

DAQLog

For LGR-5320 Series Analog and Digital I/O Loggers

Software User's Guide



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Loggers**

Software User's Guide



**MEASUREMENT
COMPUTING™**

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About this User's Guide

What you will learn from this user's guide

This user's guide explains how to install and use the DAQLog so that you get the most out of its USB data acquisition features.

This user's guide also refers you to related documents available on our web site, and to technical support resources.

Conventions in this user's guide

For more information on ...

Text presented in a box signifies additional information and helpful hints related to the subject matter you are reading.

Caution! Shaded caution statements present information to help you avoid injuring yourself and others, damaging your hardware, or losing your data.

<#:#> Angle brackets that enclose numbers separated by a colon signify a range of numbers, such as those assigned to registers, bit settings, etc.

bold text **Bold** text is used for the names of objects on the screen, such as buttons, text boxes, and check boxes. For example:

1. Insert the disk or CD and click the **OK** button.

italic text *Italic* text is used for the names of manuals and help topic titles, and to emphasize a word or phrase. For example:

- The software installation procedure is explained in the *DAQLog Software User's Guide*.
- *Never touch* the exposed pins or circuit connections on the board.

About DAQLog

DAQLog is a configuration and data logging application developed for use with Measurement Computing's LGR-5320 Series of data acquisition and logging devices.

With DAQLog software and a LGR-5320 Series device, you can perform the following operations:

- Create logger settings files for acquiring and logging analog, digital, and counter data from LGR-5320 Series devices. Settings files can include analog and digital triggers, event logging, counter debounce filters, and pacer output.
- Store logger settings files in dedicated folders for deployment, modification, and reuse.
- Deploy logger settings directly to logger devices over a USB connection, or remotely through Secure Digital (SD) and Secure Digital High Capacity (SDHC) cards.
- Retrieve binary data and event files stored on SD/SDHC cards and convert them to comma-separated values (.csv) files.
- Easily navigate to stored settings, data, .csv, and event files.

System requirements

You can install this DAQLog software package on a computer running one of these operating systems:

- Windows XP with Service Pack 2 (SP2)
- Windows VISTA (32- and 64-bits*)
- Windows 7(32- and 64-bits*)

* Application is 32-bits, but software does include 64-bit drivers for accessing the device.

Hardware requirements

- Minimum screen resolution of 800 x 600
- Computer with Pentium® 4 processor and 256 MB of RAM
- A Microsoft-compatible mouse
- A Measurement Computing LGR-5320 Series device

Getting Started

This chapter explains how to:

- install the DAQLog software
- install and prepare your LGR-5320 Series device to log data using DAQLog
- where to insert your SD card
- how to run DAQLog

Install DAQLog

Install DAQLog software before you install your device(s).

1. Insert the DAQLog 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 on **Install.exe**.
2. Follow the on-screen instructions to install the software.

Install your DAQLog device

If you are installing the device on your computer, refer to the LGR-5320 Series device's user's guide for installation instructions.

Connect signals to your LGR-5320 Series device

Once your device is powered, connect your LGR-5320 Series device to the sources and grounds of the analog, counter, and digital data you want to acquire and log.

Refer to the screw terminal pinout tables in your LGR-5320 Series device's user's guide.

Insert the SD card

If your device is installed remotely from your computer, you need an SD card reader to transfer configuration and data files between the device and your computer.

Otherwise, you can use your LGR-5320 Series device as an SD card reader over a USB connection.

For the logging exercise presented later in this guide, please remove any other SD, SDHC, or flash drives installed in your computer.

Run DAQLog

Now that you installed the DAQLog software, and connected your DAQLog device to its data source(s), you can start logging data using DAQLog.

Run DAQLog by selecting **Programs ► Measurement Computing ► DAQLog ► DAQLog** from the **Start** menu.

The main DAQLog window opens. This window is explained in more detail in the next chapter.

About the DAQLog user interface

When you first run DAQLog with a LGR-5320 Series device connected to your computer, the main DAQLog window lists the areas shown below.

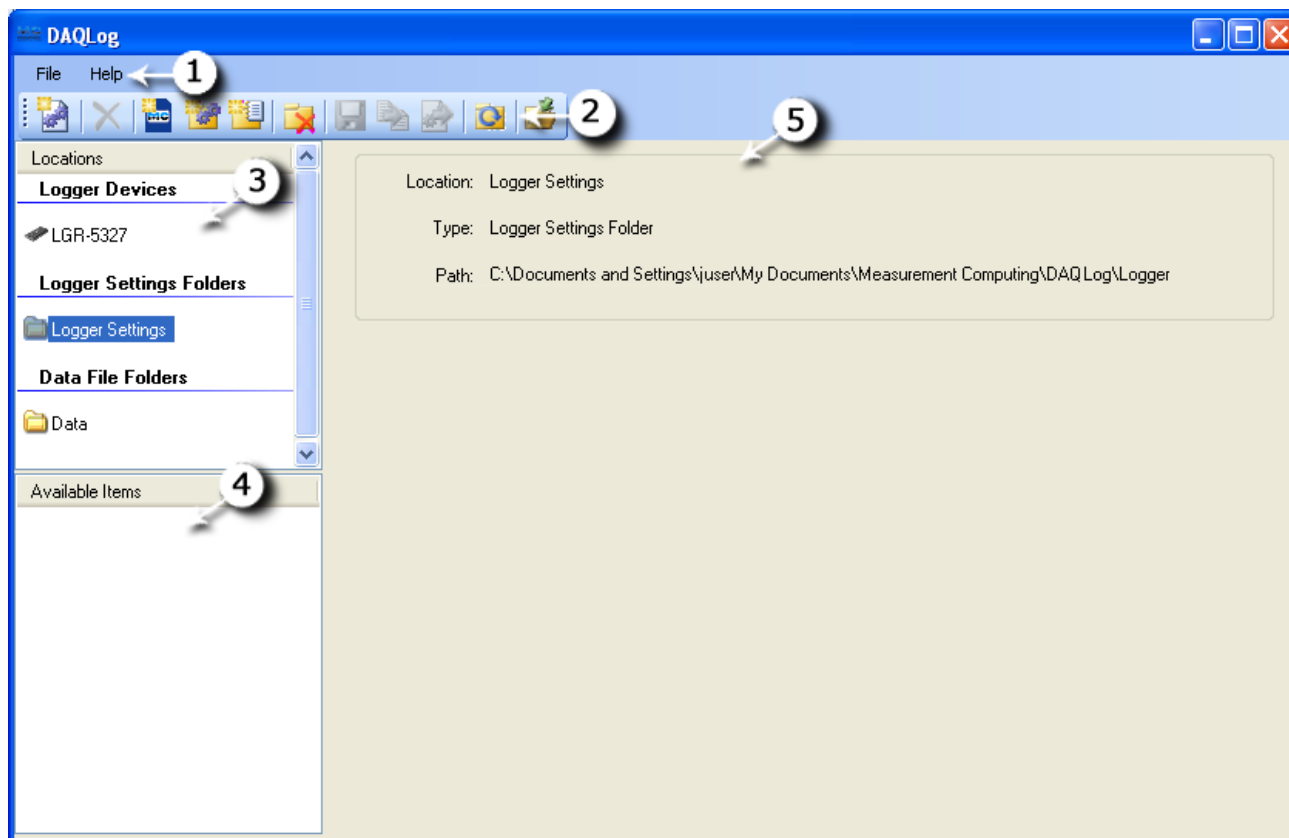


Figure 1. External DAQLog main window

- ① Menu bar
- ② Toolbar
- ③ **Locations** pane (divided into **Logger Devices**, **SD Drives (when an SD card is connected)**, **Logger Settings Folders**, and **Data Folders** sections).
- ④ **Available Items** pane
- ⑤ Displays information on the selected device, SD drive, folder, or file. When you select a configuration settings files in the **Available Items** pane, a **Log Setup**, **Channels**, **Acquisition**, and **Events** tabs. These tabs appear when a settings file is selected pane

DAQLog menu bar












The **File** menu contains options that:

- Save a logger settings file
- Deploy a logger settings file to an SD card or connected device
- Locate the file selected in the **Available Items** pane
- Convert a binary data file of logged data to a comma-separated format

The **Help** menu contains options to open the DAQLog help file and to open an **About DAQLog** dialog that displays software version information.

DAQLog Toolbar

The toolbar contains options for working with connected LGR-5320 Series devices, SD drives, settings files (.set) and folders, data files (.dat) and folders, and converted data files (.csv).

	New Settings File	<p>Launches a series of dialogs used to create a new configuration that is saved to the selected destination (device, memory card, or settings folder). This file contains the data acquisition parameters.</p> <p>For more information, see “Creating a settings file” on page 17.</p>
	Delete	<p>Deletes the selected file in the Available Items pane.</p> <ul style="list-style-type: none"> ▪ See “Deleting settings files” on page 32. ▪ See “Deleting data files” on page 38.
	Add SD Drive	<p>Opens a dialog used to add an SD drive to DAQLog.</p> <p>See “Adding an SD ” on page 14.</p>
	Add Settings Folder	<p>Opens a dialog used to add folders for storing settings files.</p> <p>See “Adding a settings folder location” on page 16.</p>
	Add Data Folder	<p>Opens a dialog used to add folders for storing converted data files or folders containing binary data files.</p> <p>See “Adding a data folder location” on page 33 for more information.</p>
	Remove Location	<p>Removes the selected settings folder, data folder, or SD drive from DAQLog Locations without affecting the folder itself.</p> <ul style="list-style-type: none"> ▪ See “Removing a device from the DAQLog configuration” on page 13 ▪ See “Removing an SD drive” on page 15. ▪ See “Removing a settings folder location” on page 17. ▪ See “Removing a data folder location” on page 34.
	Save	<p>Saves the configuration settings made to the selected location.</p> <p>See “Modifying a settings file” on page 27.</p>
	Convert Data File	<p>Converts the selected .dat file(s) to .csv files and stores them in the folder specified by Output Location.</p> <p>See “Converting data files” on page 35.</p>
	Deploy Settings File	<p>Copies a settings file to a connected logger device, or, if no device is connected, to the SD drive specified in the SD Drives pane.</p> <p>See “Deploying a settings file to a LGR-5320 Series device” on page 30.</p>
	Refresh Location	<p>Updates the contents of a data folder after the contents of the folder have changed (files are added to or removed from the DAQLog directory).</p>
	Locate File on Drive	<p>Opens Windows Explorer to the directory path of a selected folder or file.</p> <ul style="list-style-type: none"> ▪ See “Locating a settings file” on page 32.

Working with Devices

DAQLog automatically detects all LGR-5320 devices that are installed and connected to your computer's USB port.

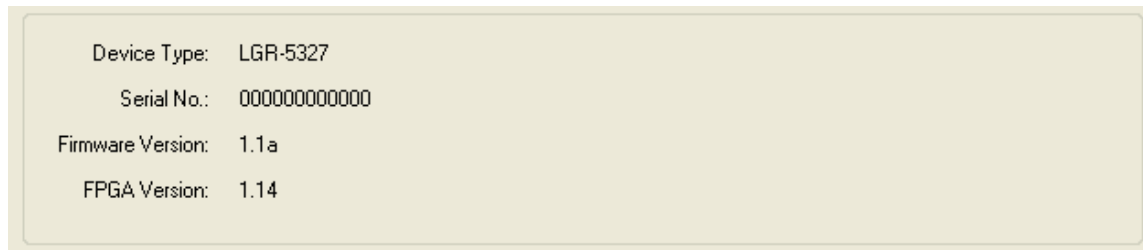
Devices are detected when you first run DAQLog, and also if you install a device while DAQLog is running.

Devices are listed in the **Logger Devices** area of the **Locations** pane.

Viewing logger device information

When you select a logger device and select **Device Info** in the **Available Items** location, the following information about the device appears in the DAQLog window:

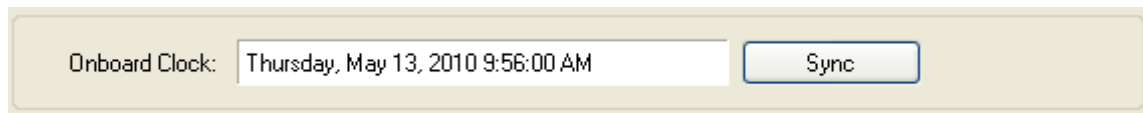
- LGR-5320 Series device type
- serial number
- firmware version
- FPGA version



Synchronizing a device's onboard clock

The **Onboard Clock** field lists the current time set on the device's internal clock.

To synchronize the clock of a LGR-5320 Series device with your computer's clock, click **Sync**.

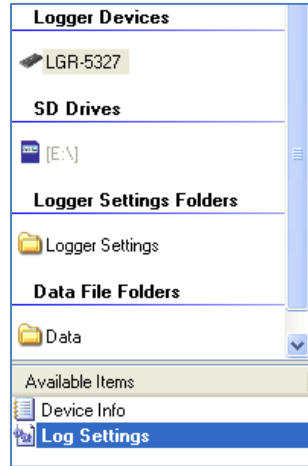


The onboard clock does not change for daylight savings time. It keeps real time relative to the time synchronized.

Modifying a device's configuration settings

To modify the settings currently loaded on a LGR-5320 Series device:

1. Make sure the device is connected to a USB port on your computer.
1. Click on the device in the **Logger Devices** location.
2. Click on the *Log Settings* file in the **Available Items** pane.



Change the settings loaded on the LGR-5320 Series device from the **Log Setup, Channels, Acquisition, and Events** tabs.

See “Modifying Log Setup parameters” on page 28 to learn how to modify settings using these tabs.

Removing a device from the DAQLog configuration

You can remove a device from the DAQLog configuration and the **Logger Devices** area in order to simplify the number of deployment targets.

To remove a device from the DAQLog configuration, select it in the **Logger Devices** area and click the **Remove Location** icon from the DAQLog toolbar.



Right-mouse click method

You can also remove a device by right-clicking on it in the **Logger Devices** area and selecting **Remove** from the popup menu.

The device is removed from the **Logger Devices** area.

Working with SD Drives

You can store and deploy LGR-5320 Series device settings files to SD cards installed on your computer or in the device’s SD card slot. LGR-5320 Series devices also log data and events to files on an SD inserted in the device.

When you run DAQLog, you may need to manually add and remove SD cards from the DAQLog configuration.


Adding an SD drive

To manually add an SD drive to the **SD Drives** pane on the main DAQLog window:

Add a volume name to your removable media
To differentiate between multiple SD cards and other removable media, use Windows Explorer to add a volume name to each removable drive.

1. Click the **Add SD Drive** icon from the DAQLog toolbar.



 **Right-mouse click method**
You can also add an SD drive by right-clicking anywhere in the **Locations** pane and selecting the **Add...»SD Drive** option.

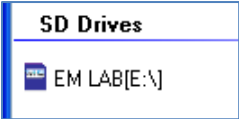
2. On the **SD Drives** pane, click on the SD card, and then click the **Refresh Location** toolbar icon.
The **SD Drive Selection** dialog opens.
3. Click **Continue»**.

The **No New Storage Devices** dialog opens if no SD card is detected. Connect an SD drive to the computer, click **OK**, and click **Continue»** again.

If an SD card is detected in a card reader or in a connected LGR-5320 Series device, another **SD Drive Selection** dialog lists the available SD cards

4. Select the drive letter of the SD drive you want to add, and click **OK**.

The SD drive is added to the **SD Drives** pane as a drive letter and volume name.



Once you add an SD drive to DAQLog, you can perform the following operations:

Removing an SD drive

You may want to remove an SD drive from the DAQLog configuration for the following reasons:

- You do not plan to use the SD drive for data logging
- The SD drive is no longer installed on your computer
- You accidentally added removable media that is not an SD card

To remove an SD drive from the DAQLog configuration, select it in the **SD Drives** area, and click the **Remove Location** icon from the DAQLog toolbar.



Right-mouse click method

You can also remove an SD drive by right-clicking on it in **SD Drives** pane and selecting **Remove** from the popup menu.

The SD drive is removed from the **SD Drives** area.

To add an SD drive back to the **SD Drives** pane, refer to “Adding an SD ” on page 14.

Disconnected SD drives that have not been removed

If you disconnect an SD card from the computer without using the **Remove Location** icon or menu option, the SD drive location is grayed out on the DAQLog window until you connect the SD drive again.



Working with Settings Files and Folder Locations

You can configure a LGR-5320 Series device using settings (.set) files created with DAQLog.

A settings file contains parameter settings that determine:

- the type of data the device logs (analog, digital, counter, event)
- the source(s) of data (channels, ports), along with how those sources are configured (single-ended, differential)
- how much data to log, and when a logging operation starts and stops (triggers, sampling rate, number of samples)
- the management of data files (folder structure, file naming conventions, and so on)

Settings files can be stored and deployed from your computer or from an SD card. You can create locations whose main purpose is to store these types of files.

Adding a settings folder location

To add a new or existing folder location to store settings files (.set), do the following:

1. Click the **Add Settings Folder** icon from the DAQLog toolbar.



Right-mouse click method

You can also add a settings folder location by right-clicking anywhere in the **Locations** pane and selecting the **Add...»Settings Folder** option.

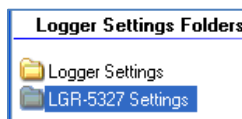
A **Browse for Folder** dialog opens.

2. To use an existing folder, navigate to the folder and select it.

To create a new folder, click **Make New Folder**, enter a name for the folder, and click **OK**.

The new folder is created on your computer in the specified location.

The folder appears in the **Logger Settings Folders** area of the **Locations** pane. If you add a folder that contains settings files, those files are listed under **Available Items**.



Once you create a logger settings folder location, you can:

- Create a settings file to store in that folder (see “Creating a settings file” on page 17)
- Remove the folder from the DAQLog configuration (see “Removing a settings folder location” on page 17).

Removing a settings folder location

To remove a settings folder location from the DAQLog configuration, select the location you want to remove and click the **Remove Location** toolbar icon.



Right-mouse click method

You can also remove a settings location by right-clicking the settings location and selecting **Remove** from the popup menu.

The location is removed from the **Logger Settings Folder** area, but remains on your computer.

Removing a location from DAQLog *does not* delete the location from the computer. To add the location to the DAQLog configuration again, refer to “Adding a settings folder location” on page 16

Creating a settings file

To create a settings file, select the location where you want to save the settings file from the **Logger Settings Folder** area, and click the **New Settings File** icon from the DAQLog toolbar.



Need to create a settings location?

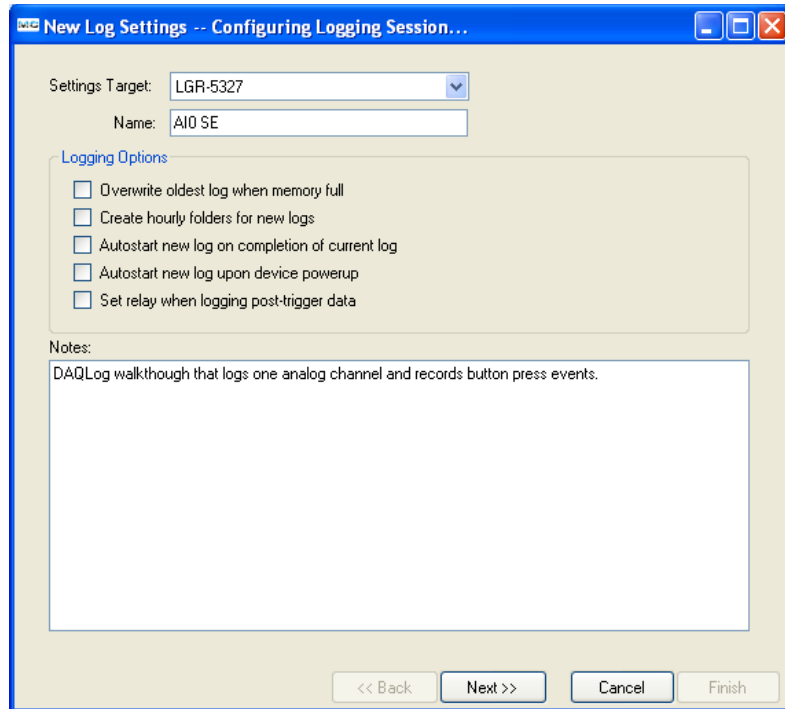
If you do not see the **Logger Settings Folder** area in the **Locations** pane, you need to create a logger settings location. Follow the instructions for “Adding a settings folder location” on page 16.

A series of **New Log Settings...** dialogs prompt you to configure your parameter settings.

Configuring the logging session

The **New Log Settings...Configuring Logging Session...** dialog contains parameters that determine:

- the LGR-5320 Series device to configure
- when logging occurs
- how data files are saved,
- what additional information is included in data files (**Name, Notes**)
- relay behavior during logging



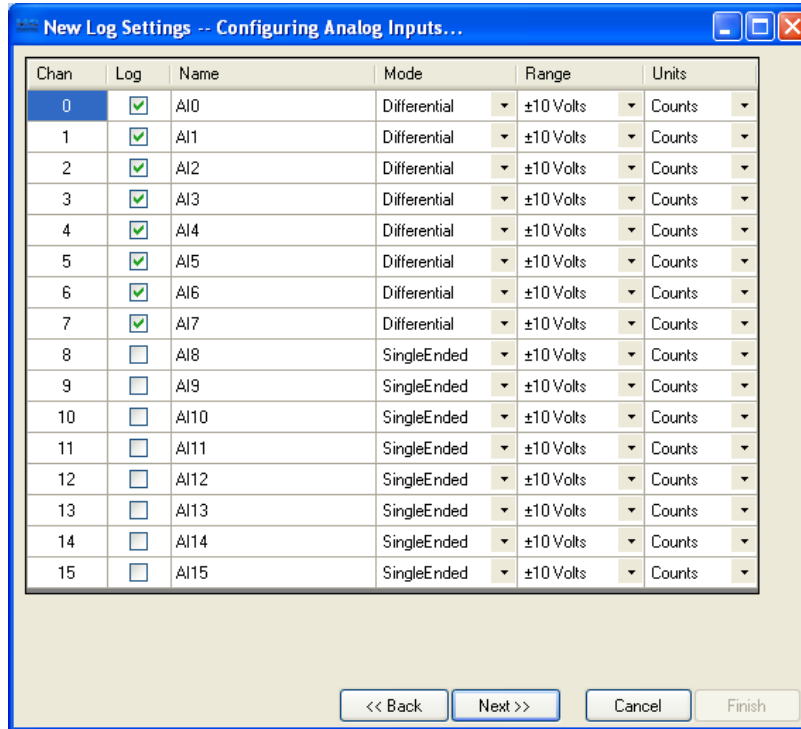
- **Settings Target:** Select the LGR-5320 Series device to configure with the settings file. By selecting a device, DAQLog only shows settings that are compatible with that device.
 If you select a settings target of LGR-5329 and try configure a LGR-5325 with that file, the LGR-5325 may not support some of the settings, and the **SD STAT** LED flashes to indicate an error.
- **Name** (optional): Enter a brief explanation of the configuration in the `.set` file. The name displays in the **Available Items** list, with the actual file name in parentheses.
 For example, if you enter `LGR-5327 AI0 CIO` in the **Name** field, it appears in the **Available Items** list as `LGR-5327 AI0 CIO(log_cfg.set)`.
- **Logging Options:** Select any of these options that determine when logging begins, how data is stored, and whether to operate the relay during logging.
 - **Overwrite oldest log when memory full:** The device overwrites the oldest log files when the SD card's memory is full. If not selected, logging stops when the SD card's memory is full.
 - **Create hourly folders for new logs:** The device creates a new subdirectory every hour to store logged data.
 - **Autostart new log on completion of current log:** A new log session automatically begins after a log session ends. Data from each log session is stored in a separate folder.
 If not selected, you must start a new log session by pressing the device's **LOG** button.
 - **Autostart new log upon device powerup:** The device immediately begins logging when powered on. Otherwise, you must start logging by pressing the device's **LOG** button.
 - **Set relay when logging post-trigger data:** The relay energizes at the start of post-trigger data, and remains energized until the log session ends.
 Leave this option unchecked to eliminate the relay "click", and to reduce wear on the relay.

Set the parameters on this dialog and click **Next>>** to open the **New Log Settings...Configuring Analog Inputs...** dialog.

Configuring analog input parameters

The **New Log Settings...Configuring Analog Inputs...** dialog contains a grid of parameters that determine:

- the analog input channels to log
- the configuration mode of each analog input channel (single-ended or differential)
- the voltage range of data to log
- the units to use on the logged data



Each column in this grid is explained below.

- **Chan:** List the number of each analog input channel. You cannot edit the numbers in this column.
- **Log:** Select the check box of each analog channel whose data you want to log.
- **Name:** Double-click on a cell in this column if you want change/add to the default name. This name appears in the column header for the channel's log data when you view the data file in a spreadsheet.
- **Mode:** Select the mode that the channel is physically wired to use when acquiring data.

Refer to the “Screw terminal pin out” section in the “Specifications” chapter of your LGR-5320 Series device user’s guide for your device’s differential and single-ended pin out.

- **Range:** Select the voltage range of the data to log.

If you select ± 30 Volts for a channel configured for differential mode, the associated high/low channel is also set to ± 30 Volts.

For example, if analog input channel 0 (**AI0**) is set to *Differential* in the **Mode** column and to ± 30 Volts in the **Range** column, **AI8** is also set to ± 30 Volts.

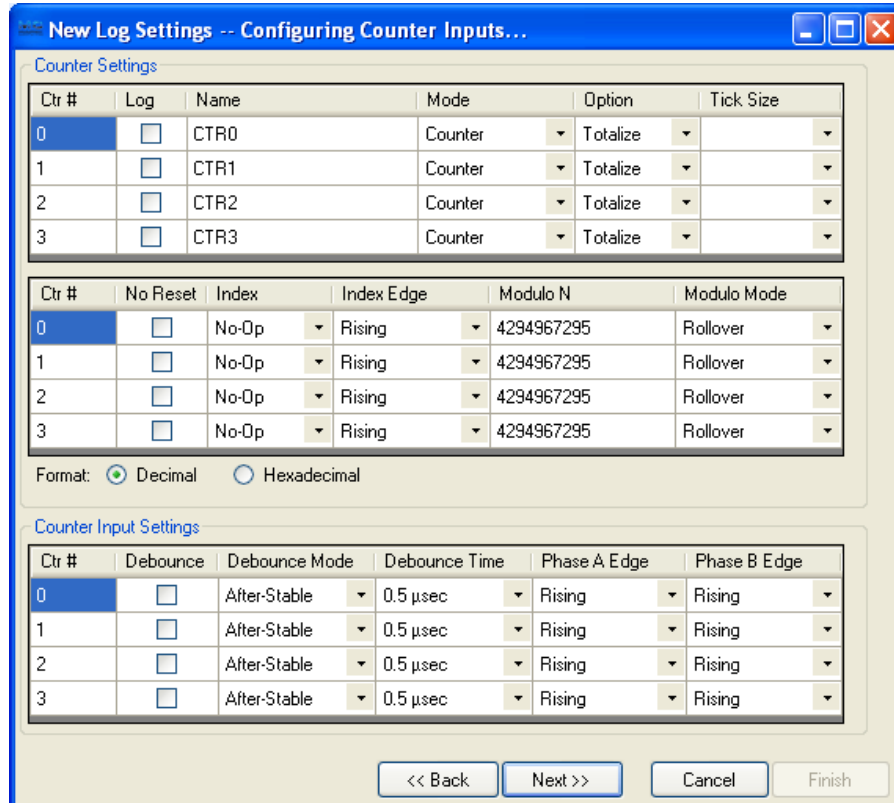
- **Units:** Select the units—*Counts*, *Volts*, or *mV*—to use when converting log data.

Set the analog input parameters on this dialog and click **Next>>** to open the **New Log Settings...Configuring Counter Inputs...** dialog..

Configuring counter input parameters

The **New Log Settings...Configuring Counter Inputs...** dialog contains three grids of counter parameters that determine:

- the counter input channels to log
- the counter mode used for each counter input channel
- the counter options available based on the counter **Mode** selection
- the reset, index, and modulo parameters
- the default format of counter data when converted
- the debounce filtering options to use on the logged counter data



Setting the counter mode and counter options

The parameters in the top grid of the **Counter Settings** area are explained below.

Counter Settings						
Ctr #	Log	Name	Mode	Option	Tick Size	
0	<input type="checkbox"/>	CTR0	Counter	Totalize		
1	<input type="checkbox"/>	CTR1	Counter	Totalize		
2	<input type="checkbox"/>	CTR2	Counter	Totalize		
3	<input type="checkbox"/>	CTR3	Counter	Totalize		

- **Log:** Select the check box of each counter channel whose data you want to log.
- **Name:** Double-click on a cell in this column if you want change/add to the default name. This name appears in the column header for the channel's log data when you view the data file in a spreadsheet.
- **Mode:** Select the counter mode to use when logging data.

- **Counter:** Use this mode for high-speed pulse and general counter operations. You can use the Index input to clear, gate, latch, or decrement the counter.
- **Up/Down Counter:** In this mode, phase A is the pulse source and phase B is the direction. The counter changes direction depending on the state of phase B. The *Phase B Edge* setting determines whether a high or low signal at phase B causes the counter to count up.
- **Encoder:** Measure the system position (counts), velocity (counts per second), and direction of rotation. This mode supports encoders with X1, X2, and X4 count modes.
- **Period:** Measure the period of a signal at a counter channel's phase A input. You can measure x1, x10, x100 or x1000 periods.
- **PulseWidth:** Measure either the time from the rising edge to the falling edge, or the time from the falling edge to the rising edge on a counter channel's phase A input.
- **Timing:** Measure the time between the rising or falling edge on the phase A input and the rising or falling edge of the Index channel. The edges used are determined by the *Phase A Edge* and *Index Edge* options settings.

Refer to the “Screw terminal pin out” section in the “Specifications” chapter of your LGR-5320 Series device user’s guide for your device’s counter signal pin out.

- **Option:** Depending on the **Mode** selected, you can set these counter options:

Counter and Up/Down Counter mode options

- **Totalize**The counter counts rising edges or falling edges.
- **Clear On Read:** The counter is cleared after each synchronous read. The counter value is latched and returned before it clears.

Encoder mode options

- **1X:** Counts rising or falling edges on phase A, depending on the phase A Edge setting (**Encoder** mode only).
- **2X:** Counts rising edges and falling edges on phase A.
- **4X:** Counts rising edges and falling edges on phase A and phase B.

Period mode options

- **1 Period:** The measurement latches after one complete period is observed
- **10 Period:**The measurement latches after 10 complete periods are observed .
- **100 Period:**The measurement latches after 100 complete periods are observed.
- **1000 Period:**The measurement latches after 1000 complete periods are observed.

- **Tick Size:** For **Period**, **PulseWidth** and **Timing** modes, you can set the counter tick size measurements. The system clock of the field programmable gate array (FPGA) is 20 ns.

- **20 ns:** Sets the counter channel's tick size (timebase) to 20 nanoseconds.
- **200 ns:** Sets the counter channel's tick size to 200 ns.
- **2 µs :**Sets the counter channel's tick size to 2 microseconds
- **20 µs:** Sets the counter channel's tick size to 20 µs

Setting reset, index, and modulo parameters

The parameters in the bottom grid of the **Counter Settings** area of the dialog are explained below.

Ctr #	No Reset	Index	Index Edge	Modulo N	Modulo Mode
0	<input type="checkbox"/>	No-Op	Rising	4294967295	Rollover
1	<input type="checkbox"/>	No-Op	Rising	4294967295	Rollover
2	<input type="checkbox"/>	No-Op	Rising	4294967295	Rollover
3	<input type="checkbox"/>	No-Op	Rising	4294967295	Rollover

Format: Decimal Hexadecimal

- **No Reset:** Select this check box to have the counter continue counting without resetting before each scan operation.
- **Index:** Depending on the **Mode** selected, you can set the function of the counter index from the following options:
 - **No-Op:** Ignore the Index signal.
 - **Clear:** When **Encoder** mode is selected, the Index signal clears the counter when counting up, or reloads the modulo number counting down (see Modulo N below).
 - **Gate:** For all counter modes *except* **Timing**, the Index signal gates the counter. By default, the counter is enabled when the Index signal is high. When the Index signal is low, the counter is disabled, but holds the count value.
You can change gate polarity using the **Index Edge** parameter.
 - **Decrement:** When **Counter** mode is selected, the Index signal decrements the counter.
 - **Latch:** When **Counter** or **Encoder** mode is selected, the Index signal latches the counter.

- **Index Edge:** Select the edge or polarity on the Index input.
- **Modulo N:** Enter upper limit of the count. The modulo number can range from 1 to 4,294,967,295 (0xFFFFFFFF), which is the maximum 32-bit counter value. The default is 4294967296 (0xFFFFFFFF).
When counting up, the counter rolls over to 0 when Modulo N is reached, and then continues counting up. When counting down, the counter rolls over to Modulo N whenever the count reaches 0, and then continues counting down.

The **Format** option setting determines whether this number is displayed as a decimal or hexadecimal.

- **Modulo Mode:** Select how the counter behaves when the counter reaches the **Modulo N** number:
 - **Rollover:** The counter rolls over to a count of 0 and continues counting.
RangeLimit: When counting up, the counter counts up to Modulo N and stops. Counting resumes if the direction reverses or the counter is cleared.
When counting down, the counter counts down to 0 and stops. Counting resumes if the direction reverses or the counter is cleared.
 - **NoRecycle:** The counter is disabled if a count overflow or underflow occurs. The counter is re-enabled when a reset or load operation is performed.

- **Format:** Select whether converted counter data is displayed in decimal or hexadecimal numbers. The **Modulo N** number also displays in this format.
You can select the format before you convert the data.

Setting debounce filter parameters

The parameters in the **Counter Input Settings** grid on the dialog are explained below.

Ctr #	Debounce	Debounce Mode	Debounce Time	Phase A Edge	Phase B Edge
0	<input type="checkbox"/>	After-Stable	0.5 µsec	Rising	Rising
1	<input type="checkbox"/>	After-Stable	0.5 µsec	Rising	Rising
2	<input type="checkbox"/>	After-Stable	0.5 µsec	Rising	Rising
3	<input type="checkbox"/>	After-Stable	0.5 µsec	Rising	Rising

- **Debounce:** Select the check box of each channel that you want to apply the debounce settings.
- **Debounce Mode:** Select one of these debounce mode options:
 - **AfterStable:** Rejects glitches and only changes state after a specified period of stability (set with the **Debounce Time** parameter).
Use this mode with electro-mechanical devices like encoders and mechanical switches to reject switch bounce and disturbances due to a vibrating encoder that is not otherwise moving. Set the debounce time short enough to accept the input pulse you want, but longer than the period of the disturbance.

- **BeforeStable:** Immediately changes state, and does not change state again until a specified period of stability (**Debounce Time**) passes.
Use this mode when the input signal has groups of glitches, and you want each group to be counted as one. This mode recognizes and count the first glitch within a group, but rejects the subsequent glitches within the group if the debounce time is set accordingly. Set the debounce time to encompass one entire group of glitches.
- **Debounce Time:** Select from 16 programmable debounce times in the range of 0.5 μ s (500 ns) to 25.5 ms.
- **Phase A Edge:** Select the edge or polarity on the Phase A input.
- **Phase B Edge:** Select the edge or polarity on the Phase B input.

Phase A, Index inputs on devices that do not support encoders

LGR-5320 Series devices that do not support encoder counting, connect the phase A input to the *CTR*x screw terminal, and the Index input to the *Gatex* screw terminal.

Set the counter input parameters on this dialog and click **Next>>** to open the **New Log Settings...Configuring Digital Inputs...** dialog.

Configuring digital input parameters

The **New Log Settings...Configuring Digital Inputs...** dialog contains one grid of digital input parameters that determine:

- the digital port to log
- the format of digital data when converted

These parameters are explained below.

Port #	Log	Name	Format
0	<input type="checkbox"/>	DIO	Hexadecimal

- **Log:** Select the check box to log data from all connected digital inputs.
- **Name:** Double-click in the **Name** column to change the name of the digital port.. This name appears in the column header for the channel's log data.
- **Format:** Select the number format used for converted digital data.
You can select the format before you convert the data.
 - **Decimal:** Data is converted to a decimal number.
 - **Hexadecimal:** Data is converted to a hexadecimal number.
 - **Binary:** Data is converted to a binary value.
 - **Bitwise:** Data is converted to a binary data, with each bit separated by a comma.

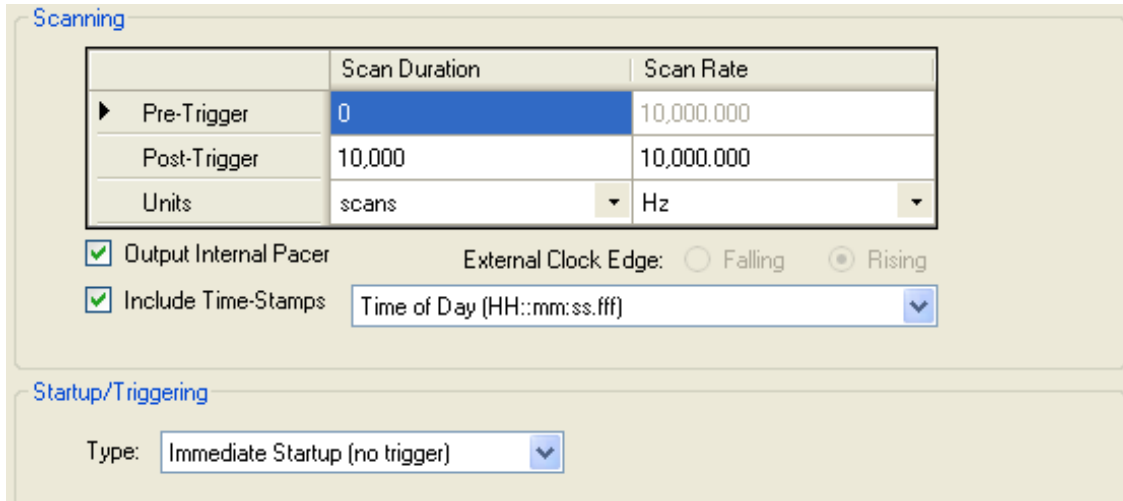
Configure the digital input parameters on this dialog and click **Next>>** to open the **New Log Settings...Configuring Acquisition Startup, Timing and Duration...** dialog.

Configuring startup, timing, and duration parameters

The **New Log Settings... Configuring Acquisition Startup, Timing and Duration ...** dialog contains parameters that determine:

- the number of samples to acquire before and after a scan is triggered,
- the sample rate before and after a scan is triggered.
- the units used to measure the scan duration and scan rate
- whether the onboard clock is available at the PACER terminal
- the type of trigger used to start a logging session

These parameters are explained below.



- **Pre-Trigger** : For all **Startup/ Triggering Type** selections except **Immediate Startup (no trigger)**, you can configure these pre-trigger parameters:
 - **Scan Duration**: The number of samples or length of time to acquire before the trigger.
 - **Scan Rate**: The sample rate per channel used to acquire pre-trigger data.
Changes to **ExtClock Divisor** when **Units** is set to **External**.
 - **ExtClock Divisor**: Disabled. Set this parameter in the **Post-Trigger** row when **Units** is set to **External**.
- **Post-Trigger**: You can configure these post-trigger parameters:
 - **Scan Duration**: The number of samples or length of time to acquire after the trigger.
 - **Scan Rate**: The sample rate per channel used to acquire post-trigger data.
Changes to **ExtClock Divisor** when **Units** is set to **External**.
 - **ExtClock Divisor**: Available when **Units** is set to **External**. The number used to divide the external clock rate. The default setting of *1* paces the acquisition at the same rate as the external clock frequency.
- **Units**: Sets the units to use for Scan Duration and Scan Rate. Also configures the device for an external clock source.
 - **Scan Duration**: Sets the units used to measure the length of the acquisition.
 - scans*: The number of samples to acquire.
 - msec*: The length of time in milliseconds to acquire samples.
 - s*: The length of time in seconds to acquire samples.
 - min*: The length of time in minutes to acquire samples.
 - hr*: The length of time in hours to acquire samples.
 - **Scan Rate**: Sets the units used to measure the sample rate, or instructs the device to use an external clock source to determine the acquisition rate.
 - External*: Determine the sample rate from an external clock. Connect the device's **PACER** screw terminal to an external clock, such as the pacer output of another logger device.
When selected, the **External Clock Edge** radio buttons are enabled, and the **Scan Timing** column header changes to **ExtClock Divisor** .
 - Hz*: Hertz
 - MHz*: Megahertz
 - kHz*: Kilohertz
 - s*: Second

- **Output Internal Pacer:** Select this check box to make the onboard clock available at the PACER terminal (to use the device as the clock source for another device, for example).
- **External Clock Edge:** Set the trigger edge of the external clock to either *Rising* or *Falling*.
This option is only enabled when **Units** is set to *External*.
- **Include Time-Stamps:** Set the default timestamp format included with logged data. Select from the following options:
 - *None:* No timestamp included with logged data.
 - *Seconds from Start (ss:ffffff):* Record the number of seconds that the data was logged after data acquisition began. Time displays as "seconds::fractions of a second (floating point)". For example, *0.0006*.
 - *Time of Day (HH::mm::ss::fff):* Record the time of day that the data was logged. Time displays as "hours::minutes::seconds::fractions of a second (floating point)". For example, *10:08:19.035*.
 - *Date and Time-US (MM/dd/yyyy HH:mm:ss:fff):* Record the date and time that the data was logged. Date/time displays as "month/day/year hours::minutes::seconds::fractions of a second (floating point)". For example, *04/05/2010 10:08:19.143*.
 - *Date and Time (yyyy-MM-dd HH:mm:ss:fff):* Record the date and time that the data was logged. Date/time displays as "month/day/year hours::minutes::seconds::fractions of a second (floating point)". For example, *2010-04-05 10:08:19.984*.
- **Startup/ Triggering:** Select the type of trigger that starts the acquisition from the **Type** listbox:
 - **Immediate Startup (no trigger):** The acquisition begins when you press the device's **START** button.
If the **Autostart new log upon device powerup** checkbox is selected (see on page 18), logging starts immediately if the device is powered and not connected to a computer's USB port.
 - **Digital Trigger:** The acquisition begins when the conditions of a digital trigger are met. You set these conditions with these parameters.
Edge: Set the edge on which to trigger as *Rising* or *Falling*. (edge trigger) or as High or Low (level trigger)
Edge (vs Level) Sensitive: Select this checkbox to set the trigger to *edge sensitive*.
Clear this checkbox to set the trigger to *level sensitive*.
 - **Analog Trigger:** The acquisition begins when the conditions of an analog trigger are met. You set these conditions with these parameters:
Edge/Level: Select whether the trigger is **Edge Sensitive** (triggers on a rising or falling edge), or **Level Sensitive** (triggers when the signal is above or below a threshold value. Set this parameter in conjunction with the **Polarity** parameter.
Polarity: Select **Rising/Above Threshold** to trigger when the signal rises above the threshold value, or **Falling/Below Threshold** to trigger when the signal drops below a threshold value.
Threshold/Hysteresis: Enter the threshold and hysteresis values. Threshold is the voltage level of the trigger point. Hysteresis is the **Range** that a signal must pass through before that signal can cause a trigger.
Range: Select *+/- 10 Volts* when you are using a low voltage trigger signal (10 V) connected to the logger device's analog trigger input pin.
Select *+/- 30 Volts* when you are using a high voltage trigger signal (30 V) connected to the device's analog trigger input pin.
 - **Multi-Channel Trigger:** The acquisition begins when the conditions of a multi-channel trigger are met. You set these condition with these parameters.
Logic: Select *And/All* to trigger the acquisition when the conditions for *all* channels are true.
Select *Or/Any* to trigger the acquisition when *one or more* channel conditions are true.
Configure the trigger conditions for each channel using the parameters in the multi-channel grid.
Apply: Select this check box to configure the channel with the selected trigger options.
Type: Select the type of trigger to use on the selected channel. Only the trigger types supported by the connected device are listed.
AboveThreshold: Triggers a logging session when the signal level rises above the threshold. The trigger stays valid until the signal level drops below the hysteresis range.

BelowThreshold: Triggers a logging session when the signal level drops below the threshold. The trigger stays valid until the signal level rises above the hysteresis range.

AboveThresholdWithLatch: Triggers a logging session when the signal level rises above the threshold. The trigger stays valid until the acquisition is complete and re-armed.

BelowThresholdWithLatch: Triggers a logging session when the signal level drops below the threshold. The trigger stays valid until the acquisition is complete and re-armed.

RisingEdge: Triggers a logging session when the signal level drops below the hysteresis range and then rises above the threshold. The trigger stays valid until the signal level drops below the hysteresis range again.

FallingEdge: Triggers a logging session when the signal level rises above the hysteresis range and then drops below the threshold. The trigger stays valid until the signal level rises above the hysteresis range again.

RisingEdgeWithLatch: Triggers a logging session when the signal level drops below the hysteresis range and then rises above the threshold. The trigger stays valid until the acquisition is complete, regardless of the signal level.

FallingEdgeWithLatch: Triggers a logging session when the signal level rises above the hysteresis range and then drops below the threshold. The trigger stays valid until the acquisition is complete, regardless of the signal level.

- o **Digital Pattern (Mis)Match Trigger**: The logging session begins when the conditions of a digital pattern trigger are met. You set these conditions with these parameters.

Condition: Select **Equal to Pattern (==)** to trigger the logging session when the binary numbers on a digital connector exactly matches a defined bit pattern. To trigger the logging session when the patterns don't match, select **Differ from Pattern (<>)**.

Pattern: Click on each bit (0 to 15) to set its value and define the bit pattern. Click once to set the bit to 0. Click again to set the bit to 1. Leave set to "X" (don't care) to exclude that bit from the comparison. Click the **All** button to cycle through setting all bits simultaneously to **0, 1, or X**.

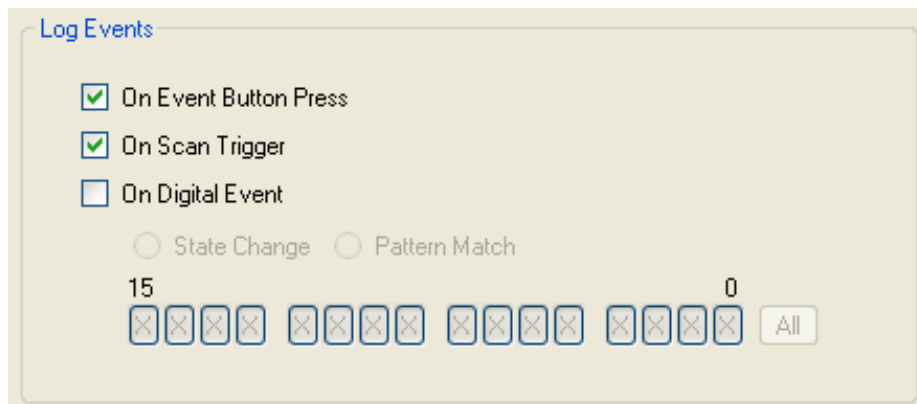
Configure these startup, timing, and duration, parameters on this dialog, and click **Next>>** to open the **New Log Settings...Configuring Event Recording...** dialog.

Configuring event log parameters

The **New Log Settings... Configuring Event recording ...** dialog contains parameters that determine the events to log during a logging session.

If you select any of the checkboxes on this screen, a separate event (.evt) log file is created along with the data file (.dat) during a logging session.

These parameters are explained below.

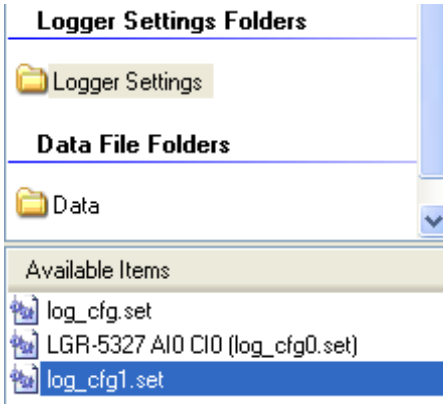


- **On Event Button Press**: Logs an event each time you press the device's **EVENT** button.
- **On Scan Trigger**: Logs an event each time a logging session is triggered.

- **On Digital Event:** Logs one of the following digital events:
 - **State Change:** Logs an event anytime the digital inputs change state.
 - **Pattern Match:** Logs an event each time the digital inputs match the defined pattern. A "1" indicates an active digital input, "0" indicates an inactive bit, and "X" denotes bits to ignore.

Configure these event parameters on this dialog, and click **Finish**.

The settings file is saved and listed in the **Available Items** pane on the main DAQLog window.



Modifying a settings file

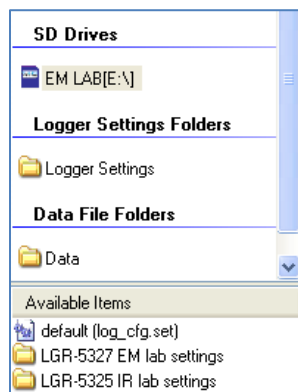
You may want to change some parameters in a settings file after you create it. You can change any parameter in a settings file *except* for the target device. You should create a new settings file if you want to configure another type of LGR-5320 Series device.

The initial step you take depends on where the settings file you want to modify is located.

Modifying settings stored on an SD card

To modify a settings file stored on an SD card:

1. Click on the SD card in the **SD Drives** location.
2. Browse the files and folders in the **Available Items** pane, and select the .set file you want to modify.



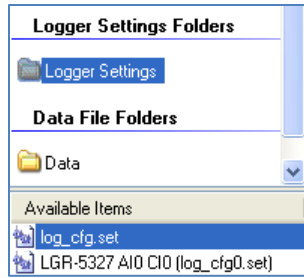
Change the settings in the file from the **Log Setup**, **Channels**, **Acquisition**, and **Events** tabs.

See “Modifying Log Setup parameters” on page 28 to learn how to modify settings using these tabs.

Modifying settings stored in a settings location

To modify a settings file stored in a settings location:

1. Click on the settings file in the **Logger Settings Folder** area.
2. Browse the files and folders in the **Available Items** pane, and select the .set file you want to modify.

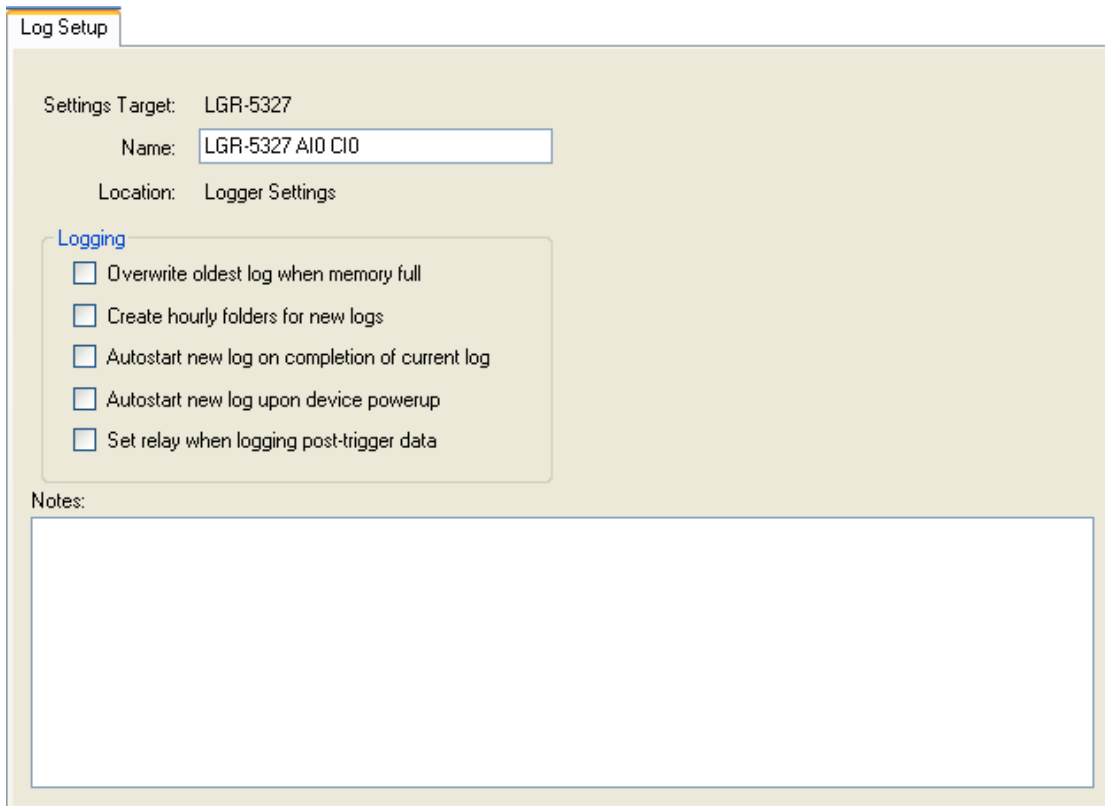


Change the settings in the file from the **Log Setup**, **Channels**, **Acquisition**, and **Events** tabs. See “Modifying Log Setup parameters” below to learn how to modify settings using these tabs.

Modifying Log Setup parameters

Click on the **Log Setup** tab to modify the logging session parameters in the file.

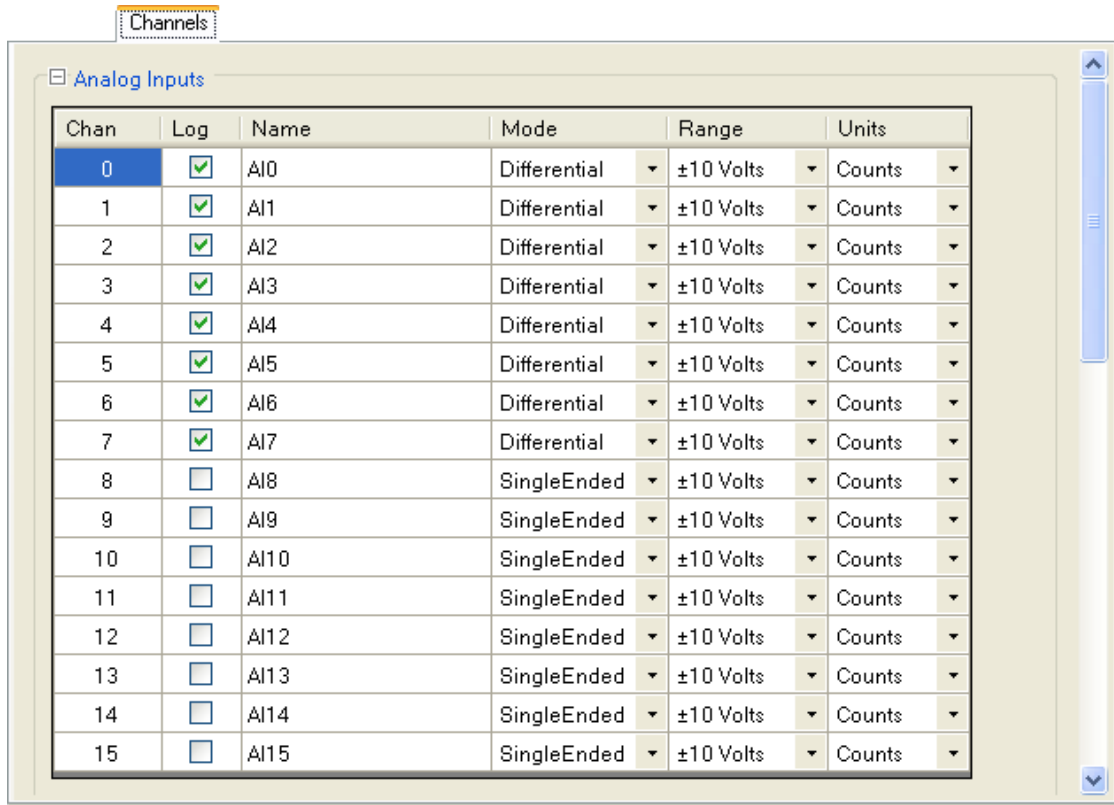
See “Configuring the logging session” on page 17 for detailed explanation of these parameters. You can change all settings except for the **Settings Target**.



Modifying Channels parameters

Clicking on the **Channels** tab to modify the parameters that determine the analog, counter, and digital input data to log. Use the scroll bars to scroll the grid down to display the counter and digital input parameters.

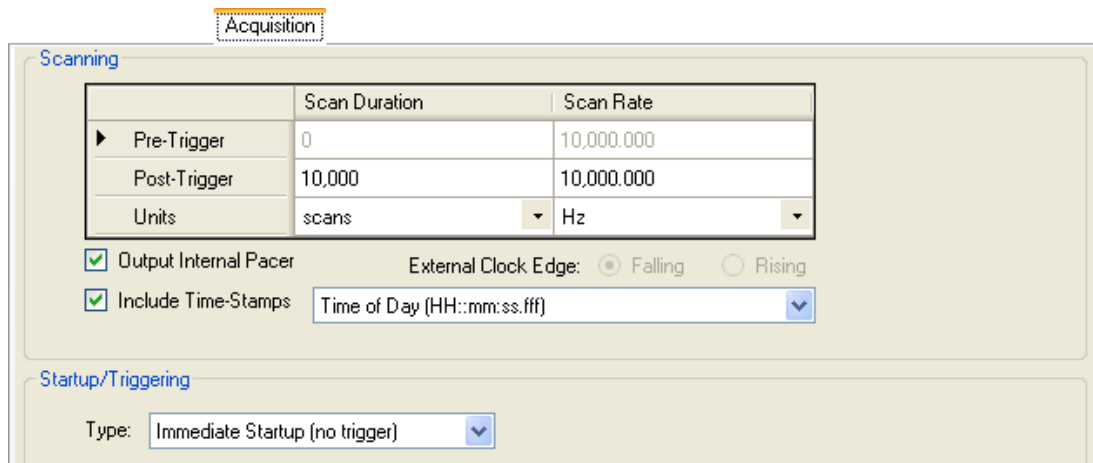
See “Configuring analog input parameters” on page 19, “Configuring counter input parameters” on page 20, and “Configuring digital input parameters” on page 23 for detailed explanation of these parameters



Modifying Acquisition parameters

Clicking on the **Acquisition** tab to modify parameters that determine the startup, timing, and duration of a logging session.

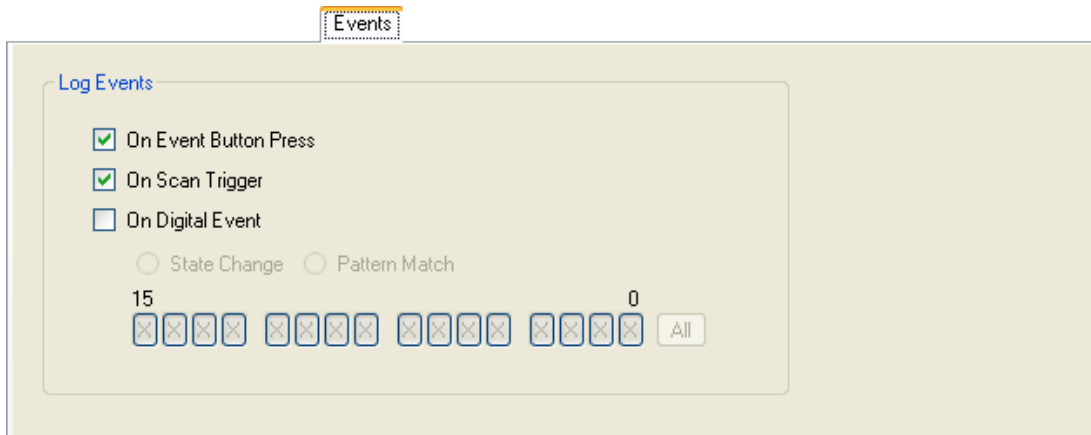
See “Configuring startup, timing, and duration parameters” on page 23 for a detailed explanation of these parameters.



Modifying Events parameters

Click on the **Events** tab to modify parameters that determine the events to log.

See “Configuring event log parameters” on page 26 for a detailed explanation of these parameters.



Saving your settings changes

When you are done modifying the parameter settings, click the Save toolbar icon.



The changes you made to the settings file are saved in the same location.

Deploying a settings file to a LGR-5320 Series device

Once you have a settings file you want to use to configure a LGR-5320 Series device, you can deploy the file to an SD card in a card reader installed on your computer. You can then remove the SD card from the reader, insert the card in the card slot in logger device, and load the configuration onto the device.

Other methods to deploy and load a settings file

Deploying a settings file over a USB connection

If your LGR-5320 Series device is connected to your computer’s USB port, you can deploy and load a settings file in one of the following ways:

- Directly to the device’s memory.
- To the SD card in the device’s card slot

Deploying directly to a LGR-5320 Series device


To copy, or deploy, your settings file from a settings folder location directly to your DAQLog, follow these steps.

1. Make sure the device is connected to a USB port on your computer.
2. Select the settings folder location where the settings file is stored.
3. Select the settings file in the **Available Items** pane.
4. Click on the Deploy Settings File toolbar icon on the toolbar.



If you have multiple devices installed, a **Select Settings Target** dialog opens.

5. Select the device to deploy to, and click **Deploy**.

 **Click-and-drag method**

You can also deploy a .set file to a device by clicking-and-dragging it from the **Available Items** pane to the **Logger Devices** location.

The **Settings Deployment—Successful** prompts you when the file deploys successfully.



The settings file is deployed and loaded to the LGR-5320 Series device’s memory. Your device is ready to log data using the configuration in this settings file.

Deploying to the SD card in a DAQLog

To copy, or deploy, your settings file from a settings folder location on your computer to the SD card in your LGR-5320 Series device, follow these steps.

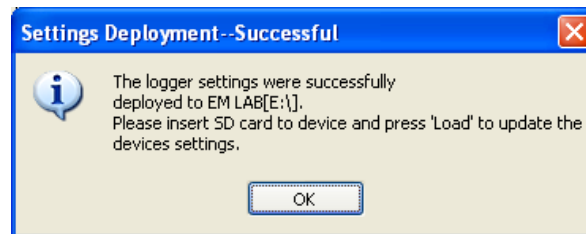
1. Make sure the device is connected to a USB port on your computer.
2. Select the settings folder location where the settings file is stored.
3. Select the settings file in the **Available Items** pane.
4. Click on the Deploy Settings File toolbar icon.



If you have multiple SD cards and/or devices installed, a **Select Settings Target** dialog opens.

5. Select the SD card in your device, and click **Deploy**.

The **Settings Deployment—Successful** dialog prompts you when the file deploys successfully.



6. Disconnect the USB cable from the device if it is connected.
7. Press **LOAD** on the device to load the settings file configuration to the device.

Your DAQLog is ready to log data using the configuration in this settings file

Deploying a settings file to an SD card in a card reader

To copy, or deploy, your settings file from a settings folder location on your computer to an SD card, follow these steps.

1. Select the settings folder location where the settings file is stored.
2. Select the settings file in the **Available Items** pane.
3. Click on the Deploy Settings File toolbar icon.



If you have multiple SD cards and/or devices installed, a **Select Settings Target** dialog opens.

4. Select the SD card to deploy to, and click **Deploy**.



Click-and-drag method

You can also deploy a .set file to an SD drive by clicking-and-dragging it from the **Available Items** pane to the **SD Drives** location.

The **Settings Deployment—Successful** dialog prompts you when the file deploys successfully.



5. Remove the SD card from the card reader, and insert it into the SD card slot on the device.
6. Disconnect the USB cable from the device if it is connected.
7. Press **LOAD** on the device to load the settings file configuration to the device.

Your DAQLog is ready to log data using the configuration in this settings file



Click-and-drag method

You can also deploy a .set file by clicking-and-dragging it from a *Available Items* pane to the *SD Drives* location or *Logger Devices* location.

Locating a settings file

You can also use DAQLog to open a folder location containing a settings file in Windows Explorer.

To open the location of a settings file in Windows Explorer, select the settings folder location or settings file and click the Locate File on Drive toolbar icon.



Windows Explorer opens the settings folder location.

Deleting settings files

You can delete one or more settings files from any folder location in the DAQLog configuration.

To delete settings files from a settings folder location, follow these steps.

1. Select the settings folder location where the settings file is stored.
2. Select the settings file(s) in the **Available Items** pane. Use the **Ctrl** and **Shift** keys to select multiple files.
3. Click the Delete toolbar icon.



Keyboard method

You can also select the file(s) and click the keyboard's **Del** key to delete the file(s).

The file is removed from the **Available Items** pane and deleted from the location where it was stored.

Working with Data Folder Locations, Data Files, and Converted Data Files

LGR-5320 Series devices use data (.dat) and event (.evt) files to store the data and record events during a logger session.

A data file is a binary file that contains data from a logging session. Data files can be stored on your computer and on an SD card.

You can also create locations whose main purpose is to store converted data files.

You can convert these binary data files to a *comma separated value* (csv) file that you can view in a spreadsheet application.

An event file logs events based on the configuration of a logging session.

Adding a data folder location

To add a new or existing folder location to store data files (.dat), do the following:

1. Click the **Add Data Folder** icon from the DAQLog toolbar.



Right-mouse click method

You can also add a data folder location by right-clicking anywhere in the **Locations** pane and selecting the **Add...»Data Folder** option.

A **Browse for Folder** dialog opens.

2. To use an existing location, navigate to the location and select it.

To create a new folder, click **Make New Folder**, enter a name for the folder, and click **OK**.

The new folder is created on your computer in the specified location.

The location appears in the **Data File Folders** area of the **Locations** pane. If you add a location that contains data and/or event files, those files are listed under **Available Items**.



Once you create a logger data location, you can:

- Create a settings file to store in that location (see “Creating a settings file” on page 17)
- Remove the folder location from the DAQLog configuration (see “Removing a settings folder location” on page 17)

Removing a data folder location

To remove a data folder location from the DAQLog configuration, select the location you want to remove and click the **Remove Location** toolbar icon.



Right-mouse click method

You can also remove a data folder location by right-clicking the settings location and selecting **Remove** from the popup menu.

The folder location is removed from the **Data Files Folder** area, but remains on your computer.

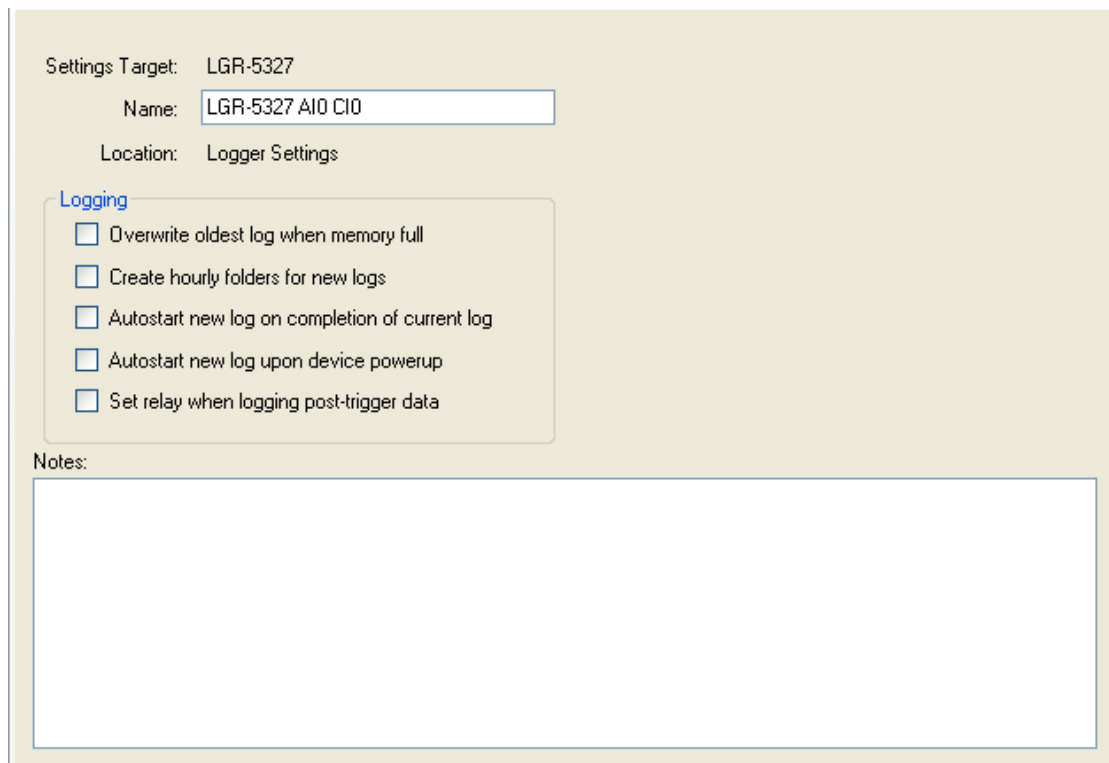
Removing a data folder location from DAQLog *does not* delete the location from the computer. To add the location to the DAQLog configuration again, refer to “Adding a data folder location” on page 33.

Creating a data file

A LGR-5320 Series device creates a data file based on the device’s current logging session configuration.

You configure when the device creates a data file from the **New Log Settings...Configuring Logging Session...** dialog when you create a settings file (see “Configuring the logging session: on page 17).

You can modify this setting from the **Log Setup** tab when you select the settings file.



Settings Target: LGR-5327

Name: LGR-5327 AIO CIO

Location: Logger Settings

Logging

- Overwrite oldest log when memory full
- Create hourly folders for new logs
- Autostart new log on completion of current log
- Autostart new log upon device powerup
- Set relay when logging post-trigger data

Notes:

Converting data files

In order to view and analyze DAQLog data and events, you must convert the data and event files to a comma separated value (.csv) file, and then open the .csv file in a spreadsheet application.

Once you have logged data on a LGR-5320 Series device, you can convert the data and event files in one of the following ways:

- Directly from SD card in the device over a USB connection
- From an SD card in card reader installed on your computer device's card slot

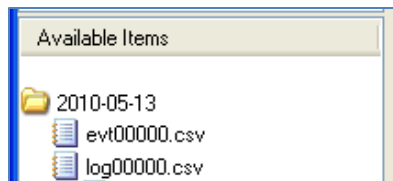
Before you learn how to convert a data file to a .csv file, learn about the options included in DAQLog for storing and organizing these converted file.

Setting converted data file storage parameters

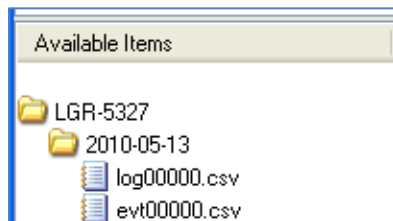
DAQLog stores converted data files in locations that are named based on the date of the log file being converted. Optionally, you can also have DAQLog create subfolders named for the device type and/or serial number of the logging device.

To view and/or change data file storage parameters:

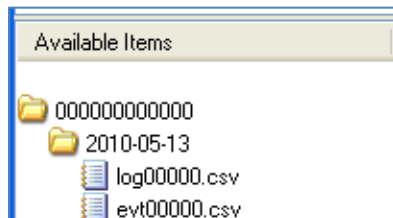
1. Select a folder location in the **Data File Folders** area.
The data file storage options display on the DAQLog window.
2. Set the **Store By:** parameters.
 - By default, DAQLog stores the .csv file in a folder named for the date the logging file was created.



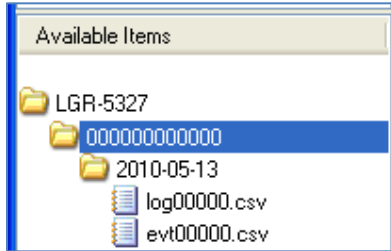
- Select the **Device Name** check box to store data in subfolders by the device name, then date created.



- Select the **Serial No.** check box to store data in subfolders by the serial number, then date created.

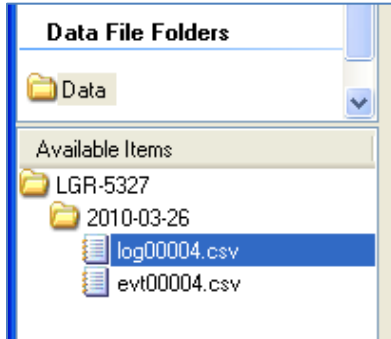


- o Select both check boxes to store data in subfolders by device name, serial number, then date created.

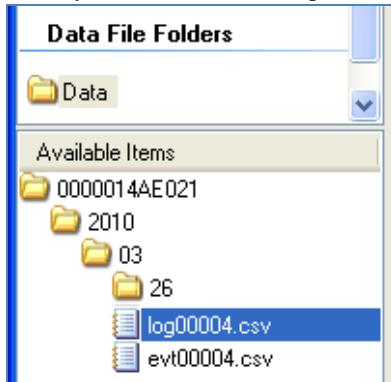


3. Set the **Date Directories** parameter:

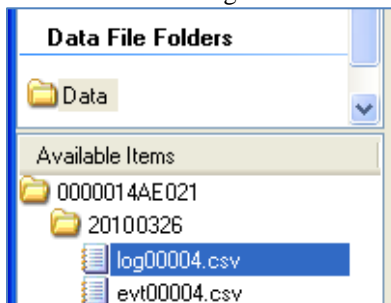
- o Select the **Separate Date Fields** radio button to store data in folders named for date the log was started. The file is named using the date format *YYYY-MM-DD*.



- o Select the **Split into Subdirectories** radio button to store data in separate subfolders for the year, month, and day that the data was acquired.



- o Select the **Keep the Same** radio button to store data in subfolders named for the date the log was started. Files are named using the date format *YYYYMMDD*.



- o *Keep The Same* – select this radio button to store data under the date the log was started. the date is formatted as *YYYYMMDD*; for example `\20100426\`.

4. Set the **Base Name** parameters.

- In the **Data** field, enter the characters added to the beginning of name of the converted data file. By default, a data file named *00006.dat* converts to *log00006.csv*.
- In the **Event** field the characters added to the beginning of name of the converted data file. By default, "evt" is appended to the file name. For example, entering *evt* converts *00006.evt* to *evt00006.csv*. By default, an event file named *00006.evt* converts to *evt00006.csv*.

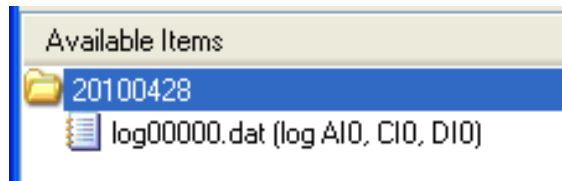
Converting a data file

To convert a data file, follow these steps.

1. Select the location where the data file is stored (usually one of the **SD Drives** locations).

The **Available Items** pane lists folders named based on the date you performed the logging operation. The date format used is "YYYYMMDD."

For example, the folder shown below was created on April 28, 2010.



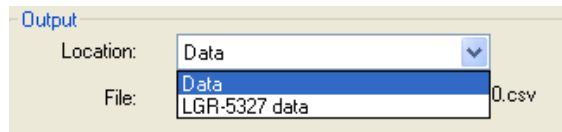
2. From the **Available Items** pane, click on the folder location containing the data, and then select the file to convert.

When you select a data file, you can change some of the parameters on the **Data Conversion** and **Settings** tab for converting the data file. Changing these parameters only changes the parameters for the current conversion—the stored defaults remain unchanged.

3. Click the **Refresh Location** toolbar icon.



4. From the **Location** listbox, select the folder location where you want the converted data to be stored.



5. Click on **Settings** tab to view the timestamp, pre-trigger and post-trigger, and channel configuration used when logging data to the data file.

You can change the time stamp format, channel names, and units parameters used during the logging session. See "Configuring startup, timing, and duration parameters" on page 23 to learn how to change the time stamp format.

See "Configuring analog input parameters" on page 19 to learn how to change the channel names and units. You change channels names using the same method for analog, counter, and digital channels.

6. Click on the **Convert Data File** icon on the toolbar.



A progress bar shows the progress of the conversion operation.

The .csv file is saved in the folder location you selected from the **Location** listbox.

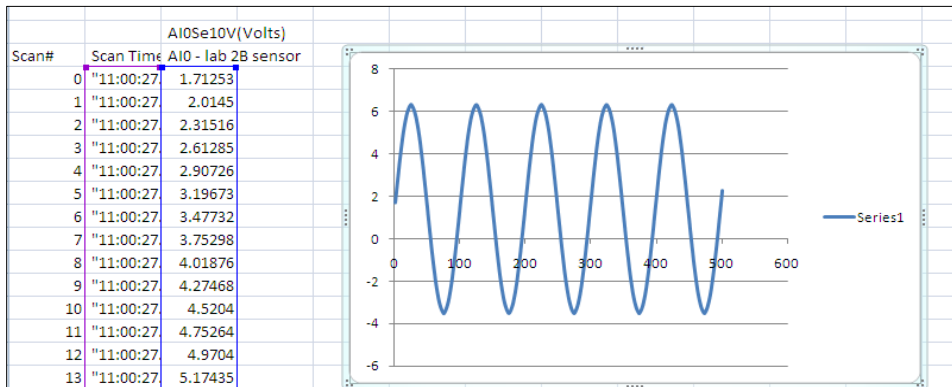
Viewing data and event files

Once you convert a DAQLog data file to a.csv file, you can view it in a spreadsheet application by following these steps:

1. On the **Data File Folders** pane, click on the folder location containing the .csv file you want to view.
2. Browse the folder in the **Available Items** pane until you see the .csv file, and then click the Locate File on Drive toolbar icon.



3. The selected folder location opens in Windows® Explorer, with the selected file highlighted.
4. Examples of a .csv data file and .csv event file opened in Microsoft® Excel® are shown below.
5. The scatter chart shown was added to the file, and is not generated during file conversion.



Converted data file (.csv) in spreadsheet.

	A	B	C	D	E	F	G	H	I	J	K
1	Event#	Event Time	Event Type	Value	Scan Index						
2		0 16:01:10.194	Button Press		119						
3		1 16:01:11.199	Button Press		219						
4											
5											
6											
7											

Converted event file in spreadsheet.

Deleting data files

You can delete a data file from the DAQLog configuration and from the selected location (usually an SD card).

To delete one or more data files, follow these steps.

1. Select the SD card or other location where the data file(s) is stored.
2. Select the data file(s) in the **Available Items** pane, and click the **Delete** toolbar icon.

Use the **Ctrl** and **Shift** keys to select multiple files.



Keyboard method

You can also select the file(s) and press the **Del** key to delete the file(s).

The file is removed from the **Available Items** pane and deleted from the location where it was stored.

DAQLog Walkthrough: Logging Data with a LGR-5320 Series Device

This chapter provides a step-by-step walkthrough of how to configure a LGR-5320 Series device using DAQLog, and then log data with the device using the configuration.

This example logs data from a single analog channel (AIO), and logs an event when the **TRIG/EVENT** button on the device is pressed.

This chapter assumes you have already completed the steps in the “Getting Started” chapter on page 9.

Create a new logger settings file

Follow these steps to create the settings file.

1. Click the **New Settings File** icon from the DAQLog toolbar.

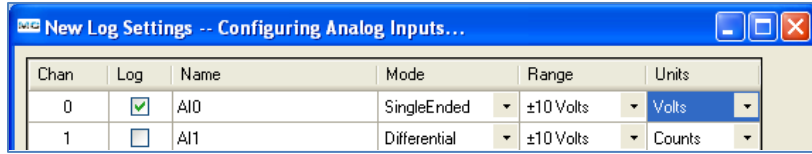


2. On the **New Log Settings--Configuring Logging Session...** dialog:
 - o Select *LGR-5327* from the **Settings Target** listbox.
 - o Enter *AIO SE* in the **Name** field.
 - o Enter *DAQLog walkthrough that logs one analog channel and records button press events* in the **Notes** field, and click **Next>>**.

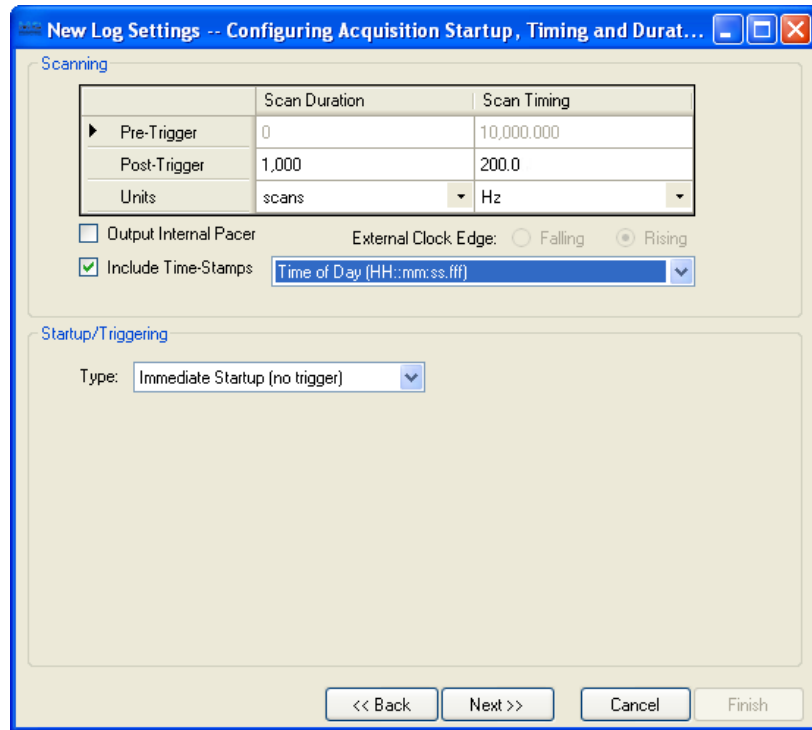
The screenshot shows a Windows-style dialog box titled "New Log Settings -- Configuring Logging Session...". It contains the following fields and options:

- Settings Target:** A dropdown menu with "LGR-5327" selected.
- Name:** A text input field containing "AIO SE".
- Logging Options:** A group box containing five unchecked checkboxes:
 - Overwrite oldest log when memory full
 - Create hourly folders for new logs
 - Autostart new log on completion of current log
 - Autostart new log upon device powerup
 - Set relay when logging post-trigger data
- Notes:** A text area containing the text "DAQLog walkthrough that logs one analog channel and records button press events."
- Buttons:** At the bottom, there are four buttons: "<< Back", "Next >>", "Cancel", and "Finish".

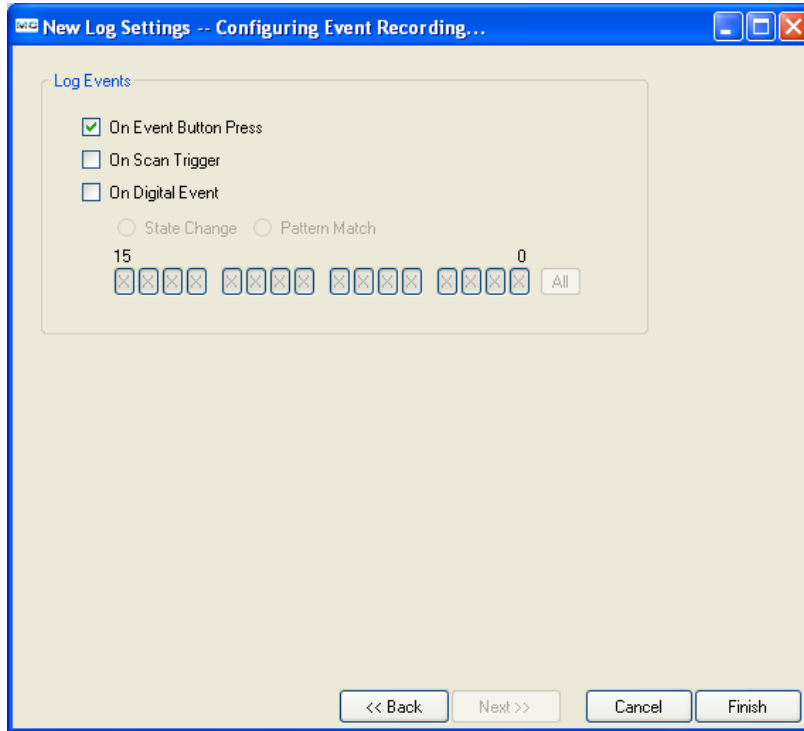
3. On the **New Log Setting--Configuring Analog Inputs...** dialog:
 - o Select the **Log** checkbox for **AI0**, and clear all other checkboxes.
 - o Select *SingleEnded* from the **Mode** listbox.
 - o Select $\pm 10V$ from the **Range** listbox.
 - o Select $\pm Volts$ from the **Units** listbox, and click **Next>>**.



4. On the next two dialogs, accept the defaults by clicking **Next>>**.
Counter or digital channels are not logged in this example.
5. On the **New Log Settings--Configuring Acquisition Startup, Timing, and Duration...** dialog:
 - o Set the **Scan Duration** to *200* (**Post-Trigger** row)
 - o Set the **Scan Rate** to *1,000.00* (**Post-Trigger** row), and click **Next>>**.



6. On the **New Log Settings--Configuring Events...** dialog:
 - o Select the **On Event Button Press** checkbox, and click **Finish**.



Deploy the settings file

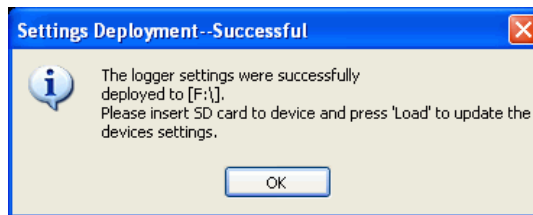
1. Select *AIO SE (log_cfg.set)* in the **Available Items** pane, and click on the **Deploy Settings File** toolbar icon.



2. If you have multiple deployment targets--multiple SD cards--select the SD card from the **Select Settings Target** dialog.

If you have only one deployment target—one SD card—the settings file is automatically deployed to that target.

3. Click **OK** on the **Settings Deployment--Successful** dialog.



Log data

Now that you have deployed your settings file, you can log data with your device using those settings.

This example uses a **10 Hz, ± 5 V sine wave** as a signal source.

1. Remove the SD card with the deployed settings file from the card reader, and then insert card into the card slot on the device.
2. Disconnect the USB cable if you connected it previously.
3. If you deployed the settings file directly to the device, the settings are already loaded onto the device.
If you deployed the settings file to an SD card, press **LOAD** on the device to load the settings file configuration to the device.



4. Press **START** on the device to start the logging session, and then press **TRIG/EVENT** on the device.



5. When the **LOG** LED turns off, remove the SD card from the card slot, and insert it back into the card reader in your computer.



Convert the data file

Now that you have logged data, you need to convert the binary data file in order to view the data.

1. On the **SD Drives** pane, click on the SD card, and then click the **Refresh Location** toolbar icon.



2. Click on the folder in the **Available Items** pane, select the *logxxxx.dat* file, and then click on the **Convert Data File** toolbar icon to convert the data file to a comma-separated (.csv) file.



View the converted data file

To locate and view the .csv file:

1. On the **Data File Folders** pane, click on the **Data** folder and browse the folder in the **Available Items** pane until you see the *logxxxx.csv* file.
2. Click on the .csv file, and then click the Locate File on Drive toolbar icon.

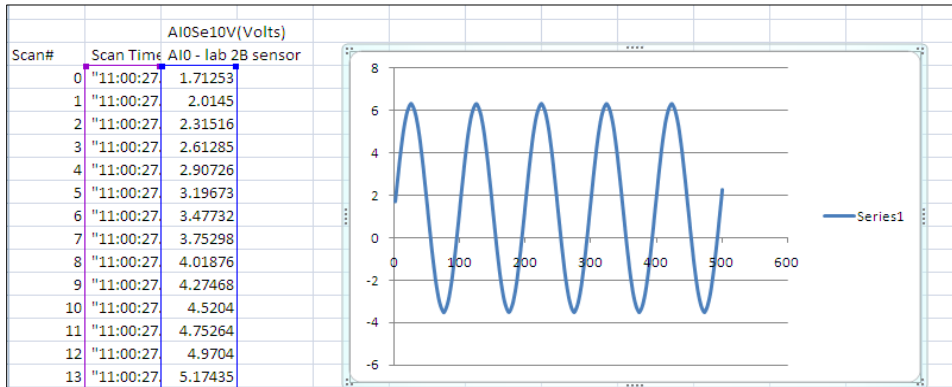


You can open the .csv file in spreadsheet application.

If you do not have a spreadsheet application, you can open it in a text editor or word processing application.

Examples of data and event .csv files opened in Microsoft® Excel® are shown below.

The scatter chart shown was added to the file, and is not generated during file conversion.



Converted data file in spreadsheet

	A	B	C	D	E	F	G	H	I	J	K
1	Event#	Event Time	Event Type	Value	Scan Index						
2		0 16:01:10.194	Button Press		119						
3											
4											

Converted event file in spreadsheet

Now that you have done a simple logging operation, you can add more analog channels, and log counter and digital channels as well. You can also set up triggers that starts the logger based on conditions related to the input data.

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