

Quick Start Guide

MCC DAQ Software

InstaCal™
Installation utility

TracerDAQ®
Ready-to-run DAQ application

Universal Library
Windows programming libraries
and components

ULx for NI LabVIEW™
Drivers and examples

Hardware/User Manuals
and documents

System Requirements
Windows® 8/7/Vista®/XP (SP2)

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MCC DAQ Software system requirements

Please read this booklet completely before you install your Measurement Computing Corporation (MCC) software or device.

You can install MCC DAQ Software on a computer running one of these operating systems:

- Windows 8
- Windows 7
- Windows Vista
- Windows XP SP 2 or later

These operating systems are the only requirements for installing and running InstaCal. Refer to the readme files in the \IcalUL folder on the MCC DAQ Software CD for more information.

Only MCC USB, WLS, WEB, and *most* PCI devices are supported on 64-bit operating systems. PCI-DAS1000 Series, PCI-DAS1200 Series, and PCI-DAS1600 Series devices are not supported on 64-bit operating systems.

ISA, PPIO, PC-CARD/ PCMCIA and E-PDISO16 devices are only supported on Windows XP.

Before using MCC DAQ Software with a MCC device, we recommend that you install the latest Windows Updates.

Universal Library requirements

Application development programming library for MCC devices requires one or more of these development languages:

- **Microsoft® Windows® languages:** Visual Basic and Visual C/C++
- **.NET languages:** VB .NET, C# .NET (Visual Studio® 2005 and later)

TracerDAQ

Virtual instrument application suite with strip chart, oscilloscope, function generator, and rate generator requires the following software:

- Microsoft .NET® Framework 2.0
- DirectX 9.0c
- InstaCal

The Microsoft .NET® Framework 2.0 and DirectX 9.0c automatically install with TracerDAQ if these applications are not already installed.

TracerDAQ requires the following hardware:

- Video card with 16 MB of memory and support for Direct3D Acceleration
- Minimum screen resolution of 1024 × 768
- Computer with Pentium® 4 processor and 256 MB of RAM
- A Microsoft-compatible mouse
- Supported MCC DAQ device

ULx for NI LabVIEW

Library of virtual instruments (VIs) and example programs used with National Instruments LabVIEW requires the following software:

- InstaCal and Universal Library
- LabVIEW 8.5 or later
- Microsoft .NET® Framework 2.0

Note: Universal Library for NI LabVIEW legacy drivers compatible with LabVIEW 6.0 through 8.2 can also be installed from the software CD. New users, however, should install the ULx for NI LabVIEW.

Hardware User's Guides

Adobe® Reader® is automatically installed with the MCC hardware user's guides.

Install the MCC DAQ Software

The MCC DAQ Software installation program consists of a series of easy-to-follow dialog boxes that lead you through the installation procedure. To install the MCC DAQ Software, complete the following steps:

1. Insert the MCC DAQ Software CD in your CD drive and wait for the installation program to start.

If the installation program does not start automatically, use Windows Explorer to browse to the root of the CD, and double-click **Install.exe**. The **MCC DAQ** dialog box opens.

All software packages are selected for installation if the requirements for the package are met. If you do not want to install a software package, clear its checkbox.

The **Required dependencies** pane lists the software packages needed to run each MCC DAQ Software package.

Adobe Reader - Adobe Reader is required to open the hardware user's guides.

Microsoft .NET framework - The .NET Framework 2.0 is required to install TracerDAQ, ULx for NI LabVIEW, and the hardware user's guides.

If the framework is not detected on your computer, this package is listed and the checkbox is selected. Measurement Computing recommends that you leave the **Microsoft .NET framework** checkbox selected.

2. Click **Install** and follow the instructions on the installation dialog boxes.

The installation program automatically installs each selected software package. You are prompted to restart your computer after installing all of the selected packages.

Install the MCC Device

After you install the MCC DAQ Software, install your device and let it be detected by Windows.

- For PCI devices, turn the computer off, install the device into a PCI slot, and turn the computer back on.
- For plug-and-play USB devices, connect a USB cable between the device and the computer.

A **Found new hardware** message displays as the device is detected by Windows. A **New Hardware Wizard** runs and installs the drivers required to operate the device.

Note: When installing some MCC devices, such as the USB-2416 Series and USB-2404 Series, an additional **New Hardware Wizard** may display when you install the device. This wizard is required to install additional drivers specific to this device. *Do not cancel this wizard* or the device will not install properly.

InstaCal overview

Use the InstaCal utility to install, configure, calibrate, and test program for use with MCC devices. MCC devices cannot be used with Universal Library programs until they are first detected by InstaCal and added to the configuration file.

Installing a device

PCI and USB devices are automatically detected by InstaCal and added to the board list after they are connected to the computer.

ISA, PC104, PPIO, WEB, and E-PDISO16 devices must be manually added to InstaCal after they are connected to the computer.

From the InstaCal drop-down menu, select **Install»Add Board** to display a group of tabs. Each tab lists the devices you can install. Once selected, the device is added to InstaCal and the board list, and remains there until removed.

The InstaCal main screen lists each device that it automatically detects or that was manually added to the board list.

Configuring a device

To configure a device, double-click on the device name to open the **Board Configuration** dialog box. The settings which display are specific to the device selected.

A common configuration task for A/D boards is to set the analog input channel mode to either single-ended or differential.

InstaCal stores hardware configuration settings in a configuration file which is read by the Universal Library when you run an application. To change device settings, stop the UL application and run InstaCal.

Note: Only one application program that calls the Measurement Computing driver can be running at a time. If the device is used by a Universal Library program, changes to device configuration settings can only be made when the program is not running.

Testing a device

InstaCal provides analog and digital tests to determine if the analog inputs and digital bits are working properly. To test the device, select either **Test»Analog** or **Test»Digital**. A **Board test** dialog box displays with options specific to the selected device.

Analog input tests may include a Loopback test and a Scan test.

- Perform a Loopback test to verify the analog connections, and that the basic analog measurement operation is working properly. With this test, one channel at a time is tested in a slow (non-clocked) sampling mode. You can loop back one of the onboard signals or use an external signal.
- Perform a Scan test to sample multiple channels simultaneously at a specified clock rate. The Scan test is a good test of the DMA and IRQ resources assigned to the card. Acquired data can be displayed graphically or numerically.

Digital tests may include an External DI test and an External DO test which verify the input or output operation of each digital bit.

Depending on the hardware, additional tests may also be available, such as **Internal CTR** and **External CTR**

Calibrating a device

InstaCal can calibrate the analog input or output channels for DAQ devices that support field calibration. Select the device from the InstaCal main form, and choose **A/D** or **D/A** from the **Calibrate** menu. A **Board Calibration** dialog box displays. Follow the instructions on the dialog to calibrate the desired channels.

Run InstaCal and add the DEMO-BOARD

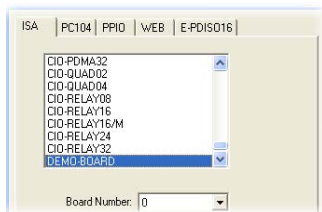
After your device is detected by Windows, run InstaCal to detect the device and add it to its configuration file.

Note: If error 308 displays, you need Administrative rights on your computer to add hardware and save configuration changes in InstaCal.

To run InstaCal and add the DEMO-BOARD to the InstaCal configuration, complete the following steps:

1. Close any Universal Library application that uses the device before you run InstaCal. Only one application that calls the MCC device driver can be running at a time.
2. Run **InstaCal** from the **Start** menu
3. Right-click **PC Board List** and select **Add Board...** from the pop-up menu.
4. Click the **ISA** tab on the **Board Selection List** dialog box.

5. Scroll down to select **DEMO-BOARD** and click **Add**.



The DEMO-BOARD is added to the InstaCal configuration.

Configure and test the DEMO-BOARD with InstaCal

You can configure and test the DEMO-BOARD with InstaCal.

Note: For physical MCC devices, common DAQ options include selecting a single-ended or differential channel configuration, and selecting the voltage range to acquire. Configuration and testing options vary depending on the type of device and the features it offers.

Configure channel 0

In the following example, use InstaCal to change the configuration of channel 0 on the DEMO-BOARD.

1. On the **PC Board List**, double-click **DEMO-BOARD**.
2. Select **Damped Sine Wave** from the **Ch. 0** list on the **Board Configuration** dialog box and click **OK**.

Test channel 0

InstaCal includes options to test the analog and digital features of your MCC hardware. When running internal tests, disconnect your signals or your cable to prevent false failures.

Complete the following steps to run the analog loop back test on the DEMO-BOARD and verify that the channel is generating the proper waveform.

1. Select the **DEMO-BOARD** on the **PC Board List**.
2. Select **Test»Analog** and select **Ch 0** is selected in the **Input Ch** list.



3. Click **OK** to close the dialog box, and then select **File»Exit** to close InstaCal.

Getting started with TracerDAQ

TracerDAQ includes the following applications:

- Strip chart with data logging functionality
- Oscilloscope
- Function generator
- Rate generator

Run **TracerDAQ** from the **Start** menu.

TracerDAQ help

Refer to the *TracerDAQ Help* (TracerDAQHelp.chm) for quick start examples of each TracerDAQ application.

Note: To compare the features in TracerDAQ and TracerDAQ Pro, refer to the *Feature comparison between TracerDAQ and TracerDAQ Pro* topic in the *TracerDAQ Help*.

Getting started with the Universal Library

The Universal Library (UL) provides a programming library used to develop applications that control MCC hardware.

The Universal Library supports programming in Visual Basic, VB .NET, Visual C/C++, C# .NET, and other languages.

The Universal Library is automatically installed with InstaCal. The default installation directory is `Program Files\Measurement Computing\DAQ`.

Universal Library example programs

You can install example programs for supported languages when you install the Universal Library software.

- On Windows XP, the example programs are installed by default to `Program Files\Measurement Computing\DAQ`.
- On Windows 8, Windows 7, and Windows Vista, the example programs are installed by default to `Users\Public\Documents\Measurement Computing\DAQ`.

When you install the example programs, an *Examples* shortcut is added to the directory where you installed the UL software. When selected, the directory containing the example programs opens in Windows Explorer.

Universal Library help

Refer to the *Universal Library Help* (`ULHelp.chm`) for more information about the Universal Library functions and how to use them with MCC hardware.

For information about your specific MCC device, use the **Search** tab in the help file. The help topic for your device lists the subset of Universal Library functions that your device supports.

Getting started with ULx for NI LabVIEW

The ULx for NI LabVIEW is a library of virtual instruments (VIs) used with MCC hardware to develop instrumentation, acquisition, and control applications in NI LabVIEW 8.5 and later. The ULx for NI LabVIEW library syntax is consistent with LabVIEW DAQmx VIs.

The ULx for NI LabVIEW library is task-based. Every measurement or output operation performed in a DAQ operation, such as analog input, digital output, and so on, is a separate task. Each task is associated with one hardware device and one or more channels of the same type.

ULx for NI LabVIEW example programs

The ULx for NI LabVIEW provides example programs that demonstrate how to perform data acquisition tasks using the ULx VIs in NI LabVIEW. You should run the example programs before creating your own VIs or programs. You can modify the example programs to suit your needs.

You can open a ULx for NI LabVIEW example program from its default installation directory (Program Files\National Instruments\LabVIEW <version>\examples\ULx) or with the NI Example Finder utility in NI LabVIEW.

Refer to the [Quick Start: MCC ULx for NI LabVIEW](http://www.mccdaq.com/PDFs/Manuals/QS-ULx-for-NI-LabVIEW.pdf) at www.mccdaq.com/PDFs/Manuals/QS-ULx-for-NI-LabVIEW.pdf for a quick start example.

ULx for NI LabVIEW help

Refer to the *ULx for NI LabVIEW Help* (lvulx.chm) for more information about the ULx VIs.

Open your hardware user's guides

If you installed the MCC hardware user's guides, you can open your hardware manual from within InstaCal.

You need Adobe Reader to open the user's guides. You can install this software from the AcrobatReader folder on the CD.

1. Select **User's Guides** from the InstaCal **Help** menu.
2. From the **Open** dialog box, double-click on the folder for the type of board whose manual you want to open (**USB**, **PCI**, and so on).
3. Double-click on the PDF hardware manual to open it.

If you did not install the MCC hardware user's guides during the DAQ software installation, you can open or copy these documents from the *ICalUL/Documents/UsersGuides* folder on the MCC DAQ Software CD.

For more information

If you have questions that you cannot answer by reading this booklet, refer to these resources:

- [Tech support form](#) at www.mccdaq.com/support/support_form.aspx
- Email: techsupport@mccdaq.com
- Phone: 508-946-5100 and follow the instructions for reaching Tech Support.
- Fax: 508-946-9500 to the attention of Tech Support
- [MCC Product User's Manuals](#) at www.mccdaq.com/manuals.aspx
- [MCC Product Data Sheets](#) at www.mccdaq.com/specs.aspx

Customers outside of the U.S. should contact their local MCC distributor for support. Refer to [International Distributors](#) at www.mccdaq.com/International to locate a distributor.

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