New Horizons® in Data Acquisition Systems

- Ethernet-Enabled Meters, Controllers, Signal Conditioners
- Multifunction, PCI-Bus A/D Boards
- DIN Rail Signal Conditioners
- Power Line Monitors
- Portable Dataloggers
- Wireless Transmitters
- Paperless Recorders
- Digital Storage Scope/Multimeter
- SUPERMETER® Infrared Pyrometer

Preview of New Horizons® Data Acquisition Handbook

Everything Available On The Internet omega.com®

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1-800-TC-OMEGA
Exceeding Your Expectations
For the past three decades, our handbooks have served as valuable reference tools for engineers around the world. Though we are an established direct-marketing pioneer, our people, facilities and superior client services go well beyond the OMEGA® handbooks. Since 1962, OMEGA has grown from manufacturing a single product line of thermocouples to being an established global leader in the technical marketplace, offering more than 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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Fast Delivery
OMEGA ships most of its orders within 48 hours. We also have overnight service available for customers who need product the next day.

Prices in U.S. Dollars

Welcome to OMEGA!

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For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website at www.omega.com

For Sales & Service 1-800-62-66342®
U.S.A. and Canada
The innovative OMEGA® iSeries devices feature state of the art technology, uncompromising accuracy, and quality backed by an extended 5-year warranty. The iSeries family includes extremely accurate digital panel meters and single loop PID controllers that are simple to configure and use, while providing tremendous versatility and a wealth of powerful features.

- User Friendly, Simple to Configure
- High Quality
- Extended 5-Year Warranty
- Powerful Features
- Free Software, Active X Controls
- Full Autotune PID Control
- Totally Programmable Color Displays, Standard
- High Accuracy ±0.5°C (0.9°F), 0.03% Reading
- Temperature Stability ±0.04°C/°C RTD and ±0.05°C/°C TC @ 25°C (77°F)
- Both RS-232 and RS-485 MODBUS on One Instrument Selectable from Menu, Optional
- Universal Inputs: Thermocouple, RTD, Process Voltage/Current, Built-in Excitation, Standard
- 2 Control or Alarm Outputs. Choice of dc Pulse, Solid State Relays, Mechanical Relays, Analog Voltage and Current
- Embedded Internet and Serial Communications
- Featuring optional "Embedded Internet" (specify EI option) the iSeries are the first instruments of their kind that connect directly to an Ethernet network and transmit data in standard TCP/IP packets, or even serve Web pages over a LAN or the Internet. The iSeries are also available with serial communications. With the C24 option, the user can select from the push-button menu between RS-232, RS-422, and RS-485, with straightforward ASCII commands or MODBUS.
- Programmable Color Display
- The OMEGA® iSeries is a family of microprocessor-based instruments offered in three true DIN sizes with NEMA-4, IP65 rated front bezels. All of the instruments share a similar set-up and configuration menu and method of operation, which is a tremendous time saver for integration of a large system.
- Universal Inputs
- Programmable Color Displays
- The iSeries family includes extremely accurate digital panel meters and single loop PID controllers that are simple to configure and use, while providing tremendous versatility and a wealth of powerful features.

The innovative OMEGA® iSeries measures process values in three separate locations, or to display three different measurements such as Temperature, Pressure, and Flow.

**QUALITY and TECHNOLOGY**
Designed and manufactured in the USA, the innovative OMEGA® Series of meters & controllers features an extended five (5) YEAR warranty at no extra charge. The iSeries packs a wealth of power and features into the smallest of packages, utilizing COB (chip-on-board) and SMT (surface mount technology) assembly techniques and automation. Every Series instrument is thoroughly calibrated and tested at several stages throughout production. The iSeries offers the highest accuracy for industrial instrumentation at 0.03% of reading. The analog-to-digital conversion utilizes a proprietary 20-bit ASIC (application specific integrated circuit) patented algorithms and smart filtering.

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

**10 Thermocouple Types**
The iSeries handles TEN (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 RTD’s and produces the most accurate RTD measurements. Handles both Pt 0.00385 and 0.00392 curves, and 100 (ohm), 500 (ohm) and 1000 (ohm). A choice of 2-, 3- and 4-wire RTD connections ensures the absolute highest degree of accuracy.

**Process Voltage and Current**
The OMEGA® iSeries measures process voltage: 0-100 millivolt, 0-1 Volt, 0-10 Volt ranges, and process current: 0-20 mA.
Analog Output
The optional analog output can be programmed within a range of 0-10 Vdc or 0-20 mA. It is selectable as either a control output or as a calibrated retransmission of the process value -- a unique feature among controllers.

Built-in Excitation Standard
The iSeries comes standard with built-in excitation for transmitters or other devices, 24 Vdc @ 25 mA. This means the same instrument can handle thermocouples, RTD’s, and 4-20 mA transmitters, with its own excitation. (Built-in excitation is not available with optional isolated RS-232/RS-485 serial communications and DC 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, cool/cool, cool/cool 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. Input types: J, K, T, E, R, S, B, C, N, J-DIN, RTD 100 ohm & 1 k ohm in 0.00385 or 0.00392, 0 to 20 mA, 0 to 100 mV, 0 to 1 V and 0 to 10 Vdc.

EMBEDDED INTERNET
The OMEGA® iSeries devices connect directly to an Ethernet network with a standard RJ-45 connector and can send and receive data in standard TCP/IP packets. (Please specify EI or C4EI option.) The iSeries devices can serve Web pages over an Ethernet LAN or even over the Internet making it possible to monitor and control a process through a web browser (such as Microsoft Internet Explorer) from anywhere in the facility or anywhere in the world.

Remote Control
For example, using an iSeries 1/8 DIN temperature controller to control a heater, an engineer can monitor the temperature, change set points or alarm points, turn the heater on and off, or make other modifications from anywhere on the local network, or anywhere on the Internet. The web pages are easily customized and secure password protected access to the devices is easily controlled. And it requires absolutely no special software on the engineer’s computer to view the data and "supervise" the controller--nothing other than a Web Browser.

The iSeries displays feature unique 9-segment LED characters, which greatly improves alphanumeric representations. The 7-segment LED characters found on most instruments are adequate for presenting numbers, but not letters. Words are easier to read with the unique 9-segment LED characters on the iSeries, which makes operating and programming simpler and easier.

Totally Programmable Color Displays
The OMEGA® 1/8, 1/16, and 1/32 are the first complete series of 1/8, 1/16 and 1/32 DIN process control instruments with totally programmable color displays. The display can be programmed to change color at any setpoint or alarm point.

AutoScaling
AutoScaling automatically shifts the decimal point right or left depending on the process value of the meter. AutoScaling is not active if the decimal point is assigned a fixed position.
To download information and to order online, visit www.omega.com

**Web Enabled Meters & Controllers**

**iSeries** Embedded Internet

*iSeries Meters and Controllers - Direct connection to ethernet (Each device has own IP Address)*

Email and Alarm

In fact, the iSeries controller can even send an email to the engineer (or anyone they choose) alerting them to an alarm condition or updating the status. Leveraging the technology of the Internet, the engineer could receive a message from the iSeries controller on an Internet enabled pager or cell phone. Most remarkable is that all this can be accomplished without a computer. The OMEGA® iSeries device (meter or controller) connects directly to the Ethernet Network -- not to the serial port of a computer functioning as a "server" and "master" to "slave" instruments connected through serial communications. The iSeries devices are also available with RS-232, RS-422, RS-485 and MODBUS serial communications. (Specify the C24 option.) In fact, the iSeries are the first instruments of this type which include all these serial protocols on one device, selectable from a menu.

Internet Appliances

With the EI option, these small ⅛ DIN and ⅛ DIN instruments are stand-alone Web Servers. The Ethernet and Web Server capability is actually embedded in the device.

(The smallest ⅛ DIN size device must be connected to an external iServer.) The OMEGA® iSeries device is assigned an IP address on the network and can also be assigned an easily remembered name such as "Heater1". In fact, the device could be assigned an authorized Internet IP address from an Internet Service Provider and function as a World Wide Web Server delivering whatever specific information is called for. (For an example, please see www.omega.com/iserver)

The iSeries devices work well with conventional industrial automation, data acquisition and control programs as well as Microsoft Visual Basic and Excel. OMEGA® provides free software and demos which makes it fast and easy to get up and running with many applications.

For More Information
omega.com/specs/iseries

**Internet IP Address**

"Web Controller"

**Standard Ethernet Hub or Switch**

**Ethernet LAN**

**INTERNET**

**$295**

⅛ DIN Controller

PC on LAN

PC on Internet

10BASE-T

10BASE-T

10BASE-T

10BASE-T

10BASE-T

i16 Controller with EI option

i8 Panel Meter with EI option

i16 Controller with EI option

i8 Controller with EI option

i8 Controller with EI option

iSeries Meters and Controllers - Direct connection to ethernet (Each device has own IP Address)
Operate the i™ Server with a Web Browser using the i™ Server Web Page

This home page is designed for our company product using iSeries serial communication protocol. It can be utilized for other products using the standard RS232/485 communication interface.

Features
Read Devices: Read variables from up to four different devices
Device Setpoints: Read and write the setpoint values to the device

For More Information
 omega.com/specs/iserver

iSeries Server
Model EIS is a DIN rail device which can be a hub connecting up to 32 instruments to the Ethernet and Internet. It is both a Web Server and an Ethernet-Serial bridge. To connect to the EIS, iSeries devices must feature the “C24” Serial Communications option. The OMEGA EIS is also compatible with the OMEGA DP41 family of ultra high performance digital panel meters and the OMEGA DRX family of Signal Conditioners featured elsewhere in this handbook.

$95 iSeries

✓ A Web Server and an Ethernet bridge combined
✓ Serves up to 32 devices
✓ High Quality
✓ Extended 5-Year Warranty
✓ Powerful Features

Model EIS is an alternate way to connect iSeries devices to an Ethernet LAN or Internet. Instead of Connecting each iSeries device directly to the Ethernet network, with individual IP Addresses for each device, the EIS can be a HUB/Server for up to 32 devices.

To Order

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIS</td>
<td>Embedded Internet Server, serves 32 devices</td>
<td>95</td>
</tr>
<tr>
<td>DRN-PS-750</td>
<td>Power supply (linear), 115 Vac input, 24 Vdc output @ 750 mA (powers 7 units)</td>
<td>130</td>
</tr>
<tr>
<td>DRN-PS-1000</td>
<td>Power supply (switching), 95 to 240 Vac input, 24 Vdc output @ 1 A (powers 10 units)</td>
<td>150</td>
</tr>
</tbody>
</table>

For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website at www.omega.com

For Sales & Service 1-800-32-66342®
U.S.A. and Canada
**iSeries Specifications**

**Accuracy:**
- ±0.5°C temp; 0.03% reading 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

**Display:** 4-digit, 9-segment LED

**Connection:**
- RS-485:
  - ASCII and Modbus protocol selectable from menu.
- RS-232/RS-422/RS-485:
  - Input value and status current display, alarm status, min/max, actual measured programmable setup capability; program to transmit selectable from menu; both

**Supported Protocols:**
- TCP/IP, ARP, HTTP/GET
- RS-232/RS-485: selectable from menu; both ASCII and modbus protocol selectable from menu.

**Process Voltage:** 0 to 100 mV, 0 to 1 V, 0 to 10 Vdc

**Process Current:** 0 to 20 mA (4 to 20 mA)

**Alarm 1 & 2 (programmable):**
- Type: Same as Output 1 & 2
- Operation: High/low, above/below, band, latch/unlatch, normally open/normally closed and process/deviation; front panel configurations

**Analog Output (programmable):**
- Non-Isolated, Retransmission 0 to 10 Vdc or 0 to 20 mA, 500 mA max (Output 1 only).

**Gain:** 0.00 to 0.01 or 0.001 for process

**Offset Adjustment:** -1999 to 9999 counts

**Control Mode:** Manual or Auto PID, Proportional, Proportional with Integral, Proportional with Derivative with Anti-reset Windup and ON/OFF

**Rate:** 0 to 3999 seconds

**Reset:** 0 to 3999 seconds

**Cycle Time:** 1 to 199 hours; set to 0 for ON/OFF operation

**Gain:** 0.5 to 99.99% of span; Setpoints 1 or 2

**Damping:** 00:00 to 0008

**Soak:** 0.00 to 99.59 (HH/MM), or OFF

**Ramp to Setpoint:** 0.00 to 99.99 (HH/MM), or OFF

**Auto Tune Mode:** Operator initiated from front panel

**Break Protection:** Programmable up- or down-scale

**Control Output 1 & 2: Relay:** 250 Vac or 30 Vdc @ 3 A (Resistive Load); configurable for on/off, PID and Ramp and Steal

**Excitation:** 5% Re-W to 265 Vdc @ 0.05 - 0.5 A (Resistive Load); continuous

**Network and Communications**

**Ethernet:** Standards Compliance IEEE 802.3 10Base-T

**Order Online**

To download information and to order online, visit **www.omega.com**

**Insulation**

**Power to Input or Output:** 2500 Vac per 1 minute test (RS-232/485, Input or Output)

**For Low Voltage Power Option:** 1500 Vac per 1 minute test (RS-232/485, Input or Output)

**Power to Relay/SSR Option:** 2500 Vac per 1 minute test

**Relay/SSR to Relay/SSR Option:** 2500 Vac per 1 minute test

**Power to Input or Output:** 250 Vac per 1 minute test

**Approvals:** CE per EN60581-1, EN50622-2, EN61010-1

**General**

**Power:** 50-240 Vac ±10%, 50-400 Hz*, 110-375 Vdc, equivalent voltage

**Low Voltage Power Option:** 24 Vac ±10%, 12 - 36 Vdc, 5 W from qualified safety approved source

**Environmental Conditions:**
- 0 to 55°C (32 to 131°F), 90% RH non-condensing
- Operation: 110-375 Vac ±10%, 50-60 Hz
- Storage: 2100 Vac, 50-60 Hz

**Dimensions**

**i/8 Series:** 48 H x 96 W x 127 mm D (1.89 x 3.78 x 5")

**i/16 Series:** 48 H x 96 W x 127 mm D (1.89 x 3.78 x 5")

**i/32 Series:** 25.4 H x 48 W x 127 mm D (1.0 x 1.89 x 5")

**Panel Cutout:** i/8 Series: 45 H x 92 mm W (1.772" x 3.622"), 1/32 DIN; i/16 Series: 45 mm (1.772") square; 1/16 DIN; i/32 Series: 22.5 H x 45 mm W (0.886" x 1.772"), 1/4 DIN

**Weight:** i/8 Series: 295 g (0.65 lb)

**i/16 Series:** 159 g (0.35 lb) i/32 Series: 127 g (0.28 lb)

* No CE compliance above 60 Hz
Remote Display/Programmer Compatible with all iSeries Meters and Controllers

**MONOGRAM**

- ½ DIN Panel Cutout or Surface Mount
- Big LED’s 21 mm (.83”)
- Alarm Indicators, and Color Change
- Serial Input ASCII RS-232, RS-485 Menu selectable
- NEMA-4 (IP65) ½ DIN Bezel
- 20 mm (0.80”) Behind Panel and only 39 mm (1.6”) over all

**REMOTE DISPLAY**

The RD4 Remote Display is compatible with all iSeries devices as well as the MICROMEGA® CN77000 controller and the DRN/DRX signal conditioners shown elsewhere in this handbook. The process value, peak or valley from any iSeries device can be displayed on one or more RD4 Remote Displays up to 1000 feet away. With the RD4, the user can also program and configure the iSeries meter or controller, to change set points or alarm points, for example (Compatible iSeries devices must feature the C24 or C4EI serial communications option.). The RD4 remote display can be mounted in a 1/8 DIN panel cutout, or surface mounted with the included bale. It features big bright 21mm (.83") 9-segment LED’s that can be programmed to change color between Green, Amber and Red to indicate alarms. Color can be programmed to return to normal or latch on until reset. Serial Connections can be made to an RJ-11 jack or screw terminals).

Remote Display **change color** at any set point

**Specifications**

- **Serial:**
  - ASCII Interface RS-232/RS-485
- **Baud rate:** 300, 600, 1200, 2400, 4800, 9600, 19200.
- **Data Formats:**
  - 7 data/odd parity/1 stop, 7 data/even parity/1 stop,
  - 8 data/no parity/1 stop.
- **Power Requirements:**
  - 10 to 36 VDC, or
  - 12 VDC/200ma AC-adapter
- **Storage Temperature:**
  - -20 to +85 degree C
- **Relative Humidity:**
  - 0 to 85%
- **Power Consumption:**
  - 2 W
- **Operating Temperature:**
  - 0-50 °C (-18 to 122°F)
- **Protection:**
  - NEMA-4x (IP65)
- **Mechanical Dimensions:**
  - 3.78” (96 mm) x 1.89” (48 mm) x 1.6 (39 mm)
- **Panel Cutout:**
  - 3.622” (92 mm) x 1.772” (45 mm)

To Order (*Specify Model No.)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD4</td>
<td>4-Digit Remote Display for iSeries Monitors and Controllers</td>
<td>$150</td>
</tr>
<tr>
<td></td>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td>CT485-Adap-110</td>
<td>110 Volt Power Supply</td>
<td>23.75</td>
</tr>
<tr>
<td>CT485-Adap-220</td>
<td>220 Volt Power Supply</td>
<td>23.75</td>
</tr>
</tbody>
</table>

Ordering Example: RD4, 4-digit remote display for iSeries and CT485-Adap-110, 110Vac power supply. $150 + 23.75 = $173.75.

Covered by U.S. and Foreign Patents and Pending Applications
I need a new job within the company before the window shuts.

Catbert is already up to "Q." Next week he gets an "S." What's his spelling?

He wouldn't say, but it starts with an "L."

Catbert says I have to get a new job within the company.

Could you find it within your heart... I'll check.

Nope. No jobs in there.

Today is my last day. I'm saying my farewells.

We've never talked, but I was working my way down the row and here you are.

So... let's stay in touch. Don't be a stranger.
12 Collection Series #12-001004

THIS SIGN IS MY PASSPORT TO CUBICLE TRANQUILITY.

I WONDER WHY NO ONE EVER THOUGHT OF IT BEFORE.

NICE SIGN. DOES IT KEEP AWAY THE UNDESIRABLES?

11/06/00 DILBERT © United Feature Syndicate, Inc.

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Stamford, CT 06907-0047

Omega.com
E-mail: info@omega.com

12 Collection Series #12-001005

YOU CAN COMPENSATE FOR YOUR LACK OF KNOWLEDGE BY TALKING TOO MUCH.

AND DON’T BE LIMITED BY SOCIETY’S EXPECTATION THAT YOU BE INTERESTING.

SOMETIMES I LIKE TO SIT QUIETLY AND THINK UP IDEAS.

NOTHING GOOD CAN COME FROM THAT.

11/08/00 DILBERT © United Feature Syndicate, Inc.

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Stamford, CT 06907-0047

Omega.com
E-mail: info@omega.com

12 Collection Series #12-001006

I’M LEARNING TO GOLF

NOW I WON’T BE EXCLUDED FROM ALL THE MALE-DOMINATED GOLF EVENTS.

HAVE YOU BEEN DOMINATING GOLF EVENTS?

SOMETIMES I CAN MAKE THEM MISS PUTTS ON TV.

11/09/00 DILBERT © United Feature Syndicate, Inc.

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Stamford, CT 06907-0047

Omega.com
E-mail: info@omega.com
The OMEGA® i/16 is the popular 1/16 DIN size (48mm square) meter or controller. The meter (model #DPi16) displays the process value and has no control outputs. The controller is available with a single (CNi16) or dual display (CNi16D) that displays a set point along with the process value. The CNi16 is the first 1/16 DIN controller with a display that can be programmed to change color at any set point or alarm point. The CNi16 is the first 1/16 DIN controller with the option of both RS-232 and RS-485 serial communications in one instrument with both MODBUS serial protocol and the straightforward OMEGA® ASCII protocol. OMEGA® provides free configuration and data acquisition software for the iSeries on CD-ROM and for download off the Web. The CNi16 enclosure has a NEMA 4 (IP65) rated front bezel. The electronics are removable from the front panel.

The CNi16 controller is available with two control outputs.

For More Information
omega.com/specs/iseries

Access Vital Information Anytime, Anywhere, on the World Wide Web
### Model i/16

**DUAL FRONT VIEW**

**FRONT VIEW**

**REAR VIEW**

**TOP VIEW**

**PANEL CUTOUT**

1/16 DIN

**PANEL THICKNESS**

6.4 (0.25) MAX

0.6 (0.03) MIN

**Dimensions shown in inches (mm)**

---

### To Order (*Specify Model No.)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPI16</td>
<td>Monitor only (no control outputs) ¼ DIN</td>
<td>$180</td>
</tr>
<tr>
<td>CNI16</td>
<td>Two control outputs ¼ DIN</td>
<td>$225</td>
</tr>
<tr>
<td>CNI16D</td>
<td>Two control outputs with dual display ¾ DIN</td>
<td>$245</td>
</tr>
<tr>
<td></td>
<td>Two solid state relays (SSFs): 1 A @ 120/240 Vac continuous</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>SSR and relay: Form “C” SPDT 3 A @ 120 Vac, 3 A @ 240 Vac</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>SSR and pulsed 10 Vdc @ 20 mA (for use with external SSR)</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>Relay and pulsed 10 Vdc @ 20 mA (for use with external SSR)</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>Two pulsed 10 Vdc @ 20 mA (for use with external SSR)</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>Analog output selectable as either control or retransmission of process value; 0 to 10 Vdc or 0-20 mA @ 500 ohm max. and SSR</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>Analog output 0 to 10 Vdc or 0-20 mA @ 500 ohm max. and Relay</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>Analog output 0 to 10 Vdc or 0-20 mA @ 500 ohm max. and pulse 10 Vdc</td>
<td>N/C</td>
</tr>
</tbody>
</table>

### COMMUNICATION

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-C24</td>
<td>Isolated RS-232 and RS-485 300 to 19.2 k baud</td>
<td>$60</td>
</tr>
<tr>
<td>-EI</td>
<td>Ethernet w/Embedded Web Server*</td>
<td>$50</td>
</tr>
<tr>
<td>-C4EI</td>
<td>Ethernet w/Embedded Web Server + Isolated RS-485/422*</td>
<td>$110</td>
</tr>
</tbody>
</table>

### POWER SUPPLY

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-DC</td>
<td>Standard power input: 90 to 240 Vac/dc, 50 to 400 Hz (no entry required)</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>10-34 Vac/dc (optional)</td>
<td>60</td>
</tr>
</tbody>
</table>

### FACTORY SETUP

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-FS</td>
<td>Factory Setup and Configuration (req. -C24 Serial Communication option)</td>
<td>N/C</td>
</tr>
</tbody>
</table>

*Embedded Internet option is available for the CNI16D only.

Ordering Example: CNI16D22 is a 1/16 DIN dual display PID Controller with two SSR control outputs, $245.

---

**For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website at www.omega.com**

---

**For Sales & Service**

1-800-32-66342®

U.S.A. and Canada
The OMEGA® CNi32 is the iSeries meter (DPi32) and controller (CNi32) in the extremely compact and increasingly popular 1/32 DIN size. The CNi32 is the most sophisticated and accurate instrument available in the small 1/32 DIN package, yet is still easy to configure.

The CNi32 introduces a number of unique features not yet found on any other 1/32 DIN instrument. The CNi32 is the first 1/32 DIN controller with a totally programmable display that can change color at any set point or alarm point. The unique 9-segment LED characters greatly improves alphanumeric representations.

The CNi32 handles more thermocouple, RTD, process voltage and current inputs than any other 1/32 DIN controller.

The CNi32 is the first 1/32 DIN controller with built-in excitation for transmitters or other devices, 24 Vdc @ 25mA.

The CNi32 is the first 1/32 DIN controller offering 2 SPDT (Single Pole Double Throw) Form C relays, instead of the single throw relays on typical 1/32 DIN controllers.

The CNi32 is the first to offer both RS-232 and RS-422/485 serial communications in one instrument (C24 option). Both ASCII protocol and modbus protocol are selectable from the menu.

The CNi32 connects to an Ethernet Network and the Internet with the external DIN Rail iServer ($95). One iServer can be a hub for up to 32 CNi32 devices (requires C24 option).
**Model i/32**

**i.Series Server**

Model EIS is a DIN rail mounted device which can be a hub connecting up to 32 instruments to the Ethernet and Internet. It is both a Web Server and an Ethernet-Serial bridge. To connect to the EIS, i.Series devices must feature the “C24” Serial Communications option.

### To Order (*Specify Model No.*):

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPI32</td>
<td>Monitor only (no control outputs) 1/32 DIN</td>
<td>$150</td>
</tr>
</tbody>
</table>

#### CONTROL OUTPUTS #1 & 2

Direct (Cool) or Reverse (Heat) Acting

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNI32 (<em>) (</em>)</td>
<td>Two control outputs 1/32 DIN</td>
<td>$195</td>
</tr>
<tr>
<td>2</td>
<td>Two solid state relays (SSR’s): 1 A @ 120/240 Vac continuous</td>
<td>N/C</td>
</tr>
<tr>
<td>3</td>
<td>SSR and relay: Form “C” SPDT 3 A @ 120 Vac, 3 A @ 240 Vac</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>SSR and pulsed 10 Vdc @ 20 mA (for use with external SSR)</td>
<td>N/C</td>
</tr>
<tr>
<td>3</td>
<td>2 relays: Form “C” SPDT 3 A @ 120 Vac, 3 A @ 240 Vac</td>
<td>N/C</td>
</tr>
<tr>
<td>4</td>
<td>Relay and pulsed 10 Vdc @ 20 mA (for use with external SSR)</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>Two pulsed 10 Vdc @ 20 mA (for use with external SSR)</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>Analog output selectable as either control or retransmission of process value; 0 to 10 Vdc or 0-20 mA @ 500 ohm max. and SSR</td>
<td>N/C</td>
</tr>
<tr>
<td>3</td>
<td>Analog output 0 to 10 Vdc or 0-20 mA @ 500 ohm max. and Relay</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>Analog output 0 to 10 Vdc or 0-20 mA @ 500 ohm max. and pulse 10 Vdc</td>
<td>N/C</td>
</tr>
</tbody>
</table>

#### NETWORKING OPTIONS

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-C24</td>
<td>Isolated RS-232 and RS-485/422</td>
<td>$60</td>
</tr>
<tr>
<td>-EIS</td>
<td>Ethernet-Serial; Bridge/Hub</td>
<td>$95</td>
</tr>
</tbody>
</table>

#### POWER SUPPLY

- DC: Standard power input: 90 to 240 Vac/dc, 50 to 400 Hz (no entry required) | N/C   |
- -DC: 10-34 Vac/dc (optional) | 60  |

#### FACTORY SETUP

- FS: Factory Setup & Configuration (req. -C24 Serial Communication option) | N/C   |

Ordering Example: CNI3222-C24 is a 1/32 DIN PID Controller with two solid state relays for PID control and serial communications, both RS-232 and RS-485, $195 + 60 = $255.
The OMEGA® i8 Series panel meters feature plug/removable connectors and a sturdy panel mounting sleeve with adjustable thumb nuts for easy secure installation.

The OMEGA® i8 is the 1/8 DIN model (96mm x 48mm) featuring the biggest “i-catch” iSeries display. The unique i8 display is much bigger and brighter than any other 1/8 DIN meter or controller. The “DPI8” model is an extremely accurate digital panel meter with no control outputs.

The “CNi8” adds a selection of outputs for complete control or alarm capability. The user can easily program the CNi8 for any control requirement from simple on-off to full autotune PID with a choice of SPDT relays, Solid State Relays, DC pulse, and Analog outputs.

Isolated Analog Output is available on this 1/8 DIN model, with or without 2 SPDT Form C relays. For Isolated Analog Output, specify model DPi8A for the monitor or CNi8A33 with two relays.

The OMEGA® i8 1/8 DIN enclosure has a NEMA 4 (IP65) rated front bezel and removable rear connectors for easy installation and wiring.

For More Information
omega.com/specs/iseries
Model i/8

$240

1/8 DIN meter
with 2 control outputs

$310

To Order (*Specify Model No.)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPi8C</td>
<td>Monitor only (no control outputs) ¼ DIN</td>
<td>$240</td>
</tr>
<tr>
<td>DPi8C</td>
<td>Monitor with Isolated Analog Output ¼ DIN</td>
<td>$285</td>
</tr>
<tr>
<td>DPi8A</td>
<td>Two control outputs ¼ DIN</td>
<td>$295</td>
</tr>
<tr>
<td>CNi8</td>
<td>Two solid state relays (SSR's): 1 A @ 120/240 Vac continuous</td>
<td>$310</td>
</tr>
<tr>
<td>CNi8C</td>
<td>Two control outputs ¼ DIN Short Case</td>
<td>$355</td>
</tr>
<tr>
<td>CNi8A</td>
<td>Isolated Analog Output w/ 2 control outputs*2</td>
<td>$365</td>
</tr>
</tbody>
</table>

* Analog Output (Option 5) is not available for the CNi8A controller

** Isolated Analog Output and Ethernet options are not available in the compact case.

NETWORK OPTIONS

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-EI</td>
<td>Ethernet with Embedded Internet</td>
<td>$55</td>
</tr>
<tr>
<td>-C24</td>
<td>Isolated RS-232 and RS-485</td>
<td>$60</td>
</tr>
<tr>
<td>-C4EI</td>
<td>Ethernet with Embedded Internet</td>
<td>$115</td>
</tr>
</tbody>
</table>

POWER SUPPLY

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-DC</td>
<td>10-34 Vac/dc (optional)</td>
<td>$60</td>
</tr>
</tbody>
</table>

FACTORY SETUP

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>-FS</td>
<td>Factory Setup and Configuration</td>
<td>N/C</td>
</tr>
</tbody>
</table>

Ordering Example: DPi8A is a 1/8 DIN Meter with isolated scalable analog retransmission of the process value, $295.
12

Collection Series
#12-001010

IT'S A PLEASURE TO MEET YOU, ALICE.

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Stamford, CT 06907-0047

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DILBERT® by Scott Adams

12

Collection Series
#12-001011

I'M FROM THE DOGBERT TEMP AGENCY. DO YOU NEED A HAND?

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DILBERT® by Scott Adams

12

Collection Series
#12-001012

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Stamford, CT 06907-0047

www.omega.com • e-mail: info@omega.com

DILBERT® by Scott Adams
$340
Dual Output Controller

First ¼ DIN Controller with Embedded Ethernet Connectivity (Optional)
Front Removable
Dual Display with Bright Color Changing Feature

The OMEGA CNi8DH and CNi8DV are high quality, highly accurate single loop Autotune PID Temperature and Process Controllers for 1/8 DIN (96mm x 48mm) horizontal or vertical panel cutouts. Both devices feature the same state of the art technology, uncompromising accuracy, and quality backed by an extended 5-year warranty.

The CNi8DH and CNi8DV are simple to configure and use, while providing tremendous versatility and a wealth of powerful features.

The CNi8DH and CNi8DV come standard with your choice of two control or alarm outputs in almost any combination: solid state relays (SSR) rated at 1 amp @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; or Analog Output (0-10 Vdc or 0-20mA) selectable for control or retransmission of the process value. Optional Isolated Analog Output can also be added to the dual relay or DC pulse standard outputs.

The universal input offers a selection of 10 thermocouple types as well as 2, 3 or 4 wire RTD’s, process voltage and current. The CNi8DH and CNi8DV are ideal controllers for use with transmitters and amplified transducers. Built in excitation is standard (24Vdc @ 25mA). The devices handle 0-20mA Process Current and Process Voltage in three scales: 0-100mV, 0-1V, and 0-10V.

The "Ten Point Linearization" (SL) option is a microprocessor and firmware upgrade which allows the user to easily program a custom linearization of a signal input, a valuable capability for demanding applications with nonlinear output. (The L option disables standard thermocouple and RTD inputs.)

As with all iSeries devices, the Process Value display can be programmed to change color between Green, Amber and Red at any set point or alarm point. The LED’s displaying the Process Value on the CNi8DH (horizontal 1/8 DIN) are the largest digits of any 1/8 DIN controller.

The highly recommended Networking and Communications options 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 which can be selected from the menu as well as both a straightforward ASCII protocol or MODBUS. The C4EI option includes both Ethernet and RS-485 ASCII/MODBUS on one device.

The iSeries 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 makes it fast and easy to get up and running with many applications.
Model i/8

The i/8 Series controllers feature plug/removable connectors and a sturdy panel mounting sleeve with adjustable thumb nuts for easy secure installation.

To Order (*Specify Model No.)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNi8</td>
<td>Two control outputs 1⁄8 DIN</td>
<td>$310</td>
</tr>
<tr>
<td>CNi8DH</td>
<td>Controller only 1⁄8 DIN Dual Display Horizontal</td>
<td>$340</td>
</tr>
<tr>
<td>CNi8DV</td>
<td>Controller only 1⁄8 DIN Dual Display Vertical</td>
<td>$340</td>
</tr>
<tr>
<td>CNi8A</td>
<td>Two control outputs w/Isolated Analog Output**</td>
<td>$365</td>
</tr>
<tr>
<td>CNi8SL</td>
<td>Two control outputs, Process only with 10 point linearization</td>
<td>$370</td>
</tr>
</tbody>
</table>

** Analog Output (Option 5) is not available for the CNi8A controller

Ordering Example: CNi8A22 is a 1⁄8 DIN Controller with isolated scalable analog retransmission of the process value $365.
Models Available for:
Thermocouple, RTD, Process Voltage & Current, Strain, Frequency, Pulse, AC Voltage and Current

Up to 1800 Vdc Isolation
DRN Series Provide 0-10 Vdc, 4-20 mA or 0-20 mA Output
DRX Series Provide RS-485 Output (OMEGA® Serial Protocol and MODBUS Serial Protocol)
Free Setup and Configuration Software
Factory Setup and Configuration Available at No Charge (for DRN Analog Output Models)

The DRN/DRX Series DIN rail mount signal conditioners represent state-of-the-art signal conditioning technology, ideal for all process and power monitoring applications. The intelligent microprocessor based modules provide a wealth of features including high accuracy inputs, field programmable ranges and 3-way electrical isolation. Models are available for most process signals including thermocouples, RTDs, process voltage, strain, frequency, pulse, ac voltage and ac current measurement. Two base styles are available, the DRN series which provides an output in an analog voltage or current format, as well as RS-232, and the DRX series which provides a digital RS-485 output.

DRN Series Analog Output
The DRN Series is the perfect front-end for a PLC or data acquisition system. It features an analog output signal which is directly proportional to the input signal. The output, which is scalable, may be set for 0 to 10 V, 4 to 20 mA or 0 to 20 mA. The module is easily configured for different operating parameters by connecting to a standard PC serial port and using the free DRN-RS232-SW Windows-based software package. Once the module is configured, the parameters are saved in non-volatile memory. The unit may be disconnected from the PC and only needs to be connected to a PC again if an operating parameter is to be changed.

Factory Setup and Configuration at No Extra Charge
To make your installation even easier, your DRN (Analog Output and RS-232) signal conditioners can be ordered preconfigured by the factory at no extra charge. You select the input types, ranges and output scale and we will program the instruments to your specific requirements in our calibration lab prior to shipment. For custom factory setup and scaling of the DRN model, please specify the “-FS” option.

DRX Series RS485 Serial Output
The DRX Series provide a complete sensor-to-computer solution. The modules accept a variety of input signals and produce an RS-485 signal that may be sent to a computer or virtually any other instrument containing an RS-485 serial port. The user can select between OMEGA® Serial Protocol and Modbus Protocol. The DRX series may be used to create a comprehensive distributed process monitoring network. Up to 32 modules may be interconnected over a distance of 1200 m (4000 ft) on a single pair of wires. Through the use of optional RS-485 repeaters, additional modules and distances are easily accommodated. With repeaters, up to 254 modules may be connected to a single RS-485 port. The modules feature a powerful, easy-to-use ASCII-based command set. Because communication is accomplished by simply reading and writing to and from the computer’s serial port, a program may be developed using any language that provides serial port support. No special software drivers or libraries are required.

Free Active X Controls
Free Active X Controls are provided for the DRN/DRX Series, making it easy to integrate the DRN/DRX Series with information systems using “Active X Containers” such as Microsoft Visual Basic and Microsoft Excel as well as with popular OLE and OPC compliant data acquisition, process control, and industrial automation software from OMEGA®, Wonderware, Intellution, Rockwell Automation, and Object Automation among others.

COMMON SPECIFICATIONS:
Input Power Supply: 10 to 32 Vdc
DRX Output: 2-wire (half duplex) RS-485 (OMEGA® Serial Protocol and Modbus Serial Protocol)
DRN Output: 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA, 10 V compliance
Isolation: 1800 V peak
Typical Step Response to 99%: 1 second
Operating Ambient: -5 to 55°C (23 to 131°F)
Storage Temperature Range: -40 to 85°C (-40 to 185°F)
Mounting: 35 mm DIN rail
Dimensions: 75 x 22.5 x 151 mm (2.95 x 0.89 x 4.77”)
**Signal Conditioners**

**Power Supplies**
- 24 Vdc Supply for DRN Modules
- DRN-PS-750 Linear Supply Powers up to 7 units
- DRN-PS-1000 Switching Supply Powers up to 10 Units

**Dimensions, DRN-PS-750:**
70 H x 75 W x 151 D mm (2.76 x 2.95 x 5.95”)

**To Order (Specify Model Number)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRN-PS-750</td>
<td>$130</td>
<td>Power Supply (linear), 115 Vac input, 24 Vdc output @ 750 mA (powers 7 units)</td>
</tr>
<tr>
<td>DRN-PS-1000</td>
<td>150</td>
<td>Power Supply (switching), 95 to 240 Vac input, 24 Vdc output @ 1 A (powers 10 units)</td>
</tr>
</tbody>
</table>

**Ordering Example:** DRN-PS-750 is a 24 Vdc output linear power supply, $130

**Accessories**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCP-485</td>
<td>229</td>
<td>Bi-directional RS-232-R3-485 converter for DRX series</td>
</tr>
<tr>
<td>DB9-RJ12</td>
<td>30</td>
<td>DB9 to RJ12 Connector Adapter, includes 7ft. RJ12 cord</td>
</tr>
<tr>
<td>DB25-RJ12</td>
<td>30</td>
<td>DB25 to RJ12 Connector Adapter, includes 7ft. RJ12 cord</td>
</tr>
<tr>
<td>RJ12T</td>
<td>15</td>
<td>RJ12T’ Split Connector for RS-485 instruments, includes 7 ft. RJ12 cord</td>
</tr>
<tr>
<td>DRX-RS485-SW</td>
<td>Free</td>
<td>Active X Controls and Configuration Software/DRX Windows 95/98/NT. Free Sample Visual Basic App Source Code</td>
</tr>
</tbody>
</table>

- FS Free Factory setup and scaling

**Input**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Thermocouple</th>
<th>RTD</th>
<th>ac Voltage</th>
<th>ac Current</th>
<th>Process</th>
<th>Strain/Bridge</th>
<th>Frequency Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRN/DRX-TC</td>
<td>Thermocouple temperature sensor</td>
<td>RTD Temperature sensor</td>
<td>ac Voltage</td>
<td>ac Current</td>
<td>dc Millivolt, Volt and Current</td>
<td>Millivolt</td>
<td>NAMUR Contact closure low level open collector</td>
</tr>
<tr>
<td>DRN/DRX-RTD</td>
<td>α = 385, 392 Full range of RTD 2, 3 or 4-wire</td>
<td>Full Scale Range: 400 mV to 400 V</td>
<td>Full Scale Range: 10 mA to 5 A</td>
<td>Full Scale Range: ±400 mV to ±10 V 0 to 20 mA</td>
<td>0 to 30 mV 0 to 100 mV ±100 mV</td>
<td>0 to 20 M pulses 0 to 50 kHz</td>
<td></td>
</tr>
</tbody>
</table>

**Input Range**
- J, K, T, E, R, S, B, N, J DIN thermocouple full range
- 0.1°C

**Accuracy**
- ±1°C

**Resolution**
- 0.05°C
- 0.2%

**Output**
- DRX Series: 2-wire (half duplex) RS-485/DRN Series: 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA

**Excitation**
- N/A

**For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website at www.omega.com**
The DRN-TC and DRX-TC signal conditioners provide high accuracy isolated measurement of thermocouple sensors. For maximum flexibility, the units feature user configurable thermocouple types which are fully field scalable. Two models are available, the DRN-TC which provides an analog output that is proportional to the input signal and the DRX-TC which uses a digital RS-485 communication link. Both models can accept 9 different thermocouple types. Thermocouples supported include J, K, T, E, R, S, B, N, and J DIN.

The output of DRN-TC can be user set for 0 to 10 V, 4 to 20 mA or 0 to 20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS-232 port of a personal computer and using the free DRN-RS232-SW, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

**Factory Setup and Configuration at No Extra Charge**

To make your installation even easier, your DRN (Analog Output and RS 232) signal conditioners can be ordered preconfigured by the factory at no extra charge. You select the input types, ranges and output scale and we will program the instruments to your specific requirements in our calibration lab prior to shipment. For custom factory setup and scaling of the DRN model, please specify the “-FS” option.

**Free Active X Controls**

Free Active X Controls are provided for the DRN/DRX Series, making it easy to integrate the DRN/DRX Series with information systems using “Active X Containers” such as Microsoft Visual Basic and Microsoft Excel as well as with popular OLE and OPC compliant data acquisition, process control, and industrial automation software from OMEGA, Wonderware, Intellution, Rockwell Automation, and Object Automation among others.

**SPECIFICATIONS**

- **Accuracy at 25°C:** ±1°C
- **Resolution:** 0.1°C
- **Power Consumption:** 2 W (84 mA @ 24 Vdc)
- **Input Types:** J, K, T, E, R, S, B, N, J DIN
- **Input Ranges:** See range chart
- **DRX Output:** 2-wire (half duplex)
- **DRN Output:** 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA, 10 V compliance
- **Thermocouple Default settings DRN:**
  - Input Type K, Range 0-1000 °F; Output 4-20 mA (Custom Settings available at no charge)
- **RS-485 (OMEGA® Serial Protocol and MODBUS SERIAL Protocol)**
- **DRN Output:**
  - J: -346 to 1400°F, -210 to 760°C
  - K: -454 to 2500°F, -270 to 1372°C
  - T: -454 to 752°F, -270 to 400°C
  - E: -454 to 1832°F, -270 to 1000°C
  - R/S: -58 to 3214°F, -50 to 1768°C
  - B: +212 to 3300°F, +100 to 1820°C
  - N: -454 to 2372°F, -270 to 1300°C
  - J DIN: -328 to 1652°F, -200 to 900°C

**To Order (Specify Model Number)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRX-TC</td>
<td>$250</td>
<td>Digital signal conditioner with RS-485 output for thermocouple inputs</td>
</tr>
<tr>
<td>DRN-TC</td>
<td>325</td>
<td>Signal conditioner with analog output for thermocouple inputs</td>
</tr>
<tr>
<td>-FS</td>
<td>Free</td>
<td>Factory setup and scaling</td>
</tr>
</tbody>
</table>

Each unit supplied with complete operator’s manual.

**Ordering Example:**

DRN-TC signal conditioner ($325), DB9-RJ12 connector adapter ($30) and DRN-RS232-SW software (N/C), $325 + $30 = $355.

For DRN/DRX accessories and power supplies, please see start of this section.

To download information and to order online, visit www.omega.com
**RTD Signal Conditioner**

**DIN Rail Mount DRN/DRX Series**

- **100Ω Pt, 500Ω Pt, 1000Ω Pt**
- **0.1°C Resolution**
- **±0.5°C Accuracy**
- **1800 V Isolation**
- **Free Setup and Configuration Software**
- **Factory Setup and Configuration Available at No Charge** (for DRN Analog Output models)

The DRN-RTD and DRX-RTD signal conditioners provide high accuracy isolated measurement of RTD temperature sensors. For maximum flexibility, the units feature user configurable RTD types which are fully field scalable.

Two models are available, the DRN-RTD which provides an analog output that is proportional to the input signal and the DRX-RTD which uses a digital RS-485 Communication link. Both models can accept 2, 3, or 4 wire 100Ω Pt, 500Ω Pt, 1000Ω Pt, and 10Ω Cu RTDs.

The output of DRN-RTD can be user set for 0 to 10 V, 4 to 20 mA or 0 to 20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS-232 port of a personal computer and using the DRN-RS232-SW, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

**Factory Setup and Configuration at No Extra Charge**

To make your installation even easier, your DRN (Analog Output and RS-232) signal conditioners can be ordered preconfigured by the factory at no extra charge. You select the input types, ranges and output scale and we will program the instruments to your specific requirements in our calibration lab prior to shipment. For custom factory setup and scaling of the DRN model, please specify the "-FS" option.

Please Specify:

- Type & Resistance
- Temperature High & Low
- Output Value High & Low

Example: Type Pt100; 0.00385; 4-wire; 0°C = 4 mA, 100°C = 20 mA

The DRX-RTD is a digital signal conditioner which communicates over an RS-485 communication link using either OMEGA® Serial Protocol or MODBUS Serial Protocol. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 ft. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.

**Free Active X Controls**

Free Active X Controls are provided for the DRN/DRX Series, making it easy to integrate the DRN/DRX Series with information systems using “Active X Containers” such as Microsoft Visual Basic and Microsoft Excel as well as with popular OLE and OPC compliant data acquisition, process control, and industrial automation software from OMEGA, Wonderware, Intellution, Rockwell Automation, and Object Automation among others.

**SPECIFICATIONS**

- **Accuracy at 25°C:** ±0.5°C
- **Input Types:** Platinum RTD, 100Ω, 500Ω or 1000Ω element (2, 3 or 4 wire, 385 or 392 curve)
- **Resolution:** 0.1°C
- **Power Consumption:** 2.4 W (100 mA @ 24Vdc)
- **Input Range:** -200 to 850°C (-328 to 1562°F)
- **DRX Output:** 2-wire (half duplex)
- **RS-485 (OMEGA® Serial Protocol and MODBUS Serial Protocol)**
- **DRN Output:** 0-to-10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA, 10 V compliance
- **RTD Default settings DRN:** Input PT100, .00385, 3-wire, Range 0-1000°F; Output 4-20 mA (Custom Settings available at no charge.)

**To Order (Specify Model Number)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRX-RTD</td>
<td>$250</td>
<td>Digital signal conditioner with RS-485 output for RTD inputs</td>
</tr>
<tr>
<td>DRN-RTD</td>
<td>355</td>
<td>Signal conditioner with analog output for RTD inputs</td>
</tr>
<tr>
<td>-FS</td>
<td>Free</td>
<td>Factory setup and scaling</td>
</tr>
</tbody>
</table>

Each unit supplied with complete operator’s manual.

Ordering Example: DRN-RTD digital signal conditioner ($355), DB9-RJ12 connector adapter (30) and DRN-RS232-SW (N/C), $355 + 30 = $385.

For DRN/DRX accessories and power supplies, please see start of this section.
**Wally:** We can’t find our CPR dummy. I need your help.

**Finding It?**

**Yes, assuming you can do that while lying on your back with your mouth open.**

---

**The company will be holding mandatory CPR training for all employees.**

**Grrr!**

**I am surrounded by pear-shaped, beef-eating, middle-aged men who I prefer not to touch.**

**Uh-oh... I hope that’s just stress.**

---

**Okay. We have one vote for using CPR. One vote for the Heimlich maneuver.**

**And two votes for sneaking up behind him and yelling “Boo.”**

**I don’t see how we can get behind him.**

**What if we drill a hole from below?**

---

**DILBERT © United Feature Syndicate, Inc.**
**Process Inputs Signal Conditioner**

**DIN Rail Mount DRN/DRX Series**

- **Unipolar/Bipolar 400 mV to 10 Vdc, 0 to 20 mA dc**
- **11 to 14-Bit Resolution**
- **±0.1% FS Accuracy**
- **14 Vdc Excitation**
- **1800 V Isolation**
- **250 Vac/1 Min. Input Overvoltage Protection** (Voltage Input Only)
- **Free Setup and Configuration Software**
- **Factory Setup and Configuration Available at No Charge (for DRN Analog Output models)**

The DRN-PR and DRX-PR signal conditioners provide high accuracy isolated measurement of process signals. For maximum flexibility, the units feature user configurable input types which are fully field scalable. Two models are available, the DRN-PR which provides an analog output that is proportional to the input signal and the DRX-PR which uses a digital RS-485 communication link. Both models can accept unipolar and bipolar signals from 400 mV to 10 Vdc full scale. A 0 to 20 mA current range is also available. The DRN/DRX-PR also contains a 14 Vdc reference voltage which may be used for transducer excitation. The output of DRN-PR can be user set for 0 to 10 V, 4 to 20 mA or 0 to 20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS-232 port of a personal computer and using the DRN-CONFIG, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

**Factory Setup and Configuration at No Extra Charge**

To make your installation even easier, your DRN (Analog Output and RS-232) signal conditioners can be ordered preconfigured by the factory at no extra charge. You select the input types, ranges and output scale and we will program the instruments to your specific requirements in our calibration lab prior to shipment. For custom factory setup and scaling of the DRN model, please specify the “-FS” option.

### Specifications

**Accuracy at 25°C:** ±0.1% FS

**Excitation:** 14 Vdc @ 25 mA

**Resolution:** 11 to 14-bit

**Power Consumption:**
- 2 W (84 mA @ 24 Vdc) without excitation
- 3 W (125 mA @ 24 Vdc) with excitation

**Input Ranges:**
- Uni/bipolar, 400 mV to 10 Vdc; 0 to 20 mA
- 0 V to 10 V, 4 to 20 mA or 0 to 20 mA

**DRX Output:**
- 2-wire (half duplex) RS-485 (OMEGA® Serial Protocol and MODBUS Serial Protocol)

**DRN Output:**
- 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA, 10 V compliance

**Process Default settings DRN:**
- Input Range 0-20mA; Output 4-20mA. Excitation 14V (Custom Settings available at no charge.)

**Free Active X Controls**

Free Active X Controls are provided for the DRN/DRX Series, making it easy to integrate the DRN/DRX Series with information systems using “Active X Containers” such as Microsoft Visual Basic and Microsoft Excel as well as with popular OLE and OPC compliant data acquisition, process control, and industrial automation software from OMEGA, Wonderware, Intellution, Rockwell Automation, and Object Automation among others.

### To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRX-PR</td>
<td>$275</td>
<td>Digital signal conditioner with RS-485 output for process signals</td>
</tr>
<tr>
<td>DRN-PR</td>
<td>$325</td>
<td>Signal conditioner with analog output for process signals</td>
</tr>
<tr>
<td>-FS</td>
<td>Free</td>
<td>Factory setup and scaling</td>
</tr>
</tbody>
</table>

Each unit supplied with complete operator’s manual.

**Ordering Example:** DRX-PR digital signal conditioner with RS-485 output for process signals ($275), plus DRN-PS-750 power supply, 115 Vac input, 24 Vdc output @ 750 mA ($130), $275 + 130 = $405

For DRN/DRX accessories and power supplies, please see start of this section.
Strain Gage/Bridge Transducer Signal Conditioner
DIN Rail Mount DRN/DRX Series

$300
DRX-ST

- Unipolar/Bipolar
  30 mV to 100 mV
- 13-Bit Resolution
- 10 Vdc Excitation
- 0.2% FS Accuracy
- 1800 Volts Isolation
- 250 Vac/1 Min. Input
- Overvoltage Protection
- Free Setup and Configuration Software
- Factory Setup and Configuration Available at No Charge (for DRN Analog Output models)

The DRN-ST and DRX-ST signal conditioners provide high accuracy isolated measurement of strain gages, load cells and other bridge based transducers. For maximum flexibility, the units feature user configurable input types which are fully field scalable. Two models are available, the DRN-ST which provides an analog output that is proportional to the input signal and the DRX-ST which uses a digital RS-485 Communication link. Both models can accept signals from 30 to 100 mV full scale and provide 10 Vdc reference voltage which may be used for transducer excitation. The output of DRN-ST can be user set for 0 to 10 V, 0 to 20 mA or 4 to 20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS-232 port of a personal computer and using the DRN-CONFIG, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

Factory Setup and Configuration Available at No Charge (for DRN Analog Output models)

To make your installation even easier, your DRN (Analog Output and RS-232) signal conditioners can be ordered preconfigured by the factory at no extra charge. You select the input types, ranges and output scale and we will program the instruments to your specific requirements in our calibration lab prior to shipment. For custom factory setup and scaling of the DRN model, please specify the "-FS" option.

Please Specify:
- Input Value High & Low
- Output Value High & Low
- Excitation: 10 or 14 Volts dc
- Ratiometric or Non-Ratiometric

**Example:**
- Input Value: 0 V = 4 mA, 100 mV = 20 mA
- Excitation 10 V, Ratiometric

The DRX-ST is a digital signal conditioner which communicates over RS-485 communication link using either OMEGA® Serial Protocol or MODBUS Serial Protocol. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 feet. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.

**Free Active X Controls**
Free Active X Controls are provided for the DRN/DRX Series, making it easy to integrate the DRN/DRX Series with information systems using “Active X Containers” such as Microsoft Visual Basic and Microsoft Excel as well as with popular OLE and OPC compliant data acquisition, process control, and industrial automation software from OMEGA, Wonderware, Intellution, Rockwell Automation, and Object Automation among others.

**SPECIFICATIONS**
- **Accuracy at 25°C:** ±0.2% FS
- **Resolution:** 13 to 15 bit
- **Excitation:** 10 V @ 30 mA
- **Power Consumption:** 2 W without excitation (84 mA @ 24 Vdc), 3 W with excitation (125 mA @ 24 Vdc)
- **Input Ranges:**
  - 0 to 30 mV
  - 0 to 100 mV
- **DRX Output:** 2-wire (half duplex) RS-485 (OMEGA® Serial Protocol and MODBUS Serial Protocol)
- **DRN Output:**
  - 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA, 10 Vdc compliance
  - Strain Default settings
    - DRN:
      - Input Range 0-30mV; Output 4-20mA
      - Excitation 10V Ratiometric (Custom Settings available at no charge.)

**To Order (Specify Model Number)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRX-ST</td>
<td>$300</td>
<td>Digital signal conditioner for strain gages and bridge transducers with RS-485 output</td>
</tr>
<tr>
<td>DRN-ST</td>
<td>345</td>
<td>Signal conditioner for strain gages and bridge transducers with analog output</td>
</tr>
<tr>
<td>-FS</td>
<td>Free</td>
<td>Factory setup and scaling</td>
</tr>
</tbody>
</table>

Each unit supplied with complete operator’s manual.

**Ordering Example:** DRX-ST digital signal conditioner for strain gages and bridge transducers with RS-485 output ($300), plus DCP-485 bi-directional RS-232-RS-485 converter for DRX series ($229), $300 + 229 = $529.

For DRN/DRX accessories and power supplies, please see start of this section.
The DRN-FP and DRX-FP signal conditioners provide high accuracy isolated measurement of frequency and pulse signals. For maximum flexibility, the units feature user configurable input types which are fully field scalable.

Two models are available, the DRN-FP which provides an analog output that is proportional to the input signal and the DRX-FP which uses a digital RS-485 communication link. Both models measure frequency signals up to 50 kHz and can count up to two million pulses. The DRX-FP and DRN-FP are compatible with a wide variety of transducers including proximity, switch, magnetic pickup, NAMUR, contact closure and open collector transducers. The output of DRN-FP can be user set for 0 to 10 V, 4 to 20 mA or 0 to 20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS-232 port of a personal computer and using the DRN-RS232-SW, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

Factory Setup and Configuration at No Extra Charge
To make your installation even easier, your DRN (Analog Output and RS-232) signal conditioners can be ordered preconfigured by the factory at no extra charge. You select the input types, ranges and output scale and we will program the instruments to your specific requirements in our calibration lab prior to shipment. For custom factory setup and scaling of the DRN model, please specify the “-FS” option.

Please Specify:
Input Signal or Sensor Type
Input Frequency High & Low
Output Value High & Low
Excitation: 10 or 14 Volts dc
Magnetic Pickup (2-wire)

Example: 0 Hz = 4 mA,
1000 Hz = 20mA, Excitation N/A

The DRX-FP is a digital signal conditioner which communicates over an RS-485 communication link using either OMEGA® Serial Protocol or MODBUS Serial Protocol. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 ft. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.

Free Active X Controls
Free Active X Controls are provided for the DRN/DRX Series, making it easy to integrate the DRN/DRX Series with information systems using “Active X Containers” such as Microsoft Visual Basic and Microsoft Excel as well as with popular OLE and OPC compliant data acquisition, process control, and industrial automation software from OMEGA, Wonderware, Intellution, Rockwell Automation, and Object Automation among others.

SPECIFICATIONS
Accuracy at 25°C:
±0.02% FS for frequency,
±0.01% FS for pulse input
Resolution: 15 to 19-bit
Power Consumption:
2.4 W (100 mA @ 24 Vdc)
without excitation, 3 W
(125 mA @ 24 Vdc) with excitation
Input Ranges:
Frequency from 200 Hz
to 50 kHz pulse from 20,000
to 200,000,000 (200M) pulses
full scale
DRX Output:
2-wire (half duplex) RS-485
(OMEGA® Serial Protocol
and MODBUS Serial Protocol)
DRN Output:
0 to 10 V @ 10 mA max;
0 to 20 mA or 4 to 20 mA
FP Default settings DRN:
Input 0-20 KHz; Output 4-20 mA
(Custom Settings available at no charge)

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRX-FP</td>
<td>$250</td>
<td>Digital signal conditioner with RS-485 output for frequency/pulse inputs</td>
</tr>
<tr>
<td>DRN-FP</td>
<td>$295</td>
<td>Signal conditioner with analog output for frequency/pulse inputs</td>
</tr>
<tr>
<td>-FS</td>
<td>Free</td>
<td>Factory setup and scaling</td>
</tr>
</tbody>
</table>

Each unit supplied with complete operator’s manual.
Ordering Example: DRN-FP signal conditioner ($295), DB9-RJ12 connector adapter ($30) and DRN-RS232-SW (N/C), $295 + $30 = $325.
For DRN/DRX accessories and power supplies, please see start of this section.
AC Voltage/Current Signal Conditioners

$270

DRX-ACV

Please Specify:

DRN-ACV: Input Value High and Low, Output Value High & Low
Example: 0 volts = 4 mA, 400 Vac = 20 mA
DRN-ACC: Input Value High & Low, Output Value High & Low
Example: 0 A = 4 mA, 5 A = 20 mA

The DRX-ACC and DRX-ACV are digital signal conditioners which communicate over an RS-485 communication link using either OMEGA® Serial Protocol or MODBUS Serial Protocol. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 ft. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.

Free Active X Controls
Free Active X Controls are provided for the DRN/DRX Series, making it easy to integrate the DRN/DRX Series with information systems using “Active X Containers” such as Microsoft Visual Basic and Microsoft Excel as well as with popular OLE and OPC compliant data acquisition, process control, and industrial automation software from OMEGA, Wonderware, Intellution, Rockwell Automation, and Object Automation among others.

SPECIFICATIONS
Accuracy at 25°C: ±0.2% FS
Resolution: 10 to 14-bit

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRX-ACC</td>
<td>$270</td>
<td>Digital signal conditioner with RS-485 output for ac current inputs</td>
</tr>
<tr>
<td>DRX-ACV</td>
<td>270</td>
<td>Digital signal conditioner with RS-485 output for ac current inputs</td>
</tr>
<tr>
<td>DRN-ACC</td>
<td>345</td>
<td>Signal conditioner with analog output for ac voltage inputs</td>
</tr>
<tr>
<td>DRN-ACV</td>
<td>345</td>
<td>Signal conditioner with analog output for ac voltage inputs</td>
</tr>
<tr>
<td>-FS</td>
<td>Free</td>
<td>Factory setup and scaling</td>
</tr>
</tbody>
</table>

Each unit supplied with complete operator’s manual.

Ordering Example: DRN-ACV signal conditioner ($345), DB9-RJ12 connector adapter ($30) and DRN-RS232-SW (N/C), $345 + $30 = $375.

For DRN/DRX accessories and power supplies, please see start of this section.
12
Collection
Series
#12-001022

12/08/00 DILBERT © United Feature Syndicate, Inc.

Collection
Series
#12-001023

12/09/00 DILBERT © United Feature Syndicate, Inc.

Collection
Series
#12-001024

12/11/00 DILBERT © United Feature Syndicate, Inc.
DIN-100 OMEGABUS® Series
DIN Rail Mount Digital Transmitters

$140
Basic Unit

- Complete Sensor to RS-485 Interface
- 500V RMS Analog Input Isolation
- 15-Bit Measurement Resolution
- Continuous Self-Calibration; No Adjustments of any Kind
- Programmable Digital Filter
- Requires +5VDC Supply
- Transient Suppression on RS-485 Communications Lines
- Screw Terminal Plug Connectors Supplied

APPLICATIONS
- Process Monitoring and Control
- Remote Data Logging to any Host Computer
- Product Testing
- Interface to PLC

The DIN-100 Sensor to Computer Modules are a family of data acquisition modules that convert analog input signals to digital data and transmit via RS-485 to a controller which may be a computer or other processor-based equipment. The modules can measure temperature, pressure, voltage, current, digital input or digital output signals. The modules provide direct connection to a wide variety of sensors and perform all signal conditioning, scaling, linearization and conversion to either linearized ASCII data values or Modbus RTU data values. Features such as address, baud rate, parity, echo, etc., are selectable using simple commands over the RS-485 port.

The selections are stored in nonvolatile EEPROM which maintains data even after power is removed.

The key to the DIN-100 Series is that the modules are easy to use. You do not need engineering experience in complicated data acquisition hardware. With these modules, anyone familiar with a personal computer can construct a data acquisition system. This modular approach to data acquisition is extremely flexible, easy to use and cost effective. Data is acquired on a per channel basis so you only buy as many channels as you need. The modules can be mixed and matched to fit your application. They can be placed remote from the host and from each other. You can string up to 247 modules on a twisted pair of wires by using RS-485 with repeaters.

All modules are supplied with screw terminal plug connectors. The connectors allow system expansion, reconfiguration or repair without disturbing field wiring. No charge utility software is available to make the DIN-100 modules easier to learn and use.

THEORY OF OPERATION
Each module is a complete single-channel data acquisition system. Each unit contains analog signal conditioning circuits optimized for a specific input type. Sensor signals are converted to digital data with a microprocessor-controlled integrating A/D converter. Offset and gain errors in the analog circuitry are continuously monitored and corrected using microprocessor techniques. The DIN-100 module converts the digital signal data and stores the resultant data in a memory buffer. The modules continuously convert data at the rate of 8 conversions per second and store the latest result in the buffer.

Host processors may request data by sending a query to the module. The DIN-100 module will instantly respond by communicating the memory buffer data back to the host processor. Up to 247 modules may be linked to a single RS-485 port. Each module on a serial line is identified by a unique user-programmable address. This addressing technique allows modules to be interrogated in any order.
DIGITAL INPUTS/OUTPUTS
DIN-170 digital output modules contain open-collector transistor switches that may be controlled by the host processors. These switches may be used to control solid-state relays which in turn may control heaters, pumps and other power equipment. The digital inputs may be read by the host processor and used to sense the state of remote digital signals. They are ideal for sensing the state of limit or safety switches.

DIGITAL FILTER
The DIN-100 analog input modules include two unique programmable single pole digital filters. The filter is used to smooth analog data in noisy environments. Separate time constants may be specified for small and large signal changes. Typically a large time constant is specified for small signal changes to filter out noise and provide stable output readings. A smaller time constant may be chosen for large signal changes to provide fast response to such changes.

COMMAND SET
The DIN-100 Series uses the Modbus RTU or ASCII protocol for communication. The Modbus RTU binary protocol uses a master-slave technique, in which only the master device can initiate transactions. The slave devices respond by supplying the requested data to the master or by taking the action requested in the query. The master can address any slave device. The returned messages are considered response messages. The supported master codes are below in the chart.

<table>
<thead>
<tr>
<th>Command Set</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI</td>
<td>Digital Input</td>
</tr>
<tr>
<td>DO</td>
<td>Digital Output</td>
</tr>
<tr>
<td>RD</td>
<td>Read Data</td>
</tr>
<tr>
<td>RS</td>
<td>Read Setup</td>
</tr>
<tr>
<td>RZ</td>
<td>Read Zero</td>
</tr>
<tr>
<td>WE</td>
<td>Write Enable</td>
</tr>
</tbody>
</table>

UTILITY SOFTWARE
Complimentary Utility Software is included with each purchase order. The software is compatible with Windows 95, 98, NT 4.0+, 2000 operating systems and distributed on CD-ROM. The Utility Software simplifies configuration of all user-selectable options such as device address, baud rate and filtering constants. The latest version of the software is always downloadable from our web site.

PROCESS CONTROL SOFTWARE
Modbus RTU protocol is supported by virtually all commercial process control software programs available today. These programs operate on IBM and compatible personal computers in the Windows 95, 98, NT and IBM OS/2 environments.

DIN-100 COMMON SPECIFICATIONS
(typical at +25°C and nominal power supply unless otherwise noted)

**ANALOG**
Channels: single channel analog input
Common Mode Rejection: 500V RMS max CMV, input to output at 60Hz
Leakage Current: input to output at 115V RMS, 60Hz; <2μA RMS
Resolution: 15 bit measurement resolution
Conversion Speed: 8 conversions per second
Calibration: autozero and autocalibration; no adjustment pots

**DIGITAL**
Microcomputer: 8-bit CMOS; digital scaling, linearization and calibration
Memory: nonvolatile memory eliminates pots and switches

**DIGITAL FILTERING**
Filtering: small and large signal with user selectable time constants from 0 to 16 seconds

The ASCII protocol is a command and response protocol using ASCII characters for easy troubleshooting and interpretation of data values.

<table>
<thead>
<tr>
<th>Command and Definition</th>
<th>Typical Command Message ($) prompt</th>
<th>Typical Response Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI</td>
<td>$1DI</td>
<td>*0003</td>
</tr>
<tr>
<td>DO</td>
<td>$1DOFF</td>
<td>*</td>
</tr>
<tr>
<td>RD</td>
<td>$1RD</td>
<td>*-00072.00</td>
</tr>
<tr>
<td>RS</td>
<td>$1RS</td>
<td>*31070142</td>
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<tr>
<td>RZ</td>
<td>$1RZ</td>
<td>*+000000.00</td>
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<td>WE</td>
<td>$1WE</td>
<td>*</td>
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</table>

Write Protected Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CZ</td>
<td>Clear Zero</td>
</tr>
<tr>
<td>RR</td>
<td>Remote Reset</td>
</tr>
<tr>
<td>SU</td>
<td>Setup Module</td>
</tr>
<tr>
<td>TS</td>
<td>Trim Span</td>
</tr>
<tr>
<td>TZ</td>
<td>Trim Zero</td>
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</table>

<table>
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<th>Modbus RTU Functions and Descriptions</th>
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<th>04</th>
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<th>06</th>
<th>15</th>
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</thead>
<tbody>
<tr>
<td>Read Coil Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Digital Inputs)</td>
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</tr>
<tr>
<td>Read Input Register</td>
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<td></td>
</tr>
<tr>
<td>(Analog Inputs)</td>
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<td></td>
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<tr>
<td>Force Single Coil</td>
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<tr>
<td>(One Digital Output)</td>
<td></td>
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</tr>
<tr>
<td>Preset Single Register</td>
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<tr>
<td>(RTU Protocol)</td>
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</tr>
<tr>
<td>Force Multiple Coils</td>
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<tr>
<td>(Multiple Digital Output)</td>
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</tr>
</tbody>
</table>

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For Sales & Service 1-800-32-66-342®
U.S.A. and Canada
**COMMUNICATIONS**

Protocol: communications in ASCII or MODBUS-RTU via RS-485 ports

Baud Rates: selectable baud rates; 300, 600, 1200, 2400, 4800, 9600, 19200, 38400

Data Format: NRZ asynchronous data format; 1 start bit, 8 data bits, 1 parity bit and 1 stop bit

Parity: odd, even, none

Address: user selectable channel address

Multi-Drop Modules: up to 247 multi-drop modules per host serial port

Communications: distance up to 4,000 feet (RS-485)

Transmit Suppression: on RS-485 communications lines

Communications Setups: stored in EEPROM

**SPECIFICATIONS FOR SPECIFIC MODULES**

**DIN-100 VOLTAGE INPUTS**

Voltage Ranges: ±10mV, ±100mV, ±1V, ±5V, ±10V, ±100Vdc

Resolution: 0.01% of FS (4 digits)

Accuracy: ±0.02% of FS max

Common Mode Rejection: 100dB at 50/60Hz

Zero Drift: ±1 count max (autozero)

Span Tempco: ±50ppm/°C max

Input Burnout Protection: to 250Vdc normal mode

Input Impedance: ≤ ±1V input = 100MΩ min; ≥ ±5V input = 1MΩ min

**DIN-120 CURRENT INPUTS**

Currents: 4-20 mA

Resolution: 0.04% of FS

Accuracy: 0.04% of FS

Common Mode Rejection: 100dB at 50/60Hz

Zero Drift: ±1 count max (autozero)

Span Tempco: ±50ppm/°C max

Voltage Drop: ±0.1V max

**DIN-130 THERMOCOUPLE INPUTS**

Thermocouple Input: automatic cold junction compensation and linearization, open thermocouple indication, overrange indication

Thermocouple Types: J, K, T, E, R, S, B, C (factory set)

Ranges: J = -200 to 760°C; B = 0 to 1820°C; K = -150 to 1250°C; S = 0 to 1750°C; T = -200 to 400°C; R = 0 to 1750°C; E = -100 to 1000°C; C = 0 to 2315°C

Resolution: ±1°C

Overall Accuracy (error from all sources) from 0 to 40°C Ambient: ±1.0°C max (J, K, T, E); ±2.5°C max (R, S, B, C) (300°C to FS)

Common Mode Rejection: 100dB at 50/60Hz

Input Impedance: 100 MΩ min

Lead Resistance Effect: <20µV per 350 Ω

Input Burnout Protection: to 250Vac normal mode

**DIN-140 RTD INPUTS**

RTD Input: automatic linearization and lead compensation

RTD Types: α = .00385, .00392, 100 Ω at 0°C; .00388, 100 Ω at 25°C

Ranges: .00385 = -200 to 850°C; .00392 = -200 to 600°C; .00388 = -100 to 125°C

Resolution: 0.1°C

Accuracy: ±0.3°C

Common Mode Rejection: 100dB at 50/60Hz

Input Connections: 2, 3, or 4 wire

Excitation Current: 0.25mA

Lead Resistance Effect: 3 wire = 2.5°C per Ω of imbalance; 4 wire = negligible

Max Lead Resistance: 50 Ω

Input Burnout Protection: to 120Vac normal mode

**DIN-145 THERMISTOR INPUTS**

Thermistor Types: 2252 Ω at 25°C

Range: 0 to 100°C

Resolution: 0.01°C or F
Accuracy: ±0.1°C
Common Mode Rejection:
100dB at 50/60Hz
Input Burnout Protection:
to 30Vdc normal mode

DIN-150 BRIDGE INPUTS
Voltage Ranges: ±30mV, ±100mV
Resolution: 10µV (mV spans);
0.02% of FS (V span)
Accuracy: ±0.05% of FS max
Common Mode Rejection: 100dB
at 50/60Hz
Input Burnout Protection: to 30Vdc
Offset Control: full input range
Excitation Voltage: 5V, 10Vdc, 50mA max
Zero Drift: ±1µV/°C max
Span Tempco: ±50ppm/°C max

DIN-160 FREQUENCY INPUTS
Range: 1Hz to 20KHz
Resolution:
0.005% of reading + 0.01Hz
Accuracy: ±0.01% of reading ±0.01Hz
Tempco: ±20ppm/°C
Switching Level: selectable 0V, +2.5V
Hysteresis: adjustable, 10mV-1.0V
Input Burnout Protection: 250Vac

DIN-170 DIGITAL INPUTS/OUTPUTS
Digital I/O: 6 digital inputs or
6 digital outputs; inputs/outputs
are read/set in parallel
Isolation:
isolated from power supply ground
Input Voltage Levels:
+30V without damage
Input Switching Levels: high, 3.5V min; low, 1.0V max
Outputs: open collector
to 30V, 100mA max, load
Vsat: 1.0V max @ 100mA

DIN-190 RS-232/485 CONVERTER/REPEATER
Baud Rates: 300-115200
(dip-switch selectable)
Termination and Biasing
Resistors: included
(selectable via internal jumpers)
Isolation: 500Vrms

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN-110</td>
<td>$180</td>
<td>10mV input/RS-485 output</td>
</tr>
<tr>
<td>DIN-111</td>
<td>180</td>
<td>100mV input/RS-485 output</td>
</tr>
<tr>
<td>DIN-112</td>
<td>180</td>
<td>1V input/RS-485 output</td>
</tr>
<tr>
<td>DIN-113</td>
<td>180</td>
<td>5V input/RS-485 output</td>
</tr>
<tr>
<td>DIN-114</td>
<td>180</td>
<td>10V input/RS-485 output</td>
</tr>
<tr>
<td>DIN-115</td>
<td>180</td>
<td>100V input/RS-485 output</td>
</tr>
<tr>
<td>Current Inputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN-125</td>
<td>180</td>
<td>4-20mA input/RS-485 output</td>
</tr>
<tr>
<td>Thermocouple Inputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN-131</td>
<td>180</td>
<td>J thermocouple input/RS-485 output</td>
</tr>
<tr>
<td>DIN-132</td>
<td>180</td>
<td>K thermocouple input/RS-485 output</td>
</tr>
<tr>
<td>DIN-133</td>
<td>180</td>
<td>T thermocouple input/RS-485 output</td>
</tr>
<tr>
<td>DIN-134</td>
<td>180</td>
<td>E thermocouple input/RS-485 output</td>
</tr>
<tr>
<td>DIN-135</td>
<td>180</td>
<td>R thermocouple input/RS-485 output</td>
</tr>
<tr>
<td>DIN-136</td>
<td>180</td>
<td>S thermocouple input/RS-485 output</td>
</tr>
<tr>
<td>DIN-137</td>
<td>180</td>
<td>B thermocouple input/RS-485 output</td>
</tr>
<tr>
<td>DIN-138</td>
<td>180</td>
<td>C thermocouple input/RS-485 output</td>
</tr>
<tr>
<td>RTD/Thermistor Inputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN-141</td>
<td>180</td>
<td>0.00385 RTD input/RS-485 output</td>
</tr>
<tr>
<td>DIN-142</td>
<td>180</td>
<td>0.00392 RTD input/RS-485 output</td>
</tr>
<tr>
<td>DIN-143</td>
<td>180</td>
<td>0.00388 RTD input/RS-485 output</td>
</tr>
<tr>
<td>DIN-145</td>
<td>180</td>
<td>2252Ω thermistor input/RS-485 output</td>
</tr>
<tr>
<td>Bridge Inputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN-151</td>
<td>250</td>
<td>30mV bridge input, 5V excitation/RS-485 output</td>
</tr>
<tr>
<td>DIN-152</td>
<td>250</td>
<td>30mV bridge input,10V excitation/RS-485 output</td>
</tr>
<tr>
<td>DIN-153</td>
<td>250</td>
<td>100mV bridge input, 5V excitation/RS-485 output</td>
</tr>
<tr>
<td>DIN-154</td>
<td>250</td>
<td>100mV bridge input,10V excitation/RS-485 output</td>
</tr>
<tr>
<td>Timer and Frequency Inputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN-161</td>
<td>180</td>
<td>Frequency input/RS-485 output</td>
</tr>
<tr>
<td>Digital Inputs/Outputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN-171</td>
<td>140</td>
<td>6 digital inputs/RS-485 output</td>
</tr>
<tr>
<td>DIN-172</td>
<td>140</td>
<td>6 digital outputs/RS-485 output</td>
</tr>
<tr>
<td>RS-232/485 Converter/Repeater</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIN-191</td>
<td>120</td>
<td>RS-232/485 converter</td>
</tr>
<tr>
<td>DIN-192</td>
<td>120</td>
<td>RS-485 repeater</td>
</tr>
</tbody>
</table>


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IS THAT WHAT YOU WANTED? I'M NOT SAYING.

IF I TELL YOU IT'S GOOD, YOU'LL RUB IT IN MY FACE AT YOUR PERFORMANCE REVIEW.

I'M SORRY. SEE HOW YOU ARE?

--

DOGBERT CONSULTS
I'VE BEEN TOLD TO MAKE A SUCCESSION PLAN.

THE PLAN SHOULD SAY WHAT TO DO IF I DIE.

I CAN HELP.

--

AND IF SATAN MAKES YOU STAND IN SLAMING WORMS UP TO YOUR NOSE, TRY STANDING ON YOUR TIPTOES FOR ETERNITY.

--

WHY DID YOU CROSS-CHARGE YOUR TIME TO MY BUDGET?
I ATTENDED YOUR MEETING.

--

ALL YOU DID WAS SIT THERE LIKE A DRUNKEN MONKEY. I WANT A REFUND.

...SO IT DOESN'T SEEM FAIR.

TALK TO MY BOSS.

...KACHING!
ARE THERE ANY QUESTIONS?

I WORRY THAT CASUAL DRESS DAYS ENCOURAGE FLIRTY BEHAVIOR.

I MEAN, LOOK HOW ADORABLE I AM IN MY TURTLENECK SWEATER. HOW ARE THE LADIES SUPPOSED TO CONCENTRATE?

DO YOU THINK I SHOULD PUT WARNING CONES AROUND MY CUBICLE?

CASUAL DRESS DAY IS HURTING OUR PRODUCTIVITY. WE NEED TO CANCEL IT.

IS IT POSSIBLE THAT OUR REAL PROBLEMS ARE CAUSED BY IRRATIONAL MANAGEMENT?

NO. I THINK COMFORTABLE PANTS ARE THE PROBLEM. SOUNDS RIGHT.
PCIDAS1200
Low Cost, High Speed Multifunction Board for the PCI-Bus

- 8 Differential/16 Single-Ended Analog Inputs
- 12-bit A/D Resolution
- 330 KHz Sample Rate
- Dual 12-bit Analog Outputs
- 1024 Sample FIFO
- 24-Bits Digital I/O
- Fully Plug-n-Play

The PCI-DAS1200 multifunction analog and digital I/O boards set the new standard for low cost, high speed data acquisition boards on the PCI-bus. Offering 16 single-ended or 8 differential 12-bit analog inputs with sample rates up to 330 KHz, two 12-bit analog outputs and 24 bits of digital I/O, the PCI-DAS1200 offers performance equal to or superior to boards costing up to 50% more.

FIFO Provides Full Data Rate Under Windows
The on-board 1024 sample FIFO buffer collects the results of A/D conversions and stores them until the computer’s CPU is able to transfer the data into PC memory. The FIFO buffer allows the PC to store up the A/D transfer requests, then service the requests in batches. The FIFO is necessary to obtain the full data acquisition rates under multitasking operating systems like Windows.

Software Selectable Ranges
All A/D and D/A range selections on the PCI-DAS1200 board are selected via software. The A/D ranges and resolutions available on the board are shown above.

FIFO Provides Full Data Rate Under Windows

<table>
<thead>
<tr>
<th>Bipolar Range</th>
<th>Resolution</th>
<th>Unipolar Range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>±10 V</td>
<td>4.88 mV</td>
<td>0 - 10 V</td>
<td>2.44 mV</td>
</tr>
<tr>
<td>±5 V</td>
<td>2.44 mV</td>
<td>0 - 5 V</td>
<td>1.22 mV</td>
</tr>
<tr>
<td>±2.5 V</td>
<td>1.22 mV</td>
<td>0 - 2.5 V</td>
<td>0.61 mV</td>
</tr>
<tr>
<td>±1.25 V</td>
<td>0.61 mV</td>
<td>0 - 1.25 V</td>
<td>305 µV</td>
</tr>
</tbody>
</table>

Minimizing Channel to Channel Skew
All of the channels on the PCI-DAS1200 are multiplexed into a single A/D converter. Since there is only one A/D converter on the board, a channel to channel skew time (delay) occurs when scanning multiple channels. With many A/D boards, the skew time is equal to the sample rate, so a 1 KHz sample rate would produce a 1 millisecond skew time. The PCI-DAS1200 features an enhanced triggering mode called the burst mode. In the burst mode the A/D converter is run at its maximum rate for the entire multi-channel scan, thus reducing the channel to channel skew time to the maximum A/D rate which is 3 µS.

$649

OMEGA CARE SM Extended Warranty Program

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OMEGASOFT® Software
The PCI-DAS1200 includes a complete test and calibration program. The program provides a step-by-step procedure for installing and configuring the card. It also creates a configuration file used by the optional Universal Library.

The Universal Library is a set of I/O libraries and drivers for those users creating their own custom programs. The Universal Library is compatible with most Windows based languages and supports the entire PCI-DAS and CIO family of boards. An optional driver for LabVIEW is also available.

Accessories
Field wiring is greatly simplified when you purchase the optional C100FF-2 cable and CIO-TERM100 screw terminal board. This combination brings all 100 PCI-DAS1200 pins out to easy to connect to screw terminals. The screw terminals accept wire sizes 12-22 AWG. The board provides positions to mount pull-up and pull down resistors or other user installed circuitry.

Specifications
(Typical for 25°C unless otherwise specified)

Analog Input Section Resolution: 12 bits
Input Ranges: ±10V, ±5 V, ±2.5 V, ±1.25V, 0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V
A/D Conversion Time: 3µs
Differential Linearity Error: ±0.75 LSB
Integral Linearity error: ±1.50 LSB max, ±0.5 LSB typ.
Gain Error: 0.02% Max

No Missing Codes Guaranteed: 12 bits
Gain Drift (A/D Specs): ±6 ppm/°C, all ranges
Zero Drift (A/D Specs): ±1 ppm/°C, all ranges
Input Leakage Current: 200nA
Input Impedance: 10 Meg Ohms

Absolute Maximum input: ±15 V
A/D Triggering Modes: Edge or level, programmable polarity unlimited pre and post trigger samples

Analog Output Specifications
Resolution: 12 bits
Number of Channels: 2
Voltage Ranges: ±10 V, ±5 V, 0-5 V, 0-10 V
Offset Error: ±100 µV max
Gain Error: ±0.02% max (calibrated)
Differential Nonlinearity: ±1 LSB max
Integral Nonlinearity: ±1 LSB max
Monotonicity: 12 bits at 25°C
D/A Gain Drift: ±2 ppm/°C max
D/A Bipolar Offset Drift: ±5 ppm/°C max
D/A Unipolar Offset Drift: ±5 ppm/°C max

Data transfer throughput rate: software update rate limited
Settling Time (10V Step): 4 µs typ
Slew Rate: 7 V/µs
D/A Trigger Modes: Software Driven
Current Drive: ±5 mA min
Output Short-Circuit Duration: 25 mA indefinite
All D/As have double buffered input latches. On Power up and reset all DAC’s cleared to 0 volts

Digital I/O
Digital I/O: 24 from 82C55A
Logic Low Level: -0.5 to 0.8V max
Logic High Level: 2.0 to 5.0V max
Input Current: ±10 µA max

Output Low Sink Current: 2.5 mA @ 0.45V
Output High Source Current: -2.5 mA @ 2.4V

Environmental
Operating Temperature Range: 0 to 70°C
Storage Temperature Range: -40 to 100°C
Humidity: 0 to 90% non-condensing
Power Consumption: 0.8 A typical, 1.0 A max

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI-DAS1200</td>
<td>$649</td>
<td>Low cost, 16 channel, 16-bit analog I/O board</td>
</tr>
<tr>
<td>CIO-TERM100</td>
<td>149</td>
<td>100 pin screw terminal adapter board, requires cable</td>
</tr>
<tr>
<td>C100FF-2</td>
<td>49</td>
<td>100 conductor cable</td>
</tr>
<tr>
<td>UNIV-DRVR</td>
<td>49</td>
<td>Universal Driver Library</td>
</tr>
<tr>
<td>CIO-LABVIEW-DRVR</td>
<td>49</td>
<td>LabVIEW driver</td>
</tr>
</tbody>
</table>

The PCI-DAS1200 includes a user's manual and configuration and test software.

Ordering Example: PCI-DAS1200 board, CIO-TERM100 terminal panel, C100FF-2 cable UNIV-DRVR driver library and OMEGACARE™ 1 year extended warranty for PCI-DAS1200 (adds 1 year to standard 3 year warranty), $649 + 149 + 49 + 49 + 64 = $960.
OM-PQR1010 Power Line and Environmental Monitor

- Measures All Types of Disturbances
  Including Spikes, Sags, Surges, Common Mode Noise, High Frequency Noise, Dropouts, Power Failures
- Datalogging - Stores Average Reading Every Minute for up to 11 Days on Each Channel
- 1500 Event Storage Per Input, 9000 Events Total for 6 Channels
- Records Magnitude, Time and Date of Each Disturbance

The OM-PQR1010 monitor unit will detect a wide range of power disturbances including spikes, sags, surges, common mode noise, dropouts and high frequency noise on two phases of ac voltage and one dc voltage channel; it will also test the temperature, humidity and ac current. For ac current measurement, the OM-PQR1010 is equipped with a pair of banana jacks designed to accept a 10 mV/A output current transducer (CT). Disturbances detected on multiple channels are recorded by their time, date, magnitude and duration in a non-volatile RAM memory. Stored data can then downloaded and analyzed by connecting the OM-PQR1010 to your PC’s serial port and running the included Windows data analysis software. Input connections to the OM-PQR1010 are made between the safety connectors on the back of the unit and the circuit panel to be tested. The OM-PQR1010 operates on standard 110 Vac/220 Vac power. Once plugged in, the OM-PQR1010 immediately begins testing the signals on the input connectors.

Electronic equipment is damaged more often by power disturbances than by fire, theft and vandalism combined. Intermittent power problems are the most expensive hidden expense to users of microprocessor-based equipment. The OM-PQR1010 power quality recorder is a state-of-the-art, fully integrated instrument that measures, records and reports power disturbances, aiding in the analysis of power quality in medical, commercial and industrial applications.

Specifications
GENERAL
Summary Event Count:
56,000 of each event type
Detail Storage:
1500 events per channel
Data Retention:
5 years without power
Datalogging Sample Rate:
programmable from 1 reading per second to 1 reading per 4 minutes
Impulse Detection:
500 nanoseconds
Communications:
RS-232, 1200 to 19,200 baud (programmable), 8 data bits, 1 stop bit, no parity
Input Connections:
ac voltage, safety banana jacks; dc voltage, BNC; current (CT), banana jacks; temperature, phone jack; humidity, mini-DIN
Operating Temperature:
32 to 122°F (0 to 50°C), 10 to 80% RH non-condensing
Operating Voltage:
12 to 30 Vdc, 80 to 260 Vac
Operating Current:
0.1 A
Operating Line Frequency:
dc to 400 Hz
Weight:
1.8 kg (4 lb)
Dimensions:
203 x 254 x 51 mm (8 H x 10 W x 2” D)
Power Cord:
1.8 m (6 ft)

Model OM-PQR1010 shown with included temperature probe, ac voltage test leads, dc voltage test leads and RS-232 cable
**AC/DC VOLTAGE CHANNELS**

**DATALOGGING**
- **Range:** ac voltage, 80 to 520 Vac RMS; dc voltage, ±1 to ±52 Vdc
- **Accuracy:** ±1.5%

**SAGS/SURGES**
- **Threshold:** 5% and 10% of average, or user programmed levels
- **Duration Limits:** 1 cycle or 20 ms
- **Accuracy:** ±1.5%

**DROPOUTS**
- **Threshold:** ac voltage, less than 10 V RMS; dc voltage, less than 10% of avg
- **Duration Limits:** longer than 8 ms, shorter than 80 ms

**POWER FAILURES**
- **Threshold:** ac voltage, less than 10 V RMS; dc voltage, less than 10% of avg
- **Duration Limits:** longer than 80 ms

**IMPULSES**
- **Resolution:** 2 channels:
  - 20 V to > 2500 V peak
- **Threshold:** 20, 70, 140, 300, 850, 2.5 kV
- **Duration Limits:** 500 nanoseconds above threshold
- **Accuracy:** ±10%

**HIGH FREQUENCY NOISE**
- **Range:** 2 volts peak, 10 kHz to 10 MHz
- **Accuracy:** ±10%
- **Response Time:** 1 ms

**AC VOLTAGE LINE FREQUENCY**
- **Range:** 40 to 400 Hz
- **Accuracy:** ±1%
- **Response Time:** 1 ac cycle
- **Threshold:** ±2% deviation from average

**HUMIDITY CHANNEL**

**DATALOGGING**
- **Range:** 10% to 90% RH non-condensing
- **Accuracy:** ±5%

**SAGS/SURGES**
- **Threshold:** 5% and 10% of average, or user programmed levels
- **Duration Limits:** 2 seconds
- **Accuracy:** ±5%

**CURRENT CHANNEL**

**DATALOGGING**
- **Input:** current transducer (CT), 10 mV/A output
- **Range:** 0.2 A to 1000 A RMS
- **Accuracy:** ±1.5%

**SAGS/SURGES**
- **Threshold:** 5% and 10% of average, or user programmed levels
- **Duration Limits:** 20 ms
- **Accuracy:** ±1.5%

**TEMPERATURE CHANNEL**

**DATALOGGING**
- **Sensor:** semiconductor transistor
- **Range:** 20 to 250°F (-7 to 121°C)
- **(0.02 to 2.5 Vdc)**
- **Accuracy:** ±1%
- **Sample Rate:** programmable from 1 reading per second to 1 reading per 4 minutes

**OM-PQR1010 software**

**OM-PQR1010 rear view**

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**To Order (Specify Model Number)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-PQR1010</td>
<td>$1495</td>
<td>Power line and environmental monitor</td>
</tr>
<tr>
<td>OM-PQR-HUMIDITY</td>
<td>295</td>
<td>Humidity probe for OM-PQR1010</td>
</tr>
</tbody>
</table>

Each OM-PQR1010 is supplied with 1.8 m (6 ft.) power cord, RS-232 communications cable with DB9F termination, Windows 95/98/NT data analysis software, temperature probe, one set of ac voltage test leads and one set of dc voltage test leads. Humidity probe must be ordered separately.

**Ordering Example:** OM-PQR1010 power line and environmental monitor, OMEGACARETM 1-year extended warranty for OM-PQR1010 (adds 1 year to standard 1-year warranty), and OM-PQR-HUMIDITY humidity probe, $1495 + 150 + 295 = $1940

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12/21/00  DILBERT © United Feature Syndicate, Inc.

IM THINKING OF ADOPTING AN INCOMPREHENSIBLE ACCOUNT SO PEOPLE WON'T ASK ME QUESTIONS.

UM...ARE YOU LEAVING THAT COFFEE POT EMPTY RIGHT IN FRONT OF ME?

MEEYERNA DERNIA FURNA ALSONKIN SUHJOORN.

WALLY, ARE YOU FREE FOR LUNCH?

I NEED TO REMIND MYSELF HOW LUCKY I AM THAT I DON'T HAVE YOUR LAZINESS OR PERSONALITY OR LOOKS.

WOULD YOU SAY I'M KIND OF A RENAISSANCE LOSER?

AS YOU KNOW I'M THE ONLY EMPLOYEE WHO IS NOT EXCEEDING EXPECTATIONS.

YOU SHOULD PUNISH THE OTHERS FOR UNSCRUPULOUSLY PADDING THEIR OBJECTIVES!

THOSE LYING WILASLES!!

CAN I GET A WHISTLE-BLOWER AWARD FOR THIS?

12/22/00  DILBERT © United Feature Syndicate, Inc.

12/23/00  DILBERT © United Feature Syndicate, Inc.
I MUST CLEAR MY MIND OF ALL THOUGHTS.

AT THE END OF THE DAY WE'LL BE IN A MARKET SPACE ON A GOING FORWARD BASIS.

OM... OM... DONE PRACTICING BEING USELESS.

I THINK HE TRIED TO MEDITATE. THAT'S THE PROBLEM.

YOU SHOULDN'T MIX MEDITATION WITH MANAGEMENT. THE MIND GETS TOO EMPTY.

WHAT CAN WE DO?

I PLAN TO RIFLE THROUGH HIS POCKETS.

HE MIGHT BE FAKING A COMA TO AVOID WORK.

THE ONLY WAY TO FIND OUT IS TO PUNCH HIM REPEATEDLY.

MAYBE WE SHOULD GET ALICE?

DO YOU REMEMBER IF I'M RIGHT- OR LEFT- HANDED?
OM-40 Series Portable Low Cost Dataloggers
Part of the NOMAD® Family

OM-40 Series
$59 Basic Unit

- Measure and Record Temperature, Relative Humidity, DC Voltage or DC Current Input
- Stores up to 7943 Readings
- Compact Size
- Easy-to-Use Windows Software

OM-40 Series dataloggers can record temperature, relative humidity, 4 to 20 mA and 0 to 2.5 Vdc signals. Model OM-41 measures temperature only (internal temperature sensor). Model OM-42 is a two channel datalogger that measures temperature (internal sensor) and also one external signal which can be an external temperature probe, 4 to 20 mA signal or 0 to 2.5 Vdc signal. Model OM-43 measures temperature and relative humidity (internal sensors). Model OM-44 is a four channel datalogger that measures temperature and relative humidity (internal sensors) and also up to two external signals which can be external temperature probes, 4 to 20 mA signals or 0 to 2.5 Vdc signals. The internal temperature sensor is on a 4 inch wire which is mounted on the circuit board inside the snap lid of the datalogger case. Typically this sensor is left inside the case and measures ambient air temperature over the operating temperature range of the logger -20 to 70°C (-4 to 158°F). The internal temperature sensor can also be placed outside of the case for faster response time. When the sensor is placed outside of the case it is capable of measuring temperatures from -20 to 120°C (-4 to 158°F).

Measurement Specifications
Temperature (internal sensor) – All Models

- Measurement Range: sensor inside case, -20 to 70°C (-4 to 158°F); sensor outside case, -40 to 120°C (-40 to 248°F)
- Sensor Type: thermistor
- Accuracy: ±0.7°C @ 21°C (±1.27°F @ 70°F) (see plot)

OM-41 Temperature Datalogger
Shown larger than actual size

Specifications
General

- Measurement Capacity: 7943 readings
- Measurement Interval: user selectable from 0.5 sec to 9 hrs
- Memory Modes: stop when full, wrap-around when full (user selectable)
- Memory: non-volatile EEPROM memory retains data even if battery fails
- Operation: blinking LED light confirms operation
- Time Accuracy: ±1 minute per week at 20°C (68°F)

Operating Temperature:
-20 to 70°C (-4 to 158°F)

Operating Humidity:
0 to 95% non-condensing

Storage Temperature:
-20 to 70°C (-4 to 158°F)

Power: 3.6V lithium battery (included)

Battery Life: 1 year

Dimensions:
68mm H x 48mm W x 19mm D
(2.4 x 1.9 x 0.8”)

Weight: 29 g (1 oz)

Relative Humidity
(user-replaceable internal sensor)
Models OM-43 and OM-44
Measurement Range:
25% to 95% RH at 80°F
for intervals of 10 seconds
or greater, non-condensing
and non-fogging (see plot)

Resolution:
0.4°C @ 21°C (0.7°F @ 70°F)

Response Time (Still Air):
15 min typical with sensor inside case;
1 min typical with sensor outside case

OM-40 Series can record temperature, relative humidity, 4 to 20 mA and 0 to 2.5 Vdc signals. Model OM-41 measures temperature only (internal temperature sensor). Model OM-42 is a two channel datalogger that measures temperature (internal sensor) and also one external signal which can be an external temperature probe, 4 to 20 mA signal or 0 to 2.5 Vdc signal. Model OM-43 measures temperature and relative humidity (internal sensors). Model OM-44 is a four channel datalogger that measures temperature and relative humidity (internal sensors) and also up to two external signals which can be external temperature probes, 4 to 20 mA signals or 0 to 2.5 Vdc signals. The internal temperature sensor is on a 4 inch wire which is mounted on the circuit board inside the snap lid of the datalogger case. Typically this sensor is left inside the case and measures ambient air temperature over the operating temperature range of the logger -20 to 70°C (-4 to 158°F). The internal temperature sensor can also be placed outside of the case for faster response time. When the sensor is placed outside of the case it is capable of measuring temperatures from -20 to 120°C (-4 to 158°F).

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Sensor Type: resistive
Accuracy: ±5%
5 to 50°C (41 to 122°F)
Resolution: 0.4%
5 to 50°C (41 to 122°F)
Response Time:
10 min typical in air

External Temperature Sensors (for use with Models OM-42 and OM-44)
Measurement Range:
OM-40-C-LT, 0 to 43°C (32 to 110°F); OM-40-C-HT, -40 to 100°C (-40 to 212°F)

Sensor Type: thermistor
Input Connection:
2.5 mm stereo phone jack

External 4 to 20 mA Input
(for use with Models OM-42 and OM-44)
Measurement Range:
0 to 20.1 mA

Input Connection:
2.5 mm stereo phone jack
Accuracy: ±0.1 mA ±1% rdg
Resolution: 0.4% of fs

External 0 to 2.5 Vdc Input
(for use with Models OM-42 and OM-44)
Measurement Range:
0 to 2.5 Vdc
Input Connection: 2.5 mm stereo phone jack; external input ground, input, switched 2.5 V output; external input ground connection is not the same as PC interface connection ground and should not be connected to any external ground
Input Impedance: 10 kΩ
Accuracy: ±10 mV ±1% rdg
Resolution: 10 mV (8-bit)
Output Power: 2.5 Vdc at 2 mA, active only during measurements

OM-43 Temperature Datalogger
Shown actual size

OM-44 Temperature Datalogger
Shown larger than actual size

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**To Order (Specify Model Number)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-41</td>
<td>$59</td>
<td>Temperature datalogger</td>
</tr>
<tr>
<td>OM-42</td>
<td>$65</td>
<td>Temperature/external input datalogger (takes one external input)</td>
</tr>
<tr>
<td>OM-43</td>
<td>$85</td>
<td>Temperature/relative humidity datalogger</td>
</tr>
<tr>
<td>OM-44</td>
<td>$95</td>
<td>Temperature/relative humidity/external input datalogger (takes up to two external inputs)</td>
</tr>
<tr>
<td>OM-40-C-LT</td>
<td>$40</td>
<td>External temperature sensor for use with Models OM-42 and OM-44 (32 to 110°F temperature range, high accuracy)</td>
</tr>
<tr>
<td>OM-40-C-HT</td>
<td>$25</td>
<td>External temperature sensor for use with Models OM-42 and OM-44 (-40 to 212°F temperature range)</td>
</tr>
<tr>
<td>OM-40-C-V</td>
<td>$6</td>
<td>External 0 to 2.5 Vdc voltage input cable for use with Models OM-42 and OM-44</td>
</tr>
<tr>
<td>OM-40-C-I</td>
<td>$13</td>
<td>External 4 to 20 mA input cable for use with Models OM-42 and OM-44</td>
</tr>
<tr>
<td>OM-40-HUM</td>
<td>$16</td>
<td>Replacement humidity sensor for Models OM-43 and OM-44</td>
</tr>
<tr>
<td>OM-40-BATT</td>
<td>$15</td>
<td>Replacement 3.6V lithium battery for OM-40 Series dataloggers (package of 10)</td>
</tr>
</tbody>
</table>

Complete operator’s manual and mounting kit (hook/loop, battery, magnet and tape are included).

**Ordering Example:** OM-44 datalogger, OM-40-C-LT external temperature sensor, OM-40-C-V voltage input cable, and RD-TEMP-SW-A Windows software, $95 + $40 + $6 + $14 = $155.

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For Sales & Service 1-800-TC-OMEGA
For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website www.omega.com
OM-50 Series Portable Low Cost Dataloggers
Part of the NOMAD® Family

- Model OM-51 Monitors Contact Closures
- Model OM-52 for Motor On/Off Applications
- Model OM-53 Monitors Light On/Off Conditions
- Easy-to-Use Windows Software

OM-50 Series dataloggers record when devices change between on and off or open and closed states and store the time, date and state for each change (the black arrows in the diagram below show when data is recorded).

These dataloggers have two LED indicator lights, one red and one green. One of these LEDs will blink every two seconds. If the contact is open or the device is off, the red LED will blink. If the contact is closed or the device is on, then the green LED will blink. Although the LEDs blink every other second, the state is checked every half second, with state changes recorded as detected. Simply connect the datalogger to your PC using the RS-232 cable and download stored data using the Windows software.

Model OM-51 State Datalogger has two inputs, a magnetic reed switch located in the middle of the hinge of the case (opposite the connectors), and an external contact closure input. The datalogger records contact closures/openings of its internal magnetic reed switch and contact closures (open/shorted) in a cable connected to its 2.5 mm stereo jack.

The OM51 datalogger detects the cable’s open/shorted condition by applying a positive voltage pulse to the tip (white wire in the cable).

Model OM-52 Motor On/Off Datalogger uses an AC magnetic field threshold sensor to determine if a motor is on or off. The AC magnetic field threshold is approximately 2 Gauss at 60 Hz. Position the logger so that its green LED blinks when the motor is on. It is usually best to mount the datalogger on the side of the motor.

Model OM-53 Light On/Off Datalogger has a light intensity threshold that is adjustable from approximately 10 to 100 lumens.

The threshold is adjusted by turning a light sensitivity control on the front of the datalogger.

The OM-53’s light sensitivity is peaked in the forward direction as shown in the light sensor angular response plot below.

This directionality can be taken advantage of to minimize the effect of other light sources when trying to determine the on/off state of a particular light source. The light sensor is on the side of the case next to the green LED. Note, however, that the sensor detects light directed at the front of the case.

OM-51 State Datalogger

 Specifications

GENERAL
- Measurement Capacity: 2000 state changes
- Time Resolution: 0.5 seconds
- Minimum State Duration: 0.5 seconds
- Memory Modes: stop when full, wrap-around when full (user selectable)
- Memory: non-volatile EEPROM memory retains data even if battery fails
- Operation: blinking LED lights show current state
- Time Accuracy: ±1 minute per week at 20°C (68°F)
- Operating Temperature: -20 to 70°C (-4 to 158°F)
- Operating Humidity: 0 to 95% non-condensing
- Storage Temperature: -20 to 70°C (-4 to 158°F)
- Power: 3.6 V lithium battery included
- Battery Life: 1 year
- Dimensions: 2.4"H x 1.9"W x 0.8"D (68 x 48 x 19 mm)
- Weight: 29 g (1 oz)

To download information and to order online, visit www.omega.com

OM-50 Series
$69
Basic Unit
Measurement Specifications
OM-51 STATE DATALOGGER
Inputs: two inputs;
a magnetic sensor mounted in the
datalogger and an external cable
for detecting contact closures
(external cable is included).
Spacing Between Datalogger
and External Magnet:
closed, less than or equal to ¾";
open, greater than or equal to ¾"
(external magnet is included)
External Contact Input:
passive relay switch or contact closure

OM-52 MOTOR ON/OFF
DATALOGGER
Sensor Type:
AC field sensor Magnetic Field
Threshold: approx. 2 Gauss at 60 Hz;
the logger will typically work with
AC motors drawing 1A or more
Mounting:
mount the datalogger on or close
to the motor housing or to one phase
of the power line to the equipment
being monitored
Angular Response:
the datalogger is sensitive to that part
of the AC field that is perpendicular to
the datalogger’s face

OM-53 LIGHT ON/OFF
DATALOGGER
Light Threshold Adjustment Range:
approx. 10 to 300 foot-candles
(flourescent light); the datalogger’s
sensitivity to incandescent light is
about ten times greater (see plot
on previous page)

All Models in Stock
To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-51</td>
<td>$69</td>
<td>State datalogger</td>
</tr>
<tr>
<td>OM-52</td>
<td>69</td>
<td>Motor on/off datalogger</td>
</tr>
<tr>
<td>OM-53</td>
<td>69</td>
<td>Light on/off datalogger</td>
</tr>
<tr>
<td>RD-TEMP-SW-A</td>
<td>14</td>
<td>Windows 95/98 software and RS-232 interface cable with DB9F termination for OM-50 Series dataloggers</td>
</tr>
<tr>
<td>OM-40-BATT</td>
<td>15</td>
<td>Replacement 3.6V lithium battery for OM-50 Series (package of 10)</td>
</tr>
</tbody>
</table>

Complete operator’s manual and mounting kit (hook/loop, magnet, battery and tape) are included.
Model OM-51 State Datalogger includes external magnet and external input cable for detecting contact closures.
I'll tape a pencil to his hand and use it to sign off on a raise for me.

That would be so unethical... hiccup may I have ten percent?

That hiccup damaged my moral compass.

A manager's brain is like a pump if it becomes empty you must prime it.

Whatever he learns first will form the foundation for all of his future perceptions.

This guy has been talking smack about you.

I asked for more e-mail storage space and you deleted all of my files!

You complain when I ignore your requests and you complain when I delete your files.

Those aren't your only choices!!

I can't please everyone.
Temperature Datalogger

OM8818 Complete Set

OM8818 AT A GLANCE

- Start / Stop logging by programmed scheduler or internal magnetic switch
- Sample interval: program from 1 sec. to 2 hours
- User-defined Min. and Max. alarm setting
- Data is retained in non-volatile memory. No loss when battery is low or has been removed
- Thermistor Temperature sensor
- Collect 8000 Temperature samples

OM8818 is a complete temperature datalogger system at a remarkable low price. Each set comes with Windows compatible software, a datalogger unit and an infrared download box with data links. The OM8818 is ideal for monitoring ambient conditions in greenhouses, art galleries and museums.

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM8818</td>
<td>$129</td>
<td>Datalogger, software and down link box</td>
</tr>
<tr>
<td>OM8800R</td>
<td>69</td>
<td>Extra Down link box and software</td>
</tr>
<tr>
<td>OM8800D</td>
<td>69</td>
<td>Extra Datalogger</td>
</tr>
</tbody>
</table>

Standard systems:
OM8800D: Datalogger unit and operator’s manual. Lithium battery and magnetic set
OM8800R: Interface module with cable, software and operator’s manual
OM8818: The complete set includes both OM8800D & OM8800R, ready for operation

SPECIFICATIONS

Temperature Range: -40 to 85°C (0 to 185°F)
Accuracy: ±0.6°C (-4 to 122°F, ±1.1°F), ±1.2°C (-40 to -4°F, 123 to 185°F, ±2.2°F)
Resolution: 0.1°C
Sample Data: 8000 samples
Sample Unit: °C or °F
Battery: ER3 (3.6V) lithium (included)
Battery Life: (>1 yr)
Dimensions:
OM8818: 124 x 52 x 92 mm (4.9 x 2 x 3.6")
OM8800D: 108 x 23 x 18 mm (4.3 x 0.9 x .7")
OM8800R: 124 x 28 mm (4.9 x 1.1)
Real-time Clock Memory: Yes
Weight: Approx. 26 g (1 oz)
Case: ABS, Waterproof
Cable Length: 150 cm (5') with DB9 (9 pin) connector

Supplied with Battery, Windows compatible software, RS232 cable and complete operators manual. Ordering Example: OM8818, Temperature datalogger with down link box and software, $129.
The OM-IQ Series is a family of high-quality, self-contained, stand-alone dataloggers for recording temperature, humidity, dc volts, milliamps or events. These dataloggers are simple to operate. Simply plug the datalogger in your PC’s serial port. Next, use the OM-IQ series software to select the sample rate, thresholds and start method. Then unplug the datalogger, deploy it where desired and start recording data. If desired, recording can be programmed to start at a later time and/or date. After the recording session is over, simply retrieve the datalogger, reconnect it and retrieve the data to an Excel spreadsheet.

All OM-IQ Series dataloggers measure ambient temperature with an internal semiconductor temperature sensor. Models OM-IQ-Temp and OM-IQ-Temp-40 are single channel dataloggers that measure ambient temperature only with the internal sensor.

All of the other OM-IQ Series dataloggers are dual channel models that measure ambient temperature in the same way as the OM-IQ-Temp and also have a second channel added.

Models OM-IQ-TRH and OM-IQ-TRH-40 are dual channel dataloggers that measure ambient temperature and also relative humidity (internal sensors). Models OM-IQ-TC and OM-IQ-TC-40 measure ambient temperature and also accept an external thermocouple probe. Models OM-IQ-TempXT and OM-IQ-TempXT-40 measure ambient temperature and a second input from an external temperature probe containing a high accuracy semiconductor temperature sensor. Models OM-IQ-VmA and OM-IQ-VmA-40 measure ambient temperature and also a second voltage or current input. Models OM-IQ-Event and OM-IQ-Event-40 measure ambient temperature and also a switch closure, voltage or pulse input for event logging.

OM-IQ Series dataloggers have two primary modes of operation: periodically recording data at a particular sampling interval after being started, or recording a single sample of data when the button on the datalogger is pressed. In periodic recording, a sampling rate from 0.125 sec to 24 hours is programmed into the datalogger. Data sampling can be started in three modes: immediately upon configuring the datalogger, by pressing the pushbutton on the datalogger, or on a specified date/time based on the internal real-time clock. Once started, the datalogger will record data until stopped by pressing the datalogger button, or, if programmed, when the memory is full. If not programmed to stop on full memory, the datalogger will continue to record data, overwriting the oldest data until manually stopped. All OM-IQ Series dataloggers may also be configured to operate in a single-sample mode. In this mode, no recording is done until the button on the datalogger is pressed and held for one second. When this is done, a single time/date stamped sample is recorded. This process may be continued until the datalogger’s memory is full.
All OM-IQ Series dataloggers have an LED status/alarm indicator. The LED indicates status or alarm as follows:

- A single blink every 5 sec means the datalogger is sampling
- A single blink every 1 sec means the datalogger is sampling and a threshold has been exceeded
- A double blink every 5 sec means that the datalogger is waiting for start by button press, pre-set time or single sample mode
- A double blink every sec means that sampling has stopped

OM-IQ Series software is an add-in for Microsoft Excel. It enables you to set up and read data back from any OM-IQ Series datalogger. A simple dialog box is used to configure the datalogger prior to deployment. After a data recording session, reconnect the datalogger to your PC and download the data by simply specifying the range of cells in an Excel worksheet where the data will be placed. By using the powerful analysis, charting and programming features of Excel, you can get the information that you need quickly, and you can also automate the data reduction process for future downloads.

**COMMON SPECIFICATIONS**

**Internal Temperature Sensor (All Models)**
- **Type:** semiconductor
- **Range:** -40 to 85°C (-40 to 185°F)
- **Resolution:** 0.03°C
- **Accuracy:** ±0.5°C over entire range
- **Response Time:** 11.6 min in still air (to 63%)

**General**
- **Memory:** 31,920 bytes (standard models); 64,680 bytes (“-40” models)
- **Data Storage:** 3,990 to 64,680 samples (see table)
- **Resolution:** 12-bit
- **Sampling Rate:** 0.125 sec to 24 hrs
- **Clock Accuracy:** ±2 seconds per day
- **Memory Type:** non-volatile
- **Start Method:** immediate, button press, delayed start based on date/time, single sample mode
- **Power:** 3.6 V lithium battery (included)
- **Operation:** status LED on datalogger indicates four operational/alarm conditions

**Software:**
- OM-IQ Series software requires WIN95/98/NT/2000 and Excel 97 or Excel 2000

**Input Connection:**
- removable screw terminals (none on OM-IQ-Temp or OM-IQ-TRH)

**Operating/Storage Temperature:**
- -40 to 85°C (-40 to 185°F)
- Humidity: 0 to 95% non-condensing

**Mounting:**
- via the attachment hole, or use magnetic or velcro mounting strips included with each datalogger

**Case:** heavy duty ABS plastic

**Dimensions:** 79mm H x 64mm W x 25mm D (3.1 x 2.5 x 1.0”)

**Weight:** 80g (2.8 oz)

**OM-IQ-TEMP, OM-IQ-TEMP-40**

**AMBIENT TEMPERATURE DATALOGGER**

**Internal Temperature Sensor**
- See Common Specifications

**Battery Life:** 2.3 yrs at 0.125 sec sample rate, 6 yrs at 0.5 sec sample rate, 10 yrs at 1.0 sec sample rate

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<table>
<thead>
<tr>
<th>Model Number</th>
<th>Single Time-Stamped Sample</th>
<th>Periodic Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-IQ-TEMP</td>
<td>4,560</td>
<td>21,280</td>
</tr>
<tr>
<td>OM-IQ-TEMP-40</td>
<td>9,240</td>
<td>43,120</td>
</tr>
<tr>
<td>OM-TRH (humidity only)</td>
<td>5,320</td>
<td>31,920</td>
</tr>
<tr>
<td>OM-TRH (temperature and humidity)</td>
<td>3,990</td>
<td>10,640</td>
</tr>
<tr>
<td>OM-TRH-40 (humidity only)</td>
<td>10,780</td>
<td>64,680</td>
</tr>
<tr>
<td>OM-TRH-40 (temperature and humidity)</td>
<td>8,085</td>
<td>21,560</td>
</tr>
<tr>
<td>OM-IQ-TC (ambient and external t/c)</td>
<td>3,990</td>
<td>10,640</td>
</tr>
<tr>
<td>OM-IQ-TC-40 (ambient and external t/c)</td>
<td>8,085</td>
<td>21,560</td>
</tr>
<tr>
<td>OM-IQ-TempXT (one channel)</td>
<td>4,560</td>
<td>21,280</td>
</tr>
<tr>
<td>OM-IQ-TempXT (two channels)</td>
<td>3,990</td>
<td>10,640</td>
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<tr>
<td>OM-IQ-TempXT-40 (two channels)</td>
<td>9,240</td>
<td>43,120</td>
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<tr>
<td>OM-IQ-TempXT-40 (two channels)</td>
<td>8,085</td>
<td>21,560</td>
</tr>
<tr>
<td>OM-IQ-VmA (volt/current channel only)</td>
<td>4,560</td>
<td>21,280</td>
</tr>
<tr>
<td>OM-IQ-VmA (2 channels)</td>
<td>3,990</td>
<td>10,640</td>
</tr>
<tr>
<td>OM-IQ-VmA-40 (volt/current channel)</td>
<td>9,240</td>
<td>43,120</td>
</tr>
<tr>
<td>OM-IQ-VmA-40 (2 channels)</td>
<td>8,085</td>
<td>21,560</td>
</tr>
<tr>
<td>OM-IQ-Event (event only)</td>
<td>6,384</td>
<td>15,960</td>
</tr>
<tr>
<td>OM-IQ-Event (2 channels)</td>
<td>4,560</td>
<td>7,980</td>
</tr>
<tr>
<td>OM-IQ-Event-40 (event only)</td>
<td>12,936</td>
<td>32,340</td>
</tr>
<tr>
<td>OM-IQ-Event-40 (2 channels)</td>
<td>9,240</td>
<td>16,170</td>
</tr>
</tbody>
</table>
OM-IQ-TRH, OM-IQ-TRH-40
Relative Humidity and Ambient Temperature Datalogger
Internal Temperature Sensor:
See Common Specifications
Internal Relative Humidity Sensor
Type: capacitive
Humidity Range:
0 to 100% RH
Temperature Range:
-40 to 85°C (-40 to 185°F)
Resolution: 1% RH
Accuracy: ±2% RH from 15 to 90% RH at 25°C
Response Time: 4.7 minutes in still air (to 63%)
Battery Life: 146 days at 0.125 sec sample rate, 3.5 yrs at 1.0 sec sample rate, 9.5 yrs at 10 sec sample rate

OM-IQ-TC, OM-IQ-TC-40
Thermocouple and Ambient Temperature Datalogger
Internal Temperature Sensor
See Common Specifications
Battery Life: 146 days at 0.125 sec sample rate, 2.4 yrs at 1.0 sec sample rate, 7.2 yrs at 10 sec sample rate

OM-IQ-TempXT, OM-IQ-TempXT-40
External Temperature Probe and Ambient Temperature Datalogger
Internal Temperature Sensor
See Common Specifications
External Temperature Probe Sensor
Type: semiconductor
Range: -40 to 125°C (-40 to 257°F)
Resolution: 0.03 °C
Accuracy: ±0.5°C over entire range
Response Time: 2.9 minutes in still air (to 63%)
Probe Dimensions
(Model OM-IQ-XTP): 12" long x ¼"
dia stainless steel sheath probe with 10 ft cable
Battery Life: 1.6 yrs at 0.125 sec sample rate, 6.5 yrs at 1.0 sec sample rate, 10 yrs at 5 sec sample rate

External Thermocouple Sensor for OM-IQ-TC and OM-IQ-TC-40

<table>
<thead>
<tr>
<th>Type</th>
<th>Range (°C)</th>
<th>Resolution</th>
<th>Accuracy</th>
<th>Temperature Accuracy*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0°C to +FS</td>
</tr>
<tr>
<td>E</td>
<td>-200 to 900</td>
<td>22.6 µV</td>
<td>±92 µV</td>
<td>±1.6°C</td>
</tr>
<tr>
<td>J</td>
<td>-200 to 750</td>
<td>15.6 µV</td>
<td>±63 µV</td>
<td>±1.3°C</td>
</tr>
<tr>
<td>K</td>
<td>-200 to 1250</td>
<td>17.1 µV</td>
<td>±69 µV</td>
<td>±1.8°C</td>
</tr>
<tr>
<td>T</td>
<td>-200 to 350</td>
<td>8.6 µV</td>
<td>±40 µV</td>
<td>±1.0°C</td>
</tr>
</tbody>
</table>
To download information and to order online, visit www.omega.com

**Data Logging Systems**

### External Voltage/Current Input

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Absolute Accuracy*</th>
<th>Typical Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 20 mA</td>
<td>5 µA</td>
<td>±30 µA</td>
<td>±15 µA</td>
</tr>
<tr>
<td>±30 V</td>
<td>15.8 mV</td>
<td>±95 mV</td>
<td>±47.4 mV</td>
</tr>
<tr>
<td>0 to 30 V</td>
<td>7.8 mV</td>
<td>±47 mV</td>
<td>±23.4 mV</td>
</tr>
<tr>
<td>±10 V</td>
<td>5.2 mV</td>
<td>±31 mV</td>
<td>±15.6 mV</td>
</tr>
<tr>
<td>0 to 10 V</td>
<td>2.6 mV</td>
<td>±16 mV</td>
<td>±7.8 mV</td>
</tr>
<tr>
<td>±5 V</td>
<td>2.6 mV</td>
<td>±17 mV</td>
<td>±7.8 mV</td>
</tr>
<tr>
<td>0 to 5 V</td>
<td>1.26 mV</td>
<td>±7.6 mV</td>
<td>±3.8 mV</td>
</tr>
<tr>
<td>±1.2 V</td>
<td>610 µV</td>
<td>±3.6 mV</td>
<td>±1.8 mV</td>
</tr>
<tr>
<td>0 to 1.2 V</td>
<td>310 µV</td>
<td>±2.0 mV</td>
<td>±1.0 mV</td>
</tr>
<tr>
<td>0 to 333 mV</td>
<td>97 µV</td>
<td>±750 µV</td>
<td>±380 µV</td>
</tr>
</tbody>
</table>

* at 25 °C and not connected to the computer

OM-IQ-Event, OM-IQ-Event-40
Event Counting and Ambient Temperature Datalogger
Internal Temperature Sensor
See Common Specifications

**External Voltage/Current Input**

- **OM-IQ-Event**, **OM-IQ-Event-40**
- Event Counting and Ambient Temperature Datalogger
- Internal Temperature Sensor
- See Common Specifications

**Event Input Modes**

- **Event Counting**: 16-bit counter
- **Event Time Stamp**: 1 time stamp max once per 0.125 sec
- **Input Impedance**: 1 MΩ Inputs
- **Switch Closure**: 1 KΩ max
- **Voltage Input**: ±60 V max
- **Thresholds**: software selectable;
  - 1.18 V, 0.58 V or 0.29 V (each range with ± mV hysteresis)
  - **Debounce Time Constant**: t = 13.8 ms, software enabled
  - **Trigger (Software Selectable)**: rising/switch open or falling/switch closed
  - **Minimum Duration**: 250 µs event only; 330 µs event and temperature (multi-tasking timing inaccuracies may cause missed pulses while communicating to PC)
  - **Battery Life**: 250 days to 10 years depending upon sample rate and counting mode.

### To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-IQ-Temp</td>
<td>$99</td>
<td>Ambient temperature datalogger</td>
</tr>
<tr>
<td>OM-IQ-Temp-40</td>
<td>$129</td>
<td>Ambient temperature datalogger, extended memory</td>
</tr>
<tr>
<td>OM-IQ-TRH</td>
<td>$139</td>
<td>Ambient temperature/relative humidity datalogger</td>
</tr>
<tr>
<td>OM-IQ-TRH-40</td>
<td>$169</td>
<td>Ambient temperature/relative humidity datalogger, extended memory</td>
</tr>
<tr>
<td>OM-IQ-TC</td>
<td>$139</td>
<td>Ambient temperature/thermocouple input datalogger</td>
</tr>
<tr>
<td>OM-IQ-TC-40</td>
<td>$169</td>
<td>Ambient temperature/thermocouple input datalogger, extended memory</td>
</tr>
<tr>
<td>OM-IQ-TempXT</td>
<td>$149</td>
<td>Ambient temperature/external temperature input datalogger</td>
</tr>
<tr>
<td>OM-IQ-TempXT-40</td>
<td>$179</td>
<td>Ambient temperature/external temperature input datalogger, extended memory</td>
</tr>
<tr>
<td>OM-IQ-VmA</td>
<td>$139</td>
<td>Temperature/voltage or current input datalogger</td>
</tr>
<tr>
<td>OM-IQ-VmA-40</td>
<td>$169</td>
<td>Temperature/voltage or current input datalogger, extended memory</td>
</tr>
<tr>
<td>OM-IQ-Event</td>
<td>$139</td>
<td>Temperature/event datalogger</td>
</tr>
<tr>
<td>OM-IQ-Event-40</td>
<td>$169</td>
<td>Temperature/event datalogger, extended memory</td>
</tr>
<tr>
<td>OM-IQ-PCIK</td>
<td>$99</td>
<td>Windows software and RS-232 cable (DB9F termination)</td>
</tr>
<tr>
<td>OM-IQ-COM</td>
<td>$39</td>
<td>Spare RS-232 cable (DB9F termination) for OM-IQ Series</td>
</tr>
<tr>
<td>OM-IQ-BATT</td>
<td>$6</td>
<td>Replacement 3.6 V lithium battery for OM-IQ Series dataloggers</td>
</tr>
<tr>
<td>OM-IQ-XTP</td>
<td>$39</td>
<td>Spare external temperature probe for Models OM-IQ-TempXT and OM-IQ-TempXT-40</td>
</tr>
</tbody>
</table>

Dataloggers are supplied with battery and complete operator's manual. Models OM-IQ-TempXT and OM-IQ-TempXT-40 include one external temperature probe (spare external temperature probes are sold separately).


**Most Popular Models Highlighted**

- OM-IQ-Event, OM-IQ-Event-40
- OM-IQ-TRH, OM-IQ-TRH-40
- OM-IQ-Temp, OM-IQ-Temp-40
- OM-IQ-VmA, OM-IQ-VmA-40
- OM-IQ-TempXT, OM-IQ-TempXT-40

**Order Online**

Over 100,000 Products Available!
OM-CP-QUADTEMP 4-Channel Temperature Datalogger
Part of the NOMAD® Family

OM-CP-QUADTEMP
$599

Basic Unit
✓ 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, stand-alone, thermocouple based temperature datalogger. This all-in-one compact, portable, easy to use device will measure and record up to 122,000 temperature measurements (24,575 readings per channel). The OM-CP-QUADTEMP is a major leap forward in both size and performance. Its 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. Its small size allows it to fit almost anywhere. Data retrieval is simple. Plug it into an empty COM port and the easy to use Windows software does the rest. The 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 Sensor
Calibrated Accuracy: +0.5°C (0°C to +50°C)
Temperature Resolution: 0.1°C
Temperature Range: -40 to 80°C (-40 to 176°F)

External Thermocouple Channel
(4 Channels)
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°C to 760°C; K:-270°C to 1370°C; T:-270°C to 400°C; E:-270°C to 980°C; R:-50°C to 1760°C; S:-50°C to 1760°C; B: +50°C to 1820°C; N:-270°C to 1300°C

General Specifications
Temperature Calibration:
digital calibration is available through software
Recording Interval:
12/minute to 1/day 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
Power: 9V alkaline battery (included)
Battery Life: 1 year typical
Time Accuracy: +1 minute/month when RS-232C port is not in use

Data Format:
date and time stamped, °C, °F, °K, °R
Computer Interface:
PC serial or RS-232C COM for receiver
Software:
Windows 95/98/NT
Operating Environment:
-40 to 80°C (-40 to 176°F)
5 to 95 % RH non-condensing
Dimensions:
81mm H x 115mm W x 28mm D (3.2 x 4.5 x 1.1”)
Material: black anodized aluminum

OM-CP-QUADTEMP Datalogger
Shown actual size

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-QUADTEMP</td>
<td>$599</td>
<td>4 channel temperature datalogger</td>
</tr>
<tr>
<td>OM-CP-IFC101</td>
<td>99</td>
<td>Windows software and 4ft RS-232 cable</td>
</tr>
</tbody>
</table>

Battery and operator’s manual is included with the OM-CP-IFC101 Windows software and RS-232 cable (software ordered separately). To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price.

Ordering Example: OM-CP-QUADTEMP-CERT 4 channel temperature datalogger with NIST calibration certificate and OM-CP-IFC101 Windows software and RS-232 cable, $599 + 100 + 99 = $798.
HELLO, EMPLOYEE.
IN THE MOTIVATION FAIRY.

MY MAGIC WAND WILL MAKE YOU
ENJOY WORKING
DESPITE THE UTTER FUTILITY.

KNOCK YOURSELF OUT.

WALLY? GAAH!
I THOUGHT YOU WERE A
MYTH!

DILBERT® by Scott Adams

One Omega Drive, P.O. 4047
Stamford, CT 06907-0047

DILBERT® by Scott Adams

One Omega Drive, P.O. 4047
Stamford, CT 06907-0047

DILBERT® by Scott Adams

One Omega Drive, P.O. 4047
Stamford, CT 06907-0047
OM-CP-RHTEMP101 Humidity and Temperature Datalogger
Part of the NOMAD® Family

OM-CP-RHTEMP101
$199
Basic Unit

✓ Memory: 16,384
✓ Humidity and 16,384
✓ Temperature Reading
✓ Programmable
✓ Start Time
✓ Dew Point and Vapor
✓ Concentration
✓ Calculated in Software
✓ Miniature Size
✓ User Calibration
✓ Through Software
✓ Real Time Operation

The OM-CP-RHTEMP101 is a miniature, battery powered, stand-alone, temperature and humidity recorder. This all-in-one compact, portable, easy to use device will measure and record up to 10,922 humidity and 10,922 temperature measurements. The OM-CP-RHTEMP101 is a major leap forward 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. Its small size allows it to fit almost anywhere. Data retrieval is simple. Plug it into an empty 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 or tabular format and can be exported to a text or Microsoft Excel file.

Specifications
Temperature Sensor: thermistor
Temperature Accuracy: 0.5°C
Temperature Resolution: 0.1°C
Temperature Range: -40 to 80°C (-40 to 176°F)
Humidity Sensor: solid state semiconductor
Humidity Accuracy: 3% RH
Humidity Resolution: 0.5% RH
Humidity Range: 0 to 99% RH non-condensing
Temperature/Humidity Calibration: digital calibration is available through software
Recording Interval: 2 second to 24 hours selectable through software

Start Time: start time and date are programmable through software
Alarm: programmable high and low limits; alarm is activated when temperature goes outside limits
Real Time Recording: device may be used with PC to monitor and record data in real time
Red Visual Indicator: LED flashes at selected reading rate or at 1 sec rate under alarm condition
Power: 3.6 V lithium battery (included)
Battery Life: 1 year typical

Time Accuracy: ±1 minute per month at 20°C
Data Format: date and time stamped, % RH, mg of water vapor concentration, °C, °F, ºK, °R
Weight: 25.5g (1 oz)
Computer Interface: PC serial or RS-232C COM
Software: Windows 95/98/NT/2000
Operating Environment: (-40 to 80°C) -40 to 176°F
0 to 99% RH non-condensing
Dimensions: 35mm H x 54mm H x 15mm D (1.4 x 2.15 x 0.6")

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-RHTEMP101</td>
<td>$199</td>
<td>Temperature and humidity datalogger</td>
</tr>
<tr>
<td>OM-CP-IFC101</td>
<td>99</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination</td>
</tr>
<tr>
<td>OM-CP-BAT101</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

Battery and operator’s manual and RS-232 cable are included with the OM-CP-IFC101
Windows software (software ordered separately). To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price. (NIST calibration for temperature only).

**OM-CP-RFRHTEMP101 Wireless Humidity and Temperature Transmitter**

**Part of the NOMAD® Family**

**OM-CP-RFRHTEMP101**

$269

**Basic Unit**

- Dew Point and Vapor Concentration Calculated in Software
- No Wires, No Installation Cost
- Miniature Size
- Automatically Converts Your PC Into a Strip Chart Recorder

The OM-CP-RFRHTEMP101 is a miniature, wireless, battery powered, stand-alone, humidity and temperature transmitter. This all-in-one compact, portable, easy to use device will measure and transmit humidity and temperature measurements. It can be started and stopped instantly through an externally accessible push button. Data is received at the PC using our receiving antenna 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-RFRHTEMP101 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 be exported to a text or Microsoft Excel file.

**Specifications**

**Temperature Sensor:** semiconductor

- **Calibrated Accuracy:** ±0.5°C
  - 0°C to +50°C (32 to 122°F)

- **Temperature Resolution:** 0.1°C
- **Temperature Range:** -40 to 80°C (-40 to 176°F)

**HUMIDITY CHANNEL**

**Humidity Sensor:** semiconductor

- **Calibrated Accuracy:** ±3% RH
  - (+10°C to +40°C, 10 to 80%RH)
  - Note: extended exposure to >90% results in a temporary 3% RH shift

- **Humidity Resolution:** 0.5% RH
- **Humidity Range:** 5 to 95% RH non-condensing (0°C to +80°C)

**TEMPERATURE/HUMIDITY Calibration:**

- **Range:** 120 feet, expandable to 1000 feet with OM-CP-RFEXT extender

- **Transmit Interval:** 1/minute to 12 hours factory settable

- **Start/Stop:** externally accessible start/stop push button enables users to instantly start and stop device

- **Green Visual Indicator:** LED flashes at 15 second interval to indicate device is functioning

- **Power:** 3.6 V lithium battery (included)

**Battery Life:**

- 2 months typical, continuously transmitting at 1 minute intervals

- **Data Format:** date and time stamped, %RH, mg/ml of water vapor concentration, °C, °F, °K, °R

- **Weight:** 25.5g (1 oz)

- **Computer Interface:** PC serial or RS-232C COM

- **Software:** Windows 95/98/NT/2000

- **Operating Environment:** -40 to 80°C (-40 to 176°F)

- **5 to 95 % RH non-condensing**

- **Dimensions:** 36mm H x 92mm W x 16mm D (1.4 x 3.6 x 0.6”)

- **Communication:** 418 MHz

**To Order (Specify Model Number)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-RFRHTEMP101</td>
<td>$269</td>
<td>Wireless humidity and temperature transmitter</td>
</tr>
<tr>
<td>OM-CP-RFC101</td>
<td>189</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination and receiving antenna</td>
</tr>
<tr>
<td>OM-CP-RFEXT</td>
<td>299</td>
<td>Radio frequency extender (up to 1000 ft)</td>
</tr>
<tr>
<td>OM-CP-BAT101</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

Battery and operator’s manual, RS-232 cable and receiving antenna included with the OM-CP-RFC101 Windows software and (software sold separately). To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price. (NIST calibration for temperature only).

**Ordering Example:** OM-CP-RFRHTEMP101-CERT wireless humidity temperature transmitter with NIST calibration certificate and OM-CP-RFC101 Windows software and RS-232 cable with receiving antenna and OM-CP-RFEXT radio frequency extender, $269 + 100 + 189 + 299 = $857.

For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM Data Acquisition Handbook or visit our website www.omega.com

For Sales & Service 1-800-32-66342®

U.S.A. and Canada
OM-CP-PH101 pH and Temperature Datalogger
Part of the NOMAD® Family

OM-CP-PH101
$199
Basic Unit

- Works with OMEGA®
  PHE-4200 Series
  of pH Probes
- 16-Bit Resolution
- Programmable
  Calibration/Start
  Time
- Miniature Size
- Memory Wrap
  Around
- User Calibration
  Through Software
- Real Time
  Operation
- Automatic
  Temperature
  Compensation

The OM-CP-PH101 is a low cost, high resolution, miniature battery powered, stand-alone data logger used for automatically recording pH between 0.00 and 14.00 pH.

The OM-CP-PH101 uses a 16-bit ADC to achieve a resolution of 0.01pH. In addition, the OM-CP-PH101 will directly connect to many off-the-shelf pH electrodes. The user can easily calibrate to a specific electrode through our software. This all-in-one compact, portable, easy to use device will measure and record up to 8,192 pH and 8,192 temperature measurements. The OM-CP-PH101 is a major leap forward 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. Its small size allows it to fit almost anywhere. Data retrieval is simple. Plug it into an empty 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 or tabular format and can be exported to a text or Microsoft Excel file.

Specifications
- Accuracy: 0.05 pH
- Resolution: 0.01 pH
- Range: 0.00 to 14.00 pH
- Temperature Sensor: thermistor
- Temperature Accuracy: 0.5°C

Temperature Resolution: 0.1°C
Temperature Range:
-5 to 50°C (23 to 122°F)
Input Connection: screw terminal
ADC Resolution: 16-bits
pH Calibration:
digital calibration is available in software
Recording Interval: 2 seconds to 12 hours selectable in 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
Memory:
8,192 pH and 8,192 temperature readings

Power: 3.6 V lithium battery (included)
Battery Life: 1 year typical
Time Accuracy:
±1 minute per month at 20°C
Data Format: date and time stamped, pH, °C, °F, °K, °R
Weight: 25.5g (1 oz)
Computer Interface: PC serial or RS-232C COM
Software: Windows 95/98/NT/2000
Operating Environment:
-5 to 50°C (23 to 122°F)
5 to 95% RH non-condensing
Dimensions: 35mm H x 54mm W x 15mm D (1.4 x 2.15 x 0.6”)

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-PH101</td>
<td>$199</td>
<td>pH and temperature datalogger</td>
</tr>
<tr>
<td>OM-CP-IFC101</td>
<td>99</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination</td>
</tr>
<tr>
<td>OM-CP-BAT101</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

Battery and operator’s manual and RS-232 cable are included with the OM-CP-IFC101 Windows software (software ordered separately). To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price. (NIST calibration for temperature only).

OM-CP-RFPH101 Wireless pH and Temperature Transmitter
Part of the NOMAD® Family

OM-CP-RFPH101 $299

Basic Unit

- No Wires, No Installation Cost
- Works with OMEGA® PHE-4200 Series of pH Probes
- Real Time Operation
- Miniature Size
- Automatic Temperature Compensation
- Automatically Converts Your PC Into a Strip Chart Recorder

The OM-CP-RFPH101 is a miniature, wireless, battery powered, stand-alone, pH and temperature transmitter. This all-in-one compact, portable, easy to use device will measure and transmit pH and temperature measurements. The OM-CP-RFPH101 uses a 16 bit ADC to achieve a resolution of 0.01pH. In addition, the OM-CP-RFPH101 will directly connect to most off-the-shelf pH electrodes. The user can easily calibrate to a specific electrode through the software. It can be started and stopped instantly through an externally accessible push button. Data is received at the PC using our receiving antenna 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-RFPH101 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

Temperature Channel
- Temperature Sensor: RTD probe
- Calibrated Accuracy: +0.5°C (-5 to +50°C)
- Temperature Resolution: 0.1°C
- Temperature Range: -5 to +50°C (23 to 122°F)

pH Channel
- pH Range: 0.00 to 14.00 pH
- pH Resolution: 0.01 pH
- Calibrated Accuracy: +0.1pH
- Input Connection: BNC connector
- General Specifications
- pH Calibration: factory digital calibration

Calibration Date: automatically recorded within device at factory
- Range: 120 feet, expandable to 1000 feet with OM-CP-RFEXT extender
- Frequency: 418 MHz
- Transmit Interval: 1/minute to 12 hours, factory settatable (1/minute default setting)
- Start Time: externally accessible push button enables users to instantly start and stop device
- Green Visual Indicator: LED flashes at 15 second interval to indicate device is running
- Power: 3.6 V lithium battery (included)
- Battery Life: 2 months typical, continuously transmitting at 1 minute intervals
- Time Accuracy: +1 minute/month at 20°C when RS-232 port is not in use
- Data Format: date and time stamped, pH, °C, °F, °K, °R
- Weight: 40g (1.5 oz)
- Computer Interface: PC serial or RS-232C COM
- Software: Windows 95/98/NT/2000
- Operating Environment: -5 to +50°C (923 to 122°F) 5 to 95 % RH non-condensing
- Dimensions: 40 mmH x 96mm W x 20mm D (1.6 x 3.8 x 0.8”)
- Communication: 418 MHz

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-RFPH101</td>
<td>$299</td>
<td>Wireless pH and temperature transmitter</td>
</tr>
<tr>
<td>OM-CP-RFC101</td>
<td>189</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination and receiving antenna</td>
</tr>
<tr>
<td>OM-CP-RFEXT</td>
<td>299</td>
<td>Radio frequency extender (up to 1000 ft)</td>
</tr>
<tr>
<td>OM-CP-BAT101</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

Battery and operator’s manual. RS-232 cable and receiving antenna are included with the OM-CP-RFC101 Windows software (software sold separately). To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price. (NIST calibration for temperature only).


For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM Data Acquisition Handbook or visit our website www.omega.com
The OM-CP-PROCESS101 is a low cost, high resolution, battery powered, stand-alone data logger used for automatically recording current between 0.000 and 30.000 mA. The OM-CP-PROCESS101 uses a 16-bit ADC to achieve a resolution of 0.5 micro-Amps. In addition, the OM-CP-PROCESS101 allows the user to store user defined units such as pressure into the device as well as scale factors and offset values. This enables the user to easily linearize and scale any process meter that provides an analog output to engineering units automatically. This all-in-one compact, portable, easy to use device will measure and record up to 32,768 current measurements. The OM-CP-PROCESS101 is a major leap forward 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. Its small size allows it to fit almost anywhere. Data retrieval is simple. Plug it into an empty 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 or tabular format and can be exported to a text or Microsoft Excel file.

Recording Interval: 2 seconds to 12 hours selectable in 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: 1 year typical
Time Accuracy: ±1 minute per month at 20°C

Specifications
Current Accuracy: 0.1% of FSR
Current Resolution: 0.5 µA
Current Range: -0.1000 to 30.0000 mA
Input connection: screw terminal
Input Impedance: 10Ω
Current Calibration: digital calibration is available in software

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-PROCESS101</td>
<td>$199</td>
<td>4 to 20 mA datalogger</td>
</tr>
<tr>
<td>OM-CP-IFC101</td>
<td>99</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination</td>
</tr>
<tr>
<td>OM-CP-BAT101</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

Battery and operator's manual and RS-232 cable are included with the OM-CP-IFC101 Windows software (software sold separately). To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price.

Ordering Example: OM-CP-PROCESS101-CERT 4 to 20 mA current datalogger with NIST calibration certificate and OM-CP-IFC101 Windows software and RS-232 cable, $199 + 100 + 99 = $398.
OM-CP-RFPROCESS101 Wireless 4 to 20 mA Transmitter Part of the NOMAD® Family

OM-CP-RFPROCESS101
$249
Basic Unit

- No Wires, No Installation Cost
- Automatically Converts Your PC Into a Strip Chart Recorder
- Miniature Size
- Real Time Operation
- Software Programmable
- Scale Factor, Offset Value and Engineering Units

The OM-CP-RFPROCESS101 is a low cost, high resolution, miniature battery powered, stand-alone data transmitter used for automatically transmitting current between 0.000 and 33.000 mA. The OM-CP-RFPROCESS101 uses a 16 bit ADC to achieve a resolution of 0.5 micro-Amps. Engineering units, scale and offset values for linear scaling of input signals are specified in the datalogger software (these values are not stored in the device). The OM-CP-RFPROCESS101 is a major leap forward in both size and performance. Data is received at the PC using our receiving antenna that attaches directly to the serial port. All received data is time and date stamped and stored directly in your PC. The OM-CP-RFPROCESS101 is a major leap forward in both size and performance. Its small size allows it to fit almost anywhere. The Windows software converts your PC into a real time strip chart recorder. Data can be printed in graphical or tabular format and can be exported to a text or Microsoft Excel file.

Specifications
- Current Accuracy: +0.1% of FSR at calibration temperature
- Current Range: 0 to 33mA
- Temperature Coefficient: 50 ppm/°C typical
- Input Connection: screw terminal
- Input Impedance: 10Ω
- Current Resolution: 10µA
- Current Calibration: factory digital calibration

Range: 120 feet max, expandable to 1000 feet with OM-CP-RFEXT extender
Frequency: 418 MHz
Transmit interval: 1 minute to 12 hours, factory settable (1/minute default setting)
Start Time: externally accessible start/stop push button enables users to instantly start and stop device
Scale/Offset Value: software programmable; user may define any desired scale and offset from +1.0000E-31 to +9.9999E+31
Green Visual Indicator: LED flashes at 15 second interval to indicate device is running
Power: 3.6 V lithium battery (included)

Battery Life: 2 months typical, continuously transmitting at 1 minute intervals
Time Accuracy: +1 minute/month at 20°C when RS-232 port is not in use
Data Format: date and time stamped, microamps, amps, other units specified through software
Computer Interface: PC serial or RS-232C COM
Software: Windows 95/98/NT/2000
Operating Environment: -40 to 80°C (-40 to 176°F) 5 to 95 % RH non-condensing
Dimensions: 36mm H x 92mm W x 16mm D (1.4 x 3.6 x 0.6”)
Weight: 40g (1.5 oz)

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-RFPROCESS101</td>
<td>$249</td>
<td>Wireless 4 to 20 mA transmitter</td>
</tr>
<tr>
<td>OM-CP-RFC101</td>
<td>189</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination and receiving antenna</td>
</tr>
<tr>
<td>OM-CP-RFEXT</td>
<td>299</td>
<td>Radio frequency extender (up to 1000 ft)</td>
</tr>
<tr>
<td>OM-CP-BAT101</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

Battery and operator's manual, RS-232 cable and receiving antenna are included with the OM-CP-RFC101 Windows software (software sold separately). To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price.

Ordering Example: OM-CP-RFPROCESS101-CERT wireless 4 to 20 mA transmitter with NIST calibration certificate and OM-CP-RFC101 Windows software and RS-232 cable with receiving antenna and OM-CP-RFEXT radio frequency extender, $249 + 100 + 189 + 299 = $837.
The OM-CP-LEVEL101 rugged water level and temperature datalogger is a battery powered, stand-alone device used for automatically recording water level from 0 to 70 ft and temperatures from –40 to 80°C. The OM-CP-LEVEL101 does this by recording the absolute water pressure and then converting the water pressure to level through software. Atmospheric pressure compensation is accomplished by the user making a separate measurement of the surface atmospheric air pressure and then entering this value into the software which subtracts it out. This all-in-one compact, portable, easy to use device will measure and record up to 16,383 water level and 16,383 temperature measurements. The OM-CP-LEVEL101 is a major leap forward 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. Its small size allows it to fit almost anywhere. Data retrieval is simple. Plug it into an empty COM port and the easy to use Windows software does the rest. The software converts your PC into a real time strip chart recorder. Data can be printed in graphical or tabular format and can be exported to a text or Microsoft Excel file.

Specifications

TEMPERATURE CHANNEL
Temperature Sensor: semiconductor
Calibrated Accuracy: +0.5°C (0°C to +50°C)
Temperature Resolution: 0.1°C
Temperature Measurement Range: -40 to +80°C (-40 to 176°F)
LEVEL/PRESSURE CHANNEL
Calibrated Accuracy: ±0.3% max at 25°C, ±0.1% typical

Pressure Resolution: 0.0005 psia, 0.02 inH₂O
Pressure Range: 0 to 30 psia, 0 to 830 in H₂O, 0 to 69 ft H₂O, records water level from 0 to 30 ft in atmospheric pressure
Pressure Sensor: strain gage
Pressure Adapter: fully submersible
Temperature effect on span/offset: +1.0% max relative to 25°C, 0 to 50°C; ±0.2% typical

GENERAL SPECIFICATIONS
(Submersible to 150 feet)
Temperature/Pressure/Level Calibration: digital calibration is available through software
Recording Interval: every 2 seconds to 12 hours selectable in software
Calibration Date: automatically recorded within device to alert user when calibration is required
Start Time: start time and date are programmable through software, up to six months in advance
Real Time Recording: device may be used with PC to monitor and record data in real time
Power: 3.6 V lithium battery
Battery Life: 1 year typical
Time Accuracy: ±1 minute per month at 20°C, when RS-232 port is not in use
Data Format: date and time stamped, °C, °F, °K, °R, PSI, inH₂O, mmH₂O, cmH₂O, mH₂O, bar, atm, Torr, Pa, kPa, MPa
Weight: 140g (5 oz)
Computer Interface: PC serial or RS-232C COM
Operating Environment: -40 to +80°C (-40 to 176°F), 0 to 99% RH non-condensing (while unit is open)
Dimensions: 25mm dia x 108mm L (1.0 x 4.25")

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-LEVEL101</td>
<td>$499</td>
<td>Water level and temperature datalogger (aluminum)</td>
</tr>
<tr>
<td>OM-CP-LEVEL101-SS</td>
<td>559</td>
<td>Water level and temperature datalogger (stainless steel)</td>
</tr>
<tr>
<td>OM-CP-IFC101</td>
<td>99</td>
<td>Windows software &amp; 4ft RS-232 cable with DB9F termination</td>
</tr>
<tr>
<td>OM-CP-BAT102</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

Operator’s manual and RS-232 cable are included with the OM-CP-IFC101 Windows software (software sold separately). To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price. (NIST calibration for temperature only)


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To download information and to order online, visit www.omega.com
OM-CP-PULSE101 Counter/Totalizer/Event Datalogger
Part of the NOMAD® Family

OM-CP-PULSE101 $199

Basic Unit

- Programmable Engineering Units
- Programmable Scale Factor/Offset Value
- Memory: 21,845 Readings
- Memory Wrap Around
- Miniature Size
- Interfaces to Tipping Bucket Rain Gauges or Pulse Output Flow Meters
- Real Time Operation

The OM-CP-PULSE101 is a low-cost recording device that will sense a pulse input or contact closure from external sources such as transducers or pulse initiators (gas, water, and electric meters) and transforms those inputs into engineering units. In addition, the OM-CP-PULSE101 allows the user to store user defined units such as gallons/min into the device as well as scale factors and offset values. This enables the user to easily linearize and scale a transducer that provides a pulse or contact closure output to any user required units automatically. Once activated the OM-CP-PULSE101 senses and records the number of pulses/contact closures that occur within adjacent "time bin" periods. The bin period is selectable from 1 second to over 24 hours. At the end of each bin period, the total number of pulses/counts within the bin period is recorded. The OM-CP-PULSE101 then starts another bin period and continues until either the memory is full or the test period has ended. 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. Its small size allows it to fit almost anywhere. Data retrieval is simple.

Plug it into an empty 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 or tabular format and can be exported to a text or Microsoft Excel file.

Specifications
- Maximum Pulse Rate: 100 per second
- Minimum Pulse Width/Contact Closure Time: 1.0 msec
- Input Signal: TTL, internal pull-up, +30 V max
- Input connection: screw terminal
- Input Impedance: >1K Ω
- Recording Interval: 2 seconds to 12 hours selectable in 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: 1 year typical
- Time Accuracy: ±1 minute/month when RS-232 port is not in use
- Data Format: date and time stamped, pulse counts, other units programmable through software
- Weight: 30g (1 oz.)
- Computer Interface: PC serial or RS-232C COM
- Software: Windows 95/98/NT/2000
- Operating Environment: -40 to 80°C (-40 to 176°F) 5 to 95% RH non-condensing
- Dimensions: 36mmH x 56mmW x 16mmD (1.4 x 2.2 x 0.6”)

To Order (Specify Model Number)

<table>
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<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-PULSE101</td>
<td>$199</td>
<td>Counter/totalizer/event datalogger</td>
</tr>
<tr>
<td>OM-CP-IFC101</td>
<td>99</td>
<td>Windows software and 4 ft RS-232 cable with DB9F termination</td>
</tr>
<tr>
<td>OM-CP-BAT101</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

OM-CP-RFTEMP101 Wireless Temperature Transmitter
Part of the NOMAD® Family

✓ No Wires.
✓ No Installation Cost
✓ Automatically Converts Your PC Into a Strip Chart Recorder
✓ Low Battery Warning
✓ Miniature Size
✓ Calibration Date Stored in Memory
✓ User Calibration through Software
✓ Programmable Alarm

The OM-CP-RFTEMP101 is a miniature, wireless, battery powered, stand-alone, temperature transmitter. This all-in-one compact, portable, easy to use device will measure and transmit temperature measurements. It can be started and stopped instantly through an externally accessible push button. Data is received at the PC using the receiving antenna 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-RFTEMP101 is a major leap forward in both size and performance. Numerous OM-CP-RFTEMP101 transmitters may send 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
Temperature Sensor: thermistor
Temperature Accuracy: 0.5°C
Temperature Resolution: .1°C
Temperature Range: -20 to 80°C (-4 to 176°F)
Temperature Calibration: digital calibration is available in software

Range: 120 feet, expandable to 1000 feet with OM-CP-RFEXT extender
Calibration Date: automatically recorded within device to alert user when calibration is required
Transmit Interval: 1/minute to 12 hours, factory settable (1/minute default setting)
Start/Stop: externally accessible start/stop push button enables users to instantly start and stop device
Alarm: programmable high and low limits; alarm is activated when temperature goes outside limits
Red Visual Indicator: LED flashes at 10 second interval to indicate device is functioning or 2 second interval to indicate alarm condition

Power: 3.6 V lithium battery (included)
Battery Life: 1 year typical
Data Format: date and time stamped, °C, °F, °K, °R
Weight: 25.5g (1 oz)
Computer Interface: PC serial or RS-232C COM for receiver.
Software: Windows 95/98/NT/2000
Operating Environment: -20 to 80°C (-4 to 176°F) 5 to 95 % RH non-condensing
Dimensions: 35 x 54 x 15mm (1.4" H x 2.15" W x 0.6" D)
Communication Frequency: 418 MHz

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-RFTEMP101</td>
<td>$199</td>
<td>Wireless temperature transmitter</td>
</tr>
<tr>
<td>OM-CP-RFC101</td>
<td>189</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination and receiving antenna</td>
</tr>
<tr>
<td>OM-CP-RFEXT</td>
<td>299</td>
<td>Radio frequency extender (up to 1000 ft)</td>
</tr>
<tr>
<td>OM-CP-BAT10110</td>
<td>299</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

Battery and operator’s manual, RS-232 cable and receiving antenna are included with the OM-CP-RFTEMP101 Windows software. To order datalogger with NIST calibration certificate, add suffix “-cert” to model number and add $100 to price.

**OM-CP-RFTC4000**  
Wireless Thermocouple Temperature Transmitter  
Part of the NOMAD® Family

- Automatic Thermocouple Linearization
- Dual Channel Ambient and Remote
- Automatically Converts Your PC into a Strip Chart Recorder
- Real Time Operation
- No Wires, No Installation Cost
- Low Battery Warning
- Miniature Size
- User Calibration through Software

The OM-CP-RFTC4000 is a miniature, wireless, battery powered, stand-alone, thermocouple based temperature transmitter. This all-in-one compact, portable, easy to use device will measure and transmit temperature measurements. It can be started and stopped instantly through an externally accessible push button. Data is received at the PC using our receiving antenna 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-RFTC4000 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 Sensor:** Thermistor  
- **Temperature Accuracy:** 0.5°C  
- **Temperature Resolution:** 0.1°C  
- **Temperature Range:** -20 to 80°C (-40 to 176°F)

**External Thermocouple Channel**
- **Accuracy:** 0.5°C all thermocouple types (does not include thermocouple error)  
- **Resolution:** 0.5°C all thermocouple types  
- **Thermocouple Connection:** screw terminal  
- **Cold Junction Compensation:** automatic

- **Thermocouple Range:**
  - Type J: -200°C to 1190°C  
  - K: -260°C to 1370°C  
  - T: -260°C to 390°C  
  - E: -260°C to 990°C  
  - R: -40°C to 1760°C  
  - S: -260°C to 1290°C  
  - B: 50°C to 1810°C

**Data Format:** date and time stamped, °C, °F, °K, °R

**Weight:** 3.6 V lithium battery (included)  
**Battery Life:** 1 year typical  
**Data Format:** date and time stamped, °C, °F, °K, °R

**Computer Interface:**
- PC serial
- RS-232C COM for receiver

**Software:**
- Windows 95/98/NT/2000

**Dimensions:**
- 35 x 54 x 15mm (1.4” H x 2.15” W x 0.6” D)
- Communication Frequency: 418MHz

**Ordering Example:** OM-CP-RFTC4000-CERT wireless temperature transmitter with NIST calibration certificate, OM-CP-RFC101 Windows software and RS-232 cable with receiving antenna and OM-CP-RFEXT radio frequency extender, $249 + $100 + $189 + $299 = $837.

### To Order (Specify Model Number)

<table>
<thead>
<tr>
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<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM-CP-RFTC4000</td>
<td>$249</td>
<td>Wireless temperature transmitter</td>
</tr>
<tr>
<td>OM-CP-RFC101</td>
<td>189</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination and receiving antenna</td>
</tr>
<tr>
<td>OM-CP-RFEXT</td>
<td>299</td>
<td>Radio frequency extender (up to 1000 ft)</td>
</tr>
<tr>
<td>OM-CP-BAT101</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website www.omega.com

For Sales & Service 1-800-32-66342®  
U.S.A. and Canada
**OM-CP-RHTEMP1000**

**Humidity and Temperature Datalogger**

Part of the NOMAD® Family

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
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<tbody>
<tr>
<td>OM-CP-RHTEMP1000</td>
<td>$399</td>
<td>Humidity and temperature data logger (aluminum)</td>
</tr>
<tr>
<td>OM-CP-RHTEMP1000-SS</td>
<td>459</td>
<td>Humidity and temperature data logger (stainless steel)</td>
</tr>
<tr>
<td>OM-CP-IFC101</td>
<td>99</td>
<td>Windows software and 4ft RS-232 cable with DB9F termination</td>
</tr>
<tr>
<td>OM-CP-BAT102</td>
<td>10</td>
<td>Replacement 3.6 V lithium battery</td>
</tr>
</tbody>
</table>

**Specifications**

- **Temperature Sensor:** thermistor
- **Temperature Accuracy:** 0.5°C
- **Temperature Resolution:** 0.1°C
- **Temperature Range:** -40 to 80°C (-40 to 176°F) for 15 minutes
- **Extended Temperature Range:** 80 to 125°C (176 to 257°F) for 15 minutes
- **Humidity Sensor:** solid state semiconductor
- **Humidity Accuracy:** 3%RH
- **Humidity Resolution:** 0.5%RH
- **Humidity Range:** 5 to 95% non-condensing
- **Temperature/Humidity Calibration:** digital calibration available through software
- **Calibration Date:** automatically recorded within device to alert user when calibration is required
- **Recording Interval:** every 2 seconds to every 24 hours, selectable through 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

**Real Time Operation**

- User Calibration through Software
- Dew Point/Vapor Concentration Calculated in Software

**Power:** 3.6 V lithium battery (included)

**Battery Life:** 1 year typical

**Time Accuracy:** ±1 minute per month at 20°C

**Data Format:** date and time stamped, %RH, mg of water vapor concentration, °C, °F, °K, °R

**Weight:** 25.5 g (1 oz.)

**Computer Interface:** PC serial or RS-232C COM

**Software:** Windows 95/98/NT/2000

**Operating Environment:** -40 to 125°C (-40 to 257°F) 5 to 95% RH non-condensing

**Dimensions:** 25mm dia x 137mm L (1.00 x 5.40")

**Material:** aluminum or stainless steel

To download information and to order online, visit www.omega.com
RD-MV100/200 Paperless Recorder

Model RD-MV200
$3800
Basic Unit
26 cm (10.4") TFT Color Display

Model RD-MV100
$2400
Basic Unit
14 cm (5.5") TFT Color Display

- Up to 12 Channels on RD-MV100
- Up to 30 Channels on RD-MV200
- Programmable Inputs: RTD, Thermocouple, Voltage
- TFT Color LCD for Better Viewing
- Removable Storage on 3.5" Floppy Disk, Zip Disk, or PCMCIA ATA Flash Memory Card
- Data Collection Over Ethernet Network (Standard)
- Network-Compatible
- Sophisticated Software
- Highly Reliable Hardware

For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website www.omega.com
**RD-MV100/200 Paperless Recorder**

1. 15.5-inch wide-viewing-angle color LCD display (RD-MV100)
2. 10.4-inch wide-viewing-angle color LCD display (RD-MV200)
3. Status display area
   Graphically displays the operating status of the RD-MV100/RD-MV200
4. Trend display area
   (Simultaneous display of all channels possible) Displays the scale values and engineering unit for each channel and arbitrary messages, along with the waveforms. The orientation (vertical/horizontal) of the trend display and background color (white/black) can be switched. The fastest trend display update rate is 15 sec/div (approximately 2376 mm/h in terms of display speed) for a 125-ms measurement interval model.
5. Digital display area
   Displays channels/tag numbers, engineering units, and each channel's alarm status, as well as the measurement values. The fastest display update interval is 1 second.
6. Power ON/OFF switch
7. Removable storage drive
   Choose from a floppy disk drive, Zip drive, or PCMCIA ATA flash memory card slot.
8. Operating keys
   Numeric keypad (RD-MV200 only) facilitates entry of settings
RD-MV100/200 Paperless Recorder

9. VGA output terminal (RD-MV200 only)
10. Ethernet (10BASE-T)
11. RS-232, RS-422-A/485 (optional)
12. Power inlet
13. Alarm output, remote control, etc. (optional)
14. Input modules
  DC voltage, TC, RTD and digital inputs (can be mixed).
  Clamp or screw terminals can be selected

For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website www.omega.com
**Removable Storage Medium**

- 3.5-inch floppy disk (1.44MB : 2 HD)
- ZIP Disk (100MB)
- PCMCIA ATA flash memory card (maximum 440MB)

**RD-MV100/RD-MV200 Paperless Recorder**

**Measurement Data**

- Internal memory
- PC or Data Server

**Transfer Data**

**Save Data**

**Memory Storage for RD-MV100/200**

Reliable Data Storage in Internal Memory

The RD-MV100/200 saves measurement data in internal memory. Data in internal memory can also be transferred to PCs or data servers either online or using a removable storage medium. The measurement data memory consists of nonvolatile flash memory (1.2 MB) that does not require battery backup. This means data written to memory will not be lost due to events such as a power outage.

**Simultaneous Extended-Period Data Storage and Detailed Analysis**

**Measurement Data**

The RD-MV100/200 can save data in two formats: display data and event data.

**Event data–for detailed analysis**

The event data format is used to save all data in a specified data saving interval. Event data can be used in combination with the trigger functions to detect and analyze abnormal data. A pretrigger can also be set, making it possible to analyze data before and after the trigger.

**Display data–for extended-period trend recording**

The display data format is used to save data displayed as waveforms. Each time the waveform display is updated, two data values (maximum and minimum values) measured since the previous update are saved.

**File Structure**

The two data formats can be used in combination such as the following:
1. Display data only
2. Event data only
3. Display data and event data in combination.

Display data, event data, and trigger function can be used in combination. With this approach, display data with a slow sample rate can be used for continuous, extended-period recording, and event data with a faster sample rate can be used to record short-term details.

**Other Data**

In addition to measurement data the RD-MV100/200 can also save the following types of data:

- Manual sampling data: instantaneous values (the 50 most recent measurements) occurring at each contact input or key input are saved in ASCII format.
- Time-series (TLOG) calculation data: Maximum value, minimum value, integrated (totalized) value, etc. during a fixed interval (with calculation option).
- Report data: Hourly reports, daily reports, weekly reports, monthly reports (with calculation option).
- Settings data: Settings for set mode and setup mode.
### Saving data to internal memory

The tables below present examples of the maximum internal memory data saving times for RD-MV100/200 data is saved as files to a removable storage medium. The tables below present examples of the maximum data saving times for a PCMCIA ATA flash memory card (440 MB).

#### Event data file only (no calculation channel)

<table>
<thead>
<tr>
<th>RD-MV100</th>
<th>Measurement channels</th>
<th>Saving interval</th>
<th>Saving times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>125 ms</td>
<td>500 ms</td>
<td>1 second</td>
</tr>
<tr>
<td>2</td>
<td>Approximately 13.8 hours</td>
<td>Approximately 27.7 hours</td>
<td>Approximately 13.8 hours</td>
</tr>
<tr>
<td>4</td>
<td>Approximately 10.4 hours</td>
<td>Approximately 20.8 hours</td>
<td>Approximately 10.4 hours</td>
</tr>
<tr>
<td>6</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>12</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

#### Display data file only (no calculation channel)

<table>
<thead>
<tr>
<th>RD-MV100</th>
<th>Measurement channels</th>
<th>Saving interval</th>
<th>Saving times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15 seconds</td>
<td>1 minute</td>
<td>2 minutes</td>
</tr>
<tr>
<td>2</td>
<td>Approximately 13.8 hours</td>
<td>Approximately 27.7 hours</td>
<td>Approximately 13.8 hours</td>
</tr>
<tr>
<td>4</td>
<td>Approximately 10.4 hours</td>
<td>Approximately 20.8 hours</td>
<td>Approximately 10.4 hours</td>
</tr>
<tr>
<td>6</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>12</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

### Saving data to removable storage medium

RD-MV100/200 data is saved as files to a removable storage medium. The tables below present examples of the maximum saving times for a PCMCIA ATA flash memory card (440 MB).

#### Event data file only (no calculation channel)

<table>
<thead>
<tr>
<th>RD-MV100</th>
<th>Measurement channels</th>
<th>Saving interval</th>
<th>Saving times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>125 ms</td>
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<td>1 second</td>
</tr>
<tr>
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<td>Approximately 13.8 hours</td>
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<td>Approximately 13.8 hours</td>
</tr>
<tr>
<td>4</td>
<td>Approximately 10.4 hours</td>
<td>Approximately 20.8 hours</td>
<td>Approximately 10.4 hours</td>
</tr>
<tr>
<td>6</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>12</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

#### Display data file only (no calculation channel)

<table>
<thead>
<tr>
<th>RD-MV100</th>
<th>Measurement channels</th>
<th>Saving interval</th>
<th>Saving times</th>
</tr>
</thead>
<tbody>
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</tr>
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<td>6</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>12</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
Network and Ethernet Functions

PC Direct Connection
The RD-MV100/RD-MV200 can easily be connected directly to a PC, even without using general communication protocols such as GP-IB and RS-232-C. Use a cross Ethernet cable for a one-to-one connection.

LAN Network Connection
PCs and RD-MV100/RD-MV200 units can communicate with each other in an existing LAN environment. This makes it possible to monitor testing in a laboratory building from a remote office area.

POTS Network Connection
If you want to exchange data between remote LANs (such as between a main office LAN and a laboratory LAN), you can connect them through a POTS line or leased line to form a WAN. POTS (acronym for Plain Old Telephone Service): Basic dial telephone connections to the public switched network, without any added features or functions.
Simple Network
You can create a simple network of PCs and RD-MV100/RD-MV200 units connected through a hub, even if you do not have an existing network.

FTP Client Function
The FTP client function makes it possible to make periodic, automatic transfers to a file server of data saved in the RD-MV100/200’s internal memory. A maximum of two servers (primary and secondary) are supported, so files are automatically transferred to the secondary server if the primary server fails.

FTP Server Function
The FTP server allows a client computer to download data files stored on the RD-MV100’s/200’s storage medium.
12

Collection Series
#12-001070

MY FLIGHT DIDN'T GET IN UNTIL THREE THIS MORNING.

WOULD YOU MIND SLAPPING THE BACK OF MY HEAD UNTIL MY EYES UNCROSS?

POUR ALL OF YOUR COFFEE IN HERE AND NO ONE GETS HURT.

DILBERT® by Scott Adams

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RD-MV100/200 Application Software

**DATA STANDARD**
(for Windows 95/98/NT4.0/2000, RD-MV100/200 Standard Software)

**Data Viewer**
The data viewer can be used to convert file formats and play back data files saved on the RD-MV100/RD-MV200 (event data, display data, TLOG data files), and data files transferred to a file server using a protocol such as FTP (event data, display data, TLOG data files). The file conversion functions lets you convert RD-MV100/200 data files to ASCII format, as well as the formats of off-the-shelf spreadsheet programs such as Lotus 1-2-3 and MS-Excel.

**Configuration Software**
The configuration software can be used to enter various RD-MV100/200 configurations either online or using a removable medium.

**DAQEXPLORER**
(for Windows 95/98/NT4.0/2000; Sold Separately)

**Desktop**
Desktop integrates DAQEXPLORER functions.

**Main features:**
- Searches for and mounts RD-MV100/RD-MV200 units distributed on a network.
- Activates the data monitor, data viewer, and configuration software.
- Starts/stops recording and triggers on the RD-MV100/RD-MV200.
- Prints out the RD-MV100/RD-MV200 display.
- Lists files stored in internal memory and an external storage medium.
- Transfers data files automatically.
- Transfers data files manually (by dragging and dropping icons).

Some of DAQEXPLORER’s varied features
Data Monitor
Used to monitor measurement data in various formats. It also allows monitoring of measurements from RD-MV100/RD-MV200 units mounted on DAQEXPLORER desktops running on other personal computers.

Data Viewer
Used to convert file formats and play back data files saved on the RD-MV100/RD-MV200, such as display data (.dds), event data (.dev), and TLOG data (.dtg) files, in various formats. It can also display linked files generated by breaking up contiguous data into multiple files. The file conversion function allows you to convert the data files to ASCII or MS-Excel/Lotus 1-2-3 format.

Configuration Software
Used to exchange settings between a personal computer and the RD-MV100/RD-MV200. All the RD-MV100/RD-MV200 settings can be entered into this program.

Linked File Display (by Data Viewer)
Data files automatically generated by breaking up contiguous data into multiple files in the RD-MV100/RD-MV200 can be displayed as linked files. You can save the file linking conditions, making it easy to redisplay linked files. In addition, displayed linked files allow you to read values, perform interval arithmetic, and convert data to ASCII or MS-Excel/Lotus 1-2-3 format.
**RD-MV100/200**

Today’s users want mobile capabilities in all types of devices that use information. Cellular phones and notebook computers are embodiments of this concept of mobility. With the RD-MV100/200 OMEGA is now setting the mobility standard for dataloggers.

**Large-Capacity Recording Memory**

The RD-MV100/200’s internal memory can store approximately 27 hours of continuous data when recording at 1-second intervals with a 6-channel model, or 8 hours when using a 20-channel model.* Data capacity can be increased to approximately 1.1 years’ worth of continuous data at the same recording interval with a 6-channel model, and 4.1 months with a 20-channel model by using a PCMCIA ATA flash memory card (440 MB) as a removable storage medium.

* 20-channel model available only for the MV200.

**Advanced Network Capability**

The RD-MV100/200 is standard equipped with an Ethernet (10BASE-T) port for high speed communications. The Ethernet capability makes it possible to form a simple network of PCs and RD-MV100/200 units using a hub, or connect the RD-MV100/200 to a LAN.

**Application Software**

The standard application software includes data display functions and RD-MV100/200 setting functions. Optional software (sold separately) is also available with more advanced networking capabilities (e.g., file transfers and data monitoring).

**Specifications**

**MV100:**
- 2-channel model: 125 ms measurement interval
- 4-channel model: 125 ms measurement interval
- 6-channel model: 1 second measurement interval
- 12-channel model: 1 second measurement interval

**MV200:**
- 4-channel model: 125 ms measurement interval
- 8-channel model: 125 ms measurement interval
- 10-channel model: 1 second measurement interval
- 20-channel model: 1 second measurement interval
- 30-channel model: 1 second measurement interval

* Measurement interval is 2 seconds when the A/D integrating time is set to 100 ms.

**RD-MV200 External Dimensions:**
Approx. 281 W x 338 H x 252 mm D (11 x 13 x 10")

**Weight:**
Approx. 7 kg (15.4 lb)

**Input:**
- Di: Voltage input
  - OFF: Less than 2.4 V
  - ON: 2.4 V or greater
- Contact input: Contact ON/OFF

**Order Online**

Visit www.omega.com to download information and to order online, visit www.omega.com

**Common Specifications**

**Removable Storage Medium:**
- 3 options (3.5" floppy disk, zip disk, PCMCIA ATA flash memory card)

**Inputs:**
- DC voltages, thermocouples, resistance temperature detectors, and digital inputs can be mixed.

**RD-MV100 External Dimensions:**
Approx. 152 W x 225 H x 240 mm D (6 x 9 x 9.5")

**Weight:**
Approx. 4 kg (8.8 lb)
when the A/D integrating time is set to 100 ms)

Input Ranges, Measuring Ranges, and Measurement/Display Accuracy:
(Reference operating conditions: 23 ±2°C; 55 ±10% RH; supply voltage; 90 to 132, 180 to 250 Vac supply frequency: 50/60 Hz ±1%; warmup time: 30 minutes or longer; performance under conditions, such as vibrations, which do not affect equipment operations)

Reference Junction Compensation (RJC): INT (internal)/EXT (external) switching possible

RJC Accuracy: Type R, S, B, C: ±1°C. Type K, J, E, T, N, L, U: ±0.5°C (when measured at 0°C or higher)

Maximum Input Voltage: 2 Vdc or lower voltage range and thermocouple ±10 Vdc (continuous), 6 V, 20 Vdc voltage range ±30 Vdc (continuous).

Input Resistance: 2 Vdc or lower voltage range and thermocouple: 10 MΩ or greater. 6 V, 20 Vdc voltage range:
Approx. 1 MΩ

Input External Resistance:
DC voltage, thermocouple input: 2 kΩ or less. RTD input: 10 Ω or less per line (equal on all three lines)

Input Bias Current: 10 nA or less

Maximum Common Mode Noise Voltage: 120 dB (50/60 Hz ±0.1%; 500 Ω unbalanced; negative terminal to ground)

Normal Mode Rejection Ratio: 40 dB (50/60 Hz ±0.1%)

Thermocouple Burnout: Sensor ON/OFF switching possible. Burnout upscale/downscale switching possible

Calculation:
Difference calculation: Difference calculation between any channels.

Difference calculation range:
DCV, TC, RTD

Linear scaling:
Scaling range: DCV, TC, RTD.
Scalable value: -30000 to 30000

Square root scaling:
Scaling range: DCV
Scalable value: -30000 to 30000

Display Unit

Display Colors: Trend and bar graph displays: 12 colors for RD-MV100, 16 colors for RD-MV200
Background: White or black

Trend Display
Direction: Vertical or horizontal
Number of Windows: Switching between 4 (4 groups)
Thickness: 1, 2, or 3 dots
Waveform update rate: 15 or 30 seconds (125 ms measurement interval model only), 1, 2, 5, 10, 20, or 30 minutes, or 1, 2, 4 hours (per div)

Bar Graph Display
Direction: Vertical or horizontal
Number of Windows: Switching between 4 (4 groups)
Scale: Can be set in range of 4 to 12
Horizontal bar graph reference position: End or center
Update rate: 1 second

Digital Display
Update rate: 1 second

Overview Display
Measurement values and alarm status on all channels

Information Display
Alarm summary, message summary, memory information, media information, etc.

Other Displayed Information
Memory status, scale values (0, 100%, display ON/OFF switching capability).
Grid (number of divisions can be set between 4 and 12), and hours: minutes: seconds)

Trip line (thickness: 1, 2, or 3 dots), Messages (maximum 16 characters, up to 8 types), alarm marks.

Data Reference Function
Data can be played back from internal memory or a removable storage medium.

Display types: Split screen (divided in 2) or whole screen.
Time axis operations: Zoom-in/-out display, scrolling.

Storage Functions:
Removable Storage Drive: A drive for the following types of media can be selected when you place your order:
• 3.5” floppy disk (2HD)
• Zip Disk
• PCMCIA ATA flash memory card

Data Saving Method: Manual saving or auto-saving

Manual Saving: Saves data when a removable storage medium is inserted
Auto-saving: Saves data when a removable storage medium is inserted

Data Saving Display: Saves data to a removable storage medium periodically (every 10 minutes to 31 days);
**RD-MV100/200 Paperless Recorder**

**Power Consumption**

**RD-MV100 (DC power option: appx. 30 VA)**

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>With LCD saver on</th>
<th>Normal use</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 VAC</td>
<td>Approximately 25 VA</td>
<td>Approximately 30 VA</td>
<td>Approximately 55 VA</td>
</tr>
<tr>
<td>240 VAC</td>
<td>Approximately 35 VA</td>
<td>Approximately 40 VA</td>
<td>Approximately 70 VA</td>
</tr>
</tbody>
</table>

**RD-MV200 (DC power option: appx. 42 VA)**

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>With LCD saver on</th>
<th>Normal use</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 VAC</td>
<td>Approximately 30 VA</td>
<td>Approximately 35 VA</td>
<td>Approximately 55 VA</td>
</tr>
<tr>
<td>240 VAC</td>
<td>Approximately 50 VA</td>
<td>Approximately 55 VA</td>
<td>Approximately 80 VA</td>
</tr>
</tbody>
</table>

**Saving Event Data:** Saves data to a removable storage medium periodically (every 3 minutes to 31 days) (when trigger is not yet specified). Or saves data when sampling period ends (when trigger is specified).

**Data Saving Intervals:**

- **Display data files:** Interval varies according to the waveform update rate.
- **Event data files:** Sampling interval is specified.
- **Event data file sampling intervals:**

**RD-MV102/104/204/208:**

1. Event data file (trigger only) plus display data file
2. Display data file only
3. Event data file only

**Data Format:** OMEGA standard format (binary format)

**Per Channel Data:**

- **Measurement Data:** 4 bytes per data
- **Calculation Data:** 8 bytes per data
- **Event Data:**
  - **Measurement Data:** 2 bytes per data;
  - **Calculation Data:** 4 bytes per data

**Sampling Time:** Example sampling times (RD-MV106, 6 measurement channels, 0 calculation channels)

**Manual Sampling Data:**

- **Storage Trigger:** Key input or contact input
- **Data Format:** ASCII format
- **Maximum Stored Data:** 50 data

**TLOG Data (with calculation option only):**

- Time series integrated (totalized) value, maximum value, minimum value, average value, max-min value
- **Storage Trigger:** Data saved when TLOG time is up

**Report Data (with calculation option only):**

- Periodic average value, maximum value, minimum value, and integrated (totalized) value.
- Types: Hourly reports, daily reports, daily + weekly reports, daily + monthly reports
- **Data Format:** ASCII
- **Screen Copying Function:** Copying
- **Method:** Key input
- **Data Format:** PNG
- **Output to:** Removable storage medium or online output

**Trigger Functions**

- **Event Data File:** Select FREE, TRIG, or ROTATE mode.
- **Display Data + Event Data File:** Select TRIG or ROTATE mode.
- **Trigger Source:** Key input, remote control (optional), alarm
- **Pretrigger:** Works with event data. 0, 5, 25, 50, 75, 95, or 100%

**Alarm Functions**

- **Maximum Number:** A maximum of four alarms can be set on each channel.
- **Alarm Types:** High-low limits, high-low difference limits, rate of change increase/decrease limits

**Rate of Change Alarm Time Interval:**

- Measurement interval x 1 to 15

**Display:** Status (alarm type) and common alarm display in digital display area when alarm occurs. Hold/no hold switching capability
Display Type

Digital Display (group switching display)
Displays all digital measurements, as well as channel/tag numbers, engineering units, and alarm statuses.

Bar Graph Display (group switching display)
Vertical and horizontal bar graphs can be selected.

Historical Trend Display
Allows past data saved in memory to be played back. In addition, historical and current trends can be viewed at the same time.

Overview Display
Allows digital readings and alarm statuses on all channels (including calculation channels) to be monitored.

Information Display
Displays an alarm summary, message summary, and report data.

4-Split Screen (RD-MV200 only)
The display can be divided into four screens for any display type.

Transferable Files: Display data files, event data files, report data, and screenshot data

FTP Server Functions: Directory operations on a removable storage medium, file output, file deletion, and information on available memory space in a storage medium

Power Supply Unit
AC Power Supply Rated
Supply Voltage: 100 to 240 Vac (automatic switching)
Operating Supply Voltage Range: 90 to 132, 180 to 250 Vac
Rated Supply Frequency: 50/60 Hz (automatic switching)

DC Power Supply Rated Supply Voltage: 12 Vdc
Operating Supply Voltage Range: 10 to 18 Vdc

FUNCTION-SPECIFIC SPECIFICATIONS
Input Unit
RD-MV100 Inputs:
RD-MV102: 2 channels
RD-MV104: 4 channels
RD-MV106: 6 channels
RD-MV112: 12 channels
RD-MV200 Inputs:
RD-MV204: 4 channels
RD-MV208: 8 channels
RD-MV210: 10 channels
RD-MV220: 20 channels
RD-MV230: 30 channels

Display Unit
Display: RD-MV100: 5.5” TFT color LCD (320 x 240 dots)
RD-MV200: 10.4” TFT color LCD (640 x 480 dots)

*The LCD may contain some pixels that are either always on or always off. Due to the characteristics of liquid crystals, variations in brightness may occur. Please note that such variations do not mean the display is broken.

NORMAL OPERATING CONDITIONS
Supply Voltage: AC Power Supply:
90 to 132, 180 to 250 Vac
DC power supply: 10 to 18 Vdc
Supply Frequency:
50 Hz ±2%, 60 Hz ±2%

For the complete selection of Data Acquisition products, refer to the OMEGA® Vol. MM® Data Acquisition Handbook or visit our website www.omega.com
DO YOU HAVE ANY ADVICE FOR MY JOB INTERVIEW?

TRY JUGGLING THE ITEMS ON HIS DESK. IT WILL MAKE YOU SEEM CONFIDENT.

SORRY

I EXPERIENCED SOMETHING CALLED POSITIVE REINFORCEMENT TODAY.

I’M ADDICTED TO IT NOW... BUT IT’S WEARING OFF. MUST GET MORE...

SAY SOMETHING NICE ABOUT ME!

FOR A CRAZY WOMAN YOU DON’T DRÔOL MUCH.

I’M ADDICTED TO POSITIVE REINFORCEMENT.

I NEED SOME DELIVERABLES SO I CAN BE Praised AGAIN.

RESULTS

3/26/00 DILBERT © United Feature Syndicate, Inc.
Ambient temperature: 5 to 40°C
Ambient humidity: 20 to 80% RH
(at 5 to 40 °C)

OPTIONAL SPECIFICATIONS
Alarm output relay contacts: (/A1, /A2, /A3, /A4, /A5) (/A4 and /A5 can be specified for RD-MV200 only)
Relay output from back side when alarm occurs.

Number of Outputs: 2, 4, 6, 12, or 24 (12 and 24 can be specified for RD-MV200 only)

Relay Contact: 250 Vdc/0.1 A (resistance load), 250 Vac (50/60 Hz)/3 A

Output Form: NO-C-NC (excitation/no excitation, AND/OR, hold/no hold switching capability)

Serial Communications (/C2, /C3): Host computer remote control, setting, and data output to host capability.

Interface Type: EIA RS-232 (/C2) or RS-422-A/485 (4-wire) (/C3) compliance

Protocol: Proprietary protocol

Synchronization Method: Start-stop

Communication Type
(RS-422-A/485): 4-wire half-duplex multidrop connection (1:N where N is 1 to 31)

Transfer Rate: 1200, 2400, 4800, 9600, 19200, 38400 bps

Data Length: 7 or 8 bits
Stop Bit: 1 bit
Parity: Odd, even, none

Maximum distance
(RS-422-A/485): 500 meters

Communication Modes: ASCII mode for control and settings I/O. ASCII or binary mode for measurement data output

Fail/Memory End Output (/F1)
Relay output from back side before start time specified for display data file overwriting or when system abnormally occurs (1, 2, 5, 10, 20, 50, or 100 hours can be specified)

Relay Contact: 250 Vdc/0.1 A (resistance load), 250 Vac (50/60 Hz)/3 A

Screw Input Terminals (/H3)
(/H3 option for RD-MV100 only; specified suffix code for RD-MV200) The standard clamp input terminals are replaced with screw type input terminals.

Mathematical Calculation Functions (/M1)
The RD-MV100/RD-MV200 is capable of the following calculations, as well as calculation channel trends/digital displaying and recording.

Calculation Channels:
RD-MV102, RD-MV104: 4 channels
RD-MV106, RD-MV112: 12 channels
RD-MV204, RD-MV208: 8 channels
RD-MV210, RD-MV220, RD-MV230: 30 channels

Calculation Types:
General Calculations: Addition, subtraction, multiplication, division, square root, absolute value, common logarithm, exponent, power, relationships (<, >, =, ≠), logical calculations (AND, OR, NOT, XOR)

Statistical Calculations: Time series data average, maximum, minimum, and integrated (totalized) values

Constants: Up to 12 constants can be set for RD-MV100, 30 for RD-MV200

Communication Digital Input:
Up to 12 (data) for RD-MV100, 30 (data) for RD-MV200 communication digital inputs are allowed. Can be used for calculation equations other than statistics.

Remote Input: Up to 8 remote inputs are allowed. Remote status (0/1) can be used in calculation equations.
Report Functions:
Report Types: Hourly reports, daily reports, daily + weekly reports, daily + monthly reports
Calculation Types: Average, maximum, minimum, and integrated (totalized) values.
Data Format: ASCII

Cu10/Cu25 RTD Input/3-wire Isolated RTD Input (N1):
This option enables CU10 and CU25 inputs in addition to the standard inputs. With RD-MV106, RD-MV112, RD-MV210, RD-MV220, and RD-MV230, all input points are isolated (A, B, and b are all isolated)
3-Wire Isolated RTD Input (N2):
With this option, all RTD input points are isolated (A, B, and b are all isolated). *Only available with RD-MV106, RD-MV112, RD-MV210, RD-MV220, and RD-MV230.
RD-MV102, RD-MV104, RD-MV203, and RD-MV208 come standard with A, B, and b isolated.

Remote Control (R1):
The following remote control operations are possible through contact input (up to 8 can be set).
• Memory start/stop (level)
• Event data file external trigger input (trigger, 250 ms or greater)
• Time adjustment (adjusts time to reference time using contact; trigger, 250 ms or greater)
• Calculation start/stop (level)
• Calculation data reset (trigger, 250 ms or greater)
• Manual sampling (trigger, 250 ms or greater)
• Message writing (as many as 8 can be set; trigger, 250 ms or greater)
• Load settings (as many as 3 can be set; trigger, 250 ms or greater)
• Alarm ACK (trigger, 250 ms or greater)

APPLICATION SOFTWARE
DAQSTANDARD
(part of standard RD-MV100/200 package)
System Requirements:
OS: Microsoft Windows 95/98/NT4.0/2000
Processor: MMX Pentium 166 MHz or higher recommended)
RAM: 32 MB or more (64 MB recommended)
Disk Drive: Floppy disk drive
Free Hard Drive Space: 10 MB or more (100 MB recommended)

Display Card: Display card capable of displaying 32,000 colors or more (64,000 or more recommended) and compatible with Windows 95/98/NT4.0/2000
Printer: Printer and printer drive compatible with Windows 95/98/NT4.0/2000
Main Functions (package):
Hardware configurations (online or using a removable storage medium); data viewer (waveform playback); printout of playback data; file conversion (to ASCII, Lotus 1-2-3, and MS-Excel formats)
DAQEXPLORER (sold separately)
System Requirements:
OS: Microsoft Windows 95/98/NT4.0/2000
Processor: MMX Pentium 166 MHz or higher recommended)
RAM: 64 MB or more (128 MB recommended)
Disk Drive: Floppy disk drive
Free Hard Drive Space: 10 MB or more (100 MB recommended)
To download information and to order online, visit www.omega.com

**Recorders**

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD-MV102-1</td>
<td>$2400</td>
<td>2-Channel 5.5&quot; Display Recorder, (125ms measurement interval)</td>
</tr>
<tr>
<td>RD-MV104-1</td>
<td>2800</td>
<td>4-Channel 5.5&quot; Display Recorder, (125ms measurement interval)</td>
</tr>
<tr>
<td>RD-MV106-1</td>
<td>2500</td>
<td>6-Channel, 5.5&quot; Display Recorder, (1sec measurement interval)</td>
</tr>
<tr>
<td>RD-MV112-1</td>
<td>3500</td>
<td>12-Channel, 5.5&quot; Display Recorder (1sec measurement interval)</td>
</tr>
<tr>
<td>RD-MV204-1</td>
<td>3800</td>
<td>4-Channel, 10.4&quot; Display Recorder (125ms measurement interval)</td>
</tr>
<tr>
<td>RD-MV208-1</td>
<td>4250</td>
<td>8-Channel, 10.4&quot; Display Recorder (125ms measurement interval)</td>
</tr>
<tr>
<td>RD-MV210-1</td>
<td>4000</td>
<td>10-Channel, 10.4&quot; Display Recorder (1sec measurement interval)</td>
</tr>
<tr>
<td>RD-MV220-1</td>
<td>4750</td>
<td>20-Channel, 10.4&quot; Display Recorder (1sec measurement interval)</td>
</tr>
<tr>
<td>RD-MV230-1</td>
<td>5500</td>
<td>30-Channel, 10.4&quot; Display Recorder (1sec measurement interval)</td>
</tr>
</tbody>
</table>

Standard units include floppy disk storage, 120/240Vac power, 3-pin power inlet with UL/CSA cable, and clamp input terminals.

To order Zip disk or ATA Flash Card change the "-1" to "-2" or "-3" respectively and add $150 to price.

To order with 12 Vdc power input (includes AC adaptor), add additional suffix of "-2" and $350 to price.

To order with different power cord add "-F" for VDE, "-R" for SAA, or "-S" for BS cable (same price).

**Ordering Example:** RD-MV106-1/A3/C3, 6-Channel 120/240 Vac model with floppy disc storage, alarm relay output with 6-points and RS422-A485 Interface, $2500 + 375 + 170 = $3045.

**Options (Add as Suffix)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/A1</td>
<td>$125</td>
<td>Alarm relay contact output: 2 points (RD-MV100 ONLY)</td>
</tr>
<tr>
<td>/AR1</td>
<td>275</td>
<td>Alarm relay contact output: 2 points &amp; Remote Control (RD-MV200 ONLY)</td>
</tr>
<tr>
<td>/A2</td>
<td>250</td>
<td>Alarm relay contact output: 4 points (RD-MV100 ONLY)</td>
</tr>
<tr>
<td>/AR2</td>
<td>400</td>
<td>Alarm relay contact output: 4 points &amp; Remote Control (RD-MV200 ONLY)</td>
</tr>
<tr>
<td>/A3</td>
<td>375</td>
<td>Alarm Relay Contact Output: 6 points</td>
</tr>
<tr>
<td>/A4</td>
<td>750</td>
<td>Alarm relay contact output: 12 points (RD-MV200 ONLY)</td>
</tr>
<tr>
<td>/A5</td>
<td>1125</td>
<td>Alarm relay contact output: 24 points (RD-MV200 ONLY)</td>
</tr>
<tr>
<td>/C2</td>
<td>170</td>
<td>RS-232C Interface</td>
</tr>
<tr>
<td>/C3</td>
<td>170</td>
<td>RS-422-A/485 Interface</td>
</tr>
<tr>
<td>/D5</td>
<td>250</td>
<td>VGA Output (RD-MV200 ONLY)</td>
</tr>
<tr>
<td>/F1</td>
<td>170</td>
<td>FAIL/Memory end output relay</td>
</tr>
<tr>
<td>/H3</td>
<td>0</td>
<td>Screw input terminals (RD-MV100 ONLY)</td>
</tr>
<tr>
<td>/M1</td>
<td>200</td>
<td>Mathematical function (including report function)</td>
</tr>
<tr>
<td>/R1</td>
<td>120</td>
<td>Remote control</td>
</tr>
<tr>
<td>-CE</td>
<td>375</td>
<td>CE marked</td>
</tr>
</tbody>
</table>

Only one /A* type option per unit. Only one /C* type option per unit.

With /F1 option the /A3 (on RD-MV100) or /A5 (on RD-MV200) is not available.

**Accessories (Sold Separately)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD-DXA200-02</td>
<td>$350</td>
<td>DAQEXPLORER Software</td>
</tr>
<tr>
<td>RD-MV-A1053MP</td>
<td>20</td>
<td>Zip Disk</td>
</tr>
<tr>
<td>RD-MV-A1134UN</td>
<td>150</td>
<td>ATA Flash Memory Card</td>
</tr>
</tbody>
</table>

Order Online

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Over 100,000 Products Available!
**Graphic Recorder/Datalogger/Data Printer**

- Accepts dcV/acV: 2 V, 200 mV, dcA: 20 mA
- Instant Graphic/Data Printout
- Datalogging for Data Recording, Storing and Analysis (RS-232)
- Programmable Unit, Hi, Lo, HiHi, LoLo Alarm & Date/Time Stamp
- Ideal for Laboratory & Process Engineering
- Software for Windows 95/98

The HH550 is a powerful graphic recorder/datalogger/printer. Designed for laboratory or process engineering use, the unit accepts an analog signal for local display, local printing, and/or storage to be downloaded to a PC. Datalogging capacity is 50,000 records. OMEGASOFT® Windows software is provided to allow setup, graphing, listing of data and exporting data to an Excel spread sheet.

The HH550 features a thermal printer which can be set to print at a programmed interval or upon demand. A real time clock and alarms of Hi, Lo, HiHi, LoLo may be set in the unit. Alarms are audible and printable. Unit is powered by 6 AA batteries (includes) or 120 Vac through an external dc adapter, both of which are provided with the instrument.

**SPECIFICATIONS**

- **Input Protection:** Voltage range 24 V; Current range 250 V/0.5 A Fuse (Maximum)
- **Operation Temperature and Humidity:** 0 to 40°C (32 to 140°F) & 10 to 80% RH
- **Storage Temperature and Humidity:** -10 to 60°C (14 to 140°F) & 10 to 70% RH indoor use
- **Dimensions:** Approx. 250 L x 100 W x 45 H mm (9.6 x 3.9 x 1.8”)
- **Weight:** Approx. 500 g (1 lb) (Includes batteries)

**Model No.** | **Price** | **Description**
--- | --- | ---
HH550 | $600 | Graphic Recorder/Datalogger/Data Printer
HH550-RP | 4 | Replacement paper, 1 roll

HH550 Complete Kit includes carrying case, batteries, power adaptor, test leads, Windows Software, 9 pin serial cable, 2 rolls of thermal paper and complete operator's manual.

Includes: carrying case, batteries, test leads, Windows software, serial cable 1.8 m (6’) long, one male and one female 9 pin connection, 9 to 25 pin adaptor, 2 rolls of thermal paper, power adaptor with 1.8 m (6’) cable and complete operator’s manual.

**To Order (Specify Model Number)**

- Printer:
  - Interval Print: 00 hour:00 min.:03 sec. to 23 hour:59 minute:59 sec.
  - Trigger print: Manual prompt by user via pressing the Print key; prints date, time and value.
- Altitude: Up to 2000 Meters (6562 ft)
- Analog Input Range:
  - dcV/acV: 2 V, 200 mV, dcA: 20 mA
- Accuracy:
  - DC: (±1% rdg + 3 d)
  - AC: (±1% rdg + 5 d) at (50 to 450 Hz)

**Ordering Example:** HH550 Graphic Recorder/Datalogger/Data Printer $600.
Next Generation SUPERMETER®
With Laser Sighting
3 METERS IN 1

HHM290
$345

- Full Function Auto-Ranging Digital Multimeter
- Infrared Pyrometer with Patented Switchable Laser Circle/Dot Sighting
- Dual Input Thermometer with Differential Temperature Function

True RMS Measurement!

Patented User Switchable Laser Sighting!

Laser Dot
Range: Up to 23 m (75 ft.)

Laser Circle
Range: Up to 7.6 m (25 ft.)

Non-contact Temperature Measurement
Differential Temperature Measurement

U.S. and Foreign Patents and Patents Pending
Technology Breakthrough!

"It's a technician's dream come true!" OMEGA's new, 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 into one power-packed handheld instrument. The Multimeter measures: DC/AC Voltage, Current, Resistance, Frequency, Capacitance and features a built-in Logic & 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 analogue bargraph format with settings for Min/Max and Average readings. Each unit features Auto power-off, fused multimeter inputs, both battery or optional AC wall adapter operation and comes complete with safety test leads, dual type-K temperature probes, rubber protective boot, batteries, spare fuse, user's manual and is CE marked.

Includes:
- Test Lead Set
- Two (2) Type K Beaded Wire Thermocouples with Spool Caps
- Six (6) "AA" Batteries
- Rubber Boot
- Spare Fuse
- Operator's Manual
- Built-in Non-Contact Infrared Pyrometer
- Full Function Multimeter Featuring Min, Max, and Average Readings
- Dual Type K Thermocouple Inputs and Selectable Temperature Display (T1 & T2) as well as Differential Temperature (T1-T2)

Patented User Switchable Laser Sighting

Laser Dot
Range: Up to 23 m (75 ft.)

Laser Circle
Range: Up to 7.6 m (25 ft.)
Specifications

**GENERAL:**
Operating Temperature:
0 to 50°C
Power: 6AA size 1.5 Vdc Batteries (included) or optional DC Adaptor, 9 Vdc @ 200 mA
Display: Dual Backlit LCD with digital readout of 43,000 counts and analogue bar graph of 40 counts.
Display Resolution:

<table>
<thead>
<tr>
<th>Range</th>
<th>Display Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4.3</td>
<td>0.0001</td>
</tr>
<tr>
<td>0-43</td>
<td>0.001</td>
</tr>
<tr>
<td>0-430</td>
<td>0.01</td>
</tr>
<tr>
<td>0-4300</td>
<td>0.1</td>
</tr>
<tr>
<td>0-43000</td>
<td>1</td>
</tr>
</tbody>
</table>

Low Battery Indication:
Icon on LCD
Battery Life: 100 hours normal operation No Laser or LCD Backlit
Tripod Mount: ¼"-20 UNC
Dimensions: 203 x 101 x 51 mm
(8 x 4 x 2")
Weight: 640 g (1.42 lb)

**Temperature Measurement**
Thermocouple Type: Dual K type
Display: T1, T2, or T1-T2

**Infrared Measurement**
Measurement Range:
-40 to 1315°C (-40 to 2400°F)
Accuracy @22°C: 2% of Rdg or 1.7°C, whichever is greater
IR Resolution: 1°C or °F
Optical Field of View: 10 to 1
Spectral Response: 8 to 14 micron
Emissivity: 0.1 to 1.00 adjustable
Response Time: ≤1.5 seconds

**Laser Sighting**

Wavelength (Color):
630-700 nm, (Red)
Operating Distance:
Laser Dot – Up to 23 m (75 ft.)
Laser Circle – Up to 7.6 m (25 ft.)
Maximum Optical Power Output:
≤5 mW. Class IIa Laser Product
Laser Indicator:
Laser icon on the display

**Multimeter**

**DC VOLTS**
Range: 430 mV to 1000 V
Accuracy: 0.25% Rdg + 1 Digit
**AC VOLTS**
Range: 430 mVac to 750 Vac
Accuracy: 1% Rdg + 2 Digits
**DC CURRENT**
Range: 430 uA to 10 A
Accuracy:
0.5% Rdg + 1 Digit (Up to 43 mA)
2% Rdg + 1 Digit (Up to 10 A)
**AC Current**
Range: 430 µA to 10 A
Accuracy:
1% Rdg + 2 Digits (Up to 43 mA)
2.5% Rdg + 2 Digits (Up to 10 A)
**Resistance**
Range: Up to 43 MΩ
Accuracy:
0.3% Rdg + 3 Digits
(Up to 4.3 MΩ)
**Frequency**
Range: Up to 1.8 MHz
Accuracy: 1% Rdg + 3 Digits
**Capacitance**
Range: 4.3 nF to 430 µF
Accuracy: 5% Rdg + 10 Digits

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Digital Instrumentation

SUPERMETER®
3 METERS IN 1!

Infrared Measurement
Laser Sighting Dot or Circle Switchable
Patented Laser Sighting Circle or Dot Switchable

DISTANCE: SENSOR TO OBJECT (FT)
DISTANCE: SENSOR TO OBJECT (CM)
SPOT DIA.* (IN) SPOT DIA.* (CM)
*SPOT DIAMETER MEASURED AT 90% ENERGY
HHM290 D:S = 10:1

We make running changes when technical advances allow. Check at time of ordering for additional features.


Dual Type K Thermocouple Inputs (Thermocouples included) with Differential Function
✔ Built-in Non-Contact Infrared Pyrometer
✔ Full Function Multimeter Featuring Min, Max, and Average Readings
✔ Dual K Type Thermocouple Input and Temperature Display (T1 & T2) as well as Differential Temperature (T1-T2)
✔ Built-in Patented Laser Circle Sighting for Infrared Measurement
✔ Digital Emissivity Adjustment from 0.1 to 1.00 in 0.01 Steps
✔ Optical Field of View of 10:1 (Distance to Spot Size)
✔ High Performance, Rugged Design with Large Backlit LCD Display
✔ Measures Voltage, Current, Resistance, Capacitance, Inductance, and Frequency
✔ Built-in Diode and Logic Test
✔ Battery Powered as well as AC Powered Using an Adaptor
✔ Auto Power Shut Off Feature
✔ Tripod Mount and a Built-in Rubber Boot

Immediate Delivery Available

To Order (Specify Model Number)

Model Number | Price | Description
--- | --- | ---
HHM290 | $345 | Digital multimeter/infrared thermometer with laser sighting Dot/Circle Switch

Options and Accessories

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHM290-SC</td>
<td>15</td>
<td>Soft carrying case</td>
</tr>
<tr>
<td>HHM-TL</td>
<td>5</td>
<td>Replacement test leads (1set)</td>
</tr>
<tr>
<td>OS520-Adaptor-110V</td>
<td>25</td>
<td>110 Vac adaptor</td>
</tr>
<tr>
<td>OS520-Adaptor-220V</td>
<td>25</td>
<td>220 Vac adaptor</td>
</tr>
<tr>
<td>KTSS-HH</td>
<td>29</td>
<td>General Purpose, immersion probe, type K</td>
</tr>
<tr>
<td>88001K</td>
<td>110</td>
<td>General purpose surface probe, type K</td>
</tr>
<tr>
<td>CALIBRATION</td>
<td>*</td>
<td>NIST Traceable Calibration</td>
</tr>
</tbody>
</table>

* Consult Sales for price and Calibrations available
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 $345, HHM290-SC, soft carrying case $15.00, KTSS-HH, general purpose immersion probe $29.00, $345 + 15 + 29.00 = $389.00.

We make running changes when technical advances allow. Check at time of ordering for additional features.
DILBERT® by Scott Adams

12
Collection Series #12-001088

I'm safe from your germs, Alice. You can sneeze all you want.

Aah...

DILBERT © United Feature Syndicate, Inc.

3/14/00

DILBERT® by Scott Adams

12
Collection Series #12-001089

I'm promoting you to President of our dot-com subsidiary.

Your job is to fire everyone.

Would I get a raise?

I how does a billion shares of stock sound?

DILBERT © United Feature Syndicate, Inc.

3/15/00

DILBERT® by Scott Adams

12
Collection Series #12-001090

Dilbert dot-com CFO: We have no profit now and we never will. You're all laid off.

Does anyone know what laid off means?

It must be a compliment.

You're pretty laid off yourself, dude.

DILBERT © United Feature Syndicate, Inc.

3/16/00
Digital Storage Oscilloscope/ Multimeter
Powerful 100 MHz Bandwidth

HHSM-310M
$1560
Probes included

The HHSM-310M has measurement capabilities beyond conventional portable instrumentation. Powerful 100 MHz, 2-channel bandwidth, 4000 count digital multimeter and its unique folding design are ideal for design and service applications. RS232C programmability (optional HHSM310-SW) combines high performance and excellent value.

HHSM-310M comes complete with built-in rechargeable battery, AC adaptor, test leads and 2 oscilloscope probe kits.

Specifications

**Vertical Axis:**
- **Resolution:** 8 bits
- **Sensitivity:** 1mV/div – 5V/div
  (1-2-5 sequence, 12 steps)
- **Accuracy:** 3% (5% for 1mV, 2mV)
- **Bandwidth:** DC-100MHz (-3dB)
- **Low Frequency Limit in AC Couple:** 10 Hz
- **Input Channel:** CH1, CH2
- **Input Impedance:** 1MΩ/approx. 25pF
- **Mode:** CH1, CH2 turned on or off independently
- **Max. Safe Input Volts:** 42Vpk (DC + AC peak at 1 KHz)
- **Horizontal Axis:**
  - **Max. Sample Rate:** Real time
  - **25 MS/s (simultaneous on 2 channels); Repetitive 5GS/s (simultaneous on 2 channels)**
  - **Acquisition Memory:** 2 K words/CH
  - **Sweep Time:**
    - Equivalent Sample: 5ns/div–2µs/div
    - Real Time Sample: 5ns/div–0.5s/div
  - **Roll Mode:**
    - 1s/div–5s/div
- **Timebase Error:** 1%

**Order Online**
Over 100,000 Products Available!
**Specifications**

**Trigger:**
- **Source:** CH1, CH2, EXT
- **Mode:** Auto, Norm, TV-V, TV-H
- **Couple:** DC, AC, HF/rel, LF/rel
- **Slope:** + or -
- **Level:** Manual setting or automatic 50% setting

**Sensitivity:**

<table>
<thead>
<tr>
<th>Trigger</th>
<th>Frequency</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH1</td>
<td>DC-10 MHz</td>
<td>0.5 div 2.5 mV/div</td>
</tr>
<tr>
<td>CH2</td>
<td>10-100 MHz</td>
<td>1.5 div 7.5 mV/div</td>
</tr>
<tr>
<td>EXT</td>
<td>DC-100 MHz</td>
<td>0.1 Vp-p</td>
</tr>
</tbody>
</table>

**TV Trigger:**
- Sync section: 1.0mv or more, negative

**AC Cut-off Freq.:**
- Approx. 10Hz (-3dB)

**HF/LF Cut-off Freq.:**
- Approx. 50kHz (-3dB)

**Auto Lower Freq.:**
- Approx. 30Hz

**Menu:**
- **Display:** 13 cm (5") STN LCD (CCFI backlight), 320 x 240 pixel
- **10div (H) x 8div (V); 25 x 25 dots/div**
- **Grid (full, quad, board) interpolation**
- **Sine, linear**
- **Dot join on/off, persistence,**
- **X-Y horizontal mag/alt mag**
- **Save/Recall:**
- Average (exponential 2-256); save/recall max. 10 waveforms
- **Set-up clear waveform set-up**

**Math:**
- **Parameter:** Amplitude (p-p, rms, average), frequency, period, pulse width (positive, negative) duty cycle
- **Arithmetic:**
- Addition, subtraction, inversion
- **Utility:**
- Probe (X1, X10) LCD contrast dec/inc, RS-232C

**Cursor:**
- ∆V, ∆T, 1/ΔT reference, track

**Auto Set-Up & Tracking:**
- The front panel settings are automatically performed so that the optimum waveform is displayed for an input signal.
- Freq: 20Hz-20MHz, duty: 20-80%; amplitude: 10mV-50V
- (20mV or more for 20 to 100Hz)

**Hold/Run:**
- Hold mode is used to stop the updating of the waveform, run mode to update repeatedly

**Hardcopy:**
- Hardcopy through RS-232C interface

**Resume:**
- The setup data before power off and all the displayed information is retained. At power on these data are displayed and used as setup data

**DMM:**
- Digit: 334 (4000 counts)
- Others:
  - Diode test, continuity test, min, max, relative, hold
- **Calibration Out:**
  - Frequency: 1 kHz ± 20%
  - Output Voltage: 0.5V ± 30%

**Power Supply:**
- **Power Supply:**
  - Exclusive AC adapter; built-in battery;
  - Rated external input voltage: 12V;
  - Power consumption for external power input: 1A (typ)
- **Power Consumption:**
  - 12W (typ)
- **Built-in Battery:**
  - Ni-Cd battery, automatically rechargeable (voltage drop is automatically detected)

**Dimensions:**
- 180 W x 67 H x 255 mm D (7 x 3 x 10")
- Weight: 2.0 kg (4 lb)

**AC/DC Voltage:**

<table>
<thead>
<tr>
<th>Range</th>
<th>400mV</th>
<th>4V</th>
<th>40V</th>
<th>400V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1mV</td>
<td>1mV</td>
<td>10mV</td>
<td>100mV</td>
</tr>
</tbody>
</table>

**Resistance:**

<table>
<thead>
<tr>
<th>Range</th>
<th>400</th>
<th>4k</th>
<th>40V</th>
<th>400K</th>
<th>4M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1</td>
<td>1</td>
<td>10</td>
<td>100</td>
<td>1K</td>
</tr>
</tbody>
</table>

**To Order (Specify Model No.)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHSM-310M</td>
<td>$1560</td>
<td>Digital storage oscilloscope/multimeter</td>
</tr>
</tbody>
</table>

**To Order (Specify Model No.)**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
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</tr>
</thead>
<tbody>
<tr>
<td>HHSM310-SW</td>
<td>$79</td>
<td>Software kit (cable, s/w, manual)</td>
</tr>
<tr>
<td>HHSM310-CC</td>
<td>55</td>
<td>Soft carrying case</td>
</tr>
<tr>
<td>HHSM310-TP</td>
<td>55</td>
<td>Spare set of oscilloscope probes (2)</td>
</tr>
<tr>
<td>HHSM310-Printer</td>
<td>800</td>
<td>RS-232 printer</td>
</tr>
</tbody>
</table>

HHSM-310M comes complete with built-in rechargeable battery, AC adapter, test lead set, 2 oscilloscope probe kits and manual. **Ordering Example:** HHSM-310M oscilloscope/multimeter, plus HHSM310-SW, software kit, plus HHSM310-Printer, RS-232 printer, $1560 + 79 + 800 = $2439.
Economical Handheld Digital Tachometer with RS232C Software (Model HHT-1501 Only)

OMEGAETTE™ — Moderately Priced Instruments. Ideal for Education, Training and Demonstration Programs.

- 5 Digits LCD Display
- Light Reflex Measurement Technology
- Range 10.00 to 99,999 RPM
- Measuring Distance 50 to 300 mm
- Event Counter with Elapsed Time (HH:MM)
- HHT-1502 Optional Contact Adaptor
- Max/Min/Hold: True Average
- Auto Range RPM
- RS-232 Interface for Model HHT-1501
- Contact RPM and Circumferential Velocity (HHT-1502CA)
- Windows 3.1/95/96 Based Software

The HHT-1500 Series is an accurate economical, non-contact optical digital tachometer. All units come complete with reflective tape and carrying case. An optional contact adaptor, HHT-1502CA is easy to attach and converts the unit to mechanical measurement. Users affix a tape on the shaft to be measured. The tachometer measures the time between reflected pulses of light and calculates the RPM.

HHT-1500
$195
Basic Unit

RS-232 Interface Standard on Model HHT-1501

Optional Contact Adaptor, HHT-1502CA, $45
**Economical Handheld Digital Tachometer**

**OMEGATTE™ — Moderately Priced Instruments. Ideal for Education, Training and Demonstration Programs.**

**Specifications**

**Speed (Optical)**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM</td>
<td>10.00 ~ 99999</td>
<td>0.01/0.1/1</td>
</tr>
<tr>
<td>rps(Hz)</td>
<td>0.200 ~ 2000.0</td>
<td>0.001/0.01/0.1</td>
</tr>
</tbody>
</table>

**Speed (Contact)**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM / (&quot;/&quot; symbolizes “Contact”)</td>
<td>10.00 - 29999</td>
<td>0.001/0.01/0.1/1</td>
</tr>
<tr>
<td>m/min</td>
<td>1.000 - 2999.9</td>
<td>0.001/0.01/0.1</td>
</tr>
<tr>
<td>ft/min</td>
<td>3.00 - 10000</td>
<td>0.001/0.01/0.1</td>
</tr>
<tr>
<td>yard/min</td>
<td>1.00 - 3000</td>
<td>0.001/0.01/0.1</td>
</tr>
</tbody>
</table>

**Event Counter**

<table>
<thead>
<tr>
<th>Range</th>
<th>Max. Input Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 99999</td>
<td>10KHz. with 5% duty cycle</td>
</tr>
</tbody>
</table>

**General Specifications**

- **External TTL Input**: High > 4.5V (HHT-1501)
- **Display**: 5 digits 99999 counts
- **Sampling Rate**: 0.7 second (> 60 rpm)
  > 1 second (10 to 60 rpm)
- **Measuring Distance**: 50 to 300 mm
- **Time Base**: 4.0 MHz Quartz Crystal
- **Range Selection**: Automatic
- **Battery**: Four 1.5V batteries (AA)
- **Power Consumption**: 1.5mA (Idle)
  5mA (1000.0 - 99999 rpm)
  25mA (10.00 - 999.99 rpm)
  25mA (Max, Min or Average Enabled)
  25mA (Event Counter)
- **Auto-Power-Off**: 30 minutes.
- **Operating Temp.**: 0 to 50°C (32 to 122°F)
- **Size**: 72 mm x 63 mm x 36 mm (6.8” x 2.5” x 1.5”) (including battery)

**To Order (Specify Model Number)**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHT-1500</td>
<td>$195</td>
<td>Digital Tachometer</td>
</tr>
<tr>
<td>HHT-1501</td>
<td>225</td>
<td>Digital Tachometer with RS232C Cable and Software</td>
</tr>
<tr>
<td>HHT-1502CA</td>
<td>45</td>
<td>Optional Contact Adaptor</td>
</tr>
</tbody>
</table>

*Each unit is supplied with carrying case, reflective tape, 4 AA alkaline batteries and operator’s manual. Ordering Example: HHT-1501, Digital tachometer with RS232C Cable and Software and HHT-1502CA Contact Adaptor, $225 + 45 = $270.*
Humidity/Temperature Transmitters

- Fast, Stable and Accurate
- Watertight Enclosure
- Compact, Easy to Use
- Excellent Long-Term Stability
- Wide Input Voltage Range (12 to 40 Vdc)
- Available with Either Current or Voltage Output
- On Site, Two Point Calibration (Zero and Span)

HX302C

$190

The HX300 Series Transmitter is designed for industrial environments requiring fast, stable and accurate measurements. It utilizes a highly stable thin film polymer capacitor to sense relative humidity, and a high accuracy thin film RTD to accurately sense temperature.

SPECIFICATIONS

Measurement Range: 0 to 100% RH
Accuracy (25°C): ±2.5% RH, ±0.3°C
Long Term Stability: Better than 1% RH per year (typical)
Temperature Compensation: 0.008% RH/°C (Effect @ 05 RH)
Response: <15 seconds (90% @ +25°C in moving air at 0.5 m/second)
Sensors: Humidity - Thin film capacitor Temperature - RTD PT100Ω, IEC 751, DIN 43760
Output: Current - 4 to 20 mA, 2-wire ±15% scalable zero and span adjustment Voltage - 0 to 1 Volt.
Supply Voltage: 12 to 40 Vdc
Sensor Protection: Sintered Filter
Housing: ABS plastic watertight enclosure to IP65 (NEMA-4)
Connections: Liquid-tight nylon, cable bushing fits 5 to 10 mm dia. (0.2 to 0.4") cables
Operating Temperature: 0 to 50°C (0 to 122°F)
Weight: Approx. 150 g (5.3 oz)

DIMENSIONS IN mm (inches)

ON SITE CALIBRATION & WIRING

ALL MODELS IN STOCK!

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HX303C</td>
<td>$225</td>
<td>Wall Mount RH/Temperature Transmitter, 4-20 mA Current Outputs</td>
</tr>
<tr>
<td>HX303V</td>
<td>225</td>
<td>Wall Mount RH/Temperature Transmitter, 0-1 Voltage Outputs</td>
</tr>
<tr>
<td>HX302C</td>
<td>190</td>
<td>Wall Mount RH Transmitter, 4-20 mA Current Outputs</td>
</tr>
<tr>
<td>HX302V</td>
<td>190</td>
<td>Wall Mount RH Transmitter, 0-1 Voltage Outputs</td>
</tr>
<tr>
<td>PSU-93</td>
<td>40</td>
<td>Unregulated Power Supply 16 to 23 Vdc @ 300 mA</td>
</tr>
</tbody>
</table>

Ordering Example: HX303C, Wall Mount Humidity/Temperature transmitter with current output, $225.


Economical Thermocouple Scanners

DP1000 — Automatic Temperature Scanner/Alarm. Monitor 6 Type J or K Thermocouples in Automatic or Manual Mode

DP1001A — 10 Point Temperature Scanners
Auto/Manual Scan Models with Channel Selection

<table>
<thead>
<tr>
<th>Model No.</th>
<th>DP1001A (Auto) and DP1001M (Manual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor</td>
<td>Type K</td>
</tr>
<tr>
<td>Range °F</td>
<td>-50 to 1999°F</td>
</tr>
<tr>
<td>°C</td>
<td>-50 to 1350°F</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.25%</td>
</tr>
<tr>
<td>Resolution</td>
<td>1.0°F/°C</td>
</tr>
<tr>
<td>Dimension</td>
<td>180 x 135 x 80 mm (7 x 5 x 3&quot;) (Bench Type)</td>
</tr>
<tr>
<td>Weight</td>
<td>1 kg (2 lb)</td>
</tr>
<tr>
<td>Power</td>
<td>AC Adaptor</td>
</tr>
</tbody>
</table>

DP1006 — 10 Point ¼ DIN Indicators
Monitor Temperatures of up to Ten Type J or K Thermocouples

<table>
<thead>
<tr>
<th>Model No.</th>
<th>DP1096KC</th>
<th>DP1096KF</th>
<th>DP1096JC</th>
<th>DP1096JF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>-50 to 1350°C</td>
<td>-60 to 1999°F</td>
<td>-50 to 750°C</td>
<td>-60 to 1400°F</td>
</tr>
<tr>
<td>Resolution</td>
<td>1.0°F/°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>± 0.25%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>DIN 96 x 96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>AC 110/220V</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To Order (Specify Model Number)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP1000</td>
<td>6 Point Auto Temperature Scanner/Alarm</td>
</tr>
<tr>
<td>DP1001A(*)</td>
<td>Auto 10 pt scanner</td>
</tr>
<tr>
<td>DP1001M(*)</td>
<td>Manual 10 pt scanner</td>
</tr>
<tr>
<td>DP1096(++)</td>
<td>10 pt ¼ DIN indicator</td>
</tr>
<tr>
<td>DP1000</td>
<td>6 pt J/K monitor, auto/manual</td>
</tr>
</tbody>
</table>

* insert Thermocouple Type J, K, T
** insert Thermocouple Type and Scale JF, JC, KC

Ordering Example: DP1001AJ auto 10 point scanner, DP1096JC 10 point indicator, DP1000 temperature scanner/alarm, $359 + 159 + 390 = $908

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e-mail: info@omega.de

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