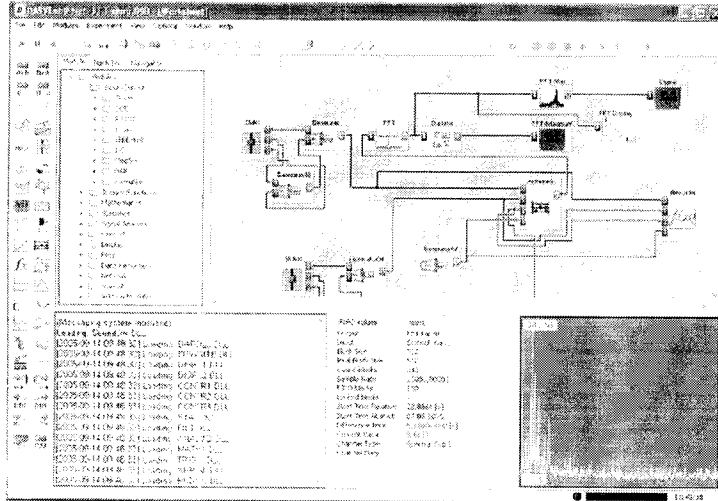


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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

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About this Document

This document serves as a supplement to data acquisition device user's manuals and to *DASYLab* documentation which is included on the *DASYLab* installation CD. It is intended to help you with your initial setup of our data acquisition hardware in *DASYLab*.

The document steps through software installation configuration issues and provides screen shots so you can more easily setup and use your equipment.

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Part 1 - Configuring *DASYLab* for

OMB-DAQBOARD, OMB-DAQBOOK, OMB-WAVEBOOK,
OMB-DAQ-3000 Series Devices – *Enhanced Driver* 1-1

Part 2 - Configuring *DASYLab* for

OMB-DAQ-54, /-55, and /-56 2-1



Reference Note:

The *DASYLab* installation CD includes a “**Getting Started with *DASYLab***” document in PDF format. We highly recommend that you review that document, especially if you are new to *DASYLab* or have been away from the application for an extended time.

Part 1 - Configuring DASYLab for

OMB-DAQBOARD, OMB-DAQBOOK, OMB-WAVEBOOK, and OMB-DAQ-3000 Series Devices

Enhanced DASYLab Driver

Our Enhanced driver uses the standard DASYLab A/D driver interface, which traditionally has supported a single hardware device, with optional channel expansion cards. Additionally, the enhanced driver supports acquiring data from multiple clock-synchronized devices through the standard DASYLab Analog Input module. The enhanced driver accomplishes this by creating a single large virtual device inside DASYLab. Since from the DASYLab software perspective all input channels are located on a single virtual device, data from all devices must be returned to DASYLab within a single data stream. The Enhanced DASYLab driver and its supporting driver layer handles the merging of data from multiple devices into one data stream for DASYLab.

This single virtual device architecture forces from the DASYLab software perspective all input channels to acquire data at the same sample rate. At the hardware level, devices may be designated as slave devices and acquire data at even clock divisions of the master clock rate. The drivers handle padding scans of slow devices in the data buffer to create a uniform input data stream.

Key Features of the Enhanced DASYLab Driver

- + Driver supports using standard DASYLab AI module, DASYLab version's 6, 7, 8, 9, 10. The Analog Input Multi-Speed module introduced in DASYLab version 7 is not supported.
- + Supports multiple hardware devices synchronized to a common input scan clock. The driver layer [DaqCOM] provides master / slave mode to support the clock-synchronization.
- + Single data stream, configured through the standard DASYLab Experiment Setup dialog. All hardware devices and expansion modules will acquire data in a single scan list and input buffer.
- + All devices MUST share same sample rate and block size from DASYLab's view. Slow devices may run at even divisions of the master clock.
- + DASYLab hardware configuration may be imported/exported from DaqCOM and DaqExplorer through XML files.

Supported Hardware

The Enhanced Driver for DASYLab supports OMB-DAQBOARD, OMB-DAQBOOK, OMB-WAVEBOOK, OMB-DAQ-3000 Series Devices, OMB-WBKs, and OMB-DBKs. The Help file includes a list of supported devices which is updated as new products are released.

Note: The following hardware devices are not supported by the Enhanced driver:

- OMB-DAQBOOK-100, 112, 120, 200, 260, 216
- OMB-DAQBOARD- 100A, 112A, 200A, 216A
- OMB-TEMPBOOK-66
- OMB-DAQTEMP-7, 7A, 14, 14A

Driver Specifications

Hardware Devices	32 Maximum (driver limitation)
Expansion Modules	Limited only by hardware design (typically 8 per device)
Analog Input Channels	512 Maximum (Sum of all devices & expansions)
Analog Output Channels	32 Maximum (Sum of all devices & expansions)
Digital I/O Ports	32 Maximum (Sum of all devices & expansions)
Counter Inputs	32 Maximum (Sum of all devices & expansions)
Frequency Output Channels	32 Maximum (Sum of all devices & expansions)
Maximum Aggregate Scan Rate	Limited by CPU, PC Memory, Network Bandwidth, etc.

Upgrading from Previous Versions

If you have existing *DASYLab* worksheets using the Standard single device driver, it may be possible to switch to the new Enhanced driver. However, the features and functionality of the two drivers (Enhanced and Standard) in some configurations may not match exactly.

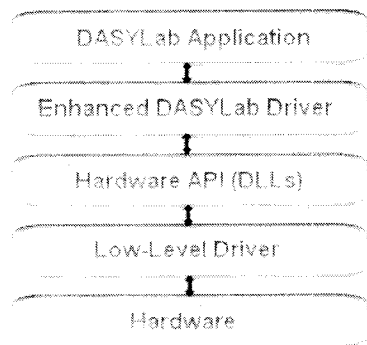
Unless you need to add additional or new devices not supported in the Standard Driver, upgrading is not recommended.

At this time, there is no automated method to read the hardware configuration from the standard support into the new XML based configuration of the Enhanced Driver. To open a *DASYLab* worksheet [which was designed for the Standard Driver] perform the following steps:

1. Make a backup of your worksheet .DSB file.
2. Open *DASYLab* worksheet with the Standard Driver active and closely examine the hardware configuration tree. Make notes or screen shots as necessary.
3. Set the Enhanced Driver active in *DASYLab*.
4. Restart *DASYLab* as needed. When *DASYLab* reloads check the Help | About dialog and verify the Enhanced Driver is loaded.
5. Open the hardware configuration dialog. Add devices to "New *DASYLab* Worksheet" tree view to match the configuration used by the Standard Driver. Click OK to close hardware configuration dialog when done.
6. Open the worksheet.
7. If you've successfully duplicated the configuration, no errors should occur.
8. Save the worksheet with the Enhanced Driver active. The Enhanced Driver will create an XML file with the same base name as the worksheet to store your configuration.

Software Installation

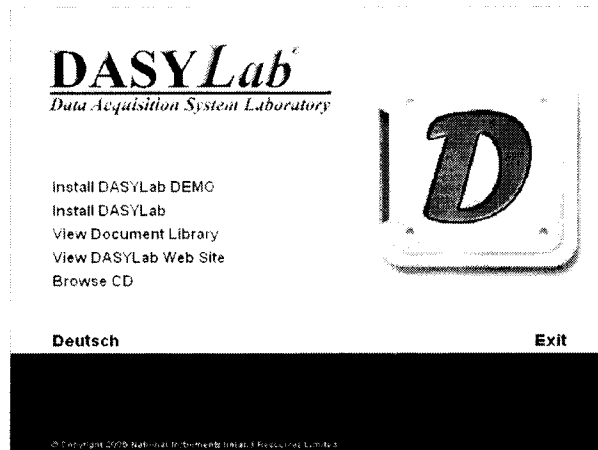
To use the Enhanced Driver for DASyLab, several layers of application and driver software are required as outlined in the figure below.



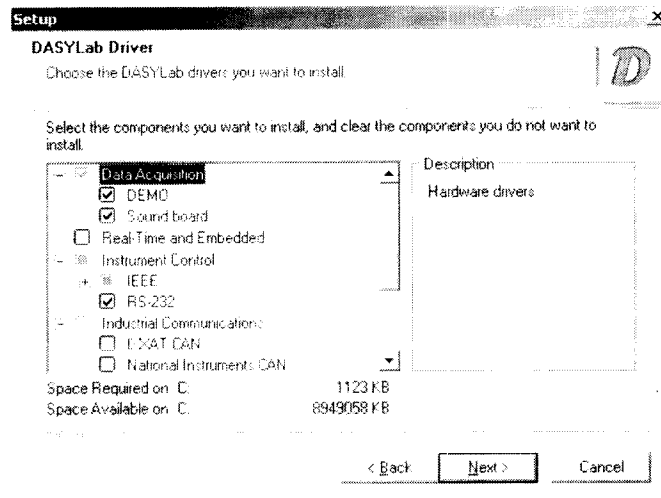
The Enhanced DASyLab driver installation program installs all required software components onto the target computer, except for the DASyLab application itself. However, there are still several steps to complete before DASyLab and the hardware is ready to use on the computer, as outlined below.

Install DASyLab Application

1. Launch DASyLab installation from the DASyLab CD. Note that the CD should auto-start. If the CD does not auto-start, run **start.exe** from the CD.



2. From the DASyLab splash screen, select “Install DASyLab.”
3. When prompted for your name, company and serial number, enter the requested data. Obtain the serial number from the CD jacket. Keep the number in a safe place for future installations and upgrades.
4. When prompted for the installation directory and program folder, use the default selection, or choose another. We recommend that the default directory and location be used.
5. When prompted for Setup Type, choose from the available options. We recommend that you select *Typical*.



6. Install the DEMO driver, and/or any of the other listed drivers as applicable.

After DASYLab has been installed you will install Drivers from your Omega Data Acquisition CD, as described in the upcoming section.

7. Upon completing the DASYLab installation, exit from and remove the DASYLab CD.

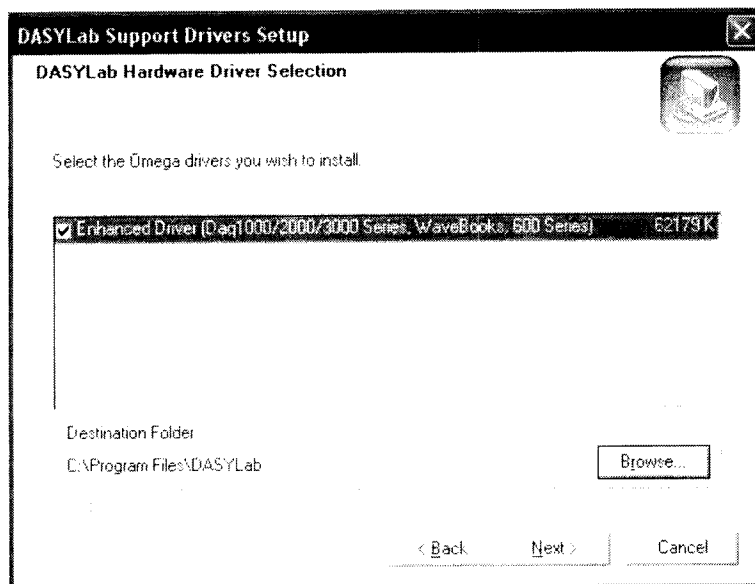
Note: After software installation is complete you may be required to restart Windows.

After restart, continue with the following section, *Installing DASYLab Drivers for Omega Devices*.

Installing DASYLab Drivers for Omega Devices

Note: The installation will automatically perform version verification to ensure that only newer support is installed.

1. Place the Omega Data Acquisition CD into your computer's CD drive. The CD should *auto-start*; if not, run the CD **start.exe** from the Windows Desktop.
2. After the intro screen appears, click <Enter Setup>.
3. After accepting the licensing agreement, select the hardware models that you will be using.
4. Select **DASYLab Support**.
5. Click the **Start Install** button. Follow the installation wizard configuration screens. Continue to click <Next> [accepting the default values] until the **DASYLab Hardware Driver Selection** dialog appears (following figure).



6. Verify that: **Enhanced Driver [Daq1000/2000/3000 Series, WaveBooks, 600 Series]** has a checkmark. It should be checked by default. See preceding figure.
7. Follow the installation wizard configuration screens until setup is complete.



Tip: Use *DaqView*, *WaveView*, or *DaqCOM Explorer* to verify connections and configurations. These applications can be very beneficial, especially in applications making use of OMB-DBK, OMB-WBK, or PDQ expansion or signal conditioning devices.

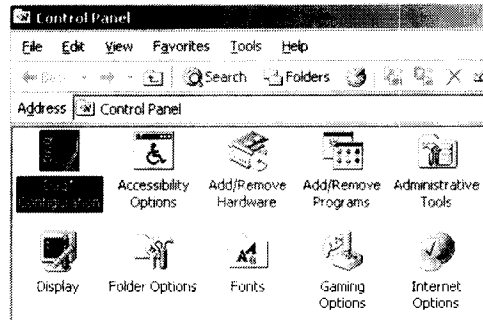
Optional - Install WaveView, WaveCal, or DaqCal

Some OMB-WBK and OMB-DBK signal conditioning modules require calibration using an external calibration program. Check the hardware manual for calibration options available, and install utilities as necessary.

Using the Daq Configuration Control Panel Applet (for non-USB Devices)

Main unit data acquisition devices such as the OMB-WAVEBOOK, OMB-DAQBOOK, and OMB-DAQBOARD **non-USB** devices must be installed into the operating system by using the **Daq* Configuration** control panel applet.

1. The Control Panel is accessed through the Windows Start Menu.



Windows Vista Users: Beginning with Omega Data Acquisition CD version 8.1, a **daqxcpl.exe** file is included and must be used if you need Windows Vista compatibility. After installing software from the Omega CD you can access the **daqxcpl.exe** file by navigating from the Windows Desktop as follows:

Start menu ⇒ Programs ⇒ DASYLab Support Drivers ⇒ DaqX Configuration Utility

2. Add and configure your data acquisition device in the control Daq Configuration Control Panel Applet. Refer to the data acquisition user's manual for instructions on using the applet and configuring device names.



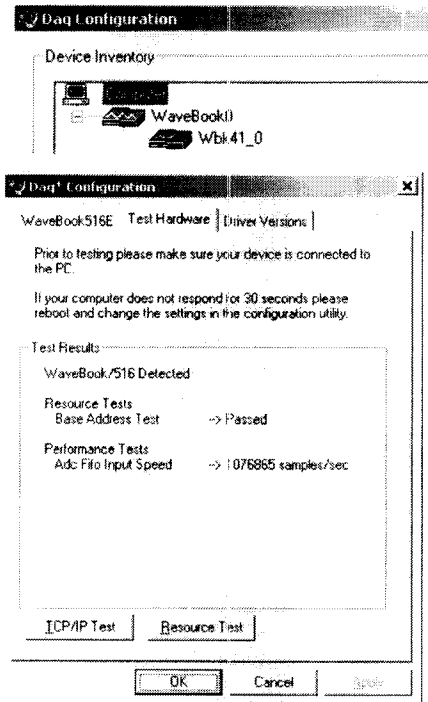
The "Device Name" assigned to the data acquisition hardware in the Daq Configuration utility will be imported and used within DASYLab for hardware identification.

3. Verify your hardware installation using the Resource Test in the Daq Configuration Control Panel Applet.



After completing the Daq Configuration test use **WaveView**, **DaqView**, or **DaqCOM Explorer** to verify connections and configurations.

Using WaveView in this manner can be very beneficial, especially in applications making use of OMB-WBK signal conditioning expansion modules.



Using the Control Panel Device Manager (for USB Plug-and-Play Devices)

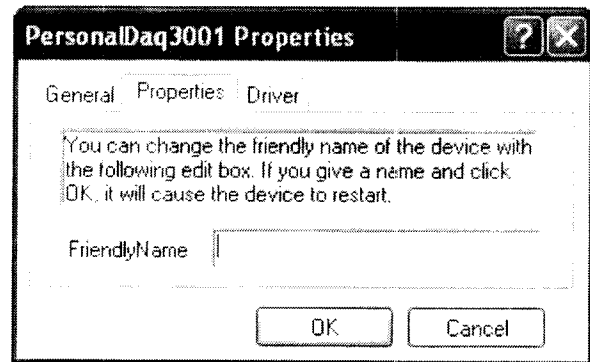
The PC will automatically detect plug-and-play data acquisition devices such as OMB-DAQ-3000 Series devices. Note that an **OMB-DAQ-3000** device will appear in the software as a **PersonalDaq3000** device (see following figures). If you need to find the name of your device, for example, if you are writing a custom program for multiple devices, navigate from the Windows Desktop to the Device Manager. The navigation path is:

Start⇒Settings⇒Control Panel⇒System⇒Hardware(Tab) ⇒Device Manager⇒DaqX PnP Devices

You will see the device listed under DaqX PnP Devices (see first figure, below). You can change the name of the device by doing a right-click on the device name to open its properties dialog box, then clicking on the Properties tab (see second figure). You can then change the “FriendlyName” of the device.



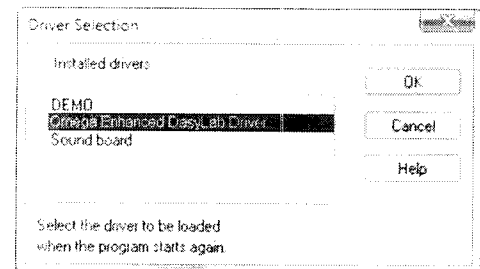
Locating DaqXPnP Devices



Properties Dialog Box

Select the Omega Driver in DASyLab

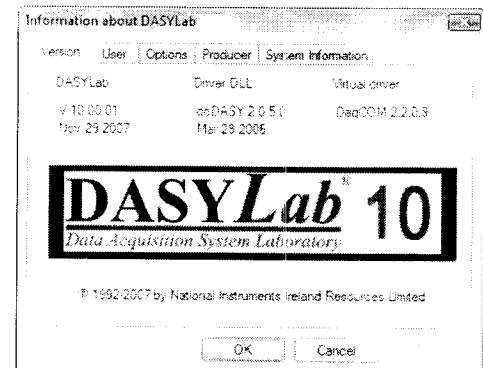
1. Start *DASyLab* and go to Measurement / Driver Selection (see figure at right).
2. When the driver selection menu is presented, select **Omega Enhanced DASyLab Driver** from the list. You may be prompted to restart *DASyLab* for the changes to take effect. If so, exit and restart *DASyLab* before continuing.



3. Click Help⇒About *DASyLab*. The “Information about *DASyLab*” screen will appear.

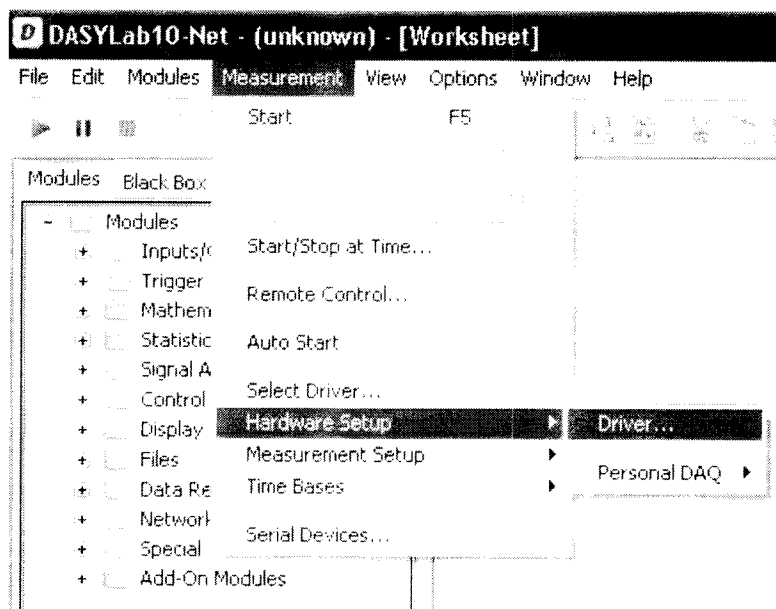
The screen’s “Version” tab states the versions of: *DASyLab*, the active hardware DLL Driver, and the low-level hardware Virtual Driver.

4. Verify that the DLL name is **dcDASY**.
5. Verify that the Virtual Driver name is **DaqCOM**. The Enhanced *DASyLab* driver uses DaqCOM to communicate with, control, and acquire data from the hardware.
6. Use the “Additional Options” tab to confirm that the options you purchased have been properly installed.



7. If you did not receive the version listed on your purchase order, please contact us. See page *ii* for contact information
8. Click <OK> to close the “Information about DASYLab” window.

This completes the software installation process. At this point you can access DASYLab Help via the Help pull-down menu; or access device-specific help as discussed below.



To access Omega Device-specific help:

1. Open the **Measurement** pull-down menu in DASYLab (see preceding figure).

Note: In earlier versions of DASYLab the pull-down menu is labeled *Experiment* and the sub-menu item for Measurement Setup is labeled *Experiment Setup*.

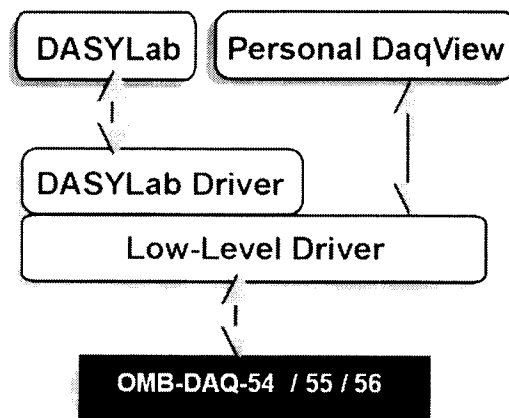
2. Select **Hardware Setup**.
3. Select **Driver**.

Note: This chapter does not apply to OMB-DAQ-3000 Series Devices.

Install DASYPab 2-1

Install Low-Level Hardware Driver 2-3

Configure the OMB-DAQ-54 / -55 or / -56 2-4



Software Support Structure



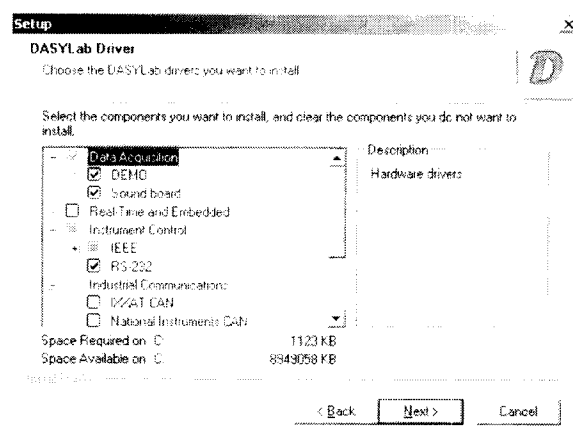
Simultaneous use of an OMB-DAQ-54, /-55, or /-56 and an OMB-WAVEBOOK, OMB-DAQBOOK, or OMB-DAQBOARD is not recommended. During the OMB-DAQ's calibration cycle, other data acquisition products will cease operation, causing gaps in the collected data and potential buffer overruns.

Note: DASYPab has a "replace" feature which allows users to substitute worksheet icons. The replace feature does not support OMB-DAQ-50 Series (Personal Daq 50 Series) hardware icons.

Install DASyLab

1. Launch **DASyLab** installation from the **DASyLab CD**. Note that the CD should *auto-start*. If the CD does not auto-start, run the CD **start.exe** from the Windows Desktop.
2. Select “Install DASyLab.”
3. When prompted for your *name, company* and *serial number*, enter the requested data. Obtain the serial number from the CD jacket. Keep the number in a safe place for future installations and upgrades.
4. When prompted for the installation directory and program folder, use the default selection, or choose another. We recommend that the default directory and location be used.
5. When prompted for **Setup Type**, choose from the available options. We recommend that you select **Typical**.

Note: You can select other drivers [for any other supported hardware you have] at this time.



Make sure a check mark appears next to your selection(s). Choices that are merely highlighted and not checked will not be installed.

Note: If you allowed the IEEE488 (GPIB) drivers to be installed, you will be able to select the vendor.

Note: After **software installation** is complete, you may be required to restart Windows.

After restart, continue with the following section, **Hardware Driver installation**.

6. Install the DEMO driver, and/or any of the other listed drivers as applicable. Note that IOtech Drivers will be installed from your IOtech installation CD, after DASyLab has been installed, as described in the upcoming section.
7. Upon completing the DASyLab installation, exit from and remove the DASyLab CD.

Note: After software installation is complete you may be required to restart Windows.

After restart, continue with the following section, **Install Low-Level Hardware Driver**.

Install Low-Level Hardware Driver

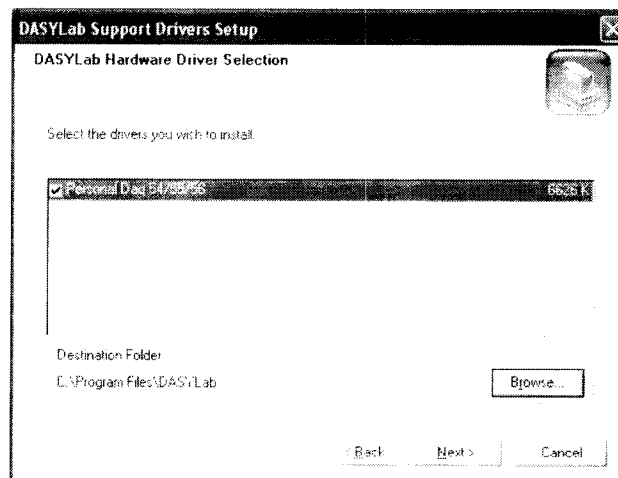
If the low-level hardware drivers for your device are not installed, or if you have received a new Omega Data Acquisition CD follow these steps.



Both the low-level drivers, installed from the Data Acquisition CD, and the DASYLab drivers, installed from the DASYLab CD, are required for DASYLab operation.

Note: The installation will automatically perform version verification to ensure that only newer support is installed.

1. Place the data acquisition CD into the CD-ROM drive. Wait for the PC to auto-run the CD. This may take a few moments, depending on your PC. If the CD does not auto-run, use the Desktop's Start/Run/Browse feature to select and run **Setup.exe**.
2. After the intro screen appears, click <**Enter Setup**>.
3. After accepting the licensing agreement, select **Personal DaqView**.
4. Select **DASYLab Support**.
5. Click the <**Install**> button; and follow the screen prompts until the **DASYLab Hardware Driver Selection** dialog appears (following figure).



6. Select **Personal Daq54/-55/56**, as indicated in the preceding figure. This selects **OMB-DAQ-54/-55/56**.
7. Follow the installation wizard configuration screens until the setup is complete.

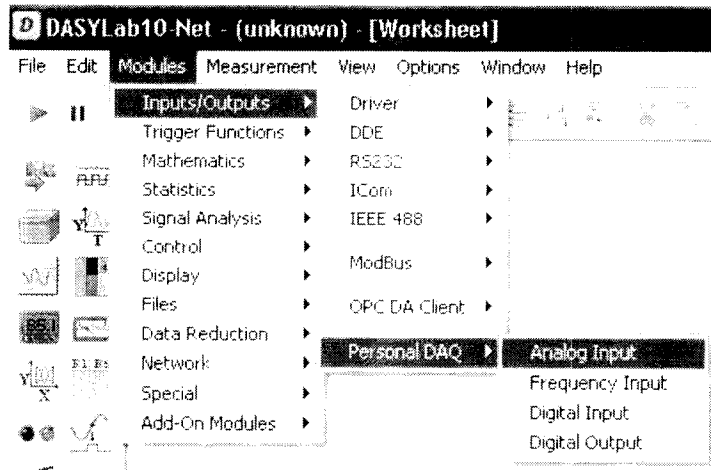


Use Personal DaqView to verify connections and configurations. This use of Personal DaqView can be very beneficial, especially in applications making use of expansion modules.

Configure the OMB-DAQ-54 / -55 or / -56

The following can be selected from within **DASYLab's Personal Daq pull-down menu**: Acquisition Settings, Hardware Setup, Analog Inputs, Frequency/Pulse Inputs, Digital Inputs, and Digital Outputs (see following figure).

Note: OMB-DAQ-54 accepts Analog Inputs only. It does not support Frequency/Pulse Inputs, Digital Inputs, or Digital Outputs.

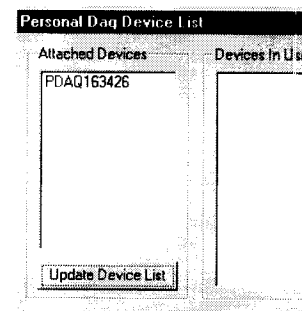
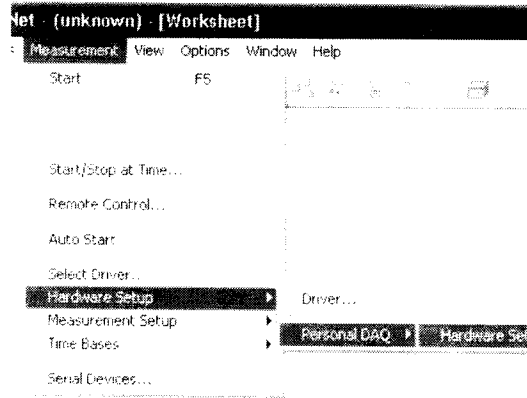


DASYLab's Personal Daq Pull-down Menu

Note: Selecting Analog Inputs, Frequency/Pulse Inputs, Digital Inputs, or Digital Outputs causes the associated icon to appear on your worksheet. *Double-clicking* on a module icon [after it is added to a worksheet] reveals channel configuration options that are available in Personal DaqView, such as channel integration time and signal range.



You can verify that the **DASYLab** software is communicating with the OMB-DAQ by locating the device serial number in *Hardware Setup* (in the Personal Daq menu). See following figures.

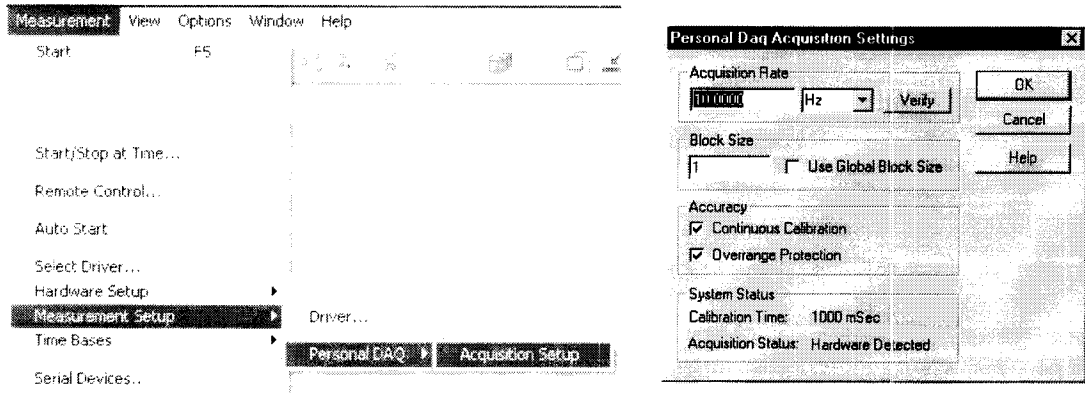


Checking the Personal Daq Device Number



DASYLab does not support OMB-DAQ's digital output capabilities unless you have firmware revision 1.9 (or greater) and have installed Personal DaqView 1.4 (or greater). Confirm firmware revision by using Personal DaqView active devices, right click on PDAQ device. Contact the factory if firmware upgrade is needed.

DASYLab's Personal Daq menu includes an *Acquisition Settings* dialog box for setting the Acquisition Rate, Block Size, and Accuracy (Continuous Calibration and/or Overrange Protection). The dialog box also includes a system Status panel.



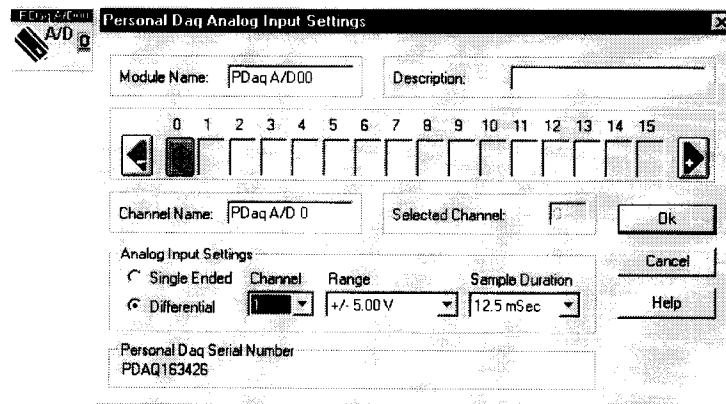
Accessing Personal Daq Acquisition Settings

Personal Daq Acquisition Settings



When using OMB-DAQ-54, /-55, or /-56 you should use the Personal Daq Acquisition Settings window to set the Acquisition Rate and Block Size (see the preceding figure). You should not use the Experiment Setup window to do this, as these two parameter values are not generally coordinated between windows. An exception is that Block Sizes will be coordinated if the checkbox for “Use Global Block Size” is checked.

A screen similar to that in the following figure appears after selecting Analog Inputs and *double-clicking* on the module icon [after it is added to a worksheet]. Notice that the device serial number appears on this screen.



Personal Daq Analog Input Settings

In the screen (see preceding figure) you must assign physical channels on the OMB-DAQ [and on PDQ1 and PDQ2, if present] to virtual channels in the A/D module. This is accomplished by highlighting each of the virtual channels in the 0 to 15 channel bar and then defining channel parameters as follows:

- Select Single-Ended or Differential
- Select the Channel; this is the *physical* channel number.
Guidelines and examples follow the bulleted list.
- Select the Range
- Select the Sample Duration.

Use the following guidelines when selecting a physical channel number.

- Make sure that the physical channel that you are assigning exists in your hardware configuration. For instance, it would be a mistake to assign channel 6 for an OMB-DAQ-55, as that product has no channel 6. If a nonexistent channel is assigned DASyLab will display an error message when you try running the worksheet.
- During the assignment process, both differential and single-ended channels can be used.
- You may skip physical channels during the assignment process. However, you must assign physical channels to virtual ones in monotonic ascending order. If you fail to do this the driver will rearrange them, resulting in virtual channels with different information than that which is expected. Examples of good and bad assignments follow.

Examples of Good and Bad Channel Assignments

Good						
Virtual Channels	0	1	2	3	4	5
Physical Channels	1	2L	3	4	11	12L

Bad						
Virtual Channels	0	1	2	3	4	5
Physical Channels	1	2L	5H	13H	4L	5L
<i>In this case the driver will rearrange the physical channels as follows:</i>						
Virtual Channels	0	1	2	3	4	5
Physical Channels	1	2L	4L	5L	5H	13H

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OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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