Installing and Using
USB-5200 Series Data Logging Devices

Thank you for purchasing a USB-5200 Series device from Measurement Computing! Please read this document to help you set up your new USB-based data acquisition and data logging device.

Use InstaCal™ to configure and test your device before you acquire and log data. After logging data, download and convert the data from the memory card with TracerDAQ®. You can optionally use InstaCal to copy or convert data directly from the data logging device.

Configuring channel sensors

Complete the following steps to configure USB-5200 Series channel sensors:

1. From the InstaCal main form, double-click on the name of the device to open the **Board Configuration** dialog box.
2. Configure the sensor options available for your data logger device.
   - **USB-5201**: Click on the **TC Type** tab and select a thermocouple type for each analog input channel.
   - **USB-5203**: Select a sensor category using the **CH(n-n)** tabs for each pair of analog input channels — choices are RTD, thermistor, thermocouple, and semiconductor — and configure the settings that are enabled for the selected sensor.

Configuring data logging options

Complete the following steps to configure USB-5200 Series data logging options:

1. In the **Board Configuration** dialog box, click on the **Data Logger»Logger Data** tab and select your data logging preferences:
   - Select the time format, time zone, and temperature units to apply to converted files.
   - Format the flash storage (required for initial use) – right-click on the device name in Windows Explorer and select **Format**.
2. Click on the **Data Logger»Logger Setup** tab and select your data logging options:
   - Set up each analog channel to log either temperature measurements (°C) or raw resistance/voltage measurements.
   - Select CJC data and/or time stamp data options to log this data in addition to the channel measurements.
   - Select the mode to start logging data.
3. Enter the interval (seconds) between samples and the file number of the first file logged.

4. Click on the **Data Logger»Alarm Setup** tab to set up the alarm options. Each digital I/O bit is independently configurable as an alarm output. The input to each alarm is one of the temperature input channels.
   Set the following:

   o Select the channel number to use as the alarm input.

   o Set the output type (active high or low) of the alarm bit when an alarm is triggered.

   o Select the threshold condition that triggers the alarm.

   o Specify the format of the logged alarm data (temperature or raw). This setting is independent of the format selected on the **Logger Setup** tab.

5. To save the configuration settings to your hard drive, click on the **Saved Configurations** tab and enter a name to save the settings in the **Configuration Name** text box.

6. Click **OK** to save your settings and close the **Board Configuration** dialog box.

   Another dialog box prompts you to write the new configuration settings to the device.

7. Click **Yes** to write the settings to the device. All logging options are stored on the device in non-volatile memory in EEPROM, and are loaded when you connect external power to the device.

After configuring the sensor and logging options, the device performs a self-calibration.

Testing the data logging device

Before logging data, verify the sensor options by running the InstaCal Temperature Test. To run this test, select **Test»Analog** in InstaCal.

Logging data

External power is required to log data. Disconnect the USB cable from the device, and connect the supplied external power supply. The logging options stored on the device are loaded. You are now ready to log data!

Ending a data logging session

The LED blinks when the device is logging data. To end a data logging session, press and hold the data logging button until the LED turns off. To prevent data loss, do not remove the memory card from the logging device while the device is logging data.

Disconnecting the device from the computer

You don't need to shut down your computer to disconnect a USB-5200 Series device. Refer to the instructions below when disconnecting a device from your computer's USB port.

In most cases, a USB-5200 Series device shows up as a mass storage device in Windows. To avoid losing data, safely remove the device from Windows before disconnecting it by using the **Eject** option or the **Safely Remove Hardware** icon. Windows displays a notification telling you it's safe to disconnect the device.

How data is stored on the memory card

Data is stored on the memory card in binary files. After logging measurements, you can transfer the files to your computer by reconnecting the logging device to a USB port on your computer or by removing the CompactFlash (CF) card from the device and using a card reader connected to your computer.

- You can use InstaCal to download and convert log files directly from the logging device to .csv or .txt format. You can also set preferences to apply to converted data
- You can use TracerDAQ to download, convert, and plot .csv data on a strip chart.
- The logging device appears as a Mass Storage Device when connected to a USB port on your computer, so you can copy files using Windows Explorer.

Downloading and converting data using InstaCal

You can use InstaCal to copy and convert log files directly from the data logging device.

Complete the following steps to copy/convert data using InstaCal:

1. After logging data, reconnect the data logging device to a USB port or hub on your computer.
2. Run InstaCal and double-click on the name of the data logging device from the InstaCal main form. The **Board Configuration** dialog box opens.
3. Click on the **Data Logger** tab.

   The **Logger Data** tab displays by default. Use this tab to select which binary file to copy or convert, and to set the preferences to apply to converted data.

   o To copy a file, click on the name of a binary file and click **Copy**.

   A **Browse for Folder** dialog box opens for you to select the destination where you want to store the copied file.

   o To *convert* a file, select the options that you want to apply to the converted file (time format, time zone, and temperature unit) and click **Convert**.

   A **Convert Log File** dialog box opens for you to configure the following options:

   The destination name and path where you want to store the converted file.

   The type of file to convert to (*.csv or *.txt). When converting to a text file you can also select the delimiter character used to separate fields in the converted file. When converting to an Excel *.csv file the delimiter character defaults to comma.

   The range of the file to convert — you can convert the entire file, or specify a range of data to convert using the date and time list boxes.
4. Click **OK** to convert the file.
5. Click **OK** to close the **Board Configuration** dialog box.

A dialog box opens for you to save your settings to the configuration file.

For more information about the data logging device, refer to the device's hardware manual. You can download this manual from the *MCC Product User's Manuals* page from .www.mccdaq.com/manuals.aspx.

Importing and plotting binary data using the TracerDAQ strip chart

Complete the following steps to plot .csv and binary log file data on the TracerDAQ strip chart:

1. Launch TracerDAQ and run the strip chart application.
2. Select **File»Import»Data Logger File** to open the **Import Data Logger File** dialog box.
3. Click **Browse** and navigate to the directory containing the binary data file
4. Select the file to import and click **Open** to return to the **Import Data Logger File** dialog box.

Refer to the *Plotting data from a logger file (.bin) on the strip chart* topic in the TracerDAQ help file for information about how to select channels and set other logging options.

Importing and plotting a .csv file on the TracerDAQ strip chart

Complete the following steps to import and plot .csv and binary log file data on the TracerDAQ strip chart:

1. Launch TracerDAQ and run the strip chart application.

2. Select **File»Import»Text File (.txt, .csv)** to open the **Import Text File** dialog box.

3. Click **Browse** and navigate to the directory containing the .csv file

4. Select the file to import and click **Open** to return to the **File Preview** dialog box.

   This dialog box shows a preview of the selected file contents. Use this dialog box to identify the number of header rows in the text file, review the column data in the file, and check the delimiter character used to separate data in the file.

5. When you are done with the **File Preview** dialog box settings, click **OK** to return to the **Import Text File** dialog box.

Refer to the P*lotting data from a text file (.txt, .csv) on the strip chart* topic in the TracerDAQ help file for information about how to select channels and set other options for plotting .csv file data.

Assigning a drive letter to the mass storage device

When installed with version 3 firmware and later, the logging device appears as a Mass Storage Device in Windows Explorer.

If your computer is on a network with shared drive letters, you should assign the highest available drive letter to the network drive when you map it. If you map the network drive to the first available drive letter after the local drive and CD-ROM drives, your system may not recognize the new drive.

If you need to assign a different drive letter to the mass storage device, complete the following steps:

1. Run Windows Explorer, right-click on 🖳 Computer, and select **Manage** from the context menu.

2. Select **Disk Management** in the left-hand pane of the **Computer Management** window.

   A list of drives appears in the right pane of the window.

3. Right-click on the new drive, and select **Change Drive Letter and Paths**.

4. Click **Change** and select a drive letter for the mass storage device from the drop-down list. This letter must not be assigned to a mapped network drive.

5. Click on **OK**, and then click on **OK** again to assign the drive letter.

For more information, refer to the Microsoft® Help and Support topic *New drive or mapped network drive not available in Windows Explorer*. This topic is available at http://support.microsoft.com/kb/297694/en-us.