# High Speed Isolated Temperature/Voltage Interface
## Model OMB-MULTISCAN-1200

**$1998**
**Basic Unit with one Input Module and Software (shown with one OMB-MTC-24)**

Pressure transducer sold separately. See the OMEGA Complete Pressure, Strain and Force Measurement Handbook and Encyclopedia® or visit us at **WWW.OMEGA.COM**

Thermocouple probes sold separately. See the OMEGA Complete Temperature Measurement Handbook and Encyclopedia® or visit us at **WWW.OMEGA.COM**

- ✔ **Measure Temperature, ac/dc Voltage and Waveforms**
- ✔ **Scan Thermocouples and dc Volts up to 147 Channels/s**
- ✔ **Single-Channel Burst Mode for Digitizing Waveforms up to 20 kHz**
- ✔ **Scanning Modules Available for 24 Channels of Thermocouple/Voltage or High Voltage**
- ✔ **744 Channel Max Expansion**
- ✔ **Built-In IEEE-488 and RS-232/422 Interfaces**
- ✔ **32 TTL Digital Alarm Outputs and 8 TTL Digital Inputs**
- ✔ **Two Programmable Scan Rates for:**
  - **• Pre-Trigger and Post-Trigger Sampling**
  - **• Accelerated Sampling On-Event Detection**
- ✔ **256 Kbytes Memory, Expandable to 4 Mbytes**
- ✔ **Real-Time Clock**
- ✔ **Includes ChartView Datalogging and PostView Graphic Data Review Programs for Windows**

The OMB-MULTISCAN-1200 is a compact, 19-inch rack-mountable temperature and voltage measurement interface that features channel-to-channel isolation. It has the versatility to scan thermocouples and volts at up to 147 channels/s, and digitize waveforms up to 20 kHz.

The standard unit accepts 24 differential inputs for any combination of voltage and temperature measurements. It has a 16-bit A/D converter, oversampling, and averaging for low noise and AC line rejection.

Unlike most temperature measuring instruments and PC plug-in boards, which are difficult or expensive to expand beyond their built-in channel capacity, the OMB-MULTISCAN-1200 can be easily expanded up to 744 channels via low-cost slave expansion units.

The OMB-MULTISCAN-1200 includes easy-to-program IEEE-488 and RS-232/422 interfaces. Two Windows applications, ChartView, a set up, acquisition, and display program; and PostView, a post-acquisition display program, are provided with each unit.

### SCANNING MODULES

The OMB-MULTISCAN-1200 can accept either the OMB-MTC-24 thermocouple/voltage or OMB-MHV-24 high voltage input module. Each module features 24 input channels. Using available expansion chassis, up to 30 additional input modules can be accommodated, yielding 744 total input channels.

The OMB-MTC-24 thermocouple/volts module accepts J, K, T, E, R, S, B, and N thermocouple types, or ±10 V, ±5 V, ±1 V, and ±100 mV inputs. Channel-to-channel isolation is 200 Vdc peak.

The OMB-MHV-24 high-voltage module accepts ±250 V, ±25 V, ±2.5 V. Channel-to-channel isolation is 500 Vdc peak.
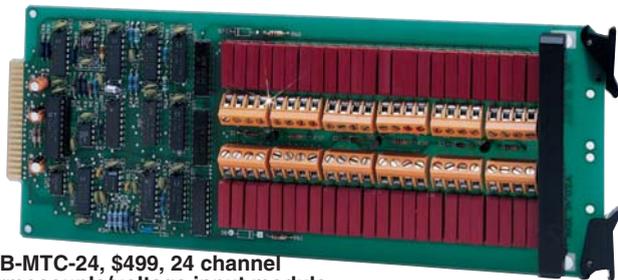


**OMB-MTC-24, $499, 24 channel thermocouple/voltage input module**

### EXPANSION ARCHITECTURE
The OMB-MULTISCAN-1200 master unit can control up to 15 OMB-EXP-10A slave expansion units. Each OMB-EXP-10A accepts either one or two 24-channel input modules, providing a maximum of 744 input channels.
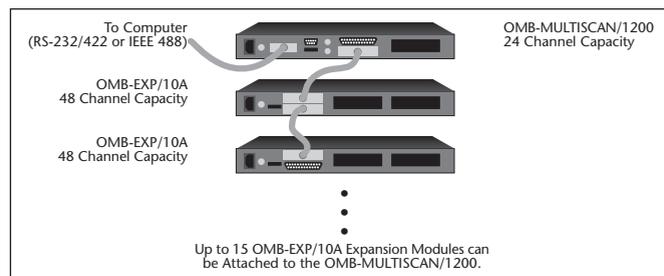
## Input Module Measurement Capability

| Signal | OMB-MTC-24 | OMB-MHV-24 |
|---|---|---|
| Thermocouple | ✔ | |
| Vdc | ✔ | ✔ |
| Vac | ✔ | ✔ |

### MEASURING MODES
The OMB-MULTISCAN-1200 offers users three measuring modes for application flexibility — line-cycle integration, high-speed multi-channel scanning and single-channel burst modes.

### Line-Cycle Integration



The OMB-MULTISCAN-1200 can sample and average 32 measurements per line cycle, making it useful for high-accuracy applications. In addition, when engaged in line-cycle averaging, the unit provides ac or dc voltage, or linearized and compensated thermocouple-based temperature readings at up to 44 channels/s.

The OMB-MULTISCAN-1200's ac voltage measurement capability is ideal for power-line monitoring applications. For each measurement, the unit calculates the equivalent true RMS voltage based on 32 samples it acquires during each ac line cycle.

### High-Speed, Multichannel Scanning
When line-cycle averaging is disabled, the OMB-MULTISCAN-1200 can average 1, 2, 4, 8, 16, or 32 samples per channel. When the unit is configured to take 1 sample per channel, it can scan 147 channels/s—or all of its potential 744 expansion channels in approximately 5 seconds.

This is important if the application involves monitoring tens to hundreds of channels. By contrast, dataloggers

## Measurement Mode

| | Line Cycle Integration | High Speed Multichannel Scanning | Single-Channel Burst Mode |
|---|---|---|---|
| Thermocouple | ✔ | ✔ | |
| Vdc | ✔ | ✔ | ✔ |
| Vac | ✔ | | ✔ |

and other temperature measuring instruments typically acquire readings at only 5 to 20 channels/s.

### Single-Channel Burst Mode
In single-channel burst mode, the OMB-MULTISCAN-1200 can sample at up to 20 kHz on a single channel and store the data in its memory, which can be expanded up to 8 Mbytes. When performing post-acquisition waveform analysis such as Fast Fourier transforms (FFTs), the unit can return each data point in a waveform to your program. Alternatively, the unit can provide a true RMS value of the equivalent ac voltage.

### SCANNING CAPABILITIES
The OMB-MULTISCAN-1200 provides an array of scanning capabilities to meet user application requirements. Because data logging applications frequently require the logging of readings at fixed time intervals, the OMB-MULTISCAN-1200 uses the standard hours-minutes-seconds (hh:mm:ss.s) format to specify the time interval between channel scans. Users can configure the unit to begin and end data logging on a specified event— such as a TTL signal, temperature level, IEEE GET, alarm condition, or absolute time of day— or upon completion of a specified number of readings.

### Two Programmable Scan Rates
The OMB-MULTISCAN-1200 offers two programmable scan rates for applications that require acceleration of the measurement rate on a specified event, such as an alarm condition. For example, you can program the OMB-MULTISCAN-1200 to sample once per minute and then, upon the occurrence of a specified alarm condition, to switch to sampling once per second. Upon cessation of the alarm condition, the unit resumes sampling at the rate of once per minute.

### ACCURACY
The OMB-MULTISCAN-1200 has a number of features and capabilities that enable it to deliver the high accuracy demanded by many research applications.

# High Speed Isolated Temperature/Voltage Interface

## High Resolution
The unit's high-speed 16-bit A/D converter enables it to offer up to 0.1°C and 3.12 μV resolution with the OMB-MTC-24 scanning module.

## Noise Filtering
The OMB-MULTISCAN-1200 filters ac line cycle noise by sampling and averaging 32 measurements per line cycle, or, for more demanding applications, by averaging across multiples of 1, 2, 4, or 8 line cycles.

## High-Accuracy Cold-Junction Compensation
The OMB-MTC-24 thermocouple scanning module features three strategically located temperature sensors that provide high accuracy cold-junction compensation across all 24 inputs.

## Accurate Linearization
The OMB-MULTISCAN-1200 enables quick and accurate linearization by providing built-in lookup tables for popular thermocouple types, including J, K, T, E, R, S, B, and N. The unit can also store user-defined lookup tables in non-volatile RAM (NVRAM) for use with user-defined thermocouple linearization curves.

## ALARMS
Many process-control applications require only periodic monitoring during normal conditions, with accelerated measurement and control until the process returns to a steady state. The OMB-MULTISCAN-1200 provides 32 digital alarm outputs that can be activated on a per-channel basis via user-specified alarm conditions, and it automatically returns its alarm outputs to steady state once limit conditions are resolved.

The OMB-MULTISCAN-1200 can also update alarmed output channels in real-time, at its programmed scan rate, and can alert the host computer of active alarm conditions via an IEEE-488 service request (SRQ). The ability to automatically update alarm outputs in real-time affords greater control of applications and reduces programming burden by eliminating the need for constant, per-channel monitoring by the controlling computer.

## REAL-TIME CLOCK
The OMB-MULTISCAN-1200 features a real-time clock to synchronize acquisition to a specific time of day. During acquisition, the OMB-MULTISCAN-1200 stores the time and date of each data scan in memory, enabling later retrieval of this information for use in plotting and analyzing measurements over time. The unit also time and date stamps each channel's high and low excursions, providing a precise time record of a channel's minimum and maximum values.

## MEMORY
The OMB-MULTISCAN-1200 has 256 Kbytes of data storage, which can be upgraded to 1 or 4 Mbytes with standard SIMMS (single in-line memory modules). Because individual measurements are not necessary for all data logging applications, the unit makes each channel's high, low, and last readings available throughout acquisition.

## CHARTVIEW SOFTWARE
The OMB-MULTSCAN-1200 includes ChartView, Windows-based setup and acquisition application.

ChartView provides a graphical spreadsheet style user interface that lets you easily configure your hardware, acquisition, and display parameters. ChartView features a no programming approach that enables data collection and display within minutes.

ChartView provides a number of data display options including a real-time smooth scrolling trend display, digital meters, analog meters, and bar graph meters. The collected data is stored to disk in an ASCII format so it may be easily imported into other applications, such as Microsoft Excel, for post acquisition display and analysis. In addition, ChartView also provides a real-time link to Excel using Dynamic Data Exchange (DDE). The OMB-TEMPSCAN-1100 also includes PostView, a post acquisition graphics display program that integrates seamlessly into ChartView. Using PostView's intuitive on-screen controls, you can expand, contract and auto-scale waveforms as well as scroll in either direction. PostView also provides hardcopy printout of the waveform.
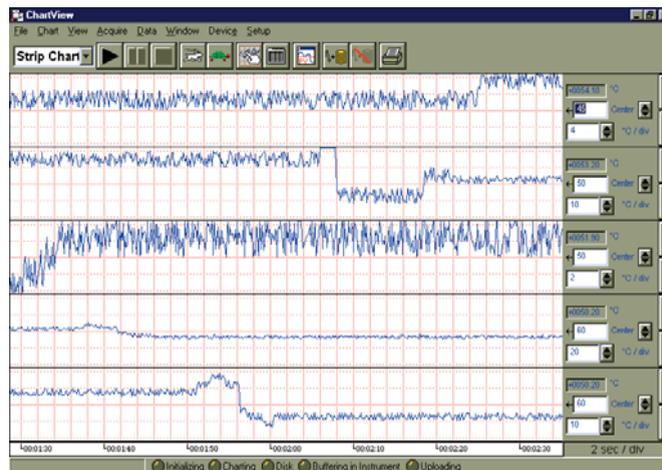


## POSTVIEW SOFTWARE

PostView for Windows is also included with the OMB-MULTISCAN-1200. PostView provides strip-chart recorder-like graphical displays for reviewing waveforms previously acquired with ChartView. PostView allows simultaneous display of up to 16 channels and provides independent cursors for each channel. It also supports both manual and automatic scaling, and permits graphical output to any Windows-supported printer.
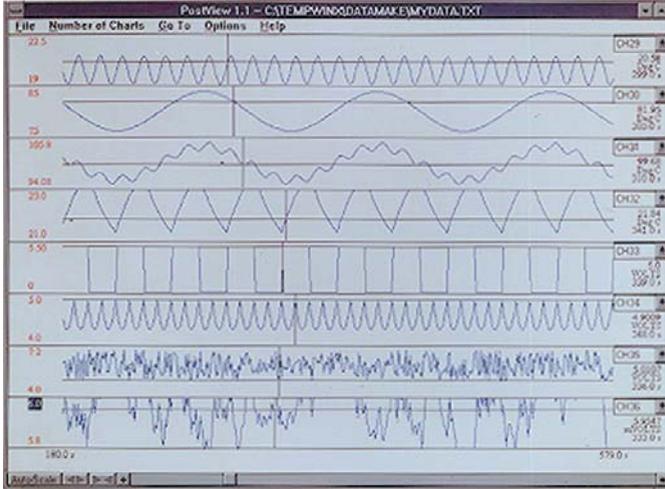
## IEEE-488 & RS-232/422 CONTROL
### IEEE-488
The IEEE-488 interface can transfer data at up to 300 Kbytes/s. It lets you log readings directly to a computer's hard disk in real-time, making it compatible with OMEGA's IEEE-488.2 controllers for IBM PC and Macintosh computers.
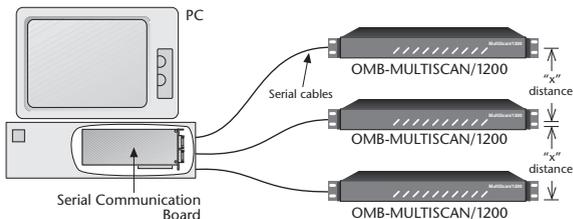
# Model OMB-MULTISCAN-1200

## RS-232/422

The RS-232/422 interface can connect directly to a serial port. The unit is suited for process control and environmental control, and other applications that require instruments to be located remotely from the controlling computer. Switch selectable baud rates from 300 to 9600 are supported.
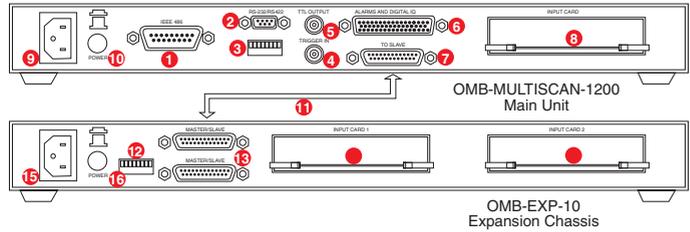
### OMB-MultiScan-1200 Rear Panel



1. **IEEE-488 Connector:** Provides full IEEE-488 control from PCs, Macintosh computers, and SUN, DEC, and HP computers
2. **RS-232C/RS-422 (DB9) Connector:** Serial port for operation at remote distances from controlling computer; supports 300 to 9600 baud using RTS/CTS or XON/XOFF handshaking
3. **DIP Switches:** Easy-to-access switches for selecting IEEE-488 or RS-232/422 communication and respective parameters (IEEE-488: Address; RS-232/422: handshaking, parity, and baud rate)
4. **Trigger input (BNC) Connector:** For initiating and/or stopping acquisition with TTL input signal
5. **TTL output (BNC) Connector:** TTL output signal occurs for each channel scan; used for synchronizing other



equipment with OMB-MultiScan-1200 acquisition
6. **Alarms and Digital Input/Output (DB50) Connector:** Provides easy access to 32 TTL digital alarm outputs and 8 digital input lines
7. **Master/slave (DB25) connector:** Connection to OMB-Exp/10A expansion units for channel expansion greater than 24 channels
8. **Shielded Enclosure:** Accepts scanning modules



OMB-MULTISCAN-1200 Main Unit

OMB-EXP-10 Expansion Chassis

(OMB-MTC-24 or OMB-MHV-24); designed to keep noise outside and a constant temperature inside
9. **Power Input Connector:** Internally configurable for either 105-125 or 210-250 Vac, 50/60 Hz, plus fuse circuit breaker
10. **Power On/Off Switch**
11. **CA-35-1 Master/Slave Cable**

### OMB-EXP/10A REAR PANEL

12. **DIP Switches:** Easy-to-access switches for selecting OMB-Exp/10A slave ID
13. **Master/Slave (DB25) Connectors:** Provides connection from the OMB-MultiScan-1200 to other OMB-Exp-10A expansion chassis
14. **Shielded Enclosure:** Accepts any combination of scanning modules (OMB-MTC-24 or OMB-MHV-24)
15. **Power Input Connector:** Internally configurable for either 105-125 or 210-250 Vac, 50/60 Hz, plus fuse circuit breaker
16. **Power On/Off Switch**

## Specifications

**OMB-MULTISCAN-1200**

**Number of Slots:** 1

**Number of Channels:** up to 24 differential thermocouple or voltage inputs; accepts OMB-MTC-24 or OMB-MHV-24 scanning modules

**Channel Attributes:** high and low set points; hysteresis value for high and low setpoints

**Scan Sequence:** channels may be specified in any combination, but are always scanned in ascending order

**Scan Interval:** absolute time between channel scans (hh:mm:ss.s); minimum = 00:00:00.0; maximum = 99:59:59.9

**Maximum Measurement Rate:**

1. **Line Cycle Integration:** 44 Channels (60Mz)
2. **High-Speed Multichannel Scanning:** 147 channels/s
3. **Single-Channel Burst Mode:** 20 kHz

**Programmable Triggering:** temperature or voltage level, absolute time of day, alarm condition, IEEE GET, IEEE TALK, external TTL trigger, specified number of readings

**Level Trigger:** programmable value for any one channel (not available in single-channel burst mode)

**TTL Trigger:** programmable for rising or falling edges

**Pre-Trigger Count:** programmable ($\leq$ memory size - 1)

**Post-Trigger Count:** programmable

### ALARMS & DIGITAL I/O

**Number of Digital Alarm Outputs:** 32 bits, TTL-level compatible

**Number of Digital Inputs:** 8 bits, TTL-level compatible

**Connector:** 50 pin D-connector; mating connector supplied

**Alarm Conditions:** may be detected by SRQ or software query (SPOLL or U Command)

# High Speed Isolated Temperature/Voltage Interface
# OMB-MULTISCAN-1200

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| Line Cycle Integration | | | | | |
|---|---|---|---|---|---|
| Line Cycle per Reading | DC Volts & Thermocouple | | AC Volts | | Maximum Channel Number |
| | 50 Hz | 60 Hz | 50 Hz | 60 Hz | |
| 1 | 38.5 | 44 | 38.5 | 44 | 744 |
| 2 | 19.2 | 22 | | | 431 |
| 3 | 9.6 | 11 | | | 234 |
| 4 | 4.8 | 5.5 | | | 122 |



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9. **Power Input Connector:** Internally configurable for either 105-125 or 210-250 Vac, 50/60 Hz, plus fuse circuit breaker

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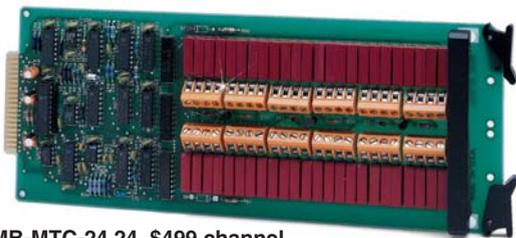
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10. **Power On/Off Switch**
11. **CA-35-1 Master/Slave Cable**

### OMB-EXP/10A REAR PANEL



**OMB-MTC-24** 24, **$499** channel thermocouple/voltage input module

*Each OMB-MULTISCAN-1200 unit supplied with ChartView software, digital I/O mating connector, rack mount kit and complete operator's manual. Each OMB-EXP-10A supplied with rack mount kit and master/slave cable.*

Thermocouple probes sold separately. See the OMEGA Complete Temperature Measurement Handbook and Encyclopedia® or visit us at **WWW.OMEGA.COM.**

12. **DIP Switches:** Easy-to-access switches for selecting OMB-Exp/10A slave ID
13. **Master/Slave (DB25) Connectors:** Provides connection from the OMB-MultiScan-1200 to other OMB-Exp-10A expansion chassis
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### *ALL MODELS AVAILABLE FOR FAST DELIVERY!*

| To Order *(Specify Model Number)* | | |
|---|---|---|
| Model No. | Price | Description |
| OMB-MULTISCAN-1200 | $1499 | Multiscan-1200 main unit, includes MultiView and PostView software board |
| OMB-EXP-10A | 799 | 2-slot expansion chassis |
| OMB-EXP-11A | 1999 | 2-slot expansion chassis |
| OMB-MTC-24 | 499 | 24-channel thermocouple/voltage input module |
| OMB-MHV-24X | 1099 | 24-channel high voltage input module (500V max common mode voltage) |
| OMB-CA-47 | 51 | RS-232 serial port cable |

*Ordering Example: **OMB-MULTISCAN-1200** main unit, **OMEGACARE**<sup>SM</sup> 1 year extended warranty for **OMB-MULTISCAN-1200** (adds 1 year to standard 1 year warranty), **OMB-EXP-10A** expansion chassis, and three **OMB-MTC-24** 24-channel thermocouple/voltage input modules, for 72-channels of thermocouple/voltage measurement and **OMB-CA-47** cable, $1499 + 149 + 799 + 3 (499) + 51 = **$3995.***

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- ## Heaters

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EPG05