

# USER MANUAL

Model 3330 G-Logger



Model 3340 G-Logger



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## HARDWARE & SYSTEM REQUIREMENTS

The 33x0 is designed to work exclusively with SDI accelerometer modules requiring 8 to 32 V DC power and also has a chip test function compatible with SDI's 1521, 1522, 1531, and 1525 surface mount accelerometers when combined with an EB-J or EB-L test board set. It does not currently support SDI models 1410, 1527, 2225, 2227, 2012, 2422 or 2422H, as well as other accelerometer brands.

System requirements to use the 3330 or 3340 G-Logger include:

- Microsoft Windows XP or newer
- Desktop, laptop, or notebook PC
- 2 GB available RAM
- 50 GB available hard disk space
- Available USB 2.0 or 3.0 port
- An internet connection may be needed during software installation

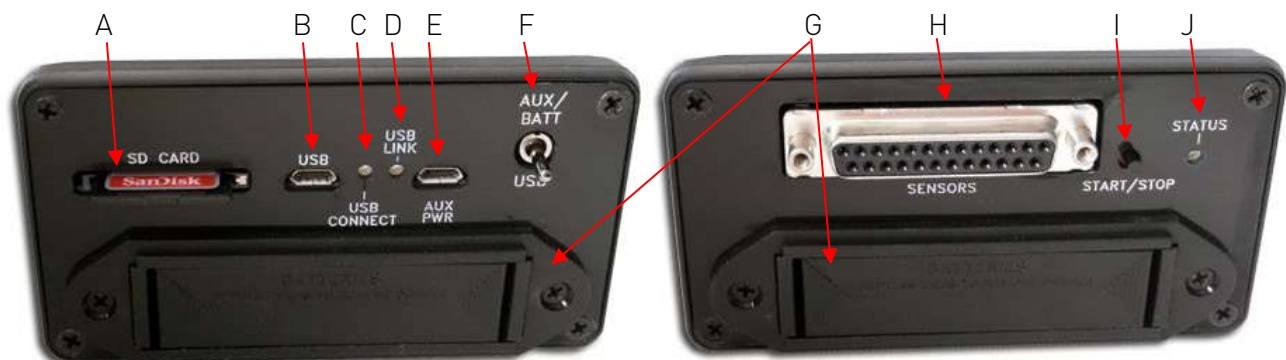
## INCLUDED CONTENTS

Please check that the following items are included in your box before using your G-Logger:

1. SDI Model 3330 or 3340 G-Logger Data Acquisition System
2. SD memory card (may be installed in G-Logger if unit is preconfigured)
3. 25 Pin terminal strip adapter (may be installed on accelerometer cable if unit is preconfigured)
4. USB A to Micro B cable
5. Installation Software

If missing any item, please contact [support@silicondesigns.com](mailto:support@silicondesigns.com).

## FEATURES



### Front Plate

- A) SD memory card slot
- B) USB cable port
- C) USB Connect light
- D) USB Link light
- E) Auxiliary power port\*
- F) Power source selection switch\*

### Back Plate

- G) Double-sided battery compartment\*
- H) 25-Pin terminal strip port
- I) Start/Stop button \*
- J) Status light

\*Feature only on Model 3340

## FEATURE DESCRIPTIONS

### SD MEMORY CARD SLOT

The 3330 and 3340 G-Loggers are supplied with a 16 GB SD card and can support up to 32 GB on a SDHC or SD type memory card, or micro-SD memory card with an adaptor. The card must be speed class 6 or higher. While the G-Logger can use most brands, extensive testing has determined that KINGSTON memory cards have inconsistent quality levels and should **NOT** be used with the G-Logger. Maximum individual file size is 4 GB.

### USB CABLE PORT

Use the included USB-to-micro-USB cable to connect the G-Logger to your computer's USB port. This is necessary to power the 3330 G-Logger and accelerometer or one of the power source options for the 3340.

### USB CONNECTION LIGHT

The LED is solid when the unit is connected via the USB cable to a computer.

### USB LINK LIGHT

- The LED flashes when the G-Logger is trying to establish a connection.
- The LED is solid when the G-Logger successfully communicates with the host computer.

### AUXILIARY POWER PORT (3340 ONLY)

For supplying power only. Use the Auxiliary Power Port if an external power source is preferred or necessary *when the 3340 is not connected to a computer/laptop*. Sources can include portable battery packs, a USB cable to car adapter or port, or to wall power using a USB adaptor.

### POWER SOURCE SELECTION SWITCH (3340 ONLY)

Flip the toggle to select USB power from a computer or AUX PWR for an external power source.

### DOUBLE-SIDED BATTERY COMPARTMENT (3340 ONLY)

The 3340 supports standalone mode with 8 "AA" batteries (not included)

### 25-PIN TERMINAL STRIP PORT

Attach the 25-pin terminal strip to this port. Always connect the accelerometers to the strip BEFORE connecting to the G-Logger.

### START/STOP BUTTON (3340 ONLY)

See [3340 Standalone Settings](#) for instructions on configuring the 3340's Start/Stop function.

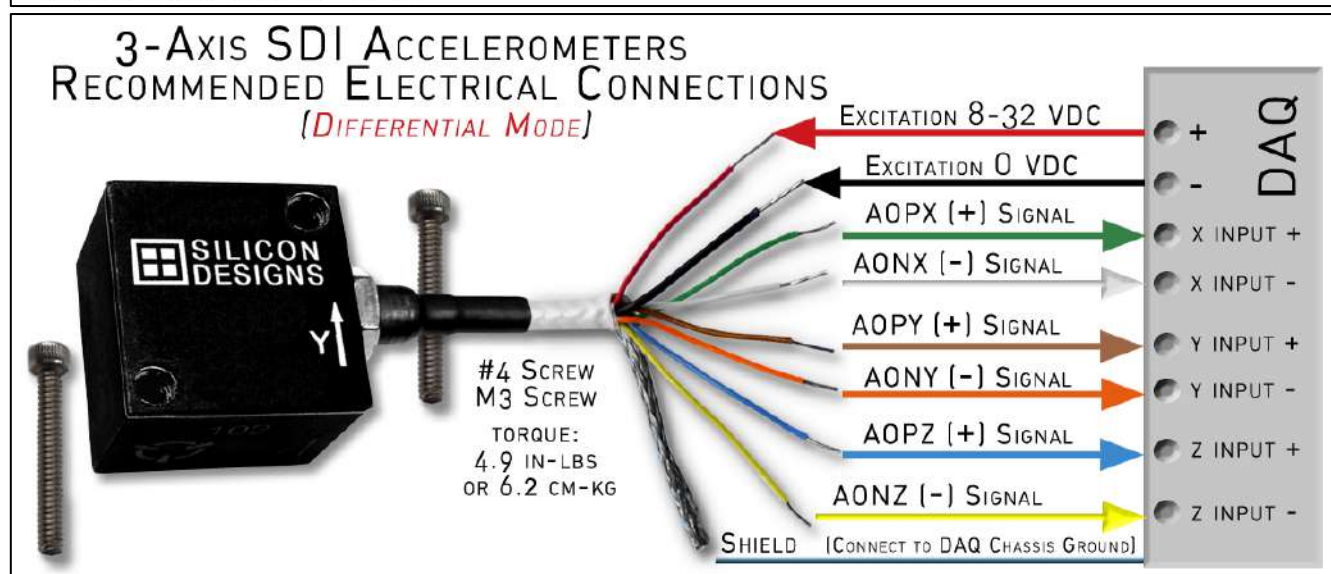
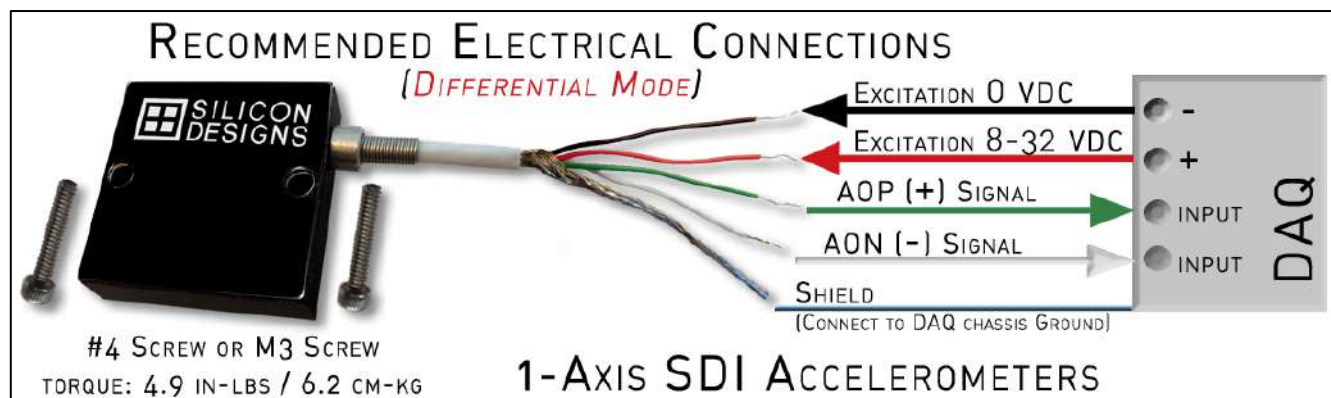
### STATUS LIGHT

- Slow, regularly blinking light indicates data acquisition in progress.
- Rapidly, irregularly blinking light indicates an error. Get log for details.
- Off means not acquiring data and no errors

### COIN BATTERY (NOT SHOWN IN PICTURE)

Inside the unit is a 3-volt type CR2032 coin battery. When power is removed from the unit, this coin battery retains the clock time and log information. This battery typically lasts 1 year in the G-Logger and can be easily replaced by unscrewing the plates and removing the lid.

## 25-PIN TERMINAL STRIP PIN LAYOUT



TOP ROW PIN #	1	2	3	4	5	6	7	8	9	10	11	12	13
TOP ROW SIGNAL	CH 0 0 Volt	CH 0 AON	CH 1 0 Volt	CH 1 AONY	CH 2 0 Volt	CH 2 AONZ	X	X	X	X	X	X	X
BOTTOM ROW PIN #	14	15	16	17	18	19	20	21	22	23	24	25	SH
BOTTOM ROW SIGNAL	CH 0 AOP	CH 0 8-32 V	CH 1 AOPY	CH 1 8-32 V	CH 2 AOPZ	CH 2 8-32 V	X	X	X	X	X	X	Shield

3, 5, 17, & 19 not used w/ 3-Axis

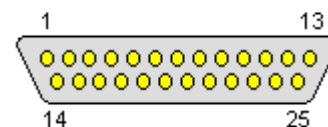
X = Not in use



Shield connection is required.

Alternatively, you can hard-wire the accelerometer cables to a 25 Pin Male D-sub (not included).

Note: There will be no "0 Volt" or "8-32 V" connections on PIN 3, 5, 17, or 19 when connecting a 3-axis module.



## SOFTWARE INSTALLATION

The SDI G-Logger software package consists of two programs, SDIServer and SDILogger. Both applications must be installed and running for the G-Logger to function and display data. Installation should take less than 5 minutes. You can also [download](#) additional copies from the SDI website.

### SDIServer Explained

This is a passive program and runs in the background to support the SDILogger program's features. It can also act as a server, transmitting data to the SDILogger application via TCP/IP to support remote access through the SDILogger program. SDIServer must be running on the same computer to which the 33x0 is connected via the USB cable.

### SDILogger Explained

The SDILogger program is the graphical user interface for the 33x0. This is where you can configure, view, record, and play back the data you collect. The SDILogger may either be installed on the same computer as SDIServer, or on a different computer where remote viewing is desired.

### Installing the Software

- 1) Using Windows Explorer, open the CD drive or unzip the download folder
- 2) Click on Setup.exe
- 3) Click YES to allow the installer to make changes to your computer
- 4) Click NEXT on the G-Logger Setup Wizard screen
- 5) Check both boxes and click INSTALL
- 6) Click NEXT to the Device Driver Installation Wizard
- 7) Click FINISH to complete the Device Driver Installation Wizard

If your PC already has .NET installed, the installer will detect this and proceed to step 8. Steps a. through d. below will only appear if your PC needs .NET installed. In this event, you will need an internet connection to download .NET.

- a. Click OK to begin .NET framework download
  - b. Click OK to install .NET framework
  - c. Check the box to accept the .NET license terms and click INSTALL
  - d. Click FINISH to complete the .NET installation
- 8) Click FINISH to the G-Logger Setup Wizard



## SDIServer

*Always launch SDIServer prior to launching SDILogger. It must run in the background on the computer that connects to the 33x0 to provide a server platform for the user interface.*

Before launching SDIServer, ensure your G-Logger is connected to the computer, the accelerometer(s) are wired properly, and the 25-Pin Strip is securely connected.

Open the SDIServer application, which will launch this small window. You can now open SDILogger.

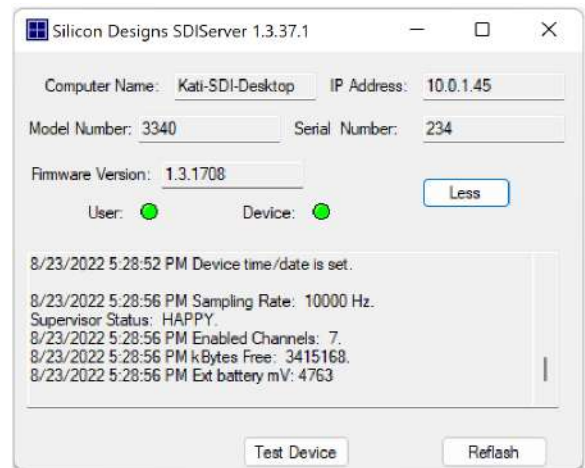
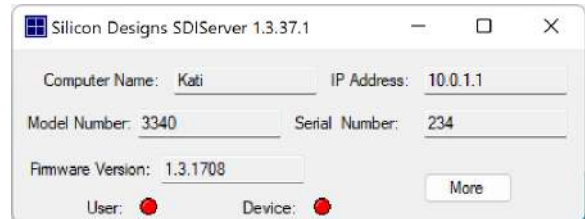
For details of the connection and accelerometer(s), click on the MORE button.

To test the device for a successful USB connection, click TEST DEVICE. The Device light should briefly turn green. If it does not, check that you have the device's USB cable plugged into your host PC.

Once you connect to the device, launch SDILogger, and an accelerometer configuration is actively running, the User and Device buttons will turn green. They will remain green as long as a successful connection remains open and the SDILogger program continues to run.

If the 33x0 G-Logger is connected to a host computer and being used as a remote server, the SDIServer application must be running on that host computer. The IP Address of the SDI Server is available at the top right.

The REFLASH button will update the firmware and should ONLY be used with SDI's assistance.



## SDILogger - CONNECT tab

SDILogger is the graphical user interface for the 33x0. It configures the accelerometers, controls the 33x0, displays the data, and provides access to saved data streams.

- 1) Connect your G-Logger by the USB cable and attach the 25-pin adapter with accelerometers.
- 2) Launch the SDIServer program.
- 3) Launch the SDILogger program.

If your G-Logger is preconfigured by SDI or already configured from prior use, skip to the next section [Pre-Configured G-Logger / Use Existing Configuration](#) to maintain your configuration.

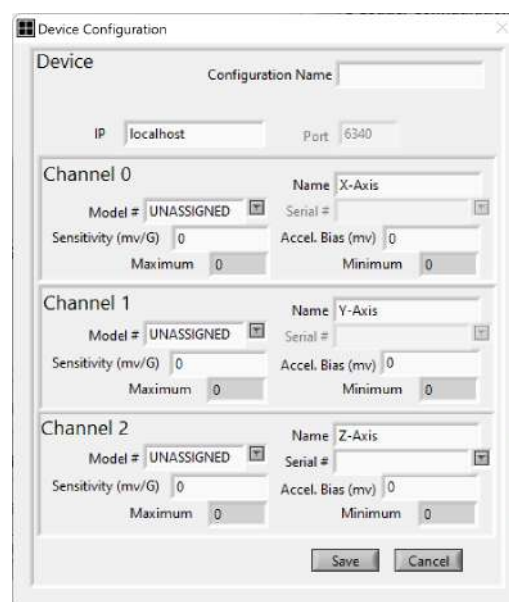
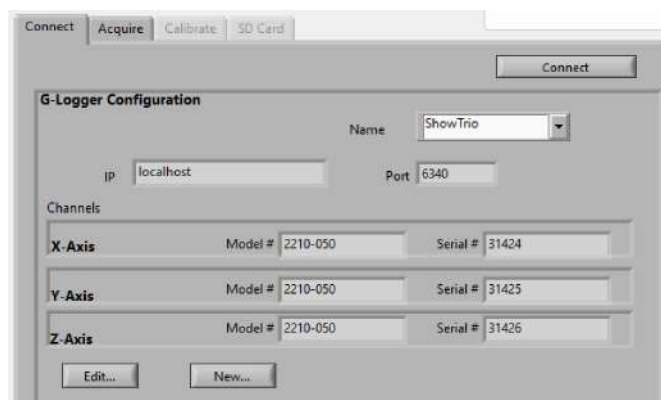
## G-Logger Configuration

If your G-Logger is preconfigured by SDI or already configured from prior use, skip to [Pre-Configured G-Logger / Use Existing Configuration](#) to maintain that configuration.

### NEW

If your accelerometers are new to your G-Logger, or your G-Logger is brand new but not preconfigured:

- 1) On the Connect tab, click **New** and a Device Configuration pop up will open.
- 2) Enter a name for this configuration of accelerometers, i.e. "ShowTrio."
- 3) Leave the IP field as "localhost" if your SDIServer and SDILogger are running on the same computer.
- 4) Repeat the following process for all channels with accelerometers wired on them:
  - a) Enter a name for this module or axis, i.e. "2470sn222" or "X-Axis" or "left 2210."
  - b) Choose the SDI accelerometer model # from the drop down.
    - i) A 3-axis module will auto-fill the Y and Z axes to channels 1 and 2.
  - c) Enter the serial number from the accelerometer.
  - d) Sensitivity & Bias will be automatically populated with SDI's default values for the Model selected. If entering the data for your specific module, the Sensitivity is also called "Scale Factor" and can be found on the module's bag or sticker on the cable.
  - e) Maximum and Minimum are auto-filled based upon the g-level of the selected model.
- 5) Click **Save** and the pop up will close and save the configuration to your PC.
- 6) Click **Connect**. Your 33x0 is now ready to collect data.





## EDIT

Select EDIT if you have already used this G-Logger and would like to replace the attached accelerometer or modify an existing configuration.

- 1) If button in the top middle of the CONNECT screen shows **DISCONNECT**, click it to enable the **Edit** button, and then click **Edit**.
- 2) Modify the fields of the Device Configuration to the desired values, as described in step 5) of New Configuration and click **Save**.
- 3) If prompted, select **Update to New Configuration** to write your new configuration to your device.
- 4) Your 33x0 should automatically connect at this point and is ready to collect data. If not, click **Connect**.

## Pre-Configured G-Logger / Use Existing Configuration

If your 33x0 came pre-configured with one or more accelerometers, the channels will already have assigned model numbers and custom calibrations *stored on the 33x0 device*. To retain these preconfigured settings, be sure to use **Keep Last Configuration** in step 4 below.

- 1) Connect the accelerometer(s) to the 33x0 and connect the 33x0 to the computer's USB port.
- 2) Launch the SDIServer program.
- 3) Launch the SDILogger program.
- 4) You may see a pop-up asking if you would like to **Update to New Configuration**, **Keep Last Configuration**, or **Cancel**. This is used to sync settings between the 33x0 and your computer.
  - a. If this 33x0 device's settings match those saved the last time the SDILogger program was used on this computer, you will not see the pop-up. No changes are necessary unless you wish to change the accelerometer(s).
  - b. Choose **Update to New Configuration**
    - i. if it is your first time connecting to an *unconfigured* 33x0. This writes a new or edited configuration from your computer to your 33x0 device.
    - ii. to write the saved configuration last used on this computer onto the 33x0, overwriting the previous settings stored on the device.
    - iii. Do not use this if it is your very first time connecting to a *preconfigured* device.
  - c. Choose **Keep Last Configuration**
    - i. to use the *preconfigured* settings of your new 33X0 device.
    - ii. to update the SDILogger program on this computer with the last configuration stored in this 33x0 device.
  - d. If you click **Cancel**, the SDILogger program will not try to connect to the 33x0 device, and any differences between the settings on the 33x0 and the host computer remain unresolved.
- 5) The 33x0 should automatically connect at this point.
- 6) You are now ready to collect data.

## Chip Mode Accelerometer Testing



Silicon Designs is the manufacturer of the actual accelerometer LCCs inside all of its modules. To support other OEMs using SDI's accelerometer LCCs, the G-Logger has a Chip Mode to support rapid calibration and characterization of every SDI chip prior to installation.

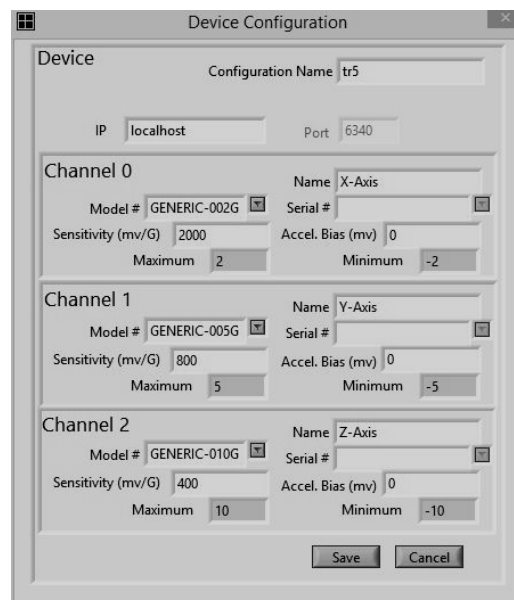
To support other OEMs using SDI's accelerometer LCCs, the G-Logger has a Chip Mode to support rapid calibration and characterization of every SDI chip prior to installation.

Up to three of either the EB-L Analog or EB-J Analog test boards may be connected to your SDI G-Logger allowing the product to be used for testing or as a development tool for SDI 15xx accelerometer chips. Connect the ribbon cable as shown in table below. In this mode the G-Logger will provide regulated 5 volt DC to the evaluation board.



Signal	G-Logger Terminal adapter PIN			Wire Color
	CH 0	CH 1	CH 2	
AOP	14	16	18	Green
VDD	13	13	13	Blue
AON	2	4	6	Grey
GND	1	3	5	Black

In the device configuration screen select the generic G range for the device you will be testing. Include the serial # for each chip. The default sensitivity will automatically be set for each device.



## SDILogger - ACQUIRE tab

The ACQUIRE tab consists of six sections: Setup, Data, Spectrum, Meters, Events (3340 only), and GPS (3340 only).



### ACQUIRE/Setup

The Setup section is for configuring the data collection settings. If necessary, click the STOP CAPTURE button to access ACQUIRE/Setup.

#### START CAPTURE



This button is displayed on and behaves identically across the Setup, Data, Spectrum, and Meters pages.

Click on **Start Capture** to begin collecting data from the attached SDI accelerometer module(s). This powers the accelerometer(s), starts data acquisition, and begins displaying data.

If data capture is in progress, the button will display **Stop Capture** instead.

Once viewing begins, see [ACQUIRE/Data](#) for additional instructions.

#### SAVE TO FILE

**Save To File** is only enabled following an acquisition. If unavailable, click **Stop Capture**.

Files are automatically saved to the SD card, and can also be saved to the PC by clicking **Save To File**. The most recently acquired data will be saved to your PC as a .bin (binary) file in the directory: C:\users\{username}\Documents\SDI

#### DISPLAY FILE

The **Display File** button is shown on and behaves identically across the Setup, Data, Spectrum, and Meters pages.

**Display File** will open a file previously saved to your PC, rather than view real-time data. To display a file previously stored on our 33x0's SD card, click on the SD Card tab (see [SD CARD TAB](#) for more details).

#### EXPORT

**Export** will convert a previously saved SDI G-Logger binary data file to text, CSV (readable by Excel), or MATLAB format.

1. Select the source binary file you wish to convert and click OK.
2. Select the file type to which you would like to export.

The columns in the exported \*.txt file are in the following order:

1. Date of sample in month/day/year format, followed by a space
2. time of sample in clock format of 24-hour: minute: sec: 1/100<sup>th</sup> seconds, followed by a tab
3. x-axis sample, followed by a tab
4. y-axis sample, followed by a tab
5. z-axis sample (samples are scaled to Gs in units of calibrated data), followed by a return.

The \*.csv are identical to the \*.txt files, except that tabs are the delimiters instead of spaces.

The MATLAB files use the binary \*.mat, version 4, which is readable by all versions of MATLAB. To read the .mat file, use the following command:

```
load myfile.mat
```

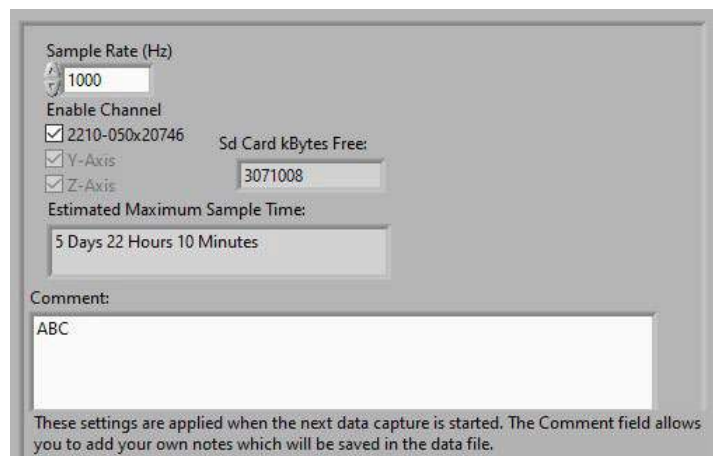
You should now have a new variable in your workspace. The MATLAB workspace variable name will match that of your original binary file name suffix. The variable will have 4 columns:

- 1) time of sample in seconds, starting at zero and incrementing by sampling period
- 2) x-axis sample
- 3) y-axis sample
- 4) z-axis sample

## SAMPLE RATE

Select the minimal sampling rate and number of channels that will give you the resolution your application requires. This will reduce your file size and increase the maximum acquisition time that can be stored on the SD card and host PC. Reducing your sampling rate is highly preferred over downsampling for this reason.

- The 33x0 supports up to 10Khz/channel, and each sample is 16-bits.
- Turn on or off the acquisition of the active channels by checking or unchecking the boxes. This will not record their data streams and save file size.
  - The Data tab provides a HIDE function to still collect the data but hide it during playback.
- The G-Logger has a built-in hardware filter at 50% of sample rate.



The screenshot shows a configuration window for the G-Logger. It includes a 'Sample Rate (Hz)' field set to 1000. Below it, there are checkboxes for 'Enable Channel', '2210-050x20746', 'Y-Axis', and 'Z-Axis'. To the right, 'Sd Card kBytes Free:' is shown as 3071008. Below these, 'Estimated Maximum Sample Time:' is displayed as '5 Days 22 Hours 10 Minutes'. At the bottom, there is a 'Comment:' field with the text 'ABC'. A note at the very bottom states: 'These settings are applied when the next data capture is started. The Comment field allows you to add your own notes which will be saved in the data file.'

File headers on your G-Logger's SD card and any binary files stored on your PC contain all of your configuration, device, acquisition, and calibration information. If you wish to store additional details regarding an acquisition, enter this into the COMMENT field to add it into your file headers.

When selecting the sample rate in hertz per channel,

- if you are trying to see 1 Hz vibration data, consider increasing the sample rate to 10hz to reduce aliasing.
- each sample is 16 bits (2 bytes) / channel.
- max file size is 4GB (using up to a 32GB SD card).
- the estimated maximum sample time is calculated from the sample rate and available memory.
- for example: entering 100Hz for 3 channels would be 600 bytes/ second or roughly 52MB per day.

When choosing the sampling rate, also take into account that the G-Logger hardware automatically applies a low pass, anti-aliasing filter with a cut-off frequency that is 25% that of the chosen sampling rate. Thus, the sampling rate should be at least 4 times that of the greatest signal frequency of interest.

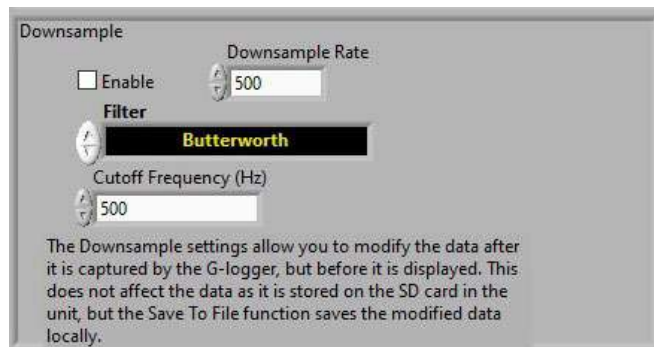
All the compatible SDI accelerometers provide an analog output, so the signal is effectively a stream.

## DOWNSAMPLE

The anti-aliasing filter's cut-off frequency can be set indirectly by changing the sampling rate. To achieve the flattest passband region, the hardware's anti-aliasing filter is a 5<sup>th</sup> order Butterworth.

Downsampling is not recommended except in cases where you are already using the minimal sampling rate but need to further reduce your exported file size.

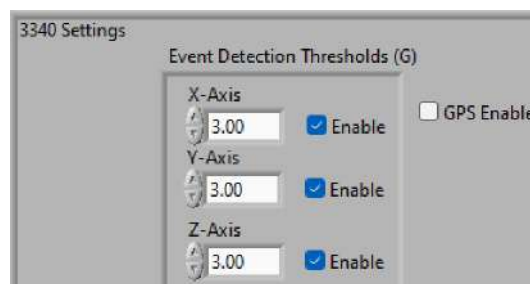
If you do enable downsampling, select the downsampling rate (in hertz per channel). Then choose the downsampling filter option, as well as the cutoff frequency with respect to the downsampling rate.



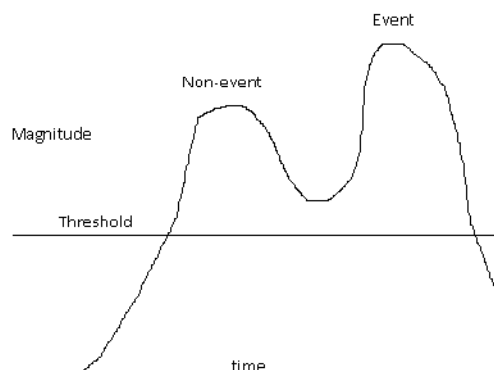
## 3340 SETTINGS – EVENT DETECTION

The 3340 can identify and report peak events. When enabled, the 3340 will identify events and automatically write to a file on the SD card *when recording is initiated by clicking **Start Capture** in the user interface.*

To enable event detection on a given channel, check the ENABLE box for that channel, and provide a threshold value, greater than zero, above which an event will be recorded.



- 1) The thresholds are in units of G magnitude, so both positive and negative events will be captured.
- 2) Events can be captured on all three channels simultaneously and independently.
- 3) It may require some experimentation to determine appropriate event thresholds for your particular application.
  - a. If the 33x0 detects more than 60 events per minute, the event detector will stop itself, but acquisition will continue. If this happens, try increasing your event threshold so it is less sensitive next time.
  - b. If you are not getting enough events, decrease the event threshold to increase sensitivity.
  - c. If the magnitude remains over the event threshold for consecutive samples, only one event will be reported for each time duration that the magnitude continuously exceeds the threshold. Even if there are multiple peaks within that duration, only the maximum peak is reported. For instance, the lesser peak is not reported here:



- 4) Event display is described in the EVENTS section.

The event file shares the same prefix as the associated accelerometer data file, but with a \*.evt suffix instead of a \*.bin suffix.

For further instructions, see [EVENTS](#).

## 3340 STANDALONE SETTINGS

### 3340 Standalone Settings

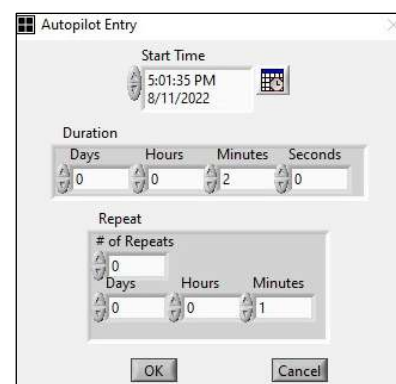
Available only with the 3340 G-Logger, this creates a custom data acquisition schedule and further configures event detection. The Standalone Settings are used when acquisition is initiated *via an external button press on the device itself or by a scheduled acquisition*, as opposed to clicking **Start Capture**.

Status	Start Time	Duration	# of Repeats	Repeat Interval

New Edit Copy Delete

The Scheduled Acquisitions table allows configuration of automatic, timed acquisitions. Click on **New** to add an entry to the Scheduled Acquisitions table.

1. Set the Start Date and Start Time to your desired future starting time.
2. Set the acquisition duration. The maximum duration depends on how much space is available on your SD card, as well as your acquisition data rate, up to a max file size of 4GB.
3. If you want this entry to repeatedly acquire data at a fixed interval for a fixed duration, set the # of Repeats field to the number of additional data acquisitions that you would like. If this field is zero, this entry will only acquire data once, beginning at the specified start time. Each entry may repeat up to 100 times, or until the SD card is full.
4. Set the Days, Hours, and Minutes to the period at which you would like the data acquisition to repeat. The repeat interval must be greater than the duration of the acquisition, as it is calculated from the previous start time.
5. Click **OK** to save this entry to the Scheduled Acquisitions table, or **Cancel** to discard.



Autopilot Entry

Start Time  
5:01:35 PM  
8/11/2022

Duration  
Days: 0 Hours: 0 Minutes: 2 Seconds: 0

Repeat  
# of Repeats: 0  
Days: 0 Hours: 0 Minutes: 1

OK Cancel

The Status field shows the status of each entry:

1. "Ready" means the entry is ready to run on the future scheduled date.
2. "Complete" means that the entry ran as scheduled.
3. "Obsolete" means that the start time passed before the entry had a chance to run. This could happen in the following situations:
  - a. The device doesn't have power at the start time. (The device keeps time via a coin battery even when the battery pack runs low.)
  - b. There was an acquisition already in progress at the scheduled start time, preventing the scheduled entry from running.
  - c. The start time passed before the configuration settings were saved to the device.

To modify an existing entry in the scheduled acquisitions, click on the entry status and click **Edit**.



To copy an existing entry in the scheduled acquisitions, click on the entry status and click **Copy**. Note that you will then need to modify the entry so the copy's scheduled time does not overlap the original.

To delete an existing entry in the scheduled acquisitions, click on the entry status and click **Delete**.

When you are satisfied with your 3340 Standalone Settings, click **Save**, which then writes the Standalone Settings to the 3340's settings.

You may have up to 124 entries in the table, where each entry may repeat up to 100 times.

Overlapping entries are not permitted. That is, a new acquisition may not begin when an acquisition is already in progress, regardless of how the acquisition is initiated.

To prematurely stop an acquisition before it reaches the specified duration, push the device's Start/Stop button, or click on **Stop Capture** in SDILogger.

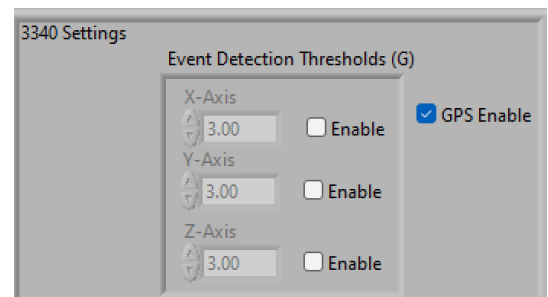
### 3340 SETTINGS - GPS

The 3340 has the option to add an external, aftermarket GPS module (widely available through Amazon or similar sources) to collect GPS data along with the accelerometer data. It is not necessary to load any of the GPS manufacturer's software. When installed and enabled in 3340 Settings, the 3340 will record GPS data and automatically write to a file on the SD card *when recording is initiated by clicking **Start Capture** in the user interface.*

The GPS data is written to a file on the SD card that shares the same prefix as the associated accelerometer data file, but with a .GPS suffix instead of a .BIN suffix.

If the 3340 does not receive any GPS data for 90 seconds, it will stop collecting GPS data.

Retrieve GPS data by clicking on the **SD CARD** tab, selecting the desired \*.GPS file, and clicking **Save File to PC**.



For further instructions, see [GPS](#).

## ACQUIRE/Data



Click on **Start Capture** to begin live data collection and recording. Click on **Display File** to open a previously saved .bin file. Click on **Stop Capture** to end a recording. Clicking on **Start Capture** again will begin a new recording and clear the previous recording's data from the display.

HORIZONTAL SCALE changes the period of time displayed in the window (but will not affect the sampling rate). A longer time period will compact the data, and a shorter time period will expand the width of the waveforms for higher resolution.

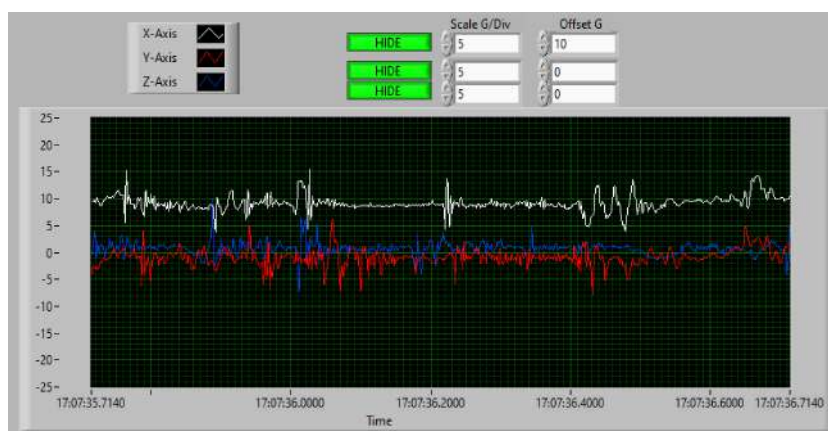


The section above the display lists the active channels and their display colors. Clicking **HIDE** will only hide a channel's line on the display but the data will still be collected. To view, unhide the channel and rewind the recording.

SCALE G/DIV: Sets the vertical grid of the display. Lower numbers will expand the waveforms vertically.

OFFSET G: Defaults to 0. Use this to move each channel waveform vertically to separate or combine the waveforms.

This is the same display as above, but the scale has been reduced to 5G/Div and the X-Axis offset is set to 10.



**\*\*NOTE\*\*** If all active channels have different scale settings, this will remove the numerical scale.

The display controls work the same as a common remote control. These controls do not impact the data collection, only the display.









-  Rewinds to the beginning of the data collection
-  Fast rewind
-  Slow rewind, variable speed is displayed in PLAYBACK SPEED box
-  Play
-  Pause
-  Slow forward, variable speed is displayed in PLAYBACK SPEED box
-  Fast forward
-  Forward to the most recently collected data, catching up with real time data

CHART TYPE: provides three different display modes as frequently seen on an oscilloscope: Strip, Scope, and Sweep. Changing this setting during a session will refresh your screen but not affect the collected data.

- Strip mode has a scrolling display. It first plots values from left to right. From here, it continues to plot new points at the rightmost point and shifts old values to the left.
- Scope mode has a retracing display similar to an oscilloscope. As it receives each new value, it plots the value to the right of the last value. When the plot reaches the right border of the plotting area, it erases the plot and begins plotting again from the left border.
- Sweep mode acts much like the scope chart, but the plot is not erased when the plot hits the right border. Instead, a moving vertical line marks the beginning of new data and moves across the display from left to right as it adds new data.

## ACQUIRE/Spectrum

SPECTRUM displays the FFT of the data. This advanced feature allows you to analyze the data by frequency to see at which frequencies the maximum vibrations are occurring.



AVERAGING PARAMETERS can be set to modify the FFT with averaging, weighting, and a variable number of averages. RESTART will refresh the screen and begin computing with the data collected from that point on.

POWER SPECTRUM MIN and MAX FREQUENCY set the range of frequencies desired for the display.

DISPLAY UNITS are either decibels per G (dBG) or decibels per volt (dBV).

The FREQUENCY boxes above the display show the location of the two yellow lines in the display. You can select two frequencies by dragging the yellow lines with your cursor. The AMPLITUDE boxes reflect the magnitude of the data collected at the respective selected frequency in units of dBV. The V/ROOT-HZ displays the difference between the left and right frequencies in volts per root-hz. HIDE will remove the channel from the display but not impact the data collection.

The FREQUENCY boxes above the display show the location of the two yellow lines in the display. You can move the yellow lines by dragging them with your cursor.

The AMPLITUDE boxes reflect the size of the data collected at the respective frequency.

The G/ROOT-HZ displays the difference between the left and right frequencies.

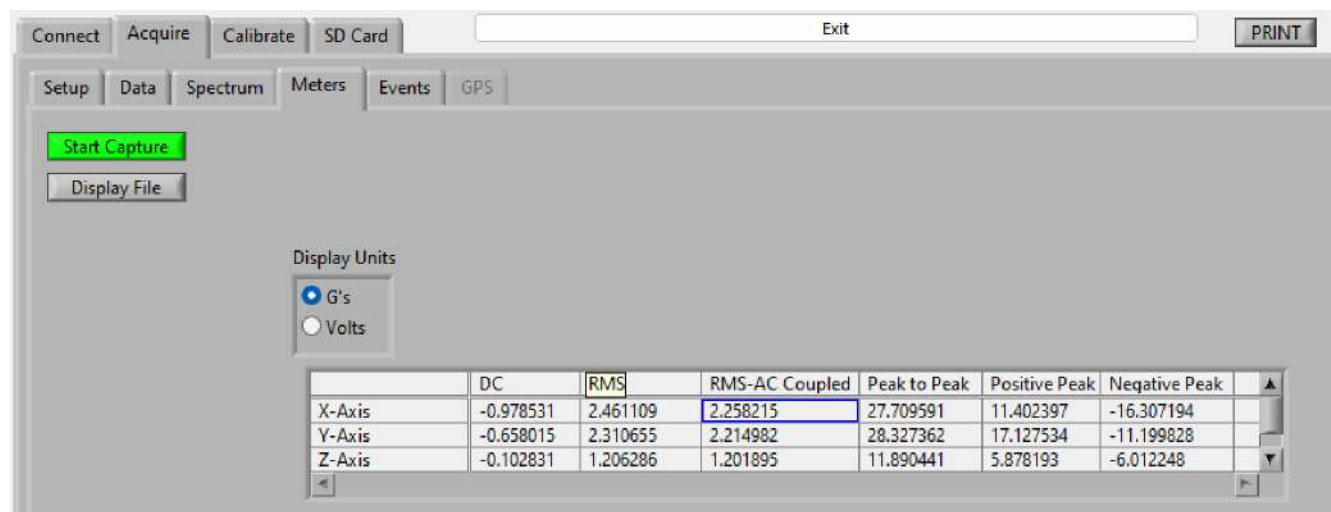
HIDE will remove the respective channel from the display. It will NOT impact the data collection.

## ACQUIRE/Meters

The METERS screen provides DC, RMS, and peak values in either Volts or Gs.

The values are calculated over the time interval selected by the HORIZONTAL SCALE setting selected on the Data tab.

The values are updated by that same time interval.

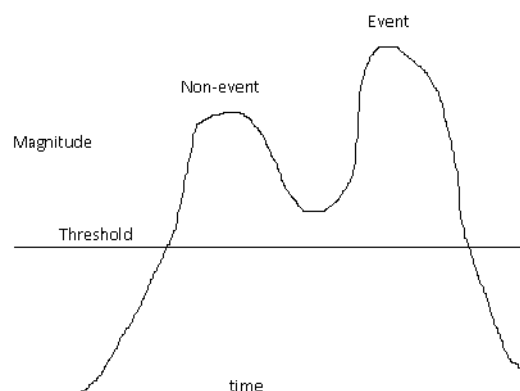


## ACQUIRE/Events (3340 Only)

Available only with the 3340 G-Logger, the 3340 can identify and report peak events based upon user-defined thresholds. Events can be simultaneously captured independently on all three channels.

The threshold settings are in units of G magnitude, so both positive and negative events will be captured. It may require some experimentation to determine the best event thresholds for your application.

- If the magnitude remains over the event threshold for consecutive samples, only one event will be reported for each time duration that the magnitude continuously exceeds the threshold. Even if there are multiple peaks within that duration, only the maximum peak is reported. For instance, the lesser peak is not reported here:
- If the 3340 detects more than 60 events per minute, the event detector will stop itself, but acquisition will continue. If this happens, try increasing your event threshold so it is less sensitive next time.
- If you are not getting enough events, decrease the event threshold to increase sensitivity.



## CONFIGURING EVENT DETECTION

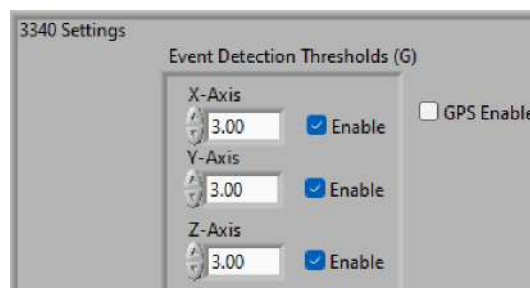
Click on the Setup section on the ACQUIRE tab. If Setup is unavailable because a recording is in progress, click on **Stop Capture**.



The Setup page contains two sections for configuring Event Detection, each with a specific function.

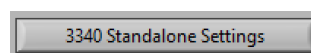
3340 SETTINGS will identify events and automatically write to a file on the SD card every time data acquisition occurs, regardless if by clicking **Start Capture** in the user interface, the external device button, or the acquisition scheduler.

To enable event detection on a given channel, click ENABLE for that channel, and provide a *non-zero* threshold over which an event will be detected. (See the **GPS** section for information on adding GPS data.)



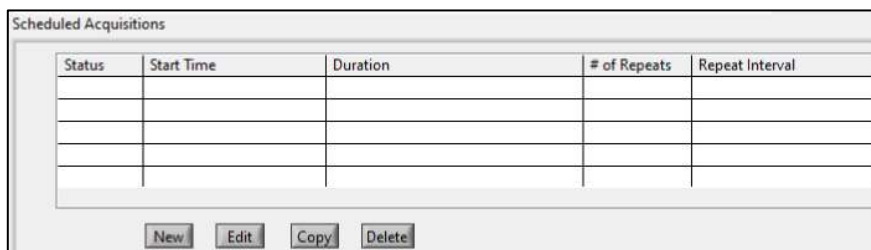
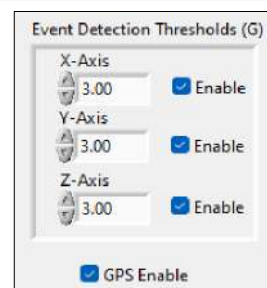
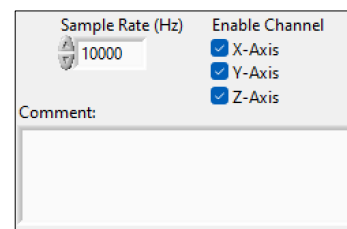
NOTE: This will automatically include an event file with every recording and will impact the available memory.

3340 STANDALONE SETTINGS are applied when acquisition is initiated only via an external button press on the device itself or by a scheduled acquisition.

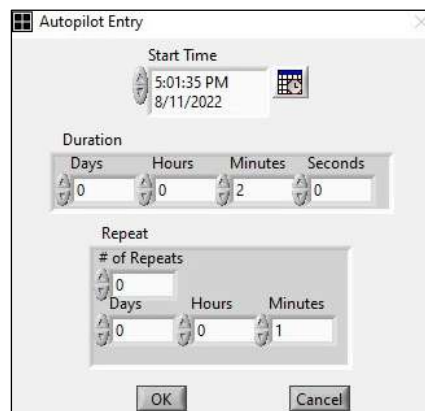


There are three components to the 3340 Standalone Settings:

1. General settings to apply when acquisition is triggered by *the external device button or a scheduled acquisition*.
  - a. Set the sample rate and enable the channels you'd like to record.
  - b. Add a comment that will be included in your file.
2. Event Detection Thresholds (G) to apply to the data as it is collected when acquisition is triggered by *the external device button or a scheduled acquisition*.
  - a. To enable event detection on a given channel, click ENABLE for that channel, and provide a *non-zero* threshold over which an event will be detected.
  - b. See the [GPS](#) section for information on adding GPS data.
3. The Scheduled Acquisitions table allows configuration of automatic, timed acquisitions. You may have up to 124 entries in the table, where each entry may repeat up to 100 times.



- a. Click on **New** to add an entry to the Scheduled Acquisitions table.
- b. Set the Start Date and Start Time to your desired future starting time.
- c. Set the acquisition duration. The maximum duration depends on how much space is available on your SD card, as well as your acquisition data rate, up to a max file size of 4GB.





- d. If you want this entry to repeatedly acquire data at a fixed interval for a fixed duration, set the # of Repeats field to the number of additional data acquisitions that you would like. If this field is zero, this entry will only acquire data once, beginning at the specified start time. Each entry may repeat up to 100 times, or until the SD card is full.
- e. Set the Days, Hours, and Minutes to the period at which you would like the data acquisition to repeat. The repeat interval must be greater than the duration of the acquisition, as it is calculated from the previous start time.
- f. Click **OK** to save this entry to the Scheduled Acquisitions table, or **Cancel** to discard.

The Status field shows the status of each Scheduled Acquisition entry:

- “Ready” means the entry is ready to run on the future scheduled date.
- “Complete” means that the entry ran as scheduled.
- “Obsolete” means that the start time passed before the entry had a chance to run. This could happen in the following situations:
  - The device doesn’t have power at the start time. (The device keeps time via a coin battery even when the battery pack runs low.)
  - There was an acquisition already in progress at the scheduled start time, preventing the scheduled entry from running.
  - The start time passed before the configuration settings were saved to the device.

To modify an existing entry in the scheduled acquisitions, select the entry and click **EDIT**.

To copy an existing entry in the scheduled acquisitions, select the entry and click **COPY**. Note that you will then need to modify the entry so the new copy’s scheduled time does not overlap the original.

To delete an existing entry in the scheduled acquisitions, click on the entry status and click **DELETE**.

When you are satisfied with your 3340 Standalone Settings, click **SAVE**, which then writes the Standalone Settings to the 3340’s settings.

Overlapping entries are not permitted. A new acquisition may not begin when an acquisition is already in progress, regardless of how the acquisition is initiated.

To prematurely stop an acquisition before it reaches the specified duration, push the device’s external Start/Stop button, or click on **Stop Capture**.

## VIEWING EVENT FILES

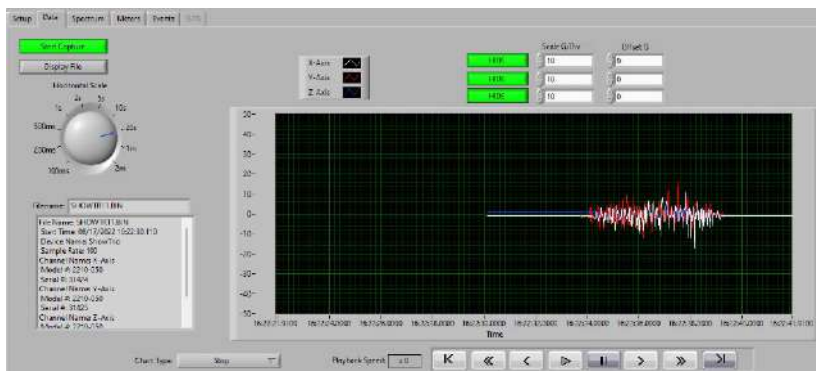
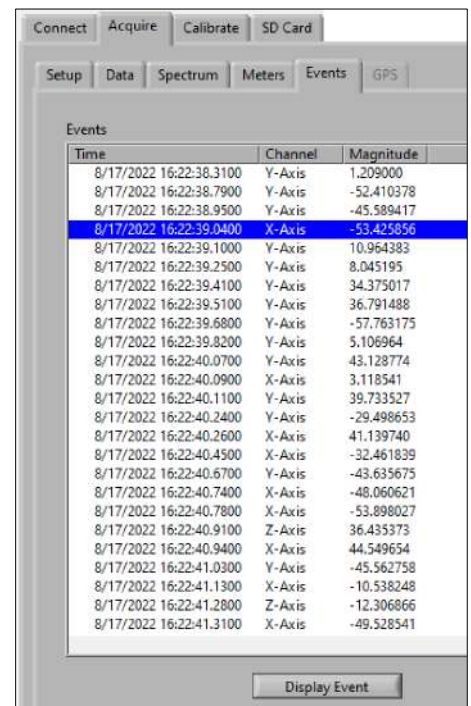
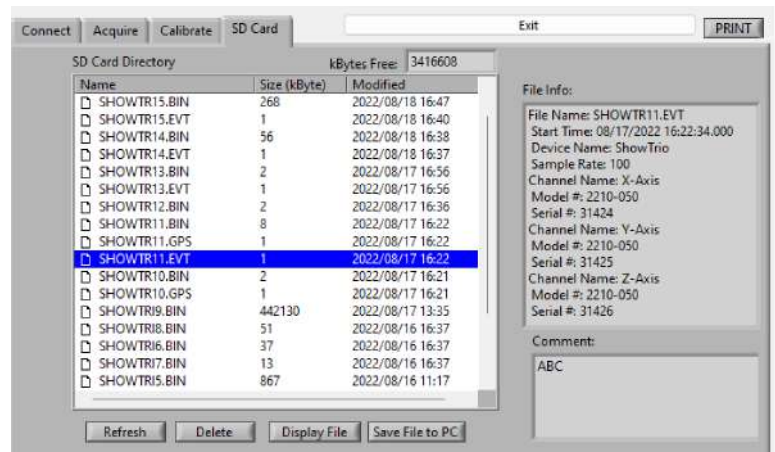
When event detection is enabled, the 3340 will identify and write events to the SD Card. The event file shares the same prefix as the associated accelerometer data file, but with a \*.evt suffix instead of a \*.bin suffix.

To access Events, first open the SD CARD tab, select your .EVT file, and click Display File.

This will open the file on the Events tab and provide a list of all the events that met or surpassed the thresholds entered in the Setup tab under 3340 Detection Thresholds or Standalone Settings.

Selecting one event and clicking on the Display Event will then open the Data display screen.

The file data will automatically load and begin playing in the display window. All the display settings, such as scaling, offset, and horizontal scale, can be modified to view the data from different perspectives. The playback controls below the display provide forward/pause/play/rewind functionality for the event.



## ACQUIRE/GPS (3340 Only)

The GPS function works similarly to the Events function. The 3340 has the option to add an external, aftermarket GPS module (widely available through Amazon or similar sources) to collect GPS data along with the accelerometer data. It is not necessary to load any of the GPS manufacturer's software.

When GPS is enabled, the 3340 will record GPS data and the accelerometer data, but will save it separately to a ".GPS" file in the SD Card with the same prefix as the associated .BIN accelerometer data files.

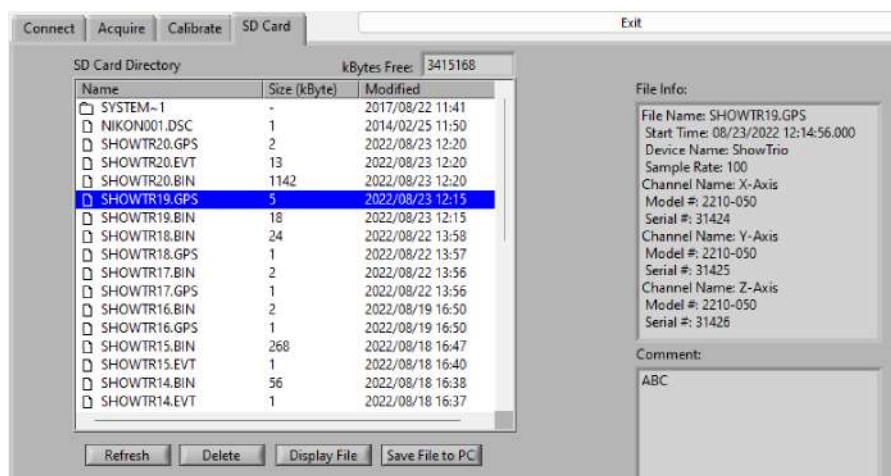
If the 3340 does not receive any GPS data for 90 seconds, it will stop collecting GPS data.

## VIEWING GPS FILES

When GPS is enabled, the 3340 will include GPS data with the accelerometer data and save it to a ".GPS" file in the SD Card with the same prefix as the associated .BIN accelerometer data files.

To access GPS data, first open the SD CARD tab, select your ".GPS" file, and click Display File.

This will list the file on the GPS screen and provide a list of all the GPS data.



Selecting one GPS entry and clicking on the Display Event will then open the Data display screen.

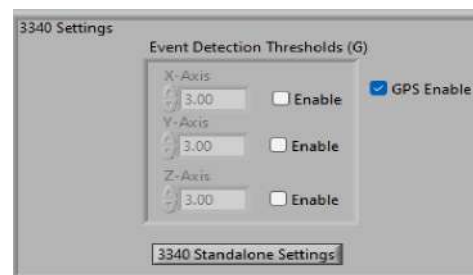
## ENABLING GPS

Click on the Setup section in the ACQUIRE tab. If Setup is unavailable because a recording is in progress, click on **Stop Capture**.

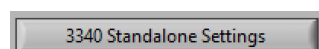
The Setup page contains two sections for configuring GPS, each with a specific function.

**3340 SETTINGS:** Click GPS ENABLE to automatically write GPS data to a file on the SD card every time data acquisition occurs, regardless if by clicking **Start Capture** in the user interface, the external device button, or the acquisition scheduler.

NOTE: This will automatically include a GPS file with every recording and will impact the available memory.



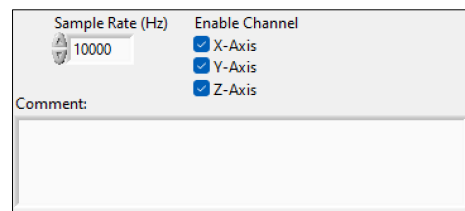
**3340 STANDALONE SETTINGS** are applied when acquisition is initiated only via an external button press on the device itself or by a scheduled acquisition.



There are three components to the 3340 Standalone Settings:

1. General settings to apply when acquisition is triggered by *the external device button or a scheduled acquisition*.

- a. Set the sample rate and enable the channels you'd like to record.
- b. Add a comment that will be included in your file.



Sample Rate (Hz) 10000

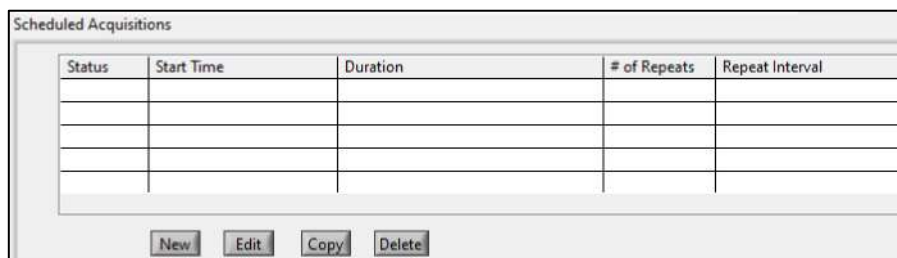
Enable Channel

- ☒ X-Axis
- ☒ Y-Axis
- ☒ Z-Axis

Comment:

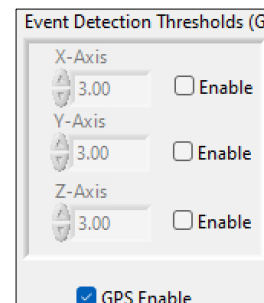
2. The GPS Enable check box will initiate GPS data collection when acquisition is triggered by *the external device button or a scheduled acquisition*.

- a. See the Event Detection section for information on setting Event Detection Thresholds



Status	Start Time	Duration	# of Repeats	Repeat Interval

New Edit Copy Delete



Event Detection Thresholds (G)

X-Axis 3.00 ☐ Enable

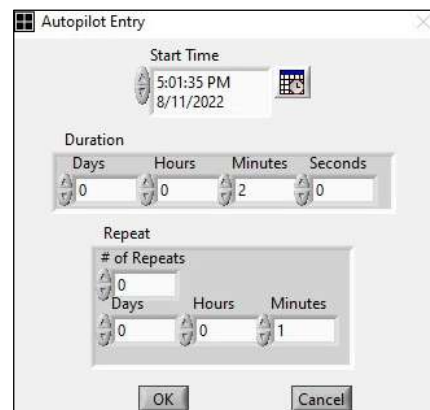
Y-Axis 3.00 ☐ Enable

Z-Axis 3.00 ☐ Enable

☒ GPS Enable

3. The Scheduled Acquisitions table allows configuration of automatic, timed acquisitions. You may have up to 124 entries in the table, where each entry may repeat up to 100 times.

- a. Click on **New** to add an entry to the Scheduled Acquisitions table.
- b. Set the Start Date and Start Time to your desired future starting time.
- c. Set the acquisition duration. The maximum duration depends on how much space is available on your SD card, as well as your acquisition data rate, up to a max file size of 4GB.
- d. If you want this entry to repeatedly acquire data at a fixed interval for a fixed duration, set the # of Repeats field to the number of additional data acquisitions that you would like. If this field is zero, this entry will only acquire data once, beginning at the specified start time. Each entry may repeat up to 100 times, or until the SD card is full.
- e. Set the Days, Hours, and Minutes to the period at which you would like the data acquisition to repeat. The repeat interval must be greater than the duration of the acquisition, as it is calculated from the previous start time.
- f. Click **OK** to save this entry to the Scheduled Acquisitions table, or **Cancel** to discard.



Autopilot Entry

Start Time 5:01:35 PM 8/11/2022

Duration

Days 0 Hours 0 Minutes 2 Seconds 0

Repeat

# of Repeats 0

Days 0 Hours 0 Minutes 1

OK Cancel

The Status field shows the status of each Scheduled Acquisition entry:

- "Ready" means the entry is ready to run on the future scheduled date.
- "Complete" means that the entry ran as scheduled.
- "Obsolete" means that the start time passed before the entry had a chance to run. This could happen in the following situations:
  - o The device doesn't have power at the start time. (The device keeps time via a coin battery even when the battery pack runs low.)

- There was an acquisition already in progress at the scheduled start time, preventing the scheduled entry from running.
- The start time passed before the configuration settings were saved to the device.

To modify an existing entry in the scheduled acquisitions, select the entry and click **EDIT**.

To copy an existing entry in the scheduled acquisitions, select the entry and click **COPY**. Note that you will then need to modify the entry so the new copy's scheduled time does not overlap the original.

To delete an existing entry in the scheduled acquisitions, click on the entry status and click **DELETE**.

When you are satisfied with your 3340 Standalone Settings, click **SAVE**, which then writes the Standalone Settings to the 3340's settings.

Overlapping entries are not permitted. A new acquisition may not begin when an acquisition is already in progress, regardless of how the acquisition is initiated.

To prematurely stop an acquisition before it reaches the specified duration, push the device's external Start/Stop button, or click on **Stop Capture**.

### CONNECTING AN EXTERNAL GPS MODULE

In addition to enabling the GPS function, an external GPS receiver must be wired on the 25-pin terminal strip along with the accelerometers.

The GPS module requires power and will reduce the life of the 3340's internal AA batteries.

SDI has tested two external GPS units with the 3340. Both units use the serial (RS232) communication protocol.

NOTE: Additional components (connectors, wiring) and some technical expertise will be required to complete this task. The following instructions assume you are using the included 25 PIN TERMINAL ADAPTER, however if you are using your own 25 pin D sub and shell, the wiring should be similar.



### **GARMIN MODEL 18X PC CONNECTIONS. (EXCITATION 8-30VDC)**

The Garmin GPS module is supplied with a 9 pin D-sub connector and a 12 volt male car accessory plug.

To wire directly to the 3340 25 pin terminal adapter:

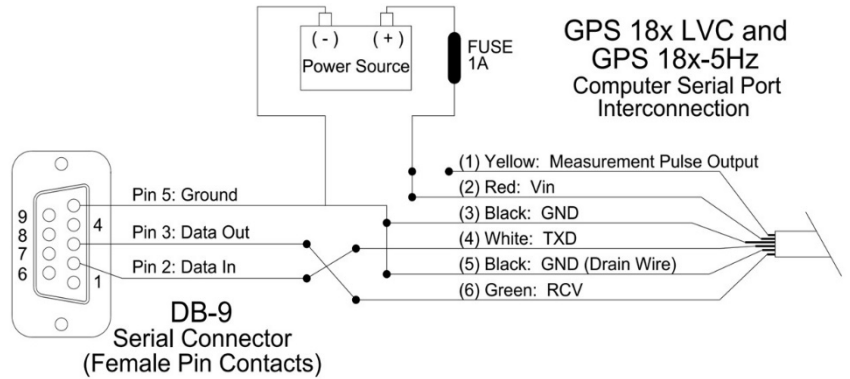
1. Cut off the Garmin GPS vehicle power plug.
2. Wire the cable directly to the 3340's 25 pin terminal adapter.
3. Secure the 3340 +positive wire to terminal adapter pin 15, 17 or 19 and secure the -negative to pin 1, 3 or 5.





Alternatively, to avoid cutting wires, connect a 12-volt female vehicle accessory outlet to 3340 25 pin D-sub terminal adapter.

1. Insert the male Garmin plug to power the GPS.
2. Use a 9 Pin Male D-Sub for the other three connections.
3. D-sub Pin 5 to G-Logger 3340 Pin 1, 3 or 5.
4. D-sub Pin 3 to G-Logger 3340 Pin 11.
5. D-sub Pin 2 to G-Logger 3340 Pin 12.

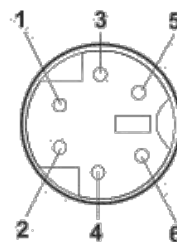


### US GLOBALSAT BR355. (EXCITATION 4.5-5.5 VDC)

The US Globalsat BR 355 GPS is supplied with a 6 pin male PS 2 connector. You will need a matching PS-2 female adapter. Wire the other end of the cable to the 3340 25 pin D-sub terminal adapter.



1. PS2 Pin 1 to G-Logger 3340 Pin 1, 3 or 5.
2. PS2 Pin 2 to G-Logger 3340 Pin 13
3. PS2 Pin 4 to G-Logger 3340 Pin 12
4. PS2 Pin 5 to G-Logger 3340 Pin 11



**PS/2 Mini DIN 6-Pin Male Connector**

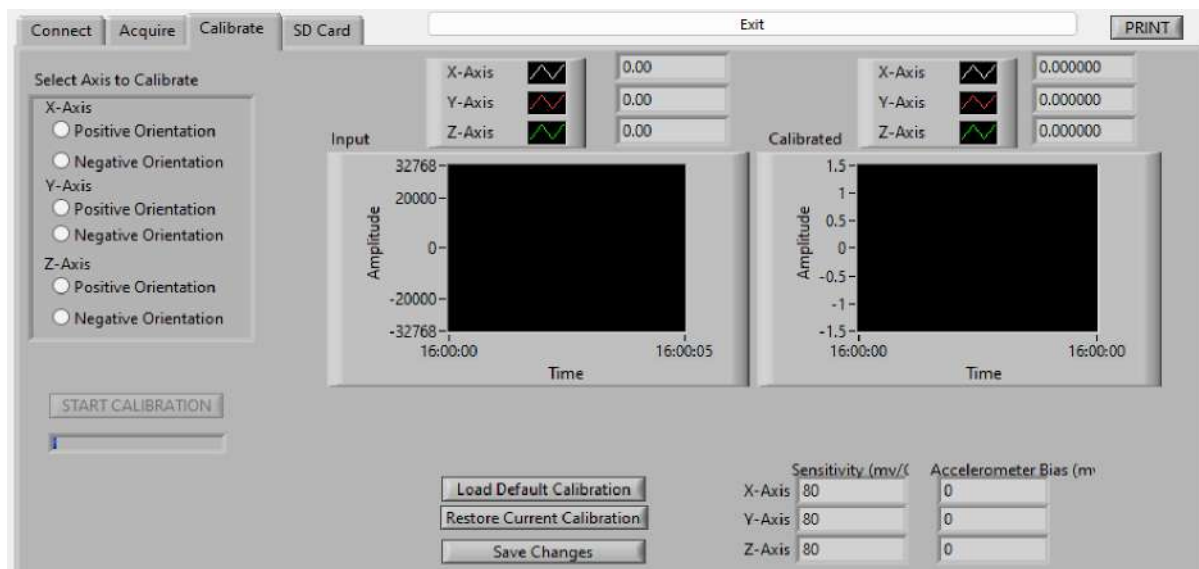
Color	Function	Pin
Black	GND	1
Red	VCC	2
Yellow	N/C	3
White	RX	4
Green	TX	5
-----	N/C	6



## CALIBRATE tab

All of SDI's accelerometer modules are calibrated and programmed during the production process. The basic calibration data of bias and scale factor (sensitivity) are provided on each unit's factor bag, and units with integrated cables also have a label listing these numbers.

The calibrate screen can quickly verify the performance of your accelerometer is still within the tolerances specified on its data sheet. See <https://www.silicondesigns.com/datasheets> for current versions. If your accelerometer is an older generation, contact [SDI Tech Support](#) for the appropriate data sheet.



To perform a calibration:

- 1) Place your accelerometer on a flat, unmoving, horizontal surface with the lid facing up and hold it still.
- 2) Click on the POSITIVE ORIENTATION bubbles for the axis to be calibrated.
- 3) Press START CALIBRATION and the blue status bar will indicate when it's done.
- 4) Flip the accelerometer over so the lid faces down, select the NEGATIVE ORIENTATION bubble, and repeat the process.
- 5) For additional 1-axis modules, repeat the process with each unit; their wiring to the 25-pin connector will designate them as the X, Y, or Z axis. For a 3-axis module, repeat the process for each axis of measurement. Refer to the X↑, Y↑, or Z↑ on the module's sides to perform the process for the correct axis.
- 6) Click SAVE CHANGES to write the new parameters to the 33x0 device for this configuration setup.

Click PRINT from the calibrate screen as a shortcut to view these parameters in User Configuration.

LOAD DEFAULT CALIBRATION will enter the standard values for the module(s) entered in the CONNECT screen.

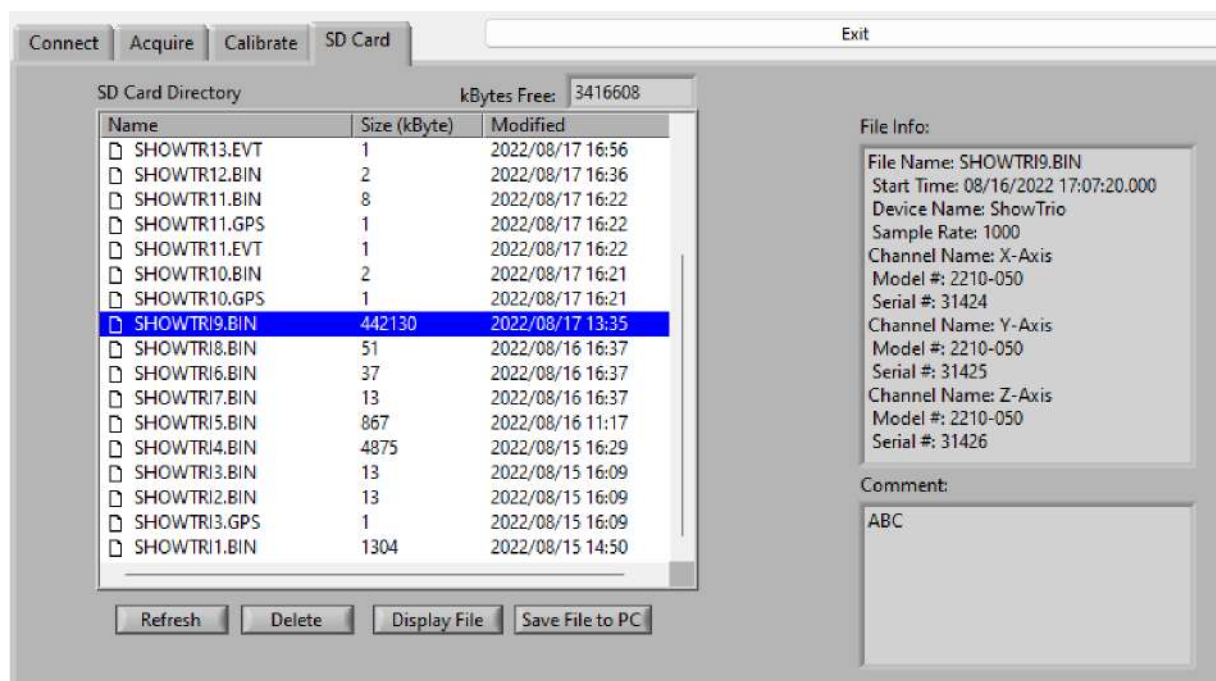
RESTORE CURRENT CALIBRATION resets the calibration values to the numbers previously stored for the module(s). These are the values set on the Configuration portion of the CONNECT screen.

**\*\*NOTE\*\*** The CALIBRATE function requires that the accelerometer module(s) be flipped from a positive G to negative G placement. If the module(s) cannot be moved, do NOT use the CALIBRATE feature.

## SD CARD tab

This screen allows you to manage the files on the SD card as well as play back older data captures.

The SD card directory displays a listing of the files previously saved to the SD card within in the G-Logger device.



If you select a file and then click DISPLAY FILE INFO, the top right shows some of the information regarding the file's data set. The Comment text shows the comments that were entered on the ACQUIRE-SETUP page prior to starting acquisition. This can help with labeling and project descriptions.

Selecting a file and then clicking DELETE will remove it from the SD card. Card size is limited to a maximum of 32 GB, and individual file size is limited to 4 GB. Removing files you no longer need allows the G-Logger to increase the maximum duration of future acquisitions. You can also delete files by removing the SD card from the G-Logger, inserting it directly into the SD memory card slot on your PC, and accessing the files through Windows Explorer.

To graphically view a file's data, select it and then click DISPLAY FILE. The Data tab will show the historical data displayed as if it were real-time. You can fast-forward, rewind, and pause the data as well as click on Spectrum or Meters tab.

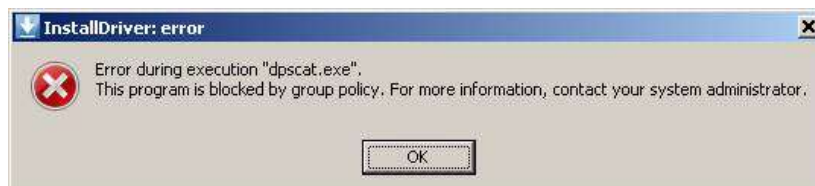
If you wish to operate the 33x0 such that you directly acquire real-time data without writing the 33x0's SD card, you can invoke Direct Streaming Mode by removing the SD card. The device will report that it does not have an SD card, and will require that the total data rate is no greater than 42 Kbytes/sec (one channel at 10Khz, or three channels at 7Khz is permissible.) To exit Direct Streaming Mode, put the SD card into the SD card slot on the 33x0 device.

## TROUBLESHOOTING

Problem	Cause	Solution
NO CONNECTION TO G-LOGGER	Driver did not install properly	In Windows, confirm the G-Logger is displayed in Device Manager. If the G-Logger device has a yellow warning or question mark, install the G-Logger driver as described in the How to Install section.
	SDI server software not loaded or activated	Make sure SDIServer is running
33X0 USB CONNECT LIGHT NOT ILLUMINATED	No USB connection	Make sure USB cable is plugged into Computer and USB port on G-Logger. Confirm it is not plugged into aux power port instead of USB port.
		Do not use USB expansion devices, only plug the USB cable directly into the computer
		Try a different USB port on the host PC in case this one has a problem with the drivers
33X0 USB LINK LIGHT NOT ON WHEN CONNECTED TO HOST PC	Driver not loaded properly	Try unplugging and plugging in the cable.
		In Windows, confirm the G-Logger is displayed in Windows Device Manager. If the G-Logger device has a yellow warning or question mark, install the G-Logger driver as described in the <a href="#">Software Installation</a> section.
NO DATA STREAM FROM ACCELEROMETERS	No accelerometers connected	Check Accelerometer wiring to terminal strip.
		Make sure terminal strip is connected to 25 pin D-sub.
NO DATA COLLECTION	SD card not installed or full	Remove SD card and reinsert.
		Use SDILogger's <a href="#">SD CARD</a> page to delete files and create space if the card is full.
G-LOGGER APPLICATION IS RUNNING BUT CAN'T CONNECT TO G-LOGGER.	Cable connections are faulty	Unplug USB from G-Logger, wait 5 seconds, and the Plug in again.
	USB cable is bad	Replace the USB cable.
ACCELEROMETERS APPEAR TO BE RUNNING HOT.	Unstable Signal	Likely incorrect wiring of terminal. In the case of 3 axis devices be careful not to confuse red, brown, and orange wires when wiring the device.

## SOFTWARE INSTALLATION: DPSCAT.EXE ERROR

If your IT permissions are restrictive and you get the DPSCAT.EXE installation error, you will need to manually install your USB driver rather than pre-installing it.



1. Click OK and continue the installation of SDIServer and SDILogger.
2. Connect your G-Logger to the computer with the USB cable and click on the Device Manager under the Control Panel, or open Settings and enter Device Manager in the search bar.
3. Expand libUSB-win32 USB Devices.
4. If the G-Logger device driver has no yellow warning or question mark, and the 33x0's USB link led is on, the driver is already installed and working properly.
5. If the G-Logger device driver has a yellow warning, you can manually install the driver now by right-clicking on G-Logger, and selecting "Update Driver Software."
6. Click "Browse my computer for driver software," then click BROWSE under "Browse for driver software on your computer."
7. Select your install folder, GLoggerInstaller\SDIDriver, and click OK.
8. Click NEXT.
9. After Windows successfully updates the driver software, click CLOSE.

## SDISERVER DOES NOT SUCCESSFULLY CONNECT (LIGHTS REMAIN RED)

If SDIServer does not show a successful connection with the device,

1. Check that the USB cable is completely and securely connected to both the computer and device.
2. Check that your device driver is properly installed:
  - a. Open the Control Panel in Windows Explorer and open the Device Manager.
  - b. If your device driver is properly installed, G-Logger should appear as a libUSB-win32 USB Device any time the 33x0's USB is plugged into your host PC.
3. If problem persists, contact SDI Technical Support for assistance.

