resistant bezels: the ultra compact 1/32 DIN (the world's smallest dual loop humidity and temperature controller); the popular midsize 1/16 DIN square bezel with dual display; the 1/8 DIN vertical; and the 1/8 DIN horizontal with the big, bright 21 mm (0.83") digits.

The OMEGA iTH Series LED displays can be programmed to change color between **GREEN**, **AMBER**, and **RED** at any setpoint or alarm point. Controller models offer a choice of two control or alarm outputs in almost any combination: solid state relays (SSR); Form "C" SPDT (single pole, double throw) relays; pulsed 10 Vdc output for use with an external SSR; or analog output selectable for control or retransmission of the process value.

The networking and communications options (highly recommended) include direct Ethernet LAN connectivity with an embedded Web server, and serial communications. The C24 serial communications option includes both RS-232 and RS-485. Protocols include MODBUS and a straightforward ASCII protocol. The C4EI option has both Ethernet and RS-485 ASCII/MODBUS in one device.

The iTH Series meters and controllers are designed for easy integration with popular industrial automation, data

acquisition, and control programs as well as Microsoft Visual Basic and Excel. OMEGA provides free configuration and data acquisition software and demos, which make it fast and easy to get up and running with many applications.

SPECIFICATIONS
CONTROL
Action: Reverse (heat) or direct (cool)
Modes: Time and amplitude proportional control modes; selectable manual or auto PID, proportional, proportional with integral, proportional with derivative with anti-reset windup and on/off
Rate: 0 to 399.9 seconds
Reset: 0 to 3999 seconds
Cycle Time: 1 to 199 seconds; set to 0 for on/off operation
Gain: 0.5 to 100% of span; setpoints 1 or 2
Damping: 0000 to 0008
Soak: 00.00 to 99.59 (HH:MM) or off
Ramp to Setpoint: 00.00 to 99.59 (HH:MM), or off
Autotune: Operator initiated from front panel for one input at a time only
CONTROL OUTPUT 1 and 2
Relay: 250 Vac or 30 Vdc @ 3 A (resistive load); configurable for on/off, PID, ramp and soak
Output 1: SPDT type, can be configured as Alarm 1 output
Output 2: SPDT type, can be configured as Alarm 2 output
SSR: 20 to 265 Vac @ 0.05 to 0.5 A (resistive load); continuous
DC Pulse: Non-isolated; 10 Vdc @ 20 mA
Analog Output (Output 1 Only): Non-isolated, proportional 0 to 10 Vdc or 0 to 20 mA; 500 Ω max
ALARM 1 and 2 (Programmable)
Type: Same as Output 1 and 2
Operation: High/low, above/below, band, latch/unlatch, normally open/normally closed and process/deviation; front panel configurations

NEW

iSeries

iTH

Analog Output (Programmable):
Non-isolated, retransmission 0 to 10 Vdc
or 0 to 20 mA, 500 Ω max (Output 1 only).
Accuracy is ±1% of FS when following conditions
are satisfied:
1. Input is not scaled below 1% of Input FS
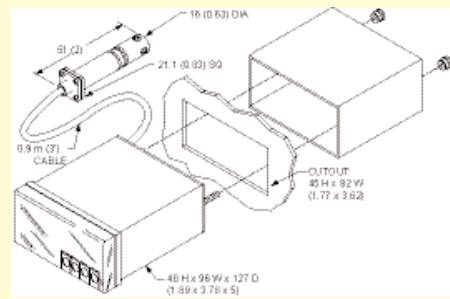2. Analog out is not scaled below 3%
   of output FS

INPUT
Accuracy:
Relative Humidity: ±2% for 10 to 90% RH
±3% for 0 to 10% RH and 90 to 100% RH
Temperature:
±0.5°C (±1°F) for 0 to 80°C (32 to 176°F)
±1°C (±2°F) for -40 to 0°C and 80 to 124°C
(-40 to 32°F and 176 to 254°F)
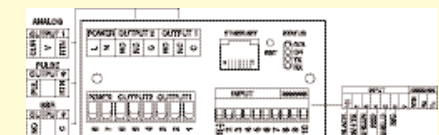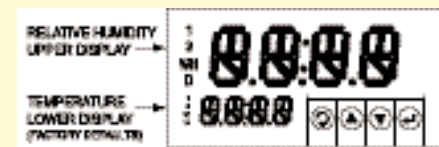**Resolution:** 0.1
A/D Conversion: 12-bit RH and 14-bit temp
Reading Rate: 2 samples per second max

Dimensions: mm (in)
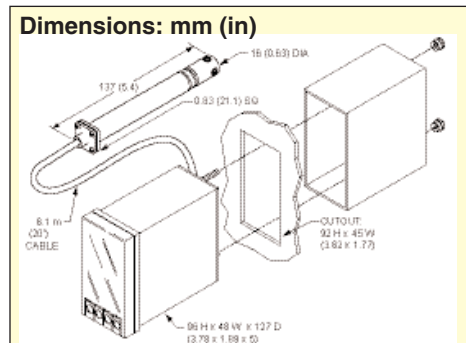
**CNiTH-i8DV shown
with -5 Probe**

**CNiTH-i8DH shown
with -2 Probe**

RELATIVE HUMIDITY
UPPER DISPLAY

TEMPERATURE
LOWER DISPLAY
(FACTORY DEFAULT)

**For more information, including other
mechanical drawings, please visit omega.com**

Digital Filter: Programmable
NETWORK & SERIAL COMMUNICATIONS
(Options -C24, -C4EI, -EI)
Ethernet: Standards compliance
IEEE 802.3 10Base-T
Supported Protocols: TCP/IP, ARP,
HTTPGET
RS-232/RS-422/RS-485: Selectable from
menu; both ASCII and MODBUS protocol
selectable from menu. Programmable 300
to 19.2K baud; complete programmable setup
capability; program to transmit current display,
alarm status, min/max, actual measured input
value and status
RS-485: Addressable from 0 to 199
Connection: Screw terminals

GENERAL
Display: 4-digit, 9-segment LED
• 10.2 mm (0.40"): i32, i16D, i8DV
• 21 mm (0.83"): i8
• 10.2 mm (0.40") and 21 mm (0.83"): i8DH
RED, **GREEN** and **AMBER** programmable colors
for process variable, setpoint and temp units
Operating Temperature: 0 to 50°C
(32 to 122°F), 90% RH non-condensing
Power: Refer to ordering guide below.
No CE compliance above 60 Hz.
Units can be powered safely with 24 Vac power, but no certification
for CE/UL is claimed.
**Please see omega.com for additional
specifications.**

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.		Description	Price
DPiTH- (****)		Monitor version, no control outputs	$390
CNiTH- (****)	(* *)	Controller version, select 2 control outputs	490
i8DH		Temperature and RH input, ⅛ DIN dual display horizontal	
i8DV		Temperature and RH input, ⅛ DIN dual display vertical	
i16D		Temperature and RH input, 1⁄16 DIN dual display	
i32		Temperature and RH input, 1⁄32 DIN single display*²	
		Control Outputs	
	2 2	Two solid state relays (SSRs): 0.5 A @ 120/240 Vac continuous	
	2 3	SSR and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	2 4	SSR and pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	3 3	2 relays: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	4 2	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and SSR	
	4 3	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and relay	
	4 4	Two pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	5 2	Analog output selectable as either control or retransmission of process value; 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max & SSR	
	5 3	Analog output 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max & relay	
	5 4	Analog out 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max & pulse 10 V	
		-AL limit alarm version (simplified menu; no PID control)*¹	N/C
RH/Temperature		**Probe (Must Select One)**	**Price**
-2		51 mm (2") probe for iTH with 1 m (3') cable	N/C
-5		127 mm (5") probe for iTH with 6 m (20') cable	N/C
Power Supply			**Price**
*		Standard power input: 90 to 240 Vac ±10%, 50 to 400 Hz, 110 to 375 Vdc, equivalent voltage (no entry required)	N/C
-DC		Low voltage power option: 12 to 36 Vdc; 24 Vac ±10%	$25
Network Options			**Price**
-EI		Ethernet with embedded Web server*²	$55
-C24		Isolated RS-232 and RS-485/422, 300 to 19.2K baud	60
-C4EI		Ethernet with embedded Web server and isolated RS-485/422 hub for up to 31 devices*²	115
Factory Setup			**Price**
-FS		Factory setup and configuration (requires network option)	N/C

Accessories

Software		Price
OPC-SERVER LICENSE	OPC server/driver software license (requires network option)	$295
ITHP-2	51 mm (2") replacement probe for iTH with 1 m (3') cable	115
ITHP-5	127 mm (5") replacement probe for iTH with 6 m (20') cable	125

*1 Analog output (option 5) is not available with -AL units.
*2 -C4EI or -EI option is not available on the 1⁄32 DIN. Refer to the iServer section for other
Ethernet devices that can connect to a CNiTH-i32xx-x-C24.

Ordering Examples: CNiTH-i8DH43-5-C4EI, horizontal ⅛ DIN dual display with pulse and
relay outputs, 5" probe and Ethernet with embedded Web server $490 + 115 = **$605.**
DPiTH-i16D-2-EI, 1⁄16 DIN dual display with 2" probe and Ethernet with embedded
Web server $390 + 55 = **$445.**

Fine Diameter Base Metal Thermocouple Wire

SPIR Series Starts at $**10**

RH32B Series Starts at $**350**

Pocket Size Temperature/ Humidity Handheld Data Logger

POCKET PAL®

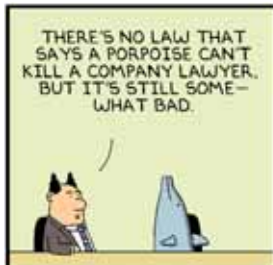**HH314** $**295**

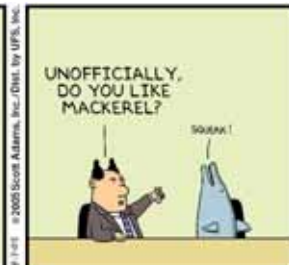**OMEGAETTE® Temperature/Humidity Handheld Meter with Data Logging**

Please search omega.com for more details on these featured products!

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09/07/05 DILBERT © United Feature Syndicate, Inc.
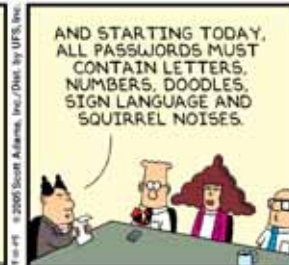

09/08/05 DILBERT © United Feature Syndicate, Inc.
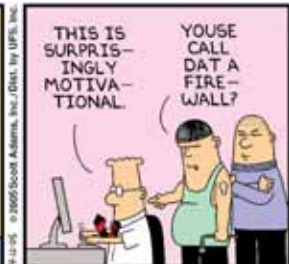

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09/10/05 DILBERT © United Feature Syndicate, Inc.

09/12/05 DILBERT © United Feature Syndicate, Inc.

i.Server MicroServer™

Virtual Chart Recorder
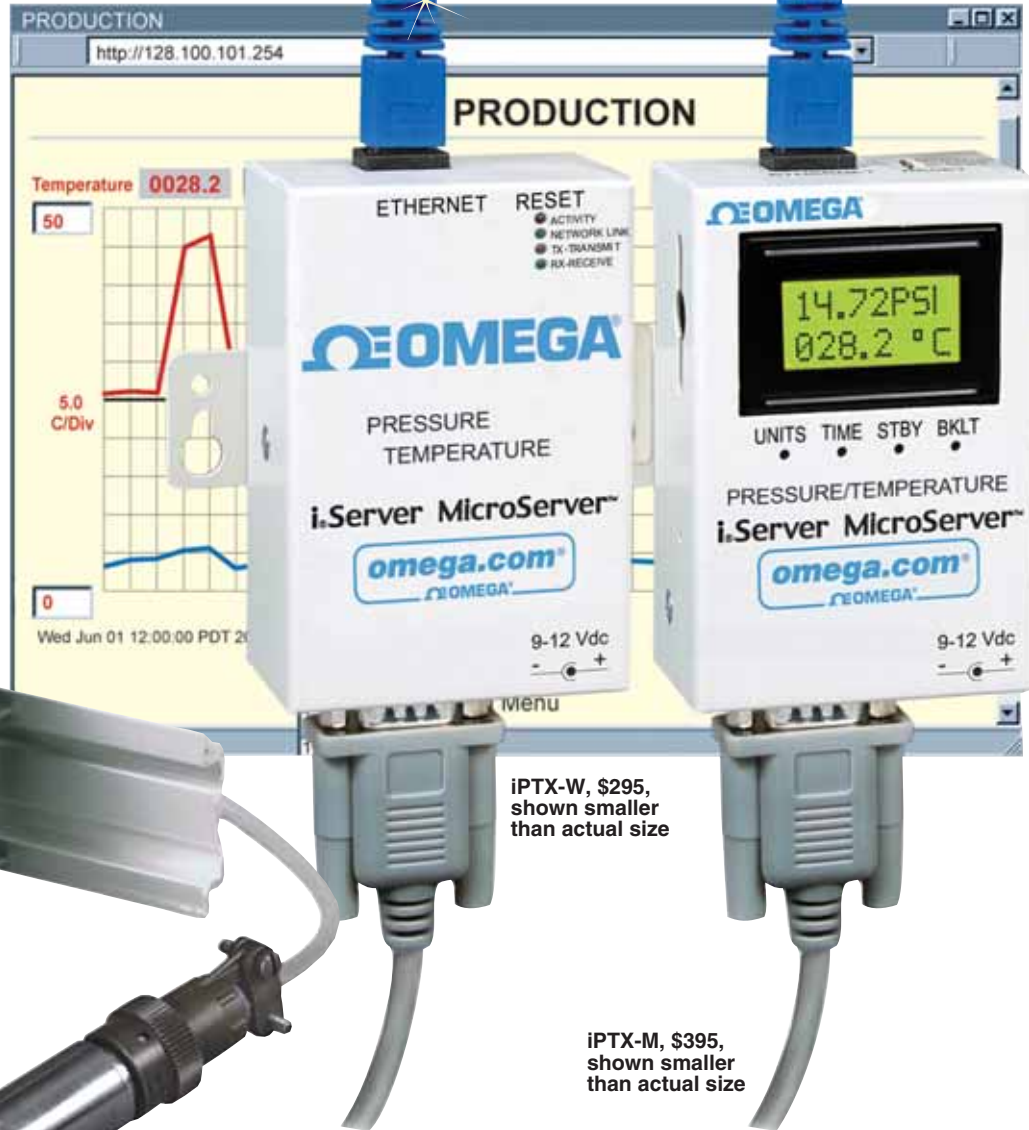## *Pressure + Temperature*

**iPTX-D
Starts at**

$295

C E **FCC-B** MADE IN USA

✔ **Virtual Chart Recorder**
✔ **Web Server**
✔ **Accurate**
✔ **Email Alarms**
✔ **Data Logging**
✔ **No Special Software Required**

i.PTX

PRODUCTION

http://128.100.101.254

PRODUCTION

Temperature 0028.2

50

5.0
C/Div

0

Wed Jun 01 12:00:00 PDT 20

Menu

ETHERNET RESET
● ACTIVITY
● NETWORK LINK
● TX-TRANSMIT
● RX-RECEIVE

Ω OMEGA

PRESSURE
TEMPERATURE

i.Server MicroServer™

omega.com®
ΩOMEGA®

9-12 Vdc

Ω OMEGA

14.72PSI
028.2 °C

UNITS TIME STBY BKLT
● ● ● ●

PRESSURE/TEMPERATURE

i.Server MicroServer™

omega.com®
ΩOMEGA®

9-12 Vdc

**iPTX-W, $295,
shown smaller
than actual size**

**iPTX-M, $395,
shown smaller
than actual size**

**iPTX-D iServer MicroServer™
with pressure transducer
(included), $295, shown
smaller than actual size**

*All iPTX models
include a 304 SS,
⅛-27 NPT pressure
transducer with twist
lock connector!*

## View Air (Inert Gas) Pressure and Temperature with a Web Browser

The OMEGA® iPTX transmitter lets the user monitor and record air (inert gas) pressure (0 to 200 psi) and temperature over an Ethernet network or the Internet with no special software except a Web browser. The OMEGA iPTX serves active Web pages to display real-time readings, display charts of air pressure and temperature, or log data in standard formats for use in a spreadsheet or data acquisition program such as Excel or Visual Basic.

The virtual chart viewed on the Web page is a JAVA™ Applet that records a chart over the LAN or Internet in real time. With the OMEGA® iPTX, there is no need to invest time and money learning a proprietary software program to log or chart the data.

Adjustable Charts

Chart scales are fully adjustable on the fly. For example, the chart can display one minute, one hour, one day, one week, one month, or one year. Temperature can be charted across the full span (0 to 70°C) or within any narrow range (such as 20 to 30°C). Air (inert gas) pressure can be displayed in kilopascals (kPa), pounds per square inch (psi), or kilograms per square centimeter (kg/cm^2).
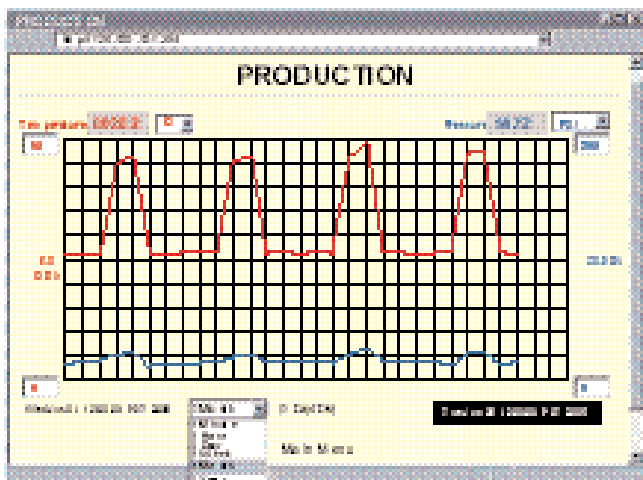
Adjustable Chart Web Page

Display and Chart Measurements

The iPTX transmitters come complete with an air pressure/temperature probe for measurement of a single location.
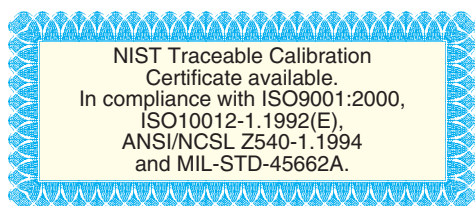
Award-Winning Technology

The OMEGA iPTX is simple to install and use, and features OMEGA's award-winning iServer technology that requires no special software except a Web browser. The iPTX connects to an Ethernet network with a standard RJ45 connector and sends data in standard TCP/IP packets. It is easily configured with a simple menu using a Web browser and can be password protected.

From within an Ethernet LAN or over the Internet, the user simply types the IP address or an easy to remember name in any Web browser, and the iPTX serves a Web page with the current readings.

Typical Applications

The OMEGA iPTX is great for monitoring air (inert gas), pressure, and temperature in HVAC systems, pharmaceutical and food processing and storage, hospitals, laboratories, semiconductor labs, electronic assembly, warehousing, manufacturing, greenhouses, farm animal shelters, and many more.

NIST Traceable Calibration
Certificate available.
In compliance with ISO9001:2000,
ISO10012-1.1992(E),
ANSI/NCSL Z540-1.1994
and MIL-STD-45662A.

NEW iPTX-M with Flash Memory and LCD Display

The OMEGA iPTX-M with LCD display adds several valuable features to the backlit local display of temperature and air pressure.

The "memory" model comes complete with a removable 2 MB flash memory card that can store one full year of readings taken at one-minute intervals (or two months of readings taken at 10-second intervals).

Up to 4 years of temperature and pressure readings can be stored on the 8 MB card.

With data being recorded in the built-in non-volatile flash memory, a failure on the Ethernet network will not interrupt the data record.

Alarm Relays

The OMEGA iPTX-M features two 1.5 A relays. With the easy Web-based setup page, the two relays can be programmed for any combination of temperature or pressure, and high or low setpoints. The relays can also be programmed to remain latched and require a manual reset if a limit is exceeded.

Email Alarms

In addition to the mechanical alarm relays, all OMEGA iPTX models on a LAN connected to the Internet can trigger an alarm that can be sent by email to a user or a distribution list anywhere in the world, including an Internet-enabled pager or cell phone.
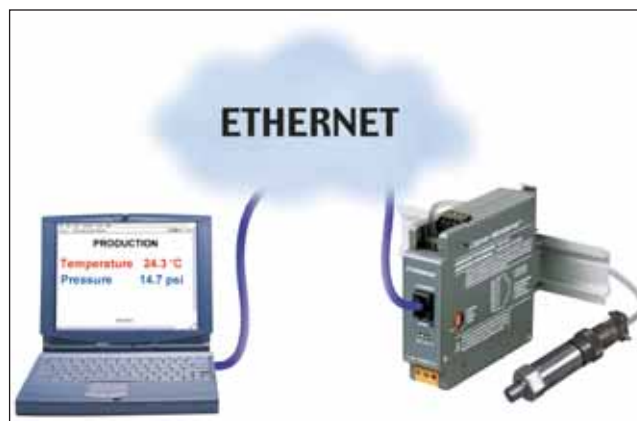
View Air Pressure and Temperature over an Ethernet or the Internet

Battery Backup

The iPTX-M comes with a universal AC adaptor. A standard 9 V alkaline battery (also included) allows the device to log data for up to 10 days without external AC power.

In locations without power or network accessibility, the iPTX-M continues logging data to its flash memory. The stored data can later be downloaded over the Ethernet.

OMEGA iServer products are designed and manufactured in the U.S.A.

Sensor Specifications
AIR (INERT GAS) PRESSURE (P)

Accuracy/Range: 0 to 200 psi ±2.4 (0 to 14 bar ±.0.2)

Resolution: 0.006 psi (0.4 mbar)

⚠️ **Maximum safe pressure:** 250 psi absolute (17 bar abs.)

TEMPERATURE (T)

Accuracy*: ±2°C (±3.6°F)

Range: 0 to 70°C (32 to 158°F)

Response Time: 5 seconds

Resolution: 0.01°C, 14 bit

PROBE PHYSICAL DIMENSIONS

Probe: 99 mm L x 19 mm dia (3.9 x 0.75") assembled

Pressure Port: 304 SST, ⅛-27 NPT

Twist Lock Type Connector: PTIH-10-6P and PT06F-10-6S

Cable with DB9 or Stripped Leads: 6.1 m (20') long

Cable Operating Temperature: 0 to 105°C (32 to 221°F)

iServer Specifications
INTERFACES
Ethernet: 10Base-T (RJ45)

Supported Protocols: TCP/IP, UDP/IP, ARP, ICMP, DHCP, DNS, HTTP and Telnet

Indicators (LEDs): Network activity, network link, transmit and receive/diagnostics

LCD Display: 16 digits 6 mm (0.23") for iPTX-M

Memory: 512 KB flash, 16 KB SRAM

Memory Data Flash Card: 2 MB; 2 months of data storage at 10-second logging intervals or 1 year at 1-minute intervals for iPTX-M

Relay Outputs: Two relays 1.5 A @ 30 Vdc for iPTX-M

Management: Device configuration and monitoring through embedded Web server

Software: Firmware upgradable. Includes an Excel program for automatic data logging within definable time intervals, compatible with all Windows operating systems.

Embedded Web Server: Serves Web pages containing real-time data and live updated charts within definable time intervals

Power Input:
  iPTX-W, iPTX-M: 9 to 12 Vdc
  iPTX-D: 10 to 32 Vdc

Safety Qualified AC Power Adaptor:
  Nominal Output: 9 Vdc @ 0.5 A
  Input: 100 to 240 Vac, 50/60 Hz (included for iPTX-W, iPTX-M)

Switching power supply sold separately for iPTX-D

Consumption: 2.5 W max

Battery: 9 Vdc alkaline for iPTX-M (included)

ENVIRONMENTAL
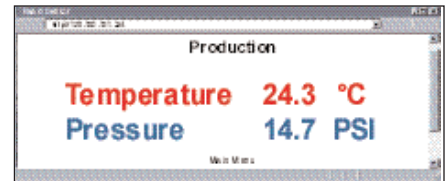**Operating Temperature:** 0 to 70°C (32 to 158°F)

PACKAGING
Material: Metal case with flange mount for iPTX-W, iPTX-M; polycarbonate case with DIN rail mount for iPTX-D.
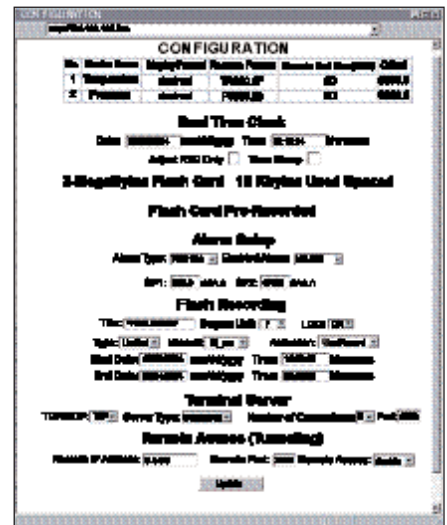
Weight:
  iPTX-D: 272 g (0.60 lb)
  iPTX-W: 363 g (0.80 lb)
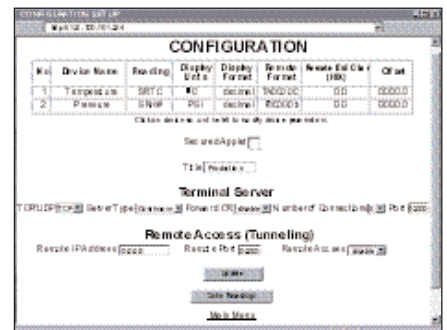 **iPTX-M:** 467 g (1.03 lb)

Dimensions: Refer to Mechanical Specifications page

Reading Sensor Web Page
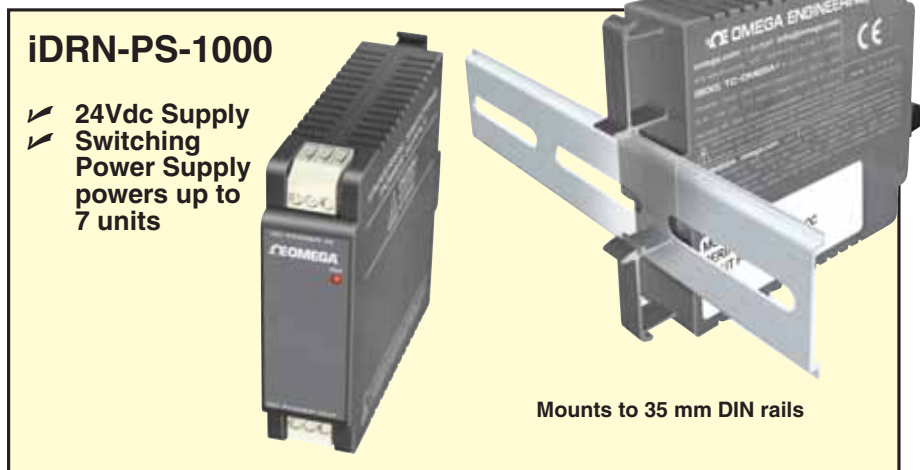

iPTX-M Device Configuration Web Page
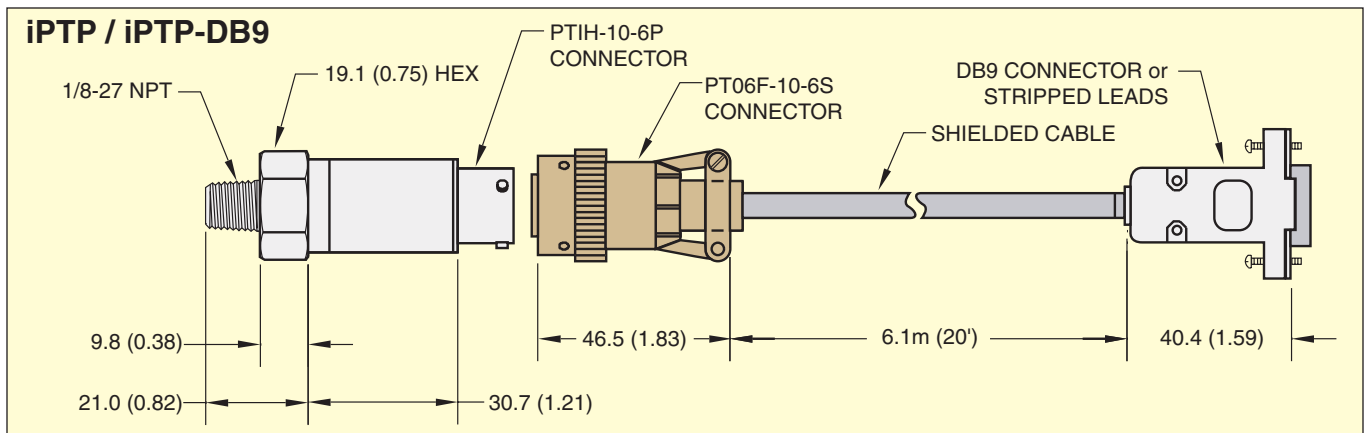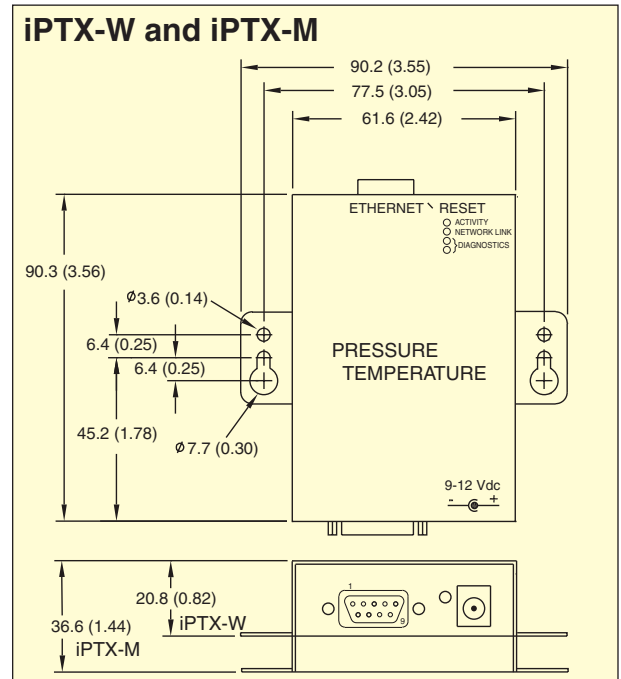

iPTX-W and iPTX-D Device Configuration Web Page

Data Logging Spreadsheet

iDRN-PS-1000

- ✔ 24Vdc Supply
- ✔ Switching Power Supply powers up to 7 units

Mounts to 35 mm DIN rails

Mechanical Specifications
Dimensions: mm (in)

iPTX-D

iPTX-W and iPTX-M

iPTP / iPTP-DB9

AVAILABLE FOR FAST DELIVERY!

Model No.	Description	Price
iPTX-D	DIN rail iServer industrial MicroServer™ for air (inert gas) pressure (0 to 200 psi) and temperature [includes probe with 6.1 m (20') cable, stripped wire leads]	$295
iPTX-W	iServer MicroServer™ for air (inert gas) pressure (0 to 200 psi) and temperature [includes probe with 6.1 m (20') cable, DB9 connector and universal (100 to 240 Vac) power adaptor]	295
iPTX-M	iServer MicroServer™ for air (inert gas) pressure and temperature [includes probe with 6.1 m (20') cable, DB9 connector, LCD display, 2 MB flash memory card, 2 relay alarm, battery backup, and universal (100 to 240 Vac) power adaptor]	395
Accessories		
iPTP	Replacement probe with 6.1 m (20') cable, stripped wire leads (for iPTX-D)	$100
iPTP-DB9	Replacement probe with 6.1 m (20') cable, DB9 connector (for iPTX-M / iPTX-M)	125
iDRN-PS-1000	Power supply (switching), 95 to 240 Vac input, 24 Vdc output @ 850 mA, powers up to 7 units (for iPTX-D)	150
iTH-MC2	Memory data flash card, 2 megabyte/1 year @ 1-minute intervals (for iPTX-M)	10
iTH-MC4	Memory data flash card, 4 megabyte/2 years @ 1-minute intervals (for iPTX-M)	20
iTH-MC8	Memory data flash card, 8 megabyte/4 years @ 1-minute intervals (for iPTX-M)	30
CAL-3-A	NIST-traceable calibration certificate, 3 pressure points, temp 25°C (for new units)	125

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09/19/05 DILBERT © United Feature Syndicate, Inc.

**HX94 Series
Starts at
$235**

**Relative Humidity
Temperature Transmitter**

**WMS-20 Series
Starts at
$645**

**Wind Monitor Stations
with Analog Outputs**

**OS685
Starts at
$149**

**Pocket Infrared
Thermometers**

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featured products!*

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1-800-DAS-1EEE
U.S.A. and Canada

49

NEW®

iServer MicroServer™

Barometric Pressure, Temperature, and Humidity Transmitter

- ✔ Virtual Chart Recorder
- ✔ Web Server
- ✔ Accurate Readings
- ✔ Email Alarms
- ✔ Data Logging
- ✔ No Special Software Required

iBTX-D Starts at
$295

FCC-B c(UL)us LISTED CE MADE IN USA

iBTHX

1020.8hP
108.2 °F
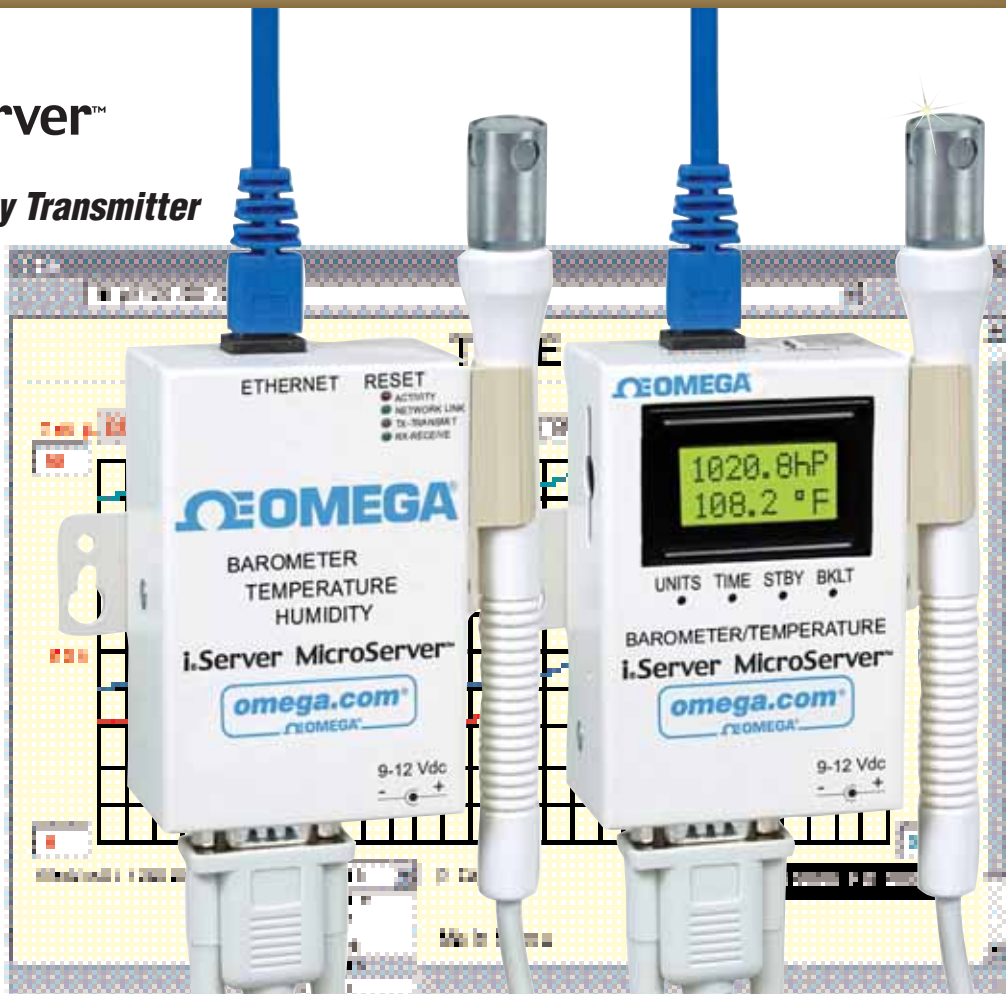
RAIL-35-2, DIN rail, sold separately, $15

iBTHX-W, $395, shown smaller than actual size

iBTX-M, $395, shown smaller than actual size

PROBE INCLUDED!

iBTX-D iServer MicroServer™ with industrial barometric pressure/temperature probe (included), $295, shown smaller than actual size

View Barometric Pressure, Temperature, and Humidity with a Web Browser

The OMEGA® iBTHX transmitter lets you monitor and record barometric pressure, temperature, relative humidity, and dew point over an Ethernet network or the Internet with no special software except a Web browser.

The iBTHX serves active Web pages to display real time readings; display charts of barometric pressure, temperature, and humidity; or log data in standard data formats for use in a spreadsheet or data acquisition program such as Excel or Visual Basic.

The virtual chart viewed on the Web page is a JAVA™ Applet that records a chart over the LAN or Internet in real time. With the iBTHX, there is no need to invest time and money learning a proprietary software program to log or chart the data.

NEW

iServer MicroServer™

Adjustable Charts

Chart scales are fully adjustable on the fly. For example, the chart can display one minute, one hour, one day, one week, one month, or one year.

Temperature and humidity can be charted across the full span (0 to 70°C and 0 to 100% RH) or within any narrow range (such as 20 to 30°C). Barometric pressure can be displayed in hectopascals (hPa), millimeters of mercury (mmHg), or inches of mercury (inHg).

Adjustable Chart Web Page

Display and Chart Measurements

The iBTHX transmitter comes complete with a barometric pressure, temperature, and humidity probe for measurement of a single location.
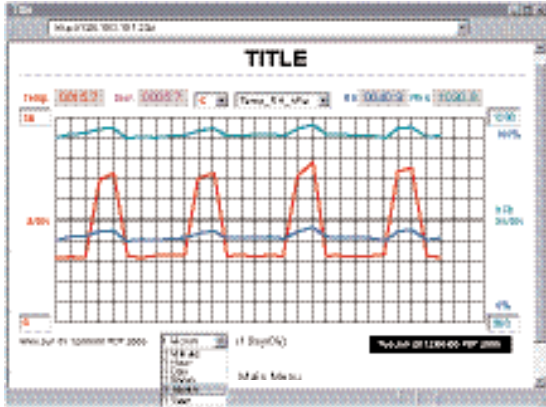
OMEGA® offers a choice of industrial probes in 5" lengths, and a wand style for ambient indoor applications.

Award-Winning Technology

The OMEGA® iBTHX is simple to install and use, and features OMEGA's award-winning iServer technology that requires no special software except a Web browser.

The iBTHX connects to an Ethernet network with a standard RJ45 connector and sends data in standard TCP/IP packets. It is easily configured with a simple menu using a Web browser, and it can be password protected.

From within an Ethernet LAN or over the Internet, the user simply types an IP address or an easy-to-remember name such as "Cleanroom 5" or "Midwest Server Room" in any Web browser, and the iBTHX serves a Web page with the current readings.

Typical Applications

The OMEGA iBTHX is excellent for monitoring temperature and humidity in applications such as: clean rooms, computer rooms, HVAC systems, pharmaceutical/food processing and storage, hospitals, laboratories, semiconductor labs, electronic

assembly, warehousing, museums, manufacturing, greenhouses, and farm animal shelters.

NIST-traceable calibration certificate available. In compliance with ISO9001:2000, ISO10012-1.1992(E), ANSI/NCSL Z540-1.1994 and MIL-STD-45662A.

NEW iBTX-M with Flash Memory and LCD Display

The OMEGA iBTX-M with LCD display adds several valuable features to the backlit local display of temperature and barometric pressure.

This "memory" model comes complete with a removable 2 MB flash memory card that can store one full year of readings taken at one-minute intervals (or two months of readings taken at 10-second intervals).

Up to 4 years of temperature and pressure readings can be stored on the 8 MB card.

With data being recorded in the built-in non-volatile flash memory, a failure on the Ethernet network will not interrupt the flow of information.

Alarm Relays

The OMEGA iBTX-M features two 1.5 A relays. With the easy Web-based setup page, the two relays can be programmed for any combination of temperature or pressure, and high or low setpoints. The relays can also be programmed to remain latched and require a manual reset if a limit is exceeded.

iBTHX

Ethernet

iBTX-M

View Barometric Pressure and Temperature via Ethernet or Internet

Email Alarms

In addition to the mechanical alarm relays, all OMEGA iBTHX models on a LAN connected to the Internet can trigger an alarm that can be sent by email to a user or a distribution list anywhere in the world, including an Internet-enabled pager or cell phone.

Battery Backup

The iBTX-M comes with a universal AC adaptor. A standard 9 V alkaline battery (also included) allows the device to log data for up to 10 days without external AC power. In locations without power or network accessibility, the iBTX-M continues logging data to its flash memory. The stored data can be downloaded later over the Ethernet.

OMEGA iServer products are designed and manufactured in the USA.

iServer MicroServer™

Specifications (Sensor)

BAROMETRIC PRESSURE (B)
Accuracy/Range:
±2.0 mbar/0 to 1100 mbar (0 to 110 kPa)
Resolution: 0.1 mbar

RELATIVE HUMIDITY (H)
Accuracy/Range: ±2% for 10 to 90%
±3% for 0 to 10% and 90 to 100%
Hysteresis: ±1% RH
Non-Linearity: ±3%
Response Time: 4 sec
(63% slowly moving air)
Repeatability: ±0.1%
Resolution: 0.03%, 12 bit

TEMPERATURE (T)
Range*: 0 to 70°C (32 to 158°F)
Accuracy*:
±0.8°C @ 20°C (±1.5°F @ 68°F)
±2°C for -40 to 125°C
(±3.6°F for -40 to 257°F)

*Note: Extended temperature range is
for industrial probe only, the iServer's
operating temperature is 0 to 70°C
Response Time: 5 sec
(63% slowly moving air)
Repeatability: ±0.1°C
Resolution: 0.01°C, 14 bit

PROBE PHYSICAL DIMENSIONS
Wand Probe:
159 L x 19 mm D (6.25 x 0.75")
Cable with DB9 Connector:
152 mm (6")
Cable Operating Temp:
0 to 80°C (32 to 176°F)
Industrial Probe:
137 L x 16 mm D (5 x 0.63")
Cable with DB9 or Stripped Leads:
6.1 m (20')
Cable Operating Temp:
0 to 105°C (32 to 221°F)

iServer Specifications

INTERFACES
Ethernet: 10 Base-T (RJ45)
Supported Protocols
TCP/IP, UDP/IP, ARP, ICMP, DHCP,
DNS, HTTP and Telnet

iP-PC
Polyethylene Cap Option

iP-SC
Porous Stainless Steel Cap Option
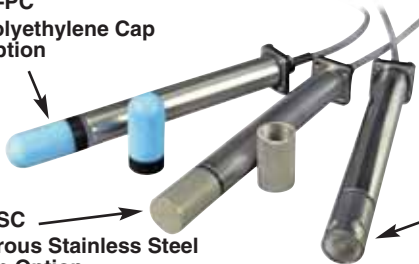
Indicators (LEDs)
Network activity, network link, transmit
and receive/diagnostics

LCD Display
16 digits 6 mm (0.23") for iBTX-M

Memory
512 KB flash, 16 KB SRAM

Memory Data Flash Card
2 MB: 2 months of data storage at
10 sec logging intervals or 1 year at
1 min intervals for iBTX-M

Relay Outputs
2 relays 1.5 A @ 30 Vdc for iBTX-M

Management
Device configuration and monitoring
through embedded Web server

Software
Firmware upgradeable, including an
Excel program for automatic data
logging within definable time intervals,
compatible with all Windows operating
systems

Embedded Web Server
Serves Web pages containing real-
time data and live updated charts
within definable time intervals.

Data Logging Spreadsheet

Sensor Reading Web Page

**Optional Caps Available for Both
Wand and Industrial Probes**

iBTP-5, iBTHP-5
**Standard Industrial Probes with
Stainless Steel Mesh Cap**

Power
Input: 9 to 12 Vdc **iBTHX-W, iBTX-M**
10 to 32 Vdc **iBTHX-D**

Safety-Qualified AC Power Adaptor
Nominal Output: 9 Vdc @ 0.5 A
Input: 100 to 240 Vac, 50/60 Hz
included for iBTHX-W, iBTX-M

Switching Power Supply:
Sold separately for iBTHX-D

Consumption: 2.5 W max

Battery:
9 Vdc alkaline for iBTX-M (included)

ENVIRONMENTAL
Operating Temperature:
0 to 70°C (32 to 158°F)

Storage Temperature:
-40 to 125°C (-40 to 257°F)

Packaging
Material:
  iBTHX-W, iBTX-M: Metal case
  with flange mount
  iBTHX-D: Polycarbonate case
  with DIN rail mount

Dimensions: See next page

**iBTHX-W and iBTHX-D
Device Configuration Web Page**

iBTX-M Device Configuration Web Page

iBTX-W, iBTHX-W, and iBTX-M

90.2 (3.55)
77.5 (3.05)
61.6 (2.42)
50.8 (2.00)
ø3.6 (0.14)
6.4 (0.25)
6.4 (0.25)
90.3 (3.56)
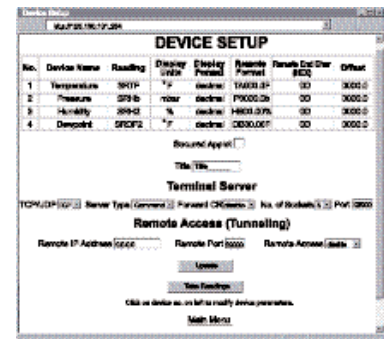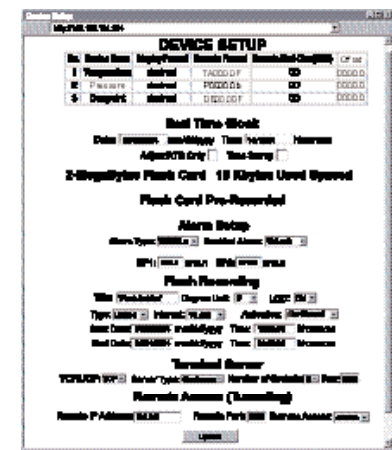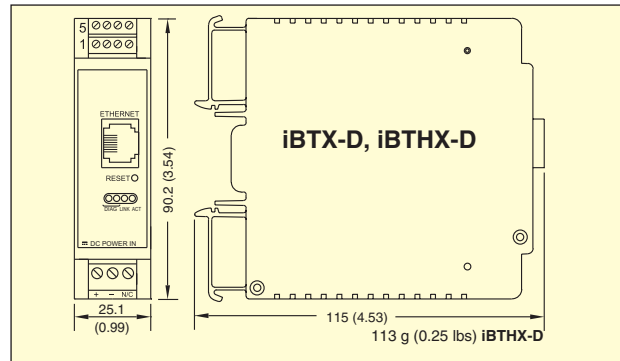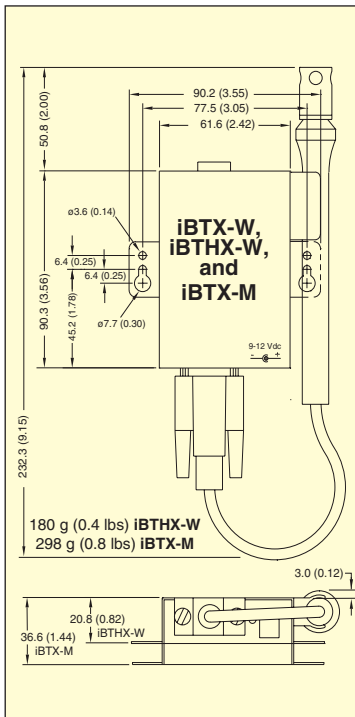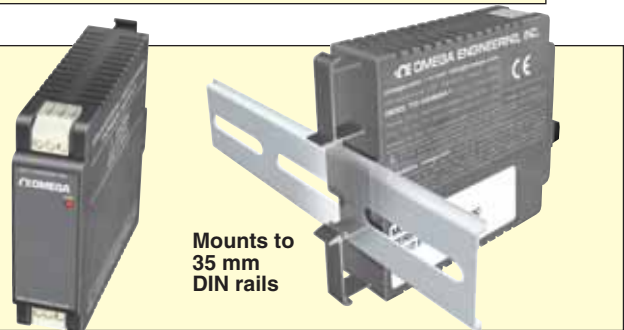45.2 (1.78)
ø7.7 (0.30)
9-12 Vdc
232.3 (9.15)

180 g (0.4 lbs) **iBTHX-W**
298 g (0.8 lbs) **iBTX-M**

3.0 (0.12)

20.8 (0.82) **iBTHX-W**
36.6 (1.44) **iBTX-M**

Dimensions: mm (in)

iBTX-D, iBTHX-D

ETHERNET
RESET
LINK ACT
DC POWER IN
+ – N/C
25.1 (0.99)
90.2 (3.54)
115 (4.53)
113 g (0.25 lbs) **iBTHX-D**

iDRN-PS-1000 $150

✔ 24 Vdc supply
✔ Switching power supply powers up to 7 units

Mounts to 35 mm DIN rails

ALL MODELS AVAILABLE FOR FAST DELIVERY!

Model No.	Description	Price
iBTX-D	iServer industrial MicroServer™ for barometric pressure and temp; industrial probe 137 mm (5"), cable 6.1 m (20'), stripped wire leads	**$295**
iBTHX-D	iServer industrial MicroServer™ for bar. pressure, temp, humidity and dew point; industrial probe 137 mm (5"), cable 6.1 m (20'), stripped wire leads	395
Accessories		
iBTP-5	Industrial probe 137 mm (5"), cable 6.1 m (20') w/stripped wire leads; barometric pressure/temp	**$125**
iBTHP-5	Industrial probe 137 mm (5"), cable 6.1 m (20') w/stripped wire leads; bar/pressure/temp/humidity	195
iDRN-PS-1000	Power supply (switching), 95 to 240 Vac input, 24 Vdc output @ 850 mA (powers up to 7 units)	150

| Model No.		Description	Price
iBTX-W		iServer MicroServer™ for barometric pressure and temperature, with AC power adaptor	**$295**
iBTHX-W		iServer MicroServer™ for barometric pressure, temperature, humidity and dew point, with AC power adaptor	395
iBTX-M		iServer MicroServer™ for barometric pressure and temperature, LCD display, 2 MB flash memory card, 2-relay alarm and battery backup, with AC power adaptor	395
	*	Standard wand probe, cable 152 mm (6") with DB9 connector (no entry required)	N/C
	-5	Industrial 5" probe, cable 6.1 m (20') with DB9 connector (substitution for wand probe)	25
Accessories			
iBTP-W-6		Wand probe, cable 152 mm (6") with DB9 connector (barometric pressure/temperature)	**$100**
iBTHP-W-6		Wand probe, cable 152 mm (6") with DB9 connector (barometric pressure/temperature/humidity)	170
iBTP-5-DB9		Industrial 137 mm (5") probe, cable 6.1 m (20') with DB9 connector (barometric pressure/temperature)	125
iBTHP-5-DB9		Industrial 137 mm (5") probe, cable 6.1 m (20') with DB9 connector (barometric pressure/temp/humidity)	195
DB9-CA-3-2		Extension cable, 0.9 m (3') with DB9 connector	15
iTH-MC2		Memory data flash card, 2 megabyte/1 year @ 1 minute intervals (iBTX-M)	10
iTH-MC4		Memory data flash card, 4 megabyte/2 years @ 1 minute intervals (iBTX-M)	20
iTH-MC8		Memory data flash card, 8 megabyte/4 years @ 1 minute intervals (iBTX-M)	3
Common Accessories			
CAL-3-HU		NIST-traceable calibration certificate, 3 humidity points: 25%, 50%, 75%, temp 25°C (for new units)	**$125**
CAL-3-HU-P-T		NIST-traceable calibration certificate, 3 humidity, barometric pressure and temp points (for new units)	250
CAL-3-P		NIST-traceable calibration certificate, 3 barometric pressure points, temp 25°C (for new units)	125
CT485B-CAL-KIT		Calibration kit, 33% and 75% RH standards	75
iP-PC		Polyethylene probe cap, for wet environments	N/C
iP-SC		Porous stainless steel probe cap, 5 μm porosity, for dusty and pressurized (<35 psi) environments	25

NEW

Internet Counter iServer MicroServer™ iFPX

iServer MicroServer™

iFPX-W Starts at

$245

MADE IN USA CE FCC-B c(UL)us

✔ **Displays Rate, Frequency, Pulse, Total, Batch, and Quadrature over Ethernet and Internet**
✔ **Web-Based Interface**
✔ **No Special Software Needed**
✔ **Up to 500 kHz Input**
✔ **Chart, Bar Graph, and X/Y Displays**
✔ **2 Channel Input/Output**
✔ **Custom Firmware and Private Labeling for OEMs**
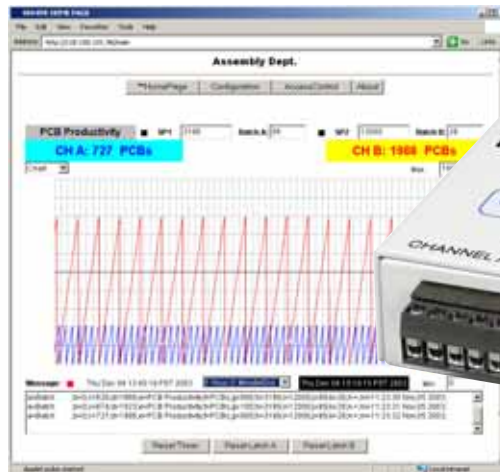
iFPX-W, $245, shown smaller than actual size

iFPX-D, $245, with DIN rail case, shown smaller than actual size

iFPX-PCB, shown smaller than actual size

The OMEGA iFPX Internet counter puts "dumb" data on the World Wide Web. This revolutionary technology transmits virtually any conventional counting application up to 500 kHz over an Ethernet network or the Internet.

The OMEGA iFPX (Internet Frequency Pulse Transmitter) can count contacts from the simplest button or switch, as well as count pulses from almost any conventional transducer, such as a proximity sensor or quadrature encoder. The iFPX converts raw data to intelligent information.

The iFPX can be configured as a virtual version of almost any rate/frequency meter, totalizer, or batch controller. It is a node on an Ethernet network with a unique IP address and serves the data to any authorized computer on a LAN, WAN or the Internet. Setpoints can be programmed to trigger an alarm and even send email automatically to a Web-enabled cell phone.

No special software or drivers are required. A user can type the unit's IP address (or assigned name) on the address line of a Web browser such as Internet Explorer. The device then serves actual JAVA-based active Web pages that present the information numerically and graphically.

The iFPX supports the common Ethernet/Internet protocols: TCP, UDP, ARP, Telnet, DHCP, DNS, and HTTP. The device integrates seamlessly with data acquisition

and industrial automation programs. The iFPX offers password protection for security.

The iFPX provides 2 discrete input/output channels. For applications that use 2 inputs, it can perform calculations with the data from channels A and B that can be presented numerically or graphically, such as charting position on an XY graph.

The OMEGA iFPX is offered as a PC board for OEM applications, and as a stand-alone device suitable for industrial or commercial applications.

Specifications
INPUT TYPE
Dual Input A and B:
Min low level signal input (magnetic pickups): 120 mV
Open Collector NPN:
Max current source: 1.66 mA
Open Collector PNP:
Max current sink: 5 mA
TTL/CMOS Input:
Low ≤0.8 V, high ≥3.5 V
(for input: 1 Hz to 30 kHz)
Low ≤0.8 V, high ≥10 V
(for input: 1 Hz to 60 kHz)
OPERATING MODES
Frequency:
  Range: 1 Hz to 100 kHz
  Max Input Frequency:
  Input level 0 to 5 V: 50 kHz
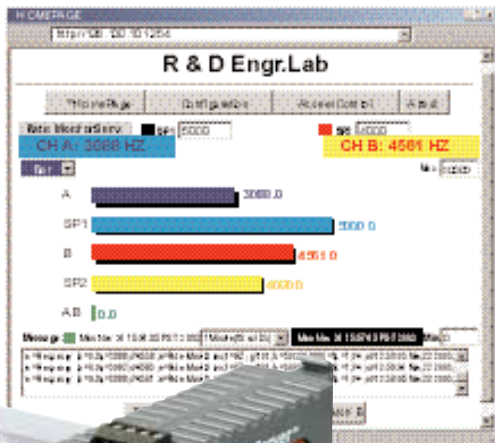 Input level 0 to 12 V: 100 kHz
Frequency Resolution:
1 Hz to 100 kHz/0.0000000001 Hz
Totalizer:
Range = 0 to 999999999*
Totalizer Accuracy: 0.3%
*Resolution is 1 count.

A/B Totalize/Frequency (A Input Used with B Input): Could be A + B, A - B, A x B Range = -999999999 to 999999999*

Batch: Similar to totalize except the batch = 0 to 65,535

Quadrature: Range = -999999999 to 999999999; resolution is 1 count

Output A and B: Open-collector transistors, rated 150 mA sink, 30 V. For external supply.

Embedded Web Server: Serves dynamic Web pages and Java applets (256 KB capacity)

NETWORK INTERFACE

Interface: Ethernet 10Base-T

Connector: RJ45

Protocols: TCP/IP, UDP/IP, ARP, ICMP, DHCP, DNS, HTTP, Telnet

Indicators (LEDs): Power, network activity, network link and diagnostics

Memory: 512 KB flash, 16 KB SRAM

Management: Embedded Web server, Telnet login, serial login

GENERAL

Input Impedance: 1 MΩ to +EXC 5 V

Excitation: 5 V at 25 mA (per channel)

Debounce Time: Programmable

Gate Time: Programmable

Isolation: Dielectric strength per 1 minute test based on EN 61010

  iFPX-W: Pwr to Ethernet: 1500 Vrms; pwr to input/output: none; input/output to Ethernet: 1500 Vrms

  iFPX-D: Pwr to Ethernet: 1500 Vrms; pwr to input/output: 1500 Vrms; input/output to Ethernet: 1500 Vrms

iFPX-W PACKAGING

Material: Metal case with flange mount

Dimensions: 20.8 H x 61.6 W x 90.3 mm D (0.83 x 2.93 x 3.56")

Weight: 180 g (0.4 lb)

iFPX-D PACKAGING

Material: Polycarbonate case with DIN rail mount

Dimensions: 90.2 H x 25.1 W x 115.0 mm D (3.54 x 0.99 x 4.53")

Weight: 113 g (0.25 lb)

iFPX-PCB PACKAGING

Material: FR-4

Board Surface Area: Approximately 76 sq mm (3 sq in)

Weight: 23 g (0.05 lb)

iFPX-W POWER INPUT

Input: 9 Vdc @ 200 mA; safety qualified AC/DC power adapter with 9 Vdc @ 0.5 A min, included

iFPX-D POWER INPUT

Input: 10 to 32 Vdc

Consumption: 2 W max (DC power supply sold separately)

iFPX-PCB POWER INPUT

Input: 5 Vdc @ 150 mA

ENVIRONMENTAL

Operating Temp: 0 to 70°C (32 to 158°F)

Storage Temperature: -40 to 125°C (-40 to 257°F)

Relative Humidity: 90% @ 40°C non-condensing
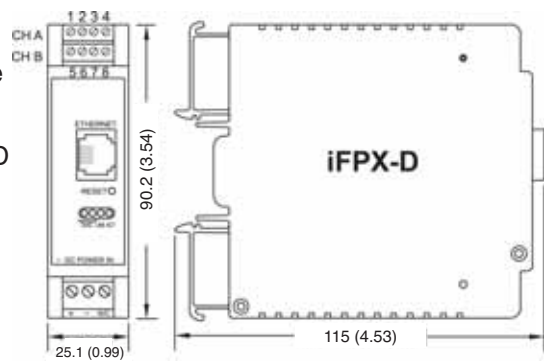
Dimensions: mm (in)
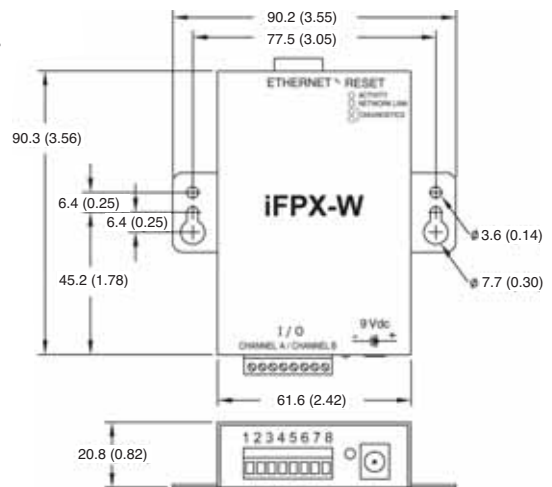
Configuration Menu

ALL MODELS AVAILABLE FOR FAST DELIVERY!
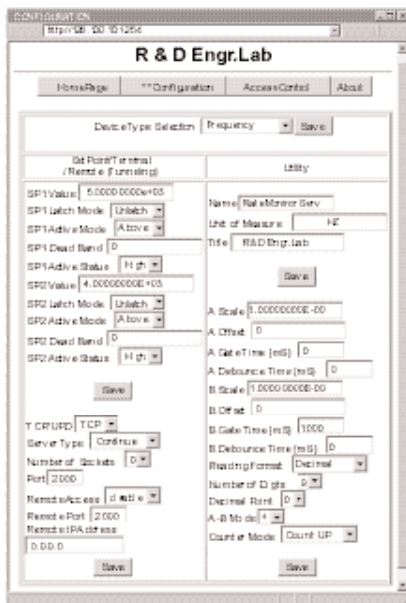
To Order (Specify Model Number)

Model No.	Description	Price
iFPX-W	iServer MicroServer™ for frequency pulse applications (up to 100 KHz input with EMC filtering), with AC power adaptor	$245
iFPX-D	Industrial iServer MicroServer™ for frequency pulse applications (up to 100 kHz input with EMC filtering)	245
iFPX-PCB	Embedded iServer MicroServer™ for frequency pulse applications (up to 100 kHz input with EMC filtering) TTL serial interface	**
iFPX-W5	iServer MicroServer™ for frequency pulse applications (up to 500 kHz input without EMC filtering), with AC power adaptor	270
iFPX-D5	Industrial iServer MicroServer™ for frequency pulse applications (up to 500 kHz input without EMC filtering)	270
iFPX-PCB5	Embedded iServer MicroServer™ for frequency pulse applications (up to 500 kHz input without EMC filtering) TTL serial interface	**

Accessory

Model Number	Description	Price
iDRN-PS-1000	Power Supply (switching), 95 to 240 Vac input, 24 Vdc output @ 850 mA (powers up to 7 units)	$150

Volume discounts are available. **Consult OMEGA for application assistance and quantitiy pricing.*

HH147
$275

Four-Channel Handheld Thermocouple Input Thermometer

CL3512A
$195

Low Cost Handheld Digital Calibrator and J/K/T/E Thermocouple Thermometer

OMG-USB-DIO
Starts at
$319

USB to Digital I/O Interface

Please search omega.com for more details on these featured products!

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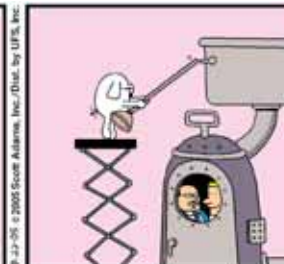
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NEW

iServer MicroServer™

iTHX

Temperature + Humidity

✔ **Virtual Chart Recorder**
✔ **Web Server**
✔ **Accurate Readings**
✔ **Email Alarms**
✔ **Data Logging**
✔ **No Special Software Required**

Starts at
$295

MADE IN USA   c(UL)us LISTED   CE   FCC-B

RAIL-35-2 DIN rail, sold separately, $15

ETHERNET   RESET
ACTIVITY
NETWORK LINK
TX-TRANSMIT
RX-RECEIVE

ΩEOMEGA
TEMPERATURE
HUMIDITY
DEW POINT
i.Server MicroServer™
omega.com
ΩEOMEGA
9-12 Vdc

ΩEOMEGA
50.8 %RH
108.2 °F
°C/°F TIME STBY BKLT
TEMPERATURE / HUMIDITY
i.Server MicroServer™
omega.com
ΩEOMEGA
9-12 Vdc

File Edit View Favorites Tools Help
Address http://128.100.101.254/

Temperature 126.42   F
200

16.8
F/Div

002   1 Minute   (2 nd/Div)   Wed Nov 2   12:10 PST 2002

Local intranet

iTHX-W, $295, shown smaller than actual size

iTHX-M, $395, shown smaller than actual size

PROBE INCLUDED!

iTHX-2 iServer MicroServer™, $295, with industrial temperature/humidity probe (included), shown smaller than actual size

View Temperature + Humidity with a Web Browser

The OMEGA® iTHX transmitter lets you monitor and record temperature, relative humidity, and dew point over an Ethernet network or the Internet with no special software except a Web browser.

The OMEGA iTHX serves active Web pages to display real-time readings, display charts of temperature and humidity, or log data in standard formats for use in a spreadsheet or data acquisition program such as Excel or Visual Basic.

The virtual chart viewed on the Web page is a JAVA™ Applet that records a chart over the LAN or Internet in real time. With the OMEGA iTHX, there is no need to invest time and money learning a proprietary software program to log or chart the data.

iServer MicroServer™

iTHX

Adjustable Charts

Chart scales are fully adjustable on the fly. For example, the chart can display one minute, one hour, one day, one week, one month, or one year. Temperature and humidity can be charted across the full span [0 to 70°C (32 to 15°F)] and 0 to 100% RH), or within any narrow range such as 20 to 30°C (68 to 86°F). When a second sensor is added, users can select a chart that records channel 1, channel 2, or the difference between the two channels.

Display and Chart Two Channels
(iTHX-W and iTHX-2 only)

The iTHX transmitters come complete with a temperature and humidity probe for measurement of a single location. With the addition of a second probe, the iTHX transmitter can measure and display temperature, humidity and dew point in a second location up to 20 feet away.

The transmitter can display and chart absolute measurements in both locations, or a differential measurement between the two locations. The second probe requires no change to the basic iTHX transmitter hardware, firmware, or software.

Read Sensor		
http://206.29.25.26		
Title		
Temperature	76.37	°F
Humidity	59.66	%
Dewpoint	59.99	°F
CH2 Temperature	75.29	°F
CH2 Humidity	47.73	%
CH2 Dewpoint	53.42	°F
Main Menu		

**Web page displaying
data received from the sensor**

A second probe can be added at the time of purchase or in the future. OMEGA offers a choice of industrial probes in 2" and 5" lengths, and a wand style for ambient indoor applications. A simple DB-9 "Y" connector is available for adding a second probe to the iTHX-W. No connector is required to add a second probe to the DIN rail mounted iTHX-2.
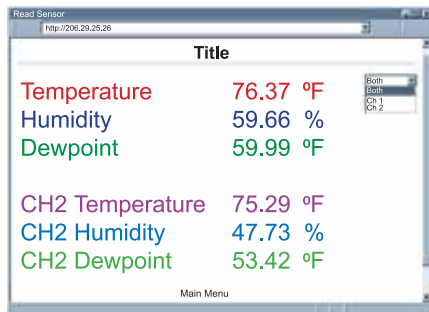
Dual channel measurement is available on the iTHX-W and iTHX-2 only; it is not available on the iTHX-M.

Award-Winning Technology

The OMEGA iTHX is simple to install and use, and features OMEGA's award-winning iServer technology that requires no special software except a Web browser.

The iTHX connects to an Ethernet network with a standard RJ45 connector and sends data in standard TCP/IP packets. It is easily configured with a simple menu using a Web browser and can be password protected.

From within an Ethernet LAN or over the Internet, the user simply types the IP address or an easy to remember name such as "Cleanroom 5" or "Midwest Server Room" in any Web browser, and the iTHX serves a Web page with the current readings.

**View temperature + humidity
over an Ethernet or the Internet**
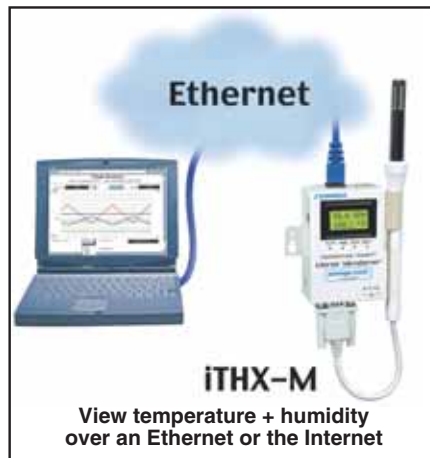
Typical Applications

The OMEGA iTHX is great for monitoring temperature and humidity in clean rooms, computer rooms, HVAC systems, pharmaceutical and food processing and storage, hospitals, laboratories, semiconductor labs, electronic assembly, warehousing, museums, manufacturing, greenhouses, farm animal shelters, and many more.

Industrial probes shown smaller than actual size

iTHP-5, $125

iTHP-2, $115

NEW iTHX-M with Flash Memory and LCD Display

The OMEGA iTHX-M with LCD display adds several valuable features to the backlit local display of temperature and humidity.

The "memory" model comes complete with a removable 2 MB flash memory card that can store one full year of readings taken at one-minute intervals (or two months of readings taken at 10-second intervals).

Up to four years of temperature + humidity readings can be stored on the 8 MB card.

With data being recorded in the built-in non-volatile flash memory, a failure on the Ethernet network will not interrupt the data record.

Alarm Relays

The OMEGA iTHX-M features two 1.5 amp relays. With the easy Web- based setup page, the two relays can be programmed for any combination of temperature or humidity, and high or low setpoints. The relays can also be programmed to remain latched and require a manual reset if a limit is exceeded.

Email Alarms

In addition to the mechanical alarm relays, all OMEGA iTHX models on a LAN connected to the Internet can trigger an alarm that can be sent by email to a user or a distribution list anywhere in the world, including an Internet-enabled pager or cell phone.

Battery Backup

The iTHX-M comes with an AC adaptor. A standard 9-volt alkaline battery (also included) allows the device to log data for up to 10 days without external AC power. In locations without power or network accessibility, the iTHX-M continues logging data to its flash memory. The stored data can later be downloaded over the Ethernet.

OMEGA iServer products are designed and manufactured in the USA.

**NIST-Traceable Calibration
Certificate available.
In compliance with ISO9001:2000,
ISO10012-1.1992(E),
ANSI/NCSL Z540-1.1994
and MIL-STD-45662A.**

Temperature + Humidity

Sensor Specifications
RELATIVE HUMIDITY (RH)
Accuracy/Range: ±2% for 10 to 90%;
±3% for 0 to 10% and 90 to 100%
Non-Linearity: ±3%
Response Time: 4 seconds
(63% slowly moving air)
Repeatability: ±0.1%
Resolution: 0.03%, 12 bit

TEMPERATURE (T)
Accuracy*: ±0.5°C (±1°F)
Range*: 0 to 70°C (32 to 158°F)
* Extended temperature accuracy/
range when 10 m (3') or longer
cable is used: ±0.5°C (±1°F) for
0 to 80°C (32 to 176°F); ±1°C (±2°F)
for -40 to 0°C and 80 to 124°C
(-40 to 32°F and 176 to 255°F)
Note: Extended temperature range
is for probe only; the iServer's
operating temperature is 0 to 70°C
(32 to 158°F).
Response Time: 5 seconds
(63% slowly moving air)
Repeatability: ±0.1°C (±1°F)
Resolution: 0.01°C (32°F), 14 bit

PROBE PHYSICAL DIMENSIONS
Wand Probe iTHX-W, iTHX-M:
Ø19.1 x 198.1 mm (0.75 x 7.8")
Industrial Probe iTHX-2:
Ø16 x 137 mm (0.63 x 5")

iSERVER SPECIFICATIONS
INTERFACES
Ethernet: 10Base-T (RJ45)
Sensor: Digital 4 wire
   iTHX-W, iTHX-M: DB-9
   iTHX-2: 8 pos. screw terminal
Supported Protocols: TCP/IP,
UDP/IP, ARP, ICMP, DHCP, DNS,
HTTP and Telnet
Indicators (LEDs): Network activity,
network link, transmit and
receive/diagnostics
LCD Display: 16 digits, 6 mm
(0.23") for iTHX-M
Memory: 512 KB flash,
16 KB SRAM
Memory Data Flash Card:
2 MB (2 months of data storage at
10-second logging intervals
or 1 year at 1-minute intervals for
iTHX-M)
Relay Outputs: Two relays
1.5 A @ 30 Vdc iTHX-M
Management
Device configuration and monitoring
through embedded Web server
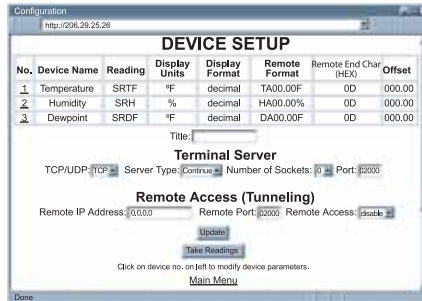
**iTHX-W and iTHX-2 device configuration
through embedded Web server**

**iTHX-M device configuration
through embedded Web server**

Software: Firmware upgradable.
Including an Excel program for
automatic data logging within
definable time intervals, compatible
with all Windows operating systems.
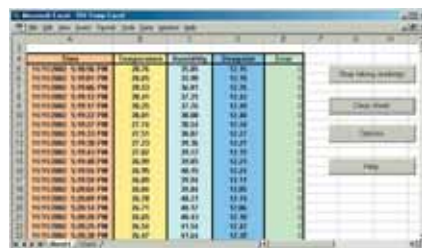
**iTHX
data logging spreadsheet**

Embedded Web Server: Serves
Web pages containing real-time
data and live updated charts
within definable time intervals.

**iTHX-W and iTHX-2
adjustable chart Web page**

iTHX-M adjustable chart Web page

POWER
Input:
   iTHX-W, iTHX-M: 9 to 12 Vdc
   iTHX-2: 10 to 32 Vdc;
   safety qualified AC power adaptor
Nominal Output: 9 Vdc @ 0.5 A
included for iTHX-W, iTHX-M.
Switching power supply sold
separately for iTHX-2.
Consumption: 2.5 W max
Battery: 9 Vdc, alkaline iTHX-M

ENVIRONMENTAL
Operating Temperature:
0 to 70°C (32 to 158°F)
Storage Temperature:
-40 to 125°C (-40 to 257°F)
PACKAGING
Material:
   iTHX-W, iTHX-M: Metal case
   with flange mount
   iTHX-2: Polycarbonate case
   with DIN rail mount
Dimensions: See next page

iDRN-PS-1000
$150
☛ 24 Vdc Supply
☛ Switching
power supply
powers up to
7 units

**Mounts to
35 mm
DIN rails**

Mechanical Specifications

iTHX-W and iTHX-M

88.9 (3.50)

90.2 (3.55)
77.5 (3.05)
61.6 (2.42)

ETHERNET   RESET
○ ACTIVITY
○ NETWORK LINK
○ TX-TRANSMIT
○ RX-RECEIVE

90.3 (3.56)

Ø3.6 (0.14)
6.4 (0.25)
6.4 (0.25)

TEMPERATURE
HUMIDITY
DEW POINT

45.2 (1.78)
Ø 7.7 (0.30)

9 to 12 Vdc
− ▯ +

270.4 (10.65)

**Dimensions:
mm (in)**

iTHX-W: 180 g (0.4 lb)
iTHX-M: 298 g (0.8 lb)

20.8 (0.82)

90.2 [3.54]

25.1
[0.99]

115 [4.53]

iTHX-2: 113 g (0.25 lb)
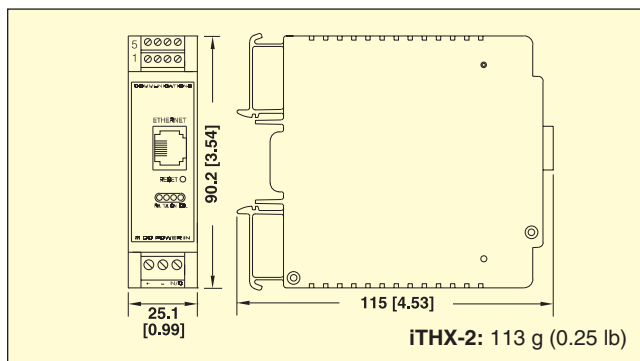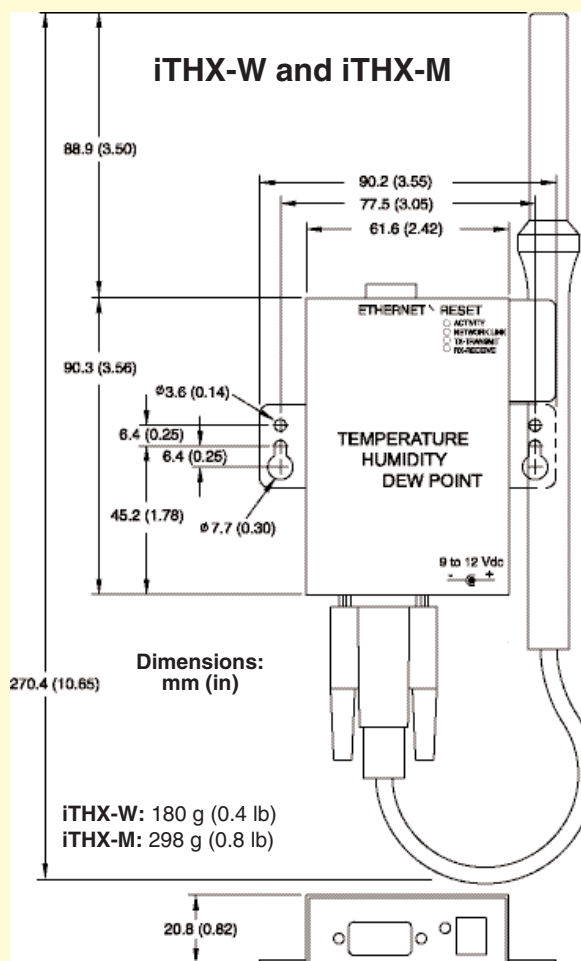
AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model No.)*

Model No.		Description	Price
iTHX-2		iServer MicroServer™ for temperature + humidity and dew point (two-channel capability)	$295
	*	127 mm (5") standard industrial probe, 6.1 m (20') cable, stripped wire leads (no entry required)	N/C
	-2	51 mm (2") industrial probe, 0.9 m (3') cable with stripped wire leads [substitution for 127 mm (5") probe]	N/C
Accessories			
iTHP-2		51 mm (2") industrial probe, 0.9 m (3') cable with stripped wire leads	115
iTHP-5		137 mm (5") industrial probe, 6.1 m (20') cable with stripped wire leads	125
iDRN-PS-1000		Power supply (switching), 95 to 240 Vac input, 24 Vdc output @ 850 mA (powers up to 7 units)	150
CAL-3-HU		NIST-traceable calibration certificate, three humidity points: 25%, 50%, 75%. Temperature 25°C (77°C) for new units.	125
CT485B-CAL-KIT		Calibration kit, 33 and 75% RH standards	75

* Volume discounts available.

Ordering Example: iTHX-2 *iServer MicroServer™ with temp + humidity and dew point, 127 mm (5") industrial probe,* **$295**

Model No.		Description	Price
iTHX-W		iServer MicroServer™ for temperature + humidity and dew point. Two-channel capability.	$295
iTHX-M		iServer MicroServer™ for temperature + humidity, LCD display, 2 MB flash memory card, 2-relay alarm and battery backup (single channel only)	395
	*	Standard 203 mm (8") wand probe, 152 mm (6") cable with DB9 connector (no entry required)	N/C
	-2	Industrial 51 mm (2") probe, 0.9 m (3') cable with DB9 connector (substitution for wand probe)	15
	-5	Industrial 137 mm (5") probe, 6.1 m (20') cable with DB9 connector (substitution for wand probe)	25
Accessories			
iTHP-W		Wand 203 mm (8") probe, 0.9 m (3') cable with DB9 connector	$100
iTHP-W-6		Replacement 203 mm (8") wand probe, 152 mm (6") cable with DB9 connector	100
iTHP-2-DB9		Industrial 51 mm (2") probe, 0.9 m (3') cable with DB9 connector	115
iTHP-5-DB9		Industrial 137 mm (5") probe, 6.1 m (20') with DB9 connector	125
DB9-Y		DB9 "Y" connector adaptor for 2 probes with DB9 connector (iTHX-W)	25
DB9-CA-3		Extension cable 0.9 m (3') with DB9 connector	15
iTH-MC2		Memory data flash card, 2 MB / 1 year @ 1-minute intervals (iTHX-M)	10
iTH-MC4		Memory data flash card, 4 MB / 2 years @ 1-minute intervals (iTHX-M)	20
iTH-MC8		Memory data flash card, 8 MB / 4 years @ 1-minute intervals (iTHX-M)	30
CAL-3-HU		NIST-traceable calibration certificate. Three points: 25%, 50%, 75%. Temperature 25°C (77°C) for new units.	125
CT485B-CAL-KIT		Calibration kit, 33 and 75% RH standards	75

NEW

iServer

iServer Industrial MicroServer™ EIS-2

Starts at
$**195**

CE · 1 YEAR WARRANTY · c(UL)US LISTED · FCC-B

✔ **Connect Almost any Serial Device to an Ethernet Network and the Internet**
✔ **Replace Dedicated Wiring and PCs for Serial Connections**
✔ **Handles RS-232, RS-422, and RS-485 Serial Communications**
✔ **Digital I/O Lines**
✔ **Well-Developed TCP/IP Stack**
✔ **Web-Based Interface for Easy Configuration and Access Without Any Special Software**
✔ **Configuration Option via Telnet or Serial**
✔ **DHCP and DNS Support for Dynamic IP Address Assignment**
✔ **Password Protection for Security**
✔ **Snaps Easily into DIN Rail Mounting Rack**
✔ **Firmware Upgradable**
✔ **Custom Firmware and Private Labeling for OEMs**
✔ **OEM Board-Level iServer Available**

EIS-2, $195, shown smaller than actual size

EIS-2-RJ, $195, shown smaller than actual size

The award-winning OMEGA® iServer is the simplest, easiest, most economical way to connect serial devices to an Ethernet network and the Internet.

When you type its name in a Web Browser, it serves Web pages that let you quickly and easily configure the device for your specific application without any special software.

Getting started with the iServer is very easy because it can take a dynamically assigned IP address from a DHCP server on your network. This DHCP client capability is a valuable and unique feature of the OMEGA iServer that makes it extremely simple to start using this device on almost any Ethernet network.

You can easily assign a static IP address to the iServer instead of the dynamic one, if necessary. The IP address can be assigned locally through its serial connection, as well as remotely over an Ethernet network via Telnet or a Web browser, using its factory default IP address.

The OMEGA iServer connects to an Ethernet network with a standard RJ45 connector. Serial devices connect to screw terminals on removable connectors. You can select RS-232 or RS-485 (and RS-422) serial communications from the configuration Web page.

The iServer can be used to make an existing Serial device a "node" on an Ethernet network with a unique IP address that's accessible from any authorized computer on the LAN, WAN, or Internet.

The iServer can instead be used to create a virtual tunnel on an Ethernet/Internet network simulating a local point-to-point serial connection between a serial device and a PC. This replaces dedicated point-to-point wiring limited to 15 m (50') on an RS-232 connection. The OMEGA iServer packages the serial data in standard TCP/IP packets that can travel anywhere on the Ethernet LAN or over the Internet.

The OMEGA iServer is compatible with almost any device with a serial interface such as: time clocks, security alarms, card-key access controllers, telecommunications equipment, vending machines, bar code readers, electric power meters, UPS systems, test and measurement instrumentation, PLCs, serial printers, and cash registers.

You do not need to rewrite the firmware for your serial devices to work with the iServer, and in some cases might not need to change your application software. Your serial devices will function

over the Ethernet network or the Internet as if they were connected directly to a PC. The COM port on the iServer simulates a local COM port on the PC.

The OMEGA iServer is compatible with wireless Ethernet. In settings where wires of any kind are not possible, the EIS-2 can be connected to a wireless Ethernet access point, enabling simple, economical wireless connectivity of serial devices.

With the OMEGA® iServer, a manufacturing manager can monitor PLCs over the LAN from a desk anywhere in the facility, or from anywhere on the Internet with the proper passwords and authorization. A technician can use a handheld computer with wireless Ethernet connectivity to change settings on a process controller.

The OMEGA iServer model EIS-2 comes complete with full documentation and firmware. For OEMs, OMEGA offers custom labeling as well as customized application-specific firmware and design engineering.

OMEGA also offers printed circuit board-level products (powered by 5 Vdc) that OEMs can incorporate into their product to add embedded Internet/Ethernet connectivity to products with existing serial interface. (Contact the OMEGA OEM Engineering Group.)

NEW

iDRN-PS-1000, $150, shown smaller than actual size

RAIL-35-2, mounts to 35 mm DIN rails, 2 m (6') length, $15, shown samller than actual size

Ethernet LAN INTERNET

PC on LAN — 10BASE-T

iServer   iServer

RS-485 Device

RS-485 Device

RS-485 Device

RS-232 Serial Device

Dimensions: mm (in)

For IT and commercial applications, OMEGA offers other iServer device servers in steel enclosures for rack mounting. The EIS-2 models feature a DB-9 connector and come complete with a 110 or 240 Vac power adaptor. OMEGA provides generous technical support and a one-year extended warranty.

Specifications
SERIAL INTERFACE
Interface: Software selectable, RS-232, RS-422 or RS-485 (2 wire)
Connector: Screw terminal plugs (EIS-2), RJ45 (EIS-2-RJ)
Data Rates: 300 to 115.2 Kbps
Characters: 7 or 8 data bits
Parity: Odd, even or none
Stop Bits: 1 or 2
Flow Control: Hardware (RTS/CTS) and software (Xon/Xoff) (hardware flow control is available only with the EIS-2-RJ model)
Digital I/Os: 4 digital input/output lines
NETWORK INTERFACE
Interface: Ethernet 10Base-T
Connector: RJ45
Standards: ARP, TCP/IP, DHCP, ICMP, DNS, Telnet and HTTP
Indicators (LEDs): Network activity, network link and serial transmit/receive
PROCESSOR
CPU: Enhanced 8051, 22 MHz
Memory: 512 KB flash, 16 KB SRAM
Management: Embedded Web server, Telnet login, serial login
EMBEDDED WEB SERVER
Uses: Serves dynamic Web pages and Java applets (256 KB capacity)
POWER INPUT– DIN RAIL ENCLOSURE
(AC power supply sold separately)
Input: 10 to 32 Vdc
Consumption: 2 W max
ENVIRONMENTAL
Operating Temperature: 0 to 70°C (32 to 158°F)

Storage Temperature: -40 to 125°C (-40 to 257°F)
PACKAGING– DIN RAIL ENCLOSURE
Material: Polycarbonate case with DIN rail mount
Dimensions: 90.2 H x 25.1 W x 115 D mm (3.54 x .99 x 4.53")
Weight: 113 kg (0.25 lb)
Agency Approvals: FCC-B, C/UL, CE
Warranty: 1-year limited warranty
Software: Firmware upgradable. Compatible with Windows 9x/ME/NT/2000/XP software and related utilities
ORDERING INFORMATION
MicroServer™: Serial interface (RS-232, RS-422, RS-485), 10Base-T/Ethernet, diagnostic LEDs, DIN rail mountable, CD-ROM with documentation, and printed quick start guide
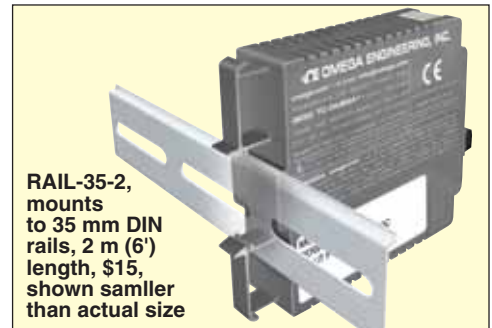
90.2 (3.54)

115 (4.53)   25.1 (0.99)

CONFIGURATION Serial Communication

SERVER HOME PAGE
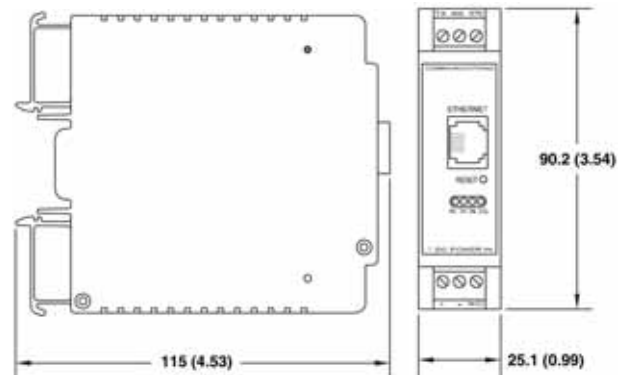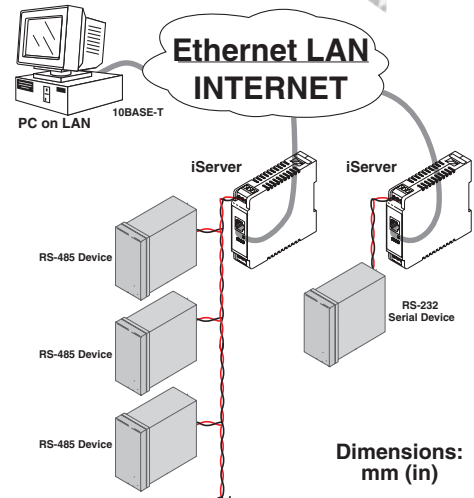
To Order *(Specify Model Number)*

Model No.	Price*	Description
EIS-2	$195	Industrial MicroServer™ with screw terminal
EIS-2-RJ	195	Industrial MicroServer™ with RJ45 serial port
iDRN-PS-1000	150	Power supply (switching), 95 to 240 Vac input, 24 Vdc output @ 850 mA (power up to 7 units)

Volume discounts available. Comes with complete operator's manual.
Ordering Example: EIS-2-RJ *industrial MicroServer™ with RJ45 serial port,* **$195.**

WALLY INTERVIEWS

DO YOU MIND IF I EAT A SANDWICH WHILE WE DO THIS?

YES, ACTUALLY I...

CHOMP CHOMP CHOMP MMM-MMM MPH-UH

WHAT WOULD YOU SAY IS YOUR BIGGEST WEAKNESS?

CHEESE.

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WALLY INTERVIEWS

THE JOB DOESN'T HAVE A BASE SALARY.

YOU'LL PAY US $1,000 PER MONTH AND WORK FROM HOME. IF YOU MAKE ANY MONEY FOR US, WE'LL GIVE YOU 10%.

YOU'RE NOT ALLOWED TO HAVE BUSINESS CARDS, AND YOU CAN'T USE OUR NAME. CAN I HAVE A PRIVATE OFFICE IN MY HOUSE?

09/29/05 DILBERT © United Feature Syndicate, Inc.

I HAVE A JOB OFFER FROM ANOTHER COMPANY, BUT I'LL GIVE YOU A CHANCE TO BUY MY LOYALTY.

NOW I JUST SIT BACK AND LET THE LOVING BEGIN.

AND HIS OPENING OFFER IS...

THAT'S RIGHT. WHACK HIM IN THE PARKING LOT.

09/30/05 DILBERT © United Feature Syndicate, Inc.

THE EMPLOYEE SATIS-FACTION SURVEY SAYS THEY DON'T TRUST MANAGEMENT.

DON'T WORRY. I'LL FIND OUT WHO FEELS THAT WAY AND FIRE THEM DURING THE NEXT RETRENCHMENT.

PURR? WHO SAID PURR?

10/01/05 DILBERT © United Feature Syndicate, Inc.

I NEED FIVE MINUTES ON THE POINTY-HAIRED BOSS'S CALENDAR.

NO CAN DO.

IF I GIVE YOU AN APPOINTMENT, I'LL JUST HAVE TO CANCEL IT LATER WHEN SOME-THING MORE IMPORT-ANT COMES UP.

WHAT'S HE DOING NOW?

COMBING HIS KNUCKLES.

10/03/05 DILBERT © United Feature Syndicate, Inc.

CAROL, WHY DON'T I HAVE ANY MEETINGS TODAY?

YOUR MEETINGS CREATE WORK FOR ME, SO I CANCELED THEM.

MAYBE I COULD DROP IN ON SOME PEOPLE.

HARPOON.

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Sales: FAX (Toll-Free) 1-877-FAX-OMEG(A)
24 HOURS

For Sales
and Service,
Call Toll-Free: **1-800-327-4333**℠
1-800-DAS-IEEE
U.S.A. and Canada

63

External Whitebox™ MicroServer™ EIS-W

EIS-W, $195, shown smaller than actual size

iServer

Starts at

$195

CE -1 YEAR WARRANTY c(UL) US LISTED FCC-B WHITE BOX

- ✔ **Connect Almost Any Serial Device to an Ethernet Network and the Internet**
- ✔ **Replace Dedicated Wiring and PCs for Serial Connections**
- ✔ **Handles RS-232, RS-422, and RS-485 Serial Communications**
- ✔ **Digital I/O Lines**
- ✔ **Well-Developed TCP/IP Stack**
- ✔ **Web-Based Interface for Easy Configuration and Access Without any Special Software**
- ✔ **Configuration Option via Telnet and Serial**
- ✔ **DHCP and DNS Support for Dynamic IP Address Assignment**
- ✔ **Password Protection for Security**
- ✔ **Wall Mount Brackets for Secure Installation**
- ✔ **Firmware Upgradable**
- ✔ **Custom Firmware and Private Labeling for OEMs**
- ✔ **OEM Board-Level iServer Available**

The award-winning OMEGA® iServer is the simplest, easiest, most economical way to connect serial devices to an Ethernet network and the Internet.

When you type its name in a Web browser, it serves Web pages that let you quickly and easily configure the device for your specific application without any special software.

Getting started with the iServer is easy because it can take a dynamically assigned IP address from a DHCP server on your network. This DHCP client capability is a valuable and unique feature of the OMEGA iServer that makes it simple to start using this device on almost any Ethernet network.

You can easily assign a static IP address to the iServer instead of a dynamic one, if necessary. The IP address can be assigned locally through its serial connection, as well as remotely over an Ethernet network via Telnet or a Web browser, using its factory default IP address.

The OMEGA iServer connects to an Ethernet Network with a standard RJ45 connector. Serial devices connect to the iServer with a standard DB-9 connector. You can select RS-232 or RS-485 (and RS-422) serial communications from the configuration Web page.

The iServer can be used to make an existing Serial device a "node" on an Ethernet network with a unique IP address that's accessible from any authorized computer on the LAN, WAN, or Internet.

The iServer can instead be used to create a virtual tunnel on an Ethernet/Internet network simulating a local point-to-point serial connection between a serial device and a PC. This replaces dedicated point-to-point wiring limited to 15 m (50') on an RS-232 connection. The OMEGA iServer packages the serial data in standard TCP/IP packets that can travel anywhere on the Ethernet LAN or over the Internet.

The OMEGA iServer is compatible with almost any device with a serial interface such as: time clocks, security alarms, card-key access controllers, telecommunications equipment, vending machines, bar code readers, electric power meters, UPS systems, test and measurement instrumentation, PLCs, serial printers, and cash registers.

You do not need to rewrite the firmware for your serial devices to work with the iServer, and in some cases might not need to change your application software. Your serial devices will function over the Ethernet network or the Internet as if they were connected directly to a PC. The COM port on the iServer simulates a local COM port on the PC.

The OMEGA iServer is compatible with wireless Ethernet. In settings where wires of any kind are not possible, the EIS-W can be connected to a wireless Ethernet access point enabling simple, economical wireless connectivity of serial devices.

With the OMEGA iServer, a facilities manager can monitor electric power usage over the LAN from a desk anywhere in the facility, or from anywhere on the Internet with the proper passwords and authorization. A payroll clerk can download data from time clocks to a PC anywhere on a local area network, or anywhere in the world. A manufacturing technician can use a handheld computer with wireless Ethernet connectivity to change settings on a process controller.

The OMEGA iServer model EIS-W comes complete with full documentation, software, and AC power adaptor.

For OEMs, OMEGA offers custom labeling as well as customized application-specific firmware and design engineering.

OMEGA also offers printed circuit board-level products (powered by 5 Vdc) that OEMs can incorporate in their product to add embedded Ethernet/Internet connectivity with existing serial interface. (Contact the OMEGA OEM Engineering Group.)

For industrial applications, OMEGA offers other iServer device servers in polycarbonate enclosures for DIN rail mounting and a 10 to 32 Vdc power source.

OMEGA iServer products provide generous technical support and a one-year limited warranty.

Specifications

SERIAL INTERFACE
Interface: RS-232, RS-422 or RS-485 (2 wire)
Connector: DB-9 (male DTE)
Data Rates: 300 to 115.2 Kbps
Characters: 7 or 8 data bits
Parity: Odd, even or none
Stop Bits: 1 or 2
Flow Control: Hardware (RTS/CTS) and software (Xon/Xoff)
Digital I/Os: 4 digital input/output lines

NETWORK INTERFACE
Interface: Ethernet 10Base-T
Connector: RJ45
Standards: ARP, TCP/IP, DHCP, DNS, ICMP, Telnet and HTTP

INDICATORS (LED):
Power, network activity and serial transmit/receive

PROCESSOR
CPU: Enhanced 8051, 22 MHz
Memory: 512 KB flash, 16 KB SRAM
Management: Embedded Web server, Telnet login, serial login

EMBEDDED WEB SERVER
Uses: Serves dynamic Web pages and Java applets (256 KB capacity)

POWER
Input: 9 to 12 Vdc
Consumption: 2 W max (AC adaptor included)

ENVIRONMENTAL
Operating Temperature: 0 to 70°C (32 to 158°F)
Storage Temperature: -40 to 125°C (-40 to 257°F)
Packaging Material: Metal case with flange mount
Dimensions: 20.8 H x 61.6 W x 90.3 mm D (0.82 x 2.42 x 3.56")
Weight: 0.18 kg (0.4 lb)

Agency Approvals:
FCC-B, C/UL, CE

Software:
Firmware upgradable; compatible with Windows 9x/ME/NT/2000/XP software and related utilities

ORDERING INFORMATION
MicroServer™: Serial interface (RS-232, RS-422, RS-485), 10Base-T/Ethernet, diagnostic LEDs, AC power adaptor (included), CD-ROM with documentation, and printed quick start guide
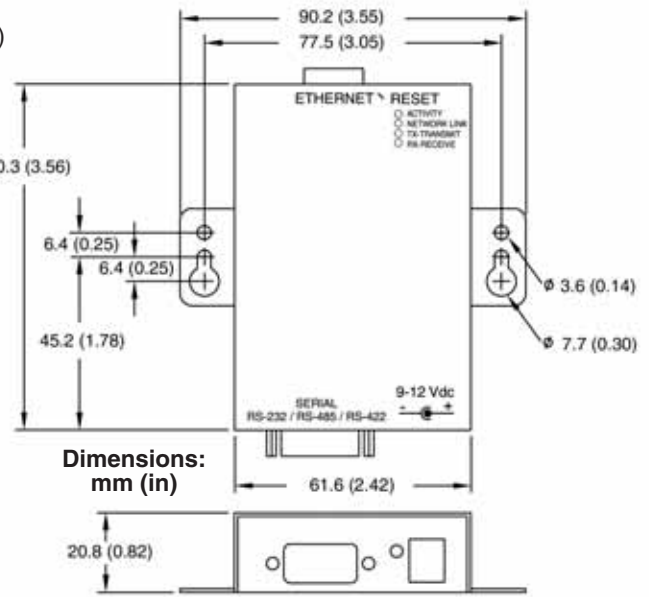
Dimensions: mm (in)

90.2 (3.55)
77.5 (3.05)
ETHERNET — RESET
ACTIVITY
NETWORK LINK
TX-TRANSMIT
RX-RECEIVE
90.3 (3.56)
6.4 (0.25)
6.4 (0.25)
45.2 (1.78)
Ø 3.6 (0.14)
Ø 7.7 (0.30)
9-12 Vdc
SERIAL RS-232 / RS-485 / RS-422
61.6 (2.42)
20.8 (0.82)

EIS-W, $195, shown smaller than actual size

Ethernet LAN INTERNET

PC on LAN 10BASE-T

iServer   iServer

RS485 Device
RS485 Device
RS485 Device
RS-232 Serial Device

INDICATING LEDs
DB9 SERIAL PORT
POWER LED
POWER PLUG
RESET BUTTON
RJ45 ETHERNET PORT
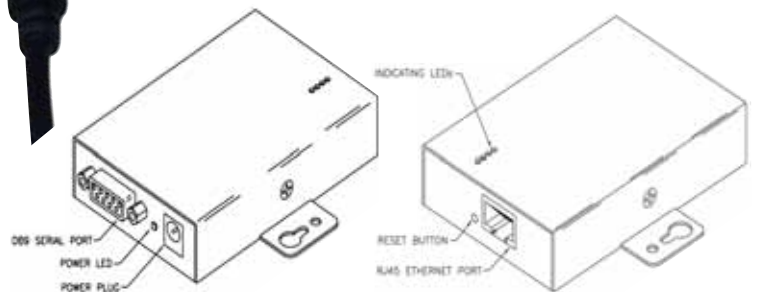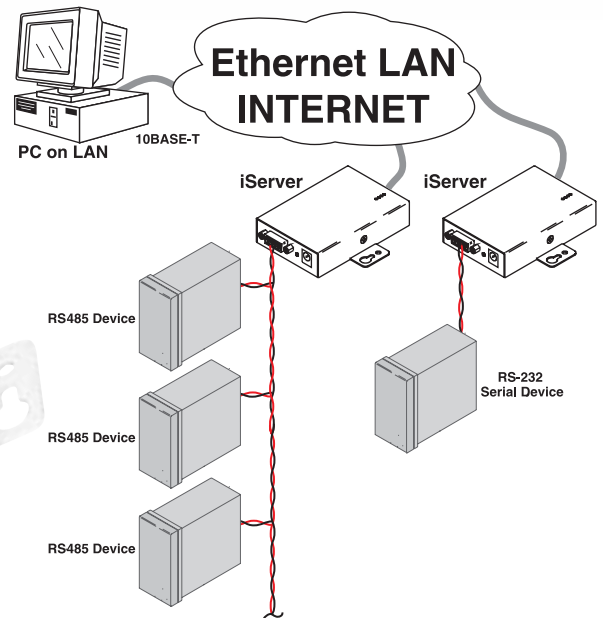
To Order *(Specify Model Number)*

Model No.	Price*	Description
EIS-W-110	**$195**	External Whitebox MicroServer™ with 110 Vac, 60 Hz adaptor
EIS-W-240	195	External Whitebox MicroServer™ with 240 Vac, 50/60 Hz adaptor

Volume discounts available. Comes with complete operator's manual.
Ordering Example: EIS-W-240, 240 Vac, 50/60 Hz iServer, **$195.**

Embedded MicroServer™ EIS-PCB

CE · 1 YEAR WARRANTY · FCC-B

✔ **Embedded Solution for Serial to Ethernet Communications**
✔ **Connect Almost any Serial Device to an Ethernet Network and the Internet**
✔ **Replace Dedicated Wiring and PCs for Serial Connections**
✔ **Small Enough to Fit into Almost any Size Device**
✔ **Well-Developed TCP/IP Stack**
✔ **Web-Based Interface for Easy Configuration and Access Without any Special Software**
✔ **Configuration Option via Telnet and Serial**
✔ **DHCP and DNS Support for Dynamic IP Address Assignment**
✔ **Digital I/O Lines**
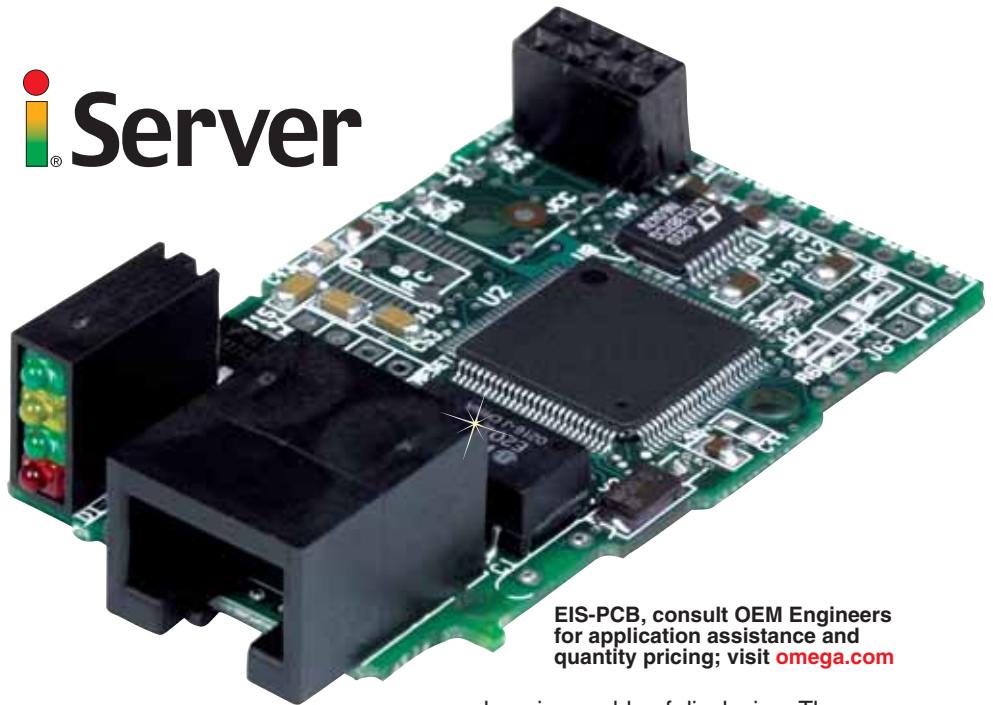✔ **Password Protection for Security**
✔ **Firmware Upgradable**
✔ **Custom Firmware Available for OEMs**

iServer

EIS-PCB, consult OEM Engineers for application assistance and quantity pricing; visit omega.com

The award-winning OMEGA® iServer is the simplest, easiest, most economical way for original equipment manufacturers to network-enable their products. Any device with serial communications capability (RS-232, 422, or 485) can now connect to an Ethernet network and the Internet.

The world's smallest World Wide Web server, the OMEGA iServer EIS-PCB is a printed circuit board, half the size of a business card, powered by 5 Vdc from the product's main board. It connects the manufacturer's product to an Ethernet network with a standard RJ45 connector.

The OEM product can now become a node on an Ethernet network, or on the Internet. The iServer is compatible with DHCP servers (dynamic host configuration protocol) and DNS servers (domain name system). This means that the OEM product can take a dynamically assigned IP address from a DHCP server on a LAN or the Internet, and can be identified by name or IP address. This DHCP client capability is a valuable and unique feature of the OMEGA iServer that makes it extremely easy for the manufacturer's customers to start using its product on almost any Ethernet network.

The OEM or end users can easily assign a static IP address to the product instead of the dynamic IP address, if necessary. The IP address can be assigned locally with its serial connection, as well as remotely over an Ethernet network using Telnet or a Web browser.

The OMEGA iServer is compatible with almost any device with a serial interface such as: time clocks, security alarms, card-key access controllers, telecommunications equipment, vending machines, bar code readers, electric power meters, UPS systems, test and measurement instrumentation, PLCs, serial printers, and cash registers.

Users of these OEM products will be able to type the product's IP address or unique name in the address line of a Web browser such as Internet Explorer and access the iServer's configuration pages as well as the serial device attached to the iServer. OMEGA offers custom firmware engineering services for each application to enable the OEM product to serve a Web page with a custom template and actively changing data.

For example, an electric power meter could serve a Web page that displays whatever data is available from the meter such as current kilowatts, accumulated kilowatt hours, peak rate, or any other information.

A burglar alarm could serve a custom Web page that displays current alarm status, log history, or anything else the

alarm is capable of displaying. The OEM product can also be programmed to trigger an email or page to report an alarm or to update the current status.

Alternatively, the iServer can be used to create a virtual tunnel on an Ethernet/Internet network simulating a local point-to-point serial connection between a manufacturer's device and a PC. This replaces dedicated point-to-point wiring limited to 15 m (50'). The OMEGA iServer packages the serial data in standard TCP/IP packets that can travel anywhere on the Ethernet LAN or over the Internet.

Using the embedded iServer, a manufacturer of time clocks could enable a payroll clerk to download data to a PC anywhere on a LAN or anywhere in the world. A manufacturer of process controllers could enable its customer to use a handheld computer with wireless Ethernet connectivity to log data and change settings on the controller.

OEMs do not need to rewrite the firmware for their serial devices to work with the iServer, and in some cases might not need to change their application software. The OEM's serial devices will function over the Ethernet network or the Internet as if they were connected directly to a PC. The COM port on the iServer simulates a local COM port on the PC.

Consult OMEGA® OEM Engineering group for application assistance and quantity pricing.

Dimensions: mm (in)

For pin and socket connector
+ 0.91 (0.036) HOLE DIA
Φ 0.61 (0.024) HOLE DIA
For mounting
⊕ 3.05 (0.120) HOLE DIA
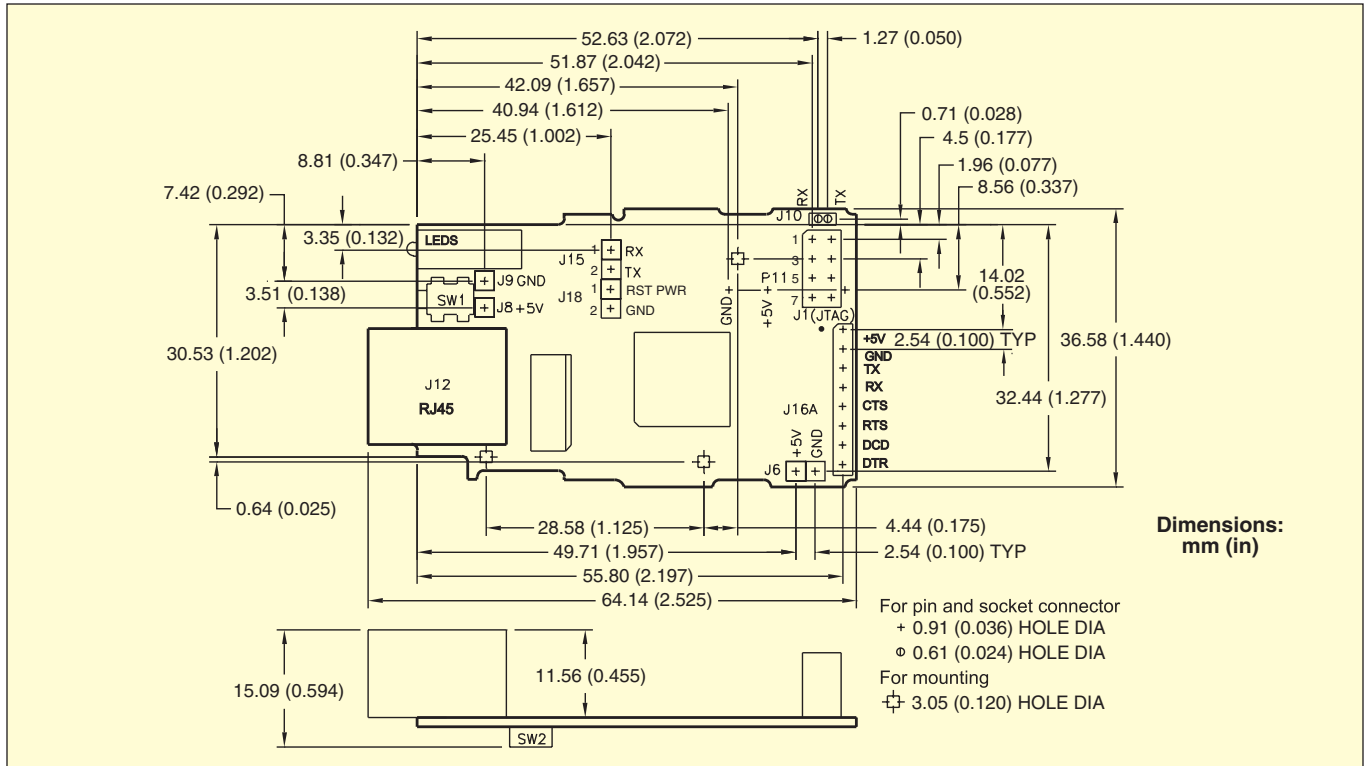
Specifications

SERIAL INTERFACE
Interface: RS-232, RS-422 or RS-485, CMOS or TTL
Connector: Pin header holes [2.5 mm (0.1") pitch]
Data Rates: 300 to 115.2 Kbps
Characters: 7 or 8 data bits
Parity: Odd, even or none
Stop bits: 1 or 2
Flow Control: Hardware (RTS/CTS) and software (Xon/Xoff)
Digital I/Os: 4 digital input/output lines

NETWORK INTERFACE
Interface: Ethernet 10Base-T
Connector: RJ45
Standards: ARP, TCP/IP, DHCP, ICMP, DNS, Telnet and HTTP
Indicators (LED): Network activity and serial transmit/receive

PROCESSOR
CPU: Enhanced 8051, 22 MHz
Memory: 512 KB flash, 16 KB SRAM
Management: Embedded Web server, Telnet login, serial login

EMBEDDED WEB SERVER
Uses: Serves dynamic web pages and Java applets (256 KB capacity)

POWER
Input: 5 Vdc

Consumption: 0.7 W avg./1 W max

ENVIRONMENTAL
Operating Temperature:
0 to 70°C (32 to 158°F)
Storage Temperature:
-40 to 125°C (-40 to 257°F)

Agency Approvals
FCC-B, CE, C/UL
Software: Firmware upgradable; Compatible with Windows 9x/ME/NT/ 2000/XP software and related utilities

Ethernet LAN INTERNET

UPS with EIS-PCB

Bar-Code Reader with EIS-PCB

Time Clock and Card-Key Access Control with EIS-PCB

Vending Machine with EIS-PCB

Scale with EIS-PCB

Security Alarm with EIS-PCB

Cash Register with EIS-PCB
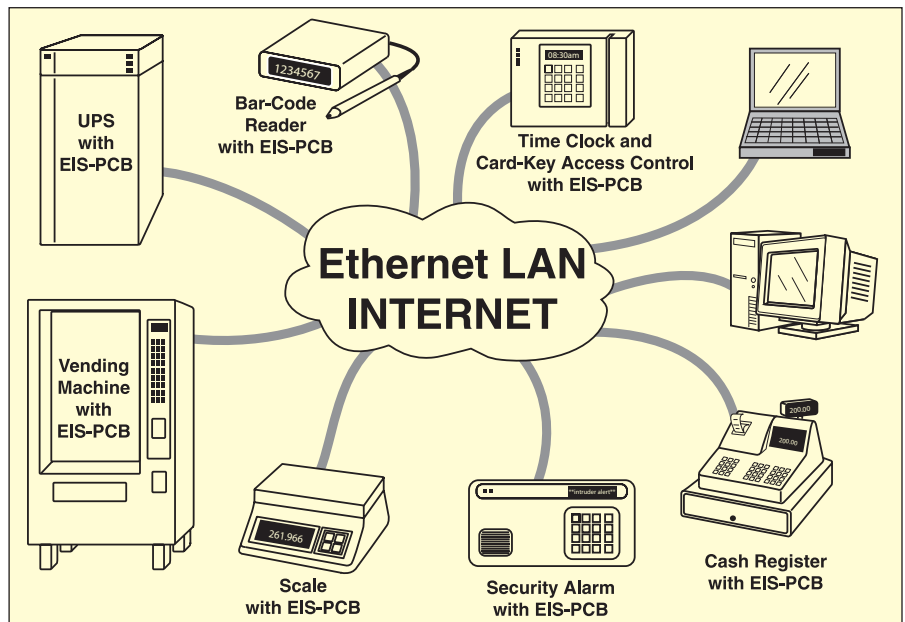
To Order (Specify Model Number)

Model No.	Description
EIS-PCB	Consult OEM engineers for application assistance and quantity pricing: oem@newportUS.com (714.540.4914)

4-Channel Sensor to Computer Interface Modules
D5000 OMEGABUS® Series

Starts at
$250

D5321, $275, shown
smaller than actual size

KQSS-14U-12, $30 each, Type K quick-disconnect thermocouple. Search
omega.com for more information.

- ✔ **4-Channel Analog Input**
- ✔ **Complete Sensor to RS-485 or RS-232C Interface**
- ✔ **ASCII Format Command/ Response Protocol**
- ✔ **500 V RMS Analog Input Isolation**
- ✔ **15-Bit Measurement Resolution**
- ✔ **Continuous Self-Calibration; No Adjustments of any Kind**
- ✔ **Programmable Digital Filter**
- ✔ **Requires 10 to 30 Vdc Unregulated Supply**
- ✔ **Transient Suppression on RS-485 Communication Lines**
- ✔ **Screw-Terminal Plug Connectors Supplied**

The D5000 4-channel sensor to computer modules are a family of complete solutions designed for data acquisition systems based on personal computers and other processor-based equipment with standard serial I/O ports. The modules convert 4 analog input signals to engineering units and transmit in ASCII format to any host with standard RS-485 or RS-232C ports. These modules can measure temperature, voltage, and current. They provide direct connection to a wide variety of sensors and perform all signal conditioning, scaling, linearization, and conversion to engineering units. The modules contain no pots or switches to be

set. Features such as address, baud rate, parity, echo, etc., are selectable using simple commands over the communications port—without requiring access to the module. The selections are stored in non-volatile EEPROM which maintains data even after power is removed.

The key to the D5000 series is that the modules are easy to use. Users do not need engineering experience in complicated data acquisition hardware. With the D5000 series modules, anyone familiar with a personal computer can construct a data acquisition system.

NEW

This modular approach to data acquisition is very flexible and cost effective. The modules can be mixed and matched to fit an application. They can be placed remote from the host and from each other. A user can string up to 30 modules on one set of wires by using RS-485 with repeaters.

All modules are supplied with screw-terminal plug connectors and captive mounting hardware. The connectors allow system expansion, reconfiguration, or repair without disturbing field wiring.

A1000, $250, RS-232 to RS-485 converter/repeater

D5321, $275, shown smaller than actual size

Technical Books Available Online!

books1.com
omega.com

☐ *MOST POPULAR MODELS HIGHLIGHTED!*

To Order *(Specify Model No.)*

RS-232C Output Model Number	RS-485 Output Model Number	Price	Input
D5111	D5112	$250	100 mV
D5121	D5122	250	1 V
D5131	D5132	250	5 V
D5141	D5142	250	10 V
D5151	D5152	250	100 V
D5251	D5252	250	4 to 20 mA
D5311	D5312	275	J (IRON-CONSTANTAN)
D5321	D5322	275	K (CHROMEGA®-ALOMEGA®)
D5331	D5332	275	T (COPPER-CONSTANTAN)
D5341	D5342	275	E (CHROMEGA®-CONSTANTAN)
D5451	D5452	250	2252 Ω thermistor

Each unit is supplied with a CD ROM that includes a complete operator's manual and Windows setup software.
Ordering Example: D5111 4-channel 100 mV input module with RS-232C output and **OMEGACARE**SM 1 year extended warranty for **D5111** (adds 1 year to standard 1-year warranty), $250 + 25 = **$275.**

Accessories

Model Number	Price	Description
A1000	$250	RS-232 to RS-485 converter, 115 Vac power
A1000-230	250	RS-232 to RS-485 converter, 230 Vac power
A1000-CABLE	15	1.5 m (5') cable, male to female
A2000	200	RS-232 to RS-485 converter, 10 to 30 Vdc power
D1000-C9	20	1.8 m (6') RS-232 cable for D5000, (DB9F connector one end, other end stripped)
CS-3771	60	Reference Book: OP AMP Applications Handbook

Each unit supplied with operator's manual.
Ordering Example: A1000 RS-232 to RS-485 converter, 115 Vac power and **OMEGACARE**SM 1 year extended warranty for **A1000** (adds 1 year to standard 1-year warranty), $250 + 25 = **$275.**

Miniature Low-Cost Temperature Transmitters

TX91A
$99

HHF12
$70

Pocket Size Air Velocity/Temperature Meter

DASYLab Data Acquisition System Laboratory Software

SWD-DASYLAB
$1099
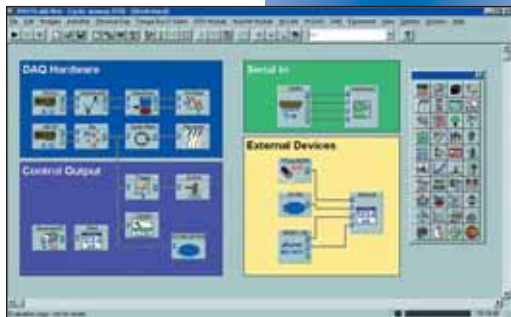
Please search omega.com for more details on these featured products!

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10/06/05   DILBERT © United Feature Syndicate, Inc.

10/07/05   DILBERT © United Feature Syndicate, Inc.

10/08/05   DILBERT © United Feature Syndicate, Inc.

10/10/05   DILBERT © United Feature Syndicate, Inc.

10/11/05   DILBERT © United Feature Syndicate, Inc.

NEW

Portable Handheld Data Logger
OM-DAQPRO-5300

Starts at
$995

Technical Books Available Online!
books1.com
omega.com

- ✔ **8-Channel Data Logger—Measures Voltage; Current; Pt 100 RTD; J, K, T Thermocouples; 2252 or 10 K Thermistors; Frequency/Pulse Input**
- ✔ **Alarm Output**
- ✔ **16-Bit Sampling Resolution**
- ✔ **Fast USB Communications**
- ✔ **Rapid Sampling—Up to 4000 Samples/Sec (Single Channel Burst Mode)**
- ✔ **Large Data Storage—512 KB RAM**
- ✔ **Graphical Display—Shows Collected Data as Measured Values, Graphs, or Tables**
- ✔ **Multiple Logging Sessions—Stores Up to 100 Recording Sessions**
- ✔ **Powerful Analysis Software for Windows 95/98/NT/2000/ME/XP**

OM-DAQPRO-5300, $995, shown smaller than actual size

The OM-DAQPRO-5300 is an 8-channel portable data acquisition and logging system with graphic display and built-in analysis functions. The data logger is powered by an internal rechargeable battery and is capable of sampling, processing, and displaying measurements without being connected to a computer. The OM-DAQPRO-5300 is a professional, cost-effective, compact, standalone data logging system that can be used with a wide variety of applications. This 16-bit, high-resolution data logger has graphic displays and analysis functions for measuring voltage, current, and temperature in real time. With its high-resolution and fast analog-to-digital converter (ADC), the OM-DAQPRO-5300 meets the majority of data logging requirements for industrial applications. Its unique ability to display measured values and analyze them in real time on a graphical interface minimizes the need to download collected data to a computer for further analysis.

Every OM-DAQPRO-5300 data logger is embedded with a unique serial number and can be loaded with a descriptive comment for safe identification.

The data logger is very easy to use because all its functions are broken down into an 8-icon menu. The four buttons on the data logger's front keypad can be used to browse every menu and execute any of the commands.

Inputs

The OM-DAQPRO-5300 has eight input channels for measuring voltage, current, temperature, and pulses. User-selectable input types/ranges are 0 to 24 mA, 0 to 50 mV, 0 to 10 V, 2252 Ω or 10 KΩ thermistors, Pt 100 RTDs, type J/K/T thermocouple temperature sensors, internal temperature, pulse counter, frequency meter, and up to 20 user-defined sensors (used for scaling analog voltage or current inputs in engineering units).

The OM-DAQPRO-5300 can record data from up to eight 2-wire or four 3-wire Pt 100 RTD inputs (two input channels are required for each 3-wire Pt 100 RTD input connected). Frequency/pulse counter is only available for input 1.

The data logger provides a simple and straightforward tool for defining up to 20 custom sensors. Almost any 0 to 10 V and 4 to 20 mA sensor or transducer can be displayed and scaled in meaningful engineering units, e.g., psi or gpm. The sensor definitions are stored in the data logger's memory and are added to the sensors list. The sensor's readings are displayed in the user-defined units both on the OM-DAQPRO-5300's LCD screen and in the Windows software.

The inputs use pluggable screw terminal blocks for easy connection. An internal clock and calendar keep track of the date and time of every sample measured.

NEW ®

Outputs

The OM-DAQPRO-5300 can automatically activate an external alarm device (e.g., energize an audible alarm or turn on a warning light) when an input channel is outside a specified range. Input/Output 8 serves as either an input or an alarm output. The external alarm device (audible or visual alarm) is connected to the screw terminals of Input/Output 8. The alarm output is an open collector output, which is analogous to an electrical switch. High/low alarm levels, and whether the alarm output is activated during an out-of limit condition, can be set for each input channel individually.

Windows Software

The OM-DAQPRO-5300 system also comes with powerful Windows software. When the data logger is connected to a PC, live displays can be viewed at rates of up to 100 samples/sec, and automatic downloads can be carried out at higher rates.

The software can display the data in graphs, tables, or meters; analyze data with various mathematical tools; or export data to a spreadsheet. The Windows software also enables the user to set up the data logger and to send advanced commands such as alarm settings, triggering conditions, and text notes.

Applications

- Quality Assurance
- Plant and Machine Condition Monitoring
- Field Monitoring Stations
- Automotive Testing
- HVAC
- Plant Troubleshooting
- Electricity Transients Failure Detection
- Environmental Monitoring
- Monitor Food, Drug, and Electronic Equipment Storage Conditions
- Water Quality Testing
- Research

Specifications
INPUTS

Number of Inputs: 8 differential analog inputs
Input Type: Selectable type for each input: 0 to 24 mA, 0 to 50 mV, 0 to 10 V, 2252 Ω or 10 KΩ thermistor, Pt 100 RTD, J/K/T thermocouple, pulse and frequency (input 1 only)

0 to 24 mA
Range: 0 to 24 mA
Resolution: 0.47 µA
Accuracy: ±0.5% FS
Loop Impedance: 21 Ω

0 to 50 mV
Range: 0 to 50 mV
**Resolution:** 3 µV
Accuracy: ±0.5% FS
Input Impedance: 50 MΩ

OM-DAQPRO-5300, $995, with sensors, shown smaller than actual size

0 to 10 V
Range: 0 to 10 V
Resolution: 200 µV
Accuracy: ±0.5% FS
Input Impedance: 125 KΩ
TEMPERATURE THERMISTOR
Thermistor Type: 2252 Ω/10 KΩ Thermistor (OMEGA 44000 Series)
Range: -25 to 150°C (-13 to 302°F)
Resolution: 0.05°C
Accuracy: ±0.5% FS

TEMPERATURE Pt 100 RTD
RTD Type: 100 Ω Pt RTD, alpha = 0.00385
Range: -200 to 400°C (-328 to 752°F)
Resolution: 0.1°C (7 MΩ)
Accuracy: -200 to -50°C, ±0.5% of reading; 50 to 400°C, ±0.5% of reading; -50 to 50°C, ±0.5°C
No. of RTD Inputs: Up to eight Pt 100 2-wire channels or four Pt 100 3-wire channels
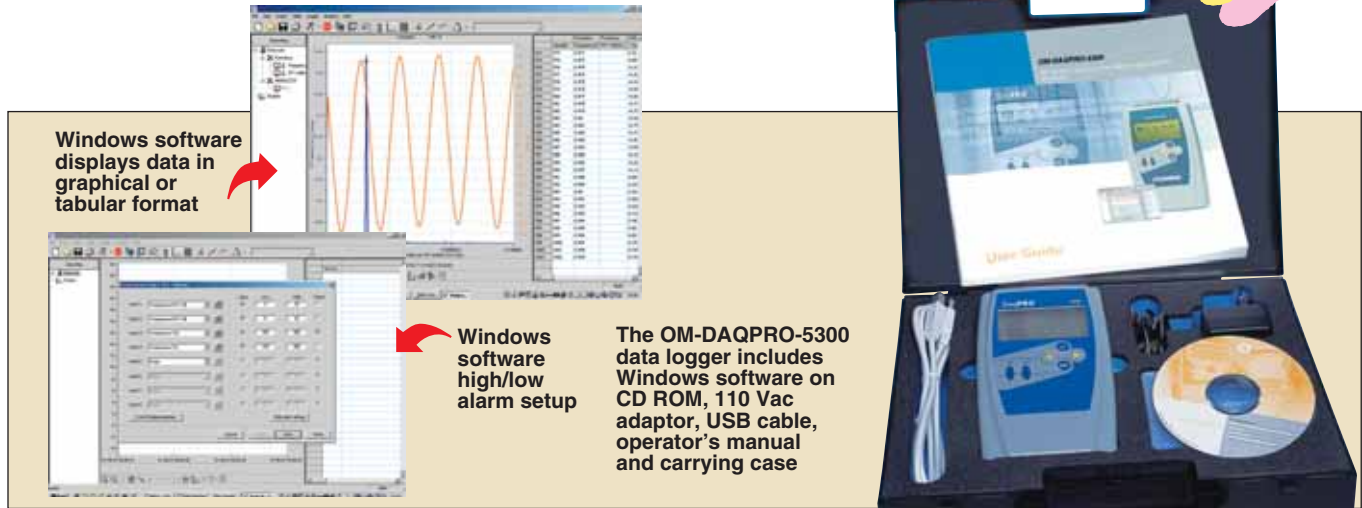
Windows software displays data in graphical or tabular format

Windows software high/low alarm setup

The OM-DAQPRO-5300 data logger includes Windows software on CD ROM, 110 Vac adaptor, USB cable, operator's manual and carrying case

INTERNAL TEMPERATURE
Range: -25 to 70°C (-13 to 158°F)
Resolution: 0.1°C (1 µV)
Accuracy: ±0.3°C

PULSE COUNTER (INPUT 1 ONLY) OPTOCOUPLER INPUT
Range: 0 to 65,000 counts
Resolution: 1 count
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 4000 Hz
Time Resolution: 6.5 µs
Input Signal: 0 to 5 V
Input Impedance: 470 Ω

GENERAL
A/D SPECIFICATIONS
Noise: 30 µV RMS
Internal Linearity Error: ±0.08% of FSR
Offset Error: 0.1%

OPEN COLLECTOR ALARM OUTPUT (OUTPUT 8)
Maximum Current Sink: 50 mA @ 5 Vdc (fuse protected)
Input Impedance: 50 Ω

COMMUNICATION
USB 1.1 compliant

SAMPLING
Capacity: 512 KB (512,000 samples total)
Analog Sampling Rate:
Note: the number of sensors in use limits the maximum sampling rate
1. Maximum sampling rate with 1 sensor is 4000 samples/sec
2. Maximum temperature sampling rate is 1 sample/sec
3. Maximum sampling rate with 2 sensors or more is 1 sample/sec
4. Maximum sampling rate with 2 Pt 100 RTD sensors or more is every 10 seconds
5. Maximum sampling rate with 5 sensors or more and at least 1 thermistor or thermocouple (J, K, or T) is every 10 seconds
6. Maximum sampling rate with 7 sensors or more is every 10 seconds
7. Maximum sampling rate with 8 Pt 100 RTD sensors or more is every 10 seconds
8. Data logger displays readings in real time at rates of up to 1 sample/sec
9. Data logger software displays online readings at rates of up to 1 sample/sec

Thermocouple Table

Analog Sampling Resolution: 16 bits

MAN/MACHINE INTERFACE
Keyboard: Full keyboard operation—enables manual programming of the data logger
Display: Graphic LCD 64 x 128 pixels

POWER SUPPLY
Power: Internal rechargeable 7.2 V Ni-MH battery, built-in battery charger, external 9 to 12 Vdc input via included 110 Vac adaptor
Battery Life: 40 hr between charges

OPERATING TEMPERATURE
Operating Temperature Range: 0 to 50°C (32 to 122°F)

MECHANICAL
Enclosure: ABS plastic
Dimensions: 182 H x 100 W x 28 mm D (7.17 x 3.94 x 1.10")
Weight: 450 g (1 lb)

STANDARDS COMPLIANCE
CE, FCC

Thermocouple Type	Range	Accuracy*	Resolution
J	-200 to -50°C (-328 to -58°F) -50 to 50°C (-58 to122°F) 50 to 1200°C (122 to 2192°F)	±0.5% of reading ±0.5°C ±0.5% of reading	0.1°C (1 µV)
K	-250 to -50°C (-418 to -58°F) -50 to 50°C (-58 to122°F) 50 to 1200°C (122 to 2192°F)	±0.5% of reading ±0.5°C ±0.5% of reading	0.1°C (1 µV)
T	-200 to -50°C (-328 to -58°F) -50 to 50°C (-58 to122°F) 50 to 400°C (122 to 752°F)	±0.5% of reading ±0.5°C ±0.5% of reading	0.1°C (1 µV)

Accuracy does not include cold junction compensation (CJC). CJC error: ±0.3°C.

The OM-DAQPRO-5300 data logger includes Windows software on CD ROM, 110 Vac adaptor, USB cable, operator's manual
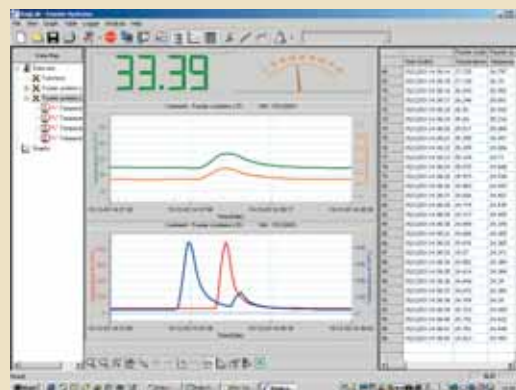
Windows software displays data in graphical or tabular format

ANALYSIS SOFTWARE
Operating System: Windows 95/98/NT/2000/ME/XP

FEATURES:
• Fast data download
• Data displayed in numeric or graphical form
• 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
• Online retrieval and display of data in real time
• Incorporates data processing functions
• Data logger setup
• Data logger calibration
• Defining of new sensors

Maximum No. of Samples vs. No. of Input Channels

No. of Channels	Max. No. of Samples
1	512,000
2	256,000
3	128,000
4	128,000
5	64,000
6	64.000
7	64,000
8	64,000

OMEGACARE^{SM} *extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE*^{SM} *covers parts, labor and equivalent loaners.*

Ready-Made Insulated Thermocouples with Stripped Leads

5TC Series

$33

MEETS OR EXCEEDS SPECIAL LIMITS OF ERROR (SLE) AND EN 60584-2: Tolerance Class 1

MADE IN USA

5-Pack Basic Unit

Custom Lengths, Insulations and Configurations Available

For more information, please see page 158

✔ Available from Stock in Convenient 5-Packs
✔ PFA Teflon®, Kapton, or Glass Braid Insulation
✔ 20, 24, 30, 36, and 40 AWG Wires
✔ 1 and 2 m (40 and 80") Lengths Standard
✔ NIST Calibration Available

"TT" PFA Teflon® insulation

"GG" glass braid insulation

AVAILABLE FOR FAST DELIVERY!

To Order (Specify Model Number)

Model No.	Price	Description
OM-DAQPRO-5300	$995	Portable handheld data logger (110 Vac adaptor)
OM-DAQPRO-5300-230VAC	995	Portable handheld data logger (230 Vac adaptor)

Accessories

Model No.	Price	Description
OM-DAQPRO-BOX	$157	Weatherproof IP67 enclosure for data logger
OM-DAQPRO-COMCABLE	20	USB communications cable (spare)
OM-DAQPRO-110-ADAPTOR	15	110 Vac adaptor (spare)
OM-DAQPRO-220-ADAPTOR	15	220 Vac adaptor (spare)
CS-3785	150	Reference Book: McGraw-Hill Dictionary of Scientific and Technical Terms

*Each **OM-DAQPRO-5300** data logger includes Windows software on CD ROM, 110 Vac or 230 Vac adaptor, USB cable, operator's manual and carrying case.*
Ordering Example: OM-DAQPRO-5300** portable handheld data logger and **OCW-1,** OMEGACARE*^{SM} *extends standard 1-year warranty to a total of 2 years ($99), $995 + 99 = **$1094.

NEW®

8-Channel Temperature Data Logger
Part of the NOMAD® Family
OM-CP-OCTTEMP

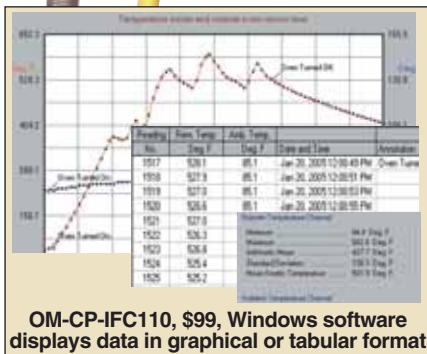OM-CP-OCTTEMP data logger, $999, shown larger than actual size, with KTSS-HH probe, sold separately, $29

Starts at
$999

5 YEAR WARRANTY MADE IN USA CE

✔ **Automatic Cold Junction Compensation**
✔ **Programmable Start Time**
✔ **8 Thermocouple Channels and 1 Ambient**
✔ **User Calibration Through Software**
✔ **Automatic Thermocouple Linearization**
✔ **Miniature Size**
✔ **Real-Time Operation**

Temperature version!

Plug in up to 8 probes

Technical Books Available Online!
books1.com™ omega.com®

The OM-CP-OCTTEMP is an 8-channel, battery-powered, standalone, thermocouple-based temperature data logger. This portable, easy-to-use device will measure and record up to 14,563 temperature measurements per channel. The OM-CP-OCTTEMP represents a major leap in both size and performance. Its real-time clock ensures that all data is time and date stamped. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. The data logger's small size allows it to fit almost anywhere. Data retrieval is simple. Plug the logger into an available COM port and our easy-to-use software does the rest. The software converts your PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Temperature Measurement Range:
  Type J: -210 to 760°C; **K:** -270 to 1370°C; **T:** -270 to 400°C; **E:** -270 to 980°C; **R:** -50 to 1760°C; **S:** -50 to 1760°C; **B:** 50 to 1820°C; **N:** -270 to 1300°C
  Memory: 14,563 readings/channel
  Temperature Calibration: Digital calibration is available through software
  Calibration Date: Automatically recorded within device to alert user when calibration is required
  Recording Interval: 5 sec to 12 hr selectable in software
  Start Time: Start time and date are programmable through software
  Real-Time Recording: Device can be used with PC to monitor and record data in real time
  Power: 9 V lithium battery (included)
  Battery Life: 1 year typical
  Time Accuracy: ±1 min/month when RS-232 port is not in use

Specifications
Internal Channel: 1
Temperature Accuracy: ±0.5°C (0 to 50°C)
Temperature Resolution: 0.1°C
Temperature Range: -40 to 80°C (-40 to 176°F)
Thermocouple Channels: 8
Thermocouple Input Types: J, K, T, E, R, S, B, N
Thermocouple Connection: Subminiature female jack
Cold Junction Compensation: Automatic
External Thermocouple Channel Accuracy*
(Uniform 20°C Internal Temperature):
J, K, T, E: ±0.5°C; R, S, B, N: ±2.5°C
Resolution: J, K, T, E: 0.1°C; R, S, B, N: 0.5°C

* Accuracy does not include errors due to thermocouple.

Data Format: Date and time stamped; °C, °F, °K, °R, mV
Computer Interface: PC serial, RS-232C COM or USB (interface cable required)
Software: Windows 95/98/NT/2000/XP
Operating Environment: -40 to 80°C (-40 to 176°F) 5 to 95% RH non-condensing
Dimensions: 38 H x 111 W x 89 mm D (1.5 x 4.4 x 3.5")
Weight: 450 g (16 oz)
Material: Black anodized aluminum

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-OCTTEMP	**$999**	8-channel, thermocouple-based temperature data logger
OM-CP-OCTTEMP-CERT	1059	8-channel, thermocouple-based temperature data logger with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interace cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3791	150	Reference Book: Standard Handbook of Electronics Engineering

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (required to operate the data logger and sold separately). **Ordering Example: OM-CP-OCTTEMP-CERT,** 8-channel, thermocouple-based temperature data logger with NIST calibration certificate, **OM-CP-IFC110,** Windows software and RS-232 cable, $1059 + 99 = **$1158.***

NEW®

4-Channel Temperature Data Logger
Part of the NOMAD® Family
OM-CP-QUADTEMP

Starts at
$599

MADE IN **USA** 5 YEAR WARRANTY CE

✔ **4 Thermocouple Channels and 1 Ambient Channel**
✔ **Real-Time Operation**
✔ **Programmable Start Time**
✔ **Automatic Cold Junction Compensation and Linearization**

The OM-CP-QUADTEMP is a 4-channel, battery-powered, standalone, thermocouple-based temperature data logger. This portable, easy-to-use device will read and record up to 131,070 temperature measurements (26,214 readings per channel including ambient). The OM-CP-QUADTEMP represents a major leap in both size and performance. Its real-time clock ensures that all data is time and date stamped. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. The device's small size allows it to fit almost anywhere. Data retrieval is simple. Plug the logger into an available COM port and the Windows software does the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
INTERNAL CHANNEL TEMPERATURE SENSOR
Calibrated Accuracy: ±0.5°C (0 to 50°C) ±0.9°F (32 to 122°F)
Temperature Resolution: 0.1°C
Temperature Range: -40 to 80°C (-40 to 176°F)
External Thermocouple Channel Accuracy*:
(Uniform 20°C Internal Temperature):
J, K, T, E: ±0.5°C; R, S, B, N: ±2.5°C
Calibrated Accuracy:* ±0.5°C
Temperature Resolution:
0.1°C for types J, K, T, E; 0.5°C for types R,S,B
Thermocouple Connection: Female subminiature connectors
Thermocouple Range Type:
J: -210 to 760°C (-346 to 1400°F)
K: -270 to 1370°C (-454 to 2498°F)
T: -270 to 400°C (-454 to 752°F)
E: -270 to 980°C (-454 to 1796°F)
R: -50 to 1760°C (-58 to 3200°F)
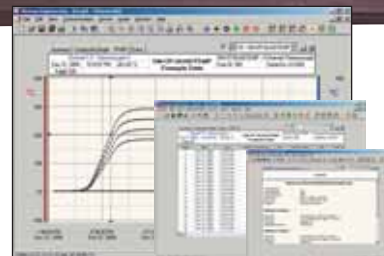**S:** -50 to 1760°C (-58 to 3200°F)
B: 50 to 1820°C (122 to 3308°F)
N: -270 to 1300°C (-454 to 2372°F)

OM-CP-QUADTEMP, $599, shown larger than actual size

KTSS-HH probe, $29, sold separately

4 Channel Thermocouple Temperature Recorder
OM-CP-QUADTEMP   Thermocouple Types: J, K, T, E, R, S, B, N
OMEGA   Made in U.S.A.   Communication: 2400 Baud
TC-1 | TC-2 | TC-3 | TC-4 | SN:

Plug in up to 4 probes

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

GENERAL SPECIFICATIONS
Temperature Calibration:
Digital calibration is available through software
Recording Interval:
12/min to 1/day selectable in software
Start Time: Start time and date are programmable through software
Real-Time Recording: Device can be used with PC to monitor and record data in real time
Power: 9 V lithium battery (included)
Battery Life: 1 year typical
Time Accuracy:
±1 min/month when RS-232C port is not in use
Data Format: Date and time stamped; °C, °F, °K, °R
Weight: 370 g (13 oz)
Computer Interface: PC serial, USB or RS-232C COM
Software: Windows 95/98/NT/2000/XP
Operating Environment:
-40 to 80°C (-40 to 176°F), 5 to 95% RH non-condensing
Dimensions: 81 H x 115 W x 28 mm D (3.2 x 4.5 x 1.1")
Material: Black anodized aluminum
***Accuracy does not include errors due to thermocouple.**

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-QUADTEMP	**$599**	4-channel temperature data logger
OM-CP-QUADTEMP-CERT	659	4-channel temperature data logger with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OMP-CP-BAT103	20	Replacement 9 V lithium battery
CS-3781	60	Reference Book: Accelerated Testing and Validation

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (required to operate the data logger and sold separately).*
***Ordering Example: OM-CP-QUADTEMP-CERT** 4-channel temperature data logger with NIST calibration certificate and **OM-CP-IFC110** Windows software with RS-232 cable, $659 + 99 = **$758**.*

NEW

8-Channel RTD Temperature Data Logger
Part of the NOMAD® Family
OM-CP-OCTRTD

Starts at
$999

MADE IN USA
5 YEAR WARRANTY

✔ **100 Ω Pt RTD Input**
✔ **0.01°C Resolution**
✔ **Real-Time Operation**
✔ **Programmable Start Time**
✔ **User Calibration Through Software**

The OM-CP-OCTRTD temperature logger is an 8-channel, battery-powered, standalone, RTD-based recorder. This portable, easy-to-use device will read and record up to 10,922 measurements per channel. 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 a computer, and its small size allows it to fit almost anywhere. The OM-CP-OCTRTD makes data retrieval quick and easy. Simply plug it into an available COM port and the easy-to-use Windows software does the rest.

The Windows software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
TEMPERATURE
Input Type: 100 Ω Pt RTD, α = 0.00385
Measurement Range:
-200 to 850°C (-328 to 1562°F)
Resolution: 0.01°C
Calibrated Accuracy: ±0.1°C @ 25°C ambient (does not include RTD error)
Specified Accuracy Range:
-200 to 850°C (-328 to 1562°F)
RESISTANCE
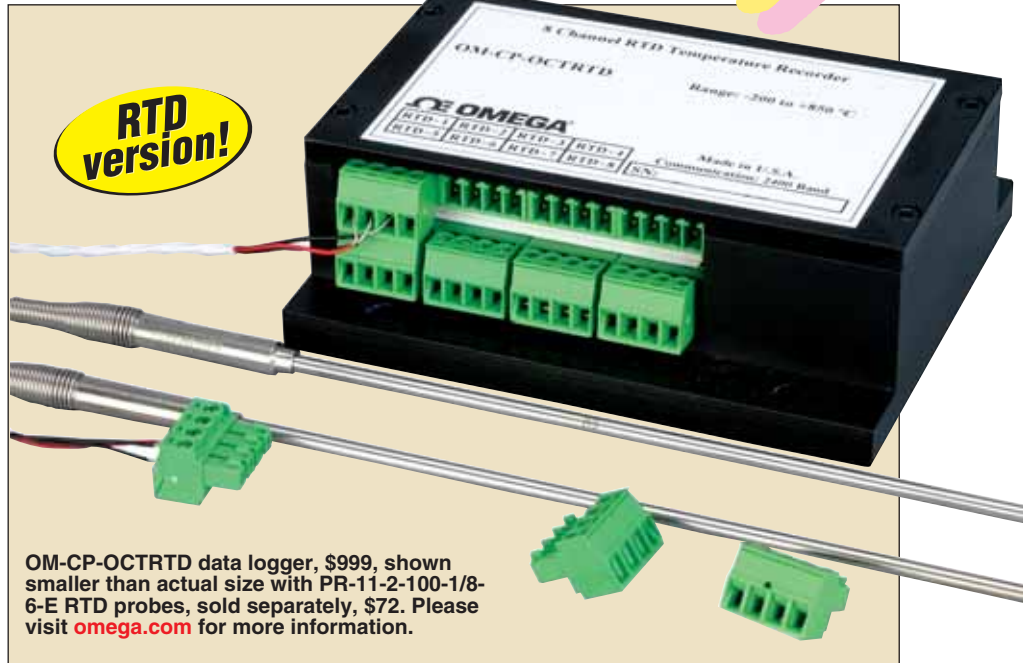**Nominal Range:** 0 to 5000 Ω
Resolution: 0.001 Ω
Calibrated Accuracy:
±0.03 Ω @ 25°C ambient
Specified Accuracy Range: 0 to 500 Ω
Channels: 8
Input Connection: Removable screw terminal; 2, 3 or 4 wire interface

RTD version!

OM-CP-OCTRTD data logger, $999, shown smaller than actual size with PR-11-2-100-1/8-6-E RTD probes, sold separately, $72. Please visit **omega.com** for more information.

Start Time: Start time and date are programmable through software
Real-Time Recording: Device can be used with PC to monitor and record data in real time
Memory: 10,922 readings per channel
Recording Interval: 2 sec to 12 hr, selectable through software
Calibration Date: Automatically recorded within device to alert user when calibration is required
Temperature Calibration: Digital calibration is available in software
Power: 9 V lithium battery (included)
Battery Life: 1 year typical
Data Format: Date and time stamped; °C, °F, °K, °R, Ω
Time Accuracy: ±1 minute per month at 20°C (when RS-232 port not in use)
Computer Interface: PC serial, RS-232C COM or USB for receiver

Software: Windows 95/98/NT/2000/XP
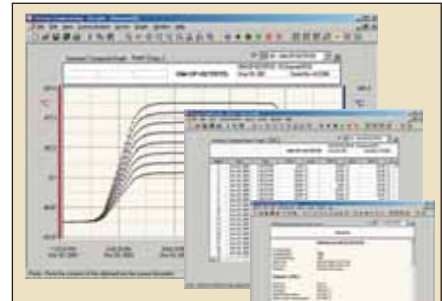**Operating Environment:**
-40 to 80°C (-40 to 176°F)
0 to 95% RH non-condensing
**Dimensions:** 89 H x 111 W x 37 mm D (3.5 x 4.4 x 1.5")
Weight: 480 g (17 oz)
Material: Black anodized aluminum

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

AVAILABLE FOR FAST DELIVERY!

To Order (Specify Model Number)

Model No.	Price	Description
OM-CP-OCTRTD	$999	8-channel RTD temperature data logger
OM-CP-OCTRTD-CERT	1059	8-channel RTD temperature data logger with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3766	100	Reference Book: Sensor Technology Handbooks

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** (windows software required to operate the data logger and sold separately).*
***Ordering Example: OM-CP-OCTRTD-CERT,** 8-channel RTD temperature data logger with NIST calibration certificate, **OM-CP-IFC110** Windows software, RS-232 cable, $1059 + 99 = **$1158**.*

NEW

4-Channel Temperature Data Logger
Part of the NOMAD® Family
OM-CP-QUADRTD

Starts at
$599

MADE IN USA

5 YEAR WARRANTY

☑ **100 Ω Pt RTD Input**
☑ **Real-Time Operation**
☑ **0.01°C Resolution**
☑ **Programmable Start Time**
☑ **User Calibration Through Software**

OM-CP-QUADRTD data logger, $599, shown smaller than actual size

PR-11-2-100-1/8-6-E RTD probes sold separately, $72. See Section C of the OMEGA® complete Temperature Handbook and Encyclopedia®.

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

The OM-CP-QUADRTD temperature data logger is a 4-channel, battery-powered, standalone, RTD-based precision temperature recorder. This portable, easy-to-use device will read and record up to 21,845 measurements per channel. 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 a computer, and its small size allows it to fit almost anywhere. The OM-CP-QUADRTD makes data retrieval quick and easy. Simply plug it into an available COM port and the easy-to-use Windows software does the rest.

The Windows software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
TEMPERATURE
Input Type:
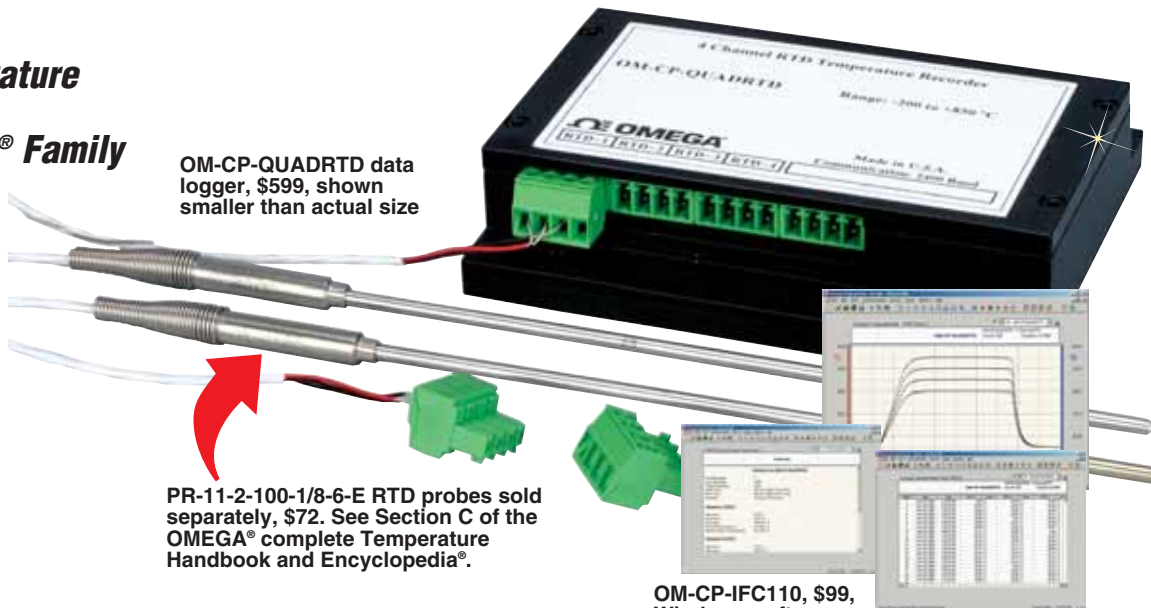100 Ω Pt RTD, α = 0.00385
Measurement Range:
-200 to 850°C (-328 to 1562°F)
Resolution: 0.01°C
Calibrated Accuracy:
±0.1°C @ 25°C ambient
(does not include RTD error)

Specified Accuracy Range:
-200 to 850°C (-328 to 1562°F)
RESISTANCE
Nominal Range: 0 to 5000 Ω
Resolution: 0.001 Ω
Calibrated Accuracy:
±0.03 Ω @ 25°C ambient
Specified Accuracy Range: 0 to 500
Channels: 4
Input Connection: Removable screw terminal; 2, 3 or 4 wire interface
Start Time: Start time and date are programmable through software
Real-Time Recording: Device can be used with PC to monitor and record data in real time
Memory: 21,845 readings per channel
Recording Interval: 2 sec to 12 hr, selectable through software
Calibration Date: Automatically recorded within device to alert user when calibration is required

Temperature Calibration: Digital calibration is available in software
Power: 9 V lithium battery (included)
Battery Life: 1 year typical
Data Format: Date and time stamped; °C, °F, °K, °R, Ω
Time Accuracy: ±1 min per month at 20°C (when RS-232 port not in use)
Computer Interface: PC serial, RS-232C COM or USB (interface cable required); 2400 baud
Software: Windows 95/98/NT/2000/XP
Operating Environment:
-40 to 80°C (-40 to 176°F)
0 to 95% RH non-condensing
Dimensions:
89 H x 111 W x 26 mm D
(3.5 x 4.4 x 1.0")
Weight: 370 g (13 oz)
Material: Black anodized aluminum

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-QUADRTD	$599	4-channel RTD temperature data logger
OM-CP-QUADRTD-CERT	659	4-channel RTD temperature data logger with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	19	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3779	50	Reference Book: Software Design for Engineers and Scientists

Operator's manual is included with the **OM-CP-IFC110** *Windows software and RS-232 cable (required to operate the data logger and sold separately).*
***Ordering Example: OM-CP-QUADRTD-CERT** 8-channel RTD temperature data logger with NIST calibration certificate and* **OM-CP-IFC110** *Windows software with RS-232 cable, $659 + 99 = **$758**.*

10/12/05 DILBERT © United Feature Syndicate, Inc.

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HHF81
$150

4-in-1 Air
Velocity Meter
Anemometer,
Hygrometer, Light
Meter, Thermometer

**CN9000A Series
Starts at
$199**

1/16 DIN Autotune
PID/On-Off Temperature
Controllers with
Midular Output

**FSB Series
Starts at
$1867**

Fluidized
Sand Bath
Temperature
Probe
Calibrators

*Please search omega.com
for more details on these
featured products!*

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24 HOURS**

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and Service,
Call Toll-Free: **1-800-327-4333**SM
1-800-DAS-1EEE
U.S.A. and Canada

79

8-Channel Voltage Data Loggers
Part of the NOMAD® Family
OM-CP-OCTVOLT

Starts at
$999

5 YEAR WARRANTY   MADE IN USA

✔ **16-Bit Resolution**
✔ **Programmable Engineering Units, Scale Factor, and Offset Value**
✔ **Memory Wraparound**
✔ **User Calibration Through Software**
✔ **Real-Time Operation**

The OM-CP-OCTVOLT Series is comprised of low-cost, high-resolution, miniature, battery-powered, standalone voltage input data loggers. In addition, the OM-CP-OCTVOLT allows the user to store predefined engineering units into the device, as well as scale factors and offset values. This lets the user easily linearize and scale a transducer that provides a voltage—automatically and in any user-required units. This capability is ideal for scaling a voltage output. The portable, easy-to-use OM-CP-OCTVOLT will read and record up to 16,383 voltage measurements per channel.

The OM-CP-OCTVOLT represents a major leap in both size and performance. Its real-time clock ensures that all data is time and date stamped. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. The device's small size allows it to fit almost anywhere.

Data retrieval is simple. Plug the device into an available COM port and our easy-to-use software does the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

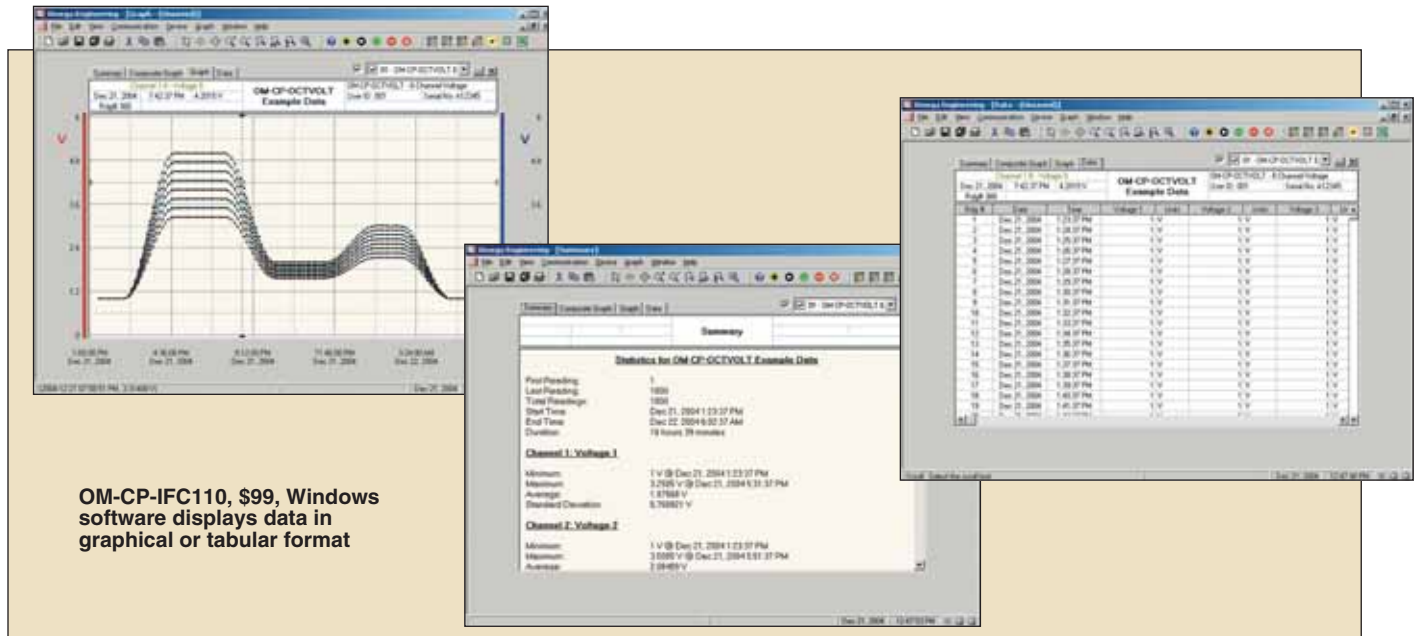**OM-CP-OCTVOLT, $999, shown slightly smaller than actual size**

Specifications

Input Channels: 8
Memory: 16,383 readings/channel
Input Connection: Removable screw terminal
ADC Resolution: 16 bits
Voltage Calibration: Digital calibration is available in software
Calibration Date: Automatically recorded within device to alert user when calibration is required
Recording Interval: 1 second to 12 hours selectable in software
Start Time: Start time and date are programmable through software
Memory Wraparound: Selectable in software
Real-Time Recording: Device can be used with PC to monitor and record data in real-time
Time Accuracy: ±1 minute per month at 20°C
Power: 9 V lithium battery (included)
Battery Life: 1 year typical

Data Format: Date and time stamped; µV, mV, V and other engineering units programmable through software
Computer Interface: PC serial, RS-232C COM or USB (interface cable required)
Software: Windows 95/98/NT/2000/XP
Operating Environment: -40 to 80°C (-40 to 176°F) 0 to 95% RH non-condensing
Dimensions: 38 H x 111 L x 89 mm D (1.5 x 4.4 x 3.5")
Weight: 450 g (16 oz)
Material: Black anodized aluminum

Technical Books Available Online!

books1.com
omega.com

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

INPUT RANGES	OM-CP-OCTVOLT-100MV	OM-CP-OCTVOLT-2.5V	OM-CP-OCTVOLT	OM-CP-OCTVOLT-30V
Nominal Input Range	±100 mV	0 to 2.5 V	0 to 15 V	0 to 30
Measurement Range	±150 mV	-0.25 to 2.75 V	-1.0 to 16.0 V	-2.0 to 32.0 V
Resolution	5 uV	0.1 mV	0.5 mV	1.0 mV
Accuracy	±0.01% FSR	±0.01% FSR	±0.1% FSR	±0.1% FSR
Input Impedance	>1 KΩ*	>1 KΩ*	>10 KΩ	>10 KΩ
Overload Protection	±5 V	±5 V	±30 V	±48 V

* *>1 MΩ during acquisition.*

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-OCTVOLT	$999	8-channel voltage data logger, 15 V input range
OM-CP-OCTVOLT-CERT	1059	8-channel voltage data logger, 15 V input range with NIST calibration certificate
OM-CP-OCTVOLT-100MV	999	8-channel voltage data logger, ±100 mV input range
OM-CP-OCTVOLT-100MV-CERT	1059	8-channel voltage data logger, ±100 mV input range with NIST calibration certificate
OM-CP-OCTVOLT-2.5V	999	8-channel voltage data logger, 2.5 V input range
OM-CP-OCTVOLT-2.5V-CERT	1059	8-channel voltage data logger, 2.5 V input range with NIST calibration certificate
OM-CP-OCTVOLT-30V	999	8-channel voltage data logger, 30 V input range
OM-CP-OCTVOLT-30V-CERT	1059	8-channel voltage data logger, 30 V input range with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3788	30	Reference Book: Electrician's Calculations Manual

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (required to operate the data logger and sold separately).*

Ordering Example: OM-CP-OCTVOLT-CERT** 8-channel voltage data logger with NIST calibration certificate and **OM-CP-IFC110** Windows software with RS-232 cable, $1059 + 99 = **$1158.

4-Channel Voltage Data Loggers
Part of the NOMAD® Family
OM-CP-QUADVOLT Series

Starts at
$599

- ✔ **16-Bit Resolution**
- ✔ **Programmable Engineering Units, Scale Factor, and Offset Value**
- ✔ **Memory Wraparound**
- ✔ **Miniature Size**
- ✔ **User Calibration Through Software**
- ✔ **Real-Time Operation**

The OM-CP-QUADVOLT is a low-cost, high-resolution, miniature, battery-powered, standalone voltage input data logger. In addition, the OM-CP-QUADVOLT allows the user to store predefined engineering units as well as scale factors and offset values. This lets the user linearize and scale any transducer that provides a voltage to any required units—automatically. This portable, easy-to-use device will read and record up to 32,768 voltage measurements per channel. The OM-CP-QUADVOLT is a major leap in both size and performance. Its real-time clock ensures that all data is time and date stamped. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. A small size allows the device to fit almost anywhere. Data retrieval is simple. Plug the device into an available COM port and our easy-to-use software does the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
Input Channels: 4

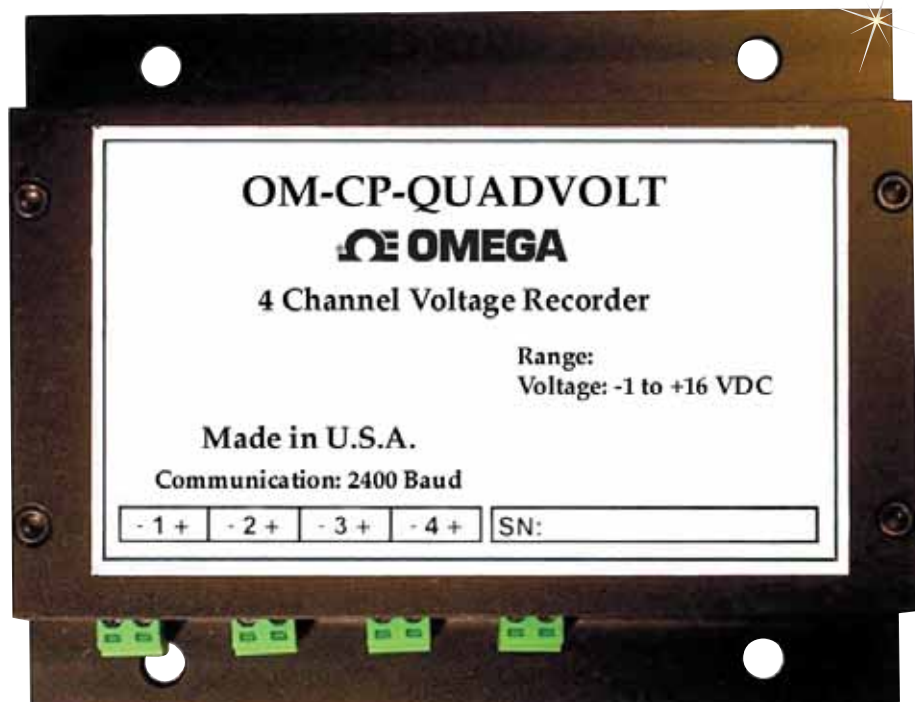**Memory:** 32,768 readings/channel
Input Connection:
Removable screw terminal
Input Impedance: >10 KΩ
ADC Resolution: 16 bits
Voltage Calibration: Digital calibration is available in software

OM-CP-QUADVOLT data logger, $599, shown larger than actual size

Calibration Date: Automatically recorded within device to alert user when calibration is required
Recording Interval: 5 seconds to 12 hours selectable in software
Start Time: Start time and date are programmable through software
Memory Wraparound:
Selectable in software
Real-Time Recording: Device can be used with PC to monitor and record data in real time
Power: 9 V lithium battery included
Battery Life: 1 year typical
Time Accuracy:
±1 minute per month at 20°C
Data Format: Date and time stamped; µV, mV, V and other engineering units programmable through software
Computer Interface:
PC serial, RS-232C COM or USB (interface cable required)
Software: Windows 95/98/NT/2000/XP
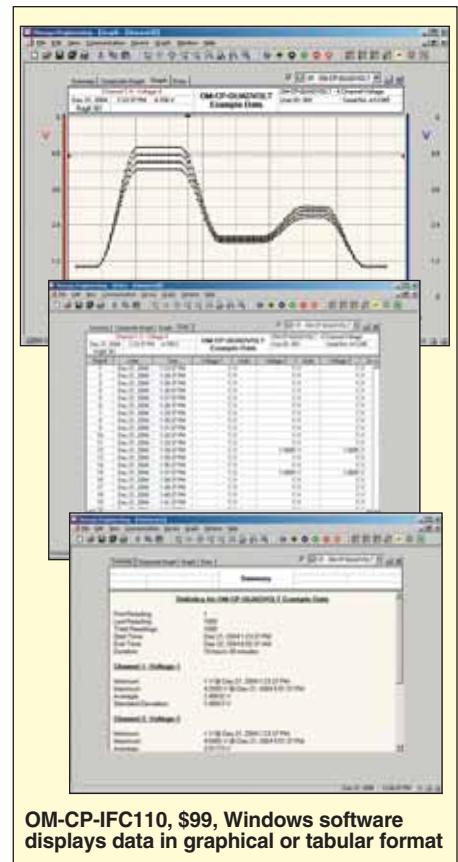**Operating Environment:**
-40 to 80°C (-40 to 176°F)
5 to 95% RH non-condensing
Dimensions: 26 H x 111 W x 89 mm D (1.0 x 4.4 x 3.5")
Weight: 370 g (13 oz)
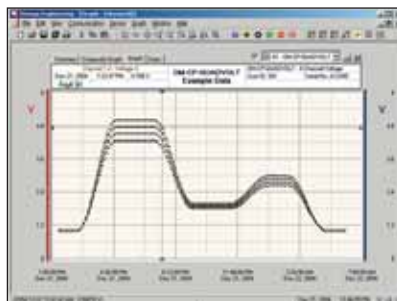**Material:** Black anodized aluminum

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

INPUT RANGES	OM-CP-QUADVOLT-100MV	OM-CP-QUADVOLT-2.5V	OM-CP-QUADVOLT	OM-CP-QUADVOLT-30V
Nominal Input Range	±100 mV	0 to 2.5 V	0 to 15 V	0 to 30
Measurement Range	±150 mV	-0.25 to 2.75 V	-1.0 to 16.0 V	-2.0 to 32.0 V
Resolution	5 µV	0.1 mV	0.5 mV	1.0 mV
Accuracy	±0.01% FSR	±0.01% FSR	±0.1% FSR	±0.1% FSR
Input Impedance	>1 KΩ*	>1 KΩ*	>10 KΩ	>10 KΩ
Overload Protection	±5 V	±5 V	±30 V	±48 V

* >1 M Ω during acquisition.

OM-CP-QUADVOLT data logger, $599, shown smaller than actual size

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

Technical Books Available Online!
books1.com
omega.com

MOST POPULAR MODELS HIGHLIGHTED!

To Order (Specify Model Number)

Model No.	Price	Description
OM-CP-QUADVOLT	$599	4-channel voltage data logger, 15 V input range
OM-CP-QUADVOLT-CERT	659	4-channel voltage data logger, 15 V input range with NIST calibration certificate
OM-CP-QUADVOLT-2.5V	599	4-channel voltage data logger, 2.5 V input range
OM-CP-QUADVOLT-2.5V-CERT	659	4-channel voltage data logger, 2.5 V input range with NIST calibration certificate
OM-CP-QUADVOLT-30V	599	4-channel voltage data logger, 30 V input range
OM-CP-QUADVOLT-30V -CERT	659	4-channel voltage data logger, 30 V input range with NIST calibration certificate
OM-CP-QUADVOLT-100MV	599	4-channel voltage data logger, ±100 mV input range
OM-CP-QUADVOLT-100MV-CERT	659	4-channel voltage data logger, ±100 mV input range with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3773	60	Reference Book: Intelligent Sensor Design using the Microchip dsPIC

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (sold separately).*
***Ordering Example: OM-CP-QUADVOLT-CERT,** 4-channel voltage data logger with NIST calibration certificate and **OM-CP-IFC110** Windows software with RS-232 cable, $659 + 99 = **$758**.*

NEW

8-Channel Current Data Logger
Part of the NOMAD® Family
OM-CP-OCTPROCESS

Starts at
$999

5 YEAR WARRANTY
MADE IN USA

✔ **16-Bit Resolution**
✔ **Programmable Engineering Units, Scale Factor, and Offset Value**
✔ **Memory Wraparound**
✔ **Miniature Size**
✔ **User Calibration Through Software**
✔ **Real-Time Operation**

The OM-CP-QUADPROCESS is a 4-channel, battery-powered, standalone current data logger. The OM-CP-OCTPROCESS lets the user store predefined units in the device, as well as scale factors and offset values.This allows easy automatic linearization and scaling of any process meter that provides an analog output to process units. This portable, easy-to-use device will read and record up to 16,383 current measurements per channel.

The OM-CP-OCTPROCESS represents a major leap in both size and performance. Its small size allows it to fit almost anywhere. Its real-time clock ensures that all data is time and date stamped. The storage medium is non-volatile solid state memory, providing maximum data security, even if the battery becomes discharged. Data retrieval is simple. Plug the logger into an available COM port and our easy-to-use software does the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical or tabular format. It can also be exported to a text or Microsoft Excel file.

OM-CP-OCTPROCESS data logger, $999, shown larger than actual size

Specifications

Input Channels:
8 non-isolated inputs
Memory: 16,383 readings/channel
Input connection: Screw terminal
ADC Resolution: 16 bits
Analog Conversion Time: 133 ms
Frequency Rejection: 60 Hz
Current Calibration:
Digital calibration is available through software
Calibration Date: Automatically recorderd within device to alert user when calibration is required
Recording Interval: 1 second to 12 hours selectable with software
Start Time: Start time and date are programmable through software
Real-Time Recording:
Device can be used with PC to monitor and record data in real time
Memory Wraparound:
Selectable in software

Power: 9 V lithium battery (included)
Battery Life: 1 year typical
Time Accuracy: ±1 minute per month at 20°C
Data Format: Date and time stamped in µA, mA, A and other engineering units programmable through software
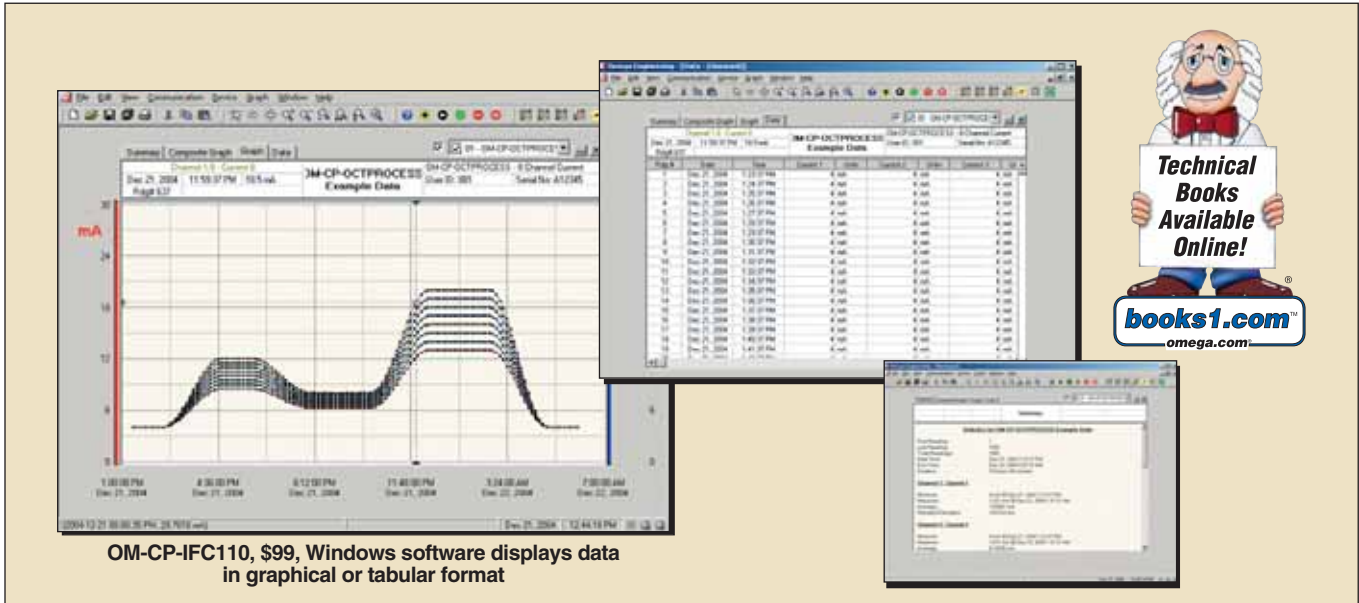**Weight:** 480 g (17 oz)
Computer Interface:
PC serial, RS-232C COM or USB (interface cable required)
Software: Windows 95/98/NT/2000/XP
Operating Environment:
40 to 60°C (-40 to 140°F)
0 to 95% RH non-condensing
Dimensions:
38 H x 111 W x 89 mm D
(1.5 x 4.4 x 3.5")
Material: Black anodized aluminum

**OM-CP-IFC110, $99, Windows software displays data
in graphical or tabular format**

Technical Books Available Online!

books1.com
omega.com

INPUT RANGES	OM-CP-OCTPROCESS-1MA	OM-CP-OCTPROCESS-25MA	OM-CP-OCTPROCESS-100MA
Nominal Range	±1 mA	±25 mA	±100 mA
Measurement Range	±1.5 mA	±30 mA	±120 mA
Resolution	0.05 µa	1 µa	5 µa
Calibrated Accuracy	±0.5% FSR	±0.1% FSR	±0.1% FSR
Input Impedance	50 Ω	10 Ω	2 Ω
Overload Protection	±20 mA	±100 mA	±125 mA

Specified accuracy range: nominal range @25°C

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-OCTPROCESS-1MA	**$999**	8-channel current data logger, ±1 mA range
OM-CP-OCTPROCESS-1MA-CERT	1059	8-channel current data logger, ±1 mA range with NIST calibration certificate
OM-CP-OCTPROCESS-25MA	999	8-channel current data logger, ±25 mA range
OM-CP-OCTPROCESS-25MA-CERT	1059	8-channel current data logger, ±25 mA range with NIST calibration certificate
OM-CP-OCTPROCESS-100MA	999	8-channel current data logger, ±100 mA range
OM-CP-OCTPROCESS-100MA-CERT	1059	8-channel current data logger, ±100 mA range with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3770	90	Reference Book: Stress, Strain and Structural Dynamics

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (required to operate the data logger and sold separately).*

***Ordering Example: OM-CP-OCTPROCESS-25MA-CERT** 8-channel current data logger with NIST calibration certificate, **OM-CP-IFC110** Windows software with RS-232 cable, $1059 + 99 = **$1158**.*

NEW

4-Channel Current Data Logger
Part of the NOMAD® Family
OM-CP-QUADPROCESS

Starts at
$599

5 YEAR WARRANTY
MADE IN USA

✔ **16-Bit Resolution**
✔ **Programmable Engineering Units, Scale Factor, and Offset Value**
✔ **Memory Wraparound**
✔ **Miniature Size**
✔ **User Calibration Through Software**
✔ **Real-Time Operation**

The OM-CP-QUADPROCESS is a 4-channel, battery-powered, standalone current data logger. The OM-CP-QUADPROCESS lets the user store predefined units in the device, as well as scale factors and offset values. This allows easy, automatic linearization and scaling of any process meter that provides an analog output to process units. This portable, easy-to-use device will read and record up to 32,767 current measurements per channel.

The OM-CP-QUADPROCESS represents a major leap in both size and performance. Its small size allows it to fit almost anywhere. Its real-time clock ensures that all data is time and date stamped. The storage medium is non-volatile solid state memory, providing maximum data security, even if the battery becomes discharged.

Data retrieval is simple. Plug the logger into an available COM port and our easy-to- use software does the rest.
The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical or tabular format. It can also be exported to a text or Microsoft Excel file.

OM-CP-QUADPROCESS, $599, shown smaller than actual size

Specifications

Input Channels: 4 non-isolated inputs
Memory: 32,767 readings/channel
Input Connection: Screw terminal
Analog Conversion Time: 133 ms
Frequency Rejection: 60 Hz
ADC Resolution: 16 bits
Current Calibration: Digital calibration available in software
Calibration Date: Automatically recorderd within device to alert user when calibration is required
Recording Interval: 1 second to 12 hours selectable with software
Start Time: Start time and date are programmable through software
Memory Wraparound: Selectable in software
Real-Time Recording: Device can be used with PC to monitor and record data in real time
Time Accuracy: ±1 minute per month at 20°C

Power: 9 V alkaline battery (included)
Battery Life: 1 year typical
Time Accuracy: ±1 minute per month at 20°C
Data Format: Date and time stamped in µA, mA, A and other engineering units programmable through software
Weight: 370 g (13 oz)
Computer Interface: PC serial, RS-232C COM or USB
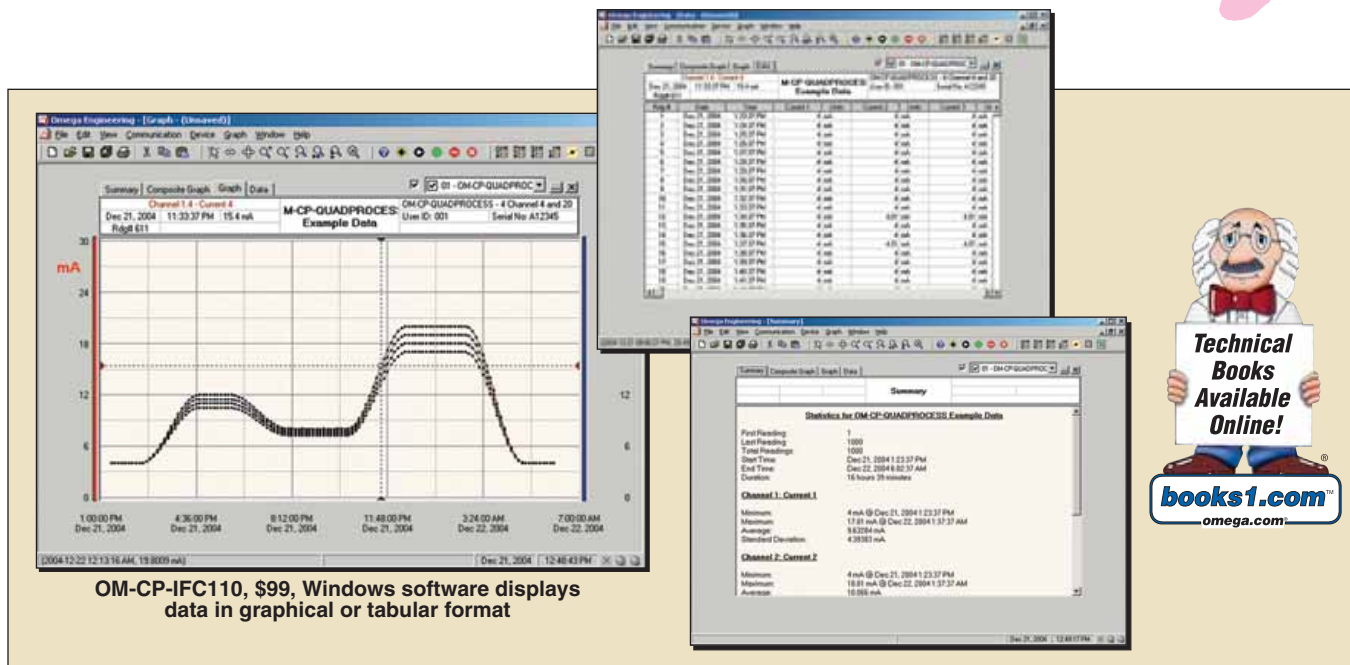**Software:** Windows 95/98/NT/2000/XP
Operating Environment: -40 to 60°C (-40 to 140°F) 0 to 95% RH non-condensing
Dimensions: 26 H x 111 W x 89 mm D (1.0 x 4.4 x 3.5")
**Material:** Black anodized aluminum

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

Technical Books Available Online!

books1.com omega.com

INPUT RANGES	OM-CP-QUADPROCESS-1MA	OM-CP-QUADPROCESS-25MA	OM-CP-QUADPROCESS-100MA
Nominal Range	±1 mA	±25 mA	±100 mA
Measurement Range	±1.5 mA	±30 mA	±120 mA
Resolution	0.05 µa	1 µa	5 µa
Calibrated Accuracy	±0.5% FSR	±0.1% FSR	±0.1% FSR
Input Impedance	50 Ω	10 Ω	2 Ω
Overload Protection	±20 mA	±100 mA	±125 mA

Specified accuracy range: nominal range @ 25°C

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-QUADPROCESS-1MA	$599	4-channel current data logger, ±1 mA range
OM-CP-QUADPROCESS-1MA-CERT	659	4-channel current data logger, ±1 mA range with NIST calibration certificate
OM-CP-QUADPROCESS-25MA	599	4-channel current data logger, ±25 mA range
OM-CP-QUADPROCESS-25MA-CERT	659	4-channel current data logger, ±25 mA range with NIST calibration certificate
OM-CP-QUADPROCESS-100MA	599	4-channel current data logger, ±100 mA range
OM-CP-QUADPROCESS-100MA-CERT	659	4-channel current data logger, ±100 mA range with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V alkaline battery
CS-3790	20	Reference Book: McGraw-Hill Dictionary of Electrical and Computer Engineering

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (required to operate the data logger and sold separately).*
***Ordering Example: OM-CP-QUADPROCESS-25MA-CERT** 4-channel current data logger with NIST calibration certificate and **OM-CP-IFC110** Windows software with RS-232 cable, $659 + 99 = **$758**.*

10/26/05   DILBERT © United Feature Syndicate, Inc.

10/28/05   DILBERT © United Feature Syndicate, Inc.
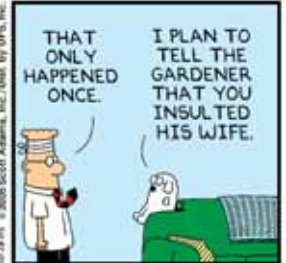
10/29/05   DILBERT © United Feature Syndicate, Inc.

10/31/05   DILBERT © United Feature Syndicate, Inc.

11/01/05   DILBERT © United Feature Syndicate, Inc.

11/02/05   DILBERT © United Feature Syndicate, Inc.

NEW

8-Channel State Recorder
Part of the NOMAD® Family
OM-CP-OCTSTATE

Starts at
$999

5 YEAR WARRANTY **MADE IN USA**

✔ **Interfaces to Contact Closures or TTL Signals Up to 30 V**
✔ **Real-Time Operation**
✔ **Programmable Start Time**
✔ **Programmable Engineering Units**
✔ **Memory Wraparound**
✔ **Miniature Size**

The OM-CP-OCTSTATE is an 8-channel, battery-powered, standalone state recorder. This portable, easy-to-use device will measure and record up to 52,484 state changes. 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 a computer, and its small size allows it to fit almost anywhere. The OM-CP-OCTSTATE makes data retrieval quick and easy. Simply plug it into an available COM port and our user-friendly software does the rest.

The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications

Input Connection: 8 removable screw terminals
Input Low: <0.4 V
Input High: >2.7 V
Input Range: 0 to 30 V
Duty Cycle Limitation:
   24 V: 10% (<6 seconds per minute)
   18 V: 25% (<5 seconds per minute)
   12 V: 50% (<30 seconds per minute)
Input Impedance: >1 KΩ
Time Resolution: 1 second (reading rate dependent)
Engineering Units: User can define units up to 10 characters in length. This value is stored within the device.

OM-CP-OCTSTATE, $999, data logger shown smaller than actual size

Scale Factor: User can program any desired scaling factor from ±1.000E-31 to ±9.999E+31. The scaling factor is stored within the device.
Start Time: Software programmable start time and date, up to six months in advance
Reading Interval: 1 reading every second to 1 every 12 hours
Memory: 52,484 state changes
Real-Time Recording: Can be used with PC to monitor and record data in real-time

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

Calibration Date: Automatically recorded within device
Power: 9 V lithium or alkaline battery (included)
Battery: 1 year typical
Data Format: Date and time stamped state changes (on/off); engineering units specified through software
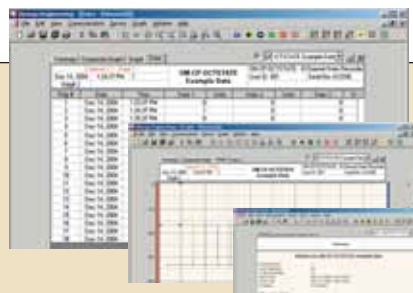**Time Accuracy:** ±1 minute/month (at 20°C, RS-232 cable not in use)
Computer Interface: PC serial, RS-232C COM or USB (interface cable required); 2400 baud
Software: Windows 95/98/ME/NT/2000/XP
Operating Environment: -40 to 80°C (-40 to 176°F) 0 to 95% RH non-condensing
Dimensions: 89 H x 111 W x 37 mm D (3.5 x 4.4 x 1.5")
Weight: 480 g (17 oz)

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-OCTSTATE	**$999**	8-channel state data logger
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3782	70	Reference Book: DSP Software Development Techniques for Embedded & Real-Time Systems

Operator's manual is included with the **OM-CP-IFC110** *Windows software and RS-232 cable (required to operate the data logger and sold separately).*
Ordering Example: **OM-CP-OCTSTATE** *8-channel state data logger and* **OM-CP-IFC110** *Windows software with RS-232 cable, $999 + 99 =* **$1098**.

NEW

4-Channel State Recorder
Part of the NOMAD® Family
OM-CP-QUADSTATE

Starts at
$599

Technical Books Available Online!
books1.com
omega.com

5 YEAR WARRANTY
MADE IN USA

✔ **Interfaces to Contact Closures or TTL Signals Up to 30 V**
✔ **Real-Time Operation**
✔ **Programmable Start Time**
✔ **Programmable Engineering Units**
✔ **Memory Wraparound**
✔ **Miniature Size**

The OM-CP-QUADSTATE is a four-channel, battery-powered, standalone state recorder. This portable, easy-to-use device will read and record up to 52,428 state changes. The OM-CP-QUADSTATE senses input transitions or contact closures from external sources such as transducers and/or state initiators, and it records the time and input state of the device when a transition occurs. 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 a computer and its small size allows it to fit almost anywhere.

The OM-CP-QUADSTATE makes data retrieval quick and easy. Simply plug it into an available COM port and our user-friendly software does the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
Input Connection: 4 removable screw terminals
Input Low: <0.4 V
Input High: >2.7 V
Input Range: 0 to 30 V
Duty Cycle Limitation:
 24 V: 10% (<6 seconds per minute)
 18 V: 25% (<15 seconds per minute)
 12 V: 50% (<30 seconds per minute)

OM-CP-QUADSTATE data logger, $599, shown smaller than actual size

Input Impedance: >1 KΩ
Time Resolution: 1 second (reading rate dependent)
Engineering Units: User can define units up to 10 characters in length. This value is stored within the device.
Scale Factor: User can program any desired scaling factor from ±1.000E-31 to ±9.999E+31. The scaling factor is stored within the device.
Start Time: Software programmable start time and date, up to six months in advance
Reading Interval: 1 reading every second to 1 every 12 hours
Memory: 52,484 state changes
Real-Time Recording: Can be used with PC to monitor and record data in real-time
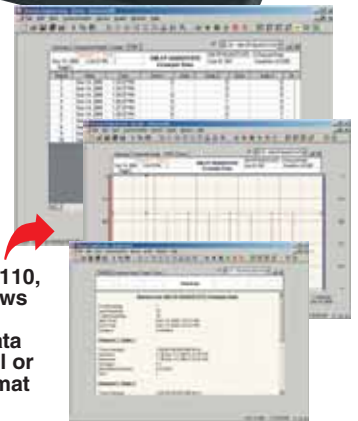**Calibration Date:** Automatically recorded within device
Power: 9 V lithium or alkaline battery (included)
Battery: 1 year typical
Data Format: Date and time stamped state changes (on/off); engineering units specified through software

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

Time Accuracy: ±1 minute/month (at 20°C, RS-232 cable not in use)
Computer Interface: PC serial, RS-232C COM or USB (interface cable required); 2400 baud
Software: Windows 95/98/ME/NT/2000/XP
Operating Environment: -40 to 80°C (-40 to 176°F) 0 to 95% RH non-condensing
Dimensions: 89 H x 111 W x 26 mm D (3.5 x 4.4 x 1.0")
Weight: 370 g (13 oz)

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-QUADSTATE	$599	4-channel state data logger
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3775	80	Reference Book: Control System Design Guide

*Operator's manual is included with the **OM-CP-IFC110** Windows software and RS-232 cable (required to operate the data logger and sold separately).*
***Ordering Example:** OM-CP-QUADSTATE 4-channel state data logger and **OM-CP-IFC110** Windows software with RS-232 cable, $599 + 99 = **$698**.*

NEW ®

Portable Data Loggers with USB Interface
OM-EL-USB Series

Starts at
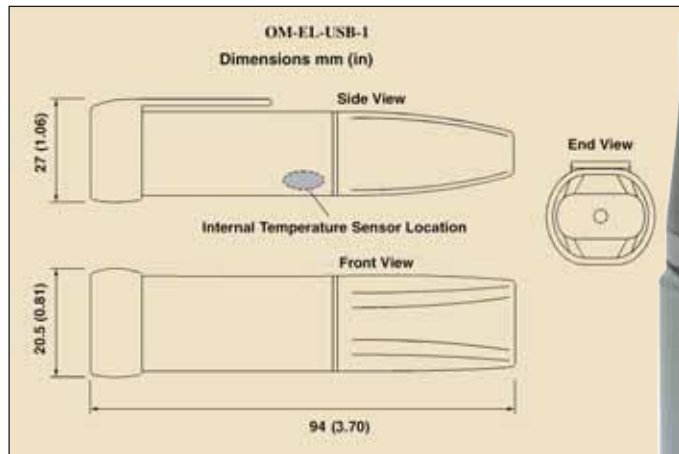$**60**

1 YEAR WARRANTY $C \epsilon$

✔ **Temperature, Temperature/RH/Dew Point, Voltage, and Current Models**
✔ **Data Logger Plugs Directly into Computer's USB Port for Easy Setup and Data Download (No USB Cable Required)**
✔ **User-Programmable Alarm Thresholds with LED Indicators**
✔ **Bright Red, Green, and Orange LED Indication**
✔ **Low-Battery Warning**
✔ **IP67 Protection**

The OM-EL-USB Series of data loggers includes models for temperature, temperature/relative humidity, voltage, and current measurement. The user can easily set up the data logger and download the stored data by plugging the module into a PC's USB port and running the easy-to-use Windows software. Software-selectable setup parameters include logging rate, start time, high/low alarm settings, and temperature units (°C or °F). Data can then be graphed, printed, and exported to other applications such as Excel. Each data logger is supplied complete with a long-life lithium battery. Built-in LED indicators show data logger status. OM-EL-USB Series data loggers are protected against moisture to IP67 standards when the protective cap is fitted.

Specifications
OM-EL-USB-1 TEMPERATURE DATA LOGGER
  Range: -35 to 80°C (-31 to 176°F)
  Resolution: 0.5°C (1°F)
  Accuracy: ±1.0°C (±2.0°F)

OM-EL-USB-1
Dimensions mm (in)
Side View
27 (1.06)
Internal Temperature Sensor Location
End View
Front View
20.5 (0.81)
94 (3.70)

GENERAL
Memory: 16,000 temperature readings
Logging Interval: 10 sec to 12 hr
Operating Temperature Range: 35 to 80°C (-31 to 176°F)
Alarm Thresholds: High/low alarm thresholds selectable in software
Start Date/Time: Selectable in software
Status Indicators (LEDs): Red, green and orange
Software: Windows 98/2000/XP
Power: ½ "AA" 3.6 V lithium battery (included)
Battery Life: 1 year (at 25°C and 1 minute logging interval)
Weight: 43 g (1.5 oz)
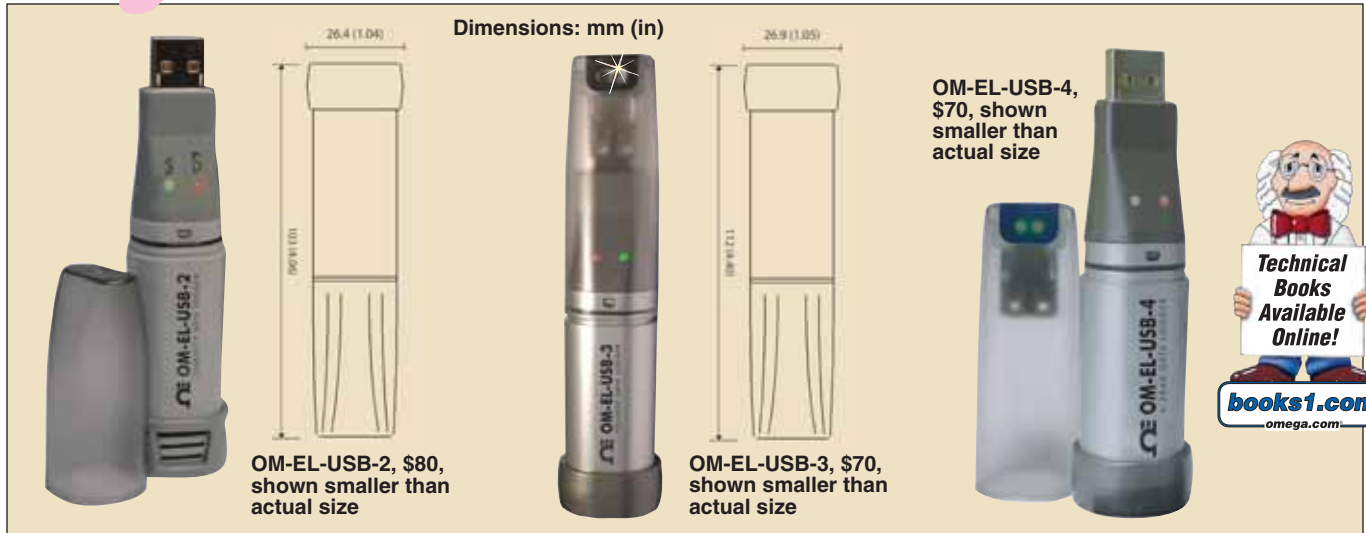**Dimensions:** See dimensional drawing

OM-EL-USB-1, $60, shown smaller than actual size

Windows software—initial setup window

Windows software—alarm setup window

Windows software—logger start window

NEW

Dimensions: mm (in)

26.4 (1.04)

26.9 (1.05)

OM-EL-USB-2, $80, shown smaller than actual size

OM-EL-USB-3, $70, shown smaller than actual size

OM-EL-USB-4, $70, shown smaller than actual size

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OM-EL-USB-2
TEMPERATURE AND RELATIVE HUMIDITY DATA LOGGER (DEW POINT INDICATION VIA WINDOWS SOFTWARE)
TEMPERATURE
Range: -35 to 80°C (-31 to 176°F)
Resolution: 0.5°C (1°F)
Accuracy: ±1.0°C (±2.0°F)
Response Time: 20 seconds
HUMIDITY
Range: 0 to 100% RH
Resolution: 0.5% RH
Accuracy: 20 to 80% RH ±3.5% RH
Response Time: 5 seconds
DEW POINT
Accuracy (overall error in the calculated dew point for RH measurements from 40 to 100% RH @ 25°C): ±2°C (±4°F)

GENERAL
Memory: 16,000 temperature and 16,000 relative humidity readings
Logging Interval:
10 seconds to 12 hours
Operating Temperature Range:
-35 to 80°C (-31 to 176°F)
Alarm Thresholds:
High/low alarm thresholds for % RH and temperature, selectable in software
Start Date/Time:
Selectable in software
Status Indicators (LEDs):
Red and green
Software: Windows 98/2000/XP
Power: ½ "AA" 3.6 V lithium battery (included)
Battery Life: 1 year typical (depends on sample rate, ambient temperaure and use of alarm LEDs)
Weight: 57 g (2 oz)
Dimensions: See dimensional drawing

OM-EL-USB-3
VOLTAGE DATA LOGGER
Range: 0 to 30 Vdc
Resolution: 100 mV
Accuracy: ±1%

GENERAL
Memory: 32,000 voltage readings
Logging Interval:
1 second to 12 hours
Input Connection:
Screw terminals
Operating Temperature Range:
-25 to 80°C (-13 to 176°F)
Alarm Thresholds: High/low alarm thresholds selectable in software
Start Date/Time:
Selectable in software
Status Indicators (LEDs):
Red and green
Power: ½ "AA" 3.6 V lithium battery (included)
Battery Life: 1 year typical (depends on sample rate, ambient temperature and use of alarm LEDs)
Weight: 57 g (2 oz)
Dimensions:
See dimensional drawing

OM-EL-USB-4
CURRENT DATA LOGGER
Range: 4 to 20 mA
Resolution: 0.1 mA
Accuracy: ±1%

GENERAL
Memory: 32,000 current readings
Logging Interval:
1 second to 12 hours
Input Connection:
Screw terminals
Operating Temperature Range:
-35 to 80°C (-31 to 176°F)
Alarm Thresholds: High/low alarm thresholds selectable in software
Start Date/Time: Selectable in software
Status Indicators (LEDs):
Red and green
Power: ½ "AA" 3.6 V lithium battery (included)
Battery Life: 1 year typical (depends on sample rate, ambient temperature and use of alarm LEDs)
Weight: 57 g (2 oz)
Dimensions:
See dimensional drawing

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

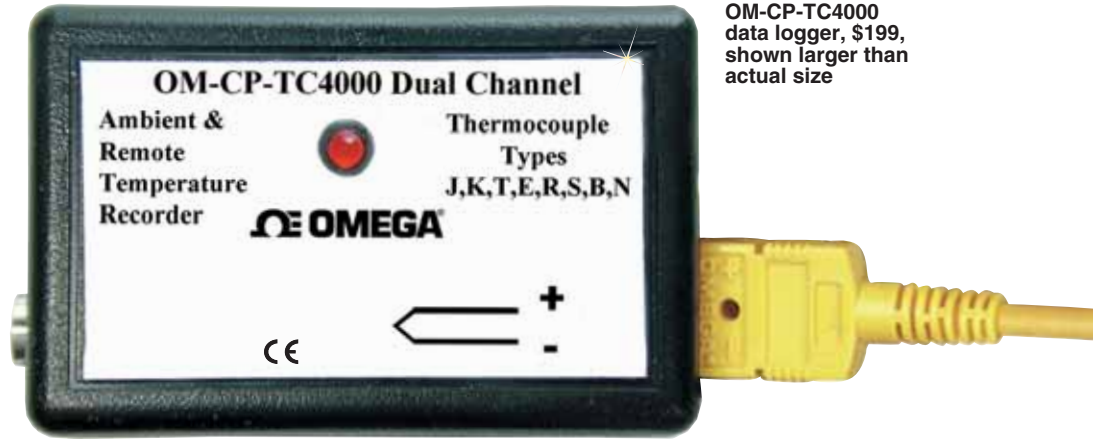| Model No.	Price	Description
OM-EL-USB-1	$60	Temperature data logger with USB interface
OM-EL-USB-2	80	Temperature/RH/dew point data logger with USB interface
OM-EL-USB-3	70	Voltage data logger with USB interface
OM-EL-USB-4	70	Current data logger with USB interface
OM-EL-BATT	3	Replacement 3.6 V lithium battery
CS-3780	20	Reference Book: Starting Electronics

Each data logger is supplied with Windows software on CD-ROM, operator's manual and 3.6 V lithium battery. Data logger plugs directly into computer's USB port (no USB cable required).
*Ordering Example: **OM-EL-USB-1,** temperature data logger with USB interface, **$60.***

NEW ®

Ambient Temperature and Thermocouple Data Loggers
Part of the NOMAD® Family
OM-CP-TC4000 and OM-CP-TC110

Starts at
$**199**

MADE IN USA · 5 YEAR WARRANTY · CE*

OM-CP-TC4000 data logger, $199, shown larger than actual size

OM-CP-TC4000 Dual Channel
Ambient & Remote Temperature Recorder
Thermocouple Types J,K,T,E,R,S,B,N
ΩΕ OMEGA
+ −
CE

✔ **Memory: 16,383 Ambient and 16,383 Remote Readings**
✔ **User Calibration Through Software**
✔ **Dual Channel Ambient and Remote**
✔ **Automatic Thermocouple Linearization**
✔ **Miniature Size**
✔ **Real-Time Operation**

OM-CP-TC110 Dual Channel
Thermocouple Types J,K,T,E,R,S,B,N
ΩΕ OMEGA
In (+)
In (−)
Ground

OM-CP-TC110 data logger, $299, shown larger than actual size

The OM-CP-TC4000 (CE approved) and OM-CP-TC110 (not CE approved) are miniature, battery-powered, standalone thermocouple-based temperature data loggers. These portable, easy-to-use devices will read and record up to 32,767 temperature measurements.

These data loggers represent a major leap in both size and performance. The real-time clock ensures that all data is time and date stamped. The storage medium is nonvolatile solid state memory, providing maximum data security even if the battery becomes discharged.

The small size of these devices allows them to fit almost anywhere. Data retrieval is simple. Plug either device into an empty COM port and our easy-to-use software does the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft file.

OM-CP-TC4000 only is CE approved.
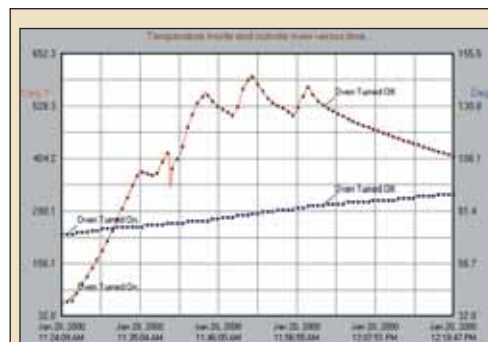
OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

Reading No.	Rem. Temp. Deg. F	Amb. Temp. Deg. F	Date and Time	Annotation
1517	528.1	85.1	Jan 20, 2000 12:00:49 PM	Oven Turned Off.
1518	527.9	85.1	Jan 20, 2000 12:00:51 PM	
1519	527.0	85.1	Jan 20, 2000 12:00:53 PM	
1520	526.6	85.1	Jan 20, 2000 12:00:55 PM	
1521	527.0	85.1	Jan 20, 2000 12:00:57 PM	
1522	526.3	85.1	Jan 20, 2000 12:00:59 PM	
1523	526.8	85.1	Jan 20, 2000 12:01:01 PM	
1524	525.4	85.1	Jan 20, 2000 12:01:03 PM	
1525	525.2	85.1	Jan 20, 2000 12:01:05 PM	
1526	524.7	85.1	Jan 20, 2000 12:01:07 PM	
1527	524.1	85.1	Jan 20, 2000 12:01:09 PM	
1528	523.6	85.1	Jan 20, 2000 12:01:11 PM	
1529	523.4	85.1	Jan 20, 2000 12:01:13 PM	
1530	522.9	85.1	Jan 20, 2000 12:01:15 PM	
1531	522.5	85.1	Jan 20, 2000 12:01:17 PM	
1532	522.5	85.1	Jan 20, 2000 12:01:19 PM	

Remote Temperature Channel
Minimum	64.4 Deg. F
Maximum	602.4 Deg. F
Arithmetic Mean	427.7 Deg. F
Standard Deviation	136.3 Deg. F
Mean Kinetic Temperature	501.9 Deg. F

Ambient Temperature Channel
Minimum	70.7 Deg. F
Maximum	89.6 Deg. F
Arithmetic Mean	80.6 Deg. F
Standard Deviation	5.8 Deg. F
Mean Kinetic Temperature	81.8 Deg. F

Specifications

INTERNAL CHANNEL
Temperature Accuracy:
±0.5°C (0 to 50°C)
Temperature Resolution: 0.1°C
Temperature Range:
-40 to 80°C (-40 to 176°F)
Remote Channel
Thermocouple Connection:
  OM-CP-TC4000: Female
  subminiature thermocouple
  connector
  OM-CP-TC110:
  Screw terminals
Cold Junction Compensation:
Automatic
Temperature Calibration:
Digital calibration is available
through software
Calibration Date: Automatically
recorded within device to alert user
when calibration is required
Recording Interval: 2 seconds
to 12 hours selectable in software
Start Time: Start time and date are
programmable through software
Real-Time Recording: Device may
be used with PC to monitor and
record data in real-time
Green Visual Indicator: LED
flashes at selected reading rate
Power: 3.6 V lithium battery included
Battery Life:
  OM-CP-TC4000:
  1 year at 1 min reading rate
  OM-CP-TC110: 10 years
  at 15 min reading rate
Time Accuracy: ±1 minute/month
when RS-232 port is not in use
Data Format: Date and time
stamped; °C, °F, °K, °R

OM-CP-TC110 data logger, $299, shown larger than actual size

Weight:
  OM-CP-TC4000: 30 g (1 oz)
  OM-OM-CP-TC110: 60 g (2 oz)
Computer Interface:
PC serial, RS-232C COM or USB
(interface cable required)
Communications:
  OM-CP-TC4000: 2400 baud
  OM-CP-TC110: 57,600 baud
Software: Windows 95/98/NT/2000/XP
Operating Environment:
-40 to 80°C (-40 to 176°F)
5 to 95% RH non-condensing
Dimensions:
  OM-CP-TC4000:
  36 H x 56 W x 16 mm D
  (1.4 x 2.2 x 0.6")
  OM-CP-TC110:
  43 H x 69 W x 20 mm D
   (1.7 x 2.7 x 0.8")

**EXTERNAL THERMOCOUPLE
CHANNEL**
Accuracy: ±0.5°C for types J,
K, T, E, N; ±2.0°C for types R,
S, B, (does not include
thermocouple error)
Resolution: 0.1°C for types J, K, T,
E, N; 0.5°C for types R, S, B
Range Type:
J: -210 to 760°C
K: -270 to 1370°C
T: -270 to 400°C
E: -270 to 980°C
R: -50 to 1760°C
S: -50 to 1760°C
B: 50 to 1820°C
N: -270 to 1300°C

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ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-TC4000	**$199**	Ambient temperature and thermocouple data logger with 1-year battery life (CE approved)
OM-CP-TC4000-CERT	199	Ambient temperature and thermocouple data logger with 1-year battery life (CE approved) and NIST calibration certificate
OM-CP-TC110	299	Ambient temperature and thermocouple data logger with10-year battery life
OM-CP-TC110-CERT	299	Ambient temperature and thermocouple data logger with10-year battery life and NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	99	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT105	12	Replacement 3.6 V lithium battery
CS-3766	100	Reference Book: Sensor Technology Handbook

Operator's manual and RS-232 cable are included with the OM-CP-IFC110 Windows software (required to operate the data logger and sold separately).
Ordering Example: OM-CP-TC4000-CERT *ambient temperature and thermocouple data logger with NIST calibration certificate*
*and **OM-CP-IFC110** Windows software with RS-232 cable, $199 + 60 + 99 =* ***$358.***

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11/08/05 DILBERT © United Feature Syndicate, Inc.

11/09/05 DILBERT © United Feature Syndicate, Inc.

11/10/05 DILBERT © United Feature Syndicate, Inc.

NEW

Humidity and Temperature Data Loggers
Part of the NOMAD® Family
OM-CP-RHTEMP101
and OM-CP-RHTEMP110

Starts at
$199

MADE IN USA | 5 YEAR WARRANTY | CE | NIST

OM-CP-RHTEMP101, $199, and OM-CP-RHTEMP110, $299, shown smaller than actual size

- ✔ **Memory: 21,845 Humidity and 21,845 Temperature Readings**
- ✔ **Programmable Start Time**
- ✔ **Dew Point and Vapor Concentration Calculated in Software**
- ✔ **Miniature Size**
- ✔ **User Calibration Through Software**
- ✔ **Real-Time Operation**

The OM-CP-RHTEMP101 and OM-CP-RHTEMP110 are miniature, battery-powered, standalone temperature and humidity data loggers. These portable, easy-to-use devices will read and record up to 21,845 humidity and 21,845 temperature measurements. They represent a major leap in both size and performance. The real-time clock ensures that all data is time and date stamped. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. Their small size allows these loggers to fit almost anywhere. Data retrieval is simple. Plug either device into an empty COM port and our easy-to-use software does the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

OM-CP-IFC110, Windows software, $99

Specifications
TEMPERATURE/HUMIDITY
Temperature Sensor: Semiconductor
Temperature Measurement Range: -40 to 80°C (-40 to 176°F)
Temperature Resolution: 0.1°C
Calibrated Accuracy: 0.5°C
Specified Accuracy Range: 0 to 50°C
Humidity Sensor: Semiconductor
Humidity Measurement Range: 0 to 100% RH
Humidity Resolution: 0.5% RH
Calibrated Accuracy: ±3% RH (±2% RH typical at 25°C)
Specified Accuracy Range: 10 to 80% RH, 10 to 40°C
Humidity Response Time: 90% of change in 60 seconds in slow moving air
GENERAL SPECIFICATIONS
Readings: 21,845 readings/channel
Recording Interval: 2 seconds to 12 hours selectable through software
Start Time: Start time and date are programmable through software, up to 6 months in advance
Real-Time Recording: Device may be used with PC to monitor and record data in real-time
Temperature Alarm: Programmable high and low limits; when logged temperature reaches or exceeds either limit, the LED blinks once/sec
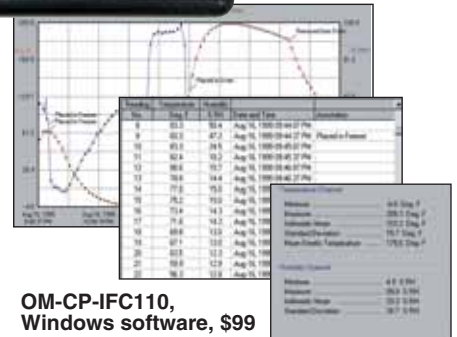
Power: 3.6 V lithium battery included
Battery Life:
OM-CP-RHTEMP101: 1 year at 1 min reading rate
OM-CP-RHTEMP110: 10 years at 15 min reading rate
Time Accuracy: ±1 minute per month at 20°C, RS-232 port not in use
Data Format: Date and time stamped; °C, °F, °K, °R, % RH, mg of water vapor concentration
Computer Interface: PC serial, RS-232C COM or USB (interface cable required)
Software: Windows 95/98//NT/2000/XP
Operating Environment: (-40 to 80°C), -40 to 176°F, 0 to 95% RH non-condensing
Weight:
OM-CP-RHTEMP101: 30 g (1 oz)
OM-CP-RHTEMP110: 60 g (2 oz)
Dimensions:
OM-CP-RHTEMP101: 35 H x 55 W x 16 mm D (1.4 x 2.2 x 0.6")
OM-CP-RHTEMP110: 43 H x 69 W x 20 mm D (1.7 x 2.7 x 0.8" mm)

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-RHTEMP101	$199	Temperature and humidity data logger with 1-year battery life
OM-CP-RHTEMP101-CERT	259	Temperature and humidity data logger, 1-year battery life with NIST calibration certificate
OM-CP-RHTEMP110	299	Temperature and humidity data logger with 10-year battery life
OM-CP-RHTEMP110-CERT	359	Temperature and humidity data logger, 10-year battery life with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT105	12	Replacement 3.6 V lithium battery for OM-CP-RHTEMP110 (models purchased prior to 6/03 may require a different battery, please consult Engineering)

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (required to operate the data logger and sold separately).*
Ordering Example: OM-CP-RHTEMP101-CERT** temperature and humidity data logger with NIST calibration certificate and **OM-CP-IFC110** Windows software and RS-232 cable, $259 + 99 = **$358.

Miniature Temperature and Humidity Data Logger
## Part of the NOMAD® Family
OM-CP-MICRORHTEMP

Dimensions: cm (in)

Starts at
$299

OM-CP-MICRORHTEMP data logger, $299, shown larger than actual size

3.8 (1.5)

1.6 (0.625)

MicroRHTemp
Humidity & Temperature Recorder
OMEGA®
Made in U.S.A.
Communications: 38,400 baud

☑ **Miniature Size**
☑ **Low-Power Technology**
☑ **Programmable Start Time**
☑ **Real-Time Operation**
☑ **Alarm Indicator**

The OM-CP-MICRORHTEMP is a miniature, battery-powered, standalone temperature and humidity data logger. This device combines the latest in low-power technology with Windows based software to provide a next-generation temperature and humidity recorder. The data logger records 10,922 humidity and 10,922 temperature measurements simultaneously. The OM-CP-MICRORHTEMP is a major leap in both size and performance. Its real-time clock enables all data to be time and date stamped. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. Its small size allows the device to fit almost anywhere. Data retrieval is simple. Plug it into an available COM port and the easy-to-use Windows software does the rest. The OM-CP-MICRORHTEMP requires minimal effort to configure and control. The software used to operate the OM-CP-MICRO-RHTEMP requires no programming skills and enables users to effortlessly select reading rate and device ID. Data collection can start moments after connecting the hardware. A simple plug-in connection is all that is required to connect the OM-CP-MICRORHTEMP to a PC. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
Temperature Sensor: Semiconductor
Temperature Accuracy: ±0.5°C
Temperature Resolution: 0.1°C
Temperature Range:
0 to 50°C (32 to 122°F)
Humidity Sensor: Semiconductor
Humidity Accuracy: 3% RH
Humidity Resolution: 0.5% RH
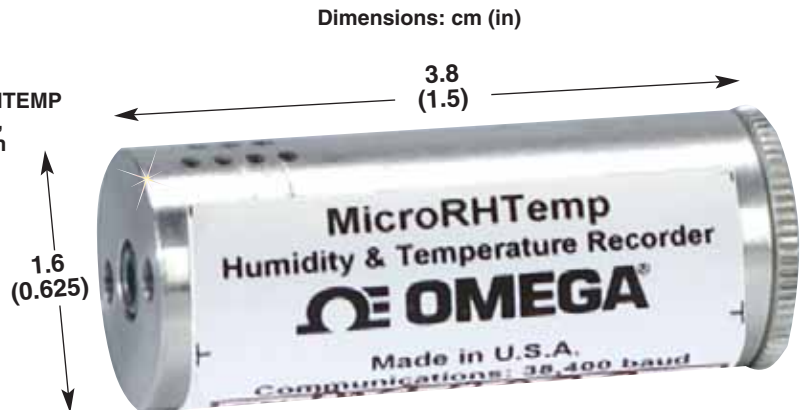
Humidity Range:
0 to 100% RH non-condensing
Calibrated Accuracy: ±3% RH (±2% RH typical @ 25°C)
Response Time: 90% change in 60 seconds in slow moving air
Accuracy Range:
10 to 80% RH, 10 to 40°C
Calibration: Digital calibration through software
Calibration Date: Automatically recorded within device
Recording Interval: 30/minute to 1/day selectable through software
Start Time: Software programmable start time and date (up to six months in advance)
Real-Time Recording: Can be used with PC to monitor and record data in real-time
Memory: 16,383 readings per channel Reading Interval: 1 reading every 2 seconds to 1 every 12 hours
Time Accuracy: ±1 min/month @ 20°C
Data Format: Date and time stamped; °C, °F, °K, °R, %RH, mg/ml water vapor concentration

Power:
2 to 1.55 V R1154W battery (included)
Battery Life: 1 year typical (15-minute reading rate, 25°C
Activity Indicator: Green LED blinks every 15 seconds to indicate device has been started
Temperature Alarm:
Programmable temperature alarm with high and low limits selectable in software; when logged data reaches or exceeds either limit, the red LED blinks every three seconds
Weight: 25.5 g (1 oz)
Computer Interface: PC serial or RS-232C COM
Software: Windows 95/98/NT/2000/XP
Operating Environment:
-40 to 80°C (-40 to 176°F)
5 to 95% RH non-condensing
Dimensions: 15 mm dia x 38 mm L (0.60 x 1.5")
Material: Stainless steel

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-MICRORHTEMP	$299	Miniature temperature and humidity data logger
OM-CP-MICRORHTEMP-CERT	359	Miniature temperature and humidity data logger w/NIST calibration certificate
OM-CP-IFC102	99	Windows software and 4' RS-232 cable with DB9F termination
OM-CP-BAT104	5	Replacement 3 V lithium battery, (logger requires 2) for loggers with serial nos. lower than M30000
OM-CP-BAT106	5	Replacement 1.55 V silver oxide coin cell (logger requires 2) for loggers with serial nos. M30000 and higher
CS-3766	100	Reference Book: Sensor Technology Handbook

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC102** Windows software (required to operate the data logger and sold separately).*

Ordering Example: OM-CP-MICRORHTEMP-CERT** miniature temperature and humidity data logger with NIST calibration certificate and **OM-CP-IFC102** Windows software with RS-232 cable, $359 + 99 = **$458.

In-Transit Temperature Recorder
Part of the NOMAD® Family
OM-CP-TRANSITEMP-EC-13

Buy 12, Get 1 Free!

OM-CP-TRANSITEMP-EC, $240, shown as Baker's Dozen and shown smaller than actual size

$**240**

Baker's Dozen

MADE IN USA

OM-CP-TRANSITEMP-EC, $240, shown smaller than actual size

- ✔ **Sold as a Baker's Dozen (Buy 12 and Get 1 Free)**
- ✔ **Ultra Low-Cost**
- ✔ **Single-Use**
- ✔ **Used Data Loggers Can be Returned and Refurbished to "Like New" Condition**
- ✔ **Unparalleled Quality and Performance**
- ✔ **Convenient Size**
- ✔ **Pushbutton Start**
- ✔ **User-Selectable Reading Rate**
- ✔ **Programmable Alarm**
- ✔ **Instantaneous Out-of-Range Alarm Indication**

The OM-CP-TRANSITEMP-EC is a low-cost temperature recorder designed to allow a user to easily monitor temperature fluctuations over time during shipment or storage of goods. Each logger can only be started once to monitor temperature during one application (single use). Used data loggers can either be discarded or returned to be refurbished to "like new" condition so they can be used again. The refurbish charge is $15 for each logger. This all-in-one, compact, portable, easy-to-use device will read and record up to 8191 measurements per channel. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. The device can be started by holding down a recessed pushbutton.

Once started, a green LED indicator light will blink twice to indicate that the device is active. A second red LED indicator will blink at 3-second intervals if the temperature goes above or below the selected alarm settings.

The OM-CP-TRANSITEMP-EC makes data retrieval quick and easy. Simply plug it into an available COM port and our user-friendly software will do the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

NEW

OM-CP-IFC103, $99, Windows software displays data in graphical or tabular format
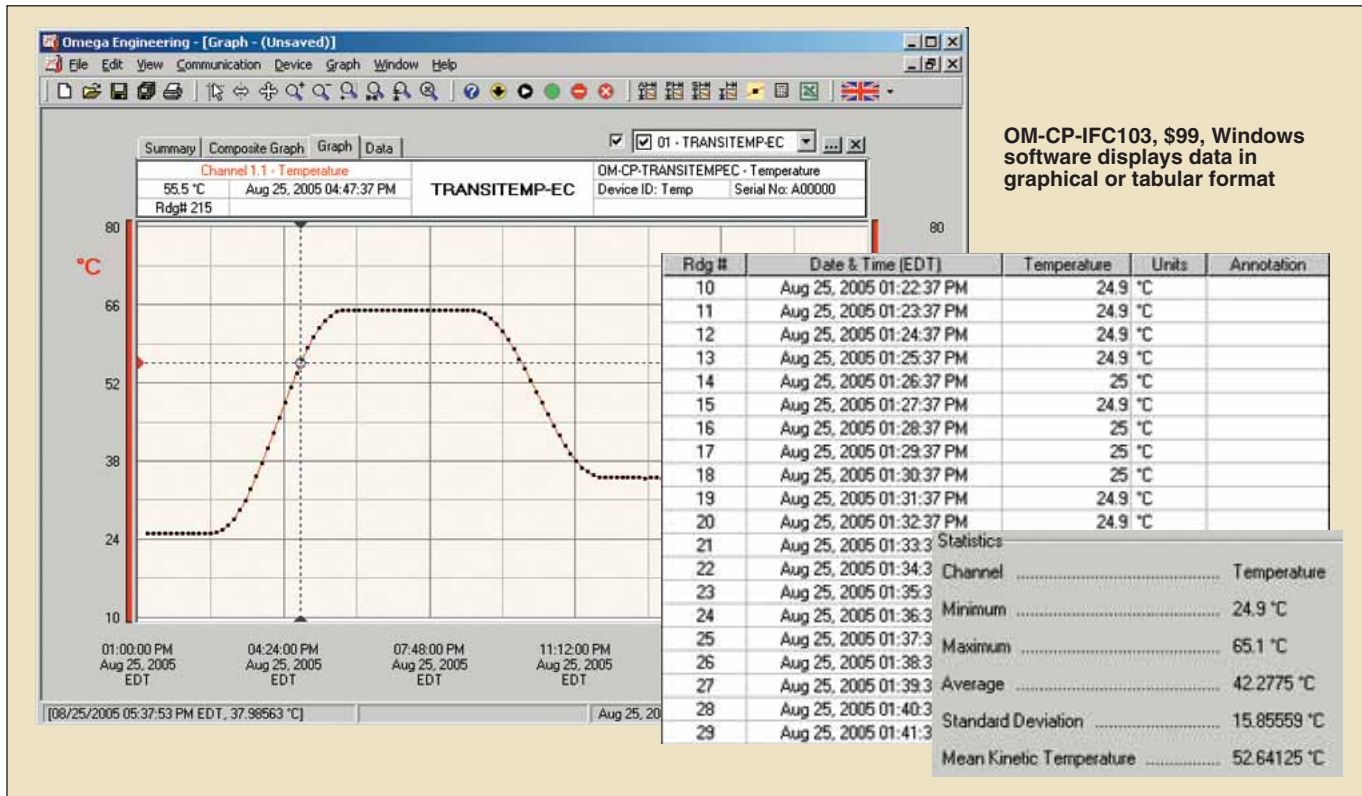
Specifications

Temperature Sensor:
Semiconductor
Temperature Range:
-20 to 70°C (-4 to 158°F)
Temperature Resolution: 0.1°C
Calibrated Accuracy:
±0.5°C (-10 to 40°C)
±1.0°C (-20 to 70°C)
Memory: 8191 readings (>85 days at 1 reading/15 minutes)
Recording Interval: 1 reading every 5 seconds to 1 every 30 minutes, selectable in software
Start Time: Pushbutton start or programmable start time and date up to 30 days in advance
Data Format: Date and time stamped °C, °F
Time Accuracy: ±2 minutes per month at 25°C

Temperature Alarm:
Programmable temperature alarm with high and low limits selectable in software; when logged data reaches or exceeds either limit, red LED blinks every 10 seconds
Activity Indicator: Green LED blinks every 10 seconds to indicate device has been started; the red LED will blink if an alarm condition exists
Power: 3 V lithium coin cell included; 2 year shelf life
Battery Life: 90 days typical at 25°C, 1-minute reading intervals
Computer Interface: PC serial or RS-232C COM (interface cable required), 38,400 baud
Software: Windows 95/98/ME/NT/2000/XP

Operating Environment:
-20 to 70°C
(-4 to 156°F)
0 to 90% RH non-condensing
Dimensions: 44 x 67 x 16 mm
(1.7 x 2.6 x 0.6")
Weight:
25 g (0.9 oz)
Material:
ABS plastic

Buy 12, Get 1 Free!

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AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-TRANSITEMP-EC-13	$240	13 single-use, in-transit temperature recorders, sold as a baker's dozen (13 loggers for the price of 12)
OM-CP-IFC103	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
CS-3790	20	Reference Book: McGraw-Hill Dictionary of Electrical and Computer Engineering

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC103** Windows software (required to operate the data logger and sold separately). Used data loggers can be returned and refurbished to like-new condition for $15 each. Contact our Customer Service department for details.*

Ordering Example:** **OM-CP-TRANSITEMP-EC-13** single-use, in-transit temperature recorder (baker's dozen) and **OM-CP-IFC103** Windows software with RS-232 cable, $240 + 99 = **$339.

NEW

Event Data Loggers
Part of the NOMAD® Family
OM-CP-EVENT101 and OM-CP-EVENT110
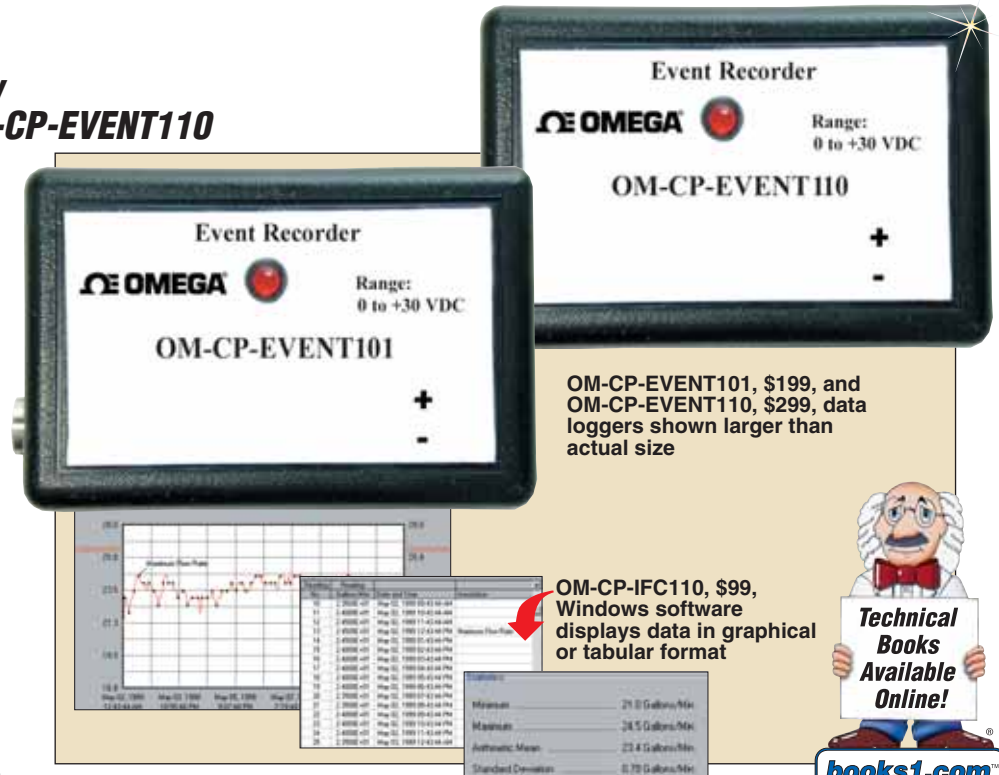
Starts at
$199

MADE IN **USA** | 5 YEAR WARRANTY | CE

- Memory: 13,107 Time Stamped Events
- Miniature Size
- Memory Wraparound
- Interfaces to Tipping Bucket Rain Gages and Other Devices with TTL to 30 V, Contact Closure Output
- Real-Time Operation
- Operational in Minutes

The OM-CP-EVENT101 and OM-CP-EVENT110 are low-cost recording devices that will sense a contact closure from external sources such as transducers or pulse initiators (gas, water, and electric meters) and record the time that a particular event has occurred. Once activated, the data logger senses and records transition or state changes at the input. Its real-time clock ensures that all data is time and date stamped. This is ideal for recording events. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. The small size of these devices allows them to fit almost anywhere. Data retrieval is simple. Plug either device into an available COM port and our easy-to-use software does the rest. The software converts a computer into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
Event Resolution: 1 second (records only up to 1 event per second; works with flowmeters that output less than one pulse/second)
MINIMUM CONTACT Closure Time: 1 msec
Input Signal: TTL, internal pull-up, 30 V max
Event Recording: Device records an event when the contact closes (falling edge of the electrical signal)

Event Recorder
Ω OMEGA
Range: 0 to +30 VDC
OM-CP-EVENT101
+ -

Event Recorder
Ω OMEGA
Range: 0 to +30 VDC
OM-CP-EVENT110
+ -

OM-CP-EVENT101, $199, and OM-CP-EVENT110, $299, data loggers shown larger than actual size

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

Technical Books Available Online!

books1.com
omega.com

Input Connection:
Removable screw terminal
Input Impedance: >1 KΩ
Memory Wraparound:
Selectable in software
Real-Time Recording: Device can be used with PC to monitor and record data in real-time
Visual Indicator: LED flashes on event
Power:
3.6 V lithium battery included
Battery Life:
OM-CP-EVENT101: 1 year at 25°C
OM-CP-EVENT110: 10 years at 25°C
Time Accuracy:
±1 minute per month at 20°C (68°F) when RS-232 is not in use
Data Format: Date and time stamped

* OM-CP-EVENT101 only is CE approved.

Weight:
OM-CP-EVENT101: 30 g (1 oz)
OM-CP-EVENT110: 60 g (2 oz)
Computer Interface:
PC serial, RS-232C COM or USB (interface cable required)
Communications:
OM-CP-EVENT101: 2400 baud
OM-CP-EVENT110: 57,600 baud
Software: WIN 95/98/NT/2000/XP
Operating Environment:
-40 to 80°C (-40 to 176°F)
0 to 95% RH non-condensing
Dimensions:
OM-CP-EVENT101:
36 H x 64 W x 16 mm D
(1.4 x 2.5 x 0.6")
OM-CP-EVENT110:
43 H x 69 W x 20 mm D
(1.7 x 2.7 x 0.8")

IN STOCK FOR FAST DELIVERY!

To Order (Specify Model Number)

Model No.	Price	Description
OM-CP-EVENT101	$199	Event data logger with 1-year battery life (CE approved)
OM-CP-EVENT110	299	Event data logger with 10-year battery life
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	99	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT105	12	Replacement 3.6 V lithium battery
CS-3780	20	Reference Book: Starting Electronics

*Operator's manual, battery and RS-232 cable included with the **OM-CP-IFC110** Windows software (sold separately).*
Ordering Example: OM-CP-EVENT101** event data logger and **OM-CP-IFC110** Windows software with RS-232 cable, $199 + 99 = **$298.

Humidity, Temperature, Pressure, and Tri-Axial Shock Data Logger
Part of the NOMAD® Family
OM-CP-ULTRASHOCK101

Starts at
$799

5 YEAR WARRANTY CE **MADE IN USA**

✔ **Built-In Accelerometers**
✔ **Excellent Low Frequency Response**
✔ **12-Bit, A/D Resolution**

The OM-CP-ULTRASHOCK101 is a 3-axis, battery-powered, standalone, programmable shock, temperature, humidity, and pressure data logger. This low-cost device measures and records the peak acceleration levels to which it is exposed, as well as temperature, humidity, and pressure, along with dates and times of occurrence. The OM-CP-ULTRASHOCK101 is designed for documenting dynamic environments such as those in moving vehicles, trains, containers, and ships. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. For setup and data recovery, the OM-CP-ULTRASHOCK101 can be used in conjunction with a host PC running the user-friendly, Windows based software.

Specifications
ACCELERATION CHANNELS
Acceleration Accuracy: ±0.5 G
Acceleration Resolution: 0.1 G
Acceleration Range:
±5 G, ±50 G, ±100 G
Sampling Rate: 1 ms (>1 kHz digitization) when accelerometer circuitry is active temperature Channel
Temperature Accuracy:
±0.5°C (0 to 50°C)
Temperature Resolution: 0.1°C
Temperature Range: -40 to 80°C (-40 to 176°F)
HUMIDITY CHANNEL
Calibrated Accuracy: ±3% RH (10 to 40°C, 10 to 80% RH)
Humidity Resolution: 0.5% RH
Humidity Range: 5 to 95% RH pressure Channel
Pressure Accuracy: ±1% max at 25°C; ±0.2% typical
Pressure Resolution: 0.0005 psia
Pressure Range: 0 to 30 psia
NOTE: *Extended exposure to >90% RH results in a temporary 3% RH shift.*

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

Pressure, Humidity, Temperature, Shock Recorder
OM-CP-Ultra-SHOCK101
ΩE OMEGA®
Range: 0-30 psia, 0% to 99% RH, -40°C to +80°C, -50g to +50g
Y-Axis X-Axis Z-Axis
Communication: 28.8K baud
SN:

OM-CP-ULTRASHOCK101 data logger, $799, shown slightly smaller than actual size

GENERAL SPECIFICATIONS
No. of Channels: 6 data channels and 1 virtual channel (shock vector sum)
Memory: 23,831 readings per channel
Recording Interval: 5 sec to 12 hr selectable through software
Real-Time Recording: Device can be used with PC to monitor and record data in real-time (displays instantaneous acceleration data in this mode)
Start Time: Start time and date are programmable through software
Power: 9 V lithium battery included
Battery Life: 5 to 7 days
Time Accuracy:
±1minute per month at 20°C when RS-232 port is not in use

Data Format: Date and time stamped; °C, °F, °K, °R, % RH, mg/ml water vapor concentration, psia, inHg, mmHg, bar, atm, torr, Pa, kPa, MPa, G
Weight: 425 g (15 oz)
Computer Interface: PC serial, RS-232C COM or USB
Software: WIN 95/98/NT/2000/XP
Operating Environment:
-40 to 80°C (-40 to 176°F)
0 to 99% RH non-condensing
Dimensions:
81 H x 110 W x 28 mm D (3.2 x 4.3 x 1.1")
Material: Black anodized aluminum

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order (Specify Model Number)

Model No.	Price	Description
OM-CP-ULTRASHOCK101	$799	Tri-axial shock data logger, ±50 G
OM-CP-ULTRASHOCK101-CERT	859	Tri-axial shock data logger, ±50 G with NIST calibration certificate
OM-CP-ULTRASHOCK-5	799	Tri-axial shock data logger, ±5 G
OM-CP-ULTRASHOCK-5-CERT	859	Tri-axial shock data logger, ±5 G with NIST calibration certificate
OM-CP-ULTRASHOCK-100	799	Tri-axial shock data logger, ±100 G
OM-CP-ULTRASHOCK-100-CERT	859	Tri-axial shock data logger, ±100 G with NIST calibration certificate
OM-CP-IFC110	99	Windows software & 1.2 (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software & 3.7 (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V lithium battery

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (required to operate the data logger and sold separately).*
*Ordering Example: **OM-CP-ULTRASHOCK101-CERT** humidity, temperature, pressure and tri-axial shock data logger, **OM-CP-IFC110** Windows software with RS-232 cable, $859 + 99 = **$958.***

NEW®

4-Channel Oven Temperature Data Logger Part of the NOMAD® Family
OM-CP-QUADTHERMOVAULT

OM-CP-QUADTHERMOVAULT data logger, $1499, shown smaller than actual size

Starts at
$1499

5 YEAR WARRANTY   **MADE IN USA**

- ✔ **4 Thermocouple Input Channels**
- ✔ **Programmable Start Time**
- ✔ **Miniature Size**
- ✔ **Automatic Cold Junction Compensation**
- ✔ **Record Short Thermal Profiling Events**

Oven temperature profiling on a regular basis can help ensure consistent product quality. Profiling enables users to optimize their process, improve process control, and make corrections whenever necesssary.

The OM-CP-QUADTHERMOVAULT is a 4-channel, thermally insulated, battery-powered oven temperature recorder able to withstand extreme temperatures. It can withstand oven temperatures of up to 350°C (662°F) for 25 minutes. When properly sealed, its stainless steel enclosure and thermal properties make it the ideal temperature recording device for applications such as powder coating cure ovens,

wet coating cure ovens, batch ovens, and conveyor ovens. The external thermocouple probes provide accurate temperature measurements and fast response times.

Our user-friendly software easily downloads the data to a computer, where the readings can be displayed in degrees Celsius, Fahrenheit, Kelvin, or Rankine. The software allows the user to view all data points and a summary of the data being viewed, for calculations such as mean kinetic temperature (MKT).

If additional analysis is needed, the data can be exported to Excel simply by clicking a button. The OM-CP-QUADTHERMOVAULT'S small size allows it to fit almost anywhere. Data retrieval is simple. Plug it into an available COM port and our easy-to-use software does the rest. Data can be printed in graphical or tabular format or it can be exported to a text or Microsoft Excel file.

NEW

Specifications

INTERNAL CHANNEL
Temperature Range:
-20 to 60°C (-4 to 140°F)
Temperature Resolution: 0.1°C
Calibrated Accuracy:
±0.5°C (0 to 50°C)

FOUR REMOTE CHANNELS
Thermocouple Types:
J, K, T, E, R, S, B, N
Thermocouple Connection:
Screw terminals
Cold Junction Compensation:
Automatic, based on internal
channel
Start Time: Start time and date are
programmable through software,
up to six months in advance
Memory: 26,214 readings/channel
Reading Interval: 12/minute to
2/day selectable in software
Calibration:
Digital calibration through software
Calibration Date:
Automatically recorded within
device
Power: 9 V lithium battery included
Battery Life: 1 year typical
Data Format: Date and time
stamped; °C, °F, °K, °R, V, mV, V
Time Accuracy:
±1 minute/month (at 20°C,
RS-232 port not in use)
Computer Interface:
PC serial, RS-232C COM or USB
(interface cable required);
2400 baud
Software:
Windows 95/98/ME/NT/2000/XP
Operating Environment:
0 to 95% RH non-condensing
Dimensions:
165 H x 200 L x 82 mm D
(6.5 x 7.9 x 3.2")
Weight: 5.7 kg (12.5 lbs)
Enclosure (Thermal Box):
Thermal insulators encased
in stainless steel
Enclosure (Logger): Black Delrin®
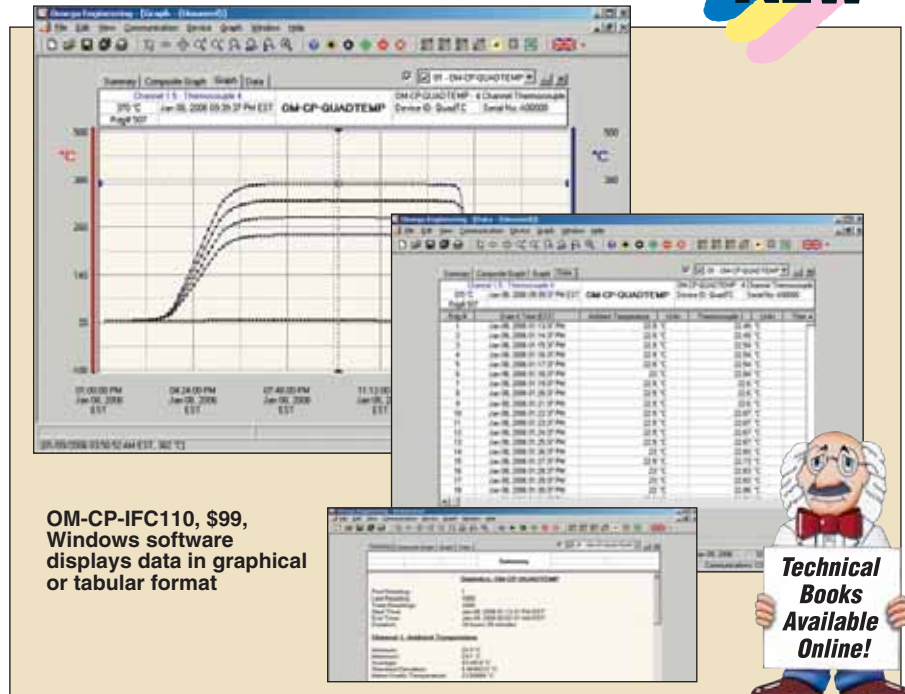
**OM-CP-IFC110, $99,
Windows software
displays data in graphical
or tabular format**

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Thermocouple Type	Range	Resolution	Accuracy*
J	-210 to 760°C	0.1°C	±0.5°C
K	-270 to 1370°C	0.1°C	±0.5°C
T	-270 to 400°C	0.1°C	±0.5°C
E	-270 to 980°C	0.1°C	±0.5°C
R	-50 to 1760°C	0.5°C	±2.0°C
S	-50 to 1760°C	0.5°C	±2.0°C
B	50 to 1820°C	0.5°C	±2.0°C
N	-270 to 1300°C	0.1°C	±0.5°C

* Accuracy does not include errors due to thermocouple.

Maximum Exposure Temperature vs Duration	
Ambient Temp °C (°F)	Max Duration in Minutes**
100 (212)	110
150 (302)	62
200 (392)	45
250 (482)	35
260 (500)	34
300 (572)	30
350 (662)	25

** Assuming logger box is initially at 25°C.
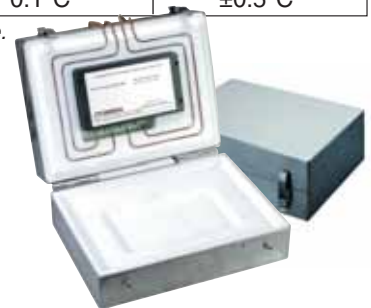
**OM-CP-QUADTHERMOVAULT
data logger, $1499, shown
smaller than actual size**

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-QUADTHERMOVAULT	**$1499**	Oven temperature data logger
OM-CP-QUADTHERMOVAULT-CERT	1559	Oven temperature data logger with NIST calibration certificate
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OM-CP-BAT103	20	Replacement 9 V lithium battery
CS-3778	40	Reference Book: Excel by Example

*Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** Windows software (required to operate the data logger),
which is sold separately.*
***Ordering Example: OM-CP-QUADTHERMOVAULT-CERT**, oven temperature data logger with NIST calibration certificate,
OM-CP-IFC110, Windows software and RS-232 cable, $1559 + 99 = **$1658**.*

Flat Surface In-Line pH/ORP Industrial Electrodes

PHE-5460
Starts at
$115

Premium Quality, Maintenance Free Tube Compression Bar Stock Ball Valves

BV71
Starts at
$68

pH, ORP, and Conductivity Controller and Transmitter

PHUTX601
Starts at
$850

PHUCN601
7.00
ALARM RELAY B
RELAY A ALARM
ΩE OMEGA
TEMP
CAL UP DOWN ENTER

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Sales: FAX (Toll-Free) 1-877-FAX-OMEG(A)
24 HOURS

NEW

Bridge/Strain Gage Data Logger
Part of the NOMAD® Family
OM-CP-BRIDGE110

All Models
$499

MADE IN USA **5 YEAR WARRANTY**

Bridge/Strain Recorder

Range: -25 to +25 mVDC

Power:
Ref (+)
Ref (-)
In (+)
In (-)
Ground

OM-CP-BRIDGE110

ΩE **OMEGA**

- ✔ 10-Year Battery Life
- ✔ High-Speed Downloads
- ✔ Programmable Start Time
- ✔ Miniature Size
- ✔ Real-Time Operation
- ✔ Reads in Microstrain and Engineering Units
- ✔ Use with Strain Gages, Load Cells, Pressure Transducers, Torque Sensors, Load Bolts, and Position Transducers

OM-CP-IFC110, $99, Windows software displays data in graphical or tabular format

OM-CP-BRIDGE110, $499, shown smaller than actual size

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The OM-CP-BRIDGE110 is a miniature, battery-powered, standalone, bridge/strain gage data logger. It features a real-time clock module that extends the battery life to more than 10 years (15-minute reading rate at 25°C) and allows for high-speed downloads. This portable, easy-to-use device will read and record up to 32,767 measurements. The storage medium is non-volatile solid state memory, providing maximum data security even if the battery becomes discharged. The logger can be started and stopped from a computer and its small size allows it to fit almost anywhere. The OM-CP-BRIDGE110 makes data retrieval quick and convenient. Simply plug it into an available com port and our user-friendly software does the rest. The software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
Input Connection: 6-position removable screw terminal
Input Impedance: 1 MΩ during acquisition, low impedance when inactive
Reference Voltage Output: 2.5 Vdc, 2.5 mA (1 KΩ) maximum load
Maximum Input Signal Impedance: 5 KΩ (350 Ω sensors can be used with series resistors to produce >1 KΩ; 120 Ω gages can be used in half and quarter bridge configurations)

Temperature Effect on Span and Offset: <25 µV over -40 to 80°C
Engineering Units: Stored in device; user may define any desired scale and offset from ±1.000E-31 to ±9.999E+31
Start Time: Start time and date are programmable through software up to six months in advance
Real-Time Recording: Device can be used with PC to monitor and record data in real-time
Memory: 32,767 readings
Recording Interval: 1 reading every 2 seconds to 1 every 12 hours
Calibration: Digital calibration through software
Calibration Date: Automatically recorded within device to alert user when calibration is required

Battery Life: 10 years at 15 min reading rate, 25°C
Power: 3.6 V lithium battery included
Data Format: Date and time stamped: %, ppm; e, µe, V, mV, µV engineering units specified through software
Time Accuracy: ±1 minute per month at 20 to 30°C
Computer Interface: PC serial, RS-232C COM or USB (interface cable required); 56,600 baud
**Software:** Windows 95/98/ME/NT/2000/XP
Operating Environment: -40 to 80°C (-40 to 176°F) 0 to 95% RH non-condensing
**Dimensions:** 42 H x 68 W x 20 mm D (1.7 x 2.7 x 0.8")
Weight: 60 g (2 oz)

Input Ranges OM-CP-BRIDGE110 Nominal Range

Nominal Range	±10 mV	±25 mV	±100 mV	±1000 mV
Measurement Range	±15 mV	±37.5 mV	±150 mV	±1200 mV
Resolution	1 µV	2.5 µV	5 µV	50 µV
Calibrated Accuracy	±0.25% FSR	±0.10% FSR	±0.05% FSR	±0.01% FSR

MOST POPULAR MODELS HIGHLIGHTED!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-CP-BRIDGE110-10	$499	Bridge input data logger (±10 mV input range)
OM-CP-BRIDGE110-25	499	Bridge input data logger (±25 mV input range)
OM-CP-BRIDGE110-100	499	Bridge input data logger (±100 mV input range)
OM-CP-BRIDGE110-1000	499	Bridge input data logger (±1000 mV input range)
OM-CP-IFC110	99	Windows software and 1.2 m (4') RS-232 cable with DB9F termination
OM-CP-IFC200	119	Windows software and 3.7 m (12') USB interface cable
OMP-CP-BAT105	12	Replacement 3.6 V lithium battery
CS-3770	90	Reference Book: Stress, Strain and Structural Dynamics

Operator's manual and RS-232 cable are included with the **OM-CP-IFC110** *Windows software (sold separately).*
Ordering Example: **OM-CP-BRIDGE110-100** *bridge input data logger (±100 mV input range) with* **OM-CP-IFC110** *Windows software and RS-232 cable, $499 + 99 =* **$598.**

NEW®

Portable Temperature Data Logger
Part of the NOMAD® Family
OM-TT01

Starts at
$60

1 YEAR WARRANTY

☑ **Selectable Temperature Range: -40 to 40°C or 0 to 80°C**
☑ **Programmable Alarm Limits with Integral Alarm LED Indicator**
☑ **2000 Readings**
☑ **12 Month Battery Life**
☑ **Water Resistant**
☑ **Compact Size**
☑ **Easy to Use**
☑ **Economical**

The OM-TT01 is a very low cost single-channel data logger for temperature ranges -40 to 40°C (-40 to 104°F) or 0 to 80°C (32 to 176°F), user selectable via internal jumper. Its compact size makes it ideal for applications requiring multiple loggers for critical temperature monitoring of products. In addition to a green LED indicating the unit's active status, the logger features programmable alarm limits. If an alarm condition occurs, the red LED will flash, indicating that the logger has experienced temperature conditions outside pre-set parameters. The stored temperature readings (up to 2000) can be downloaded to a computer through the RS-232 cable interface using the Windows software. Downloaded data can be saved or transferred in a file format compatible with most spreadsheet packages, including Excel.

Specifications
Temperature Range:
-40 to 40°C (-40 to 104°F) or 0 to 80°C (32 to 176°F) user selectable by internal jumper
Accuracy: ±0.5°C
Resolution: <0.1°C
Memory: 2000 readings
Sample Rate: 60 sec to 24 hr, software programmable

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Red Visual Indicator: Red LED flashes every 4 sec when alarm setpoint is exceeded
Green Visual Indicator: Green LED flashes every 8 sec when logging is active or every 16 sec when memory is full
Start Mode: Immediate start or programmed start delay
Sleep Mode: Logger goes into sleep mode when download is complete
Power: 3 V lithium battery (included)
Battery Life: >1 year typical
Computer Interface: RS-232 serial interface
Software: WIN95/98/NT/2000/XP
Enclosure: IP67
Operating Ambient: -40 to 80°C (-40 to 176°F), 5 to 95% RH non-condensing
Dimensions: 42 H x 27 W x 13 mm D (1.65 x 1.06 x 0.51")
Weight: 20 g (0.7 oz)

OM-TT01, $60, shown larger than actual size
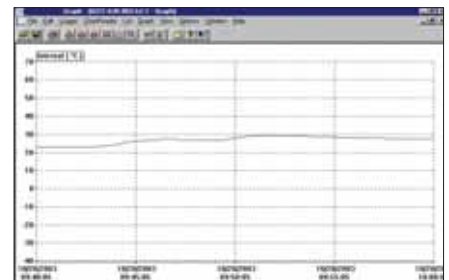
OM-MLWIN software displaying time-based graph of data
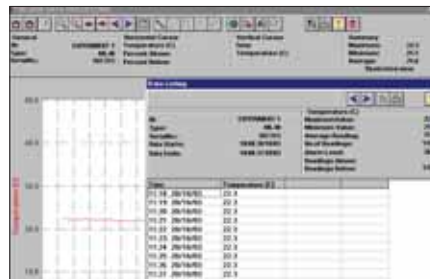
OM-MLWIN software displaying tabular data

OM-MLWIN software logger configuration screen

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OM-TT01	$60	Temperature data logger (requires OM-MLWIN Windows software and OM-TTLINK RS-232 cable, see below)
OM-TTLINK	15	1.2 m (4') RS-232 cable with DB9F termination
OM-MLWIN	15	Windows software
OM-TT-BATT	6	Replacement 3 V lithium battery
CS-3778	40	Reference book: Excel by Example

Each unit comes complete with operator's manual.
Ordering Example: *OM-TT01* temperature data logger, **OM-MLWIN** *Windows software* and **OM-TTLINK** *1.2 m (4') RS-232 cable with D89F termination, $60 + 15 + 15 = $90.*

NEW

Portable Low-Cost Data Loggers
Part of the NOMAD® Family
OM-PL Series

Starts at
$113

MADE IN USA · 1 YEAR WARRANTY · OMEGA CARE Extended Warranty Program · CE

OM-PLT2, $113, shown smaller than actual size

✔ **Measure and Record Temperature, Relative Humidity, Pressure, 4 to 20 mA, AC Voltage, and AC Current**
✔ **Selectable Sample Rate: 1 Second to 18 Hours (1-Second Increments)**
✔ **Real-Time Data Monitoring**
✔ **High/Low Alarm Threshold Settings**
✔ **Visual Alarm Indication**
✔ **User-Selectable Recording Start (Specified Date and Time, Immediately After Setup, or on Door Close)**
✔ **20-Month Battery Life (at 1-Minute Sample Rate)**

The OM-PL Series data loggers are versatile devices that can be used for a wide range of logging applications. Each data logger is capable of sampling data as fast as once per second or as slow as once every 18 hours. The data logger can stop recording when memory becomes full or rollover for continuous recording. The start of recording is software selectable to be immediate, delayed, or initiated when the data logger door is closed. The data logger can also be used to monitor high and low alarm events, which indicate if the recorded data passed above and/or below the user-selected threshold. The alarm events are stored separately from the data samples and are not affected by data rollover. When the recorded data passes the high or the low alarm threshold, the data logger records the time of the alarm. When the recorded data returns to within the acceptable range, the data logger records the duration of the alarm. Up to 50 such alarm events can be recorded. The data logger has a visual indication of an alarm condition without the need to connect to the computer.

All OM-PL Series data loggers have an internal real-time clock/calendar. This real-time clock is used to record the time stamps for data samples and alarm events. It is independent of the computer clock and can be set differently, or set to match the computer clock. These data loggers provide a high level of data security. They have physical security, when the data access door is locked, as well as software security. It is virtually impossible to falsify sample data or alarm information of OM-PL Series data loggers. Their power requirement is very low: under normal operating conditions, a 9-volt alkaline battery will last 18 months to 2 years. OM-PL Series data loggers have the capacity to store over 10,000 readings. Simply connect the data logger to a PC's serial port and use the available Windows software to set up parameters for the recording session. Once the data logger is set up, the user can disconnect it and put it in the field to record data. The data logger door can be locked on to prevent accidental or intentional disruptions of the recording session. When recording is completed, reconnect the data logger to the PC and download the recorded data using the Windows software. The Windows software allows the user to view recorded data in text or graphical format. OM-PL models are available to record internal temperature and an external temperature channel (OM-PLT2); two external temperature channels (OM-PLTT); temperature, humidity and dew point (OM-PLTH); temperature and pressure (OM-PLPT); AC current and voltage (OM-PLCV); 4 to 20 mA (OM-PL420); and internal temperature and an external thermocouple input (OM-PLTC).

Specifications
GENERAL
Operating Temperature Range (Data Logger): 0 to 60°C (32 to 140°F) using alkaline battery; -40 to 65°C (-40 to 150°F) using lithium battery
Humidity: 0 to 95% RH, non-condensing
Storage Temperature: -40 to 77°C (-40 to 170°F)
Time Accuracy: ±100 ppm @ 75°F
Power: 9 V alkaline or lithium battery
Battery Life (Average Use): 20 months using alkaline battery, 40 months using lithium battery
Dimensions: 7.6 W x 6.4 H x 2.8 cm D (3 x 2.5 x 1.1")
Weight: 71 g (2.5 oz)
Software: WIN 95/98/ME/NT/2000/XP
Measurement Interval: 1 sec to 18 hr (selectable in 1-second increments)
Computer Interface: RS-232 standard; for computers with only a USB port, use model no. OM-PL-USBS (RS-232/USB adaptor)

OM-PLTT, $151, shown smaller than actual size

OM-PLTT DUAL TEMPERATURE DATA LOGGER
Channels: Two external temperature channels
Sample Point Capacity: 21,500 temperature points for single channel (1 probe); 10,750 temperature points per channel for dual channel (2 probes)
Alarms: High and low alarms for each probe
External Probe Temperature Range: -46 to 150°C (-50 to 300°F)
Accuracy: ±1°C (±2°F)
Resolution: 0.05 °C (0.1°F)
Probe: 76 mm (3") stainless steel tip, 1.8 m (6') cable
Calibration: Single point offset calibration available through software

OM-PLT2, $113, shown smaller than actual size

OM-PLT2 TEMPERATURE DATA LOGGER
Channels: One internal temperature channel and one external temperature channel
Sample Point Capacity: 21,500 points for single channel; 10,750 points per channel for dual channel
Alarms: High and low alarms for internal and external channel
Temperature Range: Internal sensor: 0 to 60°C (32 to 140°F) with alkaline battery, -40 to 65°C (-40 to 150°F) with lithium battery; external sensor: -40 to 65°C (-40 to 150°F)
Accuracy: ±0.5°C (±1.0°F)
Resolution: 0.05°C (0.1°F)
External Probe Temperature Range: -40 to 65°C (-40 to 150°F)
Calibration: Single point offset calibration available through software

OM-PLTH, $118, shown smaller than actual size

OM-PLTH TEMPERATURE/HUMIDITY DATA LOGGER
Channels: Two internal channels (temperature and humidity); two calculated channels (dew point and wet bulb)
Sample Point Capacity: 21,500 for temperature only; 10,750 points for temperature, humidity and dew point
Alarms: High and low alarms for temperature and humidity
Temperature Range: 0 to 60°C (32 to 140°F) with alkaline battery, -40 to 65°C (-40 to 150°F) with lithium battery
Temperature Accuracy: ±1°C (±2°F)
Resolution: 0.05°C (0.1°F)

Relative Humidity Range: 0 to 99.9% RH, non-condensing
Relative Humidity Accuracy: ±2% full scale, from 0 to 95% RH for temperatures between 0 and 60°C (32 to 140°F)
Relative Humidity Resolution: 0.1% RH
Calibration: Single point offset calibration available through software; humidity is factory calibrated

OM-PLPT, $190, shown smaller than actual size

OM-PLPT PRESSURE AND TEMPERATURE DATA LOGGER
Channels: Two external channels (temperature and pressure)
Sample Point Capacity: 21,500 points for temperature or pressure; 10,750 points for both pressure and temperature
Alarms: High and low alarms for temperature and pressure
Temperature Range: -40 to 65°C (-40 to 150°F)
Temperature Accuracy: ±0.5°C (±1°F)
Resolution: 0.05°C (0.1°F)
Temperature Probe: -40 to 65°C (-40 to 150°F)
Pressure Range: 0 to 500 psi
Pressure Accuracy: ±3 psi
Pressure Resolution: 0.15 psi
Pressure Sensor: Stainless steel sensor, 1.8 m (6') cable, ½ NPT male pressure port
Operating Temperature Range (Pressure Sensor): 0 to 54°C (32 to 130°F)
Calibration: Single point offset calibration available through software; pressure is factory calibrated

NEW

**OM-PLCV, $150,
shown smaller
than actual size**

**OM-PLTC, $135,
shown smaller than actual size**

**OM-PL420, $92,
shown smaller than actual size**

OM-PLTC
THERMOCOUPLE DATA LOGGER
Channels: Two channels, one for internal ambient temperature and one for external thermocouple input
Measurement Capacity: 10,750 points for both internal temperature and external thermocouple input
Thermocouple Types (External Channel): J, K, T, E, R, S (software selectable)
Thermocouple Temperature Ranges:
  Type J: -79 to 732°C (-110 to -1350°F)
  Type K: -140 to 1038°C (-220 to 1900°F)
  Type T: -148 to 349°C (-235 to 660°F)
  Type E: -59 to 560°C (-75 to 1040°F)
  Type R: 0 to 1449°C (32 to 2640°F)
  Type S: 0 to 1449°C (32 to 2640°F)
Thermocouple Connection: Subminiature female thermocouple jack
Accuracy (Thermocouple Channel):
  Type J, K, T: ±0.8°C (±1.5°F)
  Type E: ±0.6°C (±1.0°F)
  Type R, S: ±2.8°C (±5°F)
Resolution (Thermocouple Channel): 0.05°C (0.1°F)
Accuracy (Internal Channel): ±1°C (± 2°F)
Resolution (Internal Channel): 0.05°C (0.1°F)
Alarms: High and low alarms for thermocouple and ambient temperature
Calibration: Single point offset calibration available through software for both internal ambient channel and external thermocouple channel

OM-PL420
4 to 20 MA DATA LOGGER
Channels: One 4 to 20 mA input
Measurement Capacity: 21,500 points
Alarms: High and low alarms
Input Current Range: 0 to 40 mA
Current Accuracy: ±0.05 mA
Current Resolution: 0.01 mA
Calibration: Single point offset calibration available through software

OM-PLCV CURRENT AND VOLTAGE LOGGER
Channels: Two channels, one for AC current (measured using supplied current probe) and one for AC voltage
Sample Point Capacity: 21,500 points for current or voltage; 10,750 points for both current and voltage
Alarms: High and low alarms for current and voltage
Current Range: 0 to 300 Aac
Current Accuracy: ±5%
Current Resolution: 0.1 Aac
Voltage Range: 0 to 500 Vac
Voltage Accuracy: ±1 Vac
Voltage Resolution: 0.1 Vac
Calibration: Single point offset calibration available through software; current and voltage are factory calibrated

Windows software displays data in graphical or tabular format

NEW
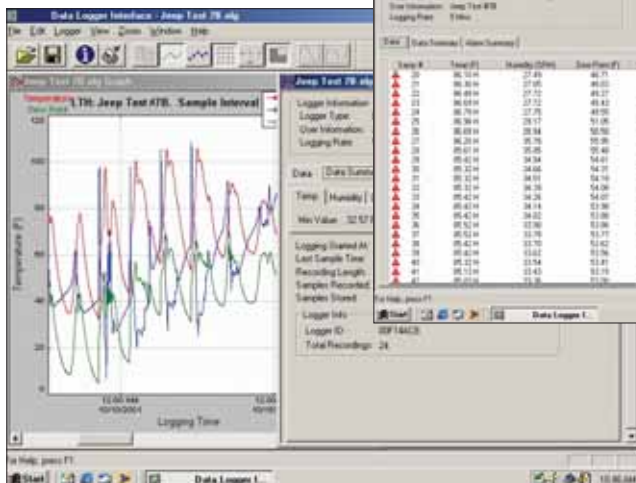
OM-PL SERIES LOGGER INTERFACE SOFTWARE SPECIFICATIONS

Sampling Interval: User-selectable from 1 second to 18 hours, in 1-second increments

Interface: COM (RS-232) serial port. Software supports COM1 through COM8. Optional USB interface (model OM-PL-USBS).

Alarms: Visual alarms with user-selectable low and high thresholds for every channel

Alarm Memory: Up to 50 alarm events. Alarm start time and alarm duration are stored.

Data Security: Locking sliding door prevents physical access to the logger data. Unique factory-set logger ID. Data collection session counter.

Compatibility: WIN95/98/ME/NT/2000/XP

Minimum System Requirements: 8 MB of RAM, 2 MB of disk space, 800 x 600 resolution, 1 free COM port or a free USB port (optional USB interface is required: model OM-PL-USBS)

Recording Start: On door close, immediately after setup or at a user-specified date and time

Recording Mode: Stop on memory full or continuous recording with memory rollover

Real-Time Status: Visual indication through the status LED. User-selectable status display frequency and LED brightness, software real-time status.

User Calibration: Password-protected calibration for each channel

User Message: Up to 30 characters

Logger Channels: User selectable. Disabling channels increases the storage capacity of the other channels.

Units: US and metric (user-selectable units)

Data Format: Custom format exportable to text or Excel spreadsheet

Real-Time Monitoring: Logger can be permanently connected to the computer and used as a real-time, multichannel sensor with logging capability. Battery does not drain when logger is connected to the computer.

OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE℠ covers parts, labor and equivalent loaners.

Technical Books Available Online!

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Windows software displays data in graphical or tabular format
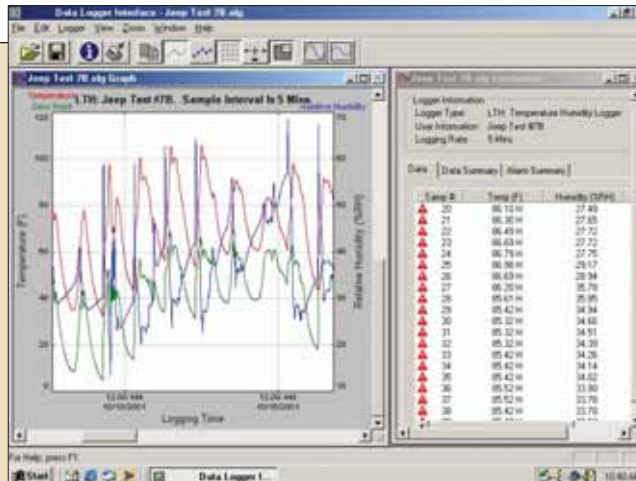
Windows software displays graphs, tables, and alarm summary (start and end times)
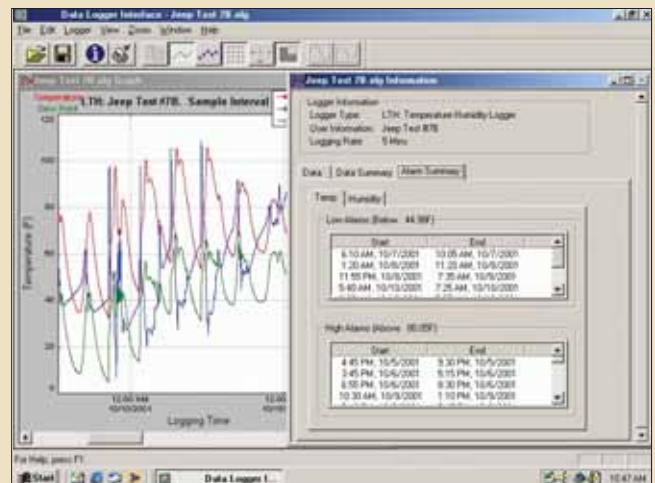
☐ *MOST POPULAR MODELS HIGHLIGHTED!*

To Order (*Specify Model Number*)

Model No.	Price	Description
OM-PLT2	$113	Temperature data logger
OM-PLTT	151	Dual-temperature data logger
OM-PLTH	118	Temperature and humidity data logger
OM-PLPT	190	Pressure and temperature data logger
OM-PLCV	150	AC current and voltage data logger
OM-PL420	92	4 to mA data logger
OM-PLTC	135	Thermocouple data logger
OM-PLLS	52	Windows software, 1.8 m (6') RS-232 cable and adaptor
OM-PL-USBS	44	USB to RS-232 converter
CS-3784	60	Reference Book: Electrical Engineer's Portable Handbook

*All data loggers are supplied with complete operator's manual. **OM-PLT2** includes one external temperature sensor (4.6 m [15'] cable, epoxy-coated tip). **OM-PLTT** includes two external temperature probes (1.8 m [6'] cable, 76 mm [3"] long stainless steel probe with penetration tip). **OM-PLPT** includes one external temperature sensor (4.6 m [15'] cable, epoxy coated tip) and one pressure transducer (1.8 m [6'] cable, stainless steel pressure transducer with 1/2 NPT male pressure port). **OM-PLCV** includes AC current clamp and set of voltage test leads. **OM-PLTC** includes 1 m (3') long beaded wire Type K thermocouple with subminiature male connector.*

*Ordering Example: **OM-PLTT**, dual-temperature data logger, **OMEGACARE**℠, 1-year extended warranty for **OM-PLTT** (adds 1 year to standard 1-year warranty), and **OM-PLLS** Windows software with RS-232 cable, $151 + 25 + 52 = $228.*
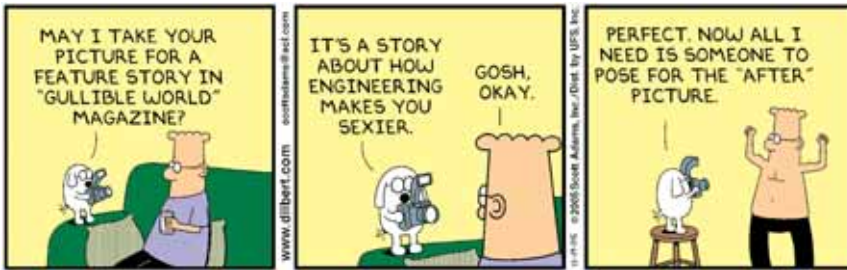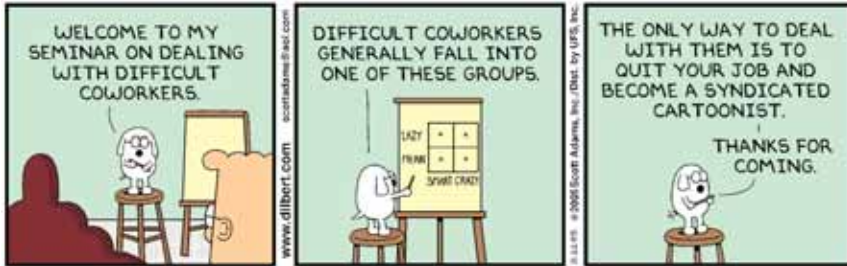
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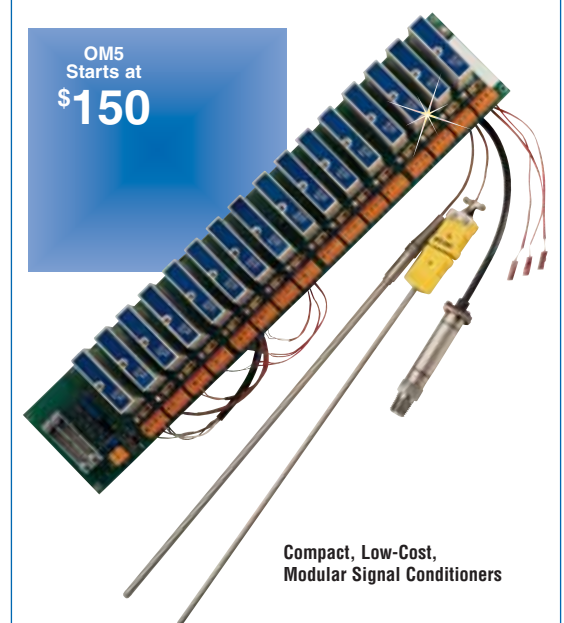11/25/05 DILBERT © United Feature Syndicate, Inc.

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111

NEW

Wireless Thermocouple Temperature Transmitter
Part of the NOMAD® Family
OM-CP-RFTC4000A

Starts at
$249

MADE IN USA · 5 YEAR WARRANTY · CE

OM-CP-RF Series wireless voltage, current and pulse input transmitters also available. Visit omega.com for details.

- ✔ **Dual Channel Ambient and Remote**
- ✔ **Real-Time Operation**
- ✔ **Automatically Converts PC Into Strip Chart Recorder**
- ✔ **Multiple Transmitter Configurations**
- ✔ **Automatic Thermocouple Linearization**
- ✔ **Memory Wraparound**
- ✔ **Programmable Start Time**

OM-CP-RFTC4000A, $249, shown larger than actual size

OM-CP-RFC101A, $199, Windows software displays data in graphical or tabular format

Thermocouple Recorder & Wireless Transmitter
OM-CP-RFTC4000A Thermocouple Types: J, K, T, E, R, S, B, N
Transmit On / Transmit Off
ΩE OMEGA®

The OM-CP-RFTC4000A is a miniature, wireless, battery-powered, standalone, thermocouple-based temperature transmitter. This portable, easy-to-use device will read and transmit temperature measurements. When enabled, the wireless transmitter will transmit readings back to the host computer where the data can be analyzed in real time. These readings are also logged to the device's memory for added data security. The convenient slide switch allows the transmitter to be turned On or Off without affecting the operation of the device. Data is received at the PC using the OM-CP-RFC101A receiver that attaches directly to the serial port. All received data is time and date stamped and stored directly in your PC. Its small size allows it to fit almost anywhere.

The OM-CP-RFTC4000A is a major leap forward in both size and performance. Numerous devices may transmit data to the same receiving station. The Windows software converts your PC into a real time strip chart recorder. Data can be printed in graphical or tabular format and can also be exported to a text or Microsoft Excel file.

Specifications
Internal Channel Temperature Range:
-30 to 70°C (-22 to 158°F)
Temperature Resolution: 0.1°C
Temperature Accuracy:
 ±0.5°C (0 to 50°C)
Remote Channel Thermocouple Types: J, K, T, E, R, S, B, N (programmable)

Thermocouple Connection:
Female subminiature (SMP)
Cold Junction Compensation: Automatic based on internal channel
Memory: 4095 readings per channel
Reading Interval: 1 reading every 30 seconds to 1 every 12 hours
Calibration Date:
Digital calibration through software
Data Format: Date and time stamped, °C, °F, °K, °R; V, mV, µV
Time Accuracy:
±1 minute/month at 20 to 30°C
Computer Interface: PC serial or RS-232C COM (interface cable required) 57600 baud
RF Baud Rate: 4800 baud
RF Carrier Frequency: 418 MHz
Range: 36 m (120') line of sight
Power: 3.6 V lithium battery (included)
Battery Life: 1 year typical (1 minute reading rate @ 25°C)

Software: Windows 95/98/ME/NT/2000/XP
Operating Environment:
-30 to 70°C (-22 to 158°F)
0 to 95% RH non-condensing
Dimensions:
20 H x 42 W x 68 mm D
(0.8 x 1.7 x 2.7")
Weight: 60 g (2 oz)
Enclosure: ABS plastic

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

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order (Specify Model Number)

Model No.	Price	Description
OM-CP-RFTC4000A	$249	Wireless temperature transmitter
OM-CP-RFTC4000A-CERT	309	Wireless temperature transmitter with NIST calibration certificate
OM-CP-RFC101A	199	Includes RF receiver, 1.2 m (4') RS-232 cable with DB9F termination, Windows software and operator's manual
OM-CP-BAT105	12	Replacement 3.6 V lithium battery
CS-3787	20	Reference Book: Personal Computing Demystified

*The **OM-CP-RFC101A** receiver package is required to operate the wireless transmitter.*
Ordering Example: OM-CP-RFTC4000A-CERT** wireless temperature transmitter with NIST calibration certificate, **OM-CP-RFC101A** Windows software, RS-232 cable with receiving antenna, $309 + 199 = **$508.

Wireless Humidity and Temperature Transmitter
Part of the NOMAD® Family
OM-CP-RFRHTEMP101A

Starts at
$269

5 YEAR WARRANTY
MADE IN USA

✔ **Measure Dew Point and Vapor Concentration**
✔ **Multiple Transmitter Configurations**
✔ **Automatically Converts a PC into a Strip Chart Recorder**
✔ **Programmable Start Time**
✔ **Memory Wraparound**

The OM-CP-RFRHTEMP101A is a miniature, wireless, battery-powered, standalone humidity and temperature transmitter. This portable, easy-to-use device will read and transmit temperature and humidity measurements to the host computer, where the data can be analyzed in real-time. These readings are also logged to the device's memory for added data security. The convenient slide switch turns the transmitter on or off. Data is received at the PC using the OM-CP-RFC101A receiver, which attaches directly to the serial port. All received data is time and date stamped and stored directly in the PC.

The OM-CP-RFRHTEMP101A is a major leap in both size and performance. Its small size allows it to fit almost anywhere. Numerous units can be used to transmit data to the same receiving station. The Windows software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

OM-CP-RFC101A, $199, Windows software, displays data in graphical or tabular format

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omega.com

Temperature/Humidity Recorder & Wireless Transmitter

OM-CP-RFRHTEMP101A
Range: -40°C to +80°C
0 to 95% RH

Transmit On
Transmit Off

ΩE OMEGA®

OM-CP-RFRHTEMP101A, $269, shown larger than actual size

Specifications
Temperature Sensor: Semiconductor
Temperature Range: -30 to 70°C (-22 to 158°F)
Temperature Resolution: 0.1°C
Calibrated Accuracy: ±0.5°C, 0 to 50°C (32 to 122°F)
HUMIDITY CHANNEL
Humidity Sensor: Semiconductor
Humdtity Range: 0 to 100% RH non-condensing
Humidity Resolution: 0.5% RH
Calibrated Accuracy: ±3% RH (±2% RH typical at 25°C)
Response Time: 90% change in 60 seconds in slow moving air

Calibration: Digital calibration through software
Start Time: Software-programmable start time and date (up to 6 months in advance)
Real-Time Recording: Transmits data to PC to monitor and record data in real-time
Memory: 5461 readings per channel
TEMPERATURE/HUMIDITY
Reading Interval: 1 reading every 30 seconds to 1 every 12 hours
Data Format: Date and time stamped; °C, °F, °K, °R; % RH, mg/ml of water concentration
Time Accuracy: ±1 minute/month [at 20 to 30°C (-4 to 86°F)]

Computer Interface: PC serial or RS-232C COM (interface cable required); 57,600 baud
RF Baud Rate: 4800 baud
RF Carrier Communication: 418 MHz
Range: 36 m (120') line of sight
Power: 3.6 V lithium battery (included)
Battery Life: 1 year typical (1 minute reading rate @ 25°C)
Software: Windows 95/98/ME/NT/2000/XP
Operating Environment: -30 to 70°C (-22 to 158°F) 5 to 95% RH non-condensing
Dimensions: 20 H x 42 W x 68 mm D (0.8 x 1.7 x 2.7")
Weight: 60 g (2 oz)
Enclosure: ABS plastic

AVAILABLE FOR FAST DELIVERY!

To Order (Specify Model Number)

Model No.	Price	Description
OM-CP-RFRHTEMP101A	$269	Wireless humidity and temperature data logger
OM-CP-RFRHTEMP101A-CERT	329	Wireless humidity and temperature data logger with NIST calibration certificate
OM-CP-RFC101A	199	Includes RF receiver, 1.22 m (4') RS-232 cable with DB9F termination, Windows software and operator's manual
OM-CP-BAT105	12	Replacement 3.6 V lithium battery
CS-3765	65	Reference Book: Wireless Sensor Networks: An Information Processing Approach

The **OM-CP-RFC101A** receiver package is required to operate the wireless transmitter. NIST calibration for temperature only.
Ordering Example: OM-CP-RFRHTEMP101A-CERT wireless humidity temperature transmitter with NIST calibration certificate and
OM-CP-RFC101A Windows software, RS-232 cable with receiving antenna, $329 + 199 = **$528.**

Wireless pH and Temperature Transmitter
Part of the NOMAD® Family
OM-CP-RFPH101A

OM-CP-RFPH101A shown larger than actual size

Starts at
$449

5 YEAR WARRANTY **MADE IN USA**

✔ **Multiple Transmitter Configurations**
✔ **Works with OMEGA® PHE-4200 Series of pH Probes**
✔ **Real-Time Operation**
✔ **Automatic Temperature Compensation**
✔ **Automatically Converts a PC into a Strip Chart Recorder**

The OM-CP-RFPH101A is a miniature, wireless, battery-powered, standalone pH and temperature transmitter. This portable, easy-to-use device will read and transmit pH and temperature measurements to the host computer, where the data can be analyzed in real-time. These readings are also logged to the device's memory for added data security. A convenient slide switch turns the transmitter on or off. The OM-CP-RFPH101A is a major leap in both size and performance. Numerous units can be used to transmit data to the same receiving station. The Windows software converts a PC into a real-time strip chart recorder. Data can be printed in graphical and tabular format or exported to a text or Microsoft Excel file.

Specifications
TEMPERATURE CHANNEL
Temperature Sensor: pH electrode with integral 100 Ω Pt RTD temperature sensor or external 100 Ω Pt RTD temperature sensor is required (a 100 Ω resistor can be used if temperature compensation is not needed)
Measurement Range:
-200 to 850°C (-328 to 1562°F)
Temperature Resolution:
0.01°C (0.001 Ω)
Calibrated Accuracy:
±0.1°C @ 25°C ambient (±0.015 Ω)
Input Connection:
Screw terminal; 2, 3 or 4 wire
pH CHANNEL
pH Range: 0 to 14 pH (-1000 to 1000 mV)
pH Resolution: 0.01 pH (0.1 mV)
Calibrated Accuracy: ±0.1 pH (±1 mV)
Input Connection: Female BNC jack
Input Resistance: 10^{12} Ω typical

GENERAL SPECIFICATIONS
Start Time: Software-programmable start time and date, up to six months in advance
Real-Time Recording: Can be used with PC to monitor and record data in real-time
Memory: 13,107 readings per channel
Reading Interval: 1 reading every 30 seconds to 1 every 12 hours
Calibration:
Digital calibration through software
Data Format: Date and time stamped; °C, °F, °K, °R, pH, V, mV, engineering units specified through software
Time Accuracy: ±1 minute/month at 20°C when RS-232 port is not in use

Computer Interface: PC serial or RS-232C COM interface cable required); 57,600 baud
RF Baud Rate: 4800 baud
RF Carrier Frequency: 418 MHz
Range: 36.6 m (120') line of sight
Power: 9 V lithium battery included
Battery Life: 1 year typical (1-minute reading rate @ 25°C)
Weight: 113 g (4 oz)
Software: Windows 95/98/NT/2000/XP
Operating Environment:
-5 to 50°C (23 to 122°F)
5 to 95% RH non-condensing
Dimensions: 114 H x 61 W x 25 mm D (4.5 x 2.4 x 1.0")
Weight: (120 g) 4 oz

AVAILABLE FOR FAST DELIVERY!

To Order (Specify Model Number)

Model No.	Price	Description
OM-CP-RFPH101A	$449	Wireless pH and temperature transmitter
OM-CP-RFPH101A-CERT	509	Wireless pH and temperature transmitter with NIST calibration certificate
OM-CP-RFC101A	199	Windows software and 1.2 m (4') RS-232 cable with DB9F termination and receiving antenna
OM-CP-BAT103	20	Replacement 9 V lithium battery

*Operator's manual, battery, RS-232 cable and receiving antenna are included with the **OM-CP-RFC101A** Windows software (required to operate the data logger and sold separately). NIST calibration for temperature only.*
***Ordering Example: OM-CP-RFPH101A-CERT** wireless pH and temperature transmitter with NIST calibration certificate and **OM-CP-RFC101A** Windows software and RS-232 cable with receiving antenna, $509 + 199 = **$708**.*

Wireless Temperature Transmitter
OMWT-TEMP15

Starts at
$137

1 YEAR WARRANTY **MADE IN USA**

✔ **Transmits Up to 180 m (600')***
✔ **64-Bit Unique ID**
✔ **Up to 100 Sensors Can Coexist**
✔ **Compact ABS Enclosure**
✔ **Complies with Part 15 of FCC Rules**
✔ **Internal Loop Antenna**

The OMWT-TEMP15 wireless temperature transmitter is a battery-operated digital temperature sensor with a microprocessor-controlled 418 MHz FCC certified radio transmitter. The OMWT-TEMP15 has an on-board time of day clock that allows it to spend most of the time in a low-power quiescent state. At pre-determined time intervals, the clock will wake up the on-board microprocessor. Unique serial number information and digital temperature data are read from a digital temperature sensor. This information is combined with a CRC-16 error check and transmitted in a very short data packet that results in a transmitter "on" time of only 15 milliseconds. This architecture allows the OMWT-TEMP15 to consume very little energy, resulting in a battery life of up to 3 years.
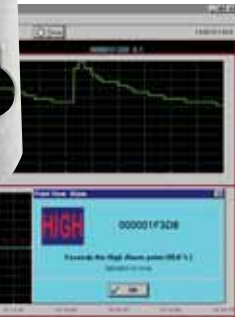
The electronics are coated with a conformal rubber material that provides a moisture barrier against condensation. Submersion in water is not recommended. A hole in the top ABS cover permits a special tool to be inserted to activate the service switch. The device is shipped with the transmitter turned off (anytime the device is to be shipped, the transmitter should be turned off; otherwise, it must be placed in a shielded container to prevent interference that might cause shipping problems). The unit is started by pushing the service switch (the user will feel the button click).

When the service switch is pushed, a data transmission immediately occurs, and a special mark is placed in the ID field of the transmitted data packet to indicate which device is in service or installation. The service switch is also used to put the device in a quiescent mode (no transmissions and very low power consumption). This is the state the device is in when the user receives it. Push and hold the service switch for 10 seconds or more to enter this powered-down state.

With the OMWT Series Windows software, incoming data being received from OMWT Series wireless transmitters can be viewed in a real-time or historical time-based chart or in a numerical view. High/low alarms can be set for each transmitter signal, with either a visual or audible alarm indication on the PC. Data can also be logged to disk at a user-specified rate in a text file format that can be opened into Microsoft Excel. The OMWT Series Windows software includes a DDE server that can interface the data being received from OMWT Series wireless transmitters to other Windows software packages.

OMWT-TEMP15, $137, shown larger than actual size

OMWT-SOFT, $100, displays real-time historical chart or numerical data

Specifications
Transmission Frequency: 418 MHz
Transmission Range*: Up to 180 m (600') depending on environmental conditions
Transmission Rate: 10 to 17 seconds random
Accuracy: ±0.5°C (±0.9°F) -10 to 85°C (-18 to 185°F)
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Humidity: 10 to 90% RH non-condensing
Battery: 3.6 V lithium battery included
Battery Life with Transmissions: 3 years
Shelf Life with Battery Installed: 5 years in quiescent mode
FCC Certified: FCC ID: M5ZCNT
Dimensions: 38 H x 53 W x 15 mm D (1.5 x 2.1 x 0.6")
Weight: 43 g (1.5 oz)

Technical Books Available Online! **books1.com** omega.com

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OMWT-TEMP15	$137	Wireless temperature transmitter
OMWT-REC232	222	Wireless receiver and 1.8 m (6') RS-232 cable with DB9F termination
OMWT-SOFT	100	OMWT Series Windows software (WIN95/98/NT/2000/XP)
OM-MLT-BATT	15	Replacement 3.6 V lithium battery
CS-3774	75	Reference Book: Introduction to Microcontrollers

Each unit comes complete with operator's manual.
* Depending on environmental conditions.
Ordering Example: OMWT-TEMP15** wireless temperature transmitter, **OMWT-REC232** wireless receiver and **OMWT-SOFT** Windows software, $137 + 222 + 100 = **$459.

NEW

Wireless Temperature and Humidity Transmitter OMWT-TEMPRH

Starts at
$200

1 YEAR WARRANTY
MADE IN USA

- ✔ **Transmits Up to 180 m (600')***
- ✔ **64-Bit Unique ID**
- ✔ **Up to 100 Sensors Can Coexist**
- ✔ **2 to 5 Year Battery Life**
- ✔ **Compact ABS Enclosure**
- ✔ **Complies with Part 15 of FCC Rules**
- ✔ **Internal Loop Antenna**

The OMWT-TEMPRH wireless temperature and relative humidity transmitter is a battery-operated digital temperature and relative humidity sensor with a microprocessor-controlled 418 MHz FCC certified radio transmitter. It has an on-board clock that allows it to spend most of the time in a low-power quiescent state. At predetermined intervals, the clock will wake up the on-board microprocessor. Unique serial number information, along with digital temperature and relative humidity data, are read from semiconductor digital temperature and relative humidity sensors. This information is combined with a CRC-16 error check and transmitted in a very short data packet that results in a transmitter "on" time of only 15 milliseconds. This architecture allows the OMWT-TEMPRH to consume very little energy, resulting in a battery life of up to 2 years.

The electronics are coated with a conformal rubber material that provides a moisture barrier against condensation. Submersion in water is not recommended. A hole in the top ABS cover permits a special tool to be inserted to activate the service switch. The OMWT-TEMPRH is shipped with the transmitter turned off (anytime the device is to be shipped, the transmitter should be turned off; otherwise, it must be placed in a shielded container to prevent interference that might cause shipping problems).

Start the device by pushing the service switch (the user will feel the button click). When the service switch is pushed, a data transmission immediately occurs and a special mark is placed in the ID field of the transmitted data packet to indicate which device is in service or installation.The service switch is also used to put the device in a quiescent mode (no transmissions and very low power consumption). This is the state the device is in when the user receives it. Push and hold the service switch for 10 seconds or more to enter this powered-down state.

With the OMWT Series Windows software, incoming data from OMWT Series wireless transmitters can be viewed in a real-time or historical time-based chart or in a numerical view. High/low alarms can be set for each transmitter signal, with either a visual or audible alarm indication on the PC. Data can also be logged to disk at a user-specified rate in a text file format that can be opened into Microsoft Excel. The OMWT Series Windows software includes a DDE server that can interface the data being received from OMWT Series wireless transmitters to other Windows software packages.

OMWT-TEMPRH, $200, shown larger than actual size

OMWT-SOFT, $100, displays real-time historical chart or numerical data

Specifications

Transmission Frequency: 418 MHz
Transmission Range*: Up to 180 m (600') depending on environmental conditions
Transmission Rate: 10 to 17 seconds random
Operating Temperature: -40 to 70°C (-40 to 158°F)
Storage Temperature: -40 to 70°C (-40 to 158°F)
Temperature Accuracy: ±0.5°C from -10 to 85°C (-18 to 185°F)
Humidity: 0 to 100% RH non-condensing
Humidity Accuracy: ±5% full scale at 25°C
Humidity Response Time: 15 sec in slowly moving air at 25°C
Battery: 3.6 V lithium battery included
Battery Life with Transmissions: 2 years
Shelf Life with Battery Installed: 5 years in quiescent mode
FCC Certified: FCC ID: M5ZTHL
Dimensions: 38 H x 53 W x 15 mm D (1.5 x 2.1 x 0.6")
Weight: 43 g (1.5 oz)

Technical Books Available Online!
books1.com
omega.com

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OMWT-TEMPRH	$200	Wireless temperature and humidity transmitter
OMWT-REC232	222	Wireless receiver and 1.8 m (6') RS-232 cable with D89F termination
OMWT-SOFT	100	OMWT Series Windows software (WIN95/98/NT/2000/XP)
OM-MLT-BATT	15	Replacement 3.6 V lithium battery
CS-3770	90	Reference Book: Stress, Strain & Structural Dynamics

Each unit comes complete with operator's manual.
* Depending on environmental conditions.
Ordering Example: OMWT-TEMPRH** wireless temperature and humidity transmitter, **OMWT-REC232** wireless receiver and **OMWT-SOFT** Windows software, $200 + 222 + 100 = **$522.

NEW

Wireless Current Transmitter
OMWT-AIN20MA

Starts at
$156

1 YEAR WARRANTY
MADE IN USA

☑ **Transmits Over Distances of Up to 180 m (600')***
☑ **12-Bit Analog-to-Digital Conversion**
☑ **0 to 20 mA Range**
☑ **Transmits Unique ID and Analog Value**
☑ **Up to 100 Transmitters Can Coexist**
☑ **Compact ABS Enclosure**
☑ **Internal Loop Antenna**

The OMWT-AIN20MA wireless current transmitter is a battery-operated, 12-bit, analog-to-digital converter with a microprocessor-controlled 418 MHz FCC certified radio transmitter. The OMWT-AIN20MA has an on-board clock that allows it to spend most of the time in a low-power quiescent state. At predetermined intervals, the clock will wake up the on-board microprocessor. Unique serial number information is read from a semiconductor digital device and analog data is read from a 12-bit analog-to-digital converter. This information is combined with a CRC-16 error check and transmitted in a very short data packet that results in a transmitter "on" time of only 15 milliseconds. This architecture allows the OMWT-AIN20MA to consume very little energy, giving its battery a life of up to 2 years.

The electronics are coated with a conformal rubber material that provides a moisture barrier to condensation. Submersion in water is not recommended. A hole in the top ABS cover permits a special tool to be inserted to activate the service switch. The OMWT-AIN20MA is shipped with the transmitter turned off (anytime the device is to be shipped, the transmitter should be turned off; otherwise, it must be placed in a shielded container to prevent interference that might cause shipping problems). Start the device by pushing the service switch (the user will feel the button click). When the service switch is pushed, a data transmission

immediately occurs and a special mark is introduced in the ID field of the transmitted data packet to indicate which device is in service or installation. The service switch is also used to put the device in a quiescent mode (no transmissions and very low power consumption). This is the state the device is in when received from the manufacturer. Push and hold the service switch for 10 seconds or more to enter this powered-down state.

With the OMWT Series Windows software, incoming data from OMWT Series wireless transmitters can be viewed in a real-time or historical time-based chart, or in a numerical view. High/low alarms can be set for each transmitter signal, with either a visual or audible alarm indication on the PC. Data can also be logged to disk at a user-specified rate in a text file format that can be opened into Microsoft Excel. The OMWT Series Windows software includes a DDE server that can interface the data received from OMWT Series wireless transmitters to other Windows software packages.

Specifications
Current Input Range: 0 to 20 mA
Input Impedance: 120 Ω
A/D Resolution: 12 bit
Accuracy: ±0.15% FSR
Transmission Frequency: 418 MHz
Transmission Rate:
10 to 17 seconds random
Transmission Range*: Up to 1.8 m (600') depending on environmental conditions

OMWT Series wireless voltage, motion and vibration transmitters also available. Visit omega.com for details.

OMWT-AIN20MA, $156, shown larger than actual size

OMWT-SOFT, $100, displays real-time historical chart or numerical data

Operating Temperature:
-40 to 85°C (-40 to 185°F)
Storage Temperature:
-40 to 85°C (-40 to 185°F)
Humidity: 0 to 90% RH non-condensing
Battery: 3.6 V lithium battery included
Battery Life: 2 years
Shelf Life with Battery Installed:
5 years in quiescent mode
FCC Certified: FCC ID: M5ZANA
Dimensions:
38 H x 53 W x 15 mm D
(1.5 x 2.1 x 0.6")
Weight: 43 g (1.5 oz)

AVAILABLE FOR FAST DELIVERY!

To Order (Specify Model Number)

Model No.	Price	Description
OMWT-AIN20MA	$156	Wireless current transmitter
OMWT-REC232	222	Wireless receiver and 1.8 m (6') RS-232 cable with DB9F termination
OMWT-SOFT	100	OMWT Series Windows software
OM-MLT-BATT	15	Replacement 3.6 V lithium battery
CS-3793	72	Reference Book: Fortran 90/95 for Scientists and Engineers

Each unit comes complete with operator's manual.
* Depending on environmental conditions.
Ordering Example: OMWT-AIN20MA _wireless current transmitter,_ **_OMWT-REC232_** _wireless receiver and_ **_OMWT-SOFT_** _Windows software, $156 + 222 + 100 =_ **_$478._**

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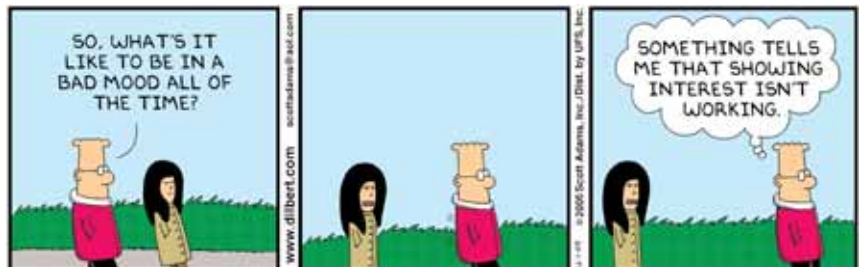
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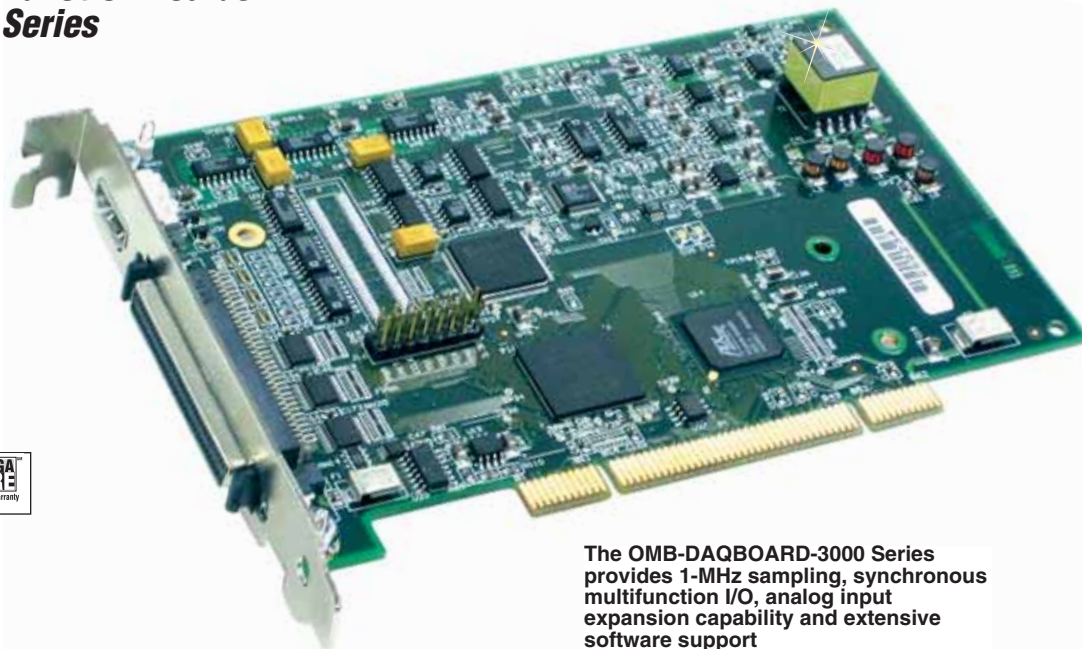12/02/05   DILBERT © United Feature Syndicate, Inc.

PCI 1-MHz, 16-Bit Multifunction Boards
OMB-DAQBOARD-3000 Series

Starts at
$**549**

The OMB-DAQBOARD-3000 Series provides 1-MHz sampling, synchronous multifunction I/O, analog input expansion capability and extensive software support

OMB-DAQBOARD-3000, $749, shown smaller than actual size

✔ **Low-Cost, 1-MHz, 16-Bit Multifunction PCI Boards**
✔ **8 Differential or 16 Single-Ended Analog Inputs (Software Selectable per Channel)**
✔ **User-Expandable—Up to 64SE/32DE Analog Inputs, Including Thermocouple Measurements**
✔ **Four 16-Bit, 1-MHz Analog Outputs with Continuous Waveform Capability**
✔ **24 High-Speed Digital I/O Lines**
✔ **Four 32-Bit Counter Input Channels with Quadrature Encoder Capability**
✔ **Includes DaqView Software for Instant Setup, Real-Time Viewing, Data Logging, and Optional Frequency Domain Analysis**
✔ **Support for Visual Studio and Visual Studio.NET, Including Examples for Visual C++, Visual C#, Visual Basic, and Visual Basic.NET**

The new OMB-DAQBOARD-3000 Series comprises high-performance PCI boards offering 16-bit/1-MHz multifunction synchronous I/O at very competitive prices. This is accomplished by incorporating a high level of integration, while focusing on features that provide valuable benefits to users.

The OMB-DAQBOARD-3000 Series features a 16-bit/1-MHz A/D converter, 16 analog input channels (user expandable to 64), up to four 16-bit/1-MHz analog outputs, 24 high-speed digital I/O, 2 timer outputs, and four 32-bit counters. All analog I/O, digital I/O, and counter/timer I/O can operate synchronously and simultaneously, guaranteeing deterministic I/O timing among all signal types.

Unique to the OMB-DAQBOARD-3000 Series is a high-speed, low-latency, highly deterministic control output mode that operates independent of the PC. In this mode both digital and analog outputs can respond to analog, digital, and counter inputs as fast as 2 µs; at least 1000 times faster than most other boards that rely on the PC for decision making.

For end-users who would prefer the same functionality, but with a USB module, see the OMB-DAQ-3000 Series.

Software
Software support for the OMB-DAQBOARD-3000 Series includes support for Visual Studio and Visual Studio.NET, including examples for Visual C++, Visual C#, Visual Basic, and Visual Basic.NET, plus comprehensive drivers for

DASYLab, MATLAB, and LabVIEW. Also included is DaqView software for quick and easy setup and collection of data without programming, along with DaqCal software, an application for easy user calibration.

The optional DaqView/Pro software adds features such as direct-to-Excel enhancements, FFT analysis, statistics, etc., for a small, additional price.

Signal Connections
One 68-pin connector provides access to the 16SE/8DE analog input channels, 24 digital I/O lines, 6 counter/timer channels, and up to 4 analog outputs on each OMB-DAQBOARD-3000 Series board. An externally accessible HDMI connector is also provided on the OMB-DAQBOARD-3000 Series, enabling a simple connection for the optional OMB-PDQ30 analog channel expansion module.

In addition to standard screw-terminal options for the OMB-DAQBOARD-3000 Series, the OMB-DBK215 BNC connection module can be used. It provides screw terminal access to all I/O, plus 16 BNC connectors that can be user configured.

OMB-PDQ30, $599, shown smaller than actual size

Thermocouple probes sold separately. Visit omega.com

JMQSS-125U-12, $26.95

TMQSS-125U-12, $26.95

KMQSS-125U-12, $26.95
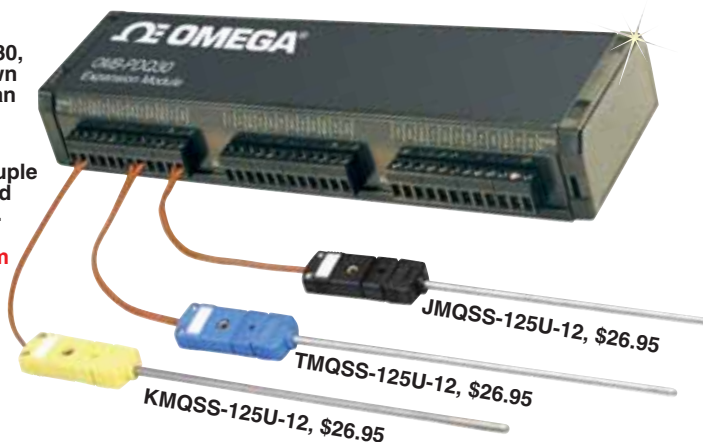
OMB-DBK215, $399, shown smaller than actual size. The OMB-DBK215 provides 16 BNC inputs or outputs and internal screw-terminal connections.

Analog Input

The OMB-DAQBOARD-3000 Series has a 16-bit, 1-MHz A/D coupled with 16 single-ended or 8 differential analog inputs. Seven software-programmable ranges provide inputs from ±10 V to ±100 mV full scale (single-ended ±10 V range on OMB-DAQBOARD-3006). Each channel can be software-configured for a different range, as well as for single-ended or differential bipolar input.

Analog Channel Expansion

Adding additional analog input channels for the OMB-DAQBOARD-3000 Series is easy using the optional OMB-PDQ30 expansion module. The OMB-PDQ30 connects to the OMB-DAQBOARD-3000 Series card via an OMB-CA-266-3 cable and does not occupy a PCI slot. The OMB-PDQ30 provides an additional 48SE/24DE analog inputs or 24 thermocouple inputs, software configured on a per-channel basis. The total channel capacity with an OMB-PDQ30 attached is 64 single-ended or 32 differential inputs. The measurement speed of OMB-PDQ30 channels is the same 1 Msample/s as with on-board channels.

When configured to measure thermocouple channels, the system sample rate is 10 kHz per channel. This reduction in sample rate ensures that temperature measurements are accurate, low noise, and stable.

The OMB-DAQBOARD-3000 Series also supports up to 4 boards installed into one PC, effectively quadrupling the number of channels that can be attached to one PC.

Synchronous I/O

The OMB-DAQBOARD-3000 Series can make analog measurements and read digital and counter inputs, while synchronously generating up to 4 analog outputs as well as digital pattern outputs. Additionally, digital and counter inputs do not affect the overall A/D rate because they use no time slot in the scanning sequencer.

Input Scanning

The OMB-DAQBOARD-3000 has several scanning modes to address a wide variety of applications. A 512-location scan buffer can be loaded by the user with any combination of analog input channels. All analog input channels in the scan buffer are measured sequentially at 1 µs per channel. The user can also specify that the sequence repeat immediately, or repeat after a programmable delay from 0 to 19 hours, with 20.83 ns resolution.

Output Timing

The digital and analog outputs on the OMB-DAQBOARD-3000 can be updated asynchronously or synchronously in several modes. In the asynchronous mode, digital and analog outputs can be updated at any time before, during, or after an analog input sequence. The maximum update rate in this mode is non-deterministic and is entirely dependent on the PC processor speed, the operating system, and the programming environment. In the synchronous output modes, the outputs can be updated directly from memory in the PC, or as the

direct result of an input from either an analog channel, digital channel, or counter channel. When updated from memory in the PC (via DMA), the rate by which the output can be specified is in 20.83 ns intervals, and all outputs can be updated synchronously at a maximum rate of 1 µs.

Triggering

The OMB-DAQBOARD-3000 Series supports a full complement of trigger modes to accommodate any measurement situation.

Hardware Analog Triggering

The OMB-DAQBOARD-3000 Series uses true analog triggering, whereby the trigger level programmed by the user sets an analog DAC, which is then compared in hardware to the analog input level on the selected channel. The result is analog trigger latency that is guaranteed to be less than 1 µs, significantly shorter than most data acquisition boards. Any analog channel can be selected as the trigger channel, including OMB-PDQ30 expansion channels. The user can program the trigger level, as well as the edge (rising or falling) and hysteresis.

Digital Triggering A separate digital trigger input line is provided, allowing TTL-level triggering with latencies guaranteed to be less than 1 µs. Both the logic levels (1 or 0), as well as the edge (rising or falling), can be programmed for the discrete digital trigger input.

Pattern Triggering The user can specify a 16-bit digital pattern to trigger an acquisition, including the ability to mask or ignore specific bits.

Software-Based Channel Level Triggering This mode differs from the modes described previously because the analog, digital, or counter readings are interrogated by the PC in order to detect the trigger event. Triggering can also be programmed to occur when one of the counters reaches, exceeds, or is within a programmed window. Normally, software-based triggering results in long latencies, from the time a trigger condition is detected until the actual capturing of data commences. However, the OMB-DAQBOARD-3000 Series circumvents this undesirable situation by use of pre-trigger data.

Stop Trigger Any of the software trigger modes described previously, including scan count, can also be used to stop an acquisition.

Pre- and Post-Triggering Modes Six modes of pre- and post-triggering are supported, providing a wide variety of options to accommodate any measurement requirement.

Calibration
Every range on the OMB-DAQBOARD-3000 is calibrated from the factory using a digital NIST-traceable calibration method. Included with each OMB-DADBOARD-3000 is DaqCal software, an easy-to-operate package that allows users to calibrate their boards. Two calibration modes are supported in DaqCal. Self-cal, a user cal mode for analog inputs, can be performed automatically in minutes with included software and without the use of external hardware or instruments. Self-cal derives its traceability from an on-board reference that has a stability of 0.005% per year. The second mode, user-cal, is for users who require traceability to international standards such as NIST. A 6½ digital multimeter is required, and user-calibration software is included with step-by-step instructions for full calibration.

Analog Output
(OMB-DAQBOARD-3000 and OMB-DAQBOARD-3001 only)
Two or four 16-bit, 1-MHz analog output channels are built into the OMB-DAQBOARD-3000 Series with an output range of -10 V to 10 V. Through the use of bus mastering DMA, each D/A output can continuously output a waveform at up to 1 MHz, which can be read from PC

RAM or a file on the hard disk. In addition, a program can asynchronously output a value to any of the D/As for nonwaveform applications, assuming the D/A is not already being used in the waveform output mode. Lastly, each of the analog outputs can be used in a control mode, where its output level is dependent on whether an associated analog, digital, or counter input is above or below a user-specified limit condition.

Digital I/O
Twenty-four TTL-level digital I/O lines are included in the OMB-DAQBOARD-3000 Series. Digital I/O can be programmed in 8-bit groups as either inputs or outputs and can be scanned in several modes. Ports programmed as inputs can be part of the scan group and scanned along with analog input channels, or they can be asynchronously accessed via the PC at any time, including when a scanned acquisition is occurring.

Digital Outputs and Pattern Generation
Digital outputs can be updated asynchronously at any time before, during, or after an acquisition. Two of the 8-bit ports can also be used to generate a 16-bit digital pattern at up to 12 MHz. The OMB-DAQBOARD-3000 Series supports digital pattern generation via bus mastering DMA. In the same manner as analog output, the digital pattern can be read from PC RAM or from a file on the hard disk.

Counter Inputs
Four 32-bit counters are built into the OMB-DAQBOARD-3000 Series. Each of the four counters will accept frequency inputs of up to 20 MHz, and each counter channel can be configured in a variety of modes, including counter, period, pulse width, time between edges, or multi-axis quadrature encoder. The counters can concurrently monitor time periods, frequencies, pulses, and other event-driven incremental occurrences from encoders, pulse generators, limit switches, proximity switches, and magnetic pick-ups.

OMB-DAQBOARD-3000 Series Block Diagram
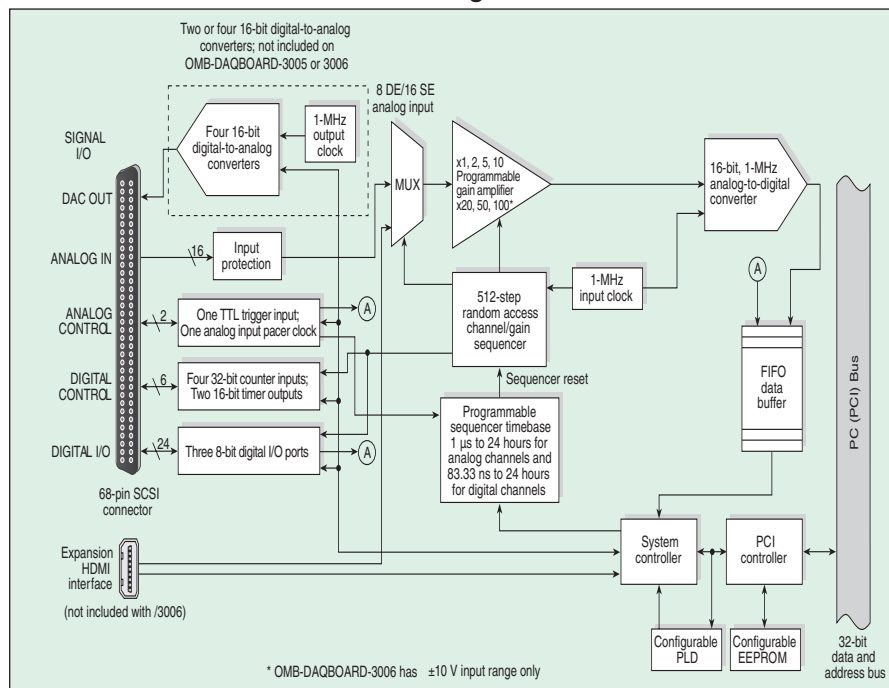
Timer Outputs
Two 16-bit timer outputs are built into the OMB-DAQBOARD-3000, each capable of generating different square waves with a programmable frequency range of 16 Hz to 1 MHz.

Multiple DaqBoards per PC
All of the features described for the OMB-DAQBOARD-3000 can be replicated with up to four OMB-DAQBOARD-3000s installed in the same PC

Specifications
General Power Consumption (per Board): 3 W
Operating Temperature: 0 to 60°C (32 to 140°F)
PCI Bus: PCI r2.2 compliant, universal 3.3 V/5 V signaling support, compatible with PCI-X
Storage Temperature: -40 to 80°C (-40 to 176°F)
Relative Humidity: 0 to 95% non-condensing
Vibration: MIL STD 810E cat 1 and 10
Signal I/O Connector: 68-pin standard "SCSI Type III" female connector
Dimensions: 165 W x 15 D x 108 mm H (6.5 x 0.6 x 4.2")
Weight: 160 g (0.35 lb)

ANALOG INPUTS
Channels: 16 single-ended (SE) or 8 differential (DE), programmable on a per-channel basis as single-ended or differential (except for OMB-DAQBOARD-3006, which is limited to 16 SE analog inputs with a fixed range of 10 V)
Expansion: An additional 48 analog inputs per board via optional OMB-PDQ30 module (except for OMB-DAQBOARD-3006, which is limited to 16 SE analog inputs with a fixed range of 10 V)

Over-Voltage Protection: ±30 V without damage
Ranges: Software- or sequencer-selectable on a per channel basis: ±10 V, ±5 V, ±2 V, ±1 V, ±0.5 V, ±0.2 V, ±0.1 V (except for OMB-DAQBOARD-3006, which is limited to 16 SE analog inputs with a fixed range of 10 V)
Input Impedance: 10 MΩ single-ended; 20 MΩ differential
Total Harmonic Distortion: -80 dB type for ±10 V range, 1 kHz fundamental
Signal to Noise and Distortion: 72 dB type for ±10 V range, 1 kHz fundamental
Bias Current: 40 pA typical (0 to 35°C)
Crosstalk: -75 dB typical DC to 60 Hz; -65 dB typical @ 10 kHz
Common Mode Rejection: -70 dB typical DC to 1 kHz

A/D Specifications
Type: Successive approximation
Resolution: 16 bit
Maximum Sample Rate: 1 MHz
Non-Linearity (Integral): ±2 LSB maximum
Non-Linearity (Differential): ±1 LSB maximum
Input Sequencer
Analog, digital and frequency inputs can be scanned synchronously, based on either an internal programmable timer or an external clock source.

Programmable Parameters per Scan: Channel (random order), gain
Depth: 512 locations
On-Board Channel-to-Channel Scan Rate:
  Analog: 1 MHz maximum
  Digital: 12 MHz if no analog channels are enabled, 1 MHz with analog channels enabled

External Acquisition Scan Clock
Input Maximum Rate: 1 MHz
Clock Signal Range: Logical zero 0 V to 0.8 V; logical one 2.4 V to 5 V
Minimum Pulse Width: 50 ns high, 50 ns low
TRIGGERING
Trigger Sources: 6, individually selectable for starting and stopping an acquisition. Stop acquisition can occur on a different channel than start acquisition; stop acquisition can be triggered via modes 4.

ANALOG OUTPUTS (OMB-DAQBOARD-3000 and OMB-DAQBOARD-3001 only)
Analog output channels are updated synchronously relative to scanned inputs and clocked from either an internal on-board clock or an external clock source. Analog outputs can also be updated asynchronously, independent of any other scanning in the system. Bus mastering DMA provides CPU and system-independent data transfers, ensuring accurate outputs irrespective of other system activities.
Channels: 2 (OMB-DAQBOARD-3000); 4 (OMB-DAQBOARD-3001)
Resolution: 16 bits
Data Buffer: PC-based memory
Output Voltage Range: ±10 V
Output Current: ±10 mA
Offset Error: ±0.0045 V max
DAC Analog Glitch: <12 mV typical at major carry
Gain Error: ±0.01%
Update Rate: 1 MHz max, 19 hours min (no minimum with external clock), resolution 20.83 ns
Settling Time: 2 µs max to 1 LSB for full-scale step
Clock Sources: 4, programmable
DIGITAL I/O
Channels: 24
Ports: 3 x 8-bit, each port is programmable as input or output

OMB-DAQBOARD-3000 Series Selection Chart and OMB-PDQ30 Expansion Capabilities					
Model Number	Analog Inputs	Input Ranges	Digital I/O	Analog Outputs	Counters/ Timers
OMB-DAQBOARD-3006	16SE	1	24	0	4/2
OMB-DAQBOARD-3005	16SE/8DE	7	24	0	4/2
OMB-DAQBOARD-3000	16SE/8DE	7	24	2	4/2
OMB-DAQBOARD-3001	16SE/8DE	7	24	4	4/2
OMB-DAQBOARD-3005 & OMB-PDQ30	16SE/8DE	7	24	0	4/2
OMB-DAQBOARD-3000 & OMB-PDQ30	16SE/8DE	7	24	2	4/2
OMB-DAQBOARD-3001 & OMB-PDQ30	16SE/8DE	7	24	4	4/2
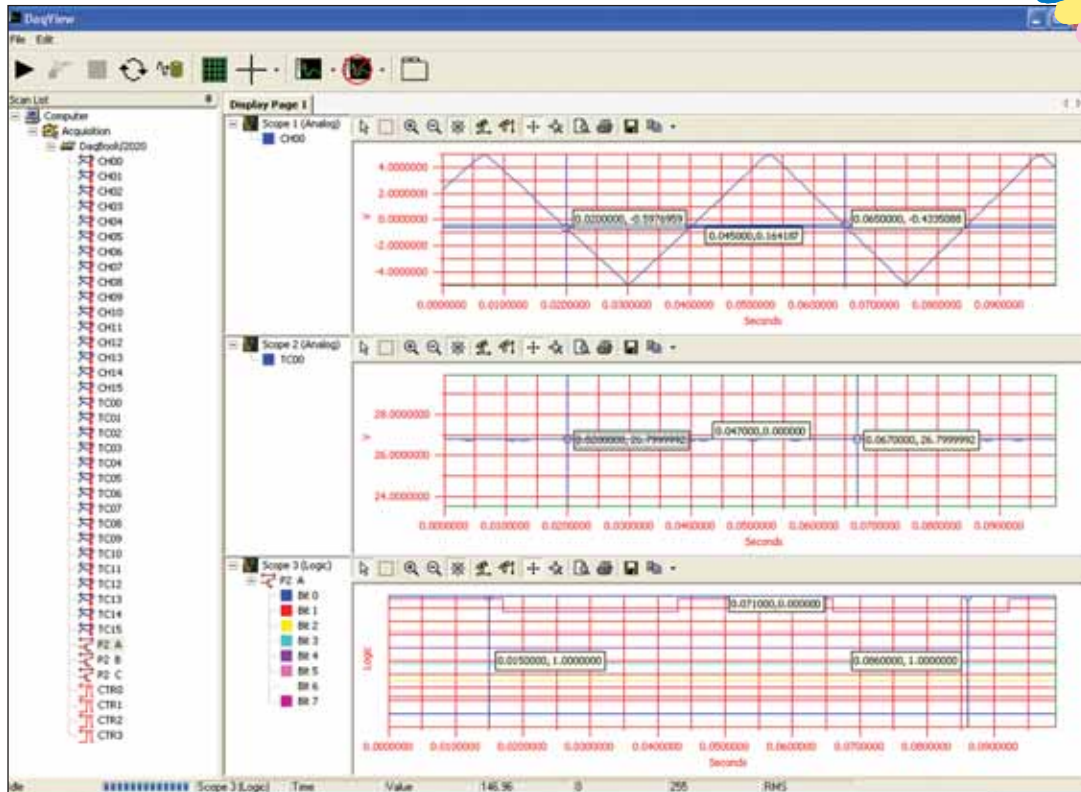
DaqView software included with the OMB-DAQBOARD-3000 Series

Input Scanning Modes (2 Programmable):
1. Asynchronous, under program control at any time relative to input scanning
2. Synchronous with input scanning
Input Characteristics: 10 KΩ pull-up to 5 V, 20 pF to common
Input Protection: ±15 kV ESD clamp diodes
Input Levels:
  Low: 0 to 0.8 V
  High: 2 to 5 V
Output Levels:
  Low: <0.8 V
  High: >2 V
Output Characteristics: Output 12 mA per pin, 200 mA total continuous
Sampling/Update Rate: 12 MHz max

PATTERN GENERATION OUTPUT
Two of the 8-bit ports can be configured for 16-bit pattern generation. The pattern can also be updated synchronously with an acquisition at up to 12 MHz.
Counter:
Each of the 4 high-speed, 32-bit counter channels can be configured for counter, period, pulse width, time between edges, or multi-axis quadrature encoder modes
Channels: 4 x 32 bit
Input Frequency: 20 MHz max
Input Signal Range: -15 V to 15 V
Input Characteristics: 10 KΩ pull-up, ±15 kV ESD protection
Trigger Level: TTL
Minimum Pulse Width: 25 ns high, 25 ns low

Debounce Times: 16 selections from 500 ns to 25.5 ms; positive or negative edge sensitive; glitch detect mode or debounce mode
Time Base Accuracy: 30 ppm (0 to 50°C)
5 Programmable Modes: Counter, period, pulse width, timing, encoder
Power Available for Encoders: 5 V @ 500 mA max
Multi-Axis Quadrature Encoder Inputs:
  1 channel with A (phase) B (phase) and Z (index)
  2 channel with A (phase) and B (phase)
  x1, x2 and x4 count modes Single-ended TTL
Frequency/Pulse Generator Channels: 2 x 16-bit

Voltage Range*	Accuracy ± (% of Reading + % Range) 23°C, ±10°C, 1 Year	Temperature Coefficient ± (ppm of Reading + ppm Range) /°C 0 to 13°C and 33 to 60°C	Noise* (cts RMS)
-10 V to 10 V	0.031% + 0.008%	14 + 8	1.5
-5 V to 5 V	0.031% + 0.009%	14 + 9	2.0
-2 V to 2 V	0.031% + 0.010%	14 + 10	1.6
-1 V to 1 V	0.031% + 0.012%	14 + 12	2.5
-500 mV to 500 mV	0.031% + 0.018%	14 + 18	4.0
-200 mV to 200 mV	0.036% + 0.012%	14 + 12	5.0
-100 mV to 100 mV	0.042% + 0.018%	14 + 18	9.0

Specifications assume differential input single-channel scan, 1-MHz scan rate, unfiltered, CMV = 0.0V, 30 minute warm-up.
**Noise reflects 10,000 samples at 1-MHz, typical, differential short, OMB-CA-G56.*

Output Waveform:
Square wave
Output Rate: 1 MHz base rate divided by 1 to 65,535 (programmable)
High-Level Output Voltage: 2 V min @ -1 mA; 2.9 V min @ -400 µA
Low-Level Output Voltage: 0.4 V max @ 400 µA
OMB-PDQ30 Expansion Module: See the OMB-PDQ30 data sheet for complete specifications
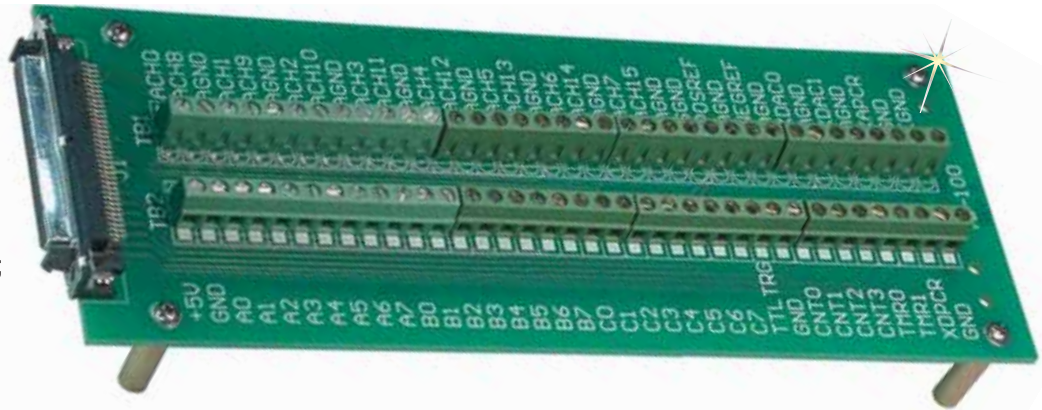
The OMB-TB-100, $99, termination board with screw terminals, provides access to all OMB-DAQBOARD-3000 Series I/O. The OMB-TB-100 can be panel mounted or 19" rack mounted using optional OMB-RACK3 mounting kit.

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OMB-DAQBOARD-3006	**$549**	16-bit, 1-MHz PCI data acquisition board with 16 analog inputs with a single-ended 10 V range (not expandable with OMB-PDQ30), 24 digital I/O, 4 counters, and 2 timers; includes DaqView; support for Visual Studio and Visual Studio.NET, including examples for Visual C++, Visual C#, Visual Basic and Visual Basic.NET; drivers for DASYLab, MATLAB and LabVIEW; and DaqCal software application for easy user-calibration
OMB-DAQBOARD-3005	**649**	16-bit, 1-MHz PCI data acquisition board with 8DE/16SE analog inputs, 7 input ranges from 100 mV to 10 V full scale, 24 digital I/O, 4 counters and 2 timers; includes DaqView; support for Visual Studio and Visual Studio .NET, including examples for Visual C++, Visual C#, Visual Basic and Visual Basic .NET; drivers for DASYLab, MATLAB and LabVIEW; and DaqCal software application for easy user-calibration
OMB-DAQBOARD-3000	**749**	Same as OMB-DAQBOARD-3005 but with two 16-bit, 1-MHz analog outputs
OMB-DAQBOARD-3001	**849**	Same as OMB-DAQBAORD-3005 but with four 16-bit, 1-MHz analog outputs
OMB-PDQ30	**599**	Analog input expansion module, adds 48SE/24DE channels to OMB-DAQBOARD-3000 Series; connects via an OMB-CA-266-3 cable
OMB-DAQVIEW-XLPLUS	**299**	DaqView add-on for seamless execution with Microsoft Excel's tool palette
OMB-DAQVIEW-PRO	**599**	DaqView add-on includes all of the features of OMB-DAQVIEW-XLPLUS, plus frequency-domain analysis

Accessories

Model No.	Price	Description
OMB-TB-100	**$99**	Termination board with screw terminals for access to OMB-DAQBOARD-3000 Series I/O; connects via an OMB-CA-G55, OMB-CA-G56 or OMB-CA-G56-6 cable
OMB-RACK3	**41**	Rack-mount kit for OMB-TB-100
OMB-DBK215	**399**	BNC termination module with 16 BNC connectors and internal screw-terminal connections; connects via an OMB-CA-G55, OMB-CA-G56 or OMB-CA-G56-6 cable
OMB-CA-G55	**69**	68-conductor ribbon expansion cable from OMB-DAQBOARD-3000 Series boards to OMB-TB-100 or OMB-DBK215, 0.9 m (3')
OMB-CA-G56	**95**	68-conductor shielded cable from OMB-DAQBOARD-3000 Series boards to OMB-TB-100 or OMB DBK215, 0.9 m (3')
OMB-CA-G56-6	**109**	68-conductor shielded cable from OMB-DAQBOARD-3000 Series boards to OMB-TB-100 or OMB-DBK215, 1.8 m (6')
OMB-CA-266-3	**49**	HDMI cable, connects OMB-PDQ30 to OMB-DAQBOARD-3000 Series, 0.9 m (3')

Each OMB-DAQBOARD-3000 Series board is supplied with DaqView software, software drivers and complete operator's manual on CD ROM.
Ordering Example: OMB-DAQBOARD-3005, *16-bit, 1-MHz PCI data acquisition board with 8DE/16SE analog inputs, 7 input ranges from 100 mV to 10 V full-scale, 24 digital I/O, 4 counters and 2 timers,* ***OMB-TB-100*** *termination board,* ***OMB-CA-G56*** *shielded cable and OMEGACARE℠ 1-year extended warranty for* ***OMB-DAQBOARD-3005*** *(adds 1 year to standard 1-year warranty), $649 + 99 + 95 + 64 =* ***$907.***

HAMMERHEAD BOB

HEY, WHAT ARE YOU TALKING ABOUT? I'M AN EXPERT ON MANY TOPICS.

TRY TO GET THIS THROUGH YOUR THICK HEAD: YOU ARE NOT WELCOME IN OUR CONVERSATION.

IRRITABLE, EH? TRY CRAMP BARK AND DANDELION ROOT.

12/03/05 DILBERT © United Feature Syndicate, Inc.

UM... WHY ARE YOU HERE?

ORIGINALLY I WAS SEDUCED BY THE SMELL OF YOUR FRESHLY BREWED COFFEE AND TEMPTING PASTRIES.

BUT NOW I'M ALL ABOUT CROSS-CHARGING MY TIME TO YOUR PROJECT.

12/05/05 DILBERT © United Feature Syndicate, Inc.

CATBERT: EVIL DIRECTOR OF HUMAN RESOURCES

ED, YOU SEEM DISGRUNTLED.

YOU NEED 30 MINUTES IN THE EMPLOYEE RATIONALIZER.

I...I...DON'T MIND BAD MANAGEMENT BECAUSE... THE COMMUTE IS EASY.

BETTER.

12/06/05 DILBERT © United Feature Syndicate, Inc.

MEET OUR NEW SOURPUSS.

I HEARD THAT EVERY OFFICE HAS ONE. AND WE DIDN'T, SO I WENT OUT AND GOT ONE.

DOES ANYTHING EVER SOUND LIKE A BAD IDEA TO YOU? LEADERSHIP IS 90% OPTIMISM.

12/07/05 DILBERT © United Feature Syndicate, Inc.

DOES ANYONE HAVE AN ISSUE WITH THE PLAN AS I'VE OUTLINED IT?

KAH! KAH! KAH!

I'M WITH SOURPUSS.

12/08/05 DILBERT © United Feature Syndicate, Inc.

SOURPUSS

WHEN LIFE GIVES YOU LEMONS...

CHOKE ON 'EM AND DIE.

YOU STUPID LEMON EATER.

12/09/05 DILBERT © United Feature Syndicate, Inc.

PX41 Series Starts at $450

Heavy-Duty Voltage Output Pressure Transducer with Unique Dual ½ and ¼ NPT Fitting

PX01 Starts at $680

Very High Accuracy Current Output Pressure Transmitter

PX02 Starts at $705

High Accuracy Electronic Barometer

Please search omega.com for more details on these featured products!

16-Bit, 200 kHz PCI Data Acquisition Boards
OMB-DAQBOARD-500 Series
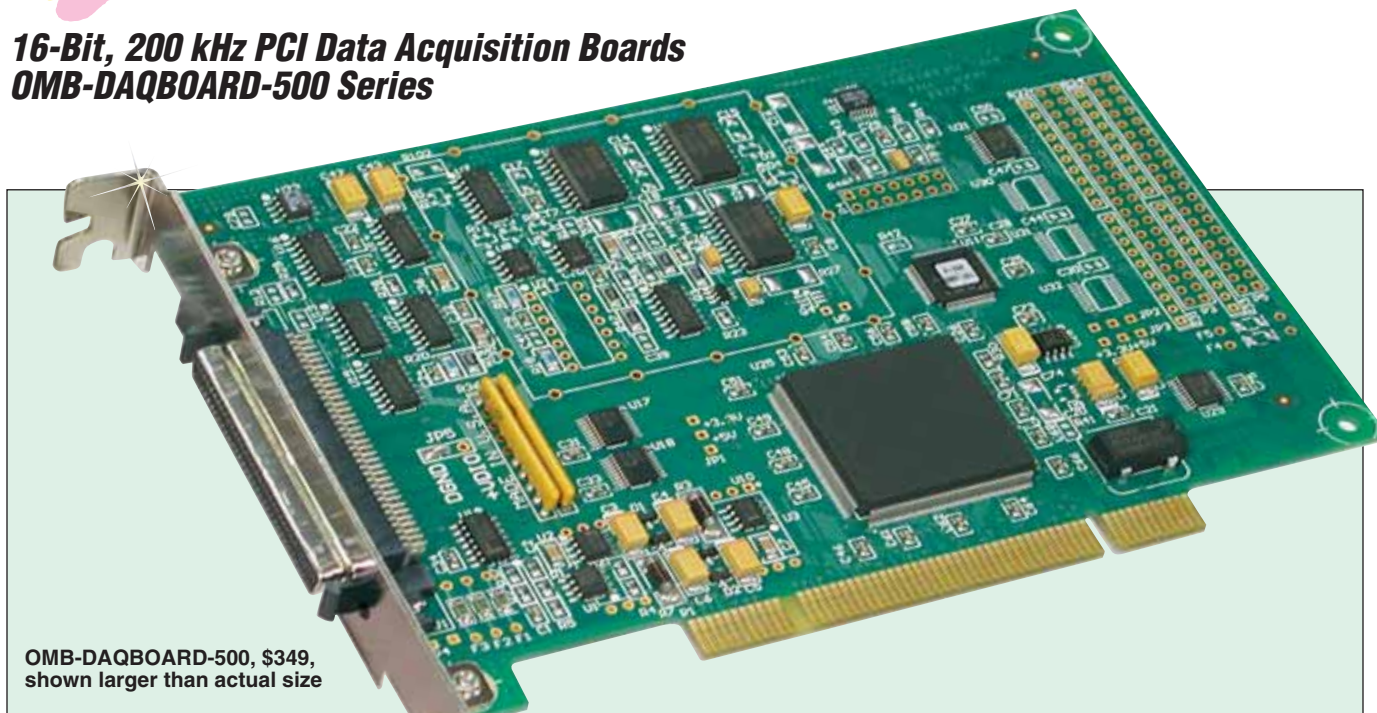
OMB-DAQBOARD-500, $349, shown larger than actual size

Starts at
$249

✔ **Low-Cost, 16-Bit PCI Data Acquisition Boards**
✔ **16-Bit, 200 kHz A/D Converter**
✔ **8 Differential or 16 Single-Ended Analog Inputs (Software Selectable per Channel)**
✔ **Up to Four Boards Can be Installed in One PC**
✔ **100% Digital Calibration**
✔ **DMA Bus Mastering**
✔ **Trigger Modes Include Digital and Software, with <5 µs Latency**
✔ **Virtually Infinite Pre-Trigger Buffer**
✔ **Two 16-Bit, 100 kHz Analog Outputs with Continuous Waveform Output Capability (OMB-DAQBOARD-500 Only)**
✔ **24 Digital I/O Lines**
✔ **One Counter/Pulse Input Channel**
✔ **Two Timer/Pulse Output Channels**
✔ **Includes DaqView Software for Effortless Data Logging and Analysis**
✔ **Support for Visual Studio and Visual Studio.NET, Including Examples for Visual C++, Visual C#, Visual Basic, and Visual Basic.NET**
✔ **Comprehensive Drivers for DASYLab and LabVIEW**
✔ **Support for Windows 2000 and XP**

The new OMB-DAQBOARD-500 and OMB-DAQBOARD-505 are the lowest priced 16-bit/200 kHz data acquisition boards. Each board offers 16 channels of 16-bit analog input, 24 digital I/O lines, and one counter input. The OMB-DAQBOARD-500 also provides two 16-bit waveform-capable analog outputs.

Software support for the OMB-DAQBOARD-500 Series includes support for Visual Studio and Visual Studio.NET, including examples for Visual C++, Visual C#, Visual Basic, and Visual Basic.NET, plus comprehensive drivers for DASYLab, and LabVIEW. Also included is DaqView software for quick and easy setup and data collection without programming.

Signal I/O
One 68-pin connector on the OMB-DAQBOARD-500 Series provides access to all of the input and output signals. Unlike other multifunction boards, which require multiple PC slots to access all of the I/O, the OMB-DAQBOARD-500 Series accommodates all I/O using one cable and a single PCI slot. The latching 68-pin I/O connector contains all analog input channels plus digital I/O lines, counter input, timer outputs, and analog outputs.

Analog Input
The OMB-DAQBOARD-500 Series has a 16-bit, 200 kHz A/D coupled with 16 single-ended or 8 differential analog inputs. Eight software-programmable ranges provide inputs from ±10 V to ±1.25 V full scale. Each channel can be software-configured for a different range, as well as for single-ended or differential and bipolar or unipolar input.

Bus Mastering DMA

The OMB-DAQBOARD-500 Series supports bus mastering DMA, which allows analog input data, as well as analog and digital output data, to flow between the PC and the OMB-DAQBOARD-500 Series without consuming valuable CPU time. The driver supplied with the OMB-DAQBOARD-500 Series, as well as all other third-party software support such as LabVIEW, automatically uses bus mastering DMA to efficiently conduct I/O from the PC to the data acquisition board.

Triggering

The OMB-DAQBOARD-500 Series supports several trigger modes to accommodate any measurement situation.

Digital

A separate digital trigger input line is provided, allowing TTL level-triggering, with latencies guaranteed to be less than 5 µs. The edge (rising or falling) can be programmed for discrete digital trigger input.
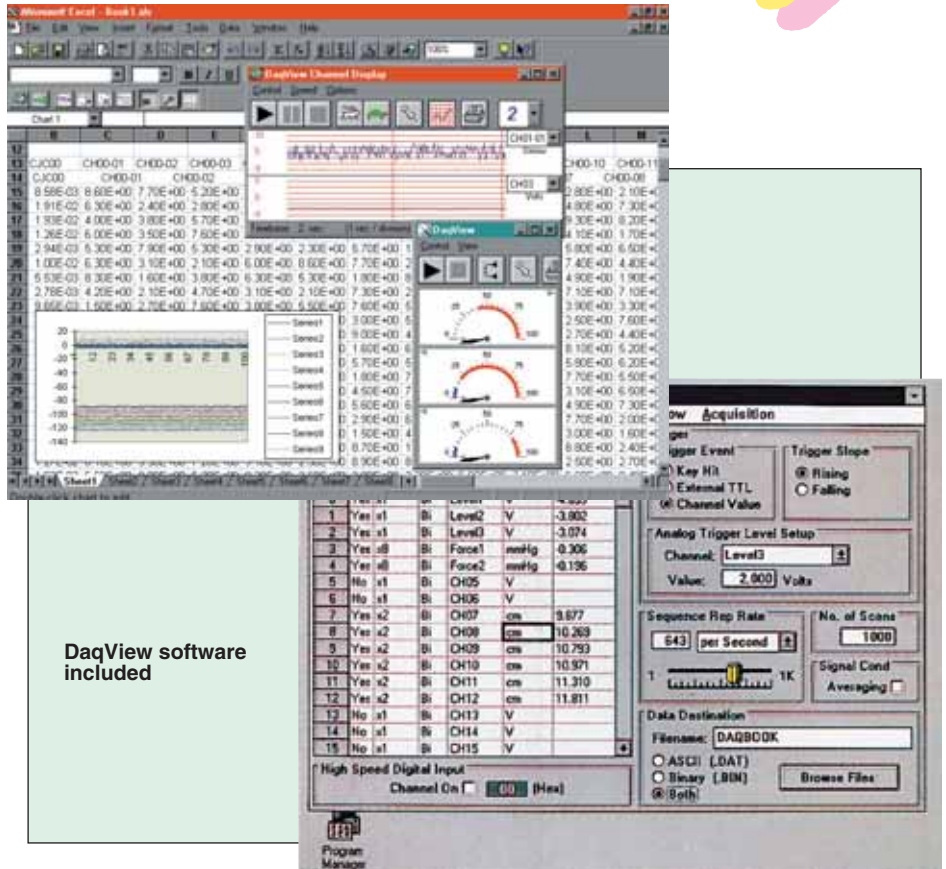
Software-Based Channel Level Triggering

Software-based channel level triggering differs from the mode described above because the readings—analog, digital, or counter— are interrogated by the PC to detect the trigger event, not in the hardware as described above. Normally, software-based triggering results in long latencies from the time a trigger condition is detected until the capturing of data commences.

However, the OMB-DAQBOARD-500 Series circumvents this undesirable phenomenon by use of pre-trigger data. Specifically, when software-based triggering is employed, and the PC detects that a trigger condition has occurred (which may be thousands of readings later than the actual occurrence of the signal), the OMB-DAQBOARD-500 Series driver automatically looks back to the location in memory where the trigger-causing measurement occurred.

DaqView software included

The OMB-DBK215, $399, provides 16 BNC inputs or outputs, and internal screw-terminal connections, shown smaller than actual size

Voltage Range	Accuracy (one year, 18 to 20°C, excluding noise, % of full range)	Settling Time
0 to 10 V	±0.06%	5 µs
0 to 5 V	±0.08%	5 µs
0 to 2.5 V	±0.1%	20 µs
0 to 1.25 V	±0.12%	20 µs
-10 to 10 V	±0.04%	5 µs
-5 to 5 V	±0.06%	5 µs
-2.5 to 2.5 V	±0.08%	20 µs
-1.25 to 1.25 V	±0.1%	20 µs

OMB-CA-G55, $69, 68-conductor expansion cable, shown smaller than actual size

The OMB-TB-100, $99, termination board with screw terminals, provides access to all OMB-DAQBOARD-500 Series I/O. The OMB-TB-100 terminal panel can be panel mounted or 19" rack mounted using the optional OMB-RACK3 rack-mount kit.

OMB-CA-G56, $95, 68-conductor shielded expansion cable, shown smaller than actual size

The acquired data that is presented to the user actually begins at the point where the trigger-causing measurement occurs. The latency in this mode is equal to one scan cycle.

Stop Trigger
Any of the software trigger modes described above can also be used to stop an acquisition. Thus, an acquisition can be programmed to begin on one event, such as a voltage level, and stop on another.

Pre- and Post-Triggering Modes
Six modes of pre- and post-triggering are supported, providing a wide variety of options to accommodate any measurement requirement. When using pre-trigger, software-based triggering must be used to initiate an acquisition.

No Pre-Trigger, Post-Trigger Stop Event
This, the simplest of modes, acquires data upon receipt of the trigger and stops acquiring upon receipt of the stop-trigger event.

Fixed Pre-Trigger with Post-Trigger Stop Event
In this mode, the user specifies the number of pre-trigger readings to be acquired, after which acquisition continues until a stop-trigger event occurs.

No Pre-Trigger, Infinite Post-Trigger
No pre-trigger data is acquired in this mode. Instead, data is acquired beginning with the trigger event and is terminated when the operator issues a command to halt the acquisition.

Fixed Pre-Trigger with Infinite Post-Trigger
The user specifies the amount of pre-trigger data to acquire, after which the system continues to acquire data until the program issues a command to halt acquisition.

Variable Pre-Trigger with Post-Trigger Stop Event (Driver Support Only)
Unlike the previously described pre-trigger modes, this mode does not have to satisfy the pre-trigger number of readings before recognizing the trigger event. Thus, the number of pre-trigger readings acquired is variable and dependent on the time of the trigger event relative to the start. In this mode, data continues to be acquired until the stop-trigger event is detected.

Variable Pre-Trigger with Infinite Post Trigger (Driver Support Only)
This is similar to the mode just described, except that the acquisition is terminated upon receipt of a command from the program to halt the acquisition.

Calibration
Every range on the OMB-DAQBOARD-500 Series is calibrated from the factory using a digital calibration method. This method works by storing a correction factor for each range on the OMB-DAQBOARD-500 Series at the time of calibration. Whenever a particular range is selected, the appropriate calibration constant is automatically applied, thereby calibrating the specific range.

Analog Output
The two OMB-DAQBOARD-500 16-bit, 100 kHz analog output channels are built into the board, with software-selectable output ranges of ±10 V and 0 to 10 V. Through the use of bus mastering DMA, each D/A output can continuously output a waveform.

In addition, a program can asynchronously output a value to either of the D/As for non-waveform applications, assuming that the D/A is not already being used in the waveform output mode.

When used to generate waveforms, the D/As can be clocked in several different modes, as described on the next page.

Asynchronous Internal Clock
The on-board programmable clock can generate updates ranging from 0.0009 Hz to 100 kHz, independent of any acquisition rate.

The OMB-DAQBOARD-500 connects to the OMB-DBK215 via an OMB-CA-G56 cable
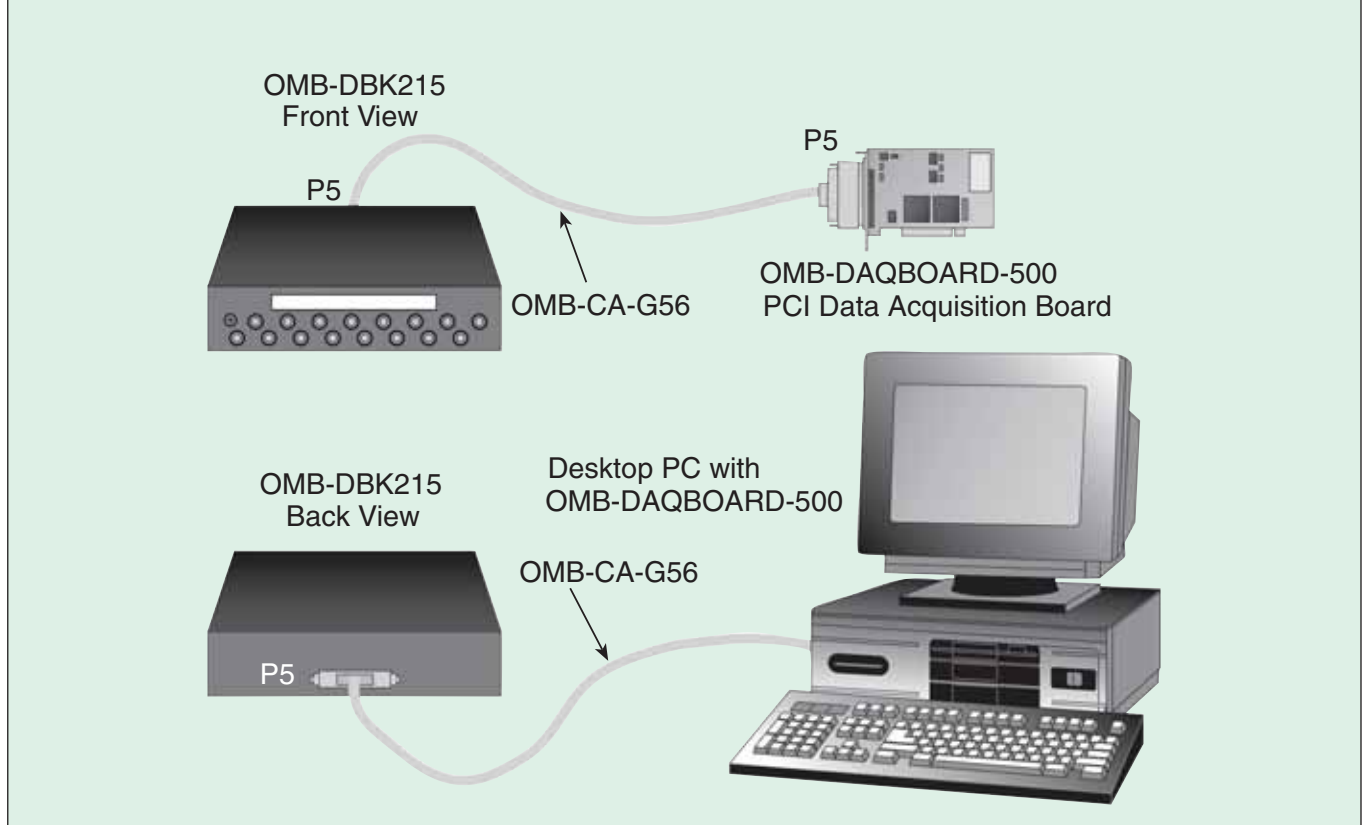
OMB-DBK215
Front View

P5

P5

OMB-CA-G56

OMB-DAQBOARD-500
PCI Data Acquisition Board

OMB-DBK215
Back View

Desktop PC with
OMB-DAQBOARD-500

OMB-CA-G56

P5

Asynchronous External Clock
A user-supplied external input clock can be used to pace the D/A, entirely independent of analog inputs.

Digital Inputs and Outputs
Twenty four TTL-level digital I/O lines are included in the OMB-DAQBOARD-500 Series. They are divided into three 8-bit ports. Ports can be programmed as either input or output.

Counter Inputs
One 16-bit counter is built into the OMB-DAQBOARD-500 Series, capable of counting up to 65,536 TTL-level transitions. The counter will accept frequency inputs up to 900 kHz.

Timer Outputs
Two 16-bit timer outputs are included in the OMB-DAQBOARD-500 Series, each capable of generating square waves with a programmable frequency range of 7.7 Hz to 500 kHz.

Multiple DaqBoards per PC
All of the features described for the OMB-DAQBOARD-500 Series can be replicated with up to four DaqBoards installed in the same PC. When multiple boards are installed, all boards can be operated synchronously.

The OM-TB-100 screw-terminal board (shown on previous page) makes it easy for the user to attach signals to the OMB-DAQBOARD-500 Series boards.

Specifications
GENERAL (ALL BOARDS)
Power Consumption (per Board): 2 W
Operating Temperature: 0 to 60°C (32 to 140°F)
Vibration: MIL STD 810E Category 1 and 10
Signal I/O Connector: 68-pin SCSI type III female connector carries all analog and digital I/O signals
Dimensions: 165 W x 15 D x 108 mm H (6.5 x 0.6 x 4.2")

ANALOG INPUTS
Channels: 16 single-ended or 8 differential, programmable on a per-channel basis as single-ended or differential and bipolar or unipolar
Bandwidth: 500 kHz
Settling Time: See table (page 127)
Over-Voltage Protection: ±25 V
Ranges: Software or sequencer selectable on a per-channel basis
Input Impedance: 10 MΩ

A/D SPECIFICATIONS
Type: Successive approximation
Resolution: 16 bit
Conversion Time: 5 µs
Maximum Sample Rate: 200 kHz
Nonlinearity (Integral): ±1 LSB
Nonlinearity (Differential): ±3 LSB, no missing codes
Input Sequencer
Analog inputs can be scanned based on either an internal programmable timer or an external clock source

Scan Clock Sources: 2
  1. Internal
  2. External, TTL-level input up to 200 kHz max

Programmable Parameters per Scan:
Channel (random order), gain
Depth: 176 location
On-Board Channel-to-Channel Scan Rate: 5 µs per channel

EXTERNAL ACQUISITION SCAN CLOCK INPUT
Maximum Rate: 200 kHz
Clock Signal Range: 0 to 5 V
Minimum Pulse Width: 50 ns high, 50 ns low

TRIGGERING
Trigger Sources: 3, individually selectable for starting and stopping an acquisition. Stop acquisition can occur on a trigger source other than start acquisition and can be triggered via modes 1 or 3. Pre-trigger is supported with fixed or variable pre-trigger periods.
1. Single-Channel Analog Software Trigger Latency: One scan period max
2. Single-Channel Digital Trigger Latency: 5 µs max
3. Software Triggering: Trigger can be initiated under program control

ANALOG OUTPUTS (OMB-DAQBOARD-500 only)
The two analog output channels are updated asynchronously relative to scanned inputs and clocked from an internal on-board clock or an external clock source.

Analog outputs can be updated asynchronously, independent of any other scanning in the system. Bus mastering DMA provides CPU and system-independent data transfers, ensuring accurate outputs independent of other system activities. Output from memory is supported, allowing continuous waveform outputs.

Channels: 2
Resolution: 16 bits
Conversion Time: 10 µs
Output Voltage Ranges: ±10 V or 0 to 10 V (software selectable)
Offset Error: ±0.0045 V max
Gain Error: ±0.01% of full range
Digital Feedthru: 50 mV when updated
Clock Sources: 2, programmable
1. On-board D/A clock, independent of scanning input clock
2. External D/A input clock, independent of external scanning input clock

DIGITAL I/O
Channels: 24
Ports: 3 x 8 bit. Each 8-bit port is software programmable as input or output.
Input Characteristics: 100 series, 20 pF to common, 4.7K pull-ups
I/O Levels: TTL
Output Characteristics: Output 24 mA per pin (sinking and sourcing)

Counter: One 16-bit counter is built into the OMB-DAQBOARD-500 Series, capable of counting up to 65,536 TTL-level transitions
Channels: 1 x 16 bit
Frequency Measurement Rate: 900 kHz max
Trigger Level: TTL

FREQUENCY/PULSE GENERATOR
Channels: 2 x 16 bit
Output: 500 kHz base rate divided by 1 to 65,535 (programmable)

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To Order *(Specify Model Number)*

Model No.	Price	Description
OMB-DAQBOARD-500	**$349**	16-bit, 200 kHz data acquisition board for PCI-bus PCs. With 16 analog inputs, two 16-bit 100 kHz analog outputs, 24 digital I/O, one 16-bit counter-timer and two 16-bit frequency/pulse generators; includes DaqView software, support for Visual Studio and Visual Studio.NET, plus comprehensive drivers for DASYLAB and LabView
OMB-DAQBOARD-505	249	Same as OM-DAQBOARD-500 but with no analog outputs
OMB-DAQVIEW-XLPLUS	299	DaqView add-on for seamless execution with Microsoft Excel's tool palette
OMB-DAQVIEW-PRO	599	DaqView add-on includes all features of OMB-DAQVIEW-XLPLUS, plus frequency-domain analysis

Each OMB-DAQBOARD-500 Series board is supplied with DaqView software, software drivers and complete operator's manual on CD ROM.
Ordering Example: OMB-DAQBOARD-500, *PCI bus data acquisition board and OMEGACARE 1-year extended warranty (adds 1 year to standard 1-year warranty) for OMB-DAQBOARD-500, with OMB-TB-100 terminal panel and OMB-CA-G56-6 shielded connecting cable, $349 + 34 + 99 + 109 =* ***$591.***

Accessories and Cables

Model No.	Price	Description
OMB-DBK215	**$399**	16-connector BNC connection module with internal screw-terminal connections for use with OMB-DAQBOARD-500 Series
OMB-CA-G55	69	68-conductor ribbon expansion cable, mates with the OMB-DAQBOARD-500 Series boards and the OMB-TB-100 terminal board, 0.9 m (3')
OMB-CA-G56	95	68-conductor shielded expansion cable, mates with the OMB-DAQBOARD-500 Series boards and the OMB-TB-100 terminal board, 0.9 m (3')
OMB-CA-G56-6	109	68-conductor shielded expansion cable, mates with the OMB-DAQBOARD-500 Series boards and the OMB-TB-100 terminal board, 1.8 m (6')
OMB-TB-100	99	Termination board with screw terminals for access to all OMB-DAQBOARD-500 Series I/O; connects via OMB-CA-G55 or OMB-CA-G56 cable
OMB-RACK3	41	Rack-mount kit for OMB-TB-100 terminal board
CS-3791	150	Reference Book: Standard Handbook of Electronics Engineering

High-Performance Analog and Digital I/O Boards
OME-PCI-1800H/L and OME-PCI-1802H/L: 330 KS/s 12-Bit Series

OME-PCI-1800H,
$720, shown smaller
than actual size

Starts at
$575

1 YEAR WARRANTY CE OMEGA CARE Extended Warranty Program

- ✔ **PCI Bus**
- ✔ **12-Bit 330 KHz A/D Converter**
- ✔ **OME-PCI-1800H, OME-PCI-1800L: 16 Single-Ended/ 8 Differential Inputs, 2K Word FIFO**
- ✔ **OME-PCI-1802H, OME-PCI-1802L: 32 Single-Ended/ 16 Differential Inputs, 8K Word FIFO**
- ✔ **330 KSamples/s for Single Channel or Multiple Channels**
- ✔ **Trigger Methods: Software Trigger, Pacer Trigger, External Trigger**
- ✔ **External Triggers: Post-Trigger, Pre-Trigger, External Pacer Trigger**

- ✔ **OME-PCI-1800L, OME-PCI-1802L Programmable Low-Gain: 0.5, 1, 2, 4, 8**
- ✔ **16 Digital Input and 16 Digital Output Channels**
- ✔ **OME-PCI-1800H, OME-PCI-1802H Programmable High-Gain: 0.5, 1, 5, 10, 50, 100, 500, 1000**
- ✔ **Two Optional 12-Bit Independent Programmable DACs; 2 MHz Throughput per Channel (Max)**
- ✔ **2.7M Word/High-Speed Data Transfer Rate**
- ✔ **Includes Software Development Kit**
- ✔ **Half-Size Board**

The OME-PCI-1800 Series is a family of high-performance data acquisition boards for the PCI bus. It features continuous, 330 kHz, gap-free data acquisition under DOS and Windows.

The OME-PCI-1800 family has two 12-bit D/A output channels, 16 digital input channels, and 16 digital output channels. The OME-PCI-1800H and OME-PCI-1800L provide 16 single-ended or 8 differential inputs. The OME-PCI-1802H and OME-PCI-1802L provide 32 single-ended or 16 differential inputs. The suffix "H" denotes a high-gain model and the "L" denotes a low-gain model. The boards feature advanced scanning features. The scanning mechanism not only scans the different input channels at vastly different rates, but also at different gains. Even in multichannel scan mode, the sampling rates can be maintained at 330 KS/s.

The OME-PCI-1800 Series also has some outstanding features, including:
- Data transfer rate of digital I/O is up to 5.4 MB
- Throughput of D/A is up to 2 MHz (max)
- Three flexible external trigger modes such as post-trigger, pre-trigger, middle trigger
- True "plug & play" under DOS and Windows
- On-board FIFO

OME-PCI-1800 Series System Expansion

Several daughter boards are available that can expand the analog and digital I/O capability of the OME-PCI-1800 Series high-performance data acquisition boards. These include: OME-DB-1825, OME-DB-8225, OME-DB-8025, OME-DB-889D, OME-DB-16P, OME-DB-16R.

OME-DB-889D 16-Channel Analog Multiplexer Board

The OME DB-889D is an expansion multiplexer/amplifier board for use with OME-PCI-1800H/L boards. Each OME-DB-889D multiplexes 16 differential analog input channels into one analog input of the data acquisition board. The high-grade instrumentation amplifier provides software programmable gains of 0.5, 1, 5, 10, 50, 100, 500, and 1000. Thermocouple measurements are handled easily with the OME-DB-889D. The board includes cold-junction sensing and compensation circuitry that provides a scaling of 24.4 mV/°C. Biasing resistors are included for open thermocouple detection. The OME-DB-889D can be cascaded to a total of 128 channels of voltage measurements or 112 channels of thermocouple measurement.

OME-DB-16P 16-Channel Isolated Digital Input Board

The OME-DB-16P is a 16-channel isolated digital input daughter board for any of the OME-PCI-1802H/1802L/1800H/1800L/1602/1602F/1202H/1202L/1002H/1002L PCI-bus multifunction boards. The optically isolated inputs of the OME-DB-16P consist of a bi-directional OPTO-coupler with a resistor for current sensing. The OME-DB-16P can be used to sense DC signals from TTL levels up to 24 V and also a wide range of AC signals. The OME-DB-16P can also be used to isolate the computer from large common-mode voltages, ground loops, and voltage spikes that often occur in industrial environments.

OME-DB-16R 16-Channel Relay Output Board

The OME-DB-16R 16-channel relay output board consists of 16 Form C relays for efficient switching of loads by programmed control.

OM-PCI-1800L & 1802L Analog Input Ranges

Gains	Bipolar (V)	Unipolar (V)	Throughput
0.5	±10 V	0 to 10 V	330 KS/s
1	±5 V	0 to 10 V	330 KS/s
2	±2.5 V	0 to 5 V	330 KS/s
4	±1.25 V	0 to 2.5 V	330 KS/s
8	±0.625 V	0 to 1.25 V	330 KS/s

OM-PCI-1800H & 1802H Analog Input Ranges

Gains	Bipolar (V)	Unipolar (V)	Throughput
0.5	±10V	0 to 10 V	40 KS/s
1	±5V	0 to 10 V	40 KS/s
5	±1V	0 to 1 V	40 KS/s
10	±0.5V	0 to 1 V	40 KS/s
50	±0.1V	0 to 0.1 V	10 KS/s
100	±0.05V	0 to 0.1 V	10 KS/s
500	±0.01V	0 to 0.01 V	1 KS/s
1000	±0.005V	0 to 0.01 V	1 KS/s

The OME-DB-16R can be used with any of the OME-PCI-1802H/1802L/1800H/1800L/1602/1602F/1202H/1202L/1002H/1002L PCI-bus multifunction boards. The relays are energized by applying a 5 V signal to the appropriate relay channel on the 20-pin flat cable connector. Sixteen annunciator LEDs, one for each relay, light when their associated relay is activated. To avoid overloading the PC's power supply, this board provides a screw terminal connection for a power supply.

Software Development Kit

All data acquisition boards are supplied with a standard software development kit for Windows 98/NT/2000/XP. The software development kit includes DLL files for programming in C, C++, or other high-level languages, and OCX files for Visual Basic or Active X programming. LabVIEW drivers are also included.

Specifications

ANALOG INPUT SPECIFICATIONS
Input Channels:
OME-PCI-1802H/L, 32 SE/16 Diff
OME-PCI-1800H/L, 16 SE/8 Diff
Resolution: 12 bits
Conversion Rate: 330 KS/s
Input Impedance:
10,000 MΩ/6 pf
Overvoltage Protection: ±35 V
Accuracy: 0.01% of reading, ±1 bit
On Board FIFO:
OME-PCI-1800 H/L: 2K
OME-PCI-1802 H/L: 8K

OME-DB-16R, $138, shown smaller than actual size

OME-DB-16P, $98, shown smaller than actual size

D/A OUTPUTS
Channels: 2
Type: 12-bit double buffers
Linearity: 0.06% FS
Settling Time: 0.4 ms
Output Range: ±5 or ±10 V
Output Driving: ±5 mA

DIGITAL I/O
Input: 16 channels; TTL levels
Input Low:
  V_{IL} = 0.8 V max
  I_{IL} = 4 mA
Input High:
  V_{IH} = 2 V min
  I_{IH} = -20 µA max

Additional Technical Books Available Online!

books1.com omega.com

OME-PCI-1800H, $720, shown smaller than actual size

Output: 16 channels; TTL levels
Output Low:
  V_{OL} = 0.5 V max
  I_{OL} = 4 mA max
Output High:
  V_{OH} = 2.7 V min
  I_{OH} = -400 µA max

TIMER
Internal Pacer Timer:
16-bit, 8 MHz input
External Pacer Timer:
16-bit, 8 MHz input
Machine Independent Timer:
16-bit, 8 MHz input

GENERAL ENVIRONMENTAL
Power Requirements:
5 V @ 350 mA (max)
Operating Temperature:
0 to 50°C (32 to 122°F)
Storage Temperature:
-20 to 70°C (-4 to 158°F)
Humidity: 0 to 90% RH
non-condensing
Dimensions: 190 L x 105 mm H
(7.5 x 4.1")

OMEGACARE^SM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE^SM covers parts, labor and equivalent loaners
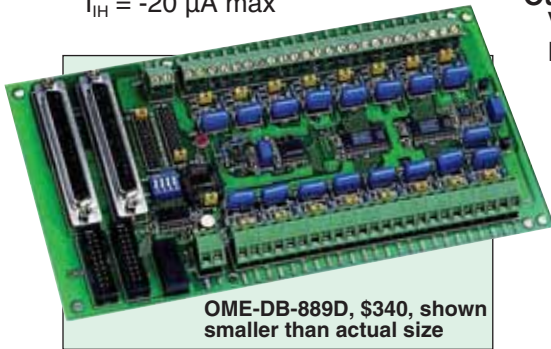
OME-DB-889D, $340, shown smaller than actual size

MOST POPULAR MODELS HIGHLIGHTED!

To Order *(Specify Model Number)*

Model Number	Price	Description
OME-PCI-1800H	$720	16-channel, high-gain, 12-bit analog and digital I/O board (2K word FIFO)
OME-PCI-1800H/NDA	575	OM-PCI-1800H without D/A
OME-PCI-1800L	720	16-channel, low-gain, 12-bit analog and digital I/O board (2K word FIFO)
OME-PCI-1800L/NDA	575	OM-PCI-1800L without D/A
OME-PCI-1802H	805	32-channel, 330 KS/s, high-gain, 12-bit analog and digital I/O board (8K word FIFO)
OME-PCI-1802L	805	32-channel, 330 KS/s, low-gain, 12-bit analog and digital I/O board (8K word FIFO)
OME-DB-1825/1	85	Screw terminal board for analog input channels for OM-PCI-1802H/L, with 1 meter cable
OME-DB-1825/2	85	Screw terminal board for analog input channels for OM-PCI-1802H/L, with 2 meter cable
OME-DB-8225/1	80	Screw terminal board for analog input channels for OM-PCI-1800H/L, with 1 meter cable
OME-DB-8225/2	85	Screw terminal board for analog input channels for OM-PCI-1800H/L, with 2 meter cable
OME-DB-8025	58	Screw terminal board for digital I/O, includes two 1 m cables
OME-DB-889D	340	16-channel analog multiplexer board, includes 1 m cable
OME-DB-16P	98	16-channel isolated digital input board, includes 1 m cable
OME-DB-16R	138	16-channel SPDT relay board, includes 1 m cable
OME-ADP-20/PCI	35	20-pin extender (extends the dual 20-pin digital I/O flat cable connectors on the board to the PC slot window, includes two 20-pin cables)
CS-3792	80	Reference Book: Complete Digital Signal Processing

Each OME-PCI-1800 Series data acquisition board includes complete operator's manual on CD ROM and software development kit.
Ordering Example:** OME-PCI-1802H 32-channel high-gain data acquisition board, **OME-DB-1825/1** screw terminal board and cable and **OMEGACARE**^SM 1-year extended warranty for **OME-PCI-1802H** (adds 1 year to standard 1-year warranty), $805 + 85 + 80 = **$970.

110 KS/s 12-Bit Low-Cost A/D Boards
OME-PCI-1002L/OME-PCI-1002H

Starts at
$365
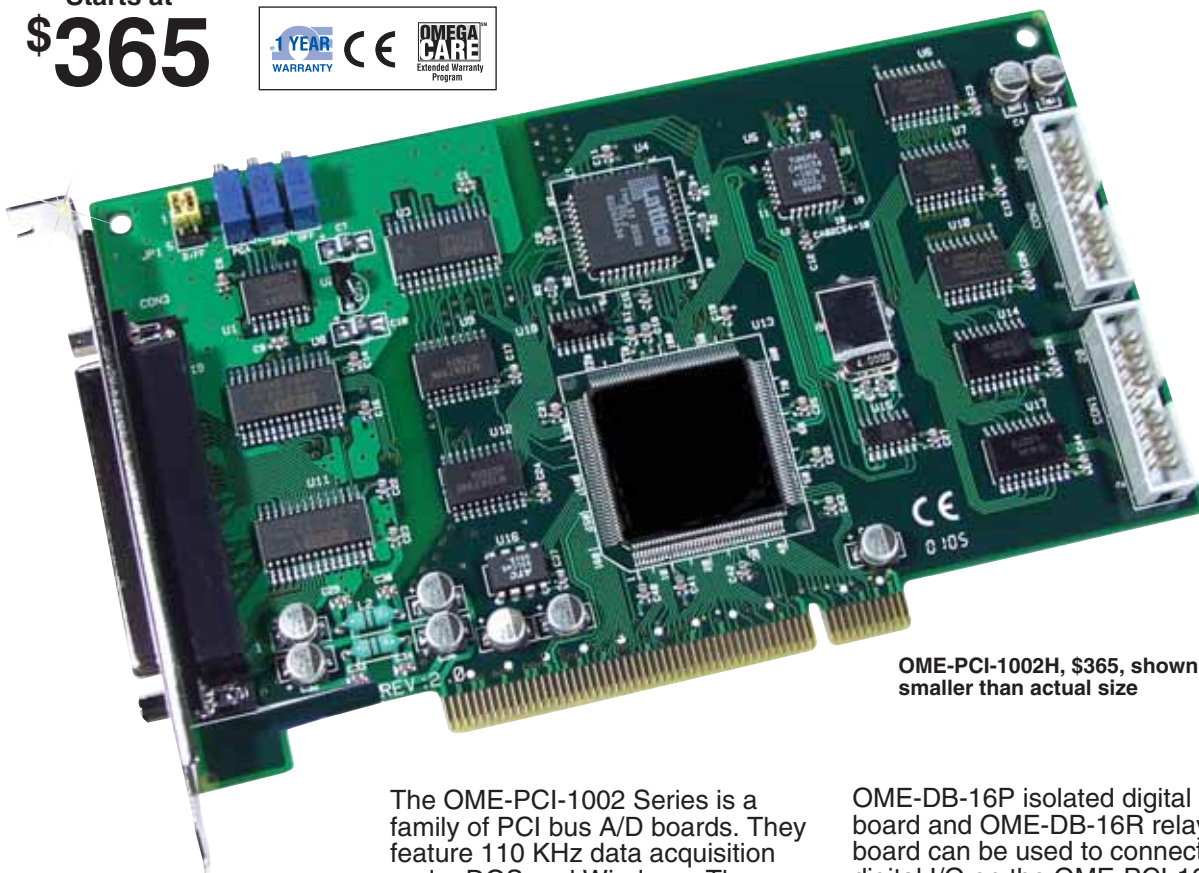
OME-PCI-1002H, $365, shown smaller than actual size

- ✔ **PCI Bus**
- ✔ **12-Bit 110 KHz A/D Converter**
- ✔ **32 Single-Ended/ 16 Differential Analog Inputs**
- ✔ **Sampling Rate: OME-PCI-1002L: 110KS/s OME-PCI-1002H: 40KS/s (Single Channel or Multiple Channels)**
- ✔ **Three Different External Triggers: Post-Trigger, Pre-Trigger, External Pacer Trigger**
- ✔ **16 Digital Input and 16 Digital Output Channels**
- ✔ **OME-PCI-1002L: Programmable Low Gain: 1, 2, 4, 8**
- ✔ **OME-PCI-1002H: Programmable High Gain: 1, 10, 100, 1000**
- ✔ **Half-Size Board**
- ✔ **Includes Software Development Kit**

The OME-PCI-1002 Series is a family of PCI bus A/D boards. They feature 110 KHz data acquisition under DOS and Windows. The boards provide 32 single-ended or 16 differential inputs, 16 digital input and 16 digital output channels. The suffix "H" denotes a high-gain model and the suffix "L" denotes a low-gain model. The OME-PCI-1002 Series provides three flexible external trigger modes: post-trigger, pre-trigger, middle trigger.

Software Development Kit
All boards are supplied with a standard software development kit for Windows 98/NT/2000/XP. The software kit includes DLL files for programming in C, C++, or other high-level languages, and OCX files for Visual Basic or Active X programming. DASYLab and LabVIEW drivers are also included. The OME-PCI-1002 includes 16-channels of digital input and 16-channels of digital output. An OME-DB-8025 screw terminal panel can be used to connect to the digital I/O lines. The

OME-DB-16P isolated digital input board and OME-DB-16R relay board can be used to connect the digital I/O on the OME-PCI-1002 to real-world signals.

OME-PCI-1002H Input Ranges (High Gain)

Gain	Range	Throughput
1	±5 V	40 K/s
10	±0.5 V	40 K/s
100	±0.05 V	10 K/s
1000	±0.005 V	1 K/s

OME-PCI-1002L Input Ranges (Low Gain)

Gain	Range	Throughput
1	±5 V	110 K/s
2	±2.5 V	110 K/s
4	±1.25 V	110 K/s
8	±0.625 V	110 K/s
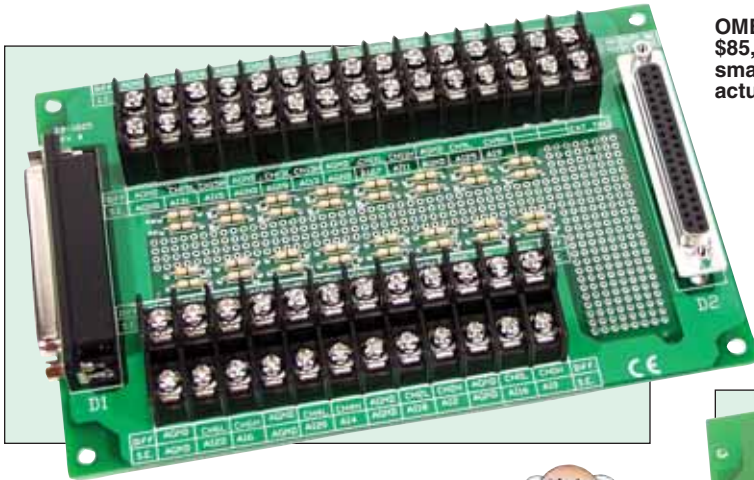
OME-DB-1825, $85, shown smaller than actual size

OMEGACARE^{SM} extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE^{SM} covers parts, labor and equivalent loaners.

Technical Books Available Online!

books1.com™
omega.com

OME-DB-16R, $138, shown smaller than actual size

Specifications

ANALOG INPUT SPECIFICATIONS
Channels:
OME-PCI-1002H, OME-PCI-1002L:
32 single-ended/16 differential
Resolution: 12 bits
Max Conversion Rate:
  OME-PCI-1002H: 40 KS/s
  OME-PCI-1002L: 110 KS/s
Input Impedance: 10,000 MΩ/6pF
Overvoltage Protection: ±35 V
Accuracy: 0.01% of reading ±1 bit
Linearity: ±1 bit

DIGITAL I/O
Inputs: 16 channels; TTL levels
Input Low:
  V_{IL} = 0.8 V max
  I_{IL} = 4 mA
Input High:
  V_{IH} = 2 V min
  I_{IH} = -20 µA max
Outputs: 16 channels; TTL levels

Output Low:
  V_{OL} = 0.33 V max
  I_{OL} = 4 mA max
Output High:
  V_{OH} = 3.83 V min
  I_{OH} = -400 µA max

TIMER COUNTER
Internal Pacer Timer:
16-bit, 8 MHz input
External Pacer Timer:
16-bit, 8 MHz input
Machine Independent Timer:
16-bit, 8 MHz input
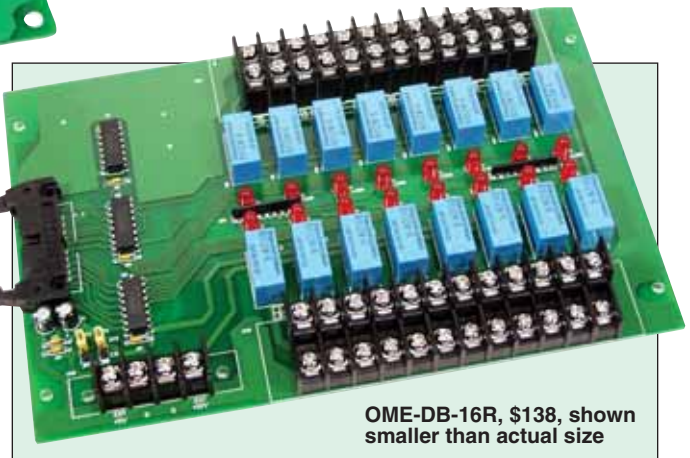
GENERAL ENVIRONMENTAL
Operating Temperature:
0 to 50°C (32 to 122°F)
Storage Temperature:
-20 to 70°C (-4 to 158°F)
Humidity: 0 to 90% RH non-condensing
Dimensions: 175 L x 105 mm H (6.9 x 4.1")
Power Requirements:
5 V @ 350 mA (max)

MOST POPULAR MODELS HIGHLIGHTED!

To Order *(Specify Model Number)*

Model Number	Price	Description
OME-PCI-1002H	**$365**	40 KS/s high gain, 12-bit analog and digital I/O board
OME-PCI-1002L	365	110 KS/s low gain, 12-bit analog and digital I/O board
OME-DB-1825/1	85	Screw terminal board for analog input channels with 1 m 37-pin D-Sub cable
OME-DB-1825/2	85	Screw terminal board for analog input channels with 2 m 37-pin D-Sub cable
OME-DB-8025	58	Screw terminal board for digital I/O, includes two 1 m 20-pin flat cables
OME-DB-16P	98	16-channel isolated digital input board, includes 1 m 20-pin flat cable
OME-DB-16R	138	16-channel SPDT relay board, includes 1 m 20-pin flat cable
OME-ADP-20/PCI	35	20-pin extender (extends the dual 20-pin digital I/O flat cable connectors on the board to the PC slot window), includes two 20-pin flat cables
CS-3782	70	Reference Book: DSP Software Development Techniques for Embedded & Real-Time Systems

Each OME-PCI-1002H and OME-PCI-1002L data acquisition board includes complete operator's manual on CD ROM and software development kit.

Ordering Example: OME-PCI-1002H, high-gain data acquisition board, **OME-DB-1825/1,** screw terminal board and **OCW-1,** OMEGACARE^{SM} 1-year extended warranty for **OME-PCI-1002H** (adds 1 year to standard 1-year warranty), $365 + 85 + 36 = **$486.**

Very Low Profile Subminiature Industrial Load Cell

LCKD Series Starts at $550

Miniature Industrial Compression Load Cell for Industrial Applications to 50,000 lb

LCGD Series $460

Subminiature Tension or Compression Load Cells High Accuracy 0.75 to 1" Diameter

LCFD Series $750

Please search omega.com for more details on these featured products!

instruNet Series Direct Sensor to Data Acquisition
iNet-100 Series
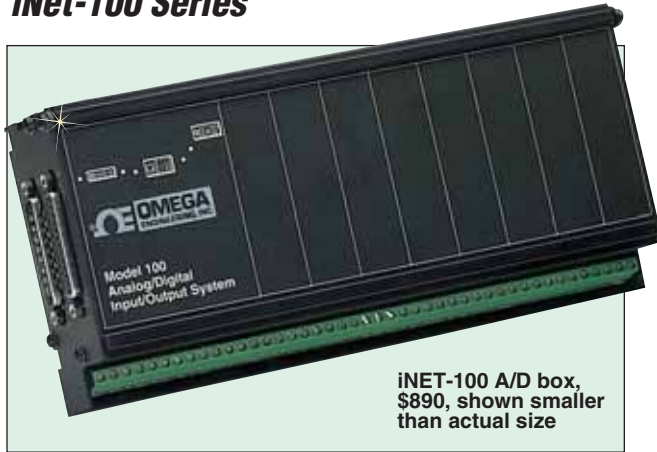
iNET-100 A/D box, $890, shown smaller than actual size
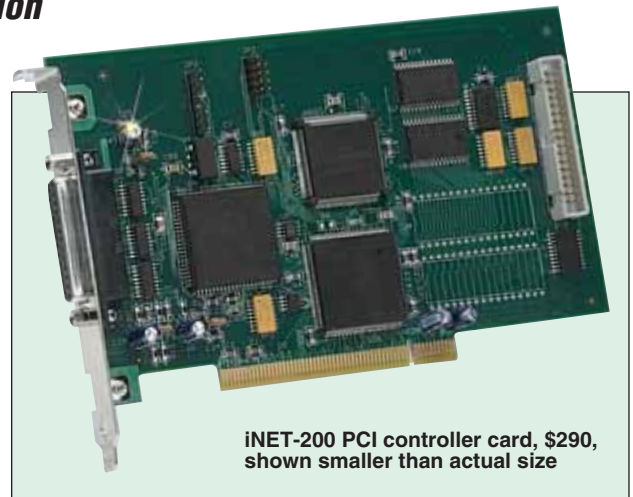
iNET-200 PCI controller card, $290, shown smaller than actual size

Starts at

$1180

**Basic System
with Software**

- ✔ **High-Accuracy Data Acquisition for Windows 95/98/NT/2000/XP and Macintosh Computers**
- ✔ **16 Single-Ended/8 Differential 14-Bit Analog Inputs, 8 Analog Outputs, and 8 Digital I/O**
- ✔ **Controller Card Includes 10 Counter/Timer Channels**
- ✔ **Direct Connect to RTD, Thermocouple, Voltage, Current, Accelerometer, Potentiometer, Load Cell, Thermistor, Bridge and Strain Gage Sensors**
- ✔ **166 KS/sec Throughput to RAM or Disk**
- ✔ **Each Channel has Independently Programmable Analog Filters, Integration Time, Voltage Range, and Sample Rate**
- ✔ **Programmable Digital Filters on All Channels**
- ✔ **Includes Strip Chart Software and Drivers for C, Visual Basic.Net, HPVEE, and TestPoint**
- ✔ **Optional LabVIEW Drivers are Available**
- ✔ **Optional DASYLab Software Includes iNET Drivers for Easy-to-Use, Icon-Based Programming**

mV/V | 4 to 20 mA | Thermo-couple | Thermistor | RTD | Strain Gage | Resistance
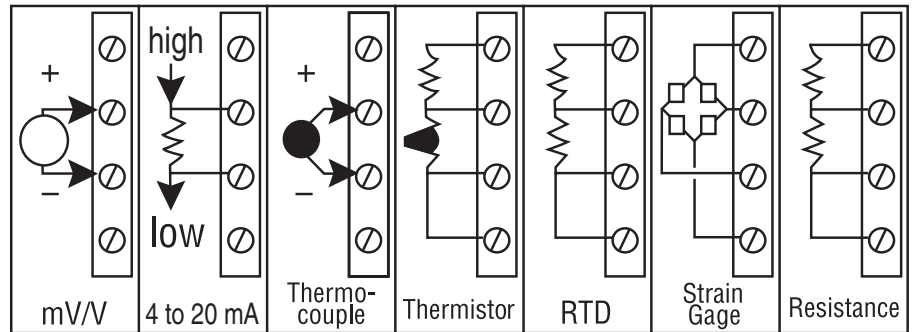
iNET-100 Hook-Up Diagram

instruNet provides tens of microvolts of absolute accuracy instead of tens of millivolts, at the same cost and at the same throughput rates as typical general purpose data acquisition boards. It does this with a completely different topology in which the analog electronics are close to the sensor in electrically quiet boxes outside the PC, and noisy digital electronics are left inside. The external boxes contain signal conditioning amplifiers for each channel and can attach directly to sensors such as thermocouples, thermistors, RTDs, strain gages, load cells, resistance sources, current sources, and voltage sources. The box returns engineering units to the PC (e.g., °C, volts, amps).

At the heart of the real-time system is a PCI (WIN95/98/NT/2000/XP) or PC-card (WIN95/98/2000/XP) controller board that plugs into a Windows or Macintosh computer.

Each controller contains a 32-bit microprocessor with 256 KB of RAM that manages the external "network" of devices. All real-time tasks are off-loaded to this processor, therefore the host computer is not burdened with real-time issues. Each instruNet iNET-100 box provides 16 single-ended/8 differential analog inputs, 8 analog outputs, and 8 digital I/O lines. The iNET-100 includes 44 screw terminals. The iNET-100B version adds 16 BNCs for analog inputs. The controllers themselves have 10 counter/timer channels, each of which can function as a digital input bit, a digital output bit, a clock output channel, a pulse counter, a frequency counter, a period measurement input, or a quadrature counter.

Distributed and Expandable

The instruNet system is ideally suited for distributed measurement and control systems. The network cable can extend up to 304.8 m (1000'). Each controller card in the PC can connect to up to 8 instruNet boxes for a total of 128 analog inputs, 64 analog outputs, and 64 digital I/O. For additional inputs, multiple controller cards can be placed in one computer, with the maximum number of controller cards limited only by the number of available slots.

Since each controller card has its own microprocessor, multiple cards do not place any additional burden on the computer. It should be noted that multiple instruNet boxes on a single network may degrade the maximum system throughput of 166 KS/sec.

Performance

The instruNet system supports the digitizing of multiple channels at a maximum aggregate sample rate of 166 KS/sec, where each channel can be digitized at its own rate. This maximum rate decreases when: the total cable length increases, optical isolation is used, digital filtering or plotting is enabled, more boxes are added, more channels are digitized, amplifier gain is increased, or spooling to disk is added. Each channel can be independently digitally filtered with low-pass, high-pass, band-stop, and band-pass filters; the filter specification for each channel is independently set in software. Each channel provides a programmable analog low-pass filter with programmable A/D measurement integration time. The network can be hundreds of feet long and can support multiple hardware devices connected in a daisy-chain configuration. The start of digitizing can be triggered from any channel. There are no jumpers or pots; the system automatically self-calibrates on power-up. Since instruNet is modular, it can easily be expanded as needs evolve. One can easily move the system hardware from one computer family to another, since the various controllers are functionally identical.

High Current Version (HC)

The iNET-100HC is similar to the iNET-100, yet the voltage output channels have a higher drive capability, providing up to 15 mA of current to capacitive loads as high as 0.01 uF. The iNET-100 and iNET-100B devices support only 4 mA/.001 uF voltage output drive. The iNET-100HC is recommended for use with sensors such as strain gages, RTDs, and thermistors, since these sensors may exceed the current or capacitive drive limits of the iNET-100 or iNET-100B. The iNET-100HC, furthermore, provides greater compatibility with sensors that have capacitive loading on the excitation lines, therefore it is recommended for all sensors requiring excitation, including RTDs and thermistors. Since the HC version has a greater power demand, an external power supply must be used. The iNET-312-8 can be used for three additional iNET-100HC boxes.

Software

"instruNet World" is a FREE application program that manages, monitors, and operates the instruNet system. It digitizes long continuous waveforms, spools them to disk, views incoming waveforms in real time, and then allows post-acquisition viewing, much like an oscilloscope or strip chart recorder.
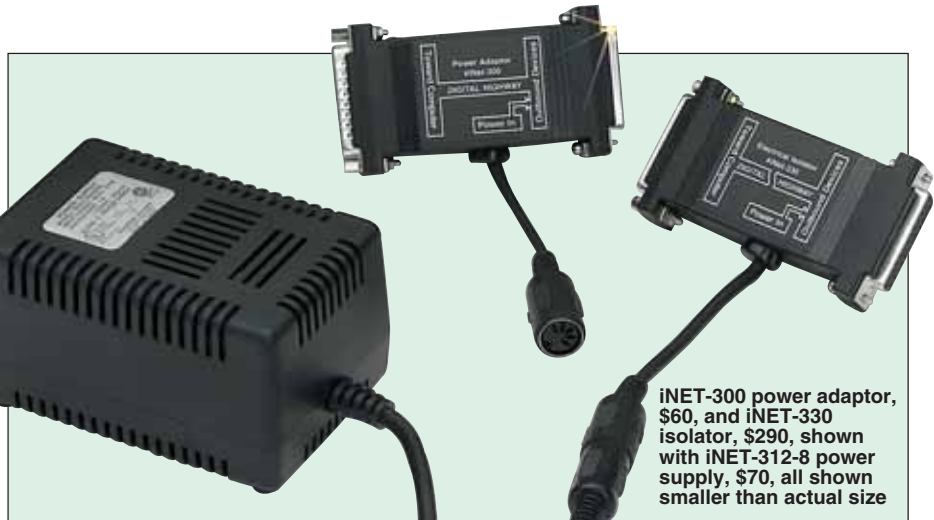
iNET-300 power adaptor, $60, and iNET-330 isolator, $290, shown with iNET-312-8 power supply, $70, all shown smaller than actual size

instruNet World provides a spreadsheet-like environment in which one can set and view channel parameters such as sensor type, integration time, analog filter, and digital filter. Each channel has its own row in the spreadsheet, with the various options in the columns.

instruNet is also compatible with a variety of off-the-shelf software products, including TestPoint, HPVEE, SuperScope II Macintosh, Microsoft Excel 8 for Windows, and DASYLab. For users writing their own programs, instruNet includes drivers callable from Visual Studio.Net Basic or C. The driver includes a main routine, called "iNet( )", that reads or writes any of the options or channels on the system. Optional drivers are also available for LabVIEW software.

instruNet World Plus (for Windows 95/98/NT/2000/XP, not Macintosh) software adds valuable features to the standard instruNet World software included with instruNet hardware. It enables one to digitize, plot, control, analyze, and save to disk A/D, D/A, and digital I/O data from instruNet hardware. Additionally, it enables one to define a personal instrument front panel with buttons, popup menus, edit fields, dynamic text, text editor regions, and waveform graphs. instruNet World Plus is programmed with a simple script language that can define tasks such as control loops. For example, one can type "Dac1 = OnOff (Ain1, 3)" to define D/A #1 as a function of A/D #1.

Below is a list of the additional features available only in instruNet World Plus:

Generate Analog and Digital Output Waveforms

Define an analog or digital output channel mathematically (e.g., sine wave, square wave, pulse train, etc.) that updates in real time (e.g., every 100 ms).

Run Feedback/Control Loops

Define an analog or digital output channel as a real-time function of analog and/or digital input channels (e.g., PID control, on/off control, etc).

Create a Custom Instrument

Create buttons, popup menus, edit fields, dynamic text fields, text edit regions, and pages to build a custom application program.

Powerful Script Programming Language

instruNet World Plus is programmed with a simple BASIC-like script language that provides feedback/control, waveform generation, math, file, hardware, and user-interface functions.

instruNet World Plus also Includes Digitize Direct to Excel Software

instruNet World Plus includes the Digitize Direct to Excel program, which populates an Excel (Version ≥ 8.0, Office ≥ 97) spreadsheet in real time while digitizing.

Power Requirements

Since instruNet is powered directly from the iNET-200 controller card, it is possible to exceed the power capacity of the controller card if multiple instruNet iNET-100 boxes are attached to a network. For systems using the iNET-200 PCI bus controller card with more than 2 iNET-100/100B boxes or one iNET-100HC instruNet box on a network, external power is required. Two power adaptors are available: the iNET-300 power adaptor and the iNET-330 adaptor/isolator. Both devices connect in line with the instruNet communications cable; the iNET-300 provides power only, the iNET-330 provides power and electrical isolation between the iNET-100 boxes and the computer. Isolation is useful in eliminating ground loop problems. Both the iNET-300 and iNET-330 require either the iNET-312-8 (USA plug) or iNET-312-8EU (Euro plug) power supply. The iNET-312-8 can power four additional iNET-100/100B or three additional iNET-100HC. The iNET-230 controller card does not provide power; the iNET-312-8 or iNET-312-8EU power supply must be used with this card.

**instruNet World Plus Data Acquisition Software
below (not included—need to puchase
software license), iNET-iWPLUS, $199**

**instruNet World Data Acquisition Software
(included with the instruNet System)**

*OMEGACARE[SM] extended warranty program is available for models
shown on this page. Ask your sales representative for full details
when placing an order. OMEGACARE[SM] covers parts, labor and
equivalent loaners*

Thermocouple Ranges/Accuracy

Thermocouple	Range	Accuracy
J	-210 to -100°C -100 to 1200°C	±0.8°C ±0.5°C
K	-200 to -50°C -50 to 1360°C	±0.8°C ±0.6°C
T	-200 to -100°C -100 to 400°C	±0.8°C ±0.5°C
E	-200 to -60°C -60 to 1000°C	±0.7°C ±0.5°C
R	-50 to 70°C 70 to 1768°C	±3.5°C ±2.0°C
S	-50 to 150°C 150 to 1768°C	±2.8°C ±1.8°C
B	250 to 600°C 600 to 1300°C	±3.8°C ±2.0°C
N	-200 to -110°C -110 to 1260°C	±1.3°C ±0.8°C
C	0 to 2315°C	±2.4°C
D	0 to 2315°C	±2.2°C
G	0 to 100°C 100 to 300°C 300 to 2315°C	±16.0°C ±3.4°C ±1.8°C

*Accuracy includes cold junction compensation, voltage
measurement and linearization errors.*

Voltage Range/Accuracy

Voltage Range	Integration (Seconds)	Accuracy
±5 V	1 ms none	±700 µV ±1500 µV
±0.6 V	1 ms none	±75 µV ±150 µV
±80 mV*	1 ms none	±15 µV ±45 µV
±10 mV*	1 ms none	±10 µV ±30 µV

**±80 mV and ±10 mV are nominal ranges. Actual ranges may be as low
as ±78 mvV and ±8 mV, respectively.*

RTD Accuracy Ranges

RTDs with α = 0.00385 and 0.00392 supported. One user
supplied shunt resistor per RTD channel is required.

RTD	Range	Shunt	Accuracy
100 Ω	0 to 200°C	1 KΩ	±0.37°C
100 Ω	0 to 850°C	2 KΩ	±1.0°C
500 Ω	0 to 200°C	4.7 KΩ	±0.38°C
500 Ω	0 to 850°C	10 KΩ	±0.9°C
1000 Ω	0 to 200°C	10 KΩ	±0.36°C
1000 Ω	0 to 850°C	20 KΩ	±0.85°C

**iNET-100B, $990,
shown smaller
than actual size
with KMTSS-125U-6
thermocouple
probe, sold
separately, $26.
Search omega.com
for more information.**

SPECIFICATIONS

Analog Inputs:
16 single-ended/8 differential
Resolution: 14 bit
System Throughput:
166K samples/sec
A/D Conversion Time: 4 μs min
Signal to Noise Ratio: 78 dB
Linearity: Differential ±1.5 LSB;
integral ±2 LSB
Input Overvoltage Protection: ±15 V
Input Impedance: >22 MΩ, 3pf
Common Mode Voltage:
±5 V min (CMR ±80 dB)
Gain and Offset Drift: ±5 ppm/°C of
5 V FSR; offset self-calibrated to 0

Thermistor Accuracy/Ranges

All OMEGA® 44000 Series thermistors supported. (Consult Sales for other thermistors.) One user-supplied shunt resistor per thermistor channel is required.

Range	Shunt	Accuracy
-80 to 40°C	47 KΩ	±0.2°C
0 to 70°C	4.7 KΩ	±0.1°C
0 to 200°C	200 Ω	±0.4°C

Analog Outputs: 8
Resolution: 8 bit
Output Range: ±5 V @ 5 mA for
iNET-100/100B, ±5 V @15 mA for
iNET-100HC
Output Protection:
Short-to-ground continuous
Output Settling Time:
4 μs (to ±2 LSB, ±5 V step)

Analog Output Accuracy: ±0.4%
Digital Coupling: ±20 mV
Gain and Offset Drift: ±10 ppm/°C of
5 V FSR and ±5 μV/°C offset drift
Digital I/O Number: 8 non-latching inputs and 8 latching outputs at 8 bidirectional screw terminals
Input Levels:
V_{IH} = 3.2 V min to 12 V max
V_{IL} = 1.0 V max to -12 V min
I_{IH} = -200 μA, V_i = 3.2 V
I_{IL} = -0.5 mA max
Output Levels:
V_{OH} = 2 V min to 5 V max
I_{OH} = -0.5 mA max
I_{OL} = 500 mA max, V_o =1.7 V
I_{OL} = 50 mA max, V_o = 0.7 V

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model No.)*

Model No.	Price	Description
iNET-100	$890	instruNet external A/D box with screw terminal connections
iNET-100B	990	instruNet external A/D box with screw terminal and BNC connections
iNET-100HC	990	Same as INET-100 with 15 mA excitation current per channel
iNET-200	290	PCI-Bus controller card for Windows 95/98/NT/2X/XP or Macintosh computers (controls up to 8 iNET-100s)
iNET-230†	290	PC-Card controller, type II for Windows 95/98/2X/XP (does not provide power, requires iNET-312-8 power supply)

The iNET-2xx controllers include a complete user's manual, instruNet World data acquisition software, driver software and network terminator.
The iNET-100/100B/100HC include a 3 m (10') cable for connecting the iNET-100/100B/100HC to the controller card or other iNET-100/100B/100HCs.
***Ordering Example: iNET-100** external A/D box, **OMEGACARE**SM 1-year extended warranty for **iNET-100** (adds 1-year to standard 1-year warranty),*
iNET-200** controller card and **OMEGACARE**SM 1-year extended warranty for **iNET-200** (adds 1 year to standard 1-year warranty), $890 + 89 + 290 + 29 = **$1298.
† iNET-230 is not supported under WIN NT.

Accessories

Model No.	Price	Description
iNET-300	$60	Power adaptor, required if using more than 2 iNET-100/100B boxes or one iNET-100HC box w/the iNET-200 PCI controller card. The iNET-230 PC card controller provides its own power adaptor .
iNET-330	290	Optical isolator, isolates signal and power lines (replaces iNET-300, requires iNET-312-8 power supply)
iNET-312-8	70	Power supply; 110/220 Vac, 5 V/2 A, ±12 V/0.8 A; USA plug used with iNET-300/330/230, iNET-300 included (powers 3 additional iNET-100HC or 4 additional iNET-100/100B); includes iNET-300 power adaptor
iNET-312-8EU	130	Power supply; 110/220 Vac, 5 V/2 A, ±12 V/0.8 A; 2-prong Euro plug, used with iNET-300/330/230 (powers 3 additional iNET-100HC or 4 additional iNET-100/100B); includes iNET-3000 power adaptor
iNET-340	50	DIN rail mounting brackets for one iNET-100
iNET-34S	75	34-pin screw terminal panel, breaks out digital I/O on iNET-2xx controller (requires iNET-34W3F cable)
iNET-34W3F	25	0.9 m (3') 34-wire ribbon cable to connect iNET-34S to iNET-2xx controller card
iNET-CABLE-1FT	12	instruNet cable, 0.3 m (1') length
iNET-CABLE-10FT	16	instruNet cable, 3.0 m (10') length
iNET-CABLE-25FT	24	instruNet cable, 7.6 m (25') length
iNET-CABLE-50FT	38	instruNet cable, 15.2 m (50') length
iNET-CABLE-100FT	78	instruNet cable, 30.5 m (100') length
iNET-iWPLUS	199	instruNet World Plus software license for one controller card (includes CD and license certificate for Windows 95/98/NT/2000/XP, not Macintosh)
iNET-380	195	LabVIEW drivers (LabVIEW versions 4 to 6 currently supported on Windows 98/NT/XP and Mac OS9)
OMX-R250	1	Precision 250 Ω shunt resistor (1% tolerance)
OMX-R(*)	10	Precision shunt resistor, insert resistance code
OMX-R1K	11	Precision shunt resistor, 1K
CS-3786	20	Reference Book: C++ Demystified

***Note:** Insert resistance code in Ωs. Available resistance codes are 200, 2K, 4.7K, 10K, 20K and 47K.*
Ordering Example: iNET-312-8** power supply, 110/220 Vac, **$70.

DIN Rail Mount Configurable Signal Conditioners
DRF Series

Starts at
$170

1 YEAR WARRANTY CE

- ✔ **Voltage, Current, Frequency, Resistance, Potentiometer, Thermocouple, RTD, and Load Cell Input Modules**
- ✔ **Field-Configurable Signal Ranges**
- ✔ **Provide Up to 3500 Veff Isolation Between Input and Output and Power (Isolation is Model Specific)**
- ✔ **Compatible with Standard 35 mm DIN Rail**

The DRF Series DIN rail signal conditioners are designed to accept a broad range of input signals, such as AC and DC voltage and current, frequency, temperature (thermocouple and RTD), and process transducers. They provide standard process outputs of either 4 to 20 mA or 0 to 10 Vdc. The DRF Series features a modern housing design that is easily mounted on standard 35 mm DIN rails. Connections are safely and securely made through pluggable screw terminal connectors, with input and output connections on the opposite sides of the module.

Functionality
The DRF Series is designed to maximize functionality. The front door of the housing provides easy access to span and offset potentiometers that can be used to field-adjust the input and output signal range.

Isolation
The input, output, and power circuits are isolated by 3500 volts of galvanic isolation. Isolation prevents potentially damaging voltages from passing through the signal conditioners into connected systems. It also provides improved measurement accuracy by minimizing the effects of ground loops and electrical noise.

Outputs
Each DRF Series signal conditioner is available with current and voltage output (only one output type can be used at a time). Available output types include 4 to 20 mA and 0 to 10 Vdc. Although pre-configured before shipping from the factory, the output can be changed by moving an internal jumper.

Standard outputs are linear and proportional to the signal input. Thermocouple input modules feature special circuitry to linearize the output to the actual temperature rather than to the non-linear signal produced by thermocouple sensors.

Specifications

(COMMON TO ALL MODELS)
Power: 24 Vdc ±10%, 230 Vac ±10% 50/60 Hz, 115 Vac ±10% 50/60 Hz
Power Consumption: <3.8 VA
Output: 4 to 20 mA and 0 to 10 Vdc
 Maximum Voltage Output: Approx. 11 Vdc
 Minimum Voltage Output: Approx. -1 Vdc
 Minimum Load Resistance (Voltage): ≥1 KΩ
 Maximum Current Output: Approx. 22 mA
 Maximum Current Output: Approx. -1.5 mA
 Maximum Load Resistance (Current): ≤400 Ω
Accuracy: <0.2% or <0.3% depending on model
Linearity: <0.1% or <0.2% depending on model
Thermal Drift: <150 ppm/°C or 250 ppm/°C typical depending on model
Response Time: 70 ms (process and DC input models); 250 ms (temperature and AC input models)
Isolation*:
 Input to Output: 3500 Veff
 Power to Input: 3500 Veff
 Power to Output: 3500 Veff (for AC powered models), 1K Veff (for DC powered models)
 *Tested true RMS, 60 sec leak <1 mA

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Electrical Connections: Plug-in screw terminals
Protection: IP-30
MECHANICAL DIMENSIONS
Weight:
 (DC Powered Models): 120 g (4.2 oz)
 (AC Powered Models): 200 g (7 oz)
Dimensions:
 (DC Powered Models):
 110 H x 22.5 W x 93 mm D (4.3 x 0.9 x 3.7")
 (AC Powered Models):
 110 H x 37 W x 93 mm D (4.3 x 1.46 x 3.7")
Operating Temperature: 0 to 60°C (32 to 140°F)
Storage Temperature: -20 to 70°C (-4 to 158°F)

SIGNAL CONDITIONERS

NEW

Thermocouple Input Signal Conditioner
DRF-TC

Starts at
$185

1 YEAR WARRANTY   CE

✔ **Models for J, K, T, E, R, and S Thermocouples**
✔ **Accuracy 0.3%**
✔ **250 ms Response Time**
✔ **Upscale Break Protection**
✔ **Linearized Output**
✔ **Galvanic Isolation Between Input, Output, and Power**

The DRF-TC thermocouple conditioners accept thermocouple input and provide a linearized and isolated 0 to 10 Vdc or 4 to 20 mA output. Models are available with three different power options; 24 Vdc, 120 Vac, and 240 Vac. The DRF-TC conditioners are ideally suited for industrial applications. All models mount on a standard 35 mm DIN rail and provide galvanic isolation between input, output, and power up to 3500 Veff (model specific). To ensure maximum measurement accuracy, the units feature cold junction compensation, 0.2% linearity, and less than 0.1°C/1°C thermal drift due to compensation. Module response time is 250 ms or less.

Range Code Table

Range Code	Range	J	K	T	E	R	S
0/100C	0 to 100°C				X		
0/150C	0 to 150°C	X	X				
0/175C	0 to 175°C				X		
0/200C	0 to 200°C			X			
0/250C	0 to 250°C	X	X				
0/300C	0 to 300°C			X	X		
0/400C	0 to 400°C	X	X	X			
0/500C	0 to 500°C				X		
0/700C	0 to 700°C	X	X				
0/800C	0 to 800°C				X		
0/1200C	0 to 1200°C		X				
0/1600C	0 to 1600°C						X
850/1700C	850 to 1700°C					X	
Minimum Span*		85°C	85°C	100°C	85°C	100°C	100°C

* Custom ranges can be obtained by adjusting on-board zero and span potentiometers.
The minimum range is limited by the minimum span specification.

DRF-TCJ-115VAC-0/400C-4/20, $185, shown larger than actual size

Specifications

Accuracy: <0.3% full scale
Linearity: <0.2% full scale
Thermal Drift: <250 ppm/°C typical
Thermocouple CJC Drift: 0.1°C/°C
Response Time: <250 ms (90% of signal)
Input Impedance: 1 MΩ
Over-Voltage Protection: 10 V

Thermocouple probe types: J, K, E, T, R, S (one model for each thermoucouple type)

Thermocouple Input

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
DRF-TCJ-(*)-(**)-(***)	**$185**	Signal conditioner for J type thermocouple
DRF-TCK-(*)-(**)-(***)	185	Signal conditioner for K type thermocouple
DRF-TCT-(*)-(**)-(***)	185	Signal conditioner for T type thermocouple
DRF-TCE-(*)-(**)-(***)	185	Signal conditioner for E type thermocouple
DRF-TCR-(*)-(**)-(***)	185	Signal conditioner for R type thermocouple
DRF-TCS-(*)-(**)-(***)	185	Signal conditioner for S type thermocouple
CS-3767	100	Reference Book: Electrical Engineers Handbook

* Specify power: "24VDC" for 24 Vdc power, "115VAC" for 115 Vac power or "230VAC" for 230 Vac power
** Specify range code from the Range Code Table.
*** Specify output: "4/20" for 4 to 20 mA output or "0/10" for 0 to 10 Vdc output.
Ordering Example: DRF-TCJ-115VAC-0/400C-4/20,** signal conditioner for a J thermocouple with a 0 to 400°C input range, 4 to 20 mA output and 115 Vac power, **$185.

RTD Input Signal Conditioner
DRF-RTD

Starts at
$180

✔ **100 Ω Platinum (Pt) RTD Element, 0.00385 Curve**
✔ **2- or 3-Wire Configuration**
✔ **0.2% Accuracy**
✔ **Cable Resistance Compensation Up to 10 Ω**
✔ **Upscale Break Protection**
✔ **Response Time <250 ms**
✔ **Galvanic Isolation Between Input, Output, and Power**

DRF-RTD signal conditioners accept 2- or 3-wire 100 Ω platinum RTDs as input and provide an isolated 0 to 10 Vdc or 4 to 20 mA output. Models are available with three different power options; 24 Vdc, 120 Vac, and 240 Vac.

DRF-RTD conditioners are ideally suited for industrial applications. All models mount on a standard 35 mm DIN rail and provide galvanic isolation between input, output, and power up to 3500 Veff (model specific). Module response time is 250 ms or less.

Specifications

RTD: 2- or 3-wire 100 Ω platinum RTD, α=0.00385
Accuracy: <0.2% full scale
Linearity: <0.1% full scale
Thermal Drift: 250 ppm/°C typical
Response Time: <250 ms (90% of signal)
RTD Excitation: 1 Vdc
Input Impedance: Measured with a Wheatstone bridge; bridge to positive through a 100 Ω resistance, bridge to negative through a 10 KΩ resistance

INPUT
-Pt -SEN +Pt
9 8 7
3-Wire RTD Input

INPUT
-Pt -SEN +Pt
9 8 7
2-Wire RTD Input

OUTPUT
4 COM | 5 Iout | 6 Vout

OMEGA DRF-RTD
PT100 V/I PS

INPUT
-PT -SEN +PT
9 8 7

DRF-RTD-24VDC-0/100C-0/10, $180, shown larger than actual size
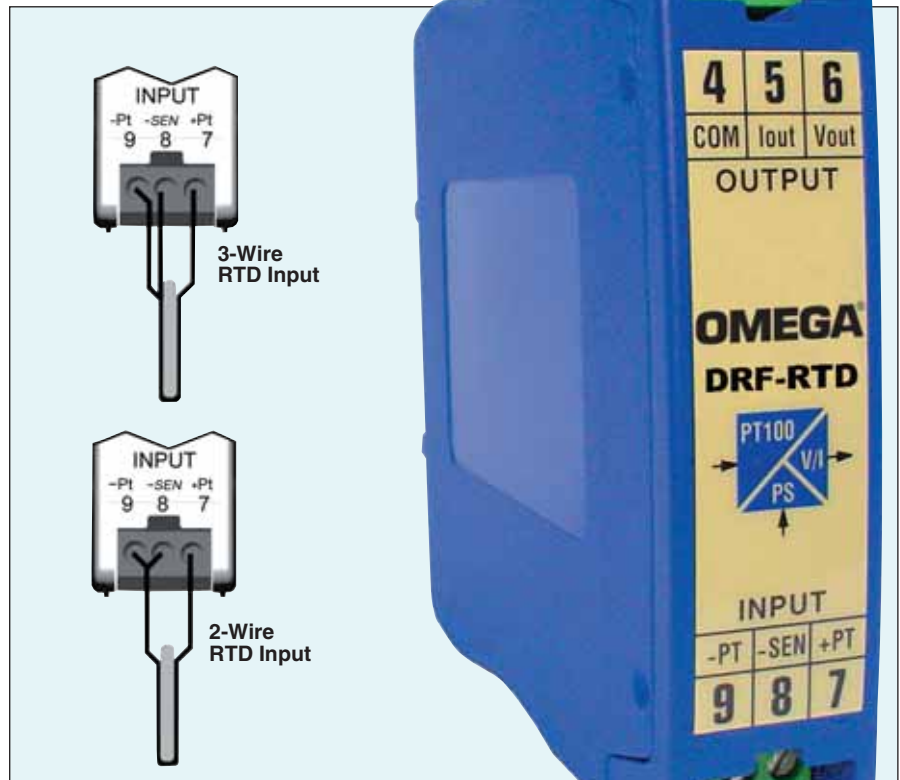
Range Code Table

Range Code	Range
-25/75C	-25 to 75°C
-50/150C	-50 to 150°C
0/100C	0 to 100°C
0/200C	0 to 200°C
0/300C	0 to 300°C
0/450C	0 to 450°C
0/600C	0 to 600°C

* Custom ranges can be obtained by adjusting on-board zero and span potentiometers. The minimum range is 0 to 50°C (32 to 122°F), maximum range is 0 to 600°C (32 to 1112°F).

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To Order *(Specify Model Number)*

Model No.	Price	Description
DRF-RTD-(*)-(**)-(***)	**$180**	Signal conditioner for 100 Ω Pt RTD
CS-3775	**80**	Reference Book: Control System Design Guide

** Specify power: "**24VDC**" for 24 Vdc power, "**115VAC**" for 115 Vac power or "**230VAC**" for 230 Vac power.*
** Specify range code from the Range Code Table.
**** Specify output: "**4/20**" for 4 to 20 mA output or "**0/10**" for 0 to 10 Vdc output.*
Ordering Example: DRF-RTD-24VDC-0/100C-0/10,** signal conditioner for an RTD with a 0 to 100°C input range, 0 to 10 Vdc output and 24 Vdc power, **$180.

DC and AC Voltage Input Signal Conditioners
DRF-VDC, DRF-VAC

Starts at
$175

1 YEAR WARRANTY CE

✔ **AC/DC Voltage Input Ranges from 60 mV to 650 V**
✔ **Accuracy 0.3%**
✔ **Response Time for DC Signals: 70 ms**
✔ **Response Time for AC Signals: 250 ms**
✔ **Over-Range Protection for Voltage Inputs**
✔ **High-Impedance Voltage Inputs**
✔ **Galvanic Isolation Between Input, Output, and Power**

DRF-VDC and DRF-VAC voltage signal conditioners accept DC and AC voltages, respectively, and provide an isolated 0 to 10 Vdc or 4 to 20 mA output. Models are available with three different power options; 24 Vdc, 120 Vac, and 240 Vac.

The DRF-VDC and DRF-VAC are ideally suited for industrial applications. All models mount on a standard 35 mm DIN rail and provide galvanic isolation between input, output, and power up to 3500 Veff (model specific).

Specifications
Accuracy: <0.2% full scale
Linearity: <0.1% full scale
Thermal Drift: 150 ppm/°C typical (max <200 ppm/°C)
Response Time (DC Signal Input Models): <70 ms (90% of signal) at 20 Hz -3 dB
Response Time (AC Signal Input Models): <250 ms (90% of signal)
Input Impedance: 1 MΩ for ranges <1 V, 10 MΩ for ranges >1 V
Over-Range Protection: 1000 V for ranges greater than 100 V, 500 V for ranges less than or equal to 100 V

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DRF-VDC-230VAC-300V-4/20, $175, shown larger than actual size

Input Range Table

Range Code	DRF Vdc Range	DRF Vac Range
75MV	0 to 75 mVdc	0 to 75 mVac
150MV	0 to 150 mVdc	0 to 150 mVac
300MV	0 to 300 mVdc	0 to 300 mVac
650MV	0 to 650 mVdc	0 to 650 mVac
1V	0 to 1 Vdc	0 to 1 Vac
7.5V	0 to 7.5 Vdc	0 to 7.5 Vac
15V	0 to 15 Vdc	0 to 15 Vac
65V	0 to 65 Vdc	0 to 65 Vac
300V	0 to 300 Vdc	0 to 300 Vac
650V	0 to 650 Vdc	0 to 650 Vac
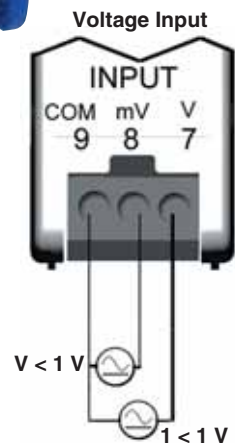
Voltage Input

INPUT
COM mV V
9   8   7

V < 1 V
1 < 1 V

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
DRF-VDC-(*)-(**)-(***)	$175	Signal conditioner for DC voltage input
DRF-VAC-(*)-(**)-(***)	175	Signal conditioner for AC voltage input
CS-3776	50	Reference Book: Analog & Digital Circuits for Control System Applications

* Specify power: "24VDC" for 24 Vdc power, "115VAC" for 115 Vac power or "230VAC" for 230 Vac power.
** Specify range code from the Input Range Table.
*** Specify output: "4/20" for 4 to 20 mA output or "0/10" for 0 to 10 Vdc output.
***Ordering Example: DRF-VDC-230VAC-300V-4/20,** signal conditioner for a DC voltage input with a 0 to 300 Vdc input range, 4 to 20 mA output and 230 Vac power, **$175**.*

DC and AC Current Input Signal Conditioners
DRF-IDC, DRF-IAC

Starts at
$175

1 YEAR WARRANTY **CE**

- ✔ **AC/DC Current Input Ranges from 0 to 100 mA to 0 to 5 A**
- ✔ **Accuracy 0.3%**
- ✔ **Response Time for DC Signals: 70 ms**
- ✔ **Response Time for AC Signals: 250 ms**
- ✔ **Ranges for x5 and x1 Current Transformers**
- ✔ **Low-Impedance Current Inputs**
- ✔ **Galvanic Isolation Between Input, Output, and Power**

DRF-IDC and DRF-IAC current signal conditioners accept DC and AC currents, respectively, and provide an isolated 0 to 10 Vdc or 4 to 20 mA output. Models are available with three different power options; 24 Vdc, 120 Vac, and 240 Vac.

The DRF-IDC and DRF-IAC are ideally suited for industrial applications. All models mount on a standard 35 mm DIN rail and provide galvanic isolation between input, output, and power up to 3500 Veff (model specific).

Specifications
Accuracy: <0.3% full scale
Linearity: <0.2% full scale
Thermal Drift: 250 ppm/°C typical (max <200 ppm/°C)
Response Time (DC Signal Input Models): <70 ms (90% of signal) at 20 Hz -3 dB
Response Time (AC Signal Input Models): <250 ms (90% of signal)
Maximum AC Frequency: 1 kHz
Input Impedance: 1 Ω for ranges <5 A, 0.02 Ω for ranges <1 A
Over-Range Protection: 7.5 A for ranges greater than 500 mA and less than or equal to 5 A, 750 mA for ranges less than or equal to 500 mA

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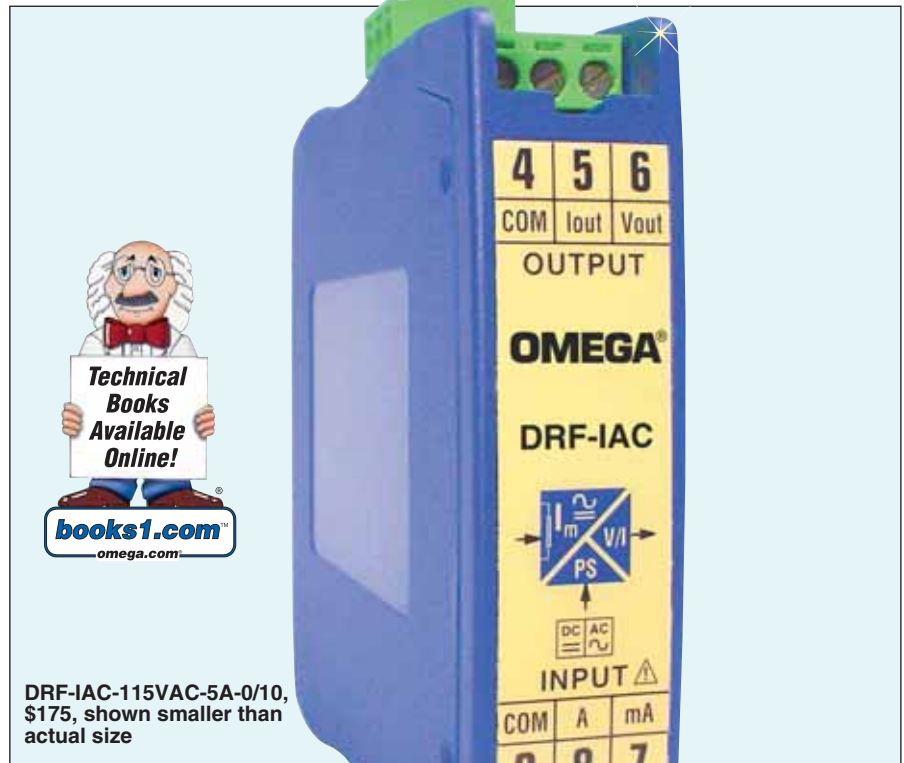
DRF-IAC-115VAC-5A-0/10, $175, shown smaller than actual size

Current Input

Input Range Table

Range Code	DRF IDC Range	DRF IAC Range
100MA	0 to 100 mAdc	0 to 100 mAac
200MA	0 to 200 mAdc	0 to 200 mAac
300MA	0 to 300 mAdc	0 to 300 mAac
1A	0 to 1 Adc	0 to 1 Aac
2A	0 to 2 Adc	0 to 2 Aac
3A	0 to 3 Adc	0 to 3 Aac
5A	0 to 5 Adc	0 to 5 Aac
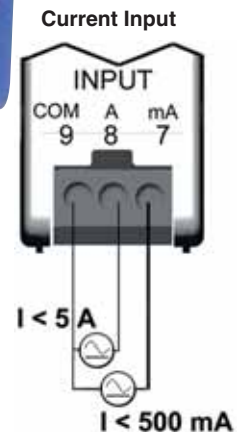
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To Order (Specify Model Number)

Model No.	Price	Description
DRF-IDC-(*)-(**)-(***)	$175	Signal conditioner for DC current input
DRF-IAC-(*)-(**)-(***)	175	Signal conditioner for AC current input
CS-3785	150	Reference Book: McGraw-Hill Dictionary of Scientific and Techinical Terms

* Specify power: **"24VDC"** for 24 Vdc power, **"115VAC"** for 115 Vac power or **"230VAC"** for 230 Vac power.
** Specify range code from the Input Range Table.
*** Specify output: **"4/20"** for 4 to 20 mA output or **"0/10"** for 0 to 10 Vdc output.
Ordering Example: DRF-IAC-115VAC-5A-0/10, signal conditioner for AC current input with a 0 to 5 Aac input range, 0 to 10 Vdc output and 115 Vac power, **$175.**

Process Input Signal Conditioner DRF-PR

Starts at
$170

1 YEAR WARRANTY CE

- ✔ **Process Signals Up to 10 Vdc and Up to 50 mA**
- ✔ **Accuracy 0.2%**
- ✔ **Response Time <70 ms**
- ✔ **Excitation Voltage for Transducers +15 Vdc (20 mA)**
- ✔ **Galvanic Isolation Between Input, Output, and Power**

The DRF-PR signal conditioner accepts a DC process signal input and provides an isolated 0 to 10 Vdc or 4 to 20 mA output. Models are available with three different power options; 24 Vdc, 120 Vac, and 240 Vac.

The DRF-PR is ideally suited for industrial applications. All models mount on a standard 35 mm DIN rail and provide galvanic isolation between input, output, and power up to 3500 Veff (model specific). Module response time is 70 ms or less.

Specifications
Accuracy: <0.2% full scale
Linearity: <0.1% full scale
Thermal Drift: 150 ppm/°C typical (max <200 ppm/°C)
Response Time (DC Signal Input Models): <70 ms (90% of signal) at 20 Hz -3 dB
Input Impedance: 50 Ω for 4 to 20 mA and 0 to 20 mA ranges, 20 Ω for 0 to 5 mA and 0 to 50 mA ranges, 5 MΩ for ranges ≥1 V, 1 MΩ for ranges ≥10 V
Vexc Output for Transducers: +15 Vdc ±10% (22 mA max)

2-Wire Input

Voltage or Current Generator

3-Wire Input
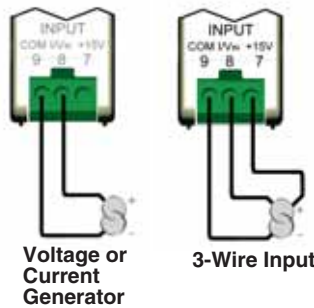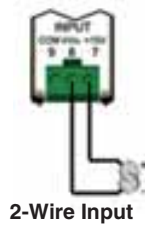
Range Code Table

Range Code	Range
0/5MA	0 to 5 mA
0/50MA	0 to 50 mA
0/20MA	0 to 20 mA
4/20MA	4 to 20 mA
0/1VDC	0 to 1 Vdc
0/10VDC	0 to 10 Vdc

DRF-PR-24VDC-0/10C-4/20, $170, shown larger than actual size

Impedance and Overvoltage Table

Range Code	Impedance	Overvoltage (max)
4 to 20 mA	50 Ω	3.5 Vdc
0 to 20 mA	50 Ω	3.5 Vdc
0 to 50 mA	20 Ω	2.5 Vdc
0 to 5 mA	20 Ω	2.5 Vdc
0 to 10 Vdc	5 MΩ	150 Vdc
0 to 1 Vdc	1 MΩ	15 Vdc

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To Order *(Specify Model Number)*		
Model No.	**Price**	**Description**
DRF-PR-(*)-(**)-(***)	**$170**	Signal conditioner for DC process input
CS-3790	**20**	Reference Book: McGraw-Hill Dictionary of Electrical and Computer Engineering

* Specify power: *"24VDC"* for 24 Vdc power, *"115VAC"* for 115 Vac power or *"230VAC"* for 230 Vac power.
** Specify range code from the Range Code Table.
*** Specify output: *"4/20"* for 4 to 20 mA output or *"0/10"* for 0 to 10 Vdc output.
Ordering Example: DRF-PR-24VDC-0/10VDC-4/20, signal conditioner for process input with a 0 to 10 Vdc input range, 4 to 20 mA output and 24 Vdc power, **$170.**

NEW

Load Cell Input Signal Conditioner DRF-LC

Starts at
$180

1 YEAR WARRANTY CE

DRF-LC-230VAC-30MV-0/10, $180, shown larger than actual size

- ✔ **For Load Cells with 1 mV/V, 2 mV/V, and 3 mV/V Output**
- ✔ **Full Scale at 10 mV, 20 mV, and 30 mV**
- ✔ **Pre-Tare Jumpers at 50%, 25%, and 0%**
- ✔ **Accuracy 0.2%**
- ✔ **Response Time <75 ms**
- ✔ **Galvanic Isolation between Input, Output, and Power**

The DRF-LC signal conditioner accepts a load cell input and provides an isolated 0 to 10 Vdc or 4 to 20 mA output. Models are available with three different power options; 24 Vdc, 120 Vac, and 240 Vac.

The DRF-LC is ideally suited for industrial applications. All models mount on a standard 35 mm DIN rail and provide galvanic isolation between input, output, and power up to 3500 Veff (model specific). Module response time is 75 ms or less.

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Specifications
Accuracy: <0.2% full scale
Linearity: <0.1% full scale
Thermal Drift: 250 ppm/°C typical (max <200 ppm/°C)
Response Time: <75 ms (90% of signal)
Bandwith: 20 Hz (-3 dB)
Pre-Tare: 50%, 25% and 0% by jumpers
Impedance: 5 MΩ
Over-Range Protection: 15 V max differential input
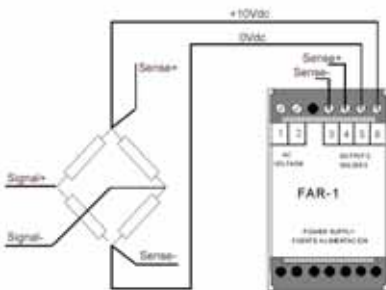
FAR-1 Power Supply with Load Cell

FAR-1, $110, 10 Vdc power supply, shown smaller than actual size

The FAR-1 is a 10 Vdc power supply for load cells. It can power up to 4 standard load cells. It accepts 4-wire load cells and 6-wire load cells. It can be mounted on a standard DIN rail.
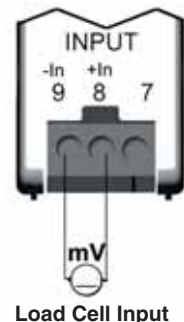
Load Cell Input

Range Code Table

Range Code	Range
10MV	0 to 10 mV
20MV	0 to 20 mV
30MV	0 to 30 mV

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
DRF-LC-(*)-(**)-(***)	$180	Signal conditioner for load cell input
FAR-1	110	10 Vdc power supply
CS-3767	100	Reference Book: Electrical Engineers Handbook

* Specify Power: *"24VDC"* for 24 Vdc power, *"115VAC"* for 115 Vac power or *"230VAC"* for 230 Vac power.
** Specify range code from the Range Code Table.
*** Specify output: *"4/20"* for 4 to 20 mA output or *"0/10"* for 0 to 10 Vdc output.
Ordering Example: DRF-LC-230VAC-30MV-0/10, signal conditioner for load cell input with a 0 to 30 mV input range, 0 to 10 Vdc output and 230 Vac power, **$180.**

NEW

Frequency Input Signal Conditioner
DRF-FR

Starts at
$210

1 YEAR WARRANTY **CE**

✔ **NPN, PNP, NAMUR, Voltage Pulse, Voltage AC (Up to 200 Vac)**
✔ **Frequency Signals from 10 Hz Up to 50 kHz**
✔ **Accuracy 0.2%**
✔ **Excitation Voltage 15 Vdc (20 mA) or 9 V2 for NAMUR**
✔ **Galvanic Isolation Between Input, Output, and Power**

The DRF-FR signal conditioner accepts a frequency input and provides an isolated 0 to 10 Vdc or 4 to 20 mA output. Models are available with three different power options; 24 Vdc, 120 Vac, and 240 Vac.

The DRF-FR is ideally suited for industrial applications. All models mount on a standard 35 mm DIN rail and provide galvanic isolation between input, output, and power up to 3500 Veff (model specific). Module response time is 250 ms or less.

Specifications
Signal Type: NPN, PNP, NAMUR, Voltage Pulse, AC up to 200 Vac (2 ranges <24 Vac and <200 Vac)
Accuracy: <0.2% full scale
Linearity: <0.1% full scale
Thermal Drift: 250 ppm/°C typical (max <200 ppm/°C)

RESPONSE TIME
0 to 100 Hz: <300 ms (90% of signal)
0 to 500 Hz: <250 ms (90% of signal)
0 to 5 kHz: <200 ms (90% of signal)
0 to 50 kHz: <150 ms (90% of signal)
IMPEDANCE
Voltage Input (<24 Vac Range): 100 KΩ
Voltage Input (<200 Vac Range): 1 MΩ
PNP and NPN Input: 10 KΩ
NAMUR Input: 1 KΩ

INPUT
COM HzIN +15V
9 8 7

Externally Powered Sensor

INPUT
COM HzIN +15V
9 8 7
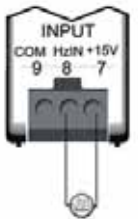
NAMUR or PNP Sensor Powered from the DRF-FR Signal Conditioner

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DRF-FR-115VAC-1KHZ-4/20, $210, shown larger than actual size

4 5 6
COM Iout Vout
OUTPUT

OMEGA®

DRF-FR

Hz V/I PS

INPUT ⚠
COM Hz IN +15V
9 8 7

Range Code Table

Range Code	Range
20HZ	0 to 20 Hz
40HZ	0 to 40 Hz
60HZ	0 to 60 Hz
100HZ	0 to 100 Hz
200HZ	0 to 200 Hz
300HZ	0 to 300 Hz
500HZ	0 to 500 Hz
1KHZ	0 to 1 kHz
2KHZ	0 to 2 kHz
3KHZ	0 to 3 kHz
5KHZ	0 to 5 kHz
10KHZ	0 to 10 kHz
20KHZ	0 to 20 kHz
30KHZ	0 to 30 kHz
50KHZ	0 to 50 kHz

Custom ranges can be obtained by adjusting on-board zero and span potentiometers. The minimum span is 10 Hz.

OVER-RANGE PROTECTION
Voltage Input (<24 Vac Range): 75 V
Voltage Input (<200 Vac Range): 300 V
PNP and NPN Input: 35 V
NAMUR Input: Always powered by 9 V2

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
DRF-FR-(*)-(**)-(***)	$210	Signal conditioner for frequency input
CS-3785	150	Reference Book: McGraw-Hill Dictionary of Scientific and Technical Terms

** Specify power: **"24VDC"** for 24 Vdc power, **"115VAC"** for 115 Vac power or **"230VAC"** for 230 Vac power.*
** Specify range code from the Range Code Table.
**** Specify output: **"4/20"** for 4 to 20 mA output or **"0/10"** for 0 to 10 Vdc output.*
***Ordering Example: DRF-FR-115VAC-1KHZ-4/20,** signal conditioner for frequency input with a 0 to 1000 Hz input range, 4 to 20 mA output and 115 Vac power, **$210**.*

DRF-RES Resistance Input and
DRF-POT Potentiometer Input Signal Conditioners

Starts at
$180

1 YEAR WARRANTY CE

- ✔ **Resistances Between 1 KΩ and 10 KΩ**
- ✔ **Excitation Current 0.2 mA**
- ✔ **Potentiometers Between 100 Ω min and 1 MΩ max**
- ✔ **Response Time <70 ms**
- ✔ **Accuracy 0.2%**
- ✔ **Galvanic Isolation Between Input, Output, and Power**

DRF-RES and DRF-POT signal conditioners accept resistance and potentiometer input, respectively, and provide an isolated 0 to 10 Vdc or 4 to 20 mA output.

The DRF-RES is available with four standard ranges from 0 to 1500 Ω to 0 to 10,000 Ω. The DRF-POT can work with a variety of potentiometers from 100 Ω to 1 MΩ.

Models are available with three different power options, 24 Vdc, 120 Vac, and 240 Vac.

The DRF-RES and DRF-POT are ideally suited for industrial applications. All models mount on a standard 35 mm DIN rail and provide galvanic isolation between input, output, and power up to 3500 Veff (model specific). Module response time is 70 ms or less.

Technical Books Available Online!
books1.com
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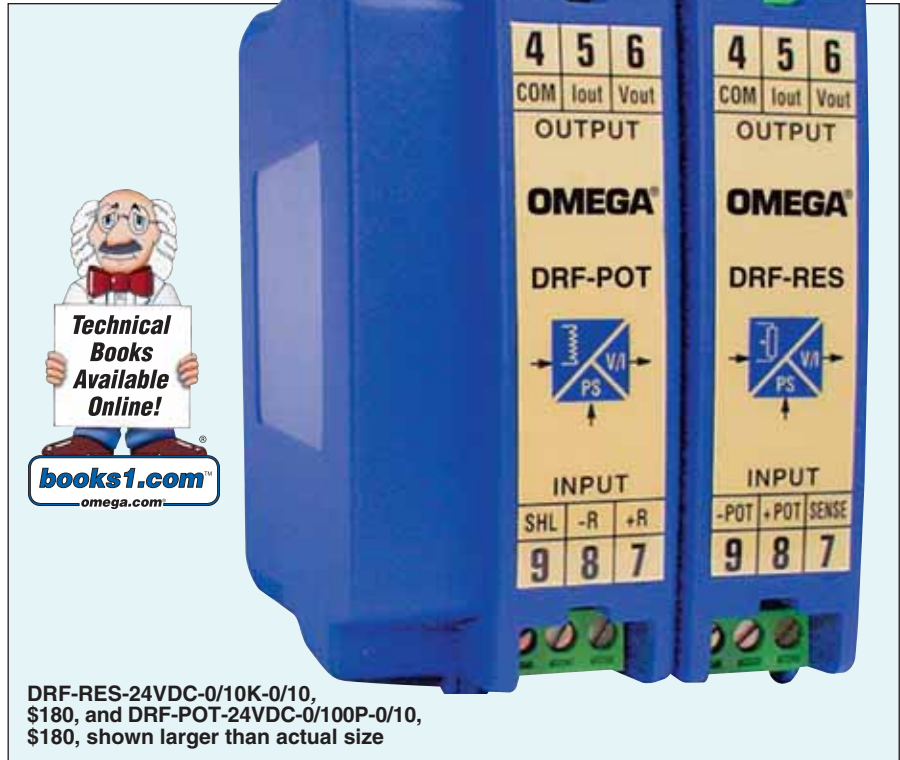
DRF-RES-24VDC-0/10K-0/10, $180, and DRF-POT-24VDC-0/100P-0/10, $180, shown larger than actual size

Specifications
Signal:
  DRF-RES: 2 wire
  DRF-POT: 3 wire
Excitation:
  DRF-RES: 0.2 mA
  DRF-POT: 1 Vdc
Accuracy: <0.2% full scale
Linearity: <0.1% full scale
Thermal Drift: 250 ppm/°C typical (max <200 ppm/°C)
Response Time: 70 ms (90% of signal)

Range Code Table

Range Code	Range
0/1.5K	0 to 1500 Ω
0/3K	0 to 3000 Ω
0/5K	0 to 5000 Ω
0/10K	0 to 10,000 Ω

Custom ranges can be obtained by adjusting on-board zero and span potentiometers. The minimum range is 0 to 750 Ω.

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
DRF-RES-(*)-(**)-(***)	$180	Signal conditioner for resistance input
DRF-POT-(*)-0/100P-(***)	180	Signal conditioner for resistance input
CS-3790	20	Reference Book: McGraw-Hill Dictionary of Electrical and Computer Engineering

* *Specify power: "24VDC" for 24 Vdc power, "115VAC" for 115 Vac power or "230VAC" for 230 Vac power.*
** *Specify range code from the Range Code Table for the DRF-RES (the DRF-POT works with potentiometers from 100 Ω to 1 MΩ).*
*** *Specify output: "4/20" for 4 to 20 mA output or "0/10" for 0 to 10 Vdc output.*
Ordering Example: DRF-RES-24VDC-0/10K-0/10,** signal conditioner for resistance input with a 0 to 10 K Ω input range, 0 to 10 Vdc output and 24 Vdc power, **$180.
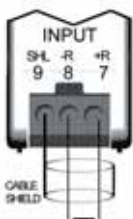
Resistance Input

Potentiometer Input

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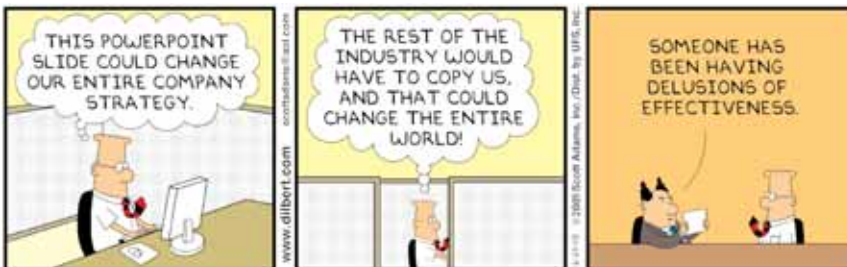
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1-800-DAS-1EEE

U.S.A. and Canada

151

OMEGABUS® Digital Transmitters D1000

Starts at
$250

MADE IN USA | 1 YEAR WARRANTY | OMEGACARE Extended Warranty Program

✔ **Complete Sensor to RS-232C or RS-485 Interface**
✔ **Input Modules for Thermocouples, RTDs, Voltages, Currents, Pulse and Frequency, and Bridge Inputs**
✔ **Isolated Inputs**
✔ **RS-485 Format Permits Remote Communications from Up to 1219 m (4000')**
✔ **Connect Up to 32 Modules on One Cable, Up to 124 Using a Repeater**
✔ **Alarm Outputs Standard**
✔ **Continuous Self Calibration (No Adjustment Requirements)**

A/IN   SERIAL I/O
A/OUT   DI/O

D1321, $325, shown smaller than actual size. For additional information and specifications, see omega.com

The D1000 Series digital transmitters are a complete family of easy-to-use interface modules for personal computers and other processor-based equipment with standard serial I/O ports. The modules convert analog input signals to engineering units and transmit, in ASCII format, to any host computer with a standard RS-232C or RS-485 port. The D1000 Series provides direct interface to a wide variety of sensors and performs all signal conditioning, scaling, linearization, and conversion to engineering units. Each module also provides digital I/O lines for controlling devices through solid state relays or TTL signals. These digital I/O lines, along with integral limit-setting capability, provide alarm and control outputs. With the exception of the D1400 RTD and D1500 bridge modules, every D1000 module contains an on-board event counter.

If transmitting over long distances is required, the RS-485 communications format is recommended. This permits remote operation up to 1219 m (4000') from the host computer.

For computers that do not have an RS-485 port, OMEGA offers the A1000 RS-232C signal converter.

Digital Inputs/Outputs

RS-232 Output	RS-485 Output	Price	Description
D1701	D1702	$275	7 digital in, 8 digital out
D1711	D1712	275	15 digital in/out

Frequency, Time and Event Inputs

RS-232 Output	RS-485 Output	Price	Description
D1601	D1602	$250	Frequency input
D1611	D1612	250	Timer input
D1621	D1622	200	Event counter

Voltage Inputs

RS-232C Output	RS-485 Output	Price	Input
D1101	D1102	$250	10 mV
D1111	D1112	250	100 mV
D1121	D1122	250	1 V
D1131	D1132	250	5 V
D1141	D1142	250	10 V
D1151	D1152	250	100 V

Current Inputs

RS-232C Output	RS-485 Output	Price	Input
D1211	D1212	$250	10 mA
D1221	D1222	250	1 mA
D1231	D1232	250	100 mA
D1241	D1242	250	1 A
D1251	D1252	250	4 to 20 mA

Each unit is supplied with a CD ROM that includes a complete operator's manual and Windows setup software.

◻ **MOST POPULAR MODELS HIGHLIGHTED!**

Thermocouple Inputs

RS-232C Output	RS-485 Output	Price	Input
D1311	D1312	$325	J
D1321	D1322	325	K
D1331	D1332	325	T
D1341	D1342	325	E
D1351	D1352	325	R
D1361	D1362	325	S
D1371	D1372	325	B
D1381	D1382	325	C

RTD Inputs

RS-232C Output	RS-485 Output	Price	Input Curve
D1411	D1412	$325	0.00385
D1421	D1422	325	0.00392

Thermistor Inputs

RS-232C Output	RS-485 Output	Price	Description
D1451	D1452	$250	2252 Ω thermistor

Bridge Inputs

RS-232C Output	RS-485 Output	Price	Input	Excitation
D1511	D1512	$325	30 mV	5 V
D1521	D1522	325	30 mV	10 V
D1531	D1532	325	100 mV	5 V
D1541	D1542	325	100 mV	10 V
D1561	D1562	325	1 to 6 V	10 V

***Ordering Example: D1311** Type J thermocouple input RS-232C output digital transmitter and **OMEGACARE**SM 1-year extended warranty for **D1311** (adds 1 year to standard 1-year warranty), $325 + 33 = **$358**.*

Portable Data Logging System OM-320

Starts at
$2480

- ✔ **Portable, Battery Powered, and Weatherproof**
- ✔ **Records Up to 24 Analog and/or Digital Channels**
- ✔ **Software Configurable Plug-In Interface Modules**
- ✔ **Icon-Based Windows Software**
- ✔ **13-Bit Analog to Digital Converter**

The OM-320 portable data logging system consists of the OM-320 system base, a choice of plug-in interface modules, and icon-based Windows software. Several optional accessories, including modem modules and PCMCIA data memory modules, are also available. The OM-320 system base is a latching weatherproof enclosure containing the microprocessor, data storage memory, analog to digital converter, liquid crystal display, batteries, input/output terminal strip connector, and 6 interface ports that accommodate the interface modules and accessories.

OM-420 Expanded Feature Model
The OM-420 is an expanded feature model of the OM-320 portable data logging system. The OM-420 consists of the OM-320 system base, plug-in interface modules, standard Windows software, and any user-specified accessories along with an OM-220-RPS-1 rechargeable power supply housed in a NEMA 4X (IP66) rated enclosure. The OM-420 was designed to meet the needs of remote data logging applications in which power is unavailable for excitation of sensors and transmitters. Additionally, the OM-420 is ideal for data collection installations at unattended sites with no available grid power.

The two rechargeable gell cell batteries of the OM-220-RPS-1 are readily recharged via photovoltaic, wind, or other power sources.

OM-320 portable logging system, $2480, shown smaller than actual size. For additional information and specifications, see omega.com

Technical Books Available Online!

books1.com
omega.com

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model No.)*

Model Number	Price	Description
OM-320	**$2480**	Data logger system base*
OM-420	2980	Data logger system base with OM-220-RPS-1 power supply*
OM-320-HLIM-1	320	Analog interface module
OM-320-HLIM-2	380	Digital interface module
OM-320-HLIM-4	320	Resistance interface module
OM-320-HLIM-5	140	PCMCIA interface module
OM-320-HLIM-7	480	Isolated analog interface module
OM-320-HLIM-8	320	Digital I/O interface module
CS-3779	50	Reference Book: Software Design for Engineers and Scientists

*Purchase system base plus desired interface modules. System base comes complete with one four-channel **OM-320-HLIM-1** analog interface module, Windows software, RS-232C cable, RJ-11 to DB25 and RJ-11 to DB9 serial port adaptors, liquid-tight fittings, 6 internal "D" cell batteries, 115/230 Vac power adaptor and complete operator's manual.
Ordering Example: OM-320 data logger system base, **OMEGACARE**ˢᴹ 1 year extended warranty for **OM-320** (adds 1 year to standard 1-year warranty), plus 5 **OM-320-HLIM-1** analog interface modules, $2480 + 150 + 5 (320) = **$4230.**

OMEGASCOPE®
Handheld Infrared Thermometer
Loaded with Features
New Distance Measurement Option Available!

OS533E

$550

Other models available starting at $295

New!
Built-In Distance Measurement Option Available!
Visit omega.com

FREE SOFTWARE INCLUDED

4 "AA" Lithium batteries included

Laser Circle to Dot Switchable™

Built-In Laser Sighting

High Intensity

Energy Zone™

Single Dot   Circle

✔ **Rugged, High-Performance Design**
✔ **Built-In Patented Laser Sighting is Switchable Between Laser Dot or Circle Pattern**
✔ **Laser Can be Flashing or Continuous**
✔ **Models Available with Temperature Ranges from -23 to 871°C (-10 to 1600°F)**
✔ **Emissivity Adjustable from 0.1 to 1 in 0.01 Steps**
✔ **Distance Measuring Option— Either Field Mountable or Built-In [0.9 and 9 m (3 and 30') Range]**
✔ **Many More Features!**

OM533E, $550, shown with probe model 88006, $115, shown smaller than actual size. Probe sold separately.

PATENTED
Patents issued and pending on many aspects of this device including but not limited to laser circle and distance measurement.

CAUTION Ω **OMEGASCOPE®**
LASER RADIATION - DO NOT STARE INTO BEAM
OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS
MAX. OUTPUT < 1mW, WAVE LENGTH
630-670 nm, CLASS II (2) LASER PRODUCT

CAUTION! – This product is not intended for medical use or use on humans
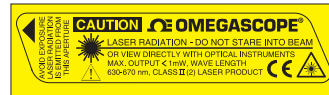
MOST POPULAR MODELS HIGHLIGHTED!

To Order *(Specify Model Number)*

Model Number	OS530LE	OS530HRE	OS530LE-CF	OS532E	OS533E-CF	OS533E	OS534E-CF	OS534E
Price (Basic Unit)	$295	$345	$345	$450	$550	$550	$650	$650
Accuracy*	±1% rdg	±1% rdg	±1% rdg	±1% rdg	±1% rdg	±1% rdg	±1% rdg	±1% rdg
Range	-23 to 538°C -10 to 1000°F	-30 to 121°C -22 to 250°F	-23 to 538°C -10 to 1000°F	-23 to 538°C -10 to 1000°F	-23 to 538°C -10 to 1000°F	-23 to 538°C -10 to 1000°F	-23 to 871°C -10 to 1600°F	-23 to 871°C -10 to 1600°F
Emissivity	adjustable	adjustable	adjustable	adjustable	adjustable	adjustable	adjustable	adjustable
Display Resolution	1°	0.1°	1°	1°	1°	1°	1°	1°
Distance to Spot Size Ratio	10:1	20:1	0.15"@6"	10:1	0.15"@6"	20:1	0.15"@6"	30:1
Differential Temperature	std	std	std	std	std	std	std	std
Min/Max Temperature	std	std	std	std	std	std	std	std
Average Temperature	std	std	std	std	std	std	std	std
High Alarm	std	std	std	std	std	std	std	std
Low Alarm	—	—	—	—	std	std	std	std
Audible Buzzer & Indicator	std	std	std	std	std	std	std	std
Ambient Target Temp. Comp.	—	—	—	—	std	std	std	std
Analog Output	1 mV/deg	1 mV/deg	1 mV/deg	1 mV/deg	1 mV/deg	1 mV/deg	1 mV/deg	1 mV/deg
RS-232 Output	—	—	—	—	std	std	std	std
Thermocouple Input	—	—	—	std	std	std	std	std
Data Storage	—	—	—	—	—	—	std	std
Laser Sight (Built-In)	dot/circle	dot/circle	dot	dot/circle	dot	dot/circle	dot	dot/circle
Trigger Lock	std	std	std	std	std	std	std	std
Last Temperature Recall	std	std	std	std	std	std	std	std

* Or 1.7°C (3°F), whichever is greater.
Ordering Examples: OS530LE, handheld infrared thermometer with built-in Laser Circle to Dot Switchable™ feature and thermocouple input, plus **OCW-3**, OMEGACARE℠ 3-year extended warranty, $295 + 73 = **$368.**
OS532E, handheld infrared thermometer with built-in Laser Circle to Dot Switchable™ feature and thermocouple input, plus **OCW-3**, OMEGACARE℠ 3-year extended warranty, $450 + 112 = **$562.**
OS534-CF, close-focus handheld infrared thermometer with built-in Laser Circle to Dot Switchable™ feature, thermocouple input and RS-232 output, plus **OCW-3** OMEGACARE℠ 3-year extended warranty, $650 + 162 = **$812.**

Embedded Internet Connectivity!

⅛ DIN Temperature, Process, & Strain Meters & PID Controllers

iSeries
ΩE MONOGRAM®

Starts at
$240

MADE IN USA | 5 YEAR WARRANTY | C€ c(UL)us

✔ **High Quality**
✔ **5-Year Warranty**
✔ **High Accuracy ±0.5°C (±0.9°F), 0.03% Reading**
✔ **User-Friendly, Simple to Configure**
✔ **Free Software**
✔ **Full Autotune PID Control**
✔ **Universal Inputs: Thermocouple, RTD, Process Voltage/Current, Strain**
✔ **Totally Programmable Color Displays, Standard**
✔ **Built-In Excitation, Standard**
✔ **2 Control or Alarm Outputs, Choice of DC Pulse, Mechanical Relays, Analog Voltage and Current**
✔ **Embedded Internet Connectivity**

The OMEGA® DPi8/CNi8 is a ⅛ DIN size [96 x 48 mm (3.7 x 1.9")] digital panel meter featuring the big iSeries color-changing display. The digits are twice the size of typical ⅛ DIN panel meters. The iSeries meters feature the only LED displays that can be programmed to change color between GREEN, AMBER, and RED at any setpoint or alarm point. The DPi8/CNi8 is an extremely accurate programmable digital panel meter, available with no outputs or with dual outputs for controlling or alarming functions. Other options include isolated programmable analog output, serial communications, MODBUS, and Ethernet. The user can easily program the CNi8 for any control or alarming requirement, from simple on-off to full autotune PID with a choice of Form C SPDT relays, solid state relays, DC pulse, and analog (voltage and current) outputs.

Fully isolated analog output for retransmission of the process value is available in addition to the control and alarm relays (specify model CNi8A33).

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order (*Specify Model No.)

Model No.			Description	Price
DPi8			Temperature/process (monitor only) ⅛ DIN	$240
DPi8A			Temperature/process monitor with isolated analog output ⅛ DIN*1	295
DPiS8			Strain/process (monitor only) ⅛ DIN	300
CONTROL OUTPUTS #1 & 2 Direct (Cool) or Reverse (Heat) Acting				
CNi8	(*)	(*)	Temperature/process with 2 control outputs	310
CNi8A	(*)	(*)	Temperature/process with isolated analog output and 2 outputs*1, *4	365
CNiS8	(*)	(*)	Strain/process with 2 control outputs	370
	2	2	Two solid state relays (SSR's): 0.5 A @ 120/240 Vac continuous	
	2	3	SSR and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	2	4	SSR and pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	3	3	2 Relays: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	
	4	2	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and SSR	
	4	3	Pulsed 10 Vdc @ 20 mA (for use with external SSR) and relay: Form "C" SPDT 3 A @ 120 Vac, 3 A @ 240 Vac	N/C
	4	4	Two pulsed 10 Vdc @ 20 mA (for use with external SSR)	
	5	2	Analog output selectable as either control or retransmission of process value; 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and SSR	
	5	3	Analog output 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and relay	
	5	4	Analog output 0 to 10 Vdc or 0 to 20 mA @ 500 Ω max and pulse 10 Vdc	
			-AL Limit alarm version (simplified menu; no PID control)*1, *4	

*1 Analog output (option 5) and Ethernet options are not available for the i8A controller.
*2 -DC, -C24, or -C4EI not available with excitation.
*3 Analog output (option 5) is not available with -AL units.
*4 For CNi8A** -AL: one alarm and one analog retransmission.

NETWORK OPTIONS		Price
-EI	Ethernet with embedded Internet	$55
-C24	Isolated RS-232 and RS-485 300 to 19.2k baud *2	60
-C4EI	Ethernet with embedded Web server + isolated RS-485/422 hub for up to 31 devices *1	115
POWER SUPPLY		
*	Standard power input: 90 to 240 Vac/Vdc, 50 to 400 Hz (no entry required)	N/C
-DC	12 to 36 Vdc, 24 Vac *2	25
FACTORY SETUP		
-FS	Factory setup and configuration (req. -C24 serial communication option)	N/C
SOFTWARE (REQUIRES NETWORK OPTION)		
OPC-SERVER LICENSE	OPC server/driver software license	295

Each model comes with a complete operator's manual.
Ordering Examples: *DPi8A,* ⅛ *DIN meter with isolated scalable analog retransmission of the process value* **$295. CNi8A22,** ⅛ *DIN temp/process controller with isolated analog output and 2 SSR outputs,* **$365. CNiS833,** ⅛ *DIN strain/process controller with two-relay outputs,* **$370.**

SUPERMETER®
With Patented Laser Sighting
Non-Contact Temperature Measurement
3 METERS IN 1

HHM290

$245

True RMS Measurement!

Non-Contact Temperature Measurement

Differential Temperature Measurement

UNIQUE FEATURES!
- ✔ **Built-In Infrared Pyrometer with Switchable Laser Dot/Circle Sighting**
- ✔ **Adjustable Emissivity with 10:1 Field of View**
- ✔ **Full Function Auto-Ranging Digital Multimeter**
- ✔ **Measures Capacitance, Inductance, and Frequency**
- ✔ **Dual Thermocouple Input with Differential Temperature Function**
- ✔ **Powers from 6 "AA" Batteries or DC Adaptor**
- ✔ **Built-In Tripod Mount**
- ✔ **Monitors Min, Max, Avg Readings**
- ✔ **Rugged Housing with Removable Boot**

Laser Circle to Dot Switchable™

Built-In Laser Sighting

High Intensity

Energy
Zone ™

Single Dot   Circle
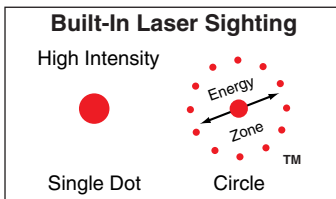
PATENTED
Covered by U.S. and International patents and pending applications

Technology Breakthrough!
"It's a technician's dream come true!" OMEGA's patented, "all-in-one" SUPERMETER® Model HHM290 combines the power of a true RMS full function multimeter, non-contact infrared pyrometer with laser sighting and a dual input Type K thermocouple meter with a differential measurement feature—all into one power-packed handheld instrument. The multimeter measures: DC/AC voltage, current, resistance, frequency, capacitance, and features a built-in logic and diode tester. The infrared pyrometer offers adjustable emissivity, a wide temperature range, a 10:1 field of view, and a laser sighting selector switch used to select between "a single laser dot" for hot spot locating and "a laser circle pattern" that outlines the optical field of view for average area measurement. The large backlit LCD display features simultaneous readings in both digital and analog bar graph format, with settings for min/max and average readings. Each unit is CE marked and features auto power-off, fused multimeter inputs, both battery or optional AC wall adaptor operation, and comes complete with safety test leads, dual Type K temperature probes, rubber protective boot, batteries, spare fuse, and user's manual.

CAUTION! – This product is not intended for medical use or use on humans

AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model Number	Price	Description
HHM290	$245	Digital multimeter/infrared thermometer with laser sighting dot/circle switch
Options and Accessories		
HHM290-SC	$15	Soft carrying case
HHM-TL	5	Replacement test leads (1set)
OS520-ADAPTOR-110V	25	110 Vac adaptor
OS520-ADAPTOR-220V	25	220 Vac adaptor
KTSS-HH	29	General purpose, immersion probe, type K
88001K	110	General purpose surface probe, type K
CAL-3-IR†	125	NIST-traceable calibration
TRIPOD	45	Lightweight tripod with soft carrying case

†*Consult Sales for prices on additional calibration services.*
Each unit comes complete with rubber boot, two (2) Type K beaded wire thermocouples, 6 "AA" alkaline batteries, test leads and operator's manual.
Ordering Example: HHM290, *digital multimeter/infrared thermometer with laser sighting,* **$245, HHM290-SC**, *soft carrying case,* **$15, KTSS-HH**, *general purpose immersion probe,* **$29, CAL-3-IR**, *NIST-traceable calibration,* **$125,** *and* **TRIPOD, $45,** *$245 + 15 + 29 + 125 + 45 =* **$459**.

High-Temperature Thermocouple Assemblies With Molded Transition Junctions
¹⁄₁₆ to ¼" Diameters, *Standard* Dimensions

Shown actual size ← 12" →//

Starts at
$19

ANSI color code shown	To order IEC color code see omega.com

OMEGACAL® Factory CAL AVAILABLE — MADE IN USA

MEETS OR EXCEEDS SPECIAL LIMITS OF ERROR (SLE) AND EN 60584-2: Tolerance Class 1

Models Highlighted have SUPER OMEGACLAD® XL Sheaths! Visit omega.com for Details

Color coded to calibration

☛ 12, 18, and 24" Lengths Standard†
☛ 304, 310, 316, 321 SS, Inconel or Super OMEGACLAD® XL Sheath
☛ Molded Junction Rated to 260°C (500°F)
☛ Color-Coded to Calibration
☛ 40" Teflon® Coated Lead Wires
☛ Stripped Lead Wire Termination—Connector Options Available

Thermocouple molded assemblies with transition joints of molded LCP high-temperature liquid crystal polymer provide an economical yet durable thermocouple probe for a variety of sensing applications. The measuring tip is limited only by thermocouple type and sheath material. Stainless steel sheaths have a maximum temperature of 900°C (1650°F) with Inconel 600 rated to 1150°C (2100°F). The calibration letter code is an integral part of the mold.

Junction Types
Exposed   *Grounded*   *Ungrounded*
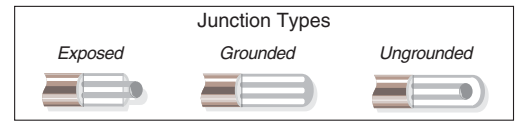
☐ **SUPER OMEGACLAD® XL HIGHLIGHTED!**

To Order *(Specify Model Number)*
ALL MODELS AVAILABLE FOR FAST DELIVERY!

Thermocouple Alloy	Sheath Dia.	Model No. 12" Length	Price G/E*	U*	Model No. 18" Length	Price G/E*	U*	Model No. 24" Length	Price G/E*	U*	Price/ Add'l foot
IRON-CONSTANTAN Inconel Sheath **J**	¹⁄₁₆"	JTIN-116(*)-12	$19.00	$20.00	JTIN-116(*)-18	$19.78	$23.78	JTIN-116(*)-24	$20.55	$24.55	$1.55
	⅛"	JTIN-18(*)-12	19.00	20.00	JTIN-18(*)-18	20.58	24.58	JTIN-18(*)-24	22.15	26.15	3.15
	³⁄₁₆"	JTIN-316(*)-12	19.00	20.00	JTIN-316(*)-18	21.18	24.18	JTIN-316(*)-24	23.35	26.35	4.35
	¼"	JTIN-14(*)-12	19.00	17.00	JTIN-14(*)-18	22.75	23.75	JTIN-14(*)-24	26.50	27.50	7.50
IRON-CONSTANTAN 304 SS Sheath **J**	¹⁄₁₆"	JTSS-116(*)-12	19.00	20.00	JTSS-116(*)-18	19.78	23.78	JTSS-116(*)-24	20.55	24.55	1.55
	⅛"	JTSS-18(*)-12	19.00	20.00	JTSS-18(*)-18	19.93	23.93	JTSS-18(*)-24	20.85	24.85	1.85
	³⁄₁₆"	JTSS-316(*)-12	19.00	20.00	JTSS-316(*)-18	20.58	23.58	JTSS-316(*)-24	23.15	25.15	3.15
	¼"	JTSS-14(*)-12	19.00	17.00	JTSS-14(*)-18	21.50	22.50	JTSS-14(*)-24	24.00	25.00	5.00
CHROMEGA®-ALOMEGA® Inconel Sheath **K**	¹⁄₁₆"	KTIN-116(*)-12	19.00	20.00	KTIN-116(*)-18	19.78	23.78	KTIN-116(*)-24	20.55	24.55	1.55
	⅛"	KTIN-18(*)-12	19.00	20.00	KTIN-18(*)-18	20.58	24.58	KTIN-18(*)-24	22.15	26.15	3.15
	³⁄₁₆"	KTIN-316(*)-12	19.00	19.00	KTIN-316(*)-18	21.18	24.18	KTIN-316(*)-24	23.35	26.35	4.35
	¼"	KTIN-14(*)-12	19.00	17.00	KTIN-14(*)-18	22.75	23.75	KTIN-14(*)-24	26.50	27.50	7.50
CHROMEGA®-ALOMEGA® 304 SS Sheath **K**	¹⁄₁₆"	KTSS-116(*)-12	19.00	20.00	KTSS-116(*)-18	19.78	23.78	KTSS-116(*)-24	20.55	24.55	1.55
	⅛"	KTSS-18(*)-12	19.00	20.00	KTSS-18(*)-18	19.93	23.93	KTSS-18(*)-24	20.85	24.85	1.85
	³⁄₁₆"	KTSS-316(*)-12	19.00	19.00	KTSS-316(*)-18	20.58	23.58	KTSS-316(*)-24	22.15	25.15	3.15
	¼"	KTSS-14(*)-12	19.00	17.00	KTSS-14(*)-18	21.50	22.50	KTSS-14(*)-24	24.00	25.00	5.00
CHROMEGA®-ALOMEGA® Super OMEGACLAD® XL Sheath **K**	¹⁄₁₆"	KTXL-116(*)-12	24.00	28.00	KTXL-116(*)-18	22.86	26.80	KTXL-116(*)-24	23.50	28.05	1.70
	⅛"	KTXL-18(*)-12	21.00	25.00	KTXL-18(*)-18	21.70	25.05	KTXL-18(*)-24	23.55	26.60	3.50
	³⁄₁₆"	KTXL-316(*)-12	21.00	25.29	KTXL-316(*)-18	24.45	26.25	KTXL-316(*)-24	26.60	28.70	4.80
	¼"	KTXL-14(*)-12	27.15	29.85	KTXL-14(*)-18	29.85	34.15	KTXL-14(*)-24	34.15	38.40	8.30
OMEGA-P®- OMEGA-N® †† Super OMEGACLAD® XL Sheath **N**	¹⁄₁₆"	NTXL-116(*)-12	22.26	26.25	NTXL-116(*)-18	22.86	26.80	NTXL-116(*)-24	23.50	28.05	1.70
	⅛"	NTXL-18(*)-12	19.86	23.25	NTXL-18(*)-18	21.70	25.05	NTXL-18(*)-24	23.55	26.60	3.50
	³⁄₁₆"	NTXL-316(*)-12	22.00	25.05	NTXL-316(*)-18	24.45	26.25	NTXL-316(*)-24	26.60	28.70	4.80
	¼"	NTXL-14(*)-12	27.15	29.85	NTXL-14(*)-18	29.85	34.15	NTXL-14(*)-24	34.15	38.40	8.30
CHROMEGA®-CONSTANTAN Inconel Sheath **E**	¹⁄₁₆"	ETIN-116(*)-12	19.00	20.00	ETIN-116(*)-18	19.93	23.93	ETIN-116(*)-24	20.85	24.85	1.85
	⅛"	ETIN-18(*)-12	19.00	20.00	ETIN-18(*)-18	20.58	24.58	ETIN-18(*)-24	22.15	26.15	3.75
	³⁄₁₆"	ETIN-316(*)-12	19.00	19.00	ETIN-316(*)-18	21.18	24.18	ETIN-316(*)-24	23.35	26.35	5.00
	¼"	ETIN-14(*)-12	19.00	17.00	ETIN-14(*)-18	22.75	23.75	ETIN-14(*)-24	26.50	27.50	7.50
CHROMEGA®-CONSTANTAN 304 SS Sheath **E**	¹⁄₁₆"	ETSS-116(*)-12	19.00	20.00	ETSS-116(*)-18	19.78	23.78	ETSS-116(*)-24	20.55	24.55	1.55
	⅛"	ETSS-18(*)-12	19.00	20.00	ETSS-18(*)-18	20.25	24.25	ETSS-18(*)-24	21.50	25.50	2.50
	³⁄₁₆"	ETSS-316(*)-12	19.00	19.00	ETSS-316(*)-18	20.58	23.58	ETSS-316(*)-24	22.15	25.15	3.15
	¼"	ETSS-14(*)-12	19.00	17.00	ETSS-14(*)-18	21.50	22.50	ETSS-14(*)-24	24.00	25.00	5.00
COPPER-CONSTANTAN Inconel Sheath **T**	¹⁄₁₆"	TTIN-116(*)-12	19.00	20.00	TTIN-116(*)-18	19.78	23.78	TTIN-116(*)-24	20.85	24.85	1.55
	⅛"	TTIN-18(*)-12	19.00	20.00	TTIN-18(*)-18	20.88	24.88	TTIN-18(*)-24	22.15	26.15	3.75
	³⁄₁₆"	TTIN-316(*)-12	19.00	19.00	TTIN-316(*)-18	21.18	24.18	TTIN-316(*)-24	23.35	26.35	5.00
	¼"	TTIN-14(*)-12	19.00	17.00	TTIN-14(*)-18	22.75	23.75	TTIN-14(*)-24	26.50	27.50	7.50
COPPER-CONSTANTAN 304 SS Sheath **T**	¹⁄₁₆"	TTSS-116(*)-12	19.00	20.00	TTSS-116(*)-18	19.78	23.78	TTSS-116(*)-24	20.55	24.55	1.55
	⅛"	TTSS-18(*)-12	19.00	20.00	TTSS-18(*)-18	20.25	24.88	TTSS-18(*)-24	21.50	25.50	2.50
	³⁄₁₆"	TTSS-316(*)-12	19.00	19.00	TTSS-316(*)-18	20.58	24.18	TTSS-316(*)-24	19.15	25.15	3.15
	¼"	TTSS-14(*)-12	19.00	17.00	TTSS-14(*)-18	21.50	23.75	TTSS-14(*)-24	24.00	25.00	5.00

** Specify junction type: E (exposed), G (grounded) or U (ungrounded). †Other lengths are available, consult Sales department. ††Supplied with stainless steel transition joints. **To order with 310, 316 or 321 SS sheath**, change "SS" in model number to "310SS", "316SS" or "321SS", respectively; no additional charge. Consult Sales for lengths between 2 to 12", or for lengths over 24". **Type N Inconel Sheathing is available, Contact Sales for part numbers. Ordering Examples: JT321SS-116U-24** Type J molded transition probe, ¹⁄₁₆" diameter, 321 SS sheath, ungrounded junction, 24" long, **$24.55**. **KTSS-18G-12**, molded transition junction probe, Type K, ⅛" O.D., 304 SS sheath, grounded junction, 12" length, **$19**.*

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ANSI color code shown

To order IEC color code see omega.com

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Shown smaller than actual size.

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☛ **NIST Calibration Available**

"TT" PFA Teflon® insulation

"GG" glass braid insulation

MOST POPULAR MODELS HIGHLIGHTED!

New! Fine 40-Gage Teflon® Wire

New! KAPTON® Insulation

To Order (Specify Model Number)

Model No. ANSI Color Code	AWG Gage	Diameter mm (in)	Insulation	Price, Pack of 5 1 m (40")	2 m (80")
5TC-GG-(*)-20-(**)	20	0.81 (0.032")	Glass Braid	$39	$49
5TC-GG-(*)-24-(**)	24	0.51 (0.020")	Glass Braid	33	43
5TC-GG-(*)-30-(**)	30	0.25 (0.010")	Glass Braid	33	43
5TC-TT-(*)-20-(**)	20	0.81 (0.032")	Teflon®	50	70
5TC-TT-(*)-24-(**)	24	0.51 (0.020")	Teflon®	39	49
5TC-TT-(*)-30-(**)	30	0.25 (0.010")	Teflon®	44	64
5TC-TT-(*)-36-(**)	36	0.13 (0.005")	Teflon®	50	70
5TC-TT-(*)-40-(**)	40	0.08 (0.003")	Teflon®	60	80
5TC-KK-(*)-20-(**)	20	0.81 (0.032")	Kapton®	50	70
5TC-KK-(*)-24-(**)	24	0.51 (0.020")	Kapton®	39	49
5TC-KK-(*)-30-(**)	30	0.25 (0.010")	Kapton®	60	80

* Insert calibration J, K, T, or E. **Specify length, insert "36" for 1 m or "72" for 2 m length.
Note: *For GG or TT wire, add **$5** per additional 300 mm (12") per package of 5.*
*For KK wire, add **$8** per additional 300 mm (12") per package of 5.*
Ordering Example: *5TC-TT-K-36-36, 5 each, Teflon® insulated thermocouples, Type K calibration (CHROMEGA®-ALOMEGA®), 36 AWG, 1 m (40") long, stripped lead termination, **$50**.*

Also Available: TAP Adhesive Labels!

Thermocouple adhesive labels secure wire probes to surfaces. **TAP** adhesive labels have a thickness of 0.064 mm (0.0022") and can be used at a maximum temperature of 180°C (356°F). They are made of a polymide film with a silicone pressure-sensitive adhesive.

Please see page F-16 for additional details and ordering information.

Model TAP, roll of 100 adhesive labels, $28, shown smaller than actual size

Warranty/Disclaimer

The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains and reserves the right to alter specifications without notice.

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When placing an order by telephone, please inform the salesperson that confirming paperwork will follow. To avoid duplication, mark your confirming paperwork **"Confirmation Only, Do Not Duplicate"** and include the salesperson's name. Send order confirmations to:

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P.O. BOX 2669
STAMFORD, CT 06906 USA

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Written orders are welcomed. If you are familiar with our products and do not need to consult with a salesperson, send or FAX your written orders to:

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P.O. Box 4047
Stamford, CT 06907-0047 USA
FAX: (203) 359-7700
or e-mail your order to:
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 intlsales@omega.com (international orders)

For fast, efficient processing of your order, please include:

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 Part No. and Description of Items Ordered
 Telephone Number of Requisitioner

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The prices of goods sold are those in effect at the time of sale. The prices listed are those in effect at the time of publication and are subject to change without notice. Please contact OMEGA's Sales Department for current prices. OMEGA will be pleased to furnish quotations either by mail, telephone, FAX, or e-mail upon request.

QUANTITY DISCOUNTS

Many items have quantity discount schedules. For large quantities and for products which do not have discount schedules listed, please consult the Sales Department.

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OMEGA is pleased to honor major credit cards for your ordering convenience: VISA, MasterCard and American Express.

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The minimum billing is $10.

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Domestic and international orders are shipped via UPS. Other qualified carriers are available upon request.

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Atlanta, GA 30374-0496 USA

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ADDITIONAL PAYMENT INFORMATION

U.S. Federal Tax I.D. No.: 06-6041011
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For delivery status, order changes, cancellations, in-warranty and out-of-warranty repairs, please contact OMEGA's Customer Service Department. Before returning any Product(s), please contact the Customer Service Department to obtain an Authorized Return (AR) number and shipping address. The designated AR number should then be marked on the outside of the return package. To avoid processing delays, please be sure to include: purchase order number, invoice number, name, address and phone number, product model and serial number, and repair instructions. Call Toll-Free for Service:

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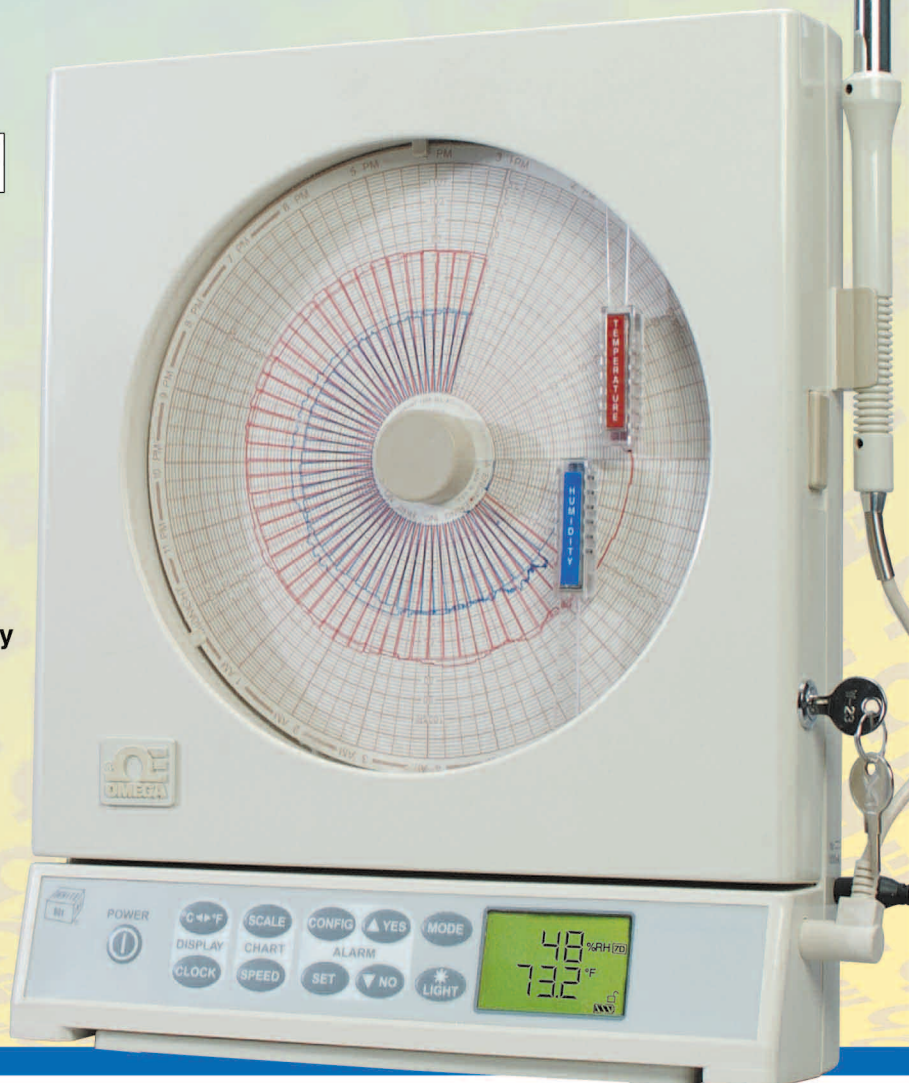MADE IN USA | NIST | CE | 2 YEAR WARRANTY | OMEGA CARE Extended Warranty Program | & EMC SERVICES | WHITE BOX

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