



OMB-DAQ-55/56

Personal Daq
USB Data Acquisition Modules



\$695
Basic Unit

- ✔ Multi-Function Data Acquisition Module Attaches to PCs Via Universal-Serial Bus (USB)
- ✔ Ultra Low-Power Design Requires No External Power or Batteries
- ✔ Can Be Located up to 5 Meters (16.4') from the PC
- ✔ High-Resolution, 22-Bit A/D Converter
- ✔ Built-in Cold Junction Compensation for Direct Thermocouple Measurements
- ✔ Frequency/Pulse/Duty-Cycle Measurements up to 1 MHz
- ✔ Convenient Removable Screw-Terminal Signal Connections
- ✔ 500 V Optical Isolation from PC for Safe and Noise-Free Measurements
- ✔ Programmable Inputs from ± 31 mV to ± 20 V Full Scale
- ✔ Digital I/O Lines with Open Collector Output for Direct Drive Applications
- ✔ Expandable up to 80 Channels of Analog and Digital I/O
- ✔ Up to 100 OMB-DAQ-55/56 Modules Can Be Attached to One PC Using USB Hubs, for a Total Capacity of 8,000 Channels
- ✔ Digital Calibration—No Potentiometers or Adjustments Required
- ✔ Spreadsheet-Style Software for Set-up, Acquisition, & Real-Time Display, PostView for Post-Acquisition Viewing
- ✔ Drivers for Visual Basic, Delphi, & C++ for Windows 95, DASyLab & LabVIEW



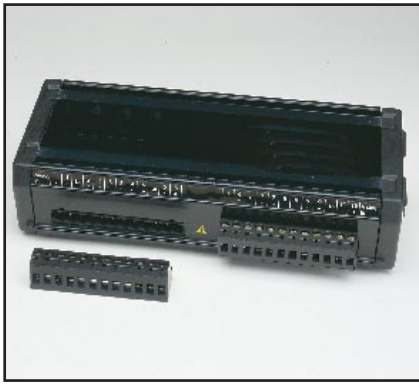
The compact OMB-DAQ-55/56 is ideal for portable data acquisition applications (laptop computer not included)



The OMB-DAQ-55 and OMB-DAQ-56 PERSONAL DAQS are full-featured data acquisition products that utilize the Universal Serial Bus (USB), which is built into almost every new PC. Designed for high accuracy and resolution, the 22-bit OMB-DAQ-55/56 data acquisition systems directly measure multiple channels of voltage, thermocouple, pulse, frequency, and digital I/O. A single cable to the PC provides high-speed communication and power to the OMB-DAQ-55/56. No additional batteries or power supplies are required, except when using bus-powered hubs.

The OMB-DAQ-55/56 modules are the first products in a new family of low-cost, USB-based products from OMEGA. Because of the strict power limitations of the USB, the modules incorporate special power-management circuitry to ensure adherence to USB specifications.

The OMB-DAQ-55/56 avoid many of the limitations of PC-Card (PCMCIA) data acquisition devices and offer advantages over many PC plug-in data acquisition boards as well. The OMB-DAQ-55 data acquisition system offers 10 single-ended or 5 differential analog (up to ± 20 V full scale) or thermocouple input



OMB-DAQ with terminal block

channels, 16 programmable ranges, 500 V optical isolation, 8 digital I/O lines, and 2 frequency/pulse/duty-cycle channels.

The OMB-DAQ-56 offers twice the I/O capacity as the OMB-DAQ-55 in the same size package.

To simplify attachment of signals and transducers, the OMB-DAQ-55/56 modules feature convenient, removable screw-terminal input connections.

SOFTWARE

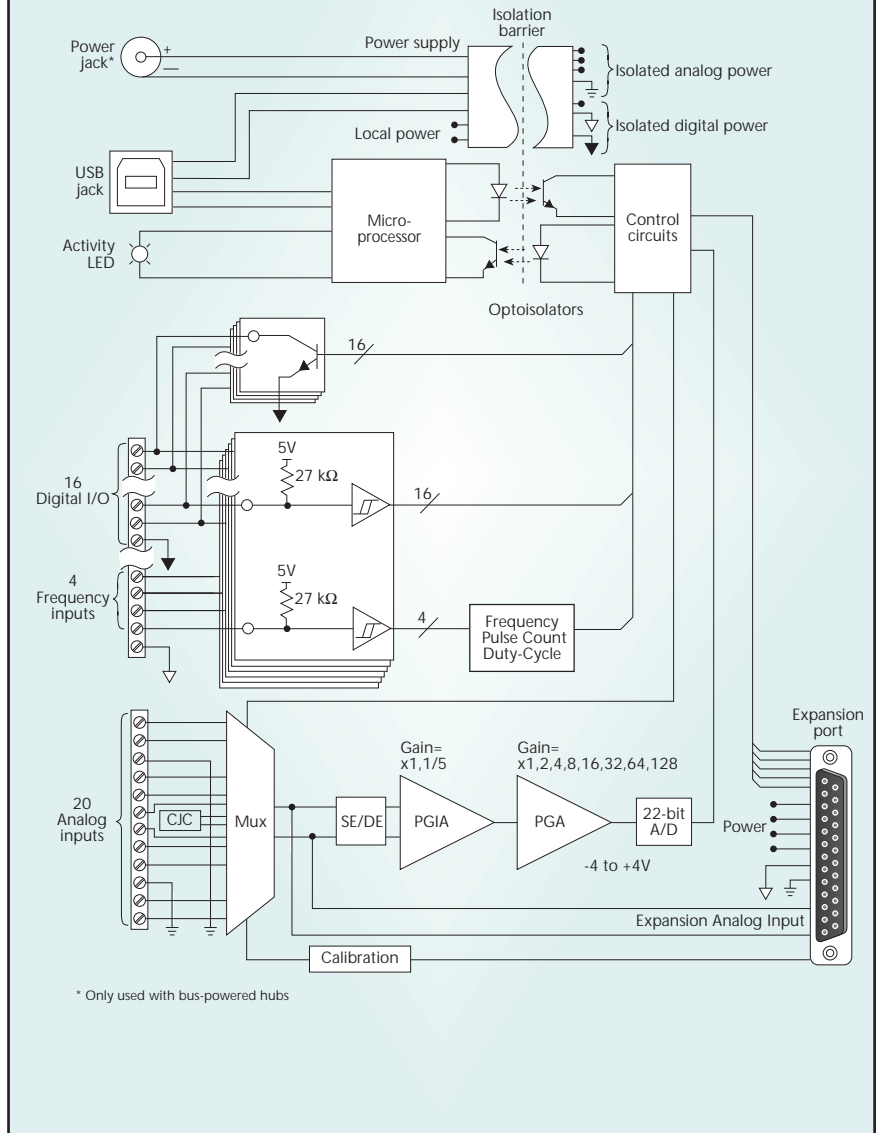
The OMB-DAQ-55/56 are supplied with an enhanced version of Personal DaqView, Windows 95 based data logging application that allows you to set up your acquisition applications and save acquired data directly to disk. The OMB-DAQ-55/56 are also shipped with PostView, a post-acquisition application that permits you to display acquired data previously saved to a file. Drivers for Visual Basic, Delphi and C++ for Windows 95 are also included. In addition, drivers are available for icon-based software packages, such as DASyLab and LabVIEW.

ABOUT USB — THE NEW PC CONNECTION

The Universal Serial Bus (USB) is a new standard for connecting PCs to peripheral devices such as printers, monitors and modems. USB offers several advantages over conventional serial and parallel connections, including higher bandwidth (up to 12 Mbits/s) and the ability to provide power to the peripheral device.

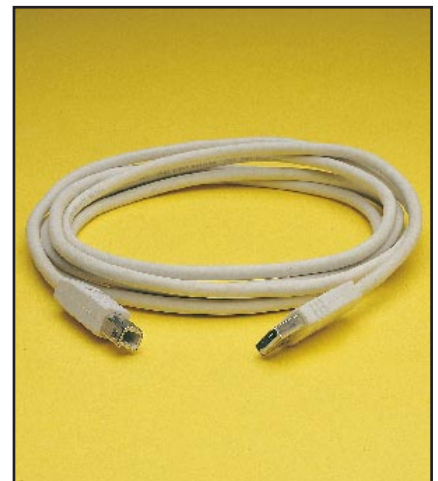
USB is ideal for data acquisition applications. Since USB

OMB-DAQ-56 Block Diagram



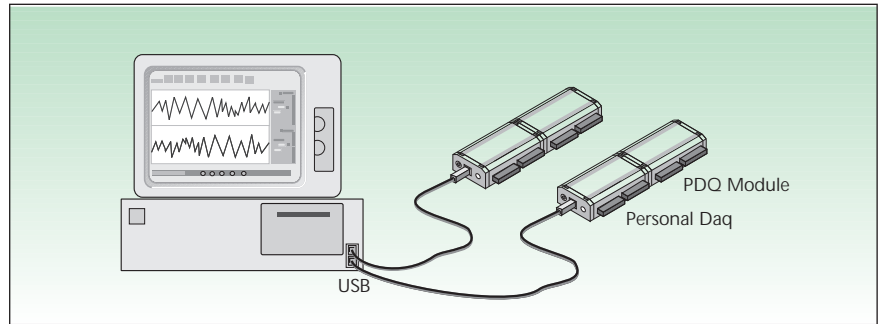
connections supply power, only one cable is required to link the data acquisition device to the PC, which most likely has at least one USB port. In addition, the USB's high-speed data transfer (from the data acquisition device to the PC) allows for a real-time display of acquired data, while eliminating the need for expensive memory in the acquisition device.

With the backing of Intel, Microsoft, and hundreds of other computer-related companies, USB is quickly becoming a new universal standard.



OMB-CA-179 Series Cable

Direct Connection to Computer USB Port(s)



Two OMB-DAQs (with optional PDQ modules) are connected by cable to each of the computer's USB ports, requiring no external power source

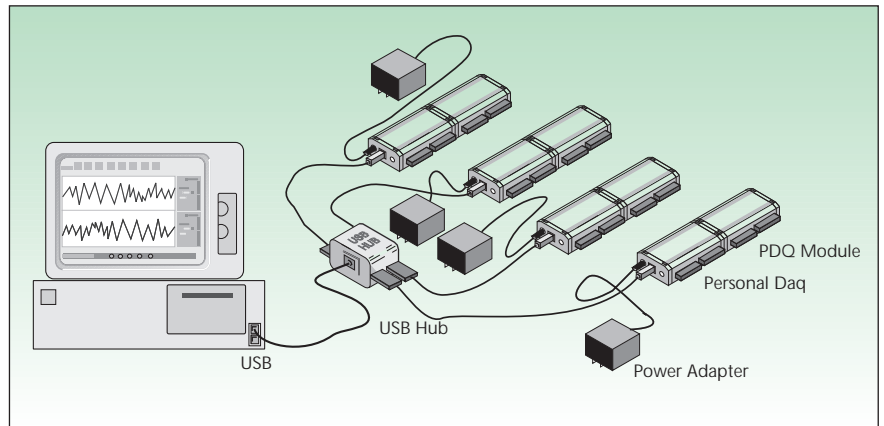
PERSONAL DAQ EXPANSION

The OMB-DAQ-55 and OMB-DAQ-56 can be easily expanded with one of two available snap-on expansion modules, bringing the total capacity up to 60 analog or thermocouple channels, 32 digital I/O lines, and 4 frequency input channels. Furthermore, USB hubs can be used to create multi-unit systems containing up to 100 OMB-DAQ-55/56 modules attached to a single PC. Using this strategy, a multi-unit OMB-DAQ-55/56 system can provide up to 8,000 analog and digital I/O lines. See chart below for available channel capacity.

EXAMPLE SYSTEMS

As a USB product, the OMB-DAQ-55/56 data acquisition system can be located up to 5 meters (16.4 feet) from the PC, allowing it to reside close to the point of measurement for improved accuracy and reduced noise. If USB hubs are used as repeaters between USB cable segments, the OMB-DAQ-55/56 can be located up to 30 meters (98.4 feet) from the PC.

Connection to USB Powered Hub



Four OMB-DAQs (with optional PDQ modules) are connected to ports of a USB powered hub; requiring an external power source



An OMB-DAQ and a PDQ module simply plug together for additional channel capacity

SPECIFICATIONS

General

Isolation: 500 V from PC

Power Requirements:

Powered from USB, or from external +6 to +16 VDC when used with a bus-powered hub

Environmental: 0-70°C, 0-95% RH (non-condensing)

Dimensions:

92 W x 182 L x 45 mm H
(3.6 x 7.1 x 1.6")

Analog Specifications

Each channel is configurable for single-ended or differential, Volts, or thermocouple inputs

OMB-DAQ-55:

10 single-ended, 5 differential; Volts or TC channels

OMB-DAQ-56:

20 single-ended, 10 differential; Volts or TC channels

OMB-DAQ and Expansion System Channel Capacities

Product or System	Volts/TC Inputs	Digital I/O	Freq/Pulse Inputs
OMB- DAQ-55	5 DE, 10 SE	8	2
OMB- DAQ-56	10 DE, 20 SE	16	4
OMB-PDQ1 Expansion Module	10 DE, 20 SE	16	-
OMB-PDQ2 Expansion Module	20 DE, 40 SE	-	-
OMB- DAQ-55 + OMB-PDQ1	15 DE, 30 SE	24	2
OMB- DAQ-55 + OMB-PDQ2	25 DE, 50 SE	8	2
OMB- DAQ-56 + OMB-PDQ1	20 DE, 40 SE	32	4
OMB- DAQ-56 + OMB-PDQ2	30 DE, 60 SE	16	4



OMB-DAQ with terminal block

Input Voltage Range:

Software programmable on a per-channel basis

Differential	Single-ended
-20 V to +20 V	-10 V to +20 V
-10 V to +10 V	-10 V to +10 V
-5 V to +5 V	-5 V to +5 V
-4 V to +4 V	-4 V to +4 V
-2.5 V to +2.5 V	-2.5 V to +2.5 V
-2 V to +2 V	-2 V to +2 V
-1.25 V to +1.25 V	-1.25 V to +1.25 V
-1 V to +1V	-1 V to +1 V
-625 mV to +625 mV	-625 mV to +625 mV
-500 mV to +500 mV	-500 mV to +500 mV
-312 mV to +312 mV	-312 mV to +312 mV
-250 mV to +250 mV	-250 mV to +250 mV
-156 mV to +156 mV	-156 mV to +156 mV
-125 mV to +125 mV	-125 mV to +125 mV
-62 mV to +62 mV	-62 mV to +62 mV
-31 mV to +31 mV	-31 mV to +31 mV

Thermocouple Type: J, K, T, E, R, S, B, N14G, & N28G

Thermocouple Accuracy: ±0.5°C

Over-Voltage Protection: ±45 V relative to analog Lo

AC Common Mode Rejection: >120 dB @ 50/60 Hz

Channel-to-Channel Crosstalk: <-110 dB (DC to 100 Hz); up to 10 K ohm source resistance

Accuracy:

0.01% of reading; ± 0.002% of range (exclusive of noise)

Input Impedance:

>5 M Ohm (SE), >10 M Ohm (DE)

Bias Current: <1 nA (0-35°C)

Measurement Speed:

Each channel can have a different measurement speed and resolution. Channels can be programmed to be scanned in any order. (Contact engineering for more information).

Resolution	Speed
22 Bits	9 Samples/s
19 Bits	25 Samples/s
17 Bits	50 Samples/s
15 Bits	83 Samples/s

Frequency Measurements

OMB-DAQ-55: 2 frequency/pulse input channels

OMB-DAQ-56: 4 frequency/pulse input channels

Operating Modes:

Pulse count (totalize), duty-cycle, and frequency

Frequency Response:

DC to 1 MHz

Input Range:

±15 V absolute minimum, <1.3 V (low), >3.8 V (high)

Pull-Up Resistor:

27 K Ohm to +5 V for switch or relay sensing

Debouncing:

None, 0.8, 3.2, or 13 mSec. (software selectable)

Totalize:

Up to 2³² counts/scan

Frequency & Duty-Cycle Resolution:

7 digits. Actual resolution depends on scan rate. At 10 scans/s, resolution is 5 digits (10 ppm); at 1 scan/s, 6 digits (1 ppm)

Digital I/O

Each I/O line is individually programmable as input or output.

OMB-DAQ-55:

8 digital I/O lines

OMB-DAQ-56:

16 digital I/O lines

Each I/O line includes an open-collector driver with a 27 K Ohm pull-up resistor to +5 V for output, and a Schmitt-trigger input buffer

Input

Voltage Range: ±15 V

Thresholds:

<1.3 V (low), >3.8 V (high)

Output

Maximum Switch Voltage:

0 to +15 Vdc (20 V for <1 minute)

Maximum Switch Current:

150 mA/output continuous, 500 mA/output peak (<100 μs), 150 mA total continuous (per bank of 8 outputs)

Output Resistance:

10 Ohms max

Updates:

Outputs may be changed arbitrarily under program control.

To Order (Specify Model Number)		
Model No.	Price	Description
OMB-DAQ-55	\$695	10 Channel, 22-bit data acquisition system
OMB-DAQ 56	995	20 Channel, 22-bit data acquisition system
OMB-PDQ1	495	20 Channel, expansion module, digital I/O & Frequency/Pulse Inputs
OMB-PDQ2	495	40 Channel expansion module
OMB-CA-179-1	10	USB Cable, 1 meter
OMB-CA-179-3	15	USB Cable, 3 meters
OMB-CA-179-5	20	USB Cable, 5 meters
OMB-TR-2	35	External power supply 120 Vac to +9 V
OMBTR-2E	50	External power supply 230 Vac to +9 V
OMB-CN-153-12	14	Terminal block

Each unit is supplied with Personal DaqVIEW Software drivers for Visual Basic, C++ and Delphi for Windows 95 and a complete operator's manual

Ordering Example: OMB-DAQ-55 data acquisition system with OMB-PDQ1 expansion module and OMB-CA-179-1 USB cable, \$695 + 495 + 10 = \$1200