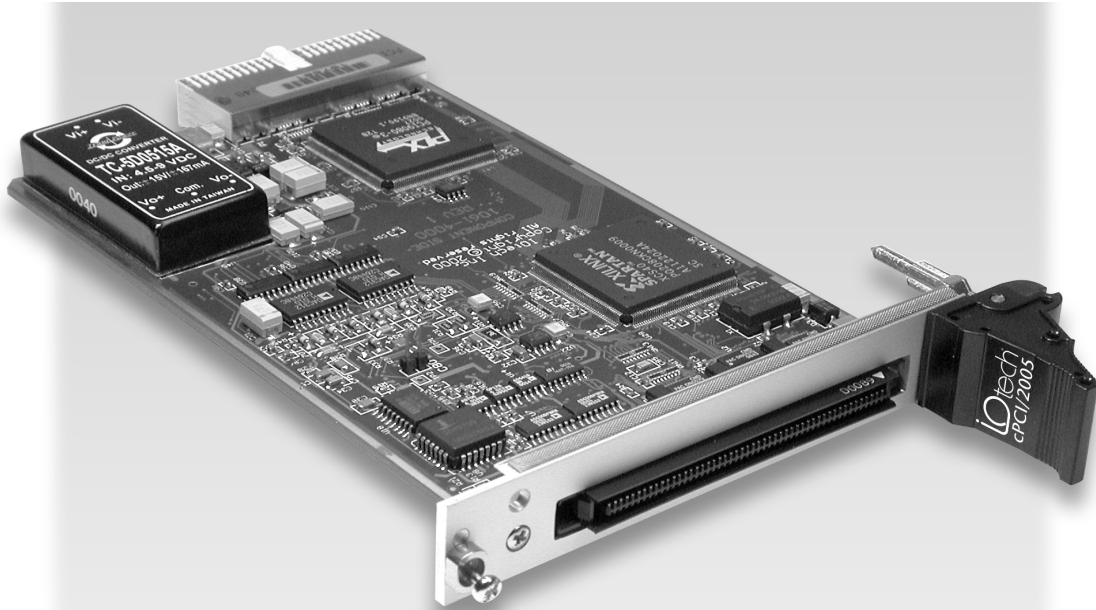


# DaqBoard/2000c Series

## Compact-PCI Data Acquisition Boards

## Installation Guide



*the smart approach to instrumentation™*

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## Warranty Information

Your IOtech warranty is as stated on the *product warranty card*. You may contact IOtech by phone, fax machine, or e-mail in regard to warranty-related issues.

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## FCC Statement



IOtech devices emit radio frequency energy in levels compliant with Federal Communications Commission rules (Part 15) for Class A devices. If necessary, refer to the FCC booklet *How To Identify and Resolve Radio-TV Interference Problems* (stock # 004-000-00345-4) which is available from the U.S. Government Printing Office, Washington, D.C. 20402.

## CE Notice



Many IOtech products carry the CE marker indicating they comply with the safety and emissions standards of the European Community. As applicable, we ship these products with a Declaration of Conformity stating which specifications and operating conditions apply.

## Warnings, Cautions, Notes, and Tips



Refer all service to qualified personnel. This caution symbol warns of possible personal injury or equipment damage under noted conditions. Follow all safety standards of professional practice and the recommendations in this manual. Using this equipment in ways other than described in this manual can present serious safety hazards or cause equipment damage.



This warning symbol is used in this manual or on the equipment to warn of possible injury or death from electrical shock under noted conditions.



This ESD caution symbol urges proper handling of equipment or components sensitive to damage from electrostatic discharge. Proper handling guidelines include the use of grounded anti-static mats and wrist straps, ESD-protective bags and cartons, and related procedures.



This symbol indicates the message is important, but is not of a Warning or Caution category. These notes can be of great benefit to the user, and should be read.



In this manual, the book symbol always precedes the words "Reference Note." This type of note identifies the location of additional information that may prove helpful. References may be made to other chapters or other documentation.



Tips provide advice that may save time during a procedure, or help to clarify an issue. Tips may include additional reference.

## Specifications and Calibration

Specifications are subject to change without notice. Significant changes will be addressed in an addendum or revision to the manual. As applicable, IOtech calibrates its hardware to published specifications. Periodic hardware calibration is not covered under the warranty and must be performed by qualified personnel as specified in this manual. Improper calibration procedures may void the warranty.

## Quality Notice



IOtech has maintained ISO 9001 certification since 1996. Prior to shipment, we thoroughly test our products and review our documentation to assure the highest quality in all aspects. In a spirit of continuous improvement, IOtech welcomes your suggestions.

During software installation, Adobe® PDF versions of user manuals are automatically installed onto your hard drive as a part of product support. The default location is in the **Programs** directory, which can be accessed from the Windows Desktop. A copy of the Adobe Acrobat Reader® is included on your CD. The Reader provides a means of reading and printing the PDF documents. Note that hardcopy versions of manuals can be ordered from the factory.

Your order was carefully inspected prior to shipment. When you receive your system, carefully unpack all items from the shipping carton and check for physical signs of damage that may have occurred during shipment. Promptly report any damage to the shipping agent and your sales representative. Retain all shipping materials in case the unit needs returned to the factory.

## CAUTION



Using this equipment in ways other than described in this manual can cause personal injury or equipment damage. Before setting up and using your equipment, you should read *all* documentation that covers your system. Pay special attention to Warnings and Cautions.

**Note:** During software installation, Adobe® PDF versions of user manuals will automatically install onto your hard drive as a part of product support. The default location is in the **Programs** group, which can be accessed from the *Windows Desktop*. Initial navigation is as follows:

Start [Desktop “Start” pull-down menu]

⇒ **Programs**

⇒ **IOtech DaqX Software**

You can also access the PDF documents directly from the data acquisition CD by using the <**View PDFs**> button located on the opening screen.

Refer to the PDF documentation for details regarding both hardware and software.

A copy of the Adobe Acrobat Reader® is included on your CD. The Reader provides a means of reading and printing the PDF documents. Note that hardcopy versions of the manuals can be ordered from the factory.



**PDF**  
1033-0901

### DaqBoard 2000 Series and DaqBoard/2000c Series User's Manual.pdf

Contains the DaqBoard/2000 Series and cPCI DaqBoard/2000c Series hardware-related and software-related chapters, as well as links to the .pdf files listed below. This pdf file, plus the following constitute a complete set of documentation for the DaqBoard/2000 Series boards and the cPCI DaqBoard/2000c Series boards. Note that the Programmer's Manual (1008-0901) and the DBK Option Cards & Modules (457-0905) are completely separate documents.



**PDF**  
457-0909

### DaqView\_DaqViewXL.pdf

Discusses how to install and use these “out-of-the-box” data acquisition programs.



**PDF**  
1086-0926  
1086-0922

### PostAcquisition Analysis.pdf

This pdf consists of two documents. The first discusses *eZ-PostView*, a post data acquisition analysis program. The application is included free as a part of DaqTemp product support. The second includes information regarding *eZ-FrequencyView* and *eZ-TimeView*. These two applications have more features than does *eZ-PostView* and are available for purchase. They can; however, be used freely during a 30-day trial period.



**PDF**  
457-0905

### **DBK Options.pdf**

The DBK Option Cards and Modules Manual discusses each of the DBK products available at the time of print.



**PDF**  
1008-0901

### **Programmers Manual.pdf**

The programmer's manual pertains to developing custom programs using Applications Program Interface (API) commands.

Programmers should check the **readme.file** on the install CD-ROM for the location of program examples included on the CD.

This guide tells you how to complete the following steps for a successful installation.

**Step 1 – Install Software** ..... page 2

**Step 2 – Install Boards into Available, 5 Volt, Compact-PCI Bus-Slots** ..... page 2

**Step 3 – Configure Boards** ..... page 4

**Step 4 – Test Hardware** ..... page 5



### Reference Note:

After you have completed the installation you should refer to the electronic documents that were automatically installed onto your hard drive as a part of product support. The default location is in the **Programs** directory, which can be accessed from the Windows Desktop.

You should keep your DaqBoard/2000c Series board's serial number and your DaqView/2000 authorization code (if applicable) with this document. Space is provided below for recording up to 4 board numbers and their compact-PCI bus-slot location. Board serial numbers are located on the 100-pin P4 connector.

	Board Type e.g., DaqBoard/2005c	Serial Number	Compact-PCI Bus-Slot Location
Board 1			
Board 2			
Board 3			
Board 4			

Compact PC support for DaqBoard/2000c Series boards varies. A system can support no more than four boards.

**\*Note:** The DaqBoard/2000c Series boards have their board identity indicated on the latch, as indicated in the photo on the front page of this guide. This identification is provided since the boards look very much alike and are visually identical once installed.

**DaqView/2000 Authorization Code** \_\_\_\_\_

Customers who ordered DaqView/2000 can find their authorization code on the *authorization code sheet* located inside the sleeve of the install CD. Customers who did not order DaqView/2000 can run a *30-day free trial version*, as discussed in the user's manual.

## CAUTION



**Take ESD precautions (packaging, proper handling, grounded wrist strap, etc.)**

**Use care to avoid touching board surfaces and onboard components. Only handle boards by their edges (or ORBs, if applicable). Ensure boards do not come into contact with foreign elements such as oils, water, and industrial particulate.**



### Reference Note:

During software installation, Adobe® PDF versions of user manuals are automatically installed onto your hard drive as a part of product support. The default location is in the **Programs** directory, which can be accessed from the Windows Desktop. A copy of the Adobe Acrobat Reader® is included on your CD. The Reader provides a means of reading and printing the PDF documents. Note that hardcopy versions of manuals can be ordered from the factory.

**Note:** In regard to functionality, the DaqBoard/2000c Series boards are identical to their DaqBoard/2000 Series counterparts.



### Reference Notes:

- Each DaqBoard/2000c Series Board plugs into a 5 volt, compact-PCI bus-slot located on the PC's backplane. Note that the 5 V compact-PCI bus-slot contains a blue key (see page 3). Consult your PC owner's manual as needed.
- Be sure to read about the DBK cards and modules applicable to your acquisition system. Specific DBK information can be found in on the world wide web at <http://www.daqboard.com>; and in your *DBK Option Cards and Modules User's Manual* (p/n 457-0905). After the install you can navigate to the DBK manual and other relevant electronic documents from your desktop as follows:

**Start ⇒ Programs ⇒ IOtech DaqX Software ⇒ DaqBoard 2000 Series Users**



**Reference Note:** Adobe PDF versions of user manuals will automatically install onto your hard drive as a part of product support. The default location is in the **Programs** group, which can be accessed from the *Windows Desktop*. Refer to the PDF documentation for details regarding both hardware and software. Note that hardcopy versions of the manuals can be ordered from the factory.

### Minimum System Requirements

PC system with Pentium® Processor

Windows Operating System

RAM, as follows:

32 Mbytes of RAM for Windows 95/98/NT

64 Mbytes of RAM for Windows Me

64 Mbytes of RAM for Windows 2000

64 Mbytes of RAM for Windows XP

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## Step 1 – Install Software



### **IMPORTANT: Software must be installed before installing hardware.**

1. Remove previous version Daq drivers, if present. You can do this through Microsoft's **Add/Remove Programs** feature.
2. Place the Data Acquisition CD into the CD-ROM drive. *Wait for 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.
3. After the intro-screen appears, follow the screen prompts.

Upon completing the software installation, continue with step 2, *Install Boards in available 5 Volt, Compact-PCI Bus-slots.*

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## Step 2 – Install Boards in available 5 Volt, Compact-PCI Bus-slots



### **IMPORTANT: Software must be installed before installing hardware.**



### **IMPORTANT: Bus Mastering DMA *must be Enabled.***

For a DaqBoard/2000c Series board to operate properly, *Bus Mastering DMA must be enabled.* Prior to installation, verify that your computer is capable of performing Bus Mastering DMA for the applicable compact-PCI bus-slot. Note that some computers have BIOS settings that enable [or disable] Bus Mastering DMA. If your computer has this BIOS option, ensure that Bus Mastering DMA is *Enabled* on the appropriate compact-PCI bus-slot.

Refer to your PC's owner manual for additional information regarding Bus Mastering DMA.



### **IMPORTANT: The Compact-PCI Bus-Slot must be keyed for 5 Volt use.**

**Note:** The 5 Volt Key location is indicated in the first photograph on page 3.

## CAUTION



Turn power **OFF**, and **UNPLUG** the host PC and externally connected equipment prior to removing any cover plates or modules. Electric shock or damage to equipment can result even under low-voltage conditions.

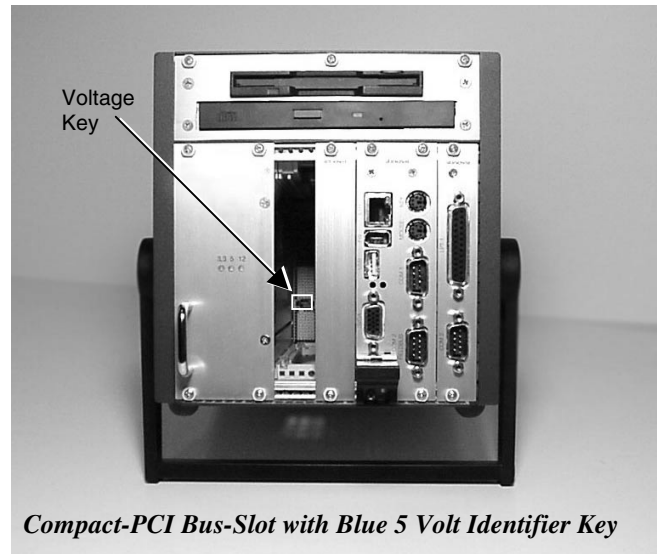


Take ESD precautions (packaging, proper handling, grounded wrist strap, etc.)

Use care to avoid touching board surfaces and onboard components. Only handle boards by their edges or ORBs. Ensure boards do not come into contact with foreign elements such as oils, water, and industrial particulate.

1. Turn the PC's power **OFF**.
2. Turn **power OFF** to externally connected equipment.
3. **UNPLUG the host PC** and all externally connected equipment.
4. Remove the computer's compact-PCI bus-slot cover plate [or remove an unwanted module, if applicable]. Refer to your PC Owner's Manual as needed.
5. Verify that the available compact-PCI bus slot is for 5 volt applications.

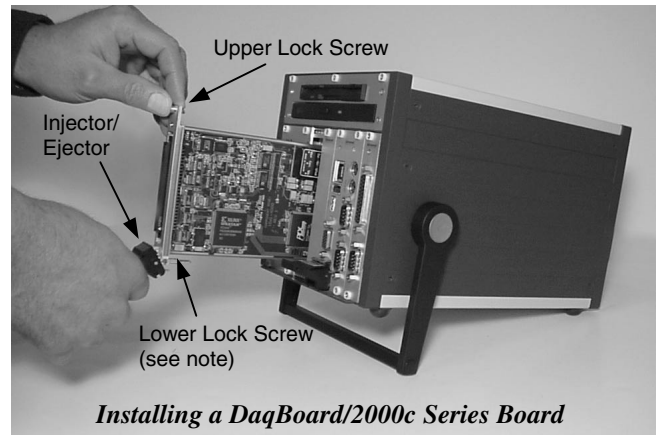
**The computer's 5 volt compact-PCI bus-slots can be recognized by a blue voltage key that is located in the center of the slot (see figure).**



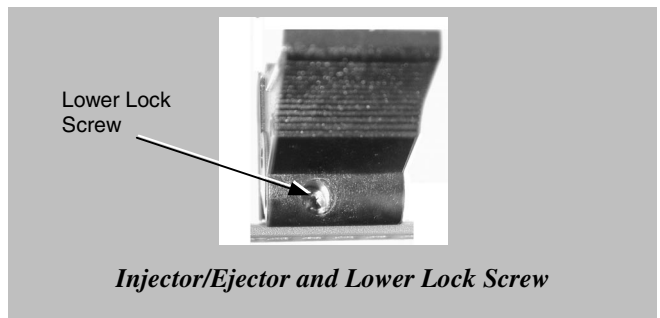
*Compact-PCI Bus-Slot with Blue 5 Volt Identifier Key*

6. Carefully remove the DaqBoard/2000c Series Board from its anti-static protective bag. If you have not already done so, write down the serial number of your board at this time. The serial number is located on the 100-pin P4 connector.
7. With the board's *injector/ejector* down, guide the board into the PC's slot. Note that the top and bottom edges of the board locate in edge-guides, within the PC.
8. Push the board back into the PC to engage the board's compact-PCI connector with the computer's compact-PCI bus-slot.
9. Pull the board's *injector/ejector* up. This will fully engage the connectors.
10. Secure the board by tightening the upper and lower lock screws.
11. Using the previous steps, install additional boards into available compact-PCI bus-slots, if applicable to your application.

**Note:** The lower lock screw is accessed through an opening on the *injector/ejector* as indicated in the right-hand figure.



*Installing a DaqBoard/2000c Series Board*



*Injector/Ejector and Lower Lock Screw*



12. Plug in all cords and cables that were removed in step 3.
13. Apply power to, and start up the PC.

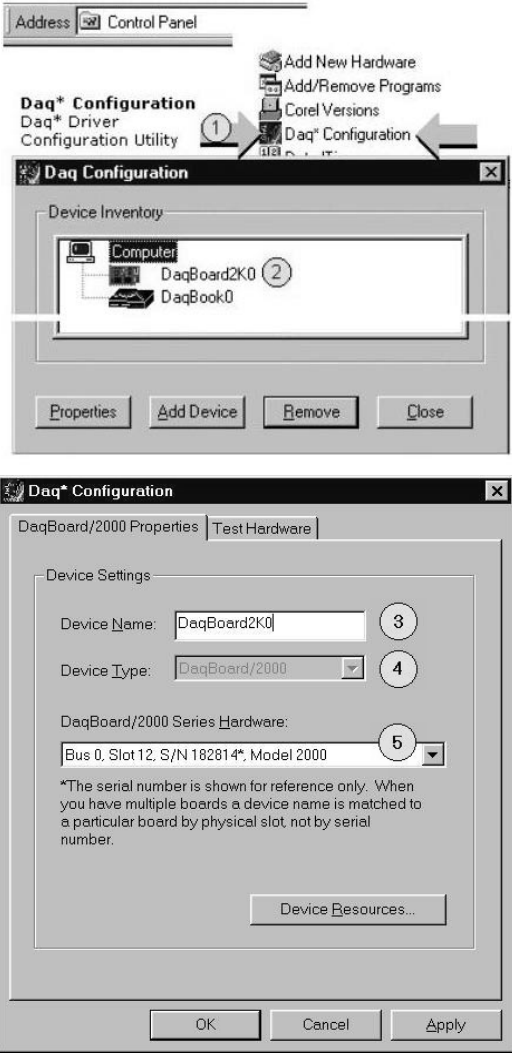
**Note:** At this point some PCs may prompt you to insert an installation disk. While this is rare, if you do receive such a prompt simply place the install CD into the disk drive and follow the screen prompts.



*Securing a DaqBoard/2000c Series Board*

### Step 3 – Configure Boards

DaqBoard/2000c Series boards have no jumpers or switches to set. Configuration is performed entirely through software. Refer to the following figure and steps to complete the configuration. The numbers in the figure correspond to the numbered steps immediately following the figure.



*Accessing the DaqBoard/2000 Properties Tab*



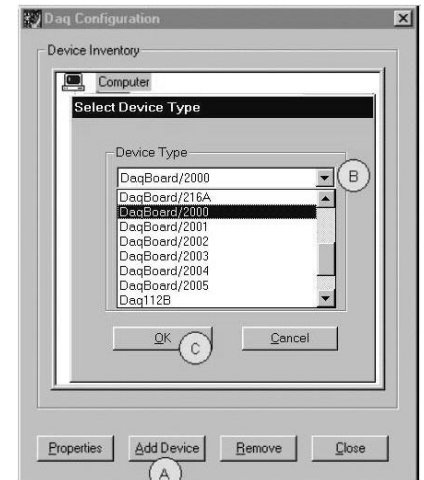
1. Run the **Daq Configuration** control panel applet. Navigation from the desktop to the applet is as follows:  
**Start ⇒ Settings ⇒ Control Panel ⇒ Daq\*Configuration** (*double-click*)
2. Double-click on the Device Inventory's DaqBoard2K0 icon. The DaqBoard/2000 Properties tab (used for the entire DaqBoard/2000 Series) will appear. **If the DaqBoard2K0 icon is not present, skip to the Using 'Add Device' section provided below.**
3. Enter a "**Device Name**" in the text box, or use the default "DaqBoard2K0." Device Name is for identifying the specific DaqBoard/2000 Series board. Note that Device Name actually refers to the PCI slot and not to the actual board.
4. Verify that the "Device Type" shows the correct DaqBoard/2000 Series board, e.g., "DaqBoard/2000, DaqBoard/2001, etc."  
Note that available device types can be viewed via the pull-down list (▼).
5. Confirm that the DaqBoard/2000 Series text box shows a **Bus #, Slot #, and Serial Number**.  
**If this text box is empty**, use its pull-down list (▼) and select the serial number that matches the one for your board. Refer to the inside front cover page for serial number information.

## Using "Add Device"

This method is for users who have accessed the **Daq Configuration** control panel applet, but have no DaqBoard2K icon (as described in step 2, above).

- (A) After accessing the Daq Configuration control panel applet, click on the Add Device button (see figure, right). The *Select Device Type* window will appear.
- (B) Using the *Device Type's* pull-down list, select the applicable board. In the example at the right **DaqBoard/2000** is selected.
- (C) Click the **OK** button. The DaqBoard/2000 Properties tab will appear. This tab applies to all boards in the DaqBoard/2000 Series.

At this point, complete steps 3 through 5 from above.



Using "Add Device"

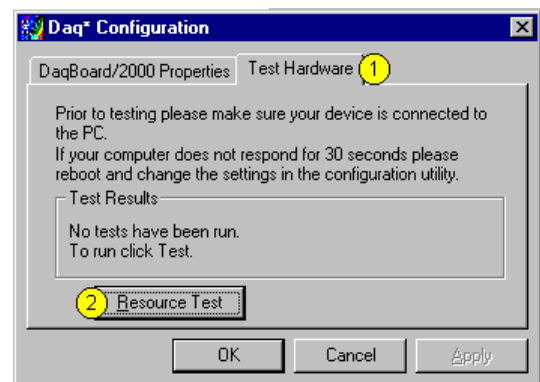
## Step 4 – Test Hardware

Use the following steps to test the DaqBoard/2000 Series board. Note that these steps are continued from those listed under the previous section, "Configure Board."

1. Select the "**Test Hardware**" tab.
2. Click the "**Resource Test**" button.
3. After the test is complete, click "**OK**."

System capability is now tested for the DaqBoard/2000 Series board and a list of test results appears on screen.

**Note:** If you experience difficulties, please consult your user documentation (included on your CD) before calling for technical support. Note that the user documentation includes a troubleshooting chapter, as well as a great deal of information regarding specific DBK cards and modules.



Test Hardware Tab (Condensed Screen Image)

At this point we are ready to connect signals. This is typically accomplished with the use of a DBK200 Series option.



### Reference Note:

For detailed information regarding the DBK200 Series options, refer to the *DBK Option Cards and Modules User's Manual* (p/n 457-0905).

During software installation, Adobe® PDF versions of user manuals are automatically installed onto your hard drive as a part of product support. The default location is in the **Programs** directory, which can be accessed from the Windows Desktop. A copy of the Adobe Acrobat Reader® is included on your CD. The Reader provides a means of reading and printing the PDF documents. Note that hardcopy versions of manuals can be ordered from the factory.





