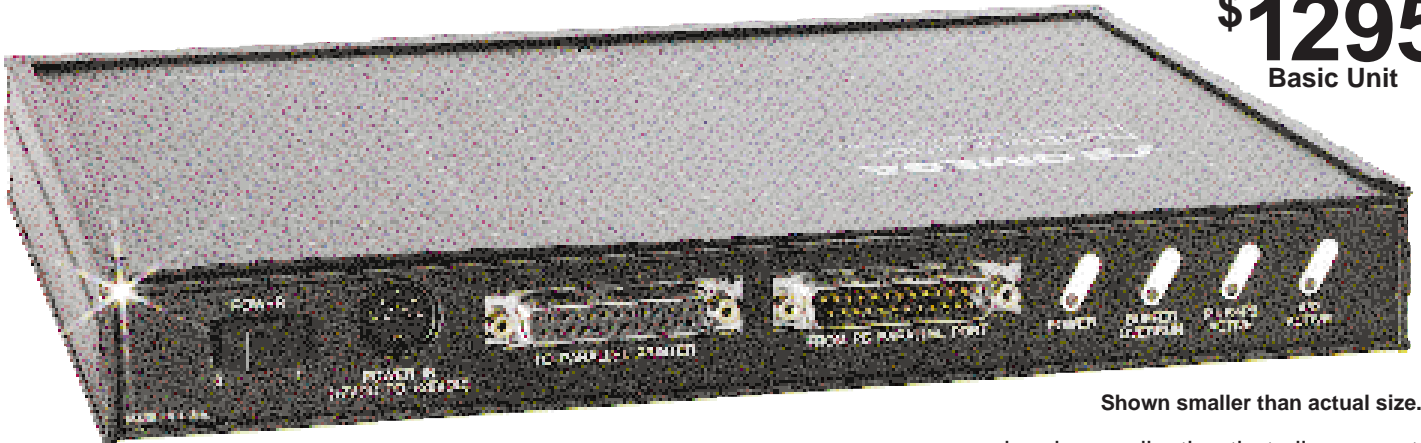




Portable Data Acquisition Systems For Notebook and Desktop PCs

\$1295
Basic Unit



Shown smaller than actual size.

- ✓ Links to Notebook or Desktop PCs via a Standard or Enhanced Parallel Port (EPP) or Optional PCMCIA Link
- ✓ Operable From ac Adapter, Optional Nickel-Cadmium Power Module, 12 V Car Battery, or Any 9 to 20 Vdc Source
- ✓ Analog Input:
 - 100 kHz, 12- or 16-bit A/D Converter
 - 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
 - Option and Expansion Cards for High-Voltage/ Current, Thermocouples, RTD's, Strain Gages, Isolation, Filtering and Simultaneous Sample and Hold
 - 512-Location Scan Memory for User-defined Channel/gain Sequencing
 - Triggerable from Analog, Digital, or Software
- ✓ Two 12-bit Analog Outputs
- ✓ Digital I/O:
 - 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
- ✓ Software Support Includes:
 - DaqView2, a Graphical Windows™ Data-logging Application
 - Visual Basic DAQBOOK Custom Control
 - DOS & Windows Drivers

OMB-DAQBOOK portable data acquisition systems for notebook and desktop PCs offer 12- or 16-bit, 100 kHz data acquisition. The OMB-DAQBOOK models provide >700 Kbyte/s bidirectional data communication to the PC via an enhanced parallel port (EPP) or PCMCIA link interfaces. Operable from ac or dc power sources, OMB-DAQBOOK series products are ideal for a variety of portable, field, and benchtop applications.

The OMB-DAQBOOKs' high performance A/D conversion and 100 kHz sampling make them particularly useful for applications with high accuracy and speed requirements. Their extensive I/O and signal conditioning capabilities, and low cost per channel also make them an effective alternative to more expensive stand-alone data loggers, less portable strip-chart recorders, and less versatile dedicated handheld devices.

The DAQBOOKs are supplied with DaqView2, a Windows-based data

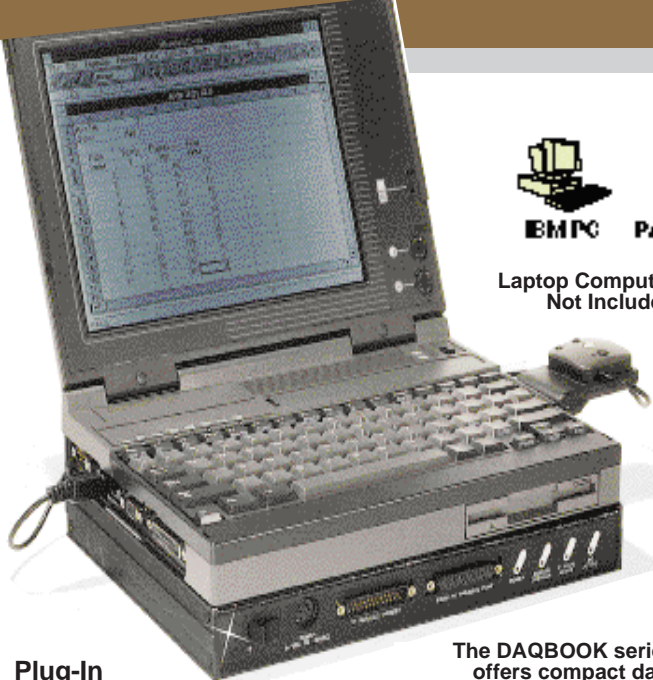
logging application that allows you to set up your acquisition applications and save acquired data directly to disk. The package includes thermocouple linearization for direct readout of temperatures when used with a OMB-DBK19 thermocouple card. The DAQBOOK products include drivers for Visual Basic, Quick Basic, C, and Pascal; they also include DOS drivers that are compatible with DAS-16, PIO-12, and CTM-05 boards. Several graphical analysis and control software packages support the DAQBOOKs. These include Labtech Notebook, SnapMaster and DASylab, which permit direct-to-disk data acquisition and simultaneous real-time graphics and analysis.

PC Connections

DAQBOOK-112, 120, 200 and 216 units connect to PCs via an EPP (enhanced parallel port) connection that provides >700 Kbyte/s bidirectional data transfer, allowing for real-time storage of acquired data in the PCs memory or on its hard drive.

The DAQBOOKs also support the standard parallel port and provide a second standard parallel port for simultaneous connection of a parallel printer. Every DAQBOOK includes supplied software drivers that enable it to automatically route characters intended for a parallel printer to its own auxiliary parallel printer port.

An optional EPP/PCMCIA card and cable is also available, so that the unit may be linked to a type II PCMCIA slot in many laptop computers.



Laptop Computer
Not Included



Plug-In Board Compatibility

The DAQBOOKs emulate popular data acquisition plug-in boards, making it easy for users of these boards to transfer their desktop-PC-based applications to portable notebook PC-based applications.

Since each unit's sensitive analog circuitry resides in a shielded enclosure outside the noisy PC environment, the units provide better measurement capability than most plug-in boards. The 100, 120 and 200's three I/O connectors are compatible with those on DAS-16, PIO-12, and CTM-05 boards, and therefore can connect to options and cabling developed for these boards. The DAQBOOKs differ from many plug-in boards in their enhanced channel-scanning capability. Instead of limiting you to the selection of only the first and last channels in a scan sequence, the DAQBOOKs allow random selection of any combination of channels and gains.

Signal Termination

The DAQBOOKs accept all analog and digital I/O signals via standard DB37 connectors. The optional signal conditioning and multiplexing expansion cards feature screw-terminal or BNC connectors for each I/O signal.

I/O CAPABILITY

Analog Input

The DAQBOOKs' 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 be obtained via expansion cards. The A/D converter scans selected channels at a constant 10 μ s/channel rate, minimizing the time skew between consecutive channels. The time between the start of each scan sequence can be programmed from 10 μ s to 10 hours. Option cards permit each unit to be expanded up to 256 channels while maintaining its 10 μ s per channel rate.

Analog Output

The DAQBOOKs' two 12-bit D/A converters allow you to generate voltages of 0 to +5 V or 0 to -REF with an external reference (REF) from -10 to +10 V. One of

the units' analog outputs can also serve to set the trigger level for their analog input triggering circuitry. 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 DAQBOOKs' analog outputs can be programmed whenever the DAQBOOKs are not transferring A/D data.

About EEP

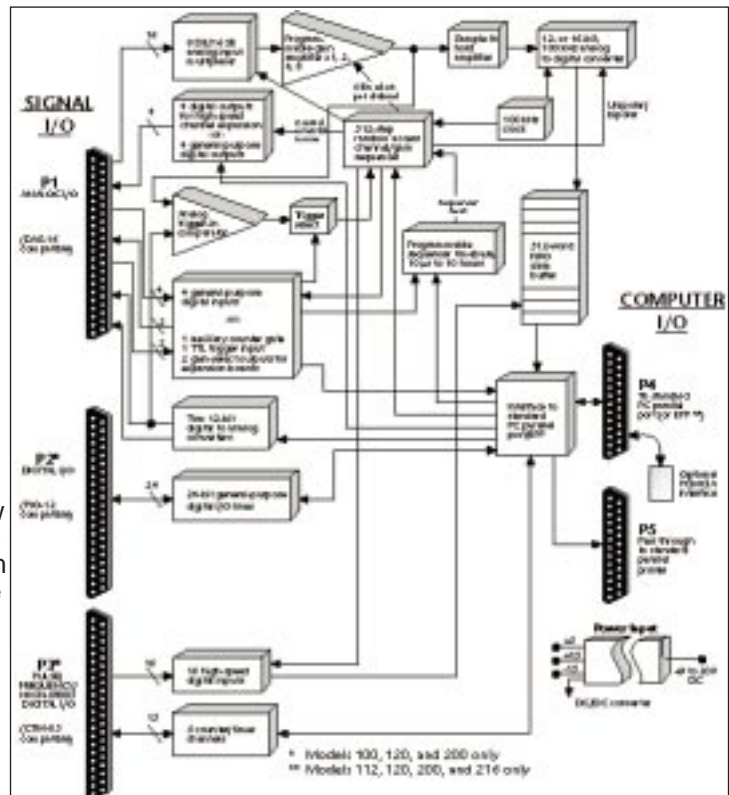
An enhanced version of the standard Centronics-style parallel port, the enhanced parallel port (EPP) offers true bidirectional, high-speed communication between the PC and connected data acquisition equipment. Whereas standard parallel ports typically offer 100 Kbyte/s to 200 Kbyte/s communication, EPP can provide vastly faster communication rates; for example, EPP-equipped DAQBOOKs offer 800 Kbyte/s data transfer.

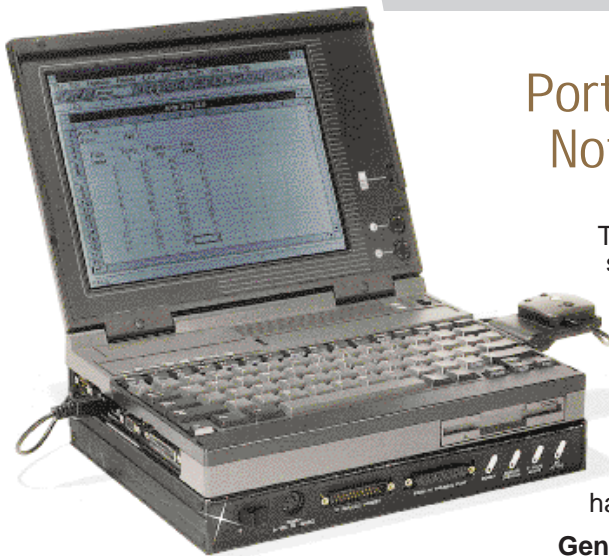
EPP Architecture

EPP achieves its high-speed operation by accomplishing a complete, interlocked data transfer within a single CPU I/O cycle. Consequently, EPP can generate the necessary handshake signals and transfer data in a fraction of the time required by a standard parallel port, which necessitates at least four I/O instructions.

EPP-Equipped PC

Developed as a result of a joint undertaking between Xircom, Inc., and Zenith Data Systems, EPP has been implemented in Intel's 386SL chip sets and thus has been incorporated into numerous notebook PCs as well. PCs with EPP support are manufactured by companies such as AST, Compaq, Digital, Farpoint, Packard Bell, Zenith, and others. Your PC will support the DAQBOOKs EPP if it is equipped with the SMC37C666 or the 82360SL chip set.





Portable Data Acquisition Systems For Notebook and Desktop PCs

The units can acquire the state of all 16 digital input lines within an analog scan sequence. The unit transfers 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.

software. Also, each channel can be configured for pulse-counting or totalizing applications wherein the number of received pulses is accumulated, permitting the PC to read the accumulation even if it is scanning analog input channels.

The units also permit the width of a digital input pulse to be measured on each channel, with resolution to 1 μ s.

Flexible Triggering

The OMB-DAQBOOKs 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 OMB-DAQBOOKs feature a hardware-based trigger, they minimize trigger latency to less than 10 μ s. In contrast, most plug-in boards that employ software-polling triggers have typical trigger-to-A/D conversion latencies of 100 μ s or more. They can also be triggered from a TTL-level digital input or from a command from the PC.

High-Speed Digital Input

The OMB-DAQBOOK-100, 120 and 200 units have the ability to scan 16 TTL-level digital inputs as part of the user-defined scan sequence.

General-Purpose Digital I/O

The 100, 120 and 200 units also include 24 general-purpose digital I/O lines, programmable in 8-bit bytes as either inputs or outputs. Digital I/O capacity can be expanded up to 192 lines with the addition of expansion cards. The digital I/O lines can be accessed by the PC whenever the DAQBOOKs are not transferring data from the A/D converter. If an application requires digital inputs with critical timing, the units' 16 high-speed digital inputs should be used.

Frequency/Pulse Input

The DAQBOOKs 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 μ 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

Pulse/Frequency Output

In pulse/frequency output modes, the DAQBOOKs' 5 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.

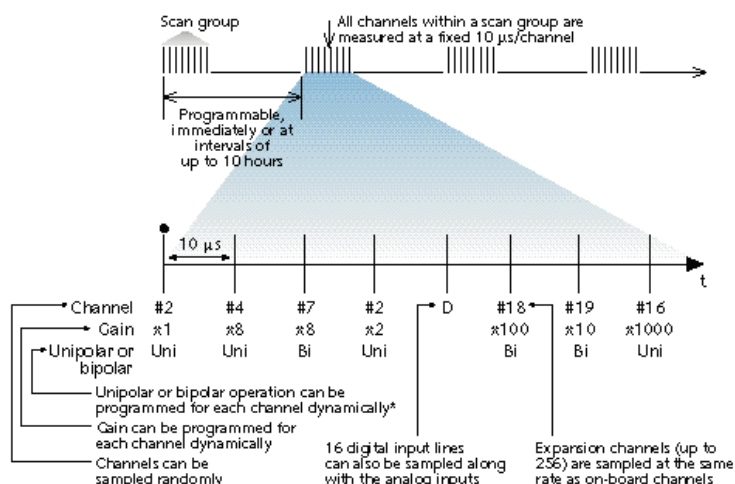
In the frequency-generation mode, the unit can generate a square wave of duty cycle from 0.0005% to 99%, with frequencies up to 1 MHz.

An external timebase can also be input to achieve other frequency outputs. Each of the DAQBOOKs' 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 μ s to 655 seconds after receipt of the trigger.

Channel-Scanning Flexibility

The OMB-DAQBOOKs offer 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 OMB-DAQBOOK channels are scanned, including the 256 potential expansion channels, at 100 kHz (10 ms/channel). 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 μ s/channel rate.

DAQBOOK Scanning Example





OMB-DAQBOOK Series Selection Guide

The OMB-DAQBOOK Series Selection Guide distinguishes among various DAQBOOK models, describing each version's particular features and capabilities. Please use it to select the unit that best fits your needs.

Model	DAQBOOK-100	DAQBOOK-112	DAQBOOK-120	DAQBOOK-200	DAQBOOK-216	DIGIBOOK/72
Analog input						
A/D resolution	12 bit	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	8 DE, 16 SE	
Max. channel capacity	256	256	256	256	256	
A/D speed [‡]	100 kHz	100 kHz	100 kHz	100 kHz	100 kHz	
Unipolar/bipolar selection	switch	switch	switch	software	software	
Single/differential selection	switch	switch	switch	software	software	
Channel/gain sequencer depth	512	512	512	512	512	
Built-in expansion card slot		1 slot			1 slot	
Analog output						
No. of output channels	2	2	2	2	2	
Resolution	12 bit	12 bit	12 bit	12 bit	12 bit	
High-speed digital inputs						
No. of bits	16		16	16		
Max. scan rate	100K words/s		100K words/s	100K words/s		
Programmable digital I/O						
No. of programmable input/output lines	24		24	24		72
Max. channel capacity	192		192	192		576
Fixed digital I/O	4 in, 4 out**	4 in, 4 out**	4 in, 4 out**	4 in, 4 out**	4 in, 4 out**	
Programmable counter/timers						
No. of channels	5		5	5		
Max. frequency input	7 MHz		7 MHz	7 MHz		
Other counter inputs	1 ch, 8 MHz**	1 ch, 8 MHz**	1 ch, 8 MHz**	1 ch, 8 MHz**	1 ch, 8 MHz**	
Computer interface						
Standard parallel port	✓	✓	✓	✓	✓	✓
Enhanced parallel port (EPP)		✓	✓	✓	✓	
Second parallel printer port	✓	✓	✓	✓	✓	✓
Max. data throughput to PC [‡]	170 Kbytes/s	800 Kbytes/s	800 Kbytes/s	800 Kbytes/s	800 Kbytes/s	170 Kbytes/s
Optional PCMCIA	✓	✓	✓	✓	✓	✓
Software						
DOS & Windows drivers	✓	✓	✓	✓	✓	✓
Visual Basic VBX	✓	✓	✓	✓	✓	
DaqView2/DigiView Software	✓	✓	✓	✓	✓	✓
PostView Software	✓	✓	✓	✓	✓	
Labtech Notebook compatible	✓	✓	✓	✓	✓	
SnapMaster compatible	✓	✓	✓	✓	✓	✓
DASYlab compatible	✓	✓	✓	✓	✓	
Power						
ac adapter	included	included	included	included	included	included
Rechargeable battery module	optional	optional	optional	optional	optional	optional
Current consumption @ 12 Vdc in	510 mA	360 mA	510 mA	620 mA	600 mA	300 mA

* Board only, does not include package or power supply.

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

‡ DAQBOOKs used on non-EPP parallel ports provide maximum A/D rates of 30 to 50 kHz, system dependent.

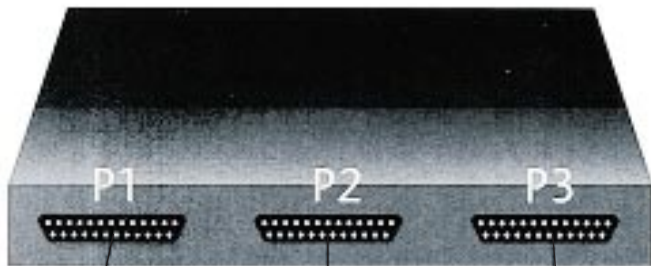
SEE PAGE C-57/C-58 TO ORDER.

Portable Data Acquisition Systems For Notebook and Desktop PCs

SYSTEM PACKAGING

Models

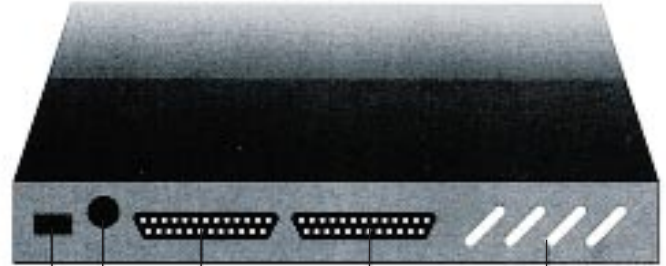
OMB-DAQBOOK-100
OMB-DAQBOOK-120
OMB-DAQBOOK-200



P1
Analog I/O
DB37 Signal I/O
Connector

P2
Digital I/O
DB37 Signal I/O
Connector

P3
Frequency I/O
& High Speed
Digital Input
DB37 Signal I/O
Connector



Power Switch
dc Power
Input

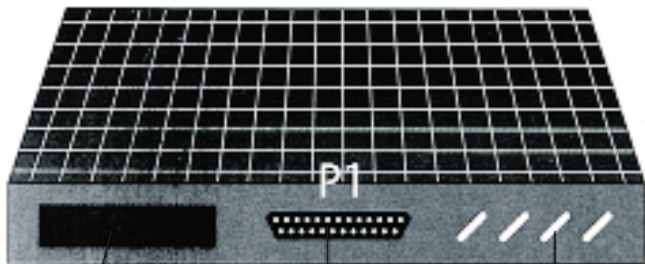
Attaches to
Parallel Printer

Status
Indicators

Attaches to PCs
standard or enhanced
parallel port (EPP) or
PCMCIA socket

Models

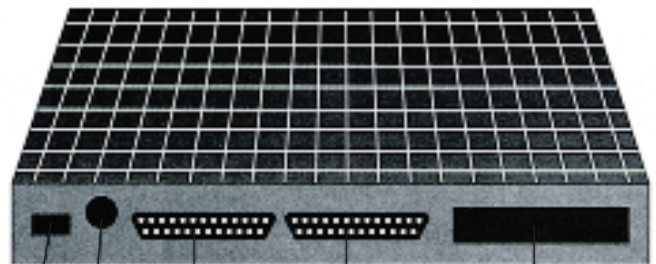
OMB-DAQBOOK-112
OMB-DAQBOOK-216



Internal
Expansion
Slot

P1
Analog I/O
DB37 Signal I/O
Connector

Status
Indicators



Power Switch
dc Power
Input

Attaches to
Parallel Printer

Internal
Expansion
Slot

Attaches to PCs
standard or enhanced
parallel port (EPP) or
PCMCIA socket

SOFTWARE

DAQBOOK 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.

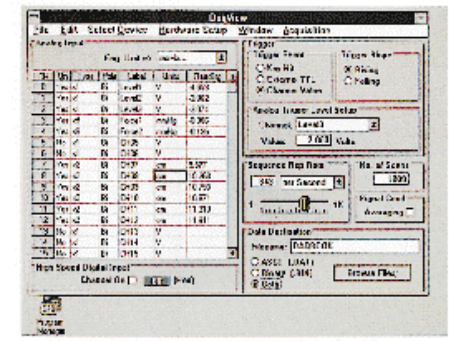
DOS and Windows Drivers

Every DAQBOOK 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 DAQBOOK operations through Visual Basic's Properties and Methods.

DaqView2

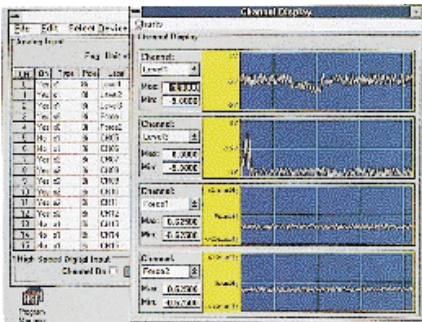
All OMB-DAQBOOK portable data acquisition systems include DaqView2, a Microsoft Windows data logging and control application that provides a "no-programming required" interface to all OMB-DAQBOOK features.



OMB-DAQBOOK Series

Analog Input

DaqView2 includes an Analog Input window for setting up the unit to acquire data to disk. DaqView2s 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 DAQBOOK 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 OMB-DAQBOOK. 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 DaqView2s 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 DAQBOOKs' 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 DAQBOOK P2 connector and up to four attached option cards. The window allows you to independently configure each port as either an input or output.

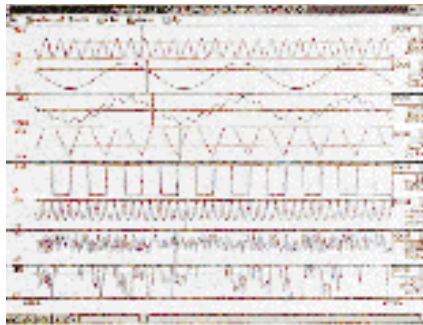
Counter-Timer Window

DaqView2 includes a counter-timer window that provides frequency measurement, totalizing, and pulse-train generation applications

for the DAQBOOK-100, /120, 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.

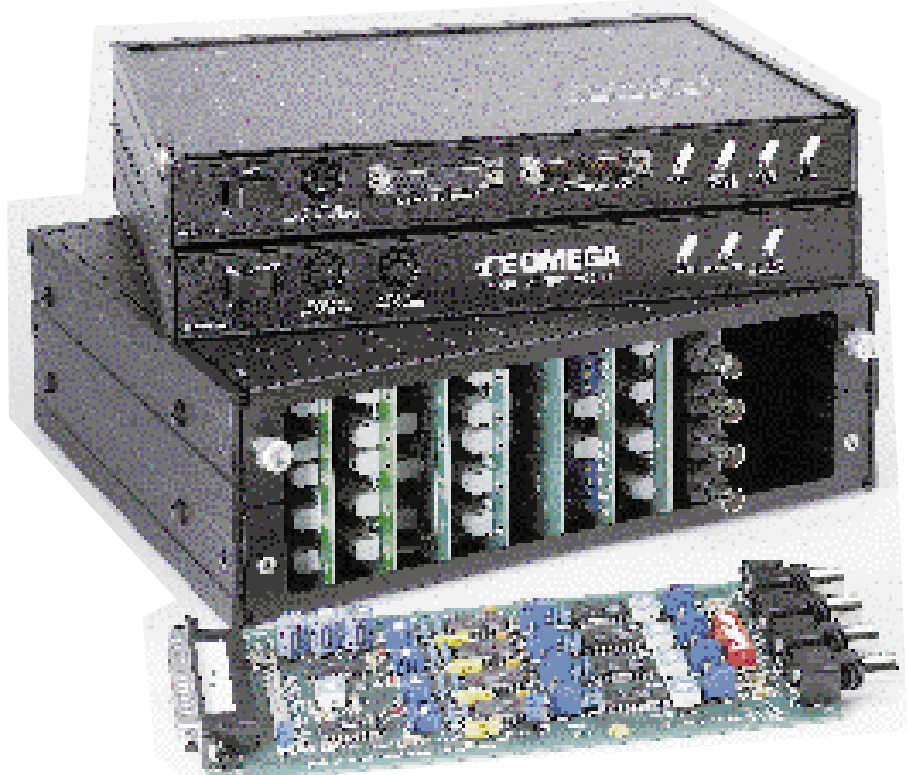


The program also lets you employ the mouse to place markers for extracting time and magnitude data from any point in the waveform. Multiple applications of PostView can be launched simultaneously to view several data files concurrently.

Visual Basic Custom Controls

Each OMB-DAQBOOK 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 DAQBOOK Series products via Visual Basic's object interface.

Selecting a DAQBOOK 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.



OMB-DAQBOOK shown with OMB-DBK30A rechargeable battery/excitation module, \$595, OMB-DBK41 ten-slot expansion enclosure, \$795, and OMB-DBK modules

SEE PAGE C-57/C-58 TO ORDER.

Portable Data Acquisition Systems For Notebook and Desktop PCs

EXPANSION, SIGNAL CONDITIONING AND POWER OPTIONS

The DAQBOOKs 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 DAQBOOK models.

Because the DAQBOOKs 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 μ s rate as on-board channels.

When equipped with analog input expansion cards, the DAQBOOK must be configured for 16 single-ended inputs. Each 16-channel expansion card in use consumes one of the DAQBOOK'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 DAQBOOK base channel to maintain the 256 channel maximum.

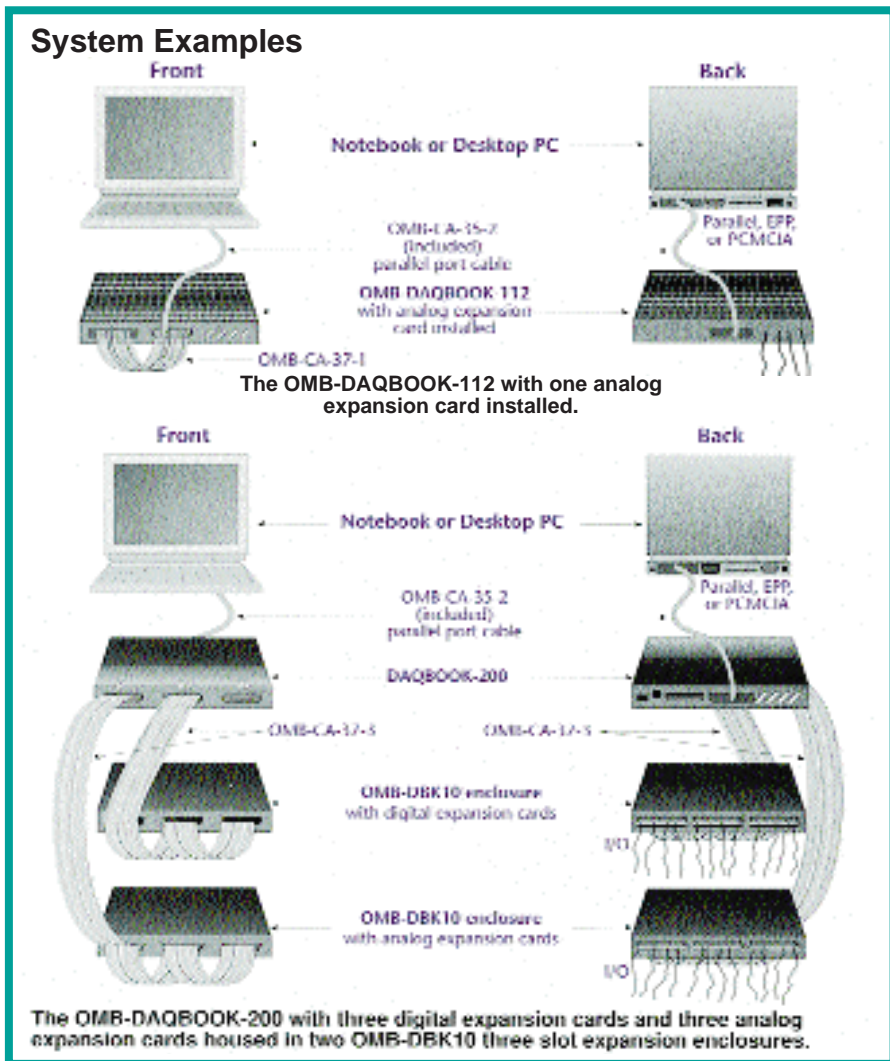
When analog expansion cards are in use, unused DAQBOOK base channels are available to measure input signals. (The OMB-DBK11A screw terminal card provides convenient access to the DAQBOOK base channels.)

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.

For example, if you need to add a single analog input card, you can simply insert it in the DAQBOOK-112s or DAQBOOK-216s internal expansion slot and connect it with an OMB-CA-37-1 cable.

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 a OMB-CA-37-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, the compact 10-slot OMB-DBK41 analog expansion card enclosure is the preferred solution.

Multiple OMB-DBK41s can be used in tandem to cost-effectively house the number of analog input cards required to bring a DAQBOOK 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.

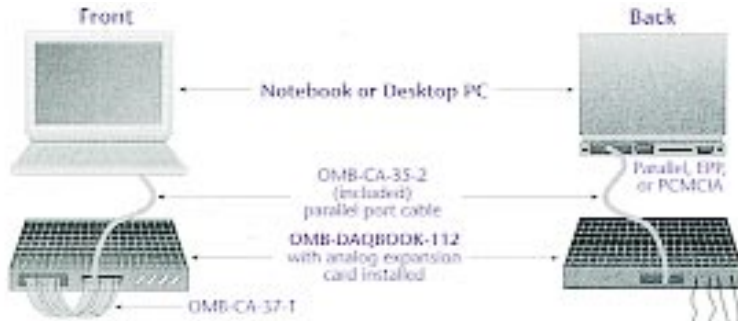
Powering Analog Cards

Every DAQBOOK model features a built-in power supply of sufficient 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 built-in DAQBOOK power supply, the OMB-DBK32 power supply card is available to meet your system's power needs.

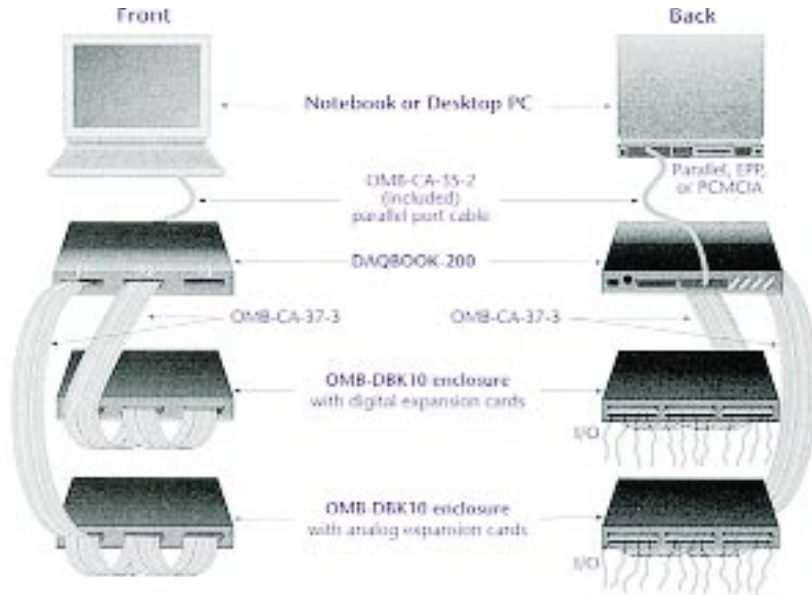
The OMB-DBK32A attaches directly to the P1 analog expansion bus and supplies power to all analog expansion cards. Like the DAQBOOKs, the OMB-DBK32A can be powered from an included ac adapter, an optional OMB-DBK30 or OMB-DBK31 battery module, or from any +10 to +20 Vdc source, such as a car battery.

OMB-DAQBOOK Series

System Examples



The OMB-DAQBOOK-200 with 8 analog expansion cards housed in one OMB-DBK41 ten-slot expansion card enclosure.



The OMB-DAQBOOK-200 with 18 analog expansion cards and two OMB-DBK32A power supply cards housed in two OMB-DBK41 ten-slot expansion card enclosures.

When installed in the OMB-DBK10 three-slot expansion enclosure, the OMB-DBK32 is attached via the OMB-CA-37-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. When used in conjunction with a DAQBOOK-112 or 216, the OMB-DBK32 can be installed into the DAQBOOKs' internal expansion slot.

Digital I/O Expansion

The DAQBOOK-100, 120, 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 are powered from the built-in DAQBOOK power supply, and can be housed in the OMB-DBK10 three-slot expansion enclosure.

When using digital I/O expansion cards, make sure to use a OMB-CA-37-x cable and daisy chain the cards to the P2 digital I/O connector, rather than to the P1 analog I/O connector.

OMB-DBK1 \$395 16-Connector BNC Interface Module

The OMB-DBK1 allows 16 analog inputs to be connected to the OMB-DAQBOOK 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 100k 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 OMB-DAQBOOK P1 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 OMB-DAQBOOK 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 ± 5 V or ± 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 OMB-DAQBOOK 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 OMB-DAQBOOK systems to

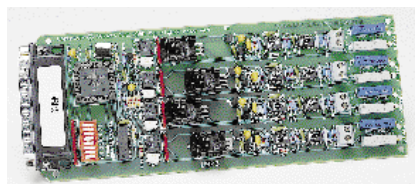
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Portable Data Acquisition Systems For Notebook and Desktop PCs



accommodate various dynamic input signals such as accelerometers or microphones. The card has programmable gain ranges of ± 50 mV, ± 500 mV, or ± 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 18kHz which is selectable for each channel. By disabling the filter a 40kHz 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 OMB-DAQBOOK 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 \$495
Four-Channel Frequency-Input Card

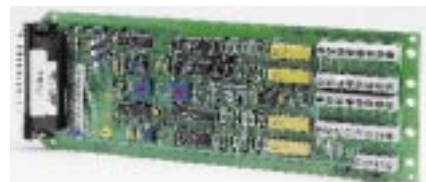


The OMB-DBK7 can accommodate frequencies from 1 Hz to 950 kHz. It accepts ac-coupled analog inputs up to 80 V p-p and dc-coupled digital signals of -15 V to +15 V. Low-pass filters of 100 kHz, 300 Hz, or 30 Hz are selectable for each channel. The OMB-DBK7 has auto-calibration capability allowing it to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

OMB-DBK8 \$495
Eight-Channel High Voltage Input Card

The OMB-DBK8 card provides the OMB-DAQBOOK 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



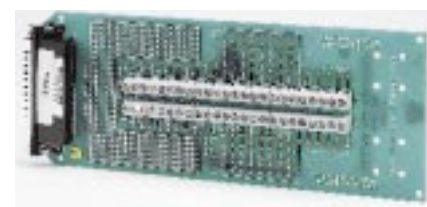
The OMB-DBK9 is an 8-channel RTD (Resistor Temperature Device) card for the OMB-DAQBOOK system. It supports 3- or 4-wire RTDs with resistance ranges of 100, 500 or 1000 Ohms. Selectable range of either a full range (-200 to 850°C) span or a narrow range (-200 to +200°C) span. The OMB-DBK9 also minimizes 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, which is identical in size to a DaqBook, 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.

Industrial-strength, Velcro-style tabs are provided, permitting users to secure a DaqBook and multiple OMB-DBK10 enclosures together beneath a notebook PC.

OMB-DBK11A \$145
Screw Terminal Card

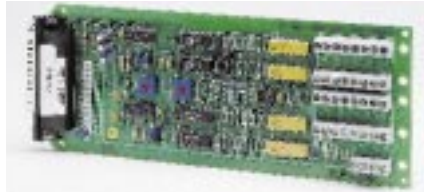


The OMB-DBK11A is a screw terminal card which allows convenient connection of analog and digital I/O signals from the OMB-DAQBOOK acquisition systems. User-installable BNC connectors are provided to accommodate signals from BNC cables. The OMB-DBK11A CARD also includes a prototype area for electronic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

SEE PAGE C-57/C-58 TO ORDER.

OMB-DAQBOOK Series

OMB-DBK12 & OMB-DBK13 Programmable Gain Analog Multiplexing Cards



OMB-DBK12, \$395

The OMB-DBK12 and OMB-DBK13 cards attach to the DAQBOOKs' P1 analog I/O connectors and provide 16 differential analog inputs.



OMB-DBK13, \$395

The OMB-DBK12s programmable gain amplifier offers x1, 2, 4, or 8 gain; the OMB-DBK13s offers

x1, 10, 100, or 1000 gain. These gains can be combined with the DaqBooks' 8 on-board ranges for a diverse solution of full scale inputs. The cards provide DB37 connections to the DaqBooks, and offer screw terminal connections for analog signal input.

OMB-DBK15 \$495 Universal Current/Voltage Input Card



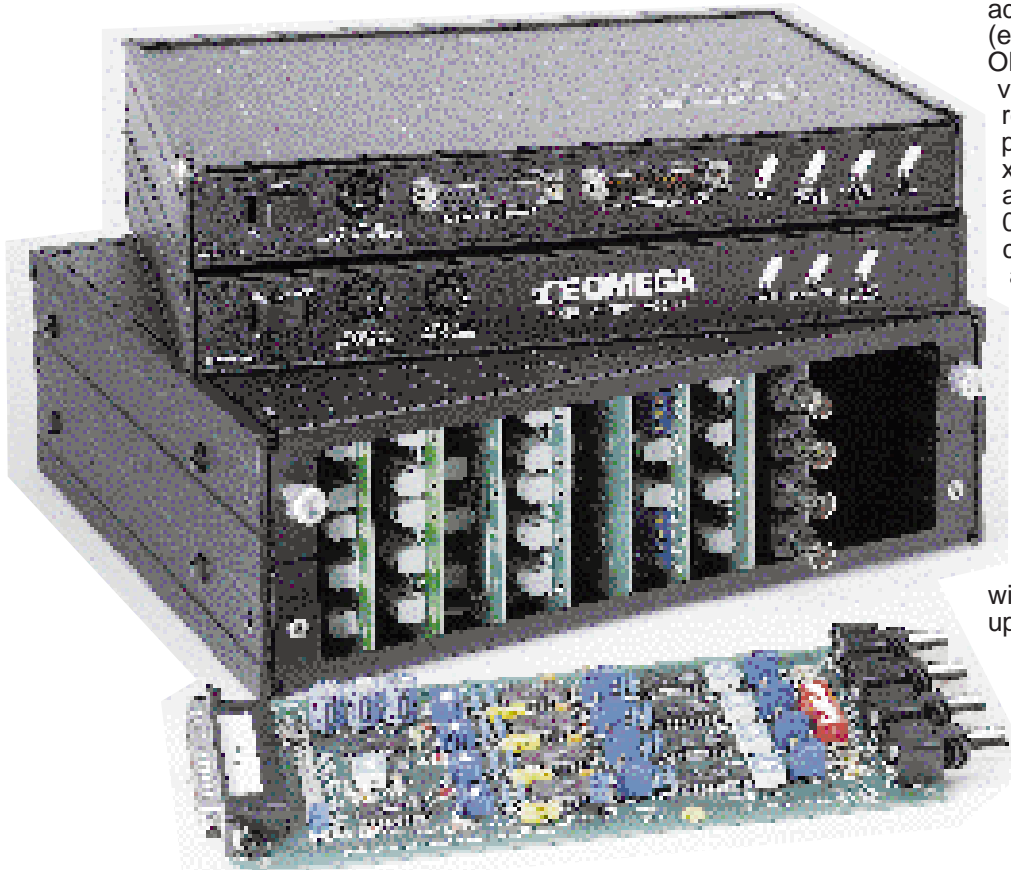
The OMB-DBK15 universal current/voltage input card lets you add an additional 16 channels of current or differential voltage input to the DaqBooks. The OMB-DBK15 features a programmable gain input amplifier and 16-channel multiplexer and also allows unipolar/bipolar selection per channel. Each of its

channels can be configured for current-to-voltage conversion or voltage attenuation. The card allows the DaqBooks to make current measurements from 4 to 20 mA transducers and voltage measurements up to ± 100 V with user-provided resistors. You can connect up to sixteen OMB-DBK15 cards to one DaqBook, 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 DaqBooks 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 is required; an OMB-DBK30A or a user-supplied voltage of 13 to 16 is recommended). 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 DaqBook with multiple OMB-DBK16 cards for up to 256 inputs.



OMB-DAQBOOK-100 shown with OMB-DBK30A rechargeable battery/excitation module, \$595, and OMB-DBK41, \$795, ten-slot expansion enclosure, with assorted OMB-DBK modules.

Portable Data Acquisition Systems For Notebook and Desktop PCs

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-DBK17s 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 \$495 High-Accuracy Thermocouple Card



The OMB-DBK19 thermocouple input card provides the DaqBooks 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



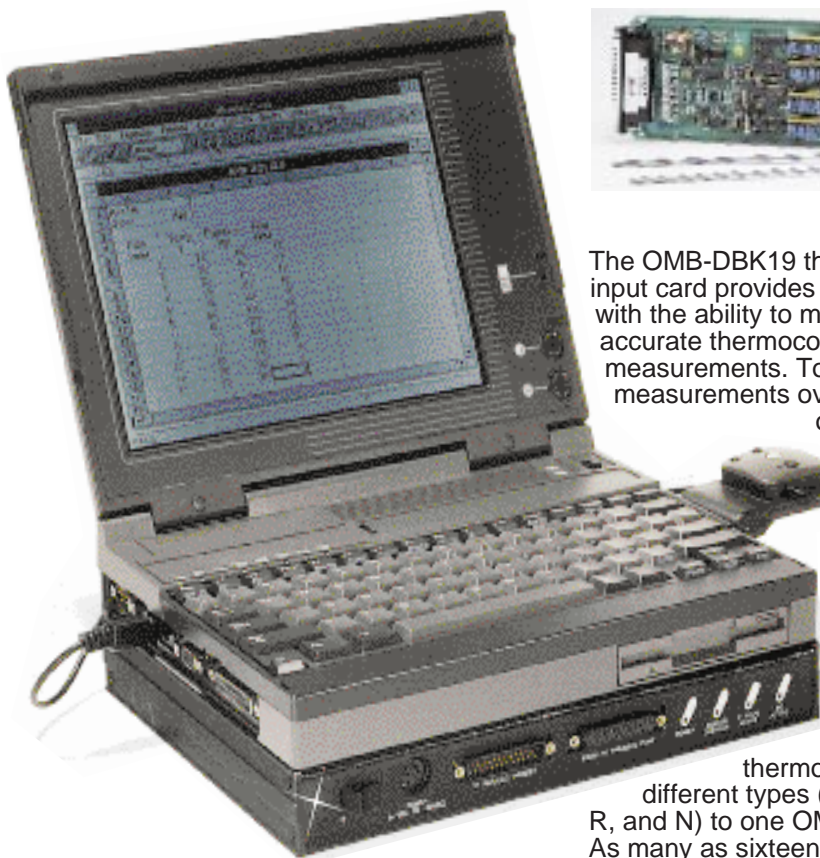
The OMB-DBK20 general-purpose digital I/O card expands the number of digital I/O lines by 48 per card. The OMB-DBK20 connects to the P2 digital I/O connector, and uses the 24 built-in DaqBook digital I/O lines as a communication bus. Note that when the OMB-DBK20 is connected, the 24 built-in lines do not function as digital I/O lines for user-connected digital signals. Thus, the first OMB-DBK20 card attached increases the DaqBooks' 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 DaqBook 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 OMB-DAQBOOK, DIGIBOOK/72, and DAQBOARD acquisition system. The unit provides 500 V of channel-to-channel and 500 V of channel-to-system optical isolation. The OMB-DBK23 attaches to the



OMB-DAQBOOK Series

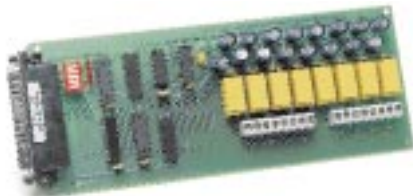
systems digital I/O connector and uses the systems digital lines as a communication bus. When OMB-DBK23 is in use, the system's digital I/O are not accessible. Up to eight OMB-DBK23 modules can be linked together for a total of 192 digital inputs.

OMB-DBK24 \$495 **24-Line Optically Isolated Digital-Output Module**



The OMB-DBK24 digital output module provides isolated digital outputs to the OMB-DAQBOARD and OMB-DIGIBOOK/72 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 OMB-DAQBOOK, and OMB-DIGIBOOK 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 OMB-DAQBOOK, WAVEBOOK-512, TEMPBOOK-66, and DIGIBOOK-72 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 OMB-DAQBOOK systems with additional power (± 15 Vdc at 500 mA) for expanded systems that exceed the OMB-DAQBOOK standard power. The OMB-DBK32A can be installed into a OMB-DBK10 or OMB-DBK41 expansion enclosure or into the OMB-DAQBOOK-112 or OMB-DAQBOOK-216 expansion slot.

OMB-DBK33 \$395 **Triple-Output Auxiliary Power Supply Card**

The OMB-DBK33 triple-output power supply card provides additional power when expanding OMEGA's OMB-DAQBOOK acquisition system. The card supplies ± 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-DBK35 \$295 **PCMCIA Interface Card**

The OMB-DBK35 is a PCMCIA interface card for DaqBook Series products, which offers transfer rates of up to 800 Kbytes. The OMB-DBK35 enables you to connect all DaqBooks to your notebook PCs Type II (5 mm) PCMCIA card socket. The interface card is PC Card 2.1 compliant.

The OMB-DBK35 is shipped with a

driver that conforms to PCMCIA Card Services specification 2.1, enabling it to automatically configure itself upon insertion into your notebook's PCMCIA socket or upon system start-up. It is also provided with a separate enabler program that lets you use it in the absence of Card Services and Socket utilities. A cable is also provided for connecting the OMB-DBK35 card to a DAQBOOK's parallel port input.

OMB-DBK40 \$345 **BNC Analog Interface**

The OMB-DBK40 provides a convenient means of attaching analog signals from BNC cables to the DaqBooks. The OMB-DBK40 features eighteen BNC connectors that accommodate 16 analog input channels and 2 analog output channels. One of the OMB-DBK40s 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 DaqBook P1 analog I/O connector. The OMB-DBK40 also accommodates the five counter-timers when attached to the DaqBook P3 connector. Included is a 6 ft. cable for attachment to a DaqBook P1 or P3.

OMB-DBK41 \$795 **Ten-Slot Analog Expansion Enclosure**

The OMB-DBK41 analog expansion enclosure allows DaqBook data acquisition systems to be expanded with any combination of up to ten OMB-DBK Series analog expansion cards. The OMB-DBK41s metal case features an analog backplane into which the OMB-DBK Series expansion cards can be easily installed. Only an OMB-CA-37-1 cable is required to connect the OMB-DBK41s output to the DaqBooks P1 analog input connector. For applications that require more than 10 cards, multiple OMB-DBK41s can be cascaded using an OMB-CA-37-x cable. (Substitute the x at the end of OMB-CA-37-x with the number of OMB-DBK41s to be attached).

Portable Data Acquisition Systems For Notebook and Desktop PCs

The OMB-DBK41 features industrial-strength Velcro-style tabs that enable you to mount your DaqBook and a notebook PC on top of the unit.

OMB-DBK42 \$695 **16-slot Multi-Purpose Isolated Signal Conditioning Module**

The OMB-DBK42 module allows the OMB-DAQBOOK 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 OMB-DAQBOOK acquisition systems to accommodate two OM5 signal conditioning modules. A variety of 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) or within the OMB-DAQBOOK/112 or OMB-DAQBOOK/216 expansion slot. The OMB-DAQBOOK 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 OMB-DAQBOOK 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 100 mV, 1 V, and 10 V. The modules provide 750 V of channel-to-channel isolation and 1250 V 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.

SEE PAGE C-57/C-58 TO ORDER.

OMB-DBK52 \$595 **14-Channel High-Accuracy Thermocouple-Input Module**

The OMB-DBK52 thermocouple-input module allows the OMB-DAQBOOK 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 standard thermocouple connectors. As many as sixteen OMB-DBK52 modules can be attached to one data acquisition system for a total of 224 channels.

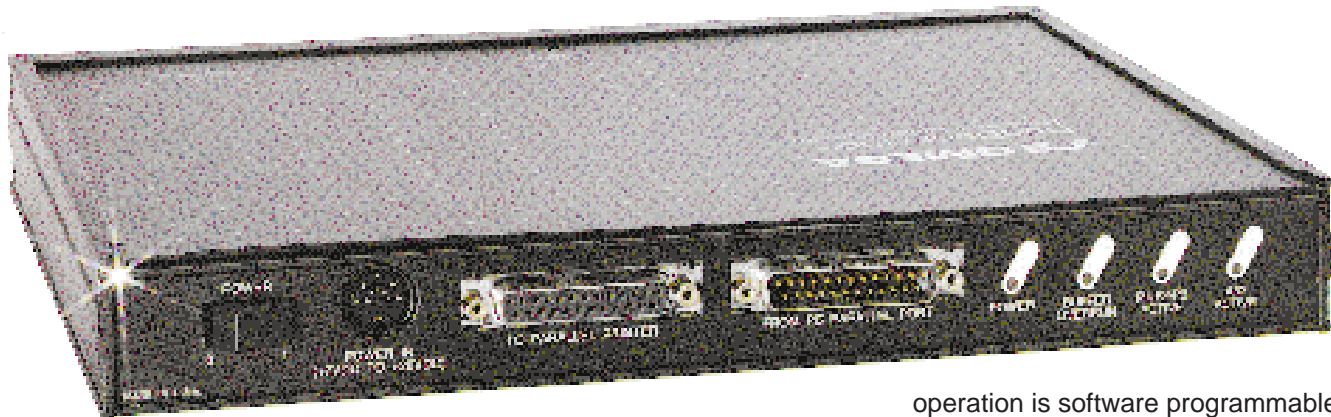
OMB-DBK53 \$495 **16-Channel Programmable Low-Gain Analog-Input Module**

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 OMB-DAQBOOK 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 OMB-DAQBOOK 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 OMB-DAQBOOK 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-DAQBOOK Series



OMB-DBK55 \$1995 8-Channel Simultaneous Sample and Hold Module with Low-Pass Filter

Each OMB-DBK55 module allows the OMB-DAQBOOK 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 50 kHz, 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.

Power Requirements

Expansion cards housed within the OMB-DBK41 may occasionally require the use of the OMB-DBK32A auxiliary supply card.

Specifications

GENERAL

System Requirements: 80386 CPU or better; bidirectional parallel port; Microsoft Windows with 8 MB RAM for DaqView software
Power Consumption: 100, 120: 510 mA @ 12 Vdc; 112: 360 mA @ 12 Vdc; 200: 620 mA @ 12 Vdc; 216: 600 mA @ 12 Vdc

Operating Ambient: 0 to 50°C; 0 to 95% RH, non-condensing

Storage Temperature: 0 to 70°C

Dimensions: 3.5 H x 21.6 W x 27.9 cm D (1 3/8" x 8.5" x 11")

Weight: 2.5 kg (5 lb)

A/D SPECIFICATIONS

Type: successive approximation
Resolution: 100, 112, 120: 12-bit; 200, 216: 16-bit

Conversion Time: 8 μ s; on non-EPP systems, 30k-50k samples/s, system dependent

Monotonicity: no missing codes

Linearity: ± 1 bit

Zero Drift: ± 10 ppm/°C max

Gain Drift: ± 30 ppm/°C max

SAMPLE AND HOLD AMPLIFIER

Acquisition Time: 2 μ s

Aperture Uncertainty: 100 ps

ANALOG INPUTS

12-BIT DAQBOOK-100, 112, 120

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 1.25 V

Bipolar: 0 to ± 5 V, 0 to ± 2.5 V, 0 to ± 0.125 V, 0 to ± 0.625 V

Maximum Overvoltage: 30 Vdc

INPUT CURRENT

Differential: 150 pA typ, 0.2 μ A max

Single-ended: 250 pA typ, 0.4 μ A max

Input Impedance: 100 M Ω

Gain Temp. Coefficient:

3 ppm/°C typ

Offset Temp. Coefficient: 12 μ V/°C max

16-BIT DAQBOOK-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 ± 5 V, 0 to ± 2.5 V, 0 to ± 0.125 V, 0 to ± 0.625 V

Maximum Overvoltage: 30 Vdc input current

Differential: 150 pA typ, 0.2 μ A max

Single-ended: 250 pA typ, 0.4 μ A max

Input Impedance: 100 M Ω

Gain Temp. Coefficient:

3 ppm/°C typ

Offset Temp. Coefficient: 12 μ V/°C max

TRIGGERING

DAQBOOK-100, 112, 120, 200, 216

Analog Trigger

Programmable Level Range: 0 to ± 5 V

Trigger to A/D Latency: 10 μ s max

Digital Trigger

Logic Level Range: 0.8 V low, 2.2 V high

Trigger to A/D Latency: 10 μ s max

Software Trigger

Trigger to A/D Latency: dependent on PC speed

Pre-Trigger: up to 65,536 scans

SEQUENCER

DAQBOOK-100, 112, 120, 200, 216

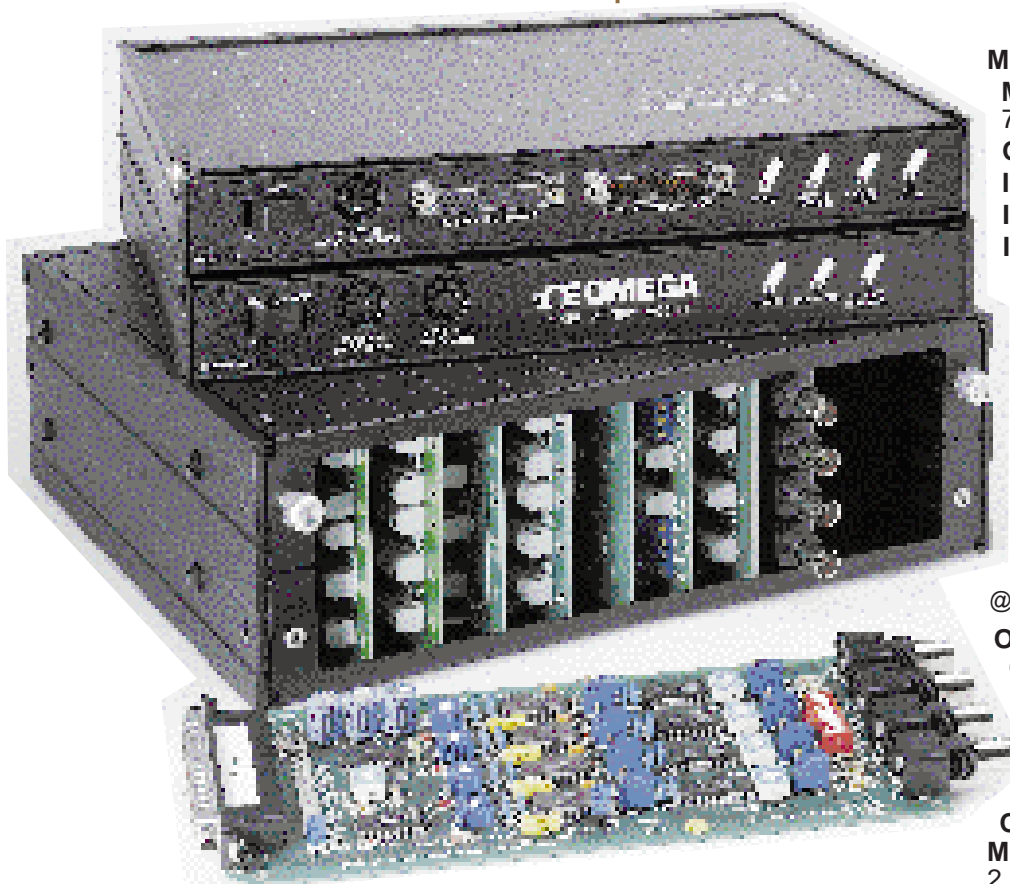
Randomly programmable for channel & gain; DAQBOOK-200 is also randomly programmable for unipolar/bipolar ranges

Depth: 512 location

Channel to Channel Rate: 10 μ s/channel, fixed

Maximum Repeat Rate: 100 kHz

Portable Data Acquisition Systems For Notebook and Desktop PCs



Minimum Repeat Rate: 10 hours
Expansion Channel Sample Rate: same as on-board channels, 10 μ s/channel

ANALOG OUTPUTS

DAQBOOK-100, 112, 120, 200, 216
Channels: 2

Connector: DB37 male, P1

Resolution: 12-bits

Voltage Ranges: 0 to 5 Vdc with built-in reference; 0 up to ± 10 Vdc with external reference

Maximum Output Current: 10 mA

GENERAL PURPOSE DIGITAL I/O

DAQBOOK-100, 120, 200

Channels: 24 expandable up to 192

Connector: DB37 male, P2

Device: 82C55

Output Voltage Levels

Minimum "1" Voltage: 3.0 @ 2.5 mA sourcing

Maximum "0" Voltage: 0.4 @ 2.5 mA sinking

Output Current

Maximum Source Current: 2.5 mA

Maximum Sink Current: -2.5 mA

Input Voltage Levels

Minimum Required "1" Voltage Level: 2 V

Maximum Allowed "0" Voltage Level: 0.8 V

Output Float Leakage Current: 10 μ A

HIGH-SPEED DIGITAL INPUTS

DAQBOOK-100, 120, 200

Lines: 16

Connector: DB37 male, P3

Maximum Sampling Rate: 100 K words/s

Input Low Voltage: 0.8 V max

Input High Voltage: 2 V min

Input Low Current: 10 nA

Input High Current: -10 μ A

COUNTER/TIMER

DAQBOOK-100, 120, 200

Channels: 5

Connector: DB37 male, P3

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

Maximum Pulse Count: 80-bit binary (5 channels cascaded)

Maximum Input Rate: 7 MHz

Minimum High Pulse Width: 70 ns

Minimum 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 μ A max

Input High Current: -10 μ A max

FREQUENCY/PULSE GENERATING MODE

Maximum Output Frequency: 1 MHz

Duty Cycle: variable between limits of approximately 0.0015% and 99.99%

Output High Voltage: 2.4V min @ -200 μ A

Output Low Voltage: 0.4V max @ 3.2 mA

OMB-DIGIBOOK-72

Channels: 72, expandable up to 576

Connector: DB37 male, P1, P2, or P3

I/O Device: 82C55 x 3

OUTPUT VOLTAGE LEVELS

Minimum "1" Voltage: 3.0 @ 2.5 mA sourcing

Maximum "0" Voltage: 0.4 @ 2.5 mA sinking

OUTPUT CURRENT

Maximum Source Current: 2.5 mA

Maximum Sink Current: -2.5 mA

INPUT VOLTAGE LEVELS

Minimum Required "1" Voltage Level: 2 V

Maximum Allowed "0" Voltage Level: 0.8 V

Output Float Leakage Current: 10 μ A

OMB-DBK1 16-CONNECTOR BNC INTERFACE MODULE

Connector: DB37 male, mates with P1 pinout on the OMB-DAQBOOK; 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)

OMB-DAQBOOK Series

OMB-DBK2 FOUR-CHANNEL D/A VOLTAGE OUTPUT CARD



Connectors: DB37 male, mates with P1 pinout on the OMB-DAQBOOK; screw terminals for signal outputs

Resolution: 14-bit
Output Ranges: ± 5 V & ± 10 V (selectable per channel via jumpers)
Accuracy: 0.05% FS
Hysteresis: 0.01% FS
Output Current: 5 mA typ
Power Consumption: 565 mW

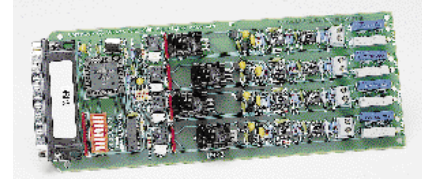
OMB-DBK4 TWO-CHANNEL DYNAMIC SIGNAL INPUT CARD



Channels: 2
Connectors: DB37 male, mates with P1 pinout on the OMB-DAQBOOK; 1 BNC per channel & footprints for one user provided Microdot connector per channel
Current Source
Output Impedance: >1.4 M Ohm
Compliance: 27V
Current Levels: 2 & 4 mA (jumper selectable)
Broadband Noise: $0.3 \mu\text{A RMS}$ (BW=100 kHz)
Input Impedance: 150 k Ohm
Input Ranges: ± 50 mV, ± 500 mV, & ± 5 V FS; additional full scale ranges are available when combined with the OMB-DAQBOOK'S on-board programmable A/D ranges
Coupling: AC & DC
AC High-Pass Filters: Per channel, 1 pole HPF with 10 Hz or 0.1 Hz cutoff, selectable via jumper

Input Signal/Noise: >96 dB (BW=100 kHz)
Amplitude Accuracy: ± 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: $4 \mu\text{A/LSB}$, 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: $V_{\text{loop}} = 12$ to 45 V
Compliance: $R_{\text{loop}} = (V_{\text{loop}}^2)/0.020$
 Example Voltage MDR*
 @ $V_{\text{exc}} = 35$ V 1450 Ohms
 @ $V_{\text{exc}} = 25$ V 950 Ohms
 @ $V_{\text{exc}} = 15$ V 450 Ohms
 *MDR (maximum drive resistance)

OMB-DBK7 FOUR-CHANNEL FREQUENCY-INPUT CARD



Connector: DB37 male, mates with P1 connector on the OMB-DAQBOOK; 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 μF), in series with 20 K 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 μF), 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

SEE PAGE C-57/C-58 TO ORDER.

Portable Data Acquisition Systems For Notebook and Desktop PCs

OMB-DBK8 EIGHT-CHANNEL HIGH VOLTAGE INPUT CARD

Connector: DB37 male, mates with P1 pinout on the OMB-DAQBOOK; screw terminals for signal inputs

Voltage Input Ranges: ± 10 Vdc, ± 50 Vdc, ± 100 Vdc; selection by jumper for each channel

Input Impedance: 10 M Ohm

Attenuation:

10 V	$V_{out}=V_{in}/2$
50 V	$V_{out}=V_{in}/10$
100V	$V_{out}=V_{in}/20$

Bandwidth: 15 kHz

Attenuation Accuracy: 0.5 %

Offset Voltage

Typ: 0.5 mV

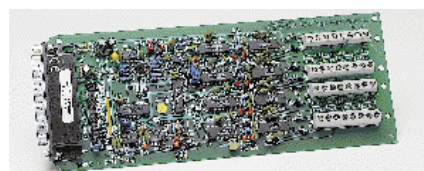
Max: 0.2 mV

Offset Drift

Typ: 4 $\mu\text{V}/^\circ\text{C}$

Max: 10 $\mu\text{V}/^\circ\text{C}$

OMB-DBK9 EIGHT-CHANNEL RTD MEASUREMENT CARD



Connector: DB37 male, mates with P1 Pinout on the OMB-DAQBOOK; 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 to +850°C
100, 500, or 1000. Ohm (narrow): -200 to +200°C

RTD Excitation Current:

100 Ohm	500 μA
500 Ohm	227 μA
1000 Ohm	160 μA

Accuracy:

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

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

Resolution:

100, 500 or 1000 Ohm (wide): 0.3 C
100, 500, or 100 Ohm (narrow): 0.1°C

Adjustments: Jumpers on circuit board

OMB-DBK10 EXPANSION-CARD ENCLOSURE

Capacity: accommodates any 3 expansion cards

Material: aluminum

Finish: black, powder-coated

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 OMB-DAQBOOK; 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 ± 10 Vdc

Input Impedance: 100 M Ω

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

Maximum Input Voltage: ± 35 Vdc

Slew Rate: 20 V/ μs typ; 10 V/ μs min

Settling Time: 2 μs to 0.01%

CMRR: 80 dB min

Non-Linearity: 0.002% typ; 0.015% max

Bias Current: 150 pA typ, 0.2 μA max

Offset Voltage: $\pm(0.5 + 5/G)$ mV typ, $\pm(2.0 + 24/G)$ mV max

Offset Drift: $\pm(3 + 50/G)$ $\mu\text{V}/^\circ\text{C}$ typ, $\pm(12 + 240/G)$ $\mu\text{V}/^\circ\text{C}$ 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 Ω

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

Maximum Input Voltage: ± 35 Vdc

Slew Rate: 20 V/ μs typ;

10 V/ μs min

Settling Time: 2 μs to 0.01%

@ G < 1000; 10 μs to 0.01%

@ G = 1000

CMRR: 80 dB @ G=1 min; 86 dB @ G=10 min; 92 dB @ G=100 min; 94 dB @ G=1000 min

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

Bias Current: 150 pA typ, 0.2 μA @ 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: $\pm(3 + 50/G)$ $\mu\text{V}/^\circ\text{C}$ typ, $\pm(12 + 240/G)$ $\mu\text{V}/^\circ\text{C}$ max

OMB-DBK15 UNIVERSAL CURRENT/VOLTAGE INPUT CARD



Connector: DB37 male corresponds to pinouts of P1

Gain Ranges: x1, 2

Number of Channels: 16 differential

SEE PAGE C-57/C-58 TO ORDER.

OMB-DAQBOOK Series

Voltage Input Ranges:

±30 Vdc max

Current Input Range: ±20 mA max

Attenuator Resistors

Accuracy: ±1%

Temperature Coefficient:

100 ppm/C°

Gain Accuracy: ±0.05% typ;

±0.25% max

Maximum Input Voltage: ±35 Vdc

Slew Rate: 10 V/μs

Settling Time: 2 μs to 0.01%

CMRR: 80 dB min

Non-Linearity: 0.002% typ;

0.015% max

Unattenuated Bias Current:

150 pA typ; 0.2 μA max @ 25°C

Offset Voltage: ±(0.5 + 5/G) mV

@ 25°C typ; ±(2.0 + 24/G) mV

@ 25°C max

Offset Drift: ±(3 + 50/G) μV/C° typ,

±(12 + 240/G) μV/C° max

OMB-DBK16

STRAIN-GAGE CARD



Connectors: DB37 mates with P1 on a DAQBOOK; 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 MΩ

CMRR: 115 dB

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%

Reference Drift: 3 ppm/C°

Gain Calibration Reference:

5.00 m Vdc

Reference Accuracy: 0.2%

Reference Drift: 20 ppm/C°; separate instrumentation amplifier for each channel, with gain adjustable from x100 to 1250 via externally accessible 15-turn trimpot

Gain Accuracy: 0.5%

Gain Drift: 50 ppm/C°

Input Offset: 100 μV max

Offset Drift: 4 μV/C°

Output Offset: 20 mV

Offset Drift: 200 μV/C°

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 DAQBOOK P1 pinout; inputs via 4 BNC connectors

Inputs: 4 differential, with switchable 100 KΩ bias resistors to input low

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

Aperture Time: 50 ns

Voltage Droop: 1 mV/ms

Maximum Signal Voltage:

±5.00 Vdc (x1)

OMB-DBK18

LOW-PASS FILTER CARD



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

Inputs: 4 differential, with switchable 100 KΩ bias resistors to input low

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

Maximum Pole Frequency: 50 kHz

OMB-DBK19

HIGH-ACCURACY THERMOCOUPLE CARD



Connector: DB37 male, mates with P1 pinout on a DAQBOOK; 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/°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 KΩ

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

Portable Data Acquisition Systems For Notebook and Desktop PCs

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 DAQBOOK P2 pinout & to DigiBook/72 P1, P2, P3 pinouts

Device: 82C55 x 2

Output Voltage Levels

Minimum "1" Voltage: 3.0 @ 2.5 mA sourcing

Maximum "0" Voltage: 0.4 @ 2.5 mA sinking

Output Currents

Maximum Source Current: 2.5 mA

Maximum Sink Current: -2.5 mA

Input Voltage Levels

Minimum Required "1" Voltage Level: 2 V

Maximum Allowed "0" Voltage Level: 0.8 V

Output Float Leakage Current: 10 μ A

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 OMB-DAQBOOK; 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 (8.5" x 11" x 1.375")

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 OMB-DAQBOOK; 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°C: 1 V

Maximum Open Circuit Voltage: 60 Vdc

Off-State Leakage: 10 μ A

Module Power Requirements: 1.5 W; 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

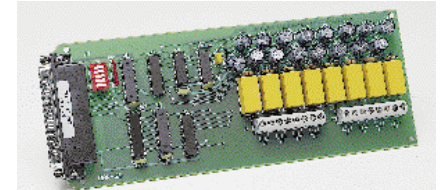
Maximum Module Power

Dissipation: @25°C 12 W, @50°C 6 W

Dimension: 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 OMB-DAQBOOK 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: 2 A

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

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

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-DAQBOOK Series

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

Full Load Input Current Range:

1.05 A @ 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 (+5V); 5% max ($\pm 15V$)

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

Total Output Power: 15 VA full Load

Input Voltage range: 9 to 18 Vdc

Included AC Adapter:

Adapter: 15 Vdc @ 0.9 A

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: 3 A

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

OMB-DBK35 PCMCIA INTERFACE CARD

Bus Interface: 8-bit PCMCIA Card Standard 2.1

Dimensions: 5 mm (PCMCIA Type II) card

Power Consumption: 5 V @ 35 mA

Connector: DSUB 25, DAQBOOK compatible

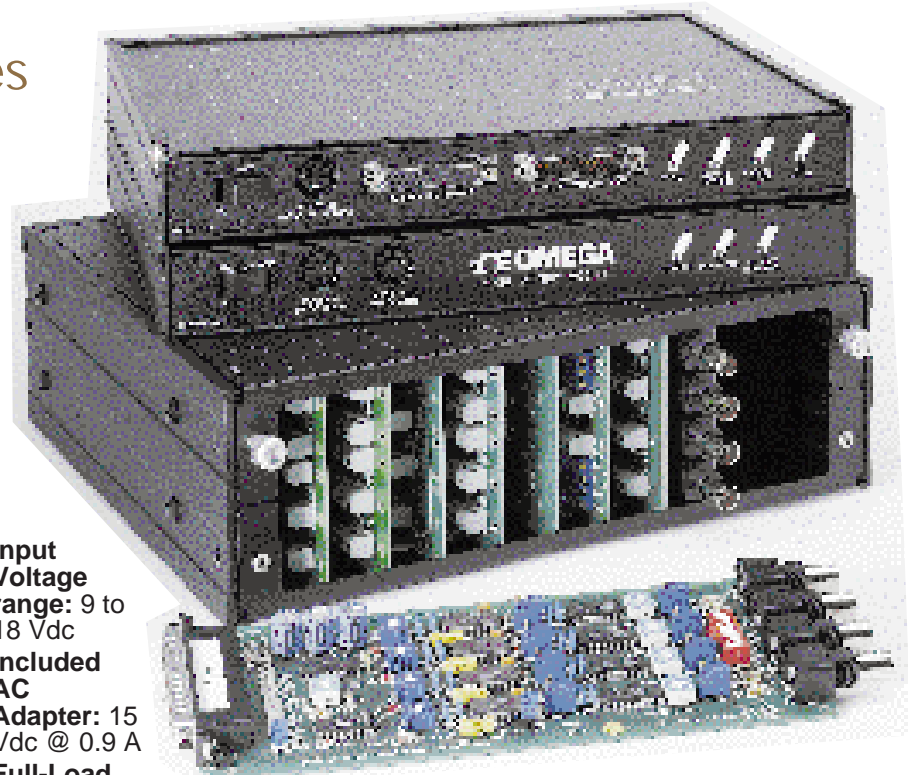
Cable: 2 ft

OMB-DBK40 BNC ANALOG INTERFACE DAQBOOK Connection:

male DB37, mates with DAQBOOK P1

Analog Input Connection: one BNC connector for each of 16 analog input channels

Single-Ended Mode: center



conductor carries signal, outer conductor carries signal ground

Differential Mode: center conductor of two adjacent BNC connectors carries input high and input low signals; outer conductor of both is attached to system ground

Analog Output Connection: one BNC connector for each of 2 analog output channels; center conductor carries signal, outer carries signal ground

TTL Trigger Input Connection: one analog output BNC connector (J18) can be switched for a TTL trigger input connection; in TTL trigger mode, the second analog output channel is unavailable on the BNC connector

Cable: 6 ft

Dimensions: 58 H x 173 W x 135 cm D (2.3" x 6.8" x 5.3")

Weight: 0.6 kg (1.3 lb)

OMB-DBK41 TEN-SLOT ANALOG EXPANSION MODULE

Card Capacity: 10 positions

Cable: OMB-CA-37-x (not included); substitute the x with the number of OMB-DBK41s to be attached to one DAQBOOK

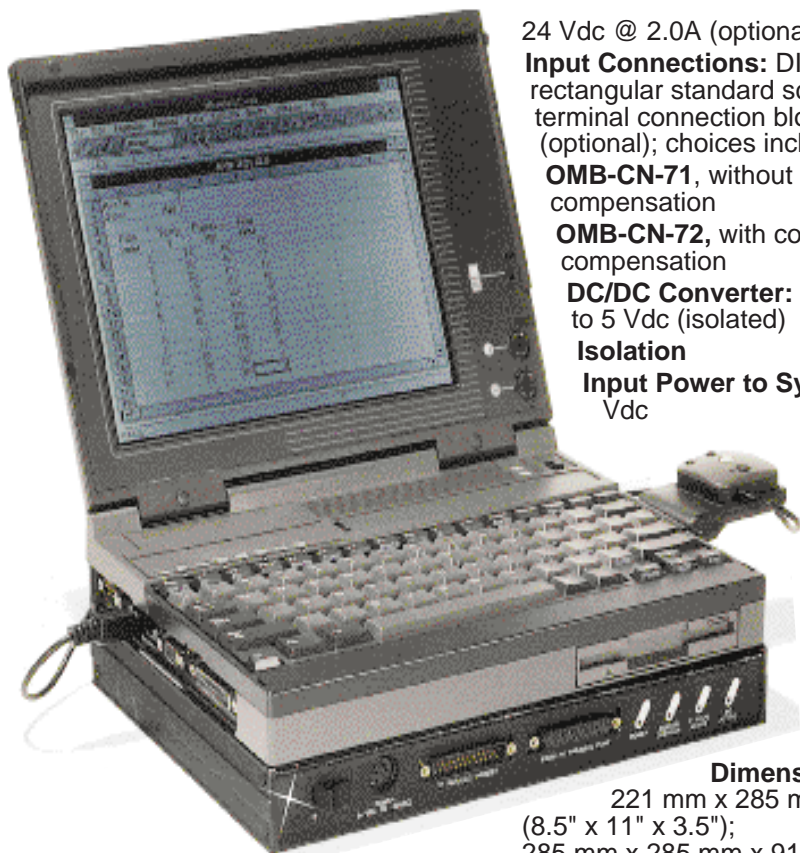
Power Indicator: LED powered by DAQBOOK 5 Vdc

DAQBOOK Connection: male DB37, mates via cable with DAQBOOK P1

Dimensions: 89 H x 279 W x 248 mm D (3.5" x 11" x 9.75")

Weight: 1.8 kg (4 lb), with no cards

Portable Data Acquisition Systems For Notebook and Desktop PCs



installed

DBK42 16-SLOT MULTI-PURPOSE ISOLATED SIGNAL CONDITIONING MODULE

Connector: DB37 male, mates with P1 pinout on the OMB-DAQBOOK

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: 3 A

Power Indicator: LED powered by internal 5 Vdc

Power Connection: DIN5 x2 for daisy chaining

AC Power Packs: 120 Vac to 15 Vdc @ 0.9 A — 120 Vac to

24 Vdc @ 2.0A (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 91 mm
(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 OMB-DAQBOOK; 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)

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

Input Type: Differential

Input Impedance: 100 M Ohm parallel with 100pF

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 μ V max

Output Drift: 4 μ V/Co

Output Offset: 4 mV

Offset Drift: 6 μ 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 -3 dB at Fc; gain x2 (10 Hz installed)

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

Weight: 1.3 kg (3 lbs)

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

Connector: DB37 male, mates with P1 pinout on the OMB-DAQBOOK; 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

OMB-DAQBOOK Series

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: 4 A

OM-DBK50 & OM-DBK51 8-CHANNEL ISOLATED VOLTAGE-INPUT MODULES



Connector: DB37 male, mates with P1 pinout on the OMB-DAQBOOK

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: ±10 V, 100 V, & 300 V

DBK51: ±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: ±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)

OM-DBK52

14-CHANNEL HIGH-ACCURACY THERMOCOUPLE-INPUT MODULE

Connector: DB37 male, mates with P1 pinout on the OMB-DAQBOOK; 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:

100 mV/°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 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 OMB-DAQBOOK

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 OMB-DAQBOOK 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: ±0.05% typ, ±0.25% max

Maximum Input Voltage: ±35 Vdc

Slew Rate: 20 V/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 µA @ 25°C max

Offset Voltage:

±(0.5 + 5/G) mV @ 25°C typ

±(2.0 + 24/G) mV @ 25°C max

Offset Drift:

±(3 + 50 /G) µV/°C typ

±(12 + 240/G) µV/°C typ

Dimensions: 221 mm x 285 mm x 36 mm (8.5" 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 OMB-DAQBOOK data acquisition systems; BNC connectors for signal connections; pin jack for analog common connection

Gain Ranges: x1, x10, x100, & x1000

Portable Data Acquisition Systems For Notebook and Desktop PCs

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

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

Gain Accuracy:

±0.05% typ, ±0.25% max (G <1000)

±0.10% typ, ±1.0% max (G = 1000)

Maximum Input Voltage: ±35 Vdc

Slew Rate: 20 V/us typ, 10 V/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 uA @ 25°C max

Offset Voltage:

±(0.5 +5/G) mV @ 25°C typ

±(2.0 +24/G) mV @ 25°C max

Offset Drift:

±(3 +50/G) uV/°C typ

±(12 +240/G) uV/°C max

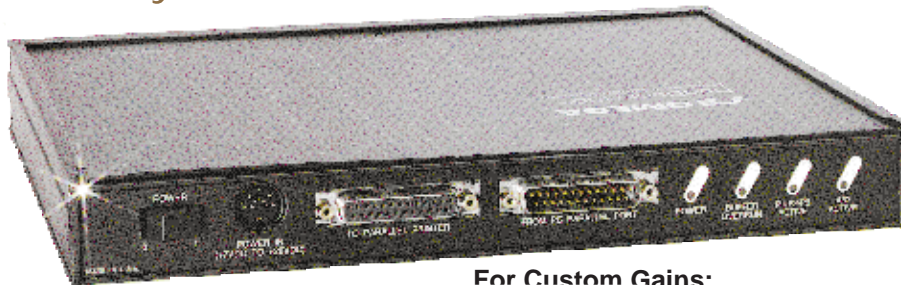
Dimension: 221 mm x 285 mm x 36 mm (8.5" x 11" x 1.375")

Weight: 1.2 kg (3 lbs)

OMB-DBK 55

8-CHANNEL SIMULTANEOUS SAMPLE AND HOLD MODULE WITH LOW-PASS FILTER

Connector: DB37 male, mates with P1 pinout on the OMB-DAQBOOK



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 ±5 Vdc, 0 to ±500 m Vdc, 0 to ±50 m Vdc, 0 to ±25 m Vdc, 0 to ±10 m Vdc

For Custom Gains:

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

To Order (<i>Specify Model Number</i>)		
Model No.*	Price	Description
OMB-DAQBOOK-100	\$1395	8/16-channel analog interface, high speed and programmable digital I/O, counter/timers, standard parallel port
OMB-DAQBOOK-112	1295	8/16-channel analog interface, digital I/O, standard or enhanced parallel port
OMB-DAQBOOK-120	1595	8/16-channel analog interface, high speed and programmable digital I/O, counter/timers, standard or enhanced parallel port
OMB-DAQBOOK-200	1995	16-bit 8/16-channel analog interface, high speed and programmable digital I/O, counter/timers, standard or enhanced parallel port
OMB-DAQBOOK-216	1795	16-bit 8/16 channel analog interface; standard or enhanced parallel port
OMB-DIGIBOOK-72	595	72-channel digital I/O interface

Each DAQBOOK unit is supplied with power cable, parallel port cable, DOS and Windows driver software, DaqView2 and PostView software, and complete operator's manual. OMB-DIGIBOOK-72 supplied with power cable, parallel port cable, DOS and Windows driver software, DigiView software and complete operator's manual.

Ordering Example: OMB-DAQBOOK-112 unit with one OMB-DBK19 thermocouple input module and OMB-CA37-1 cable, \$1295 + 395 + 45 = **\$1735**.

*CE approved models are available as a special order, consult engineering for ordering information.

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 the appropriate number indicated in the DAQBOOK Power Chart at right, then your application does not require an OMB-DBK32 card. If your overall total exceeds the chart number, then the OMB-DBK32 is required.

1 Module	2 Quantity	3 Current	4 Total	Model	Current
DBK11	<input type="checkbox"/>	x 0	= 0	DAQBOOK-100	80
DBK12	<input type="checkbox"/>	x 20	= <input type="checkbox"/>	DAQBOOK-112	90
DBK13	<input type="checkbox"/>	x 20	= <input type="checkbox"/>	DAQBOOK-120	80
DBK14	<input type="checkbox"/>	x 20	= <input type="checkbox"/>	DAQBOOK-200	150
DBK15	<input type="checkbox"/>	x 15	= <input type="checkbox"/>	DAQBOOK-216	150
DBK16	<input type="checkbox"/>	x 25	= <input type="checkbox"/>		
DBK17	<input type="checkbox"/>	x 15	= <input type="checkbox"/>		
DBK18	<input type="checkbox"/>	x 30	= <input type="checkbox"/>		
DBK19	<input type="checkbox"/>	x 20	= <input type="checkbox"/>		
TOTAL				<input type="checkbox"/>	

OMB-DAQBOOK Series



OMB-DBK55 Specification (Continued)

installation of 4 to 6 resistors and/or capacitors in the provided socket locations

Frequency Modules: Optional 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 (5V excursion to 0.1%); 5.0 us (5V 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] μV 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: 5×10^{12} Ohms parallel with 6 pF (without 100k bias resistors enabled)

Switchable Bias Resistors: 100K 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	± 20 ppm/ $^\circ\text{C}$ max
x10	± 20 ppm/ $^\circ\text{C}$ max
x100	± 40 ppm/ $^\circ\text{C}$ max
x200	± 60 ppm/ $^\circ\text{C}$ max
x500	± 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	495	Four-channel frequency-input card
OMB-DBK8	495	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	395	16-channel multiplexing card, X1, 2, 4 and 8 gains
OMB-DBK13	395	16-channel multiplexing card, X1, 10, 100 and 1000 gains
OMB-DBK15	495	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	495	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-DBK35	295	PCMCIA interface card and cable
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-132	95	6ft cables with mating mini-DIN 6 connector
OMB-CA-37-1	45	Expansion card cable, for single option expansion
OMB-CA-37-2	55	Expansion card cable, for two option expansion
OMB-CA-37-3	65	Expansion card cable, for three option expansion
OMB-CA-37-4	75	Expansion card cable, for four option expansion
OMB-CN-71	95	16-channel screw terminal connection block
OMB-CN-72	295	16-channel screw terminal connection block with cold-junction sensors

* OMB-DBK42 requires connectors OMB-CN71 or OMB-CN72
** OMB-DBK43 requires connector OMB-CA-132