APEX WAVES USB-6210 Multifunction I-O Device User Guide

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Product Information

The USB-6210 is a data acquisition (DAQ) device manufactured by National Instruments (NI). It is designed to allow users to measure and generate analog or digital signals using physical and virtual channels.

Key Features:

- USB connectivity for easy connection to a computer
- Supports various types of measurements and signal generation
- Compatible with NI MAX software for device configuration and testing
- Can be used with Signal Conditioning Components (SCC), terminal blocks, and switch modules for signal conditioning and switching
- Supports TEDS sensors for easy configuration
- Integrates with NI-DAQmx software for measurement control and data acquisition

System Requirements:
To use the USB-6210 DAQ device, you will need:

- A computer with a USB port
- Operating system compatible with the NI software
- Application and driver software provided by NI

Product Usage Instructions

Confirm Device Recognition:

1. Launch NI MAX software by double-clicking the NI MAX icon on the desktop or clicking NI MAX from the NI Launcher (Windows 8).
2. Expand the “Devices and Interfaces” section to confirm if your USB-6210 device is detected.
3. If using a remote network DAQ device, follow the troubleshooting tips provided in the user manual or go to **ni.com/info** and enter the Info Code “netdaqhelp” if you cannot access the device.

4. Right-click on the device and select “Self-Test” to verify its operation. Refer to **ni.com/support/daqmx** in case of any errors.
5. For NI M and X Series PCI Express devices, right-click on the device and select “Self-Calibrate”. Follow the on-screen instructions and click “Finish”.

Configure the Device Settings:
If your USB-6210 device has configurable properties, follow these steps:

1. Right-click on the device name and select “Configure”.
2. Configure the device settings as required, such as accessories, RTSI, topologies, or jumper settings.
3. If using TEDS sensors, click “Scan for TEDS” or right-click on the device under “Devices and Interfaces” and select “Configure TEDS” to configure them.
4. Click “OK” to accept the changes.

Install Signal Conditioning or Switch Devices:
If your system includes SCXI signal conditioning modules, SCC components, terminal blocks, or switch modules, refer to the getting started guide provided with the product for installation and configuration instructions.

Attach Sensors and Signal Lines:
Attach sensors and signal lines to the terminal block or accessory terminals of each installed USB-6210 device. You can find the device terminal/pinout locations in NI MAX software, NI-DAQmx Help, or the device documentation.

For more information about sensors and IEEE 1451.4 TEDS smart sensors, refer to **ni.com/sensors** and **ni.com/teds** respectively. If you are using SignalExpress, refer to the documentation on how to use NI-DAQmx with your application software.

Run Test Panels:
Refer to the DAQ Getting Started Guide for instructions on running test panels and performing measurements using the USB-6210 device.

For more detailed information about NI-DAQmx channels and tasks, refer to the user manual available at **ni.com**.

This guide describes how to confirm your NI data acquisition (DAQ) device is operating properly. Install your application and driver software, then your device, using the instructions packaged with your device.

Confirm Device Recognition

Complete the following steps:

1. Launch MAX by double-clicking the NI MAX icon on the desktop, or (Windows 8) by clicking NI MAX from NI Launcher.
2. Expand Devices and Interfaces to confirm your device is detected. If you are using a remote RT target, expand Remote Systems, find and expand your target, and then expand Devices and Interfaces. If your device is not listed, press <F5> to refresh the configuration tree. If the device is still not recognized, refer to **ni.com/support/daqmx**.

   For a Network DAQ device, do the following:

   - If the Network DAQ device is listed under Devices and Interfaces» Network Devices, right-click it and

select Add Device.

- If your Network DAQ device is not listed, right-click Network Devices, and select Find Network NI-DAQmx Devices. In the Add Device Manually field, type the Network DAQ device's hostname or IP address, click the + button, and click Add Selected Devices. Your device will be added under Devices and Interfaces» Network Devices.

  Note If your DHCP server is set up to automatically register host names, the device registers the default hostname as cDAQ-<model number>-<serial number>, WLS-<serial number>, or ENET-<serial number>. You can find the serial number on the device. If you cannot find the hostname of that form, it may have been modified from the default to another value.

  If you still cannot access your Network DAQ device, click the Click here for troubleshooting tips if your device does not appear link in the Find Network NI-DAQmx Devices window or go to **ni.com/info** and enter the Info Code netdaqhelp.

  Tip You can test NI-DAQmx applications without installing hardware by using a NI-DAQmx simulated device. For instructions on creating NI-DAQmx simulated devices and importing NI-DAQmx simulated device configurations to physical devices, in MAX, select Help» Help Topics» NI-DAQmx» MAX Help for NI-DAQmx.

3. Right-click the device and select Self-Test. When the self-test finishes, a message indicates successful verification or if an error occurred. If an error occurs, refer to **ni.com/support/daqmx**.
4. For NI M and X Series PCI Express devices, right-click the device and select Self-Calibrate. A window reports the status of the calibration. Click Finish.

Configure the Device Settings

Some devices, such as the NI-9233 and some USB devices, do not need properties for configuring accessories, RTSI, topologies, or jumper settings. If you are installing only devices without configurable properties, skip to the next step. Configure each device with configurable settings that you install:

1. Right-click the device name and select Configure. Be sure to click the device name under the folder for the system (My System or Remote Systems) and NI-DAQ API in which you want to control the device.
   For Network DAQ devices, click the device name and then the Network Settings tab to configure network settings. For additional information on configuring Network DAQ devices, refer to your device documentation.
2. **Configure the device properties.**
   - If you are using an accessory, add the accessory information.
   - For IEEE 1451.4 transducer electronic data sheet (TEDS) sensors and accessories, configure the device and add the accessory as previously described. Click Scan for TEDS. To configure TEDS sensors cabled directly to a device, in MAX, right-click the device under Devices and Interfaces and select Configure TEDS.
3. Click OK to accept the changes.

Install Signal Conditioning or Switch Devices

If your system includes SCXI signal conditioning modules, Signal Conditioning Components (SCC) such as SC carriers and SCC modules, terminal blocks, or switch modules, refer to the getting started guide for the product to install and configure the signal conditioning or switch hardware.

Attach Sensors and Signal Lines

Attach sensors and signal lines to the terminal block or accessory terminals for each installed device. You can find

device terminal/pinout locations in MAX, the NI-DAQmx Help, or the device documentation. In MAX, right-click the device name under Devices and Interfaces, and select Device Pinouts.

For information about sensors, refer to **ni.com/sensors**. For information about IEEE 1451.4 TEDS smart sensors, refer to **ni.com/teds**. If you are using SignalExpress, refer to Use NI-DAQmx with Your Application Software.

Run Test Panels
Use the MAX test panel as follows.

1. In MAX, expand Devices and Interfaces or Devices and Interfaces» Network Devices.
2. Right-click the device to test, and select Test Panels to open a test panel for the selected device.
3. Click the tabs at the top and Start to test the device functions, or Help with operating instructions.
4. If the test panel displays an error message, refer to **ni.com/support**.
5. Click Close to exit the test panel.

Take a NI-DAQmx Measurement

NI-DAQmx Channels and Tasks
A physical channel is a terminal or pin at which you can measure or generate an analog or digital signal. A virtual channel maps a name to a physical channel and its settings, such as input terminal connections, the type of measurement or generation, and scaling information. In NI-DAQmx, virtual channels are integral to every measurement. A task is one or more virtual channels with timing, triggering, and other properties. Conceptually, a task represents a measurement or generation to perform. You can set up and save configuration information in a task and use the task in an application. Refer to the NI-DAQmx Help for complete information about channels and tasks.

Use the DAQ Assistant to configure virtual channels and tasks in MAX or in your application software.

Configure a Task Using the DAQ Assistant from MAX
Complete the following steps to create a task using the DAQ Assistant in MAX:

1. In MAX, right-click Data Neighborhood and select Create New to open the DAQ Assistant.
2. In the Create New window, select NI-DAQmx Task and click Next.
3. Select Acquire Signals or Generate Signals.
4. Select the I/O type, such as analog input, and the measurement type, such as voltage.
5. Select the physical channel(s) to use and click Next.
6. Name the task and click Finish.
7. Configure individual channel settings. Each physical channel you assign to a task receives a virtual channel name. To modify the input range or other settings, select the channel. Click Details for physical channel information. Configure the timing and triggering for your task. Click Run.

Use NI-DAQmx with Your Application Software
The DAQ Assistant is compatible with version 8.2 or later of LabVIEW, version 7. x or later of LabWindows™/CVI™ or Measurement Studio, or with version 3 or later of SignalExpress. SignalExpress, an easy-to-use configuration-based tool for data logging applications, is at Start» All Programs» National Instruments» NI SignalExpress or (Windows 8) NI Launcher.

To get started with data acquisition in your application software, refer to the tutorials:

Application	Tutorial Location
LabVIEW	Go to **Help» LabVIEW Help**. Next, go to **Getting Started with LabVIEW» Getting Started with DAQ» Taking a NI-DAQmx Measurement in LabVIEW**.
LabWindows/CVI	Go to **Help» Contents**. Next, go to **Using LabWindows/CVI» Data Acquisition» Taking a NI-DAQmx Measurement in LabWindows/CVI**.
Measurement Studio	Go to **NI Measurement Studio Help» Getting Started with the Measurement Studio Class Libraries» Measurement Studio Walkthroughs» Walkthrough: Creating a Measurement Studio NI-DAQmx Application**.
SignalExpress	Go to **Help» Taking a NI-DAQmx Measurement in SignalExpress**.

Examples

- NI-DAQmx includes example programs to help you get started developing an application. Modify example code and save it in an application, or use examples to develop a new application or add example code to an existing application.
- To locate LabVIEW, LabWindows/CVI, Measurement Studio, Visual Basic, and ANSI C examples, go to **ni.com/info** and enter the Info Code daqmxexp. For additional examples, refer to **zone.ni.com**.
- To run examples without hardware installed, use a NI-DAQmx simulated device. In MAX, select Help» Help Topics» NI-DAQmx» MAX Help for NI-DAQmx and search for simulated devices.

Troubleshooting

- If you have problems installing your software, go to **ni.com/support/daqmx**. For hardware troubleshooting, go to **ni.com/support** and enter your device name, or go to **ni.com/kb**.
- If you need to return your National Instruments hardware for repair or device calibration, refer to **ni.com/info** and enter the Info Code rdsenn to start the Return Merchandise Authorization (RMA) process.
- Go to **ni.com/info** and enter rddq8x for a complete listing of the NI-DAQmx documents and their locations.

More Information

After you install NI-DAQmx, the NI-DAQmx software documents are accessible from Start» All Programs» National Instruments» NI-DAQ» NI-DAQmx document title or (Windows 8) NI Launcher. Additional resources are online at **ni.com/gettingstarted**. You can access online device documentation by right-clicking your device in MAX and selecting Help» Online Device Documentation. A browser window opens to **ni.com/manuals** with the results of a search for relevant device documents. If you do not have Web access, documents for supported devices are included on the NI-DAQmx media.

Worldwide Technical Support

- For support information, refer to **ni.com/support** for access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers. Visit **ni.com/zone** for product tutorials, example codes, webcasts, and videos.
- Visit **ni.com/services** for NI Factory Installation Services, repairs, extended warranty, calibration, and other services.
- To ensure measurement accuracy, the NI factory calibrates all applicable hardware and issues a Basic

Calibration certificate, which you can get online at ni.com/calibration.

- Visit ni.com/training for self-paced training, eLearning virtual classrooms, interactive CDs, and Certification program information, or to register for instructor-led, hands-on courses at locations around the world.
- For support available at the National Instruments worldwide offices, visit ni.com, or contact your local office at ni.com/contact. National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504.

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- sales@apexwaves.com.

Request a Quote CLICK HERE USB-6210.

Documents / Resources

	APEX WAVES USB-6210 Multifunction I-O Device [pdf] User Guide USB-6210 Multifunction I-O Device, USB-6210, Multifunction I-O Device, I-O Device, Device
	APEX WAVES USB-6210 Multifunction I-O Device [pdf] User Guide USB-6210 Multifunction I-O Device, USB-6210, Multifunction I-O Device, I-O Device, Device

References

- Engineer Ambitiously - NI
- Engineer Ambitiously - NI
- Calibration Services - NI
- Contact Us - NI
- Example Programs - NI Community
- NI Learning Center - NI
- Using Info Codes - NI
- Search Results - NI
- Legal Information - NI
- Product Documentation - NI
- Contact Us - NI
- National Instruments Patents - NI
- Log In - National Instruments
- Shop - NI
- NI Services - NI
- Support - NI
- Support - NI
- NI-DAQ™mx Download - NI
- Shop - NI
- NI Trademarks and Logo Guidelines - NI
- Education Services - NI
- Support - NI
- Example Programs - NI Community
- NI Learning Center - NI
- Using Info Codes - NI
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