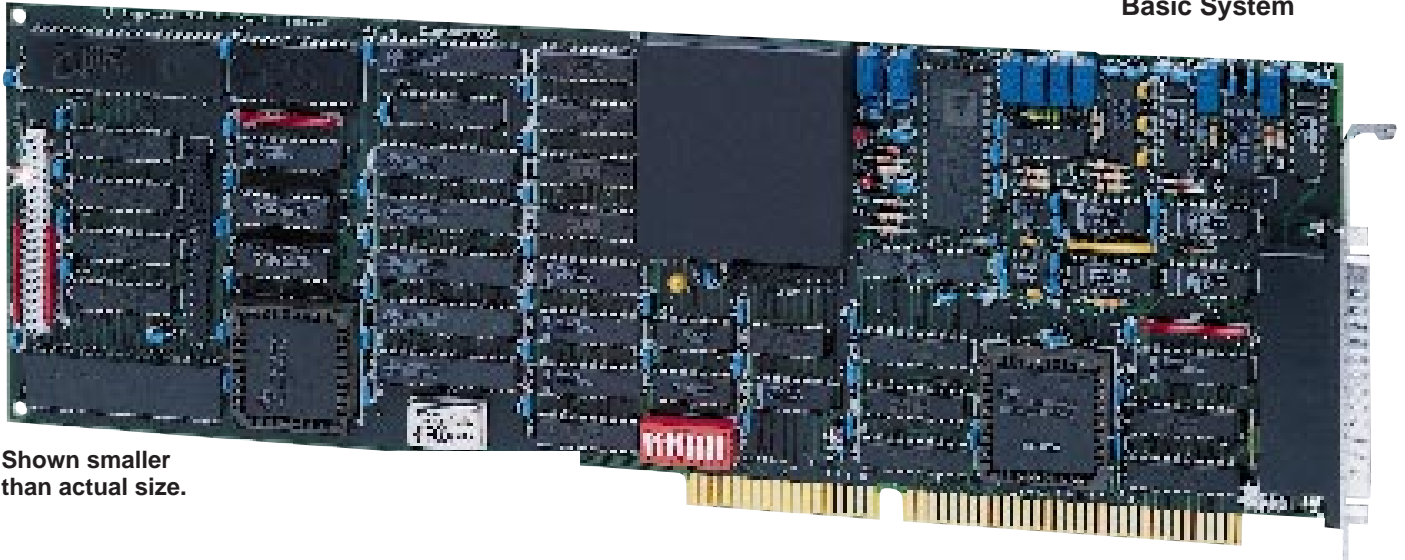


# Data Acquisition Boards for Desktop PCs

CE

**\$795**  
Basic System



Shown smaller  
than actual size.

- ✓ **12- or 16-bit A/D**
- ✓ **100K Reading/sec Real-time Storage-to-Disk**
- ✓ **8 Differential- or 16 Single-Ended Inputs, Expandable to 256**
- ✓ **X1, 2, 4, or 8 Programmable Gain (Other Gains Available with Option Cards)**
- ✓ **Expansion Cards for High Voltage/current, Strain Gage, Thermocouple, Isolation, Filtering and Simultaneous Sample and Hold**
- ✓ **512-location Scan Memory for User-Defined Channel/Gain Sequencing**
- ✓ **Analog, Digital, or Software Trigger**
- ✓ **Two 12-bit Analog Outputs, 100 kHz via On-board DMA or FIFO**
- ✓ **24 General-Purpose Digital I/O Lines, Expandable to 192**
- ✓ **16 High-speed Digital-Input Lines, Scannable at up to 100 kHz**
- ✓ **Five Programmable 16-bit Counter/timers**

The DaqBoard family of data acquisition boards offers more signal conditioning choices than any comparable product, while also providing high-speed performance and low price. These ISA-bus boards offer 10  $\mu$ sec per-channel, 12-bit measurement capacity over their 16 analog input channels and maintain the same performance when expanded up to 256 channels. Moreover, both the boards' 16 built-in and 256 expansion channels can each be programmed for a

different, dynamically selectable gain. This means that a single DaqBoard can measure various signal types, from thermocouples to strain-gages, while maintaining the 10  $\mu$ sec per-channel rate. Most other data acquisition boards suffer significant speed and performance declines when equipped with expansion channels, because their on-board sequencing supports only built-in channels.

The DaqBoard family's 256-channel expansion capacity includes low-cost, compact signal conditioning boards for measuring temperature, voltage, and strain, as well as boards for performing isolation, low-pass filtering, and simultaneous sample and hold. These boards can be housed in similarly inexpensive and compact three- or ten-slot enclosures.

## FLEXIBLE TRIGGERING

The DaqBoards offer an array of both analog and digital triggering capabilities. For example, the units permit you to trigger on the analog input level from any one channel, and also allow you to program the slope and polarity of the trigger level. Because the DaqBoards feature a hardware-based trigger, they minimize trigger latency to less than 10  $\mu$ s. In contrast, most plug-in boards that employ software-polling triggers have typical trigger-to-A/D conversion latencies of 100  $\mu$ s or more. The DaqBoards can also be triggered from a TTL-level digital input or from a command from the PC. Pre-trigger data can be collected using any analog channel as the triggering event.

## ANALOG INPUT

The DaqBoards' built-in analog input capability permits them to measure 8 channels in a differential input mode, or 16 channels in a single-ended mode. Their on-board programmable gain instrumentation amplifiers can be dynamically set to x1, 2, 4, or 8. Other gains can

# DaqBoard Series



be obtained via expansion cards. The DaqBoards A/D converter scans selected channels at a constant 10  $\mu$ s/channel rate, minimizing the time skew between consecutive channels. The time between the start of each scan sequence can be programmed to start immediately or at intervals up to 12 hours. The OMB-DBK expansion cards permit each DaqBoard to be expanded up to 256 channels while maintaining its 10  $\mu$ s per channel rate. (For applications that require simultaneous sampling of multiple channels, see OMB-DBK17).

## ANALOG OUTPUT

Each DaqBoard has two 12-bit D/A converters that allow you to generate voltages of 0 to +5 V. In addition, with a bipolar external reference, output voltages between -10 Vdc and +10 Vdc may be obtained. One D/A converter is internally wired to the analog trigger comparator, and can be software programmed to act as either the trigger-level setting, or the second analog output channel. The DaqBoards' analog outputs can be programmed whenever the DaqBoards are not transferring A/D data.

## HIGH-SPEED DIGITAL INPUT

The DaqBoard-100, and 200 have the ability to scan 16 TTL-level digital inputs as part of the user-defined scan sequence. Thus, the units can acquire the state of all 16 high-speed digital input lines within an analog scan sequence. The DaqBoards transfer the acquired digital word to the PC within the same data stream as the acquired analog data, eliminating the need for special data handling by the software.

## GENERAL-PURPOSE DIGITAL I/O

The DaqBoard-100, and 200 also include 24 general-purpose digital I/O lines, programmable in 8-bit groups as either inputs or outputs. Digital I/O capacity can be expanded up to 192 lines with the addition of optional expansion cards. The digital I/O lines can be accessed by the PC whenever the DaqBoards are not transferring data from the A/D converter. If an application requires digital inputs with critical timing, the unit's 16 high-speed digital inputs should be used.

## FREQUENCY/PULSE INPUT

The DaqBoard-100 and 200 provide five 16-bit counter/timers, which can be programmed for a wide variety of functions. For frequency measuring applications, each channel can count frequency inputs up to 7 MHz, with programmable gate time from 1  $\mu$ s to 655 seconds. If expansion beyond the 16-bit capacity of a single channel is required, the units permit channels to be cascaded via software. Also, each channel can be configured for pulse-counting or totalizing applications—wherein the number of received pulses is accumulated, permitting pulse accumulation concurrently with the measurement of analog input channels. The units also permit the width of a digital input pulse to be measured on each channel, with resolution to 1  $\mu$ s.

## PULSE/FREQUENCY OUTPUT

In pulse/frequency output modes, the DaqBoard-100 and 200's five counter-timer channels can each be independently programmed to perform one of several functions. In the pulse generation mode, a single pulse of programmable width can be generated from dc to 500 kHz. In the frequency-generation mode, the DaqBoards can generate a square wave of duty cycle from 0.0005% to 99%, with frequencies up to 1 MHz.

An external timebase can also be input to achieve other frequency outputs. Each of the DaqBoards' counter-timer channels has a one-shot output mode that can generate a pulse output in response to a hardware or software trigger input. The pulse begins at a programmable delay from 1  $\mu$ s to 655 seconds after receipt of the trigger.



DaqBoard-100 shown with optional OMB-DBK41 card cage and OMB-DBK input/expansion modules.

See Page  
D1-79 To Order.

D1  
ANALOG INPUT AND  
MULTI-FUNCTION CARDS

# Data Acquisition Boards for Desktop PCs

## SOFTWARE

DaqBoard products support a wide variety of software options, providing you with a diverse selection of software packages in which to develop your data acquisition system.

## DOS and Windows Drivers

Every OMB-DAQBOARD product is supplied with drivers that enable you to develop your own applications under either DOS or Windows. The units' DOS drivers are compatible with QuickBASIC, C, and Pascal; the Windows drivers are compatible with Visual Basic, Visual C, and C++. Windows support also includes a Visual Basic custom control that provides point-and-click control of DaqBoard operations through Visual Basic's Properties and Methods.

## DAQBOARD Series Selection Guide

Model	DAQBOARD-100	DAQBOARD-112	DAQBOARD-200	DAQBOARD-216
Analog input				
A/D resolution	12 bit	12 bit	16 bit	16 bit
No. of analog input channels	8 DE, 16 SE	8 DE, 16 SE	8 DE, 16 SE	8 DE, 16 SE
Max. channel capacity	256	256	256	256
A/D speed	100 kHz	100 kHz	100 kHz	100 kHz
Unipolar/bipolar selection	software	software	software	software
Single/differential selection	software	software	software	software
Channel/gain sequencer depth	512	512	512	512
Analog output				
No. of output channels	2	2	2	2
Resolution	12 bit	12 bit	12 bit	12 bit
High-speed digital inputs				
No. of bits	16		16	
Max. scan rate	100K words/s		100K words/s	
Programmable digital I/O				
No. of programmable input/output lines	24		24	
Max. channel capacity	192		192	
Fixed digital I/O	4 in, 4 out**	4 in, 4 out**	4 in, 4 out**	4 in, 4 out**
Programmable counter/timers				
No. of channels	5		5	
Max. frequency input	7 MHz		7 MHz	
Other counter inputs	1 ch, 8 MHz**	1 ch, 8 MHz**	1 ch, 8 MHz**	1 ch, 8 MHz**
Software				
DOS & Windows drivers	✓	✓	✓	✓
Visual Basic VBX	✓	✓	✓	✓
DaqView2 Software	✓	✓	✓	✓
PostView Software	✓	✓	✓	✓
LABTECH NOTEBOOK compatible	✓	✓	✓	✓
SnapMaster compatible	✓	✓	✓	✓
DASYlab compatible	✓	✓	✓	✓

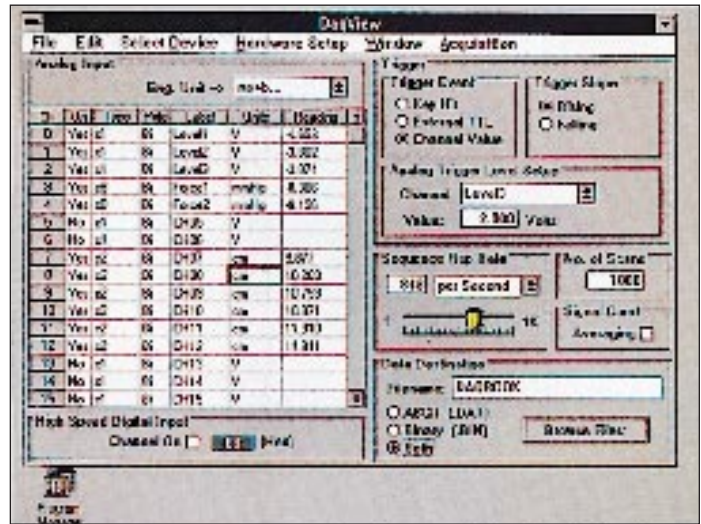
\*\* Accessible only if no analog expansion cards are in use; not accessible from DaqView2, Labtech Notebook or SnapMaster

## DAQVIEW2

All DaqBoard data acquisition systems include DaqView2, a Microsoft Windows data logging and control application that provides a "no-programming required" interface to all DaqBoard features.

## Analog Input

DaqView2 includes an Analog Input window for setting up the unit to acquire data to disk. DaqView2's on-screen controls let



you set parameters such as trigger source, trigger level, and number of scans, and also provides you with a channel-configuration spreadsheet for selecting and assigning labels and gains to each channel. Once you have configured a DaqBoard and armed it for acquisition, a strip chart window can be opened to display channel data trends in real time. DaqView2 also enables you to easily access option boards connected to a DaqBoard. DaqView2 lets you specify the data format of your output files as binary, ASCII, or both. The ASCII format is compatible with many spreadsheets and graphical analysis programs. You can also use DaqView2's mX+b facility to scale and offset readings on a per-channel basis.

## Analog Output

DaqView2 provides an analog output window for interactive control of the DaqBoard's two D/A converters. The window features a slider and a text entry field for each D/A converter, facilitating the setting of output voltage.

## Digital I/O

DaqView2 includes a digital I/O window that provides you with full interactive control of digital I/O on a DaqBoard P2 connector and up to four attached option cards. The window allows you to independently configure each port as either an input or output.

See Page D1-79 To Order.

# DaqBoard Series

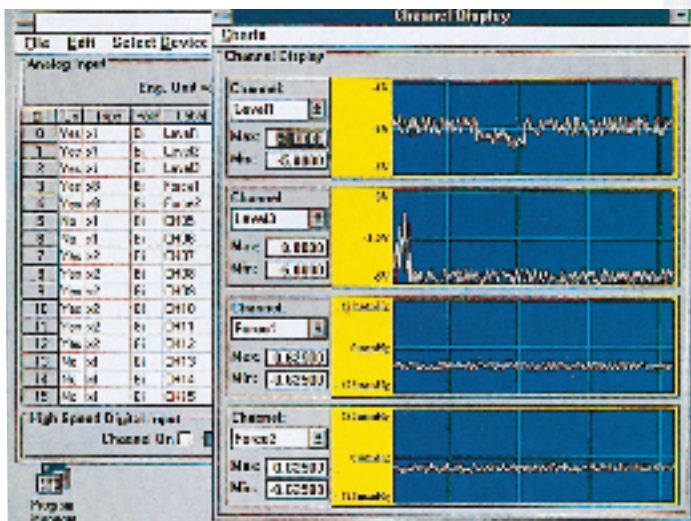
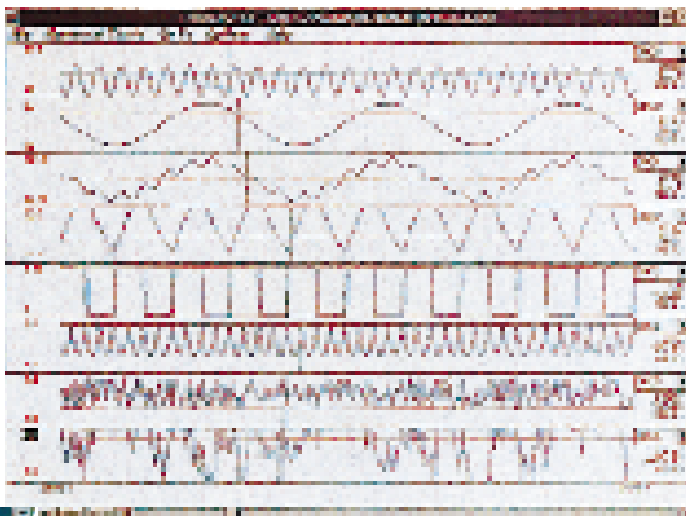
## Counter-Timer Window

DaqView2 includes a counter-timer window that provides frequency measurement, totalizing, and pulse-train generation applications for the DaqBoard-100, and 200's five counter-timers.

## PostView

This post-acquisition waveform viewing program provides strip-chart recorder-like graphical displays for reviewing large amounts of previously acquired data. Users can display up to 16 channels of data that have been collected and saved to a file by DaqView2. Using the program's intuitive on-screen controls, you can expand, contract, and auto-scale waveforms as well as scroll in either direction.

The program also lets you employ the mouse to place markers for extracting time and magnitude data from any point in the waveform. Multiple applications of



PostView can be launched simultaneously to view several data files concurrently.

## Visual Basic Custom Controls

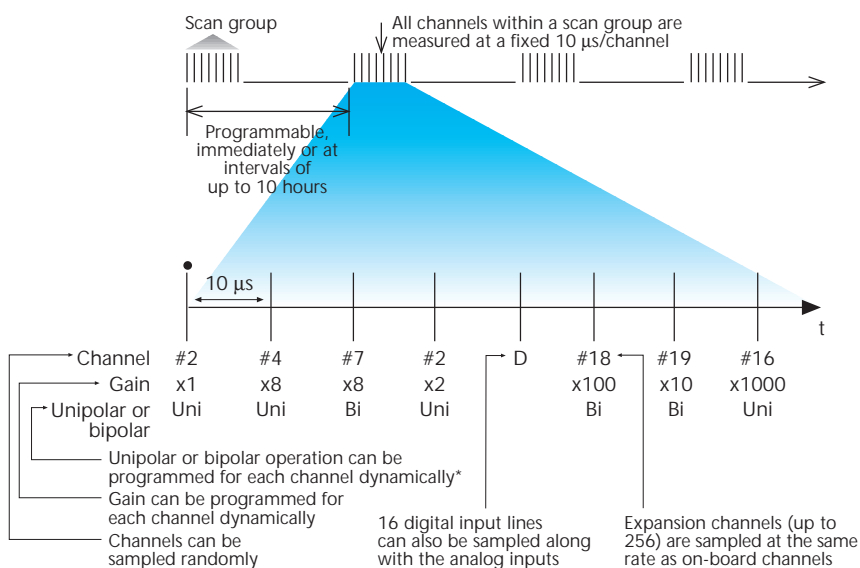
Each DaqBoard is shipped with four Visual Basic Extensions (VBX) for controlling its hardware subsystems— analog input, analog output, digital I/O, and counter-timer. You can place any or all of the VBX controls in your application directly from Visual Basic's tool palette, for complete control of DaqBoard Series products via Visual Basic's object interface.

Selecting a DaqBoard VBX on a window automatically results in the display of a Properties window depicting the state of most of its member properties. Assigning values to these variables at design time through the Properties window eliminates the necessity to write initialization code. The Properties window also provides a list of valid choices for most parameters.

## CHANNEL-SCANNING FLEXIBILITY

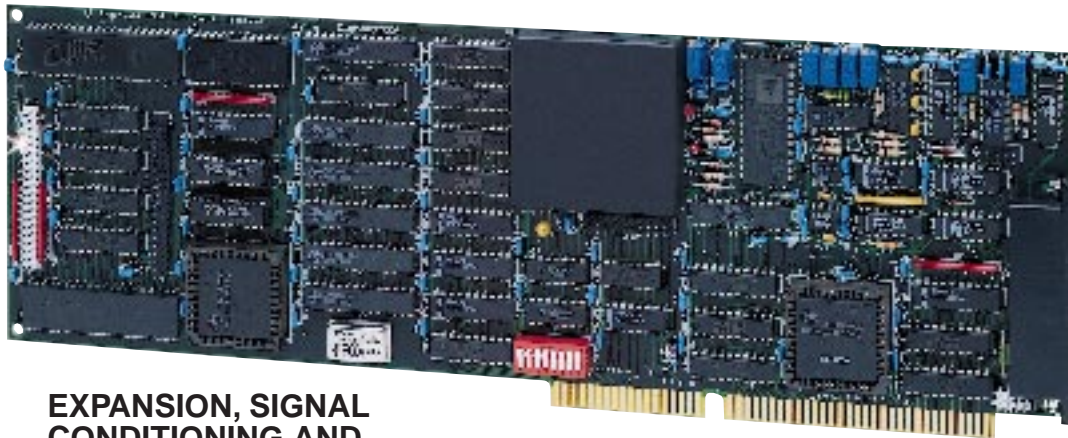
The DaqBoard offers a 512-location scan sequencer that allows you to select each channel and associated input amplifier gain at random. The sequencer circuitry circumvents a major limitation encountered with many plug-in data acquisition boards—a drastic reduction in the scan rate for external expansion channels. All DaqBoard channels are scanned, including the 256 potential expansion channels, at 100 kHz (10  $\mu$ s/channel), via on-board FIFO or directly from the PC via DMA. In addition, the 16 digital inputs can be scanned using the same scan sequence employed for analog inputs, enabling the time correlation of acquired digital data to acquired analog data. The units permit each scan group, which can contain up to 512 channel/gain combinations, to be repeated immediately or at programmable intervals of up to 10 hours. Within each scan group, consecutive channels are measured at a fixed 10  $\mu$ s/channel rate.

## DAQBOARD Scanning Example



\* DaqBoard-200 & 216 only

# Data Acquisition Boards for Desktop PCs



When installed in the OMB-DBK10 three-slot expansion enclosure, the OMB-DBK32A is attached via the OMB-CA-131-x cable. If used with the OMB-DBK41 ten-slot expansion card enclosure, it simply installs into one of the analog expansion slots on the unit's backplane.

## EXPANSION, SIGNAL CONDITIONING AND POWER OPTIONS

The DaqBoards can be easily expanded beyond their built-in channel capacity via our wide ranging OMB-DBK Series of expansion, signal conditioning, and power supply cards.

### Analog Input Expansion

All OMB-DBK Series analog expansion cards are designed to daisy-chain to the P1 analog connector found on all DaqBoard models.

Because the DaqBoards feature an on-board channel/gain sequencer, they can directly address up to 256 channels, enabling the scanning of all expansion channels at the same 10  $\mu$ s rate as on-board channels.

When equipped with analog input expansion cards, the DaqBoard must be configured for 16 single-ended inputs. Each 16-channel expansion card in use consumes one of the DaqBoard's on-board analog channels; consequently, a maximum of sixteen 16-channel cards can be accommodated, for a total of 256 channels. OMB-DBK Series cards with only 2 or 4 channels can share the same DaqBoard base channel to maintain the 256 channel maximum.

When analog expansion cards are in use, unused DaqBoard base channels are available to measure input signals. (The OMB-DBK11A screw terminal card provides convenient access to the DaqBoard base channels.)

### Analog Input Card Housing

You can house the OMB-DBK analog input expansion cards in a variety of ways. Your choice will

depend on the number of cards required by your system.

If your application requires six or fewer cards, the slim 3-slot OMB-DBK10 expansion card enclosure is a good choice. The OMB-DBK10 requires an OMB-CA-131-x cable for daisy-chaining the analog expansion cards. The OMB-DBK10 enclosures can easily be stacked together.

If your application requires more than 6 expansion cards or if you want to allow for future system expansion, the compact 10-slot OMB-DBK41 analog expansion card enclosure is the preferred solution.

Multiple OMB-DBK41s can be daisy-chained to cost-effectively house the number of analog input cards required to bring a DaqBoard system up to its maximum expansion capacity of 256 channels. Also, because it features an analog backplane for connecting the expansion cards, the OMB-DBK41 obviates a long daisy-chain cable.

### Powering Analog Cards

Every DaqBoard model has the capacity to power several analog expansion cards. However, if the number of cards in your application requires more power than can be obtained from the power supply, the OMB-DBK32A power supply card is available to meet your system's power needs.

The OMB-DBK32A attaches directly to the P1 analog expansion bus and supplies power to all analog expansion cards. Like the DaqBoards, the OMB-DBK32A can be powered from an included ac adapter.

## Digital I/O Expansion

The DaqBoard-100 and 200 each feature a P2 connector equipped with 24 digital I/O channels. You can expand these models' digital I/O capacity up to 192 channels via the use of OMB-DBK series digital I/O cards. These cards can be housed in the OMB-DBK10 three-slot expansion enclosure.

**OMB-DBK1 \$395**

### 16-CONNECTOR BNC INTERFACE MODULE

The OMB-DBK1 allows 16 analog inputs to be connected to the DAQBOARD series via BNC connectors. Its 16 BNC connectors accommodate 16 single-ended or 8 differential analog inputs. Each differential input is equipped with a switchable 100 k Ohm bias resistor referenced to analog common. The unit also has provisions for accessing external ground connections. The OMB-DBK1 features a DB37 connector that mates directly to the DAQBOARDP1 analog I/O connector.

**OMB-DBK2 \$495**

### FOUR-CHANNEL D/A VOLTAGE-OUTPUT CARD



The four-channel OMB-DBK2 D/A voltage output card provides the DAQBOARD series the ability to generate precise bipolar analog voltage outputs. It features a quad

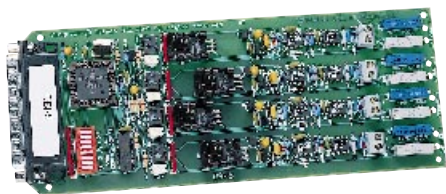
14-bit D/A converter that permits it to generate up to a  $\pm 5$  V or  $\pm 10$  V. Voltage ranges for each channel are jumper selectable. Accuracy and stability are ensured by an on-board bipolar reference. You can connect up to 64 OMB-DBK2 cards to one DAQBOARD series to expand analog output capacity to 256.

**OMB-DBK4 \$795**  
**TWO-CHANNEL DYNAMIC SIGNAL-INPUT CARD**



The two-channel OMB-DBK4 dynamic signal-input card enables the DAQBOARD systems to accommodate various dynamic input signals such as accelerometers or microphones. The card has programmable gain ranges of  $\pm 50$  mV,  $\pm 500$  mV, or  $\pm 5$  V which is software selectable for each channel. A built-in constant current source is available for ICP transducer biasing. Anti-aliasing Butterworth filter provides eight selectable cutoff frequencies from 141.6 Hz to 18 kHz which is selectable for each channel. By disabling the filter a 40 kHz bandwidth is possible on each channel. Simultaneous sample & hold amplifier allows all channels in a system (up to 256) to be sampled within 50ns of one another. Includes BNC connectors & footprints for user-provided Microdot connectors. Up to 128 cards can be linked together to one system for a total of 256 dynamic signal inputs.

**OMB-DBK5 \$395**  
**FOUR-CHANNEL CURRENT-OUTPUT CARD**



The OMB-DBK5 current output card when utilized with the DAQBOARD system can control four isolated 4 to

20 mA current loops. Each of the channels contains a 12-bit D/A converter to set the current loop. All the channels are optically isolated from each other and from the data acquisition system by 500 V. The OMB-DBK5 is compatible with regulated and unregulated supplies of 12 to 45 Vdc and has maximum loop drive resistance of 1450 Ohms. As many as sixty-four OMB-DBK5s can be linked together for a 256 analog output system.

**OMB-DBK7 \$395**  
**FOUR-CHANNEL FREQUENCY-INPUT CARD**

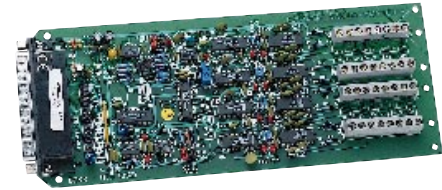


The OMB-DBK7 can accommodate frequencies from 1 Hz to 950 kHz. It accepts ac-coupled analog inputs up to 80V p-p and dc-coupled digital signals of -15 V to +15 V. Low-pass filters of 100 kHz, 300 Hz, or 30 Hz are selectable for each channel. The OMB-DBK7 has auto-calibration capability allowing it to compensate for system errors. 64 OMB-DBK7 cards can be interfaced together for a 256 channel system.

**OMB-DBK8 \$395**  
**EIGHT-CHANNEL HIGH VOLTAGE INPUT CARD**

The OMB-DBK8 card provides the DAQBOARD system the capability of inputting high voltage, bipolar ranges of 10, 50, or 100 V. The card's high input impedance of 10 M Ohms ensures accurate readings over a wide range of source impedance. High speed scanning of the inputs is possible via individual buffer amplifiers. Thirty-two OMB-DBK8 can be tied together for a 256 channel system.

**OMB-DBK9 \$395**  
**EIGHT-CHANNEL RTD MEASUREMENT CARD**



The OMB-DBK9 is a 8-channel RTD (Resistor Temperature Device) card for the DAQBOARD system. It supports 3- or 4-wire RTDs with resistance ranges of 100, 500 or 1000 Ohms. Selectable range of either a full range ( -200 to 850°C) span or a narrow range ( -200 to +200°C) span. The OMB-DBK9 also minimizes self-heating error to less than 0.1°C by limiting power to 100 micro-watts.

**OMB-DBK10 \$175**  
**THREE-SLOT EXPANSION-CARD ENCLOSURE**

The OMB-DBK10 is a metal expansion-card enclosure that accommodates up to three expansion cards. This rugged enclosure, allows three expansion cards to easily slide into it without requiring removal of the signal connections. Two OMB-DBK10s are ideal for applications that require 6 or fewer expansion cards.

**OMB-DBK11A \$145**  
**SCREW TERMINAL CARD**



The OMB-DBK11A is a screw terminal card which allows convenient connection of analog and digital I/O signals from the DAQBOARD acquisition systems. User-installable BNC connectors are provided to accommodate signals from BNC cables. The OMB-DBK11A CARD also includes a prototype area for electronic components, such as resistors and capacitors for filtering signals.

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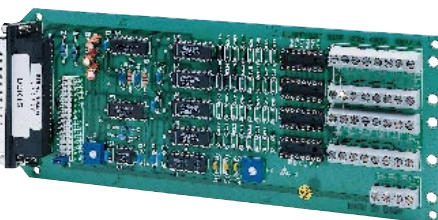
**OMB-DBK12 AND OMB-DBK13 \$295**  
**PROGRAMMABLE GAIN ANALOG**  
**MULTIPLEXING CARDS**



The OMB-DBK12 and OMB-DBK13 cards provide 16 differential analog inputs.

The OMB-DBK12's programmable gain amplifier offers x1, 2, 4, or 8 gain; the OMB-DBK13's offers x1, 10, 100, or 1000 gain. These gains can be combined with the DaqBoards' 8 on-board ranges for a diverse solution of full scale inputs. The cards provide DB37 connections to the DaqBoards, and offer screw terminal connections for analog signal input.

**OMB-DBK15 \$395**  
**UNIVERSAL CURRENT/VOLTAGE**  
**INPUT CARD**



The OMB-DBK15 universal current/voltage input card lets you add an additional 16 channels of current or differential voltage input to the DaqBoards. The OMB-DBK15 features a programmable gain input amplifier and 16-channel multiplexer and also allows unipolar/bipolar selection per channel. Each of its channels can be configured for current-to-voltage conversion or voltage attenuation. The card allows the DaqBoards to make current measurements from 4 to 20 mA transducers and voltage measurements up to  $\pm 100$  V with user-provided resistors. You can connect up to sixteen OMB-DBK15 cards to one DaqBoard, for a total of 256 voltage or current inputs.

**OMB-DBK16 \$495**  
**TWO-CHANNEL STRAIN-GAGE**  
**MEASUREMENT CARD**



The 2-channel OMB-DBK16 strain-gage card lets you use the DaqBoards to take measurements from most strain-gage types. The card has a 50 mA current limit and an on-board excitation regulator adjustable from 1.5-10.5 Vdc (external power of 13-16 Vdc required). The OMB-DBK16 provides an input amplifier of x100-1250 gain range for accommodating strain gages with 0.4 to 10 mV/V sensitivities. The card features a 0 to 5 Vdc offset adjustment range and output scaling gain stage, letting you null large quiescent loads and expand dynamic range for maximum resolution. Each OMB-DBK16 channel offers selectable ac coupling between the bridge and input amplifier circuits, and a selectable 3-pole, low-pass filter with a customizable cut-off frequency. You can equip one DaqBoard with multiple OMB-DBK16 cards for up to 256 inputs.

**OMB-DBK17 \$495**  
**SIMULTANEOUS SAMPLE AND**  
**HOLD CARD**



The OMB-DBK17 is a 4-channel simultaneous sample and hold card that allows you to capture multiple input channels simultaneously, eliminating channel-to-channel timing skew. Multiple OMB-DBK17s can be used for simultaneous samples of up to 256 inputs. Each of the OMB-DBK17's channels

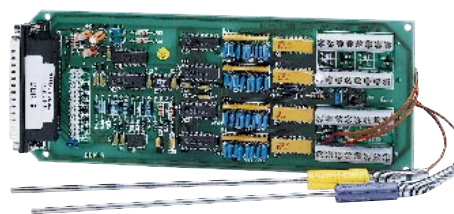
provides a differential input stage, a low-noise instrumentation amplifier with 5 switchable gains, and a high accuracy sample and hold stage. All signal inputs are attached via convenient BNC connectors.

**OMB-DBK18 \$495**  
**LOW-PASS FILTER CARD**

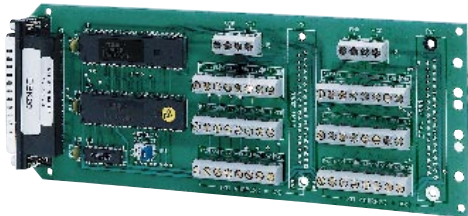


The OMB-DBK18 card provides four low-pass filters that can be individually configured for a cut-off frequency of from dc to 50 kHz, and for Butterworth, Chebychev, or Bessel characteristics. Each channel is equipped with an instrumentation amplifier that can be switch-set for a gain of x1, 10, 100, 200, or 500, as well as for a custom value. Multiple OMB-DBK18 cards can be used to filter up to 256 input channels. All signal inputs are attached via convenient BNC inputs.

**OMB-DBK19 \$395**  
**HIGH-ACCURACY**  
**THERMOCOUPLE CARD**



The OMB-DBK19 thermocouple input card provides the DaqBoards with the ability to make highly accurate thermocouple measurements. To ensure precise measurements over a wide range of operating temperature, two of its 16 on-board channels are reserved for auto-zero and cold-junction compensation. As a result, you can attach up to 14 thermocouples of different types (J, K, S, T, E, B, R, and N) to one OMB-DBK19 card. As many as sixteen OMB-DBK19 cards can be attached to one DaqBook, for a total of 224 channels.



**OMB-DBK20 & OMB-DBK21 \$195**  
**GENERAL PURPOSE DIGITAL I/O CARDS**

The OMB-DBK20 general-purpose digital I/O card expands the number of digital I/O lines by 48 per card. The OMB-DBK20 connects to the P2 digital I/O connector, and uses the 24 built-in DaqBoard digital I/O lines as a communication bus. Note that when the OMB-DBK20 is connected, the 24 built-in lines do not function as digital I/O lines for user-connected digital signals. Thus, the first OMB-DBK20 card attached increases the DaqBoards' number of usable digital I/O lines from 24 to 48, and subsequent cards each add 48 additional lines of user-programmable digital I/O. Up to four cards can be attached to one DaqBoard for a total of 192 lines. The optional OMB-DBK21 is the same as the OMB-DBK20, except that it is equipped with two DB37 male connectors instead of screw terminals.



**OMB-DBK23 \$495**  
**24-LINE OPTICALLY ISOLATED DIGITAL-INPUT MODULE**

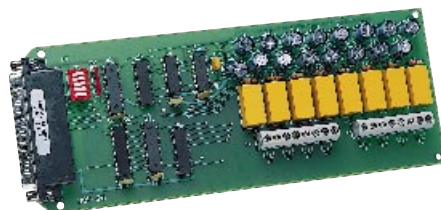
The OMB-DBK23 isolated digital input module attaches to the DAQBOARD acquisition system. The unit provides 500 V of channel-to-channel and 500V of channel-to-system optical isolation. The OMB-DBK23 attaches to the systems digital I/O connector and uses the systems digital lines as a communication bus. When OMB-DBK23 is in use, the system's digital I/O are not accessible. Up to

eight OMB-DBK23 modules can be linked together for a total of 192 digital inputs.



**OMB-DBK24 \$495**  
**24-LINE OPTICALLY ISOLATED DIGITAL-OUTPUT MODULE**

The OMB-DBK24 digital output module provides isolated digital outputs to the DAQBOARD acquisition systems. The outputs can switch up to 60 Vdc, and provide 500 V channel-to-channel and 500 V channel-to-system isolation. The OMB-DBK24 connects to the systems digital I/O connector, and uses the digital I/O for a communication bus. This disables usage of the systems digital I/O lines when the OMB-DBK24 is being used. A 192 digital output system is available when eight OMB-DBK24 modules are interfaced together.



**OMB-DBK25 \$295**  
**8-CHANNEL RELAY-OUTPUT CARD**

The OMB-DBK25 provides eight relay contacts to the DAQBOARD acquisition systems. The relay contacts are rated for 2A at 28 Vdc or 0.6A at 120 Vac. A 256 relay output system is available via thirty-two OMB-DBK25s.

**OMB-DBK30A \$595**  
**RECHARGEABLE BATTERY / EXCITATION MODULE**

The OMB-DBK30A module enables the DAQBOARD data acquisition systems to be utilized in remote or portable applications. The OMB-DBK30A has two operating modes, a 14 Vdc output is able to operate the data acquisition system for three to six hours. The second

mode provides 28 Vdc output for excitation for 2-wire 4 to 20 mA transducers while simultaneously powering the acquisition system for up to three hours.

**OMB-DBK32A \$395**  
**AUXILIARY POWER SUPPLY CARD**

The OMB-DBK32A provides the DAQBOARD systems with additional power ( $\pm 15$  Vdc at 500 mA) for expanded systems that exceed the DAQBOARD standard power. The OMB-DBK32A can be installed into a OMB-DBK10 or OMB-DBK41 expansion enclosure.

**OMB-DBK33 \$395**  
**TRIPLE-OUTPUT AUXILIARY POWER SUPPLY CARD**

The OMB-DBK33 triple-output power supply card provides additional power when expanding OMEGA's DAQBOARD acquisition system. The card supplies  $\pm 15$  Vdc at 250 mA and +5 Vdc at 1000 mA. The OMB-DBK33 installs directly into the OMB-DBK41 expansion chassis and will operate only with that chassis.

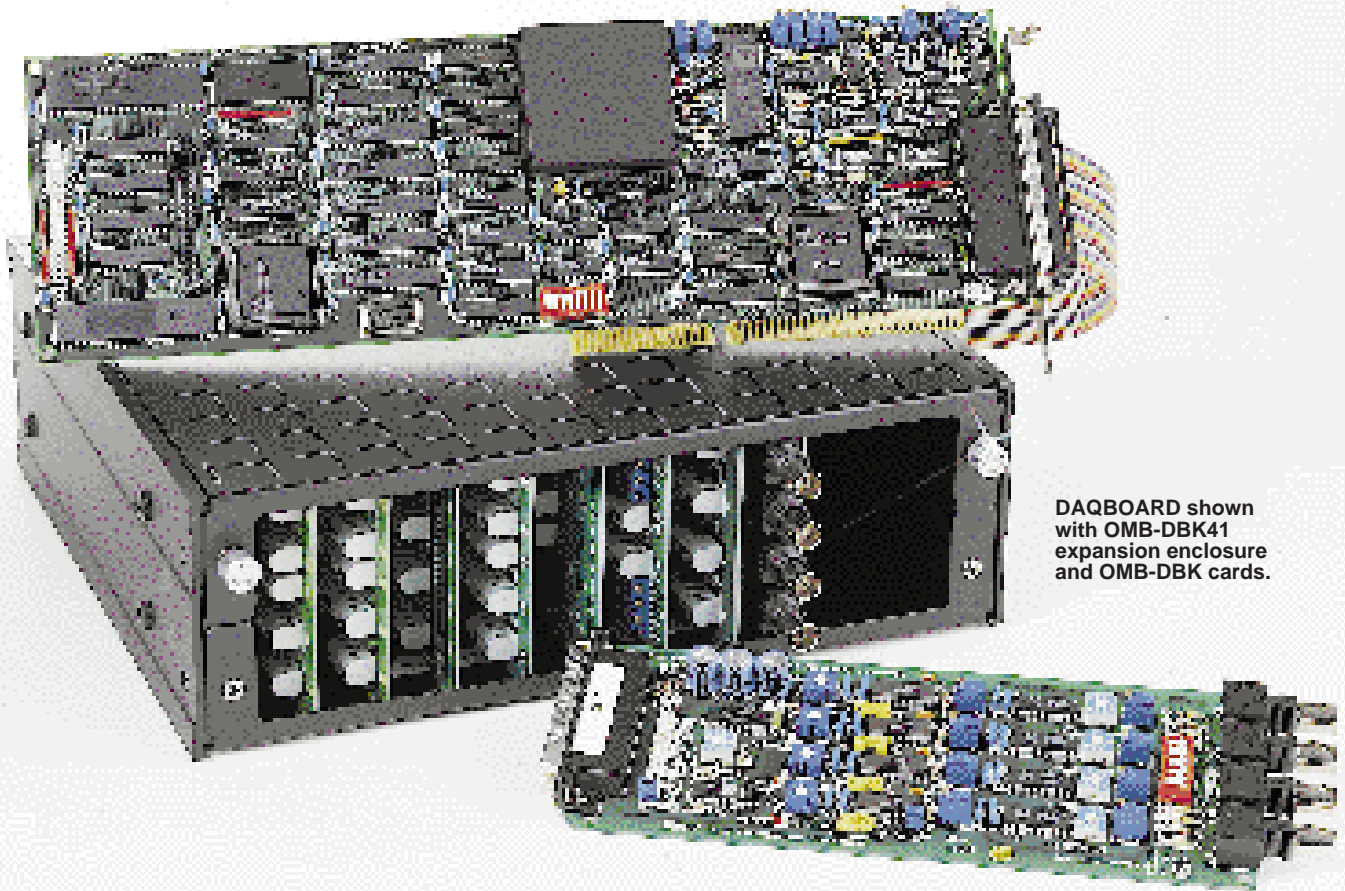
**OMB-DBK40 \$345**  
**BNC ANALOG INTERFACE**

The OMB-DBK40 provides a convenient means of attaching analog signals from BNC cables to the DaqBoards. The OMB-DBK40 features eighteen BNC connectors that accommodate 16 analog input channels and 2 analog output channels. One of the OMB-DBK40's BNC connectors can be switch-selected as either the TTL trigger input or as the second analog output channel. The OMB-DBK40 features a male DB37 connector that mates with the DaqBoard P1 analog I/O connector. The OMB-DBK40 also accommodates the five counter-timers when attached to the DaqBoard P3 connector. Included is a 6 ft. cable for attachment to a DaqBoard P1.

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# Data Acquisition Boards for Desktop PCs



DAQBOARD shown with OMB-DBK41 expansion enclosure and OMB-DBK cards.

acquisition systems to be expanded with any combination of up to ten OMB-DBK series analog expansion cards. The OMB-DBK41's metal case features an analog backplane into which the OMB-DBK series expansion cards can be easily installed. Only a OMB-CA-131-1 cable is required to connect the OMB-DBK41's output to the DAQBOARD's P1 analog input connector. For applications that require more than 10 cards, multiple OMB-DBK41s can be cascaded using a OMB-CA-131-x cable.

## Power Requirements

Expansion cards housed within the OMB-DBK41 may occasionally require the use of the OMB-DBK32 auxiliary supply card.

## OMB-DBK42 \$695

### 16-SLOT MULTI-PURPOSE ISOLATED SIGNAL CONDITIONING MODULE

The OMB-DBK42 module allows the DAQBOARD acquisition systems to accommodate OM5 signal conditioning modules. The modules

are designed to accommodate a variety of input types and provide input to system isolation of 1500 Vdc and channel-to-channel isolation of 500 Vdc. Signals are attached via optional screw-terminal connection block OMB-CN-71 or thermocouple input block OMB-CN-72. The OMB-DBK42 case is a rugged all-metal case which includes a built-in power supply operable from 10 to 24 Vdc. Up to sixteen OMB-DBK42 can be stacked together to one system for channel capacity of 256 inputs.

## OMB-DBK43 \$1995

### 8-CHANNEL STRAIN-GAGE MODULE

The OMB-DBK43 accepts eight strain gages and accommodates most bridge types from Quarter (2-wire) to Full bridge (6-wire). There is a built-in dc/dc converter for powering unit via external dc of 9 to 18 Vdc or included ac adapter. The dc/dc converter also provides power to 8 on-board excitation regulators which are adjustable from 1.5 to 10.5 Vdc @

50 mA. The OMB-DBK43 also provides input amplifiers with gain ranges of 100 to 1250 which will accommodate strain gage sensitivity of 0.4 mV to 10mV/V. The card also features a 0 to 5 Vdc offset adjustment range and output-gain scaling permits nulling of large quiescent loads and expansion of dynamic range for maximum resolution. The OMB-DBK43 has locations for user-supplied shunt calibration resistors for each channel. Each DBK43 input channel features user-selectable ac or dc coupling between the input amplifier circuits, and a selectable 3-pole, low-pass filter with customizable cut-off frequency. Up to thirty-two DBK43 modules can be linked together for a 256 strain input system.

## OMB-DBK44 \$195

### 2-CHANNEL MULTI-PURPOSE ISOLATED SIGNAL CONDITIONING CARD

The OMB-DBK44 card allows the DAQBOARD acquisition systems to accommodate two OM5 signal conditioning modules. A variety of

# DaqBoard Series

OM5 modules are available and provide signal to system isolation of 1500 Vdc and input channel-to-channel isolation of 500 Vdc. The OMB-DBK44 can be installed in the OMB-DBK10 ( 3-slot enclosure) or OMB-DBK41 ( 10-slot enclosure). The DAQBOARD systems may provide the 5 V power needed for the modules or an external supply is recommended for isolation purposes.

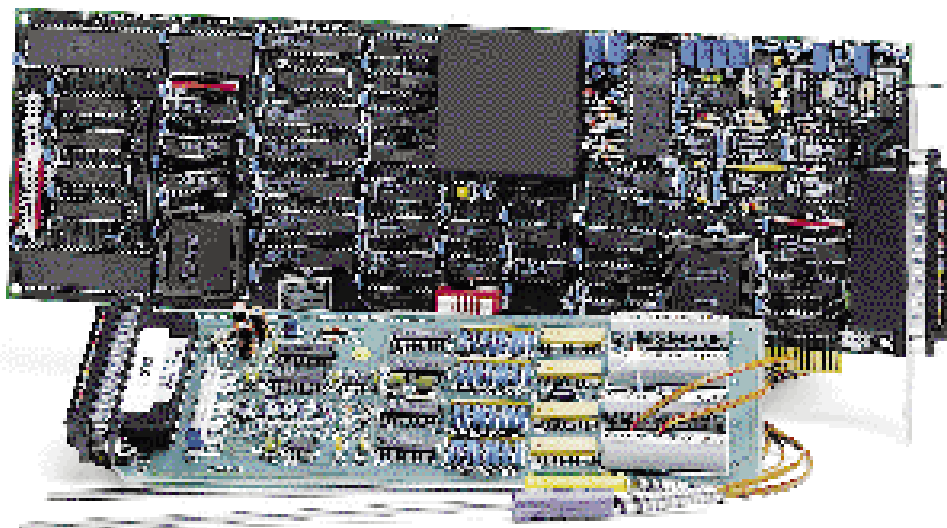
## **OMB-DBK50 & OMB-DBK51 \$1995 8-CHANNEL ISOLATED VOLTAGE-INPUT MODULES**



The OMB-DBK50 & DBK51 modules allow the DAQBOARD acquisition systems the ability to accept isolated voltage inputs. The OMB-DBK50's input amplifiers provide input ranges for 10 V, 100 V, and 300 V bipolar signals. The OMB-DBK51's amplifiers provide ranges of 100mV, 1V, and 10V. The modules provide 750V of channel-to-channel isolation and 1250V of channel-to-system isolation. A low-pass filter of 3.5 Hz is selectable for each channel. This can be bypassed for a bandwidth response of 20 kHz. A 256 channel isolated voltage system is obtainable by linking 32 modules to one acquisition system.

## **OMB-DBK52 \$595 14-CHANNEL HIGH-ACCURACY THERMOCOUPLE-INPUT MODULE**

The OMB-DBK52 thermocouple-input module allows the DAQBOARD acquisition systems the ability to measure 14 thermocouple inputs. To ensure precise measurements over a wide range of operating temperatures, two of its 16 on-board channels are reserved for auto-zero and cold-junction compensation. As a result, you can attach up to 14 thermocouples of different types (J, K, S, T, E, B, R, and N) to one OMB-DBK52 module. Connections to the module are made via



miniature thermocouple connectors. As many as sixteen OMB-DBK52 modules can be attached to one data acquisition system for a total of 224 channels.

## **OMB-DBK53 \$495 16-CHANNEL PROGRAMMABLE LOW-GAIN ANALOG-INPUT MODULE**

The OMB-DBK53 module provides the OMB-DAQBOOK acquisition systems with 16 differential or single-ended analog inputs. The modules programmable gain amplifier offers x1, x2, x4, x8 gain ranges, which can be combined with the on-board DAQBOARD gain ranges. The OMB-DBK53 is equipped with BNC connectors for accepting analog inputs. Up to 16-OMB-DBK53 can be tied together to one system for a total of 256 differential inputs.

## **OMB-DBK54 \$495 16-CHANNEL PROGRAMMABLE HIGH-GAIN ANALOG-INPUT MODULE**

The OMB-DBK54 module allows the DAQBOARD acquisition systems the ability to accept 16 differential or single-ended analog inputs. The modules programmable gain amplifier offers x1, x10, x100, and x1000 gain ranges, which can be combined with the on-board DAQBOARD gain ranges. The OMB-DBK54 is equipped with BNC connectors for accepting analog inputs. As many as 16 OMB-DBK54 can be interfaced together to one data acquisition system for a total of 256 differential

inputs.

## **OMB-DBK55 \$1995 8-CHANNEL SIMULTANEOUS SAMPLE AND HOLD MODULE WITH LOW-PASS FILTER**

Each OMB-DBK55 module allows the DAQBOARD acquisition systems to input eight differential or single-ended analog input channels equipped with low-pass filters and simultaneous sample-and-hold. Each input has its own amplifier for selectable gain ranges of x1, x10, x100, x200, and x500, as well as positions on board for user-selectable gain resistor, allowing for custom gain ranges up to x800. Each channel has a low-pass filter which is also individually configurable for cut-off frequencies from dc to 50kHz, and for Butterworth, Chebyshev, or Bessel characteristics. The inputs are convenient BNC connectors. Up to thirty-two OMB-DBK55 modules can be attached to one data acquisition system for a total of 256 differential inputs.

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# Data Acquisition Boards for Desktop PCs



## Specifications

### GENERAL DAQBOARD-100, 112, 200, 216

**Power Consumption:** 100: 1275 mA @ 5 Vdc; 112: 900 mA @ 12 Vdc; 200: 1550 mA @ 5 Vdc; 216: 1500 mA @ 5 Vdc

**Operating Temperature:** 0 to 50°C

**Storage Temperature:** 0 to 70°C

**Humidity:** 0 to 95% RH, non-condensing

### A/D SPECIFICATIONS

**Type:** Successive approximation

**Resolution:** 100, 112: 12-bit; 200, 216: 16-bit

**Conversion Time:** 8  $\mu$ s

**Monotonicity:** No missing codes

**Linearity:**  $\pm 1$  bit

**Zero Drift:**  $\pm 10$  ppm/°C max

**Gain Drift:**  $\pm 30$  ppm/°C max

### SAMPLE AND HOLD AMPLIFIER

**Acquisition Time:** 2  $\mu$ s

**Aperture Uncertainty:** 100 ps

### ANALOG INPUTS

#### 12-BIT DAQBOARD-100, 112

**Channels:** 16 single-ended, 8 differential, expandable up to 256 differential; single-ended/differential operation is switch selectable

**Connector:** DB37 male, P1

**Resolution:** 12-bits

**Ranges:** Unipolar/bipolar operation is switch selectable

**Unipolar:** 0 to 10 V, 0 to 5 V, 0 to 2.5 V, 0 to 1.25V

**Bipolar:** 0 to  $\pm 5$  V, 0 to  $\pm 2.5$  V, 0 to  $\pm 1.25$  V, 0 to  $\pm 0.625$  V

**Max Overvoltage:** 30 Vdc

#### Input Current

**Differential:** 150 pA typ, 0.2  $\mu$ A max

**Single-ended:** 250 pA typ, 0.4  $\mu$ A max

**Input Impedance:** 100 M $\Omega$

**Gain Temp. Coefficient:** 3 ppm/°C typ

**Offset Temp. Coefficient:**

12  $\mu$ V/°C max

#### 16-BIT DAQBOARD-200, 216

#### Channels:

16 single-ended, 8 differential, expandable up to 256 differential; single-ended/differential operation is software programmable

**Connector:** DB37 male, P1

**Resolution:** 16-bits

**Ranges:** unipolar/bipolar operation is software programmable on a per-channel basis

**Unipolar:** 0 to 10 V, 0 to 5 V, 0 to 2.5 V, 0 to 1.25 V

**Bipolar:** 0 to  $\pm 5$  V, 0 to  $\pm 2.5$  V, 0 to  $\pm 0.125$  V, 0 to  $\pm 0.625$  V

**Max Overvoltage:** 30 Vdc

#### Input Current

**Differential:** 150 pA typ, 0.2  $\mu$ A max

**Single-ended:** 250 pA typ, 0.4  $\mu$ A max

**Input Impedance:** 100 M $\Omega$

**Gain Temp. Coefficient:** 3 ppm/°C typ

**Offset Temp. Coefficient:**

12  $\mu$ V/°C max

### TRIGGERING

#### DAQBOARD-100, 112, 200, 216

##### Analog Trigger

**Programmable Level Range:** 0 to  $\pm 5$  V

**Trigger to A/D Latency:** 10  $\mu$ s max

##### Digital Trigger

**Logic Level Range:** 0.8 V low, 2.2 V high

**Trigger to A/D Latency:** 10  $\mu$ s max

##### Software Trigger

**Trigger to A/D Latency:** Dependent on PC speed

**Pre-Trigger:** up to 65,536 scans

### SEQUENCER

#### DAQBOARD-100, 112, 200, 216

Randomly programmable for channel & gain; DAQBOARD-200 is also randomly programmable for unipolar/bipolar ranges and single-ended/differential modes

**Depth:** 512 location

**Channel to Channel Rate:** 10  $\mu$ s/channel, fixed

**Max Repeat Rate:** 100 kHz

**Min Repeat Rate:** 10 hours

**Expansion Channel Sample Rate:** same as on-board channels, 10  $\mu$ s/channel

### ANALOG OUTPUTS

#### DAQBOARD-100, 112, 200, 216

**Channels:** 2

**Connector:** DB37 male, P1

**Resolution:** 12-bits

**Voltage Ranges:** 0 to 5 Vdc with built-in reference; 0 up to  $\pm 10$  Vdc with external reference

**Max Output Current:** 10 mA

### GENERAL PURPOSE DIGITAL I/O DAQBOARD-100, 200

**Channels:** 24 expandable up to 192

**Connector:** DB37 male, P2

**Device:** 82C55

#### Output Voltage Levels

**Min "1" Voltage:** 3.0 @ 2.5 mA sourcing

**Max "0" Voltage:** 0.4 @ 2.5 mA sinking

#### Output Current

**Max Source Current:** 2.5 mA

**Max Sink Current:** -2.5 mA

#### Input Voltage Levels

**Min Required "1" Voltage Level:** 2 V

**Max Allowed "0" Voltage Level:** 0.8 V

**Output Float Leakage Current:** 10  $\mu$ A

### HIGH-SPEED DIGITAL INPUTS DAQBOARD-100, 200

**Lines:** 16

**Connector:** DB37 male, P3

**Max Sampling Rate:** 100K words/s

**Input Low Voltage:** 0.8 V max

**Input High Voltage:** 2 V min

**Input Low Current:** 10 nA

**Input High Current:** -10  $\mu$ A

### COUNTER/TIMER

#### DAQBOARD-100, 200

**Channels:** 5

**Connector:** DB37 male, P3

**Frequency/Pulse Counting Mode:** up or down, binary or BCD

# DaqBoard Series

**Max Pulse Count:** 80-bit binary (5 channels cascaded)  
**Max Input Rate:** 7 MHz  
**Min High Pulse Width:** 70 ns  
**Min Low Pulse Width:** 70 ns  
**On-board Time Base:** 1 MHz  
**Input Low Voltage:** 0.8 V max  
**Input High Voltage:** 2.2 V min  
**Input Low Current:** 10  $\mu$ A max  
**Input High Current:** -10  $\mu$ A max  
**Frequency/Pulse Generating Mode**  
**Max Output Frequency:** 1 MHz  
**Duty Cycle:** variable between limits of approximately 0.0015% and 99.99%  
**Output High Voltage:** 2.4 V min @ -200  $\mu$ A  
**Output Low Voltage:** 0.4 V max @ 3.2 mA

## OMB-DBK1 – 16-CONNECTOR BNC INTERFACE MODULE

**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD; BNC connectors for signal inputs  
**Analog Input Connection:** One BNC connector for each of 16 analog unit channels  
**Dimensions:** 221 mm wide x 285 mm long x 35 mm high ( 8.5" x 11" x 1.375")  
**Weight:** 1.3 kg (3 lbs)

## OM-DBK2 – FOUR-CHANNEL D/A VOLTAGE-OUTPUT CARD

**Connectors:** DB37 male, mates with P1 pinout on the DAQBOARD; screw terminals for signal outputs  
**Resolution:** 14-bit  
**Output Ranges:**  $\pm 5$ V &  $\pm 10$ V (selectable per channel via jumpers)  
**Accuracy:** 0.05% FS  
**Hysteresis:** 0.01% FS  
**Output Current:** 5 mA typ  
**Power Consumption:** 565 mW

## OM-DBK4 – TWO-CHANNEL DYNAMIC SIGNAL-INPUT CARD



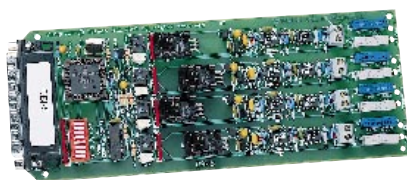
**Channels:** 2  
**Connectors:** DB37 male, mates with P1 pinout on the DAQBOARD; 1 BNC per channel & footprints for one user provided Microdot connector per channel  
**Current Source**  
**Output Impedance:** >1.4 M Ohm

**Compliance:** 27 V  
**Current Levels:** 2 & 4 mA (jumper selectable)  
**Broadband Noise:** 0.3 $\mu$ A RMS (BW=100 kHz)  
**Input Impedance:** 150k Ohm  
**Input Ranges:**  $\pm 50$  mV,  $\pm 500$  mV, &  $\pm 5$  V FS; additional full scale ranges are available when combined with the DAQBOARD'S on-board programmable A/D ranges

**Coupling:** AC & DC  
**AC High-Pass Filters:** Per channel, 1 pole HPF with 10 Hz or 0.1Hz cutoff, selectable via jumper  
**Input Signal/Noise:** >96 dB (BW=100 kHz)  
**Amplitude Accuracy:**  $\pm 0.5$  dB pass band center  
**Low-Pass Filter:** Software selectable, 12-pole Butterworth filter, with cutoff frequencies of 18 kHz, 9 kHz, 4.5 kHz, 2.25 kHz, 1.125 kHz, 562.5 Hz, 281.2 Hz & 141.6 Hz; each channel can be configured for a different cutoff frequency

**Distortion**  
**Bypass Mode:** @ 1 kHz-85 dB, @ 10 kHz-82 dB  
**Filter Mode:** @ 1 kHz-75 dB, @ 10 kHz-72 dB  
**Flatness DC-80 % Fc:** +0.2 db  
**Accuracy Passband Center:** +0.5 dB  
**Power Consumption:** 2750 mW

## OMB-DBK5 –FOUR-CHANNEL CURRENT-OUTPUT CARD



**Connectors:** DB37 male mates with P1 pinout on the OMB-DAQBOOK; screw terminals for signal outputs  
**Accuracy/Linearity:** 0.1% full scale  
**Resolution:** 4 $\mu$ A/LSB, monotonic  
**Hysteresis:** 0.02% full scale  
**Regulation:** 0.05 % full scale

**Isolation Voltage**  
**Channel-to-Channel:** 500 V  
**Channel-to-System:** 500 V  
**Voltage Range:**  $V_{loop} = 12$  to 45 V  
**Compliance:**  $R_{loop} = (V_{loop} / I) / 0.020$

**Example Voltage MDR\***  
 @  $V_{exc} = 35$  V 1450 Ohms  
 @  $V_{exc} = 25$  V 950 Ohms  
 @  $V_{exc} = 15$  V 450 Ohms  
 \*MDR ( maximum drive resistance)

## OMB-DBK7 – FOUR-CHANNEL FREQUENCY-INPUT CARD



**Connector:** DB37 male, mates with P1 connector on the DAQBOARD; BNC connector for signal inputs

**Number of Channels per Card:** 4  
**Maximum Cards per System:** 64  
**Frequency-to-Voltage Ranges:** Programmable from 1 Hz to 950 kHz  
**Accuracy:** 0.1 %

**Low-Pass Filters:** 300 Hz & 30 Hz  
**Debouncing:** off 0.6, 2.5, & 10 ms  
**Input Characteristics**

**Low-Level Analog Signals**  
**Minimum:** 100 mV guaranteed, (50 mV typ)  
**Maximum:** 80 V p-p sine wave  
**Minimum Slew:** 5 V/s  
**Hysteresis:** 15 mV

**Impedance:** AC-coupled ( 0.33  $\mu$ F), in series with 20K Ohm to ground  
**High-Level Analog Signals**  
**Minimum:** 1.25 V guaranteed, .75 typ  
**Maximum:** 80V p-p sine wave  
**Minimum Slew:** 50 V/s

**Hysteresis:** 250 mV  
**Impedance:** AC-coupled (0.33 $\mu$ F), in series with 20 K Ohm to ground

**Digital Signals**  
**Input Voltage:** -15 V to +15 V  
**Threshold Voltage (low):** 0.8 V typ, 0.5 V max  
**Threshold Voltage (high):** 1.6 V typ 2.1 V max

**Hysteresis:** 400 mV min  
**Pulse width (high or low):** 520 ns min  
**Input Impedance:** 27 K Ohm pull-up to +5 V in parallel with 50 pF  
**Power Consumption:** 20 mW

## OMB-DBK8 – EIGHT-CHANNEL HIGH VOLTAGE INPUT CARD

**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD screw terminals for signal inputs  
**Voltage Input Ranges:**  $\pm 10$  Vdc,  $\pm 50$  Vdc,  $\pm 100$  Vd; selection by jumper for each channel

**Input Impedance:** 10 M Ohm  
**Attenuation:**  
 10 V  $V_{out} = V_{in} / 2$   
 50 V  $V_{out} = V_{in} / 10$   
 100 V  $V_{out} = V_{in} / 20$

# Data Acquisition Boards for Desktop PCs

**Bandwidth:** 15 kHz  
**Attenuation Accuracy :** 0.5 %  
**Offset Voltage**  
**Typ:** 0.5 mV  
**Max:** 0.2.mV  
**Offset Drift**  
**Typ:** 4 $\mu$ V/ $^{\circ}$ C  
**Max:** 10 $\mu$ V/ $^{\circ}$ C

## OMB-DBK9 – EIGHT-CHANNEL HIGH VOLTAGE INPUT CARD

**Connector:** DB37 male, mates with P1 Pinout on the DAQBOARD; screw terminals provided for signal connections

**Configurations:** 3- or 4-wire  
**Alpha:** 0.00385

**Inputs:** 8 channels  
**Temperature Ranges:** 100, 500, or 1000 Ohm (wide): -200 $^{\circ}$  to +850 $^{\circ}$ C  
100, 500, or 1000.Ohm (narrow): -200 $^{\circ}$  to +200 $^{\circ}$ C

### RTD Excitation Current:

100 Ohm	500 $\mu$ A
500 Ohm	227 $\mu$ A
1000 Ohm	160 $\mu$ A

### Accuracy:

100, 500, or 1000 Ohm (wide):  $\pm$ 1.5 $^{\circ}$ C  
100, 500, or 1000 Ohm (narrow):  $\pm$ 0.5 $^{\circ}$ C

### Resolution:

100, 500 or 1000 Ohm (wide): 0.3 $^{\circ}$ C  
100,500, or 100 Ohm (narrow): 0.1 $^{\circ}$ C

**Range and RTD Type Adjustments:**  
Jumpers on circuit board

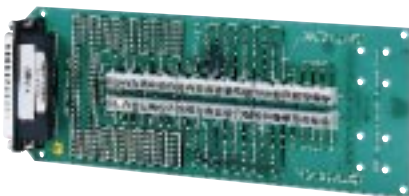
## OMB-DBK10–EXPANSION-CARD ENCLOSURE

**Capacity:** Accommodates any 3 expansion cards

**Size:** 8.5" W x 11" L x 1 $\frac{3}{8}$ " H

**Weight:** 3 lb empty; cards, 8 to 12 oz each

## OMB-DBK11A–



## SCREW TERMINAL CARD

**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD; screw terminals for signal inputs

**No. of Terminals:** 40

**Wire Size Range:** 14 to 26 awg

## OMB-DBK12–ANALOG MULTIPLEXING CARD

**Connector:** DB37 male, corresponds to pinouts of P1

**Gain Ranges:** x1, 2, 4, 8

**Inputs:** 16 differential or single-ended (switch selectable as a group)

**Voltage Range:** 0 to  $\pm$ 10 Vdc

**Input Impedance:** 100 M $\Omega$

**Gain Accuracy:**  $\pm$ 0.05% typ;  $\pm$ 0.25% max

**Max Input Voltage:**  $\pm$ 35 Vdc

**Slew Rate:** 20 V/ $\mu$ s typ; 10 V/ $\mu$ s min

**Settling Time:** 2  $\mu$ s to 0.01%

**Non-Linearity:** 0.002% typ; 0.015% max

## OMB-DBK13–ANALOG MULTIPLEXING CARD

**Connector:** DB37 male, corresponds to pinouts of P1

**Gain Ranges:** x1, 10, 100, 1000

**Inputs:** 16 differential or single-ended (switch selectable as a group)

**Voltage Range:** 0 to 10 Vdc

**Input Impedance:** 100 M $\Omega$

**Gain Accuracy:**  $\pm$ 0.05% typ @ G <1000;  $\pm$ 0.25% max @ G <1000;  $\pm$ 0.10% typ @ G = 1000;  $\pm$ 1% max @ G = 1000

**Max Input Voltage:**  $\pm$ 35 Vdc

**Slew Rate:** 20 V/ $\mu$ s typ; 10 V/ $\mu$ s min

**Settling Time:** 2  $\mu$ s to 0.01% @ G <1000; 10  $\mu$ s to 0.01% @ G = 1000

**Non-Linearity:** 0.002% typ @ G <1000; 0.015% max @ G <1000; 0.02% typ @ G = 1000; 0.06% max @ G = 1000

## OMB-DBK15–UNIVERSAL CURRENT/VOLTAGE INPUT CARD

**Connector:** DB37 male corresponds to pinouts of P1

**Gain Ranges:** x1, 2

**Number of Channels:** 16 differential

**Voltage Input Ranges:** 0 to 10 Vdc,  $\pm$ 5 Vdc

**Current Input Range:**  $\pm$ 20 mA max

**Attenuator Resistors**

**Accuracy:**  $\pm$ 0.05% typ

**Gain Accuracy:**  $\pm$ 0.05% typ;  $\pm$ 0.25% max

**Max Input Voltage:**  $\pm$ 35 Vdc

**Slew Rate:** 10V/ $\mu$ s

**Settling Time:** 2  $\mu$ s to 0.01%

**Non-Linearity:** 0.002% typ; 0.015% max

## OMB-DBK16–STRAIN-GAGE CARD

**Connectors:** DB37 mates with P1 on a DaqBoard; screw terminals provided for strain-gage and external excitation connections

**Number of Channels:** 2

**Excitation Voltage Adjustment Range:** 1.50 to 10.50 Vdc @ 50 mA

**Gain Range:** x100 to 1250

**Accommodated Bridge Types:** Full Bridge, Kelvin Excitation (6-wire); Full Bridge (4-wire); Half Bridge (3-wire); Quarter Bridge (2-wire)

**Bridge Resistors:** on-board locations are provided for four bridge-completion resistors per channel

**Input Type:** differential

**Input Impedance:** 100 M $\Omega$

**Excitation Voltage Source:** user-supplied 13 to 16 Vdc @ 50 mA/channel

**Excitation Current Output:** 50 mA max

**Excitation Sensing:** local or remote

**Excitation Regulation:** Line regulation: 0.025%; load regulation: 0.05%

**Reference Voltages:** 2.5 Vdc

**Reference Accuracy:** 0.05%

**Gain Calibration Reference:** 5.00 mV dc

**Reference Accuracy:** 0.2%

**Reference Drift:** 20 ppm/ $^{\circ}$ C; separate instrumentation amplifier for each channel, with gain adjustable from x100 to 1250 via externally accessible 15-turn trimpot

**Gain Accuracy:** 0.5%

**Offset Adjustment:** 0 to 100% of range, 0 to 5.00 Vdc (15-turn trimpot)

**Full-Scale Sensitivity Range:** at 5.00 Vdc excitation: 0.8 to 10 mV/V; at 10.00 Vdc excitation: 0.4 to 5 mV/V

**Scaling Amplifier Gain Range:** x1 to 10 (15-turn trimpot)

**Low Pass Filter:** 3 pole, user by-passable -9 dB @ user changeable corner frequency (gain = x2)

## OMB-DBK17–SIMULTANEOUS SAMPLE AND HOLD CARD



**Connectors:** DB37 male corresponds to DAQBOARD P1 pinout; inputs via 4 BNC connectors

**Inputs:** 4 differential, with switchable 100 K $\Omega$  bias resistors to input low

**Input Gains:** x1, 10, 100, 200, & 500

**Aperture Time:** 50 ns

**Voltage Droop:** 1 mV/ms

**Max Signal Voltage:**  $\pm$ 5.00 Vdc (x1)

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# DaqBoard Series

## OMB-DBK18-LOW-PASS FILTER CARD

**Connectors:** DB37 male corresponds to DAQBOARD P1 pinout; inputs accepted via 4 BNC connectors

**Inputs:** 4 differential, with switchable 100 K $\Omega$  bias resistors to input low

**Input Gains:** x1, 10, 100, 200, & 500

**Max Pole Frequency:** 50 kHz

## OMB-DBK19-HIGH-ACCURACY THERMOCOUPLE CARD



**Connector:** DB37 male, mates with P1 pinout on a DaqBoard; thermocouples attach directly to on-board screw terminals

**Thermocouple Types:** J, K, S, T, E, B, R, N

**Gain Ranges:** x60, 90, 180, 240

**Inputs:** 14 differential thermocouples; 1 cold-junction sensor (on-board); 1 auto zero

**Cold Junction Sensor Output:** 100 mV/ $^{\circ}$ C

**Voltage Ranges Gains:** 0 to 80 mV @ x60; 0 to 50 mV @ x90; 0 to 25 mV @ x180; 0 to 20 mV @ x240

**Input Impedance:** 20 K $\Omega$

**Input RC Filter -3 dB Frequency:** 159 Hz

**Gain Accuracy:** uncalibrated: 0.15%; calibrated: 0.02%

**Max Input Voltage:** 35 Vdc

## OMB-DBK20 & OMB-DBK21-GENERAL-PURPOSE DIGITAL I/O CARDS

**Channels:** 48, programmable in 8-bit groups as input or output

**Connector:** DB37 male corresponds to DAQBOARD P2 pinout

**Device:** 82C55 x 2

**Output Voltage Levels**

**Min "1" Voltage:** 3.0 @ 2.5 mA sourcing

**Max "0" Voltage:** 0.4 @ 2.5 mA sinking

**Output Currents**

**Max Source Current:** 2.5 mA

**Max Sink Current:** -2.5 mA

**Input Voltage Levels**

**Min Required "1" Voltage Level:** 2 V

**Max Allowed "0" Voltage Level:** 0.8 V

## OMB-DBK23-24-LINE OPTICALLY ISOLATED DIGITAL-INPUT MODULE

(24 optically isolated digital-input channels readable in 8-bit groups)

**Connector:** DB37 male, mates with P2 pinout on the DAQBOARD; P2-1, P2-2, or P2-3 on DigiBook/72; screw terminals for signal outputs

**Input Channel Ratings**

**Range:** 3 to 30 Vdc

**Input Current:** 1.5 to 15 mA

**Operating Voltage Range:** 9 to 24 Vdc

**Module Power Requirements:** 0.25 W; AC adapter included

**120 Vac Adapter Supplied:** 15 Vdc @ 0.9 A

**Indicators:** Local power & system power LED

**Controls:** Power on/off

**Isolated Voltage**

**Channel-to-Channel:** 500 V

**Channel-to-System:** 500 V

**Channel Address:** Set by dip-switch

**Dimensions:** 221 mm wide x 285 mm long x 35 mm high

**Weight:** 1.2 kg empty (3 lbs)

## OMB-DBK24-24-LINE OPTICALLY ISOLATED DIGITAL-OUTPUT MODULE



(24 optically isolated digital-output channels programmable in 8-bit groups)

**Connector:** DB37 male, mates with P2 pinout on the DAQBOARD; P2-1, P2-2, or P2-3 on DigiBook/72; screw terminals for signal outputs

**Output Channel Ratings**

**Maximum Current/Channel:** 1 A

**Voltage Drop @ 1 A and 25 $^{\circ}$ C:** 1 V

**Maximum Open Circuit Voltage:** 60 Vdc

**Off-State Leakage:** 10  $\mu$ A

**Module Power Requirements:** 1.5W; AC adapter included

**120 Vac Adapter Supplied:** 15 Vdc @ 0.9 A

**Indicators:** Local power & system LED

**Controls:** Power on/off

**Power-On-Reset State:** Following power-up, the state of each output is determined by dip-switch settings prior to first write command to the module

**Isolation Voltage**

**Channel- to-Channel:** 500 V

**Channel-to-System:** 500 V

**Channel Address:** Set by dip-switch

**Maximum Module Power Dissipation:**

@25 $^{\circ}$ C 12 W

@50 $^{\circ}$ C 6 W

**Dimensions:** 221 mm wide x 285 mm long x 35 mm high (8.5" x 11" x 1.375")

**Weight:** 1.3 kg empty (3 lbs)

## OMB-DBK25-8-CHANNEL RELAY-OUTPUT CARD

**Connector:** DB37 male, mates with P2 pinout on the DAQBOARD or DigiBook/72 ; P2-1, P2-2, or P2-3 on DigiBook/72; screw terminals for signal outputs

**Number of Channels:** 8

**Max. Number of Cards:** 32

**Contact Rating:** 2A @ 28 Vdc & 0.6 A @ 120 Vac

**Isolation**

**Channel-to-System:** 250 V

**Channel-to-Channel:** 150 V

## OMB-DBK30A-RECHARGEABLE BATTERY/EXCITATION MODULE

**Battery Type:** Nickel cadmium

**Number of Battery Packs:** 2

**Battery Pack Configuration:** 12 Series-connected Sub-C's

**Output Voltage:** 14.4 V or 28.8 V (depending on the selected mode)

**Output Fuses:** 2A

**Battery Amp-Hours:** 3.4 A-H (1.7 A-H/pack)

**Charging Voltage from supplied AC Adapter:** 22 to 26 Vdc @ 2A

**AC Adapter Input:** 95 to 265 Vac @ 47 to 63 Hz

**Charging Time:** 2 hours or less

**Charging Termination:** Peak detection

**Dimensions:** 221 mm x 285 mm x 35 mm (8.5" x 11" x 1.375")

**Weight:** 2.4 kg (6 lbs)

## OMB-DBK32A-AUXILIARY POWER SUPPLY CARD

**Connector:** DB37 male, mates with P1 & supplies power to other DBK cards; input power accepted via DIN5

**Isolation**

**Input to Output:** 500 Vdc

**Output Voltages:**

+15 Vdc nominal @ 535 mA

-15 Vdc nominal @ 535 mA

**Line regulation:** 0.5 %

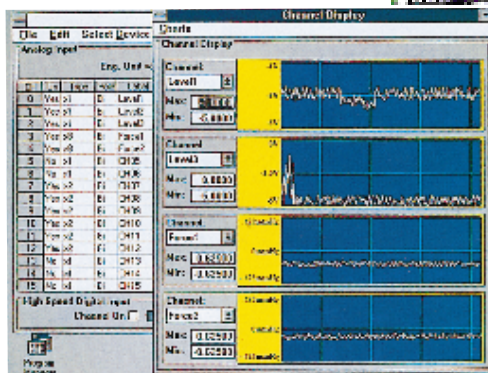
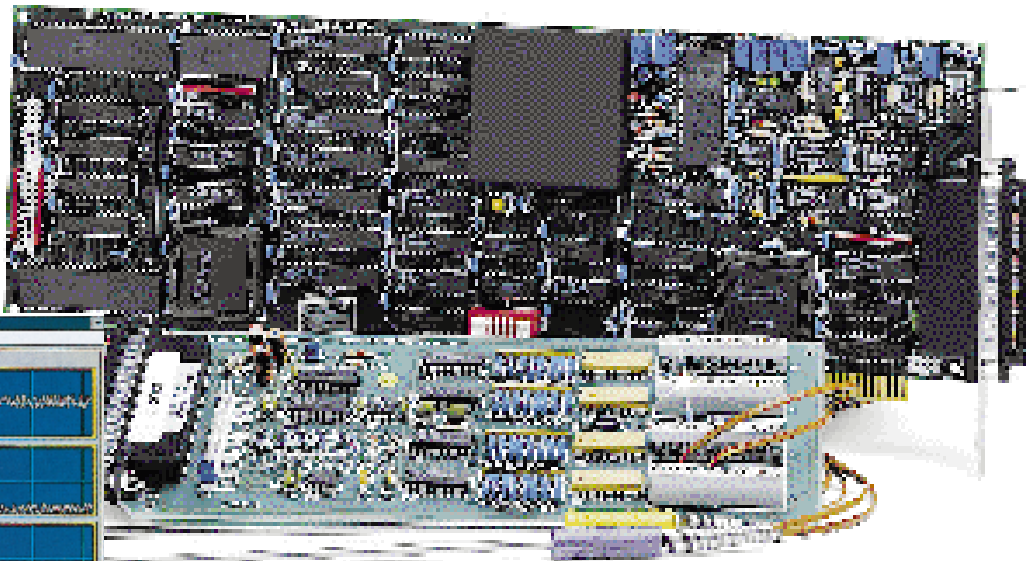
**Load regulation:** 1.0 %

**Total Output Power:** 16 VA

**Input Voltage Range:** 0.9 to 18.0 Vdc

**Included AC Adapter:** 5 Vdc @ 0.9 A

# Data Acquisition Boards for Desktop PCs



Shown smaller than actual size.

DaqBoard-100 shown with OMB-DBK19 thermocouple input module.

**Full Load Input Current Range:** 1.05A @ 18 Vdc, 2.10 @ 9 Vdc

**Full load Efficiency:** 81%

**Parallel Provision:** OR-ing diodes on output lines allow use of multiple DBK32A's in larger systems

**Controls:** ON/OFF rocker arm switch

**Indicators:** LED driven by input voltage

**Over-Voltage Protection:** Fuse followed by 19 V zener clamp

**Switching Frequency:** 100 kHz min

**Environment:** -20 to 70°C

**Input Fuse:** 3A

**Dimensions:** 82 mm x 209 mm x 19 mm (3.25" x 8.25" x 0.75")

## OMB-DBK33 – TRIPLE-OUTPUT AUXILIARY POWER SUPPLY CARD

**Connector:** DB37 male, mates with DBK41 backplane & supplies power to other DBK products; input power accepted via DIN5

### Isolation

**Input to Output:** 500 Vdc

### Output Voltages:

+15 Vdc nominal @ 250 mA

-15 Vdc nominal @ 250 mA

+5 Vdc nominal @ 1000 mA

**Line Regulation:** 0.2% max (+5 V); 5% max ( $\pm 15$  V)

**Load Regulation:** 0.5 % max (+5 V); 5% max ( $\pm 15$  V)

**Total Output Power:** 15 VA full load

**Input Voltage Range:** 9 to 18 Vdc

**Included AC Adapter:** 15 Vdc @ 0.9A

**Full-Load Input Current Range:** 2.10 A @ 9 Vdc & 1.05 A @ 18 Vdc

**Full -Load Efficiency:** 80 % typ

**Parallel Provision:** OR-ing diodes on

output lines allow use of multiple DBK33's in larger systems

**Controls:** ON/OFF rocker arm switch

**Indicators:** LED driven by input voltage

**Over-Voltage Protection:** Fuse followed by 19 V zener clamp

**Switching Frequency:** 100 kHz min

**Environment:** -20 to 70°C

**Input Fuse:** 3A

**Dimensions:** 82 mm x 209 mm x 19mm (3.25" x 8.25" x 0.75")

## OMB-DBK42 – 16-SLOT MULTI-PURPOSE ISOLATED SIGNAL CONDITIONING MODULE

**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD

**Module Capacity:** 16 (input only) OM5 modules

**Power Requirements:** 10 to 24 Vdc or 120 Vac with included adapter

### With 16 T/C type modules:

12 Vdc @ 0.50 A

15 Vdc @ 0.40 A

18 Vdc @ 0.35 A

### With 16 strain gage type modules:

12 Vdc @ 1.9A

15 Vdc @ 1.5A

18 Vdc @ 1.3A

**DC Input Fuse:** 3A

**Power Indicator:** LED powered by internal 5 Vdc

**Power Connection:** DIN5 x2 for daisy chaining

**AC Power Packs:** 120 Vac to 15 Vdc @ 0.9A—120 Vac to 24 Vdc @ 2.0 A (optional)

**Input Connections:** DIN96 rectangular standard screw-terminal connection block (optional); choices include:

**OMB-CN-71**, without cold-junction compensation

**OMB-CN-72**, with cold-junction compensation

**DC/DC Converter:** 10 to 24 Vdc to 5 Vdc (isolated)

### Isolation

**Input Power to System:** 500 Vdc

**Signal Inputs to System:** 1500 Vdc

**Input Channel-to-Channel:** 500 Vdc

**Dimensions:** 221 mm x 285 mm x 91 mm (8.5" x 11" x 3.5")

285 mm x 285 mm x 91mm (11" x 11" x 3.5") with optional signal connection block

495 mm x 254 mm x 91 mm (19" x 9.75" x 3.5") with optional DBK-1 rack mount kit installed

**Weight:** 1.8 kg (4 lbs) with no modules installed

## OMB-DBK43– 8-CHANNEL STRAIN-GAGE MODULE

**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD; mini-DIN6 provided for each strain-gage & external excitation connection

**Number of Channels:** 8

### Excitation Voltage Adjustment

**Range:** 1.50 to 10.50 Vdc @ 50 mA

**Input Gain Range:** x100 to 1250; separate instrumentation amplifier for each channel with gain adjustable via externally accessible 15-turn trimpot

### Accommodated Bridge Types

Full bridge, Kelvin excitation(6-wire)

Full-bridge (4-wire)

Half bridge (3-wire)

Quarter bridge (2-wire)

# DaqBoard Series

**Bridge Resistors:** On-board resistor locations are for four bridge-completion resistors per channel

**Input Type:** Differential

**Input Impedance:** 100 M Ohm parallel with 100 pF

**CMRR:** 115 dB (DC to 60 Hz)

**Input Power Source:** User supplied +9 to +18 Vdc @ 600 mA max

**Excitation Current Output:** 50 mA max (current limited @ 60 mA)

**Excitation Regulation:**

**Line Regulation:** 0.025 %

**Load Regulation:** 0.5 %

**Reference Voltages:** 2.5 Vdc

**Reference Accuracy:** 0.15%

**Reference Drift:** 25 ppm/°C max

**Gain Calibration Reference:** 5.00 m Vdc

**Reference Accuracy:** 0.2%

**Input Offset:** 200  $\mu$ V max

**Output Drift:** 4  $\mu$ V/Co

**Output Offset:** 4 mV

**Offset Drift:** 6  $\mu$ V/Co

**Offset Adjustment:** 0 to 100% of range, 0 to 5.00 Vdc (15-turn trimpot)

**Full-Scale Sensitivity Range:**

**At 5.00 Vdc excitation:** 0.8 to 10 mV/V

**At 10.00 Vdc excitation:** 0.4 to 5 mV/V

**Scaling Amplifier Gain Range:**

x1 to 10 (15-turn trimpot)

**Low-Pass Filter:** 3 pole, user selectable; corner frequency (Fc) set by user-supplied component; attenuation-3dB at Fc; gain x2 (10 Hz installed)

**Dimensions:** 221 mm x 285 mm x 35 mm (8.5" x 11" x 1.375")

**Weight:** 1.3kg ( 3 lbs)

## OMB-DBK44 – 2-CHANNEL MULTI-PURPOSE ISOLATED SIGNAL CONDITIONING CARD

**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD; screw terminals for signal inputs

**User Connections:** 4 screw terminals/channel; 2 screw-terminals for external 5 Vdc

### Isolation

**Input Channel-to-Channel:** 500 Vdc

**Signal Modules:** Any OM5 series input module; cold junction sensors for T/C modules are located by each channel terminal block; plug in-locations for current loop sensing resistors are provided for each channel

**Module Capacity:** 2 (input only) OM5 modules

**Weight:** 25 kg (8 oz) with no modules installed

**DC Input Fuse:** 4A

## OMB-DBK50 & OMB-DBK51– 8-CHANNEL ISOLATED VOLTAGE-INPUT MODULES



**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD

**Inputs:** Removable screw terminal block

**Channels:** 8, individually isolated

**Channel-to-Channel:** 750 V

**Channel-to-System:** 1250 V

**Input Impedance**

**DBK50:** 1 M Ohm

**DBK51:** >10 M Ohm

**Bipolar Input Ranges**

**DBK50:**  $\pm$ 10 V, 100 V, & 300 V

**DBK51:**  $\pm$ 100 mV, 1 V & 10 V

**Output Voltage Range:** +5 Vdc

**Accuracy**

**Without Offset Correction:** 1% of Range

**With Offset Correction:** 0.2% of range

**Offset:**  $\pm$ 50 mV Max

**Noise**

**With Low-Pass Filter:** <5 mV p-p

**Without Low-Pass Filter:** <50 mV p-p

**Temp. Coefficient:** 0.2 mV/°C

**Bandwidth:** 20 kHz (LPF bypassed)

**Low-Pass Filter:** Factory installed 3-pole, 3.5 Hz (by-passable or user set)

**Operating Power Voltage Range:**

+9 to +20 Vdc

**Module Power Requirements:** 7.5 W

**Included AC Adapter:** 15 Vdc @ 0.9 A

**Dimensions:** 221 mm x 285 mm x 36 mm (8.5" x 11" x 1.375")

**Weight:** 1.7 kg (4 lbs)

## OMB-DBK52 – 14-CHANNEL HIGH-ACCURACY THERMOCOUPLE-INPUT MODULE

**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD; thermocouples attach directly to standard thermocouple connectors

**Power:** 20 mA

**Dimensions:** 221 mm x 285 mm x 36 mm (8.5" x 11" x 1.375")

**Thermocouple Types:** J, K, S, T, E, B, R, N

**Gain Ranges:** x 60, 90, 180, 240

**Inputs:** 14 differential thermocouples  
1 cold-junction sensor (on board)  
1 auto-zero channel

**Cold Junction Sensor Output:** 100mV/°C

**Voltage Ranges Gains:** 0 to 80 mV @ x 60, 0 to 50 mV @ x90, 0 to 25 mV @ x180, 0 to 20 mV @ x240

**Input Impedance:** 20 K Ohm

**Input RC Filter-3 dB Frequency:** 159 Hz

**Gain Accuracy**

**Uncalibrated:** 0.15%

**Calibrated:** 0.02%

**Maximum Input Voltage:** 35 Vdc

**CMRR (Input Stage):** 110 dB typ, DC to 60 Hz

**Offset:** Software compensated

**Offset Drift:** Software compensated

**Dimension:** 221 mm x 285 mm x 36 mm (8.5" x 11" x 1.375")

**Weight:** 1.2 kg (3 lbs)

**Accuracy (DBK52 @ 0 -50°C)\*:**

Type	Min.	Max.	(<0°C)	(>0°C)
J	-200°C	760°C	0.6°C	0.6°C
K	-200°C	1260°C	1.6°C	1.0°C
T	-200°C	400°C	1.4°C	0.8°C
E	-270°C	1000°C	1.4°C	0.9°C
N28	-270°C	400°C	0.8°C	0.8°C
N14	0°C	1300°C	–	1.0°C
S	0°C	1780°C	–	1.6°C
R	0°C	1780°C	–	1.6°C
B	0°C	1820°C	–	1.8°C

\* Accuracy based on calibrated 16-bit DAQBOARD

**Resolution (°C):**

Type	12-bit <0°C	12-bit >0°C	16-bit <0°C	16-bit >0°C
J	1.2°C	0.5°C	0.1°C	0.1°C
K	1.1°C	0.8°C	0.1°C	0.1°C
T	0.8°C	0.3°C	0.1°C	0.1°C
E	1.6°C	0.7°C	0.1°C	0.1°C
N28	1.0°C	1.0°C	0.1°C	0.1°C
N14	–	5.0°C	–	0.30°C
S	–	1.3°C	–	0.1°C
R	–	1.7°C	–	0.1°C
B	–	1.5°C	–	0.1°C

## OMB-DBK53 – 16-CHANNEL PROGRAMMABLE LOW-GAIN ANALOG-INPUT MODULE

**Connector:** DB37 male, mates with P1 on the DAQBOARD data acquisition systems; BNC connectors for signal connections; pin jack for analog common connection

**Gain Ranges:** x1, x2, x4, & x8

**Inputs:** 16, differential or single-ended (configurable via jumpers)

**Input Impedance:** 100 M Ohm in parallel, with switched 120 pF

**Gain Accuracy:**  $\pm$ 0.05% typ, +0.25% max

**Maximum Input Voltage:**  $\pm$ 35 Vdc



# Data Acquisition Boards for Desktop PCs

**Slew Rate:** 20V/us typ, 10 V/us min

**Settling Time:** 2 us to 0.01%

**CMRR:** 80 dB min at DC to 60 Hz

**Non-Linearity:** 0.002% typ, 0.015% max

**Bias Current:** 150 pA typ, 0.2  $\mu$ A @ 25°C max

**Offset Voltage:**

$\pm(0.5 + 5/G)$  mV @ 25°C typ

$\pm(2.0 + 24/G)$  mV @ 25°C max

**Offset Drift:**

$\pm(3 + 50/G)$   $\mu$ V/°C typ

$\pm(12 + 240/G)$   $\mu$ V/°C typ

**Dimensions:** 221 mm x 285 mm x 36 mm (8.5" x 11" x 1.375")

**Weight:** 1.2 kg (3 lbs)

## OMB-DBK54 – 16-CHANNEL PROGRAMMABLE HIGH-GAIN ANALOG-INPUT MODULE

**Connector:** DB37 male, mates with P1 pinout on DAQBOARD data acquisition systems; BNC connectors for signal connections; pin jack for analog common connection

**Gain Ranges:** x1, x10, x100, & x1000

**Inputs:** 16, differential or 16 single-ended (configurable via jumpers)

**Input Impedance:** 100 M Ohm in parallel, with switched 120 pF

**Gain Accuracy:**

$\pm 0.05\%$  typ,  $+0.25\%$  max (G < 1000)

$+0.10\%$  typ,  $+1.0\%$  max (G = 1000)

**Maximum Input Voltage:**  $\pm 35$  Vdc

**Slew Rate:**

20 V/us typ,

10V/us min

**Settling Time:**

2 uS to 0.01%

(G < 1000)

10 uS to 0.01%

(G = 1000)

**CMRR:**

80 dB @ G = 1 min

@ DC to 60 Hz

86 dB @ G = 10 min @ DC to 60 Hz

92 dB @ G = 100 min @ DC to 60 Hz

94 dB @ G = 1000 min @ DC to 60 Hz

**Non-Linearity:**

0.002% typ, 0.015% max (G < 1000)

0.02% typ, 0.06% max (G = 1000)

**Bias Current:** 150 pA typ, 0.2  $\mu$ A @ 25°C max

**Offset Voltage:**

$\pm(0.5 + 5/G)$  mV @ 25°C typ

$\pm(2.0 + 24/G)$  mV @ 25°C max

**Offset Drift:**

$\pm(3 + 50/G)$   $\mu$ V/°C typ

$\pm(12 + 240/G)$   $\mu$ V/°C max

**Dimension:** 221 mm x 285 mm x

36 mm (8.5" x 11" x 1.375")

**Weight:** 1.2 kg (3 lbs)

## OMB-DBK55 – 8-CHANNEL SIMULTANEOUS SAMPLE AND HOLD MODULE WITH LOW-PASS FILTER

**Connector:** DB37 male, mates with P1 pinout on the DAQBOARD data acquisition systems; BNC connectors



for signal inputs

**Number of Channels:** 8

**Number of Cards Addressable:** 32

**Input Type:** Differential or single-ended (set individually by jumper placement)

**Voltage Input Ranges:** 0 to  $\pm 5$  Vdc, 0 to  $\pm 500$  m Vdc, 0 to  $\pm 50$  m Vdc, 0 to  $\pm 25$  m Vdc, 0 to  $\pm 10$  m Vdc

**For Custom Gains:**

$R_{user} = (40,000 / (Gain - 1)) / 50$  (Ohms)

**Input Amplifier Slew Rate:**

12 V/us min

**Active Filter Device:** UAF42 (Burr-Brown)

**Number of Poles/Filter:** 3

**Types of Filters:** Bessel, Butterworth, & Chebyshev

**Frequency Range:** 0.1 Hz to 50 kHz; the frequency is set by installation of 4 to 6 resistors and/or capacitors in the provided socket locations

**Frequency Modules:** Optional

### Calculating System Power Requirements

To determine whether the OMB-DBK32 power supply card is required for your system, simply list the quantity of each OMB-DBK card you are using in Column 2 and multiply it by the current consumption indicated in Column 3. Place the totals in Column 4, add them, and list the overall total at the bottom of the column. If your overall total is equal to or less than 100, then your application does not require an OMB-DBK32 card. If your overall total exceeds 100, then the OMB-DBK32A is required.

1 Module	2 Quantity	3 Current	4 Total
OMB-DBK11	<input type="checkbox"/>	x 0 =	0
OMB-DBK12	<input type="checkbox"/>	x 20 =	<input type="checkbox"/>
OMB-DBK13	<input type="checkbox"/>	x 20 =	<input type="checkbox"/>
OMB-DBK14	<input type="checkbox"/>	x 20 =	<input type="checkbox"/>
OMB-DBK15	<input type="checkbox"/>	x 15 =	<input type="checkbox"/>
OMB-DBK16	<input type="checkbox"/>	x 25 =	<input type="checkbox"/>
OMB-DBK17	<input type="checkbox"/>	x 15 =	<input type="checkbox"/>
OMB-DBK18	<input type="checkbox"/>	x 30 =	<input type="checkbox"/>
OMB-DBK19	<input type="checkbox"/>	x 20 =	<input type="checkbox"/>
<b>TOTAL</b>			<input type="checkbox"/>

### Ordering Example:

Qty	Description	Price
1	DAQBOARD-200 16-bit board with digital I/O	\$1195
1	OMB-DBK10 Three slot expansion card enclosure	175
3	OMB-DBK19 14-channel thermocouple input expansion cards @ 395	1185
1	OMB-CA-131-3 Cable from DaqBoard to OMB-DBK10	65
<b>Total Cost:</b>		<b>\$2620</b>

### To Order (Specify Model No.)

Model No.	Price	Description
DAQBOARD-100	\$995	12-bit 16-channel analog input, 2-channel analog output, 16 high speed digital inputs, 24 general purpose digital I/O, 5 counter/timers
DAQBOARD-112	795	12-bit 16-channel analog inputs and 2 analog outputs
DAQBOARD-200	1195	16-bit 16-channel analog input, 2-channel analog output, 16 high speed digital inputs, 24 general purpose digital I/O, 5 counter/timers
DAQBOARD-216	995	16-bit, 16-channel analog inputs and 2 analog outputs

## OMB-DBK55 Specifications (continued)

frequency module kits are available that consist of 4 plug-in resistor/ capacitor (RC) headers pre-configured for any of the following frequencies -5 Hz, 10 Hz, 100 Hz, 500 Hz, or 1 kHz; are all Butterworth type filters

**Acquisition Time:** 3.5 us  
(5 V excursion to 0.1%); 5.0 us  
(5 V excursion to 0.01%)

**Channel to Channel Aperture Uncertainty:** 50 ns

**Output Droop Rate:** 200  $\mu\text{V}/\text{ms}$

**Input Gains:** x1, 10, 100, 200, 500, & user determined up to 800

**Input Offset Voltage:** [500 + 5000/G]  $\mu\text{V}_{\text{max}}$  (nullable)

**Input Offset Drift:** [ $\pm 5$  +100/G]  $\mu\text{V}/^\circ\text{C}$  max

**Input Bias Current:** 100 pA max

**Input Offset Current:** 50 pA max

**Input Impedance:**  $5 \times 10^{12}$  Ohms parallel with 6 pF (without 100 k bias resistors enabled)

**Switchable Bias Resistors:** 100 K each to analog common

### Gain errors:

x1 0.04% max  
x10 0.1% max  
x100 0.2% max  
x200 0.4% max  
x500 1.0% max

### Gain vs. Temperature:

x1  $\pm 20$  ppm/ $^\circ\text{C}$  max  
x10  $\pm 20$  ppm/ $^\circ\text{C}$  max  
x100  $\pm 40$  ppm/ $^\circ\text{C}$  max  
x200  $\pm 60$  ppm/ $^\circ\text{C}$  max  
x500  $\pm 100$  ppm/ $^\circ\text{C}$  max

### Non- Linearity:

x1  $\pm 0.015\%$  FS max  
x10  $\pm 0.015\%$  FS max  
x100  $\pm 0.025\%$  FS max  
x200  $\pm 0.025\%$  FS max  
x500  $\pm 0.045\%$  FS max

### Common Mode rejection:

x1 70 dB min  
x10 87 dB min  
x100 100 dB min  
x200 100 dB min  
x500 100 dB min

**Dimensions:** 221 mm x 285 mm x 36 mm (8.5" x 11" x 1.375")

**Weight:** 1.2 kg (3 lbs)

## Accessories and Cables

Model No.	Price	Description
OMB-DBK1	\$395	16-connector BNC interface module
OMB-DBK2	495	Four-channel D/A voltage-output card
OMB-DBK4	795	Two-channel dynamic signal-input card
OMB-DBK5	395	Four-channel current-output card
OMB-DBK7	395	Four-channel frequency-input card
OMB-DBK8	395	Eight-channel high voltage input card
OMB-DBK9	395	Eight-channel RTD measurement card
OMB-DBK10	175	3-slot expansion card enclosure
OMB-DBK11A	145	Screw terminal card
OMB-DBK12	295	16-channel multiplexing card, X1, 2, 4 and 8 gains
OMB-DBK13	295	16-channel multiplexing card, X1, 10, 100 and 1000 gains
OMB-DBK15	395	16-channel universal voltage/current input card
OMB-DBK16	495	2-channel strain gage input card
OMB-DBK17	495	4-channel simultaneous sample and hold card
OMB-DBK18	495	4-channel low pass filter card
OMB-DBK19	395	14-channel thermocouple input card
OMB-DBK20	195	48-channel digital I/O card with screw terminal connectors
OMB-DBK21	195	48-channel digital I/O card with DB37 male connectors
OMB-DBK23	495	24-Line optically isolated digital-input module
OMB-DBK24	495	24-Line optically isolated digital-output module
OMB-DBK25	295	8-channel relay-output card
OMB-DBK30A	595	Rechargeable battery/excitation module
OMB-DBK32A	395	Auxiliary power supply card
OMB-DBK33	395	Triple-output auxiliary power supply card
OMB-DBK40	345	BNC analog interface and cable
OMB-DBK41	595	10-slot expansion card enclosure
OMB-DBK42	695	16-slot multi-purpose isolated signal conditioning module
OMB-DBK43	1995	8-channel strain-gage module
OMB-DBK44	195	2-channel multi-purpose isolated signal conditioning card
OMB-DBK50	1995	8-channel isolated high voltage-input modules
OMB-DBK51	1995	8-channel isolated low voltage-input modules
OMB-DBK52	595	14-channel high-accuracy thermocouple-input module
OMB-DBK53	495	16-channel programmable low-gain analog-input module
OMB-DBK54	495	16-channel programmable high-gain analog-input module
OMB-DBK55	1995	8-channel simultaneous sample and hold module with low-pass filter
OMB-CA-131-1	45	Expansion card cable, for single option expansion
OMB-CA-131-2	55	Expansion card cable, for two option expansion
OMB-CA-131-3	65	Expansion card cable, for three option expansion
OMB-CA-131-4	75	Expansion card cable, for four option expansion
OMB-CA-113	45	Ribbon cable with female DB37 connector
OMB-CA-60	45	Adaptor cable, converts digital I/O and counter ports from DaqBoard to 37-pin D connector that mounts on rear of PC; one cable required for each port

Each DAQBOARD unit is supplied with DOS and Windows driver software, DaqView2 and PostView software, and complete operator's manual.