High Speed Temperature & Process Signal Measurement System

DI/O
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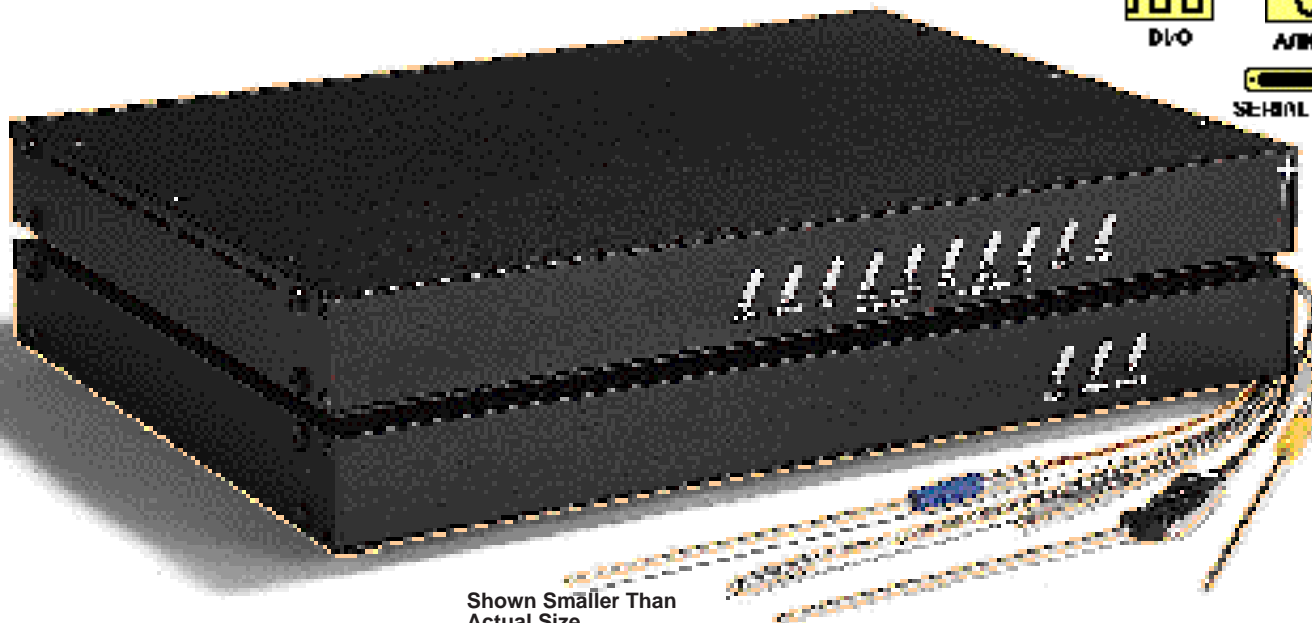
Shown Smaller Than Actual Size

$1595
Basic Unit

- ✔ **Measure Thermocouples and Voltage at Rates up to 960 Channels per Second**
- ✔ **Software Support includes:**
  - **TempView datalogging application for effortless setup, acquisition, & real-time display**
  - **PostView, for post-acquisition viewing of large data files**
  - **Calibration software**
- ✔ **Accepts Optional Scanning Modules for Measuring Thermocouples, RTD or Voltage**
- ✔ **Expandable to 992 Channels**

- ✔ **Requires No External Signal Conditioning**
- ✔ **Built-In IEEE-488 and RS-232/422 Interfaces**
- ✔ **32 TTL Digital Alarm Outputs and 8 TTL-Compatible Digital Inputs**
- ✔ **Programmable Pre-Trigger and Post-Trigger Scan Intervals**
- ✔ **Memory Expansion to 8 MB**
- ✔ **Time and Date Stamping for Monitoring Temperature Trends**

The OMB-TEMPSCAN-1100 sets a new standard for speed, expansion and economy in data acquisition systems. The OMB-TEMPSCAN-1100 accepts any one of three scanning modules, for either thermocouple, RTD or voltage measurement. The thermocouple and voltage modules each accept 32 inputs, while the RTD module accepts 16 3-wire or 4-wire RTD sensors.

With optional expansion chassis the OMB-TEMPSCAN-1100 can accept up to 992 inputs. The OMB-EXP-10A two-slot chassis can accept one or two scanning modules. Multiple OMB-EXP-10A units may be daisy chained for expansions to the full input capacity. For systems with more than 96 inputs, the OMB-EXP-11A, 10-slot chassis provides more economical, convenient expansion. Each OMB-EXP-11A provides up to 320 input channels in a compact and convenient enclosure. Multiple OMB-EXP-11A chassis can be connected to one OMB-TEMPSCAN-1100 to provide a total system capacity of up to 992 channels.

The OMB-TEMPSCAN-1100's multi-processor architecture provides linearized and compensated thermocouple-based temperature readings at speeds up to 960 channels per second, valuable in monitoring a large number of channels. The OMB-TEMPSCAN-1100 fast reading rate enables the unit to measure a sensor and activate an alarm much faster than alternative

Model OMB-TEMPSCAN-1100

OMB-EXP-11A
Optional Expansion Chassis,
$2995

solutions. Also, a 16-bit A/D converter ensures measurement integrity. The A/D converter samples and averages multiple readings, resulting in high noise rejection from ac line pickup.

The OMB-TEMPSCAN-1100 is designed to facilitate datalogging at fixed-time intervals. The unit can be configured to begin and end logging on a user-specified event, such as a TTL input, temperature level, IEEE GET command, as well as time of day, or upon completion of a specified number of readings. An internal 256 k data buffer can be upgraded to 8 megabytes, ideal for both high-speed and long-term datalogging.

Many process control applications require occasional temperature monitoring until a limit condition occurs. Once an alarm is detected, the system often needs to accelerate temperature measurement and simultaneously provide closed-loop control signals until the process returns to steady-state conditions.

The OMB-TEMPSCAN-1100 provides 32 digital alarm outputs that actuate on user-specified alarm conditions, on a per channel basis. Once the limit condition is resolved, the alarm outputs return to steady-state. OMB-TEMPSCAN-1100 can update alarmed output channels in real-time, at the max 960 channels per second rate. It can also be configured to alert the host computer of active alarm conditions via an IEEE-488 SRQ.

The OMB-TEMPSCAN-1100 also provides separate pre-trigger and post-trigger scan intervals for quick reaction during alarm conditions. For example, the unit can be programmed to sample channels once per minute, and when a specified channel reaches a limit condition, to sample data once per second.

The OMB-TEMPSCAN-1100 scans groups of 16 consecutive channels during every ac line cycle (i.e., channels 1-16 scanned during the first line cycle, 17-32 during the second line cycle, etc.). This results

in max measurement rates of 960 channels per second (at 60 Hz, 800 channels per second at 50 Hz).

The OMB-TEMPSCAN-1100 IEEE-488 interface is well suited to laboratory applications that require real-time data transmission to the host for mass storage. Data transfer rates up to 300 kb per second are supported. The RS-232/422 interface supports baud rates from 300 to 9600, and can be used for process and environmental control.

The RS-232/422 interface suits it for applications that require the placement of instrumentation at remote distances from the controlling computer, such as process and environmental control. The unit provides switch selectable baud rates from 300 to 9600.

Both its IEEE 488 and RS-232/422 interfaces support data retrieval in ASCII and, for high speed applications, in binary format.

The OMB-TEMPSCAN-1100 is designed with convenience in mind. It requires no external signal conditioning, multiplexers, or
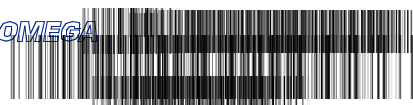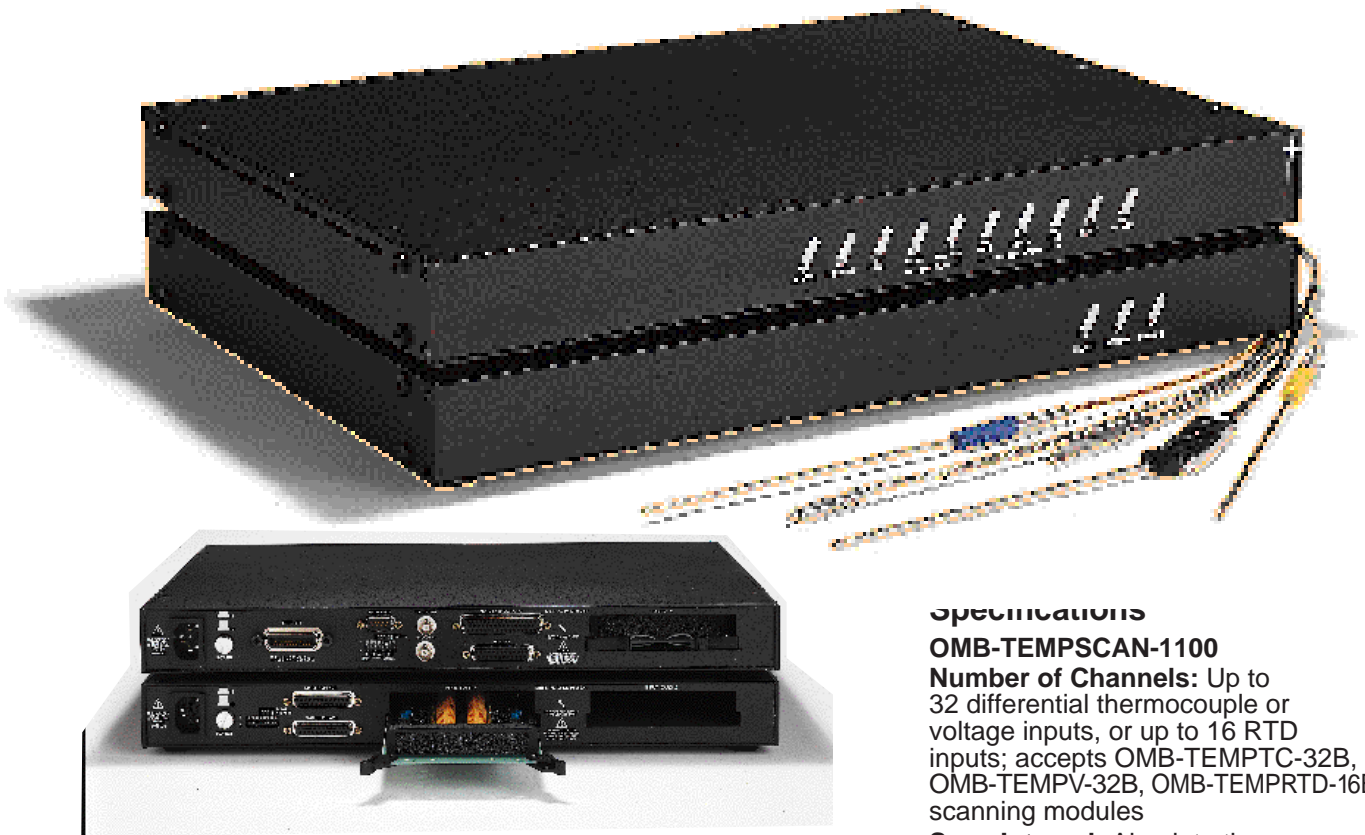
custom cables saving the user both time and money. User-installable scanning modules provide all signal conditioning and amplification.

The scanning modules contain screw terminal sockets for quick and easy input connections. The modules slide into a metal, shielded enclosure within the OMB-TEMPSCAN-1100, keeping noise outside and maintaining a constant internal temperature.

The OMB-TEMPSCAN-1100 and its expansion chassis accept three versions of scanning modules, allowing users to create systems of up to 992 channels. These scanning modules include:

Remote/Modem Operation

The OMB-TEMPSCAN-1100 is ideal for applications that require the placement of instrumentation at some distance from the controlling computer. The RS422 interface enables the OMB-TEMPSCAN-1100 to be located up to 1 Km from the computer. For greater distances, TempView is is capable of controlling the OMB-TEMPSCAN-

1100 via a Hayes compatible modem. To establish a modem link, a modem is required in the computer and an auto answer modem must be connected to the OMB-TEMPSCAN-1100.

Thermocouple Scanning Module:

OMB-TEMPTC-32B thermocouple scanning module contains 32 differential input channels, each of which may be configured for any thermocouple type or a millivolt input with ±100 mV range. Measurements may be returned in units of °C, °F, K, R, or mV.

Voltage Scanning Module:

The OMB-TEMPV-32B scanning module contains 32 differential input channels and is capable of measuring voltage with programmable ranges of ± 10 V, ± 5 V, ±1 V, and ± 100 mV.

RTD Scanning Module:

The OMB-TEMPRTD-16B scanning module supports 16 channels of 3- or 4-wire RTDs. Measurements may be returned in units of °C, °F, K, or R.

Specifications

OMB-TEMPSCAN-1100

Number of Channels: Up to 32 differential thermocouple or voltage inputs, or up to 16 RTD inputs; accepts OMB-TEMPTC-32B, OMB-TEMPV-32B, OMB-TEMPRTD-16B scanning modules

Scan Interval: Absolute time between channel scans (hh:mm:ss.s); min = 00:00:00.0; max = 99:59:59.9

Maximum Measurement Rate: 960 channels/sec (60 Hz)

Per Channel Scan Rate: The rate at which individual channel values are updated depends on the total number of channels scanned and the AC line frequency (50/60 Hz).

No. of Channels	Per Channel Scan Rate (Hz)	
	60 Hz	50 Hz
1-16	60	50
17-32	30	25
33-48	20	16.7
49-64	15	12.5
65-80	12	10
81-96	10	8.3
97-112	8.6	7.1
113-128	7.5	6.25
↕		
785-800	1.2	1.0
↕		
945-960	1.0	.83
961-976	.98	.82
977-992	.97	.81

Programmable Triggering: Level (temperature or voltage), absolute time of day, alarm condition, IEEE GET, IEEE TALK, external TTL trigger

Level Trigger: Programmable value for any one channel

TTL Trigger: Programmable for rising or falling edges

Pre-Trigger Count: Programmable (< memory size - 1)

Post-Trigger Count: Programmable

Alarms & Digital I/O

Number of Digital Alarm Outputs: 32 bits, TTL-level compatible, will drive 5 TTL loads.

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

Connector: 50 pin D-connector; mating connector supplied

Data Storage and Format: 128K reading (256 Kbyte) standard; optional 500K reading (1 Mbyte), 2M reading (4 Mbyte), and 4M reading (8 Mbyte)

Data Formats: ASCII and binary; binary format returns a 16-bit compensated and linearized temperature value (0.1°C/bit); user programmable for hi/lo byte or lo/hi byte

IEEE 488 Interface

Maximum Data Transfer speed: 300 Kbytes/s

Connector: Standard IEEE 488 connector with metric studs

RS-232/422 Interface

Baud Rates: 300, 1200, 2400, 4800, and 9600

Data Bits: 8

Stop Bits: 1

Parity: Even, odd, none

Handshaking: RTS/CTS, XON/OFF

Connector: Male DB-9

General

Power: 105-125 or 210 to 250 Vac, 50/60 Hz; 20 VA max

Environment: 32 to 122°F (0 to 50°C); 0 to 95% RH (non-condensing) to 35°C; linearly derate 3% RH /°C from 35°C to 50°C

Dimensions: 1.75" H x 16.75" W x 12" D (45 x 425 x 305 mm)

Weight: 8 lb (3.62 kg)

OMB-EXP-10A Expansion Chassis

Number of Channels: Up to 64 differential voltage or thermocouple inputs, or up to 32 RTD inputs; accepts any combination of two OMB-TEMPTC-32B,

OMB-TEMPV-32B, and OMB-TEMPRTD-16B scanning modules

Power: 105-125 or 210 to 250 Vac, 50/60 Hz; 20 VA max

Dimensions: 1.75" H x 16.75" W x 12" D (45 x 425 x 305 mm)

Weight: 2.53 kg (5.5 lbs)

OMB-EXP-11A

Number of Slots: 10

Number of Channels: Up to 320 differential voltage or thermocouple inputs, or up to 160 RTD inputs; accepts any combination of 10 OMB-TEMPTC-32B, OMB-TEMPV-32B or OMB-TEMPRTD-16B

Front Panel Indicators: LEDs for scanning, error, & power

Power: 105 to 125 or 210 to 250 Vac, 50/60 Hz; 20 VA max

Environment: 0 to 50°C; 0-95% RH non-condensing to 35°C; linearly derate 3% RH/°C from 35° to 50°C

Dimensions: 16.75" W x 12" D x 5.75" H (425 x 305 x 135 mm)

Weight: 14 lbs (6.36Kg)

OMB-TEMPTC-32B Thermocouple Scanning Module

Number of Channels: 32 differential; programmable by channel for specific thermocouple type or a millivolt input

Input Types: J, K, T, E, R, S, B, N14 & N28, custom thermocouple, and millivolts

Input Connectors: Screw terminal

Thermocouple Wire: #16 AWG max, #24 AWG min, #20 AWG recommended for J, K, T., E & N #24 AWG recommended for R, S, & B

TEMPERATURE RANGES AND ACCURACY:

Type	Range	Accuracy*	Resolution**
J	-200 to 760°C	±0.5°C	±0.1°C
K	-100 to 1372°C	±0.5°C	±0.1°C
T	-100 to 400°C	±0.5°C	±0.1°C
E	-100 to 1000°C	±0.5°C	±0.1°C
N	-200 to 1300°C	±0.5°C	±0.1°C
R	0 to 1768°C	±1.0°C	±0.1°C
S	0 to 1768°C	±1.0°C	±0.1°C
B	35 to 1820°C	±1.0°C	±0.1°C
N14	0 to 1300°C	±0.5°C	±0.1°C
N28	-270 to 400°C	±0.5°C	±0.1°C

*18 to 28°C   **Typical

Temperature Units: °C, °F, °K, °R

Input Impedance: 1M ohm typical

Maximum Allowable Input: ±35V peak

Channel to Digital Low Isolation: 500 V max

Channel to Channel Isolation: ±10 V peak

Digital Filtering: Averages 16 samples at 50/60Hz for line cycle noise rejection

Voltage Range/ Resolution: ±100 mV/ 3.05μV

Voltage Accuracy: ±0.02%

OMB-TEMPRTD-16B RTD Scanning Module

Number of Inputs: 16 (3 or 4-wire)

Input Connectors: Screw terminal

TEMPERATURE RANGE AND ACCURACY:

Type	Range	Accuracy	Resolution
100 Ω Pt	-100 to 630°C	±0.2°C	0.1°C
α=0.00385	-270 to -100°C	±0.4°C	0.2°C

Excitation Current: <1 mA peak

OMB-TEMPV-32B Voltage Scanning Module

Number of Inputs: 32 differential

Input Connectors: Screw terminal

Range/Resolution:

Range	Resolution
± 100 mV	3.05 µV/bit
± 1 V	30.5 µV/bit
± 5 V	153 µV/bit
± 10 V	306 µV/bit

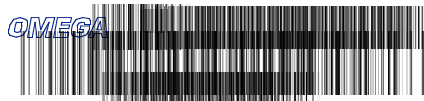**Accuracy:** ±0.02%

Input Impedance: 1 MΩ typ

Input bias current: 40 nA max

Common Mode Rejection: 100 dB typ
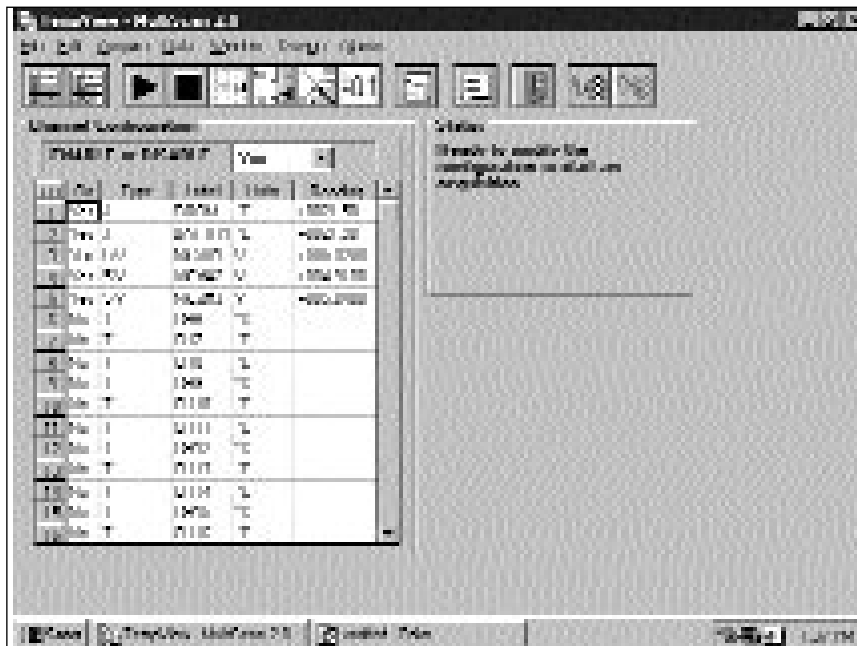
Maximum Allowable Input: 25 Vrms max

Channel to Digital Low Isolation: 500 V max

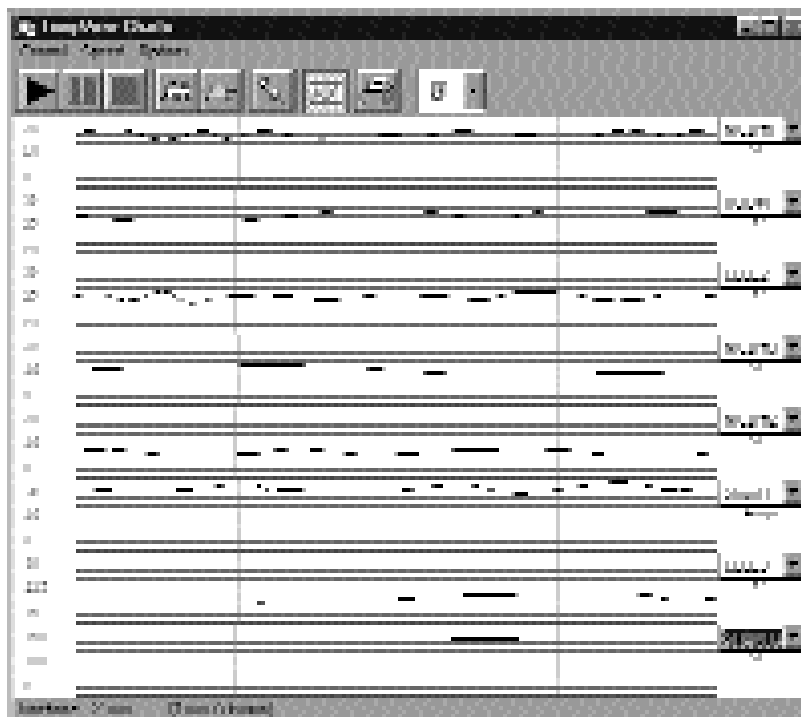**Channel to Channel Isolation:** ±10 V peak

Software

The OMB-TEMPSCAN-1100 is shipped with TempView datalogging software for effortless set-up, acquisition and real-time display. Compatible with Windows 3.x and Windows 95, TempView requires no programming and provides a graphical spreadsheet-style display that lets you easily configure your hardware, acquisition and display parameters. TempView data logging software enables users to record temperature and voltage measurements within minutes rather than hours. TempView's graphical toolbar and spreadsheet style interface allows novice users to obtain results quickly and easily. Yet, TempView also taps the OMB-TEMPSCAN-1100's extensive functionality to satisfy demanding data logging requirements without programming.

TempView's spreadsheet-style interface allows you to enable or disable channels, select thermocouple types or voltage ranges, enter a channel label, and choose units in which to display data including (mX+b) on a per-channel basis. After your channel configuration is complete, a single click of the mouse displays data in real-time in the spreadsheet.

TempView provides four display types for developing custom real-time displays. The display types are digital meters, analog meters, bar graphs and charts. Any combination of these four displays may be active at any time. The meters and bar graphs support display of up to 32 channels at a time. The charts support up to 16 channels of data in a smooth scrolling stripchart recorder-like fashion.

The OMB-TEMPSCAN-1100 is also shipped with PostView software. PostView may be started from TempView or as a standalone program. PostView provides stripchart recorder-like graphical display for scrolling through previously acquired data files. PostView also allows simultaneous display of up to 16 channels, and provides independent cursors for each channel.


TempView software, supplied with each unit, allows users to setup the OMB-TEMPSCAN-1100 with a Windows interface

TempView Charts

Rear view of OMB-TEMPSCAN-1100 and OMB-EXP-10A

Rear Panel Connections
OMB-TEMPSCAN-1100

❶ IEEE-488 Connector: Provides full IEEE-488 control from PCs, Macintosh computers, and SUN, HP and DEC workstations.

❷ RS-232C/RS-422 Connector: Serial port for operation at remote distances from computer. Supports 300 to 9600 baud using RTS/CTS or XON/XOFF handshaking.

❸ DIP Switches: select IEEE or RS-232/422 communications and respective parameters (IEEE address; RS-232 baud rate, parity and handshaking).

❹ Trigger Input (BNC) Connector: initiate and/or stop acquisition with TTL input signal.

❺ TTL Output (BNC) Connector: signal for each channel scan; used for synchronizing other equipment.

❻ Alarm, Digital I/O Connector: provides access to 32 TTL digital alarm outputs and 8 digital input lines.

❼ Master/Slave Connector: attach OMB-EXP-10A expansion chassis.

❽ Shielded Enclosure: scanning modules designed for constant temperature and reduce electrical noise interference.

❾ Power: 105 to 125 or 210 to 250 Vac, internally configurable.

❿ Power Switch

⓫ Master/Slave Expansion Cable

OMB-EXP-10A EXPANSION CHASSIS

⓬ DIP Switches: select ID number for each OMB-EXP-10A expansion chassis.

⓭ Master/Slave Connector: attach multiple OMB-EXP-10A modules to the OMB TEMPSCAN-1100A.

OMB-TEMPSCAN-1000 Main Unit

OMB-EXP-10A Expansion Chassis
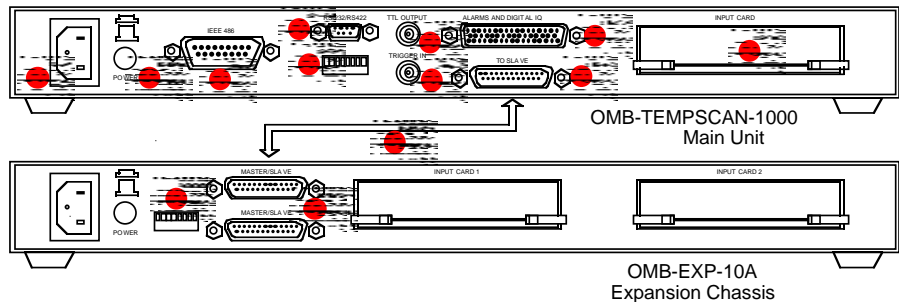
To Order *(Specify Model Number)*

Model No.	Price	Description
OMB-TEMPSCAN-1100	**$1595**	High speed temperature measurement chassis; accepts one scanning module (module sold separately)
OMB-EXP-10A	1095	Expansion chassis; includes OMB-TEMPSCAN-1100 to OMB-EXP-10A cable; accepts two scanning modules (modules sold separately)
OMB-EXP-11A	2995	Expansion chassis; includes OMB-TEMPSCAN-1100 to OMB-EXP-11A cable; accepts 10 scanning modules (modules sold separately)
OMB-TEMPTC-32B	595	32 channel thermocouple input scanning module
OMB-TEMPV-32B	595	32 channel voltage input scanning module
OMB-TEMPRTD-16B	595	16 channel RTD input scanning module
OMB-TEMPMEM1	795	1 MB (500k readings) memory expansion
OMB-TEMPMEM4	995	4 MB (2M readings) memory expansion
OMB-TEMPMEM8	1295	8 MB (4M readings) memory expansion
OMB-CA-47	45	6' cable, connects OMB-TEMPSCAN-1100 to 9 or 25 pin serial port
SWD-LTNPRO-WIN	995	Labtech Notebook Pro software for windows
OMB-PER-488	395	IEEE-488 controller card for IBM PC compatibles; needed if using IEEE-488 option in TempView

OMB-TEMPSCAN-1100 includes TempWindows software, DB-50 digital I/O port mating connector, operator's manual and rack mount kit. OMB-EXP-10A and OMB-EXP-11A includes rack mount kit and master/slave interface cable.

Ordering Example: *OMB-TEMPSCAN-1100 chassis, OMB-EXP-10A expansion chassis, OMB-TEMPTC-32B thermocouple input module, OMB-TEMPV-32B voltage input module, OMB-TEMPRTD-16 RTD input module, $1595 + 1095 + 595 + 595 + 595 = **$4475.***

http://www.omega.com
e-mail: info@omega.com