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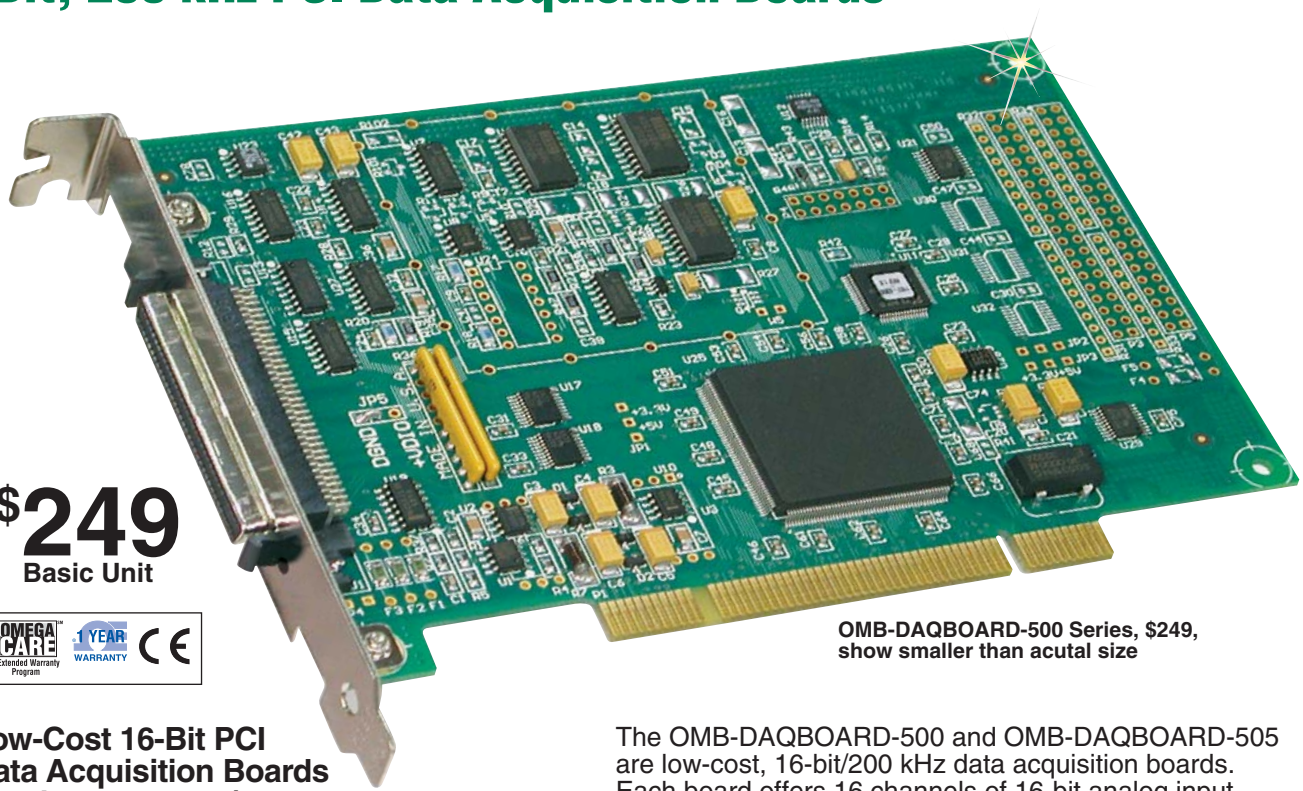
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OMB-DAQBOARD-500 Series
16-Bit, 200 kHz PCI Data Acquisition Boards



$249
Basic Unit

OMEGA CARE Extended Warranty Program | 1 YEAR WARRANTY | CE

OMB-DAQBOARD-500 Series, $249, show smaller than acutal size

- Low-Cost 16-Bit PCI Data Acquisition Boards
- 16-Bit, 200 kHz A/D Converter
- 8 Differential or 16 Single-Ended Analog Inputs (Software Selectable per Channel)
- Up to 4 Boards Can be Installed into One PC
- 100% Digital Calibration
- DMA Bus Mastering
- Trigger Modes Include Digital and Software, with <5 µs Latency
- Virtually Infinite Pre-Trigger Buffer
- Two 16-Bit, 100 kHz Analog Outputs with Continuous Waveform Output Capability (OMB-DAQBOARD-500 Only)
- 24 Digital I/O Lines
- 1 Counter/Pulse Input Channel
- 2 Timer/Pulse Output Channels
- Includes DaqView Software Application for Effortless Data Logging and Analysis
- Support for Visual Studio and Visual Studio.NET, Including Examples for Visual C++, Visual C#, Visual Basic, and Visual Basic.NET
- Comprehensive Drivers for DASYLab and LabVIEW
- Support for Windows 2000 and XP

The OMB-DAQBOARD-500 and OMB-DAQBOARD-505 are low-cost, 16-bit/200 kHz data acquisition boards. Each board offers 16 channels of 16-bit analog input, 24 digital I/O lines, and one counter input. The OMB-DAQBOARD-500 also provides two 16-bit waveform-capable analog outputs.

Software supported by the OMB-DAQBOARD-500 Series includes Visual Studio and Visual Studio.NET, with examples for Visual C++, Visual C#, Visual Basic, and Visual Basic.NET, plus comprehensive drivers for DASYLab and LabVIEW. DaqView software is also included for quick and easy setup and data collection without programming.

Signal I/O
One 68-pin connector on the OMB-DAQBOARD-500 Series provides access to all the input and output signals. Unlike other multifunction boards that require multiple PC slots to access the I/O, the OMB-DAQBOARD-500 Series accommodates all I/O by using one cable and a single PCI slot. The latching 68-pin I/O connector contains all analog input channels, plus digital I/O lines, counter input, timer outputs, and analog outputs.

Analog Input
The OMB-DAQBOARD-500 Series has a 16-bit, 200 kHz A/D converter coupled with 16 single-ended or 8 differential analog inputs. Eight software-programmable ranges provide inputs from ±10 V to ±1.25 V full scale. Each channel can be software configured for a different range, as well as for single-ended or differential and bipolar or unipolar input.

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Bus Mastering DMA

The OMB-DAQBOARD-500 Series supports bus mastering DMA, which allows analog input data, as well as analog and digital output data, to flow between the PC and the OMB-DAQBOARD-500 Series without consuming valuable CPU time. The driver supplied with the OMB-DAQBOARD-500 Series, as well as all other third-party software support such as LabVIEW, automatically use bus mastering DMA to efficiently conduct I/O from the PC to the data acquisition board.

Triggering

The OMB-DAQBOARD-500 Series supports several trigger modes to accommodate any measurement situation.

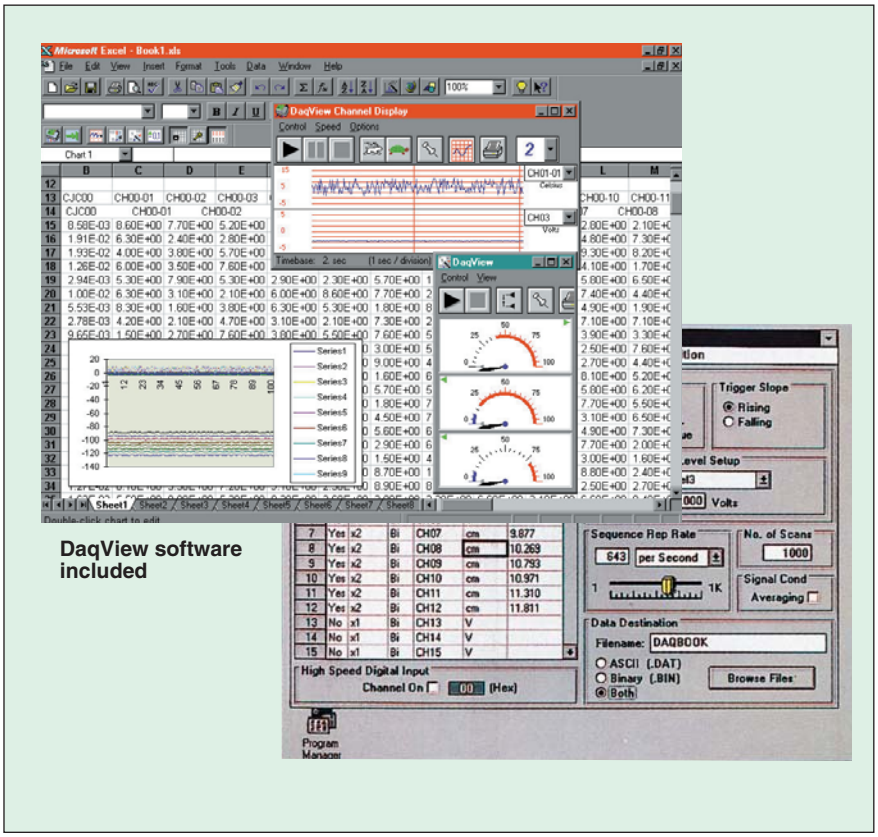
Digital

A separate digital trigger input line is provided, allowing TTL-level triggering, with latencies guaranteed to be less than 5 µs. The edge (rising or falling) can be programmed for the discrete digital-trigger input.

Software-Based Channel Level Triggering

Software-based channel level triggering differs from the mode described above because the readings, analog, digital, or counter are interrogated by the PC to detect the trigger event, not in the hardware. Normally, software-based triggering results in long latencies from the time a trigger condition is detected until the capturing of data commences.

However, the OMB-DAQBOARD-500 Series circumvents this undesirable phenomenon by use of pre-trigger data. Specifically, when software-based triggering is employed and the PC detects that a trigger condition has occurred (which may be thousands of readings later than the actual occurrence of the signal), the OMB-DAQBOARD-500 Series driver automatically looks back to the location in memory where the trigger-causing measurement occurred.



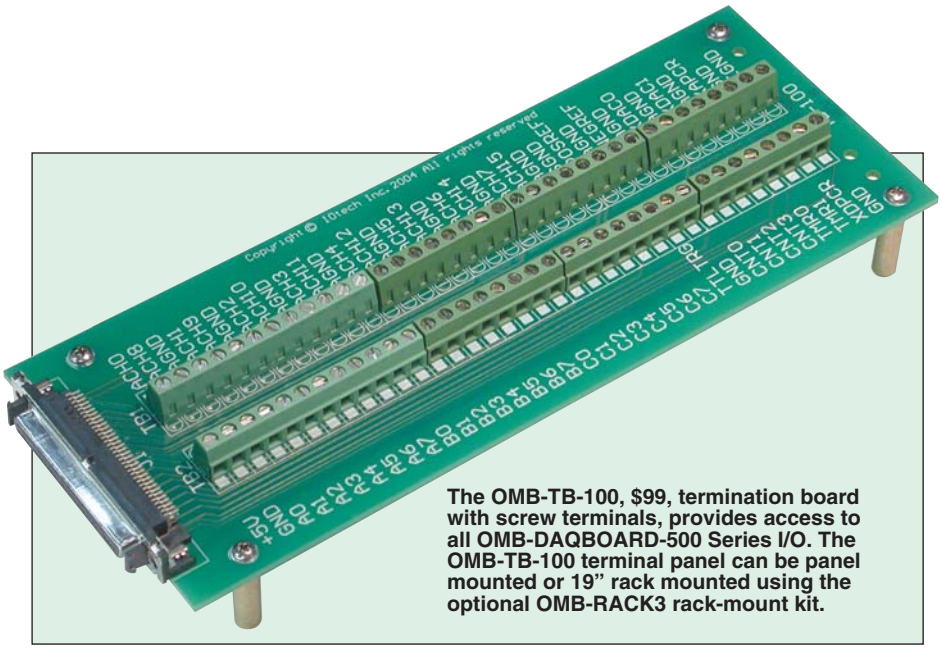
DaqView software included



The OMB-DBK215, $399, provides 16 BNC inputs or outputs, and internal screw-terminal connections, shown smaller than actual size.

Voltage Range	Accuracy One Year, 18 to 20°C, Excluding Noise, % of Full Range	Settling Time
0 to 10 V	±0.06%	5 µs
0 to 5 V	±0.08%	5 µs
0 to 2.5 V	±0.1%	20 µs
0 to 1.25 V	±0.12%	20 µs
-10 to 10 V	±0.04%	5 µs
-5 to 5 V	±0.06%	5 µs
-2.5 to 2.5 V	±0.08%	20 µs
-1.25 to 1.25 V	±0.1%	20 µs

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The OMB-TB-100, $99, termination board with screw terminals, provides access to all OMB-DAQBOARD-500 Series I/O. The OMB-TB-100 terminal panel can be panel mounted or 19" rack mounted using the optional OMB-RACK3 rack-mount kit.



OMB-CA-G55, $69, 68-conductor expansion cable, shown smaller than actual size.



OMB-CA-G56, $95, 68-conductor shielded expansion cable, shown smaller than actual size.

The acquired data that are presented to the user actually begin at the point where the trigger-causing measurement occurs. The latency in this mode is equal to one scan cycle.

Stop Trigger

Any of the software trigger modes described above can also be used to stop an acquisition. Thus an acquisition can be programmed to begin on one event, such as a voltage level, and stop on another.

Pre- and Post-Triggering Modes

Six modes of pre- and post-triggering are supported, providing a wide variety of options to accommodate any measurement requirement. When using pre-trigger, software-based triggering must be used to initiate an acquisition.

No Pre-Trigger, Post-Trigger Stop Event

This, the simplest of modes, acquires data upon receipt of the trigger and stops acquiring upon receipt of the stop-trigger event.

Fixed Pre-Trigger with Post-Trigger Stop Event

In this mode, the user specifies the number of pre-trigger readings to be acquired, after which acquisition continues until a stop-trigger event occurs.

No Pre-Trigger, Infinite Post-Trigger

No pre-trigger data are acquired in this mode. Instead, data are acquired beginning with the trigger event and are terminated when the operator issues a command to halt the acquisition.

Fixed Pre-Trigger with Infinite Post-Trigger

The user specifies the amount of pre-trigger data to acquire, after which the system continues to acquire data until the program issues a command to halt acquisition.

Variable Pre-Trigger with Post-Trigger Stop Event (Driver Support Only)

Unlike the previous described pre-trigger modes, this mode does not have to satisfy the pre-trigger number of readings before recognizing the trigger event. Thus, the number of pre-trigger readings acquired is variable and dependent on the time of the trigger event relative to the start. In this mode, data continue to be acquired until the stop-trigger event is detected.

Variable Pre-Trigger with Infinite Post Trigger (Driver Support Only)

This is similar to the mode just described, except that the acquisition is terminated upon receipt of a command from the program to halt the acquisition.

Calibration

Every range on the OMB-DAQBOARD-500 Series is calibrated from the factory using a digital calibration method. This method works by storing a correction factor for each range on the OMB-DAQBOARD-500 Series at the time of calibration. Whenever a particular range is selected, the appropriate calibration constant is automatically applied, thereby calibrating the specific range.

Analog Output

The 2 OMB-DAQBOARD-500 16-bit, 100 kHz analog output channels are built into the board, with software-selectable output ranges of ±10 V and 0 to 10 V. Through the use of bus mastering DMA, each D/A output can continuously output a waveform.

In addition, a program can asynchronously output a value to either of the D/As for non-waveform applications, assuming that the D/A is not already being used in the waveform output mode.

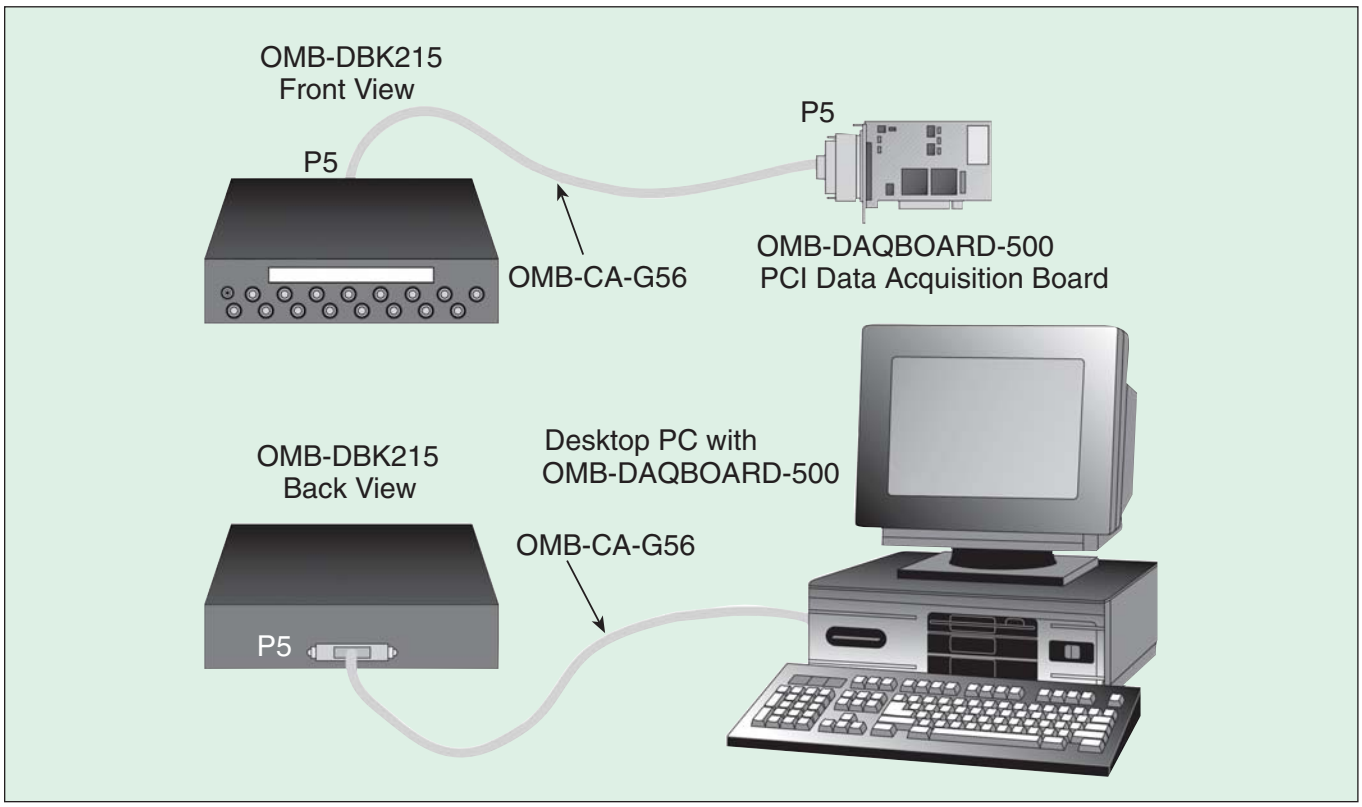
When used to generate waveforms, the D/As can be clocked in several different modes, as described on the next page.

Asynchronous Internal Clock

The on-board programmable clock can generate updates ranging from 0.0009 Hz to 100 kHz, independent of any acquisition rate. operated synchronously.

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The OMB-DAQBOARD-500 Connects to the OMB-DBK215 via an OMB-CA-G56 Cable



Asynchronous External Clock

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

Digital Inputs and Outputs

Twenty-four TTL-level digital I/O lines are included in the OMB-DAQBOARD-500 Series. They are divided into three 8-bit ports. Ports can be programmed as either input or output.

Counter Inputs

One 16-bit counter is built into the OMB-DAQBOARD-500 Series, capable of counting up to 65,536 TTL-level transitions. The counter will accept frequency inputs up to 900 kHz.

Timer Outputs

Two 16-bit timer outputs are included in the OMB-DAQBOARD-500 Series, each capable of generating square waves with a programmable frequency range of 7.7 Hz to 500 kHz.

Multiple DaqBoards per PC

All of the features described for the OMB-DAQBOARD-500 Series can be replicated with up to 4 DaqBoards installed in the same PC. When multiple boards are installed, all boards can be operated synchronously.

The OM-TB-100 screw-terminal board (shown on previous page) makes it easy for the user to attach signals to the OMB-DAQBOARD-500 Series boards.

Specifications

GENERAL (ALL BOARDS)

Power Consumption (per Board): 2 W
Operating Temperature: 0 to 60°C (32 to 140°F)
Vibration: MIL STD 810E Category 1 and 10
Signal I/O Connector: 68-pin SCSI type III female connector carries all analog and digital I/O signals
Dimensions: 165 W x 15 D x 108 mm H (6.5 x 0.6 x 4.2")

ANALOG INPUTS

Channels: 16 single-ended or 8 differential, programmable on a per-channel basis as single-ended or differential and bipolar or unipolar
Bandwidth: 500 kHz
Settling Time: See earlier table
Overvoltage Protection: ±25 V
Ranges: Software or sequencer selectable on a per-channel basis
Input Impedance: 10 MΩ

A/D SPECIFICATIONS

Type: Successive approximation
Resolution: 16-bit
Conversion Time: 5 µs
Maximum Sample Rate: 200 kHz
Non-Linearity (Integral): ±1 LSB
Non-Linearity (Differential): ±3 LSB, no missing codes
Input Sequencer:
Analog inputs can be scanned based on either an internal programmable timer or an external clock source
Scan Clock Sources: 2

1. Internal
2. External, TTL-level input up to 200 kHz max

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Programmable Parameters per Scan:
Channel (random order), gain
Depth: 176 location
On-Board Channel-to-Channel Scan Rate: 5 µs per channel

External Acquisition Scan Clock Input
Maximum Rate: 200 kHz
Clock Signal Range: 0 to 5 V
Minimum Pulse Width: 50 ns high, 50 ns low

Triggering
Trigger Sources: 3, individually selectable for starting and stopping an acquisition. Stop acquisition can occur on a trigger source other than start acquisition and can be triggered via modes 1 or 3. Pre-trigger is supported with fixed or variable pre-trigger periods.

1. Single-channel analog Software trigger latency: One scan period max
2. Single-channel digital trigger latency: 5 µs max
3. Software triggering trigger can be initiated under program control

Analog Outputs (OMB-DAQBOARD-500 Only)
The 2 analog output channels are updated asynchronously relative to scanned inputs and clocked from an internal on-board clock or an external clock source.

Analog outputs can be updated asynchronously, independent of any other scanning in the system. Bus mastering DMA provides CPU and system-independent data transfers, ensuring accurate outputs independent of other system activities. Ouput from memory is supported, allowing continuous waveform outputs.

Channels: 2
Resolution: 16-bit
Conversion Time: 10 µs
Output Voltage Ranges: ±10 V or 0 to 10 V (software selectable)
Offset Error: ±0.0045 V max
Gain Error: ±0.01% of full range
Digital Feedthrough: 50 mV when updated

Clock Sources: 2, programmable

1. On-board D/A clock, independent of scanning input clock
2. External D/A input clock, independent of external scanning input clock

Digital I/O
Channels: 24
Ports: 3 x 8-bit; each 8-bit port is software programmable as input or output
Input Characteristics: 100 series, 20 pF to common, 4.7K pull-ups
I/O Levels: TTL
Output Characteristics: Output 24 mA per pin (sinking and sourcing)

Counter: One 16-bit counter is built into the OMB-DAQBOARD-500 Series, capable of counting up to 65,536 TTL-level transitions
Channels: 1 x 16-bit
Frequency Measurement Rate: 900 kHz max
Trigger Level: TTL
Frequency/Pulse Generators
Channels: 2 x 16-bit
Output: 500 kHz base rate divided by 1 to 65,535 (programmable)

ALL MODELS AVAILABLE FOR FAST DELIVERY!

To Order *(Specify Model Number)*

Model No.	Price	Description
OMB-DAQBOARD-500	**$349**	16-bit, 200 kHz data acquisition board for PCI-bus PCs with 16 analog inputs; two 16-bit, 100 kHz analog outputs; 24 digital I/O, one 16-bit counter-timer; and two 16-bit frequency/pulse generators. Includes DaqView software, support for Visual Studio and Visual Studio.NET, plus comprehensive drivers for DASYlab and LabVIEW.
OMB-DAQBOARD-505	**249**	Same as OM-DAQBOARD-500 but with no analog outputs
OMB-DAQVIEW-XLPLUS	**299**	DaqView add-on for seamless execution with Microsoft Excel's tool palette
OMB-DAQVIEW-PRO	**599**	DaqView add-on includes all features of OMB-DAQVIEW-XLPLUS, plus frequency-domain analysis

Each OMB-DAQBOARD-500 Series board comes with DaqView software, software drivers and complete operator's manual on CD-ROM.
Ordering Example: OMB-DAQBOARD-500,** PCI-bus data acquisition board and **OMEGACARE** 1-year extended warranty (adds 1 year to standard 1-year warranty) for OMB-DAQBOARD-500 with **OMB-TB-100** terminal panel, **OMB-CA-G56-6,** shielded connecting cable, $349 + 34 + 99 + 109 = **$591.

Accessories and Cables

Model No.	Price	Description
OMB-DBK215	**$399**	16-connector BNC connection module with internal screw-terminal connections for use with OMB-DAQBOARD-500 Series
OMB-CA-G55	**69**	68-conductor ribbon expansion cable, mates with the OMB-DAQBOARD-500 Series boards and the OMB-TB-100 terminal board, 0.9 m (3')
OMB-CA-G56	**95**	68-conductor shielded expansion cable, mates with the OMB-DAQBOARD-500 Series boards and the OMB-TB-100 terminal board, 0.9 m (3')
OMB-CA-G56-6	**109**	68-conductor shielded expansion cable, mates with the OMB-DAQBOARD-500 Series boards and the OMB-TB-100 terminal board, 1.8 m (6')
OMB-TB-100	**99**	Termination board with screw terminals for access to all OMB-DAQBOARD-500 Series I/O; connects via OMB-CA-G55 or OMB-CA-G56 cable
OMB-RACK3	**41**	Rack-mount kit for OMB-TB-100 terminal board

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