LeCroy

LogicStudio

Getting Started Manual

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Warranty

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The instrument is warranted for normal use and operation, within specifications, for a period of one year from shipment. LeCroy will either repair or, at our option, replace any product returned to one of our authorized service centers within this period. However, in order to do this we must first examine the product and find that it is defective due to workmanship or materials and not due to misuse, neglect, accident, or abnormal conditions or operation.

LeCroy shall not be responsible for any defect, damage, or failure caused by any of the following: a) attempted repairs or installations by personnel other than LeCroy representatives or b) improper connection to incompatible equipment, or c) for any damage or malfunction caused by the use of non-LeCroy supplies. Furthermore, LeCroy shall not be obligated to service a product that has been modified or integrated where the modification or integration increases the task duration or difficulty of servicing the instrument. Spare and replacement parts, and repairs, all have a 90-day warranty.

The instrument firmware has been thoroughly tested and is presumed to be functional. Nevertheless, it is supplied without warranty of any kind covering detailed performance. Products not made by LeCroy are covered solely by the warranty of the original equipment manufacturer.

Internet: www.lecroy.com

Manufactured under an ISO 9000 Registered Quality Management System. Visit www.lecroy.com to view the certificate.		This electronic product is subject to disposal and recycling regulations that vary by country and region. Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles. For more information about proper disposal and recycling of your LeCroy product, please visit www.lecroy.com/recycle.

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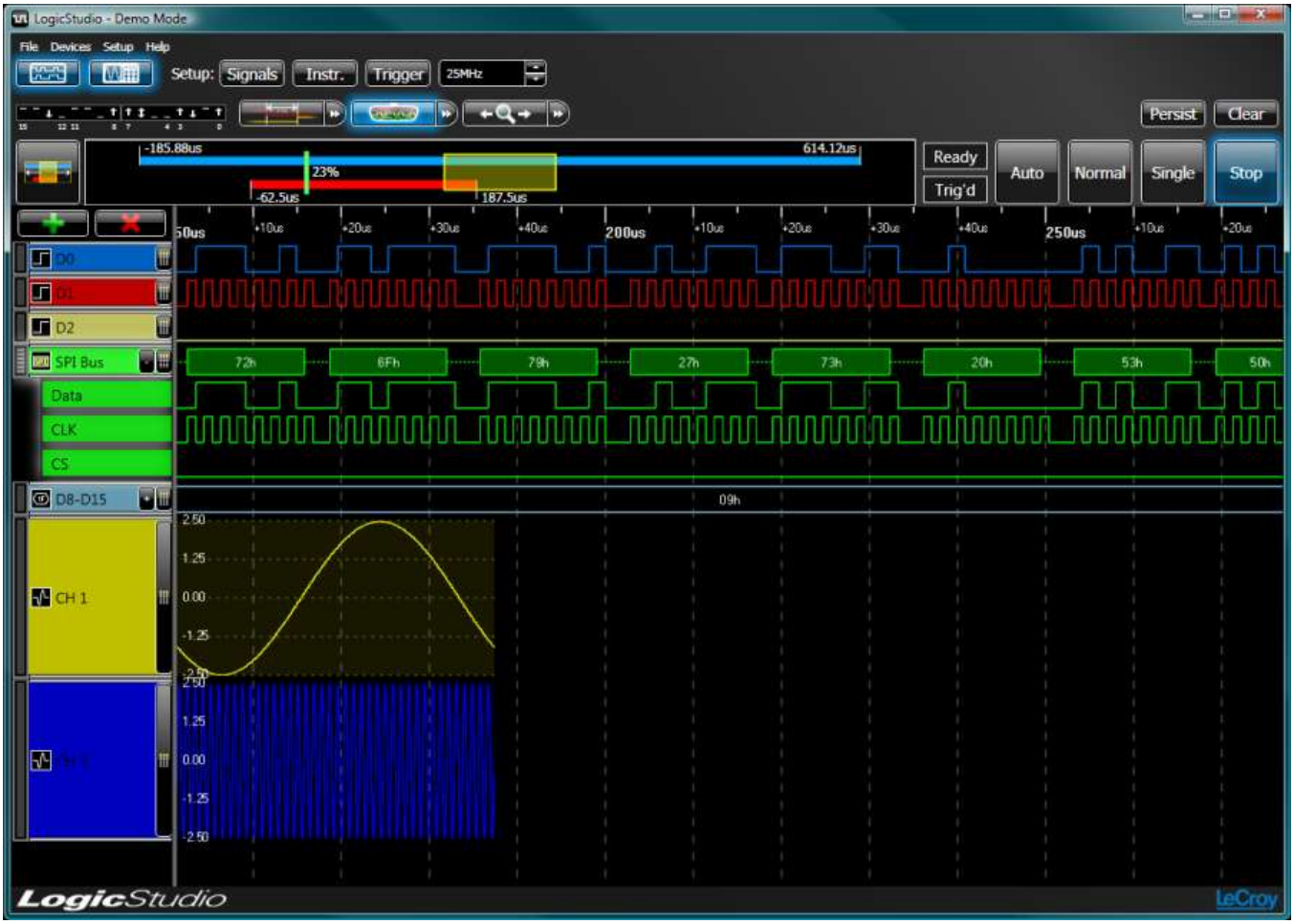
Introduction

This document provides an overview of the LogicStudio application features and describes how to perform various operations. Software interface updates may result in a slight difference between screenshots seen in this manual (running on Windows Vista®) and the interfaces you'll find from the software and operating system versions you're running. Different versions of the application and/or running the application under different operating systems may result in slight interface appearance differences. Regardless, the differences do not prevent you from easily following the explanations.



System Requirements

- Operating System: Windows® XP, Windows® Vista (32 or 64 Bit Versions).
- 1 GB RAM minimum, 2 GB recommended.

Package Contents

- LogicStudio 16 USB Logic Analyzer
- Digital Leadset – 16 channels, 4 ground
- 20 Grippers
- 1 USB Cable
- 1 BNC cable
- Software Download Instructions

Safety Requirements

This symbol may appear on the product: 

This refers you to additional information contained in the operator's manual. The corresponding information in this manual is similarly denoted.

Operating Environment

Before using your LeCroy LogicStudio 16, ensure its operating environment will be maintained within these parameters:

- Indoor use;
- Altitude up to 3000 m;
- Temperature 5 °C to 50 °C;
- Maximum relative humidity 90 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 50 °C.

General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to your LeCroy accessory or any products connected to it.

- **Use only as intended.** Use of this product and/or the equipment it is connected to in a manner other than specified may impair the protection mechanisms.
- **Connect and disconnect properly**. Avoid damage to cables thru excessive bending.
- **Do not use in wet/damp or explosive atmospheres.**
- **Do not operate with suspected failures.** Do not use this accessory if any part is damaged. All maintenance should be referred to qualified service personnel.
- **Keep product surfaces clean and dry.**

Cleaning

The outside of the LogicStudio 16 hardware should be cleaned with a soft cloth dampened with either deionized / distilled water or isopropyl alcohol. Allow the surface to dry completely before returning the instrument to service.

Use and Maintenance

The LogicStudio16 is a high quality, precision instrument. To maintain accuracy and signal fidelity, mechanical shock should be avoided, as well as damage to the cables through excessive bending. All maintenance and component replacement should be referred to qualified personnel.

Software and Driver Installation

The most recent LogicStudio installer is available as a **.zip** file from the LeCroy website at **www.lecroy.com**.

- Choose to **Save** the .zip file to a location on your local computer.
- When the .zip file is completely downloaded to your machine, double-click the file to open its contents. Two files and two folders should be shown.
- Double-click the file named **Setup.exe** to launch the installer.

The installer guides you through proper setup of both the LogicStudio software and necessary drivers for your computer as explained in the following topics.

Software Installation

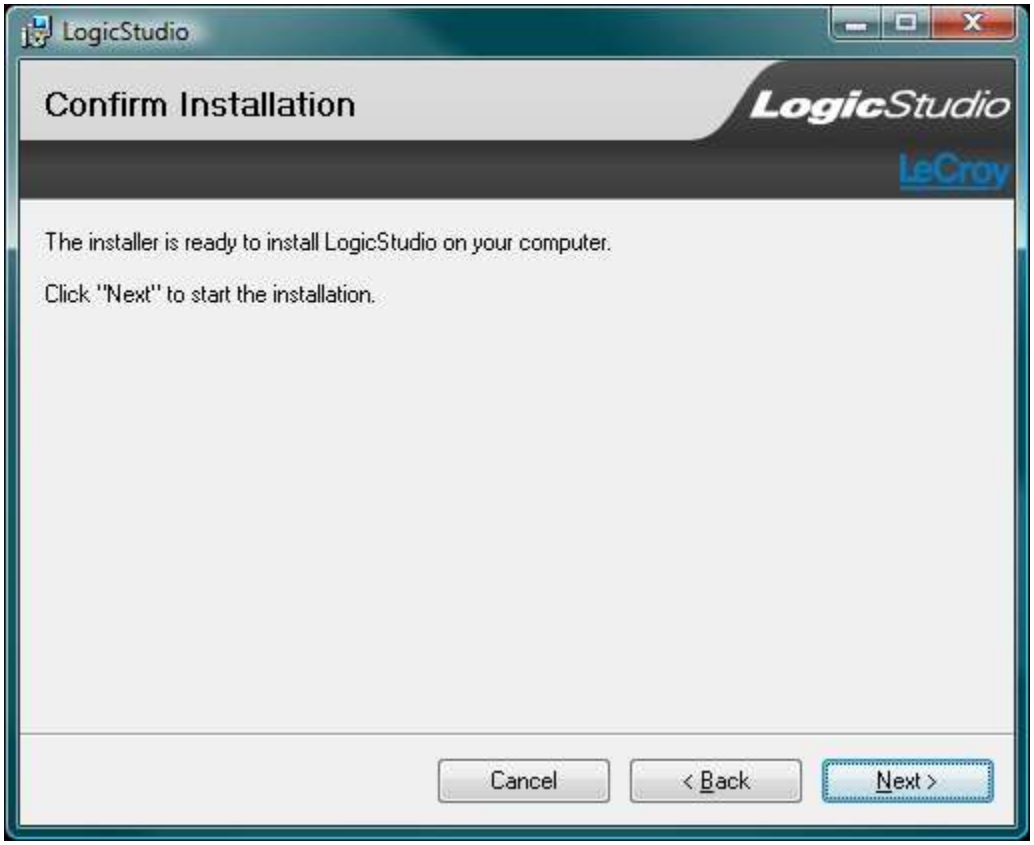
The **LogicStudio Setup Wizard** is then shown. Click **Next** to proceed with the installation.

Note: Included in this installation process is **Microsoft .NET 3.5 SP1 (Service Pack 1)**. This version (or greater) is required to run the LogicStudio software properly.

Agree to the terms of the End User License Agreement by selecting **I Agree**, and then click the **Next** button to continue.

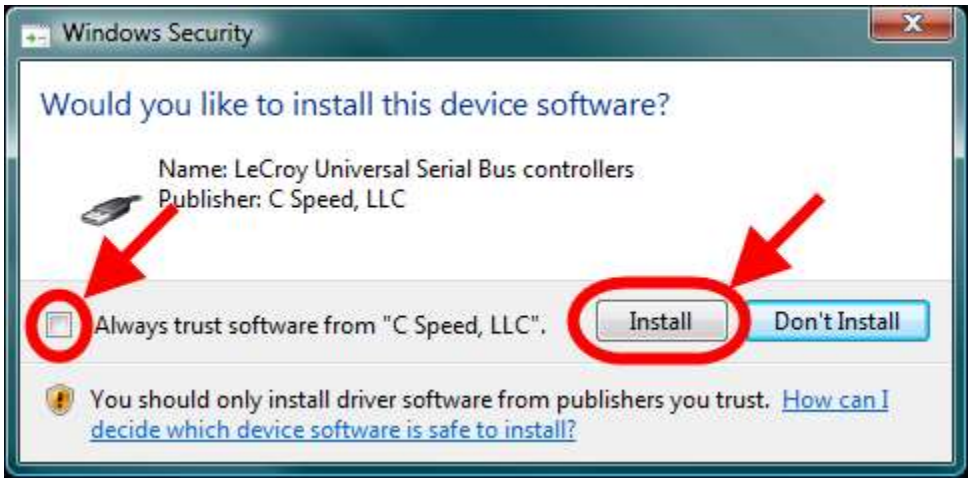
You can leave the default **Installation Folder** path, or specify a new location. Also, determine whether or not to install the software for yourself or anyone who uses the computer. After making the desired settings, click **Next** to proceed**.**

The **Confirm Installation** screen is shown. Click **Next** to start your installation.



Driver Installation

The Wizard then notifies you that the LogicStudio installer contains **signed** and **unsigned** drivers. Windows® prompts you to this affect by showing **driver confirmation** dialogs.



Note: Keep in mind that installation interface screens differ slightly between Windows® operating systems. Regardless of appearance, choose the option to **Install** or **Continue Anyway** when prompted about LogicStudio drivers.

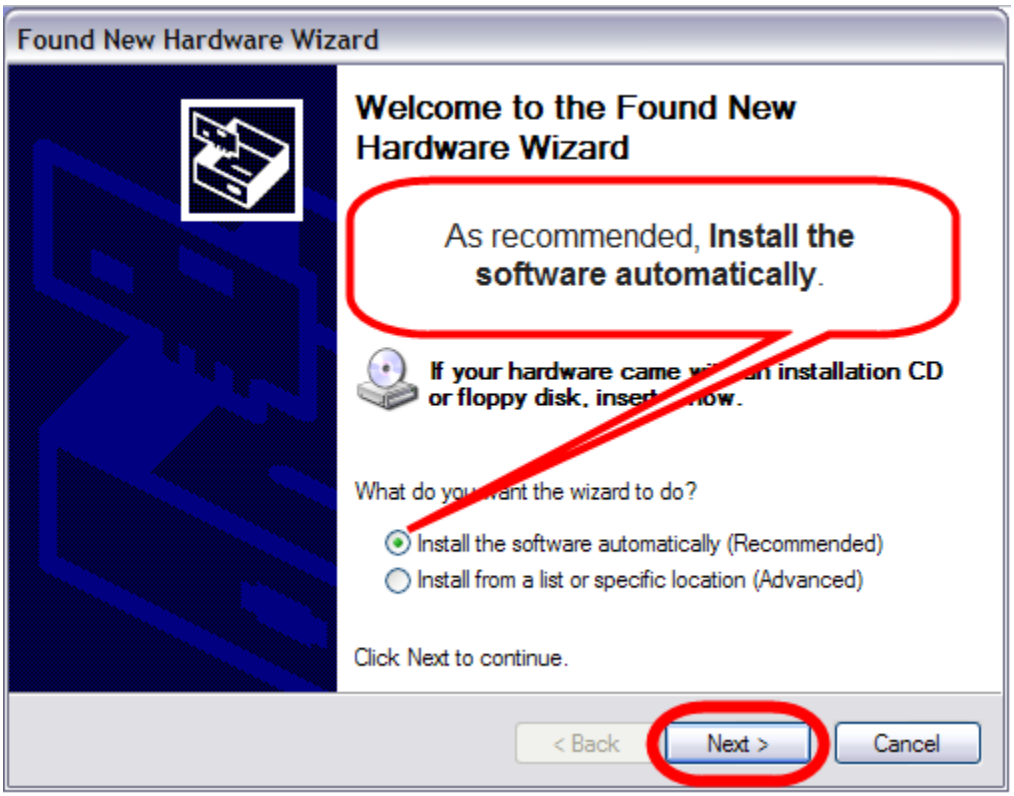
Click the **Continue** button to proceed.

Note: The previous screen differs slightly between Windows® operating systems. Again, regardless of appearance, choose the option to **Continue** when prompted.

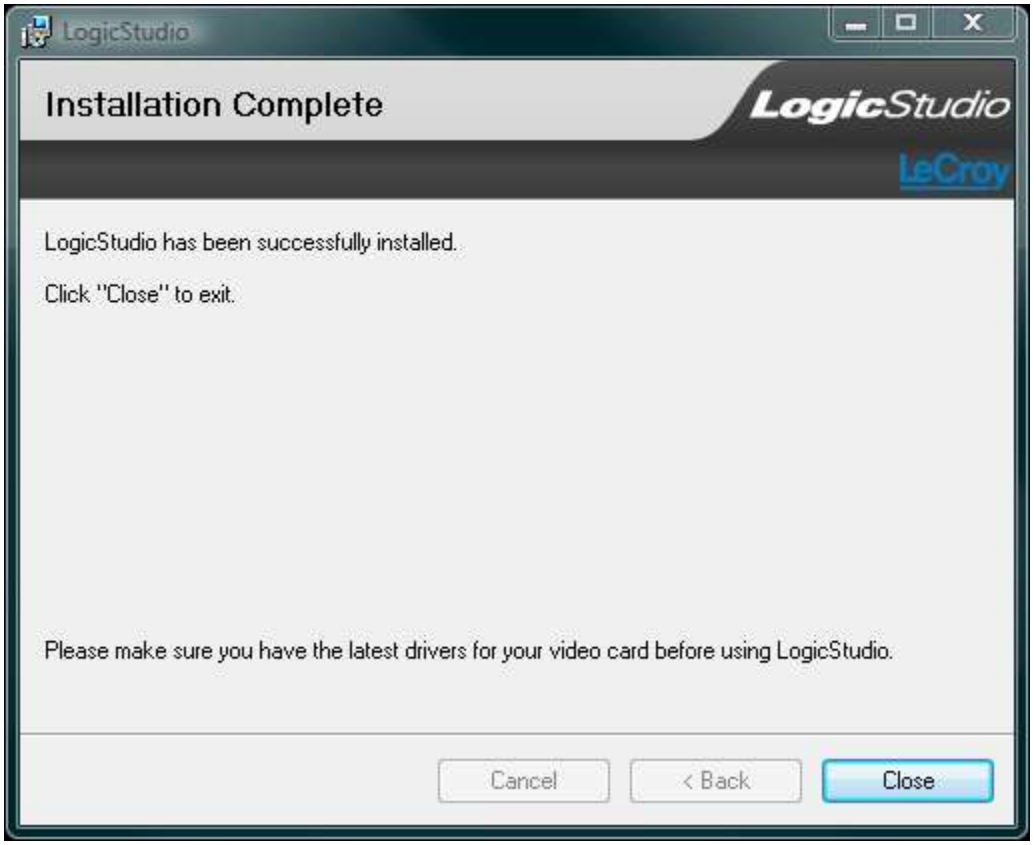
The progress of the LogicStudio installation is then shown.

The Wizard then lets you know that you can attach your device to the computer once the installation has finished.

Note: Depending on your operating system, Windows® shows additional driver interfaces when LogicStudio is actually plugged into your computer. Always choose the **Install the software automatically** option and click the **Next** button to complete the driver installation.



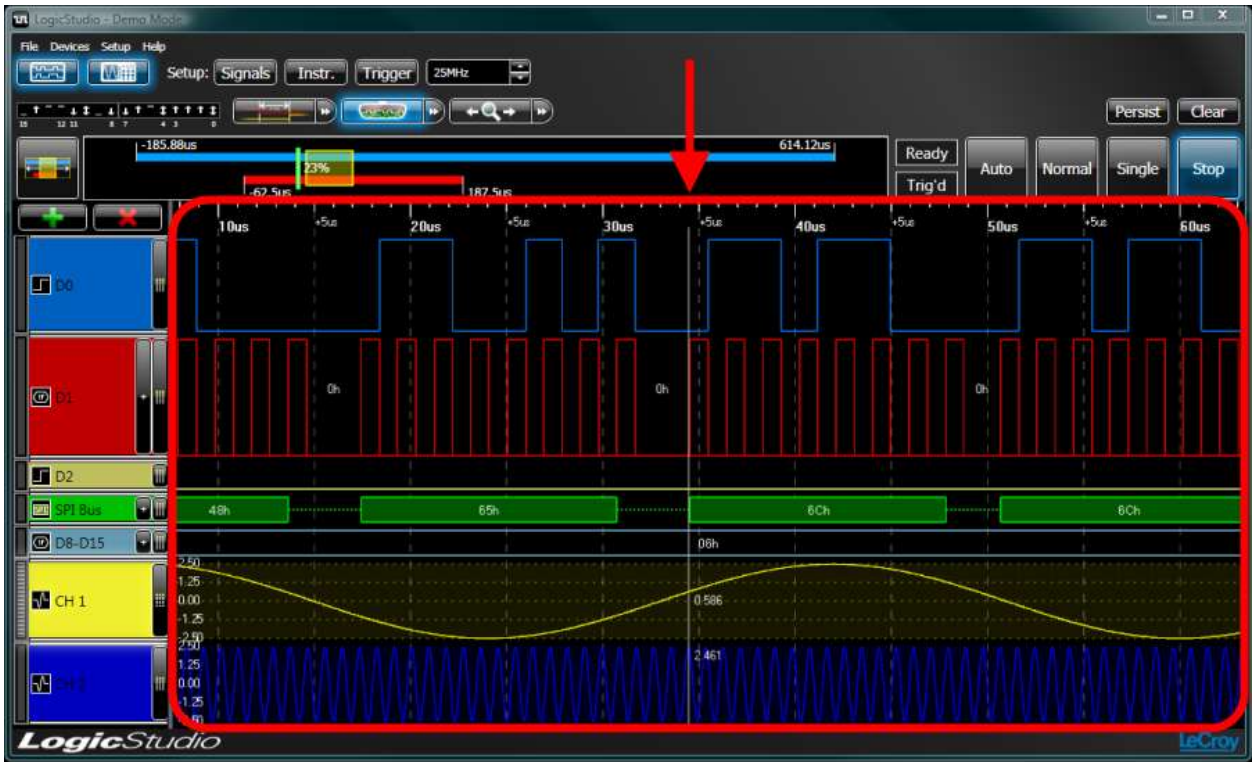
The **Installation Complete** screen is shown. Click the **Close** button to complete the installation.



Now, with correct application software and drivers installed, your LogicStudio is ready for use.

The Waveform Display Area

The **Waveform Display Area** takes up the largest portion of the application display space because it's where configured signal waveforms are shown.



Navigation

The user can navigate the Waveform Display Area and make various view adjustments using the following controls:

- **Panning the Timeframe** - **Left-click** and **drag left/right** and the waveform display area moves in the direction you've chosen.
- **Zoom a Specific Region** – Hold **Control**, **left-click**, and **drag left/right**. When the mouse button is released, your zoom is shown in the waveform display area.
- **Scale the Timeframe (Click-and-Drag)** - **Right-click** and **drag left/right** to scale the timeframe and view (zoom in/out) around the center point of the view.

  OR

- **Scale the Timeframe (Mousewheel)** – You can alternatively scale the timeframe using the mousewheel by putting your **mouse pointer** anywhere **inside the waveform display area** and **mousewheeling up/down** (instead of right-clicking and dragging left/right). Mousewheeling advances in 10% increments.

Note: Along with these navigation tools, you can also double-click any area on the waveform display area to automatically center the view at the point of your selection.

Scale and Grid

A timescale is displayed along the top edge of the waveform display area at all times. The scale steps and labels dynamically adjust based on the current timeframe shown. Labeled tick marks have dashed grid lines extending the full height of the display providing waveform reference.

Interacting with Cursors

Cursors are easily applied to the waveform display area (see **The Cursors Tool** topic for more information).

Tools

Controls for LogicStudio's built in **Tools** are located in the space above the **Waveform Display Area**. The built in tools include controls for **Cursors**, **RearView**, and **Magnifier**, respectively.

Toggle the **Cursors** and **Magnifier** tools (**RearView** is always on) on or off by clicking the main portion of the control (containing the icon). Click the right side of the control to access detailed controls related to each tool.

The Cursors Tool

This topic demonstrates the use of the **Cursors** tool.

When the **Cursor** tool is enabled, you are currently armed with the selected cursor pair on the waveform display. When expanded, the tool's detailed control provides storage for up to 4 cursor pairs. When cursors are placed on the display, they are highlighted when the pair is selected from the numbered cursor pair. Remove a pair by clicking the **Remove Cursor** button on the right side of the numbered cursor pair.

Cursors are controlled and interacted with in the following ways:

- Selecting a cursor pair button activates the pair.
- Pressing the **Remove Cursor** button for the pair deletes them from the display.

  
- Double-clicking a cursor pair button automatically zooms and centers the pair on the Waveform Display Area.

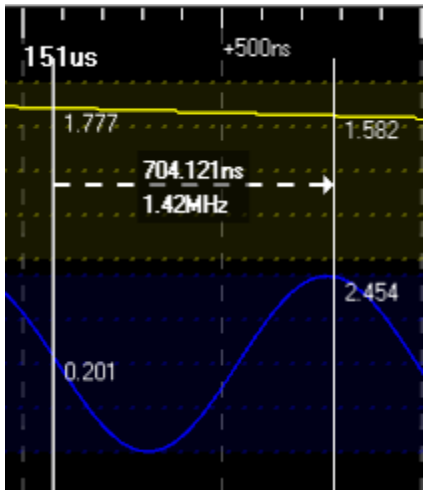
Mark cursor pairs on signals in the waveform display using the following steps:

1. Select a cursor pair (1-4) from the tools detailed control.
2. Left -click the display to place **cursor A** (of the pair) at the first location.
3. Now, right-click the display to place **cursor B** (of the pair) at the second location.

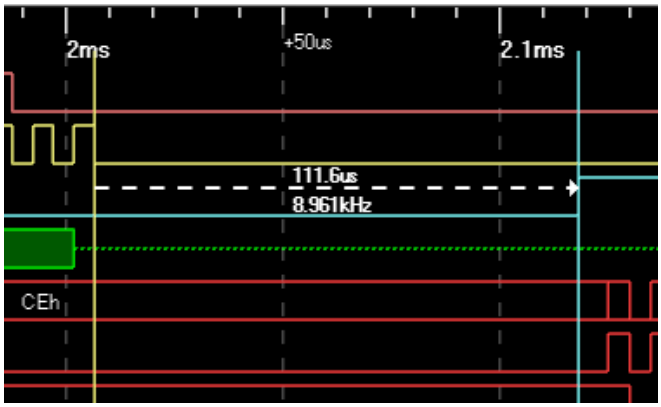
PLEASE NOTE THE FOLLOWING:

- The time difference (and frequency between A and B) is shown on both the Waveform Display Area and on the Cursor's Tool.
- When a single cursor (of the pair) is placed, the time and frequency is shown in real-time based on mouse position until the second half of the pair is placed (by right-clicking on the waveform).
- Placing the mouse over the active cursor pair shows the **horizontal click-and-drag mouse icon**. When this icon appears, you can horizontally click-and-drag a cursor to a new location. The display values are updated accordingly.

- Clicking a created cursor in the waveform display automatically selects the cursor pair and enables the cursor tool.
- When placing or moving a cursor over any digital signal, the software looks for any nearby edges on the signal and snaps the cursor to that edge. This allows for easier, precise measurements between edges. When the cursor is successfully snapped to an edge, the cursor's color changes to match the signal. Snapping does not occur when the mouse pointer is positioned above or below the waveform.
- Cursors that cross Analog or Digital Wave signals also display the value of the signal where it meets the cursor as follows:



The following screenshot shows a cursor pair placed on the waveforms display.



RearView

The **RearView** tool allows you to store and navigate through a history of data acquisitions retrieved from the device(s). The expanded RearView tool's detailed control looks like the following:

RearView keeps a history of the last **N** acquisitions. View your stored acquisitions by setting your trigger to **Stop** and using the slider on the detailed control to flip through the history. The currently selected acquisition is shown in the waveform display area.

You can change the number of stored acquisitions by providing a new number in the text box at the right end of the tool's detailed control.

The blue bar on the slider control displays how much of the RearView history is being used and available for review. This bar fills up as you make new acquisitions until reaching your specified depth; at which point the oldest acquisition is discarded when a new one is received.

Note: The RearView tool is always enabled. The default acquisition depth is set to 20 records.

The specific acquisition being viewed is always shown above the slider control – for example in the previous screenshot the tool is showing acquisition 11 of 20 possible acquisitions. When you acquire a new acquisition the **RearView** tool automatically adjusts to show the most recent acquisition.

TIPS:

- While using the **RearView** tool, you can modify your signal setup at any time and display additional signals/data in different ways than how it may have been set at the time of the actual signal acquisition.
- You can create a persistence display to compare acquisitions AFTER all the necessary acquisitions have been obtained. Do this by enabling persistence mode, and then navigating through various acquisitions available in the RearView tool. You can even generate a persistence display for a timeframe or zoom level – even if the signal data was not yet visible at the time of acquisition.

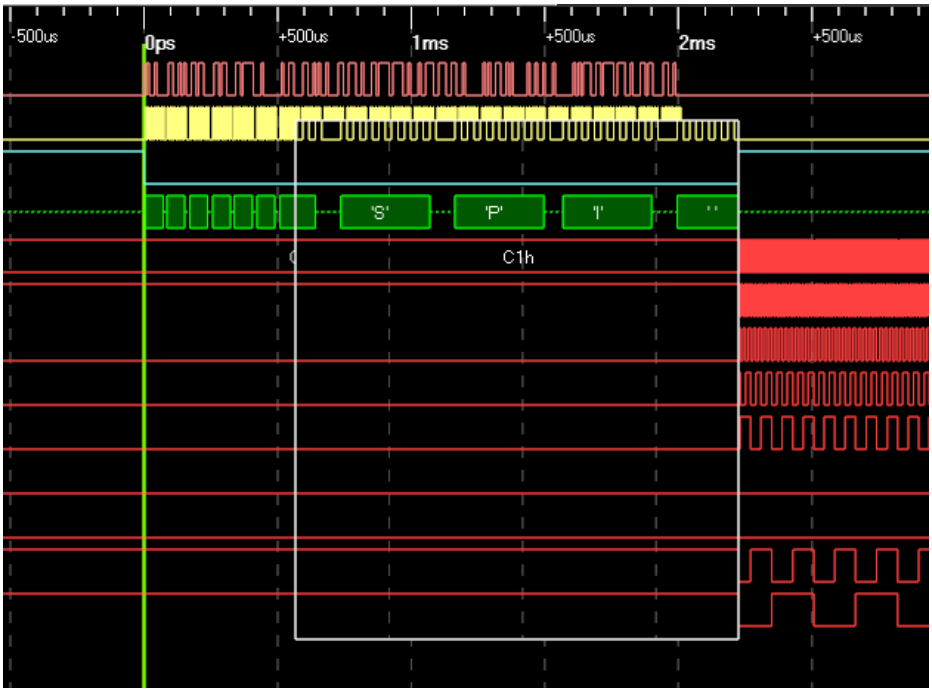
Magnifier

The **Magnifier** tool allows you to quickly zoom-in on a selected time-period of your acquisition without having to adjust your main display or lose your frame of reference.

Enable the magnifier tool at any time by clicking the main portion of the control. Now, move your mouse anywhere over the waveform display and an additional, time-magnified display is drawn inside a boxed, magnified area. Use the slider control or mousewheel to adjust the magnification factor inside the time-magnified display. The slider bar updates along with your mousewheel adjustments.

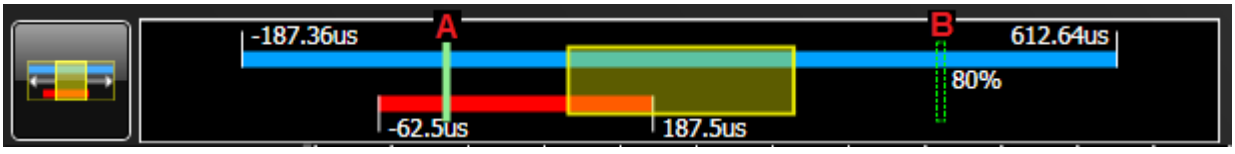
With the magnifier tool enabled, you can still adjust the timeframe of the main waveform display by holding the Control key down while scrolling the mousewheel, or dragging with the left and right mouse buttons as normal.

Tip: This tool conveniently provides a quick, magnified view of closely aligned edges or visibility of decode and bus value text.



WorldView

The **WorldView** is an extremely powerful control just above the waveform display on the dashboard. Not only does it provide important high-level waveform information, but it also allows for display configuration and even pre/post-store settings. The control looks like the following:



The **WorldView** is primarily a high-level presentation of the current relationship between your displayed acquisition(s) and your current view in the main waveforms display.

The display automatically updates to reflect the current conditions whenever display adjustments or a new acquisition is obtained.

- The **blue horizontal bar** represents the digital samples acquired. The labels on each end of the bar show the time extent of that data relative to the trigger point.
- The **red horizontal bar** represents analog samples (if present) acquired from an attached oscilloscope and the labels on each end of the bar show the time extent of that data relative to the trigger point.

The trigger point itself is denoted by the solid vertical green bar (**A**).

The current pre/post-store setting for the digital device is denoted by the dashed green rectangle (**B**). These two indicators align when a new acquisition is obtained; however, the pre/post-store control can be adjusted by the user to change the setting for subsequent acquisitions. The pre-store amount (as a percentage of the total digital acquisition) is always displayed next to this rectangle.

The **yellow translucent viewbox** represents your current view in the waveforms display. This shaded region also provides information for relative zoom level and position within the acquired data.

WorldView control uses include the following:

- Left-click and drag the yellow, translucent viewbox to **pan the waveform display** (to the left or right) through the acquired data.
- **Increase/decrease the current timeframe** by left-clicking and dragging the left or right **edges** of the viewbox. This adjusts or stretches the left or right-most visible time point on the display while leaving the other side pinned.
- **Replace** the existing viewbox with a new one by left-clicking **outside** the existing one and dragging to the desired timeframe size.
- **Center** your existing viewbox by right-clicking outside the existing one. This centers the viewbox around the point in time.
- **Change the pre/post-store setting for the digital device** by left-clicking and dragging the pre/post-store control (B). The ratio displayed as a percentage next to the indicator.
- **Auto-adjust the view to exactly fit the complete timeframe of any digital and analog data currently displayed** by clicking the button directly to the left of the WorldView display.

Run Modes

Four run mode buttons are available on the upper-right of the dashboard as follows:

The modes **Auto**, **Normal**, **Single**, and **Stop** behave similarly to an oscilloscope.

- **Stop** prevents any new acquisitions.
- **Single** mode attempts to get exactly one new acquisition, while **Normal** gets repeated acquisitions.
- **Auto** mode is similar to normal except it times out and forces a trigger if the current trigger condition hasn't been met within a specified period of time.

The Run Mode section of the dashboard also contains two green indicators for **Ready** and **Triggered**. These indicators reflect the state of the digital device at any point in time.

Persistence

Directly above the run mode buttons on the dashboard are the **Persistence** controls. Click the **Persist** button to toggle the function on/off. When persistence is on, subsequent acquisitions are received and shown on the waveform display. Use the **Clear** button to remove the waveforms from the display and restart your acquisitions.

Note: The Clear button also clears your RearView history.

Status Display

At times an animated status display appears in the upper-right corner of the dashboard (above the **Persistence** and **Clear** controls). This display provides messages when certain device actions are taking a longer period of time.

For example, the Status Display indicates when the software is **waiting for a trigger** to occur, **accumulating a large pre/post-store**, or **downloading data from an oscilloscope**.

Signals Control Panel

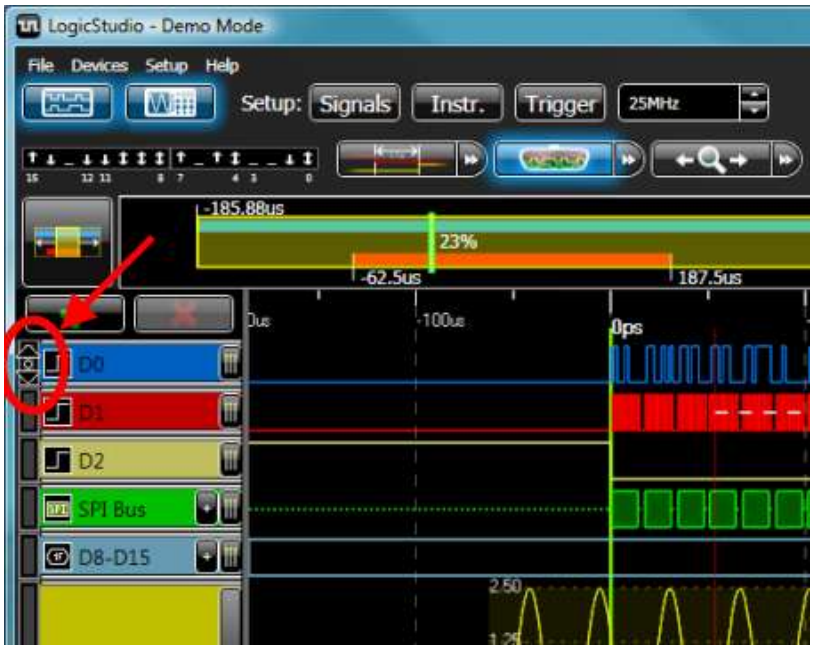
The signals control panel is located on the main window to the left of the waveform display area as follows. Controls on this panel allow for quick and easy signal display modifications.

Note: Signals contain icons indicating the waveform type they are configured to display.

Arranging Your Signals

The display of signals can be modified directly through this control as follows:

- You can **rearrange the order of the signals** shown in the waveform display area. Rolling the mouse over the grip area on the left of a given signal shows the **vertical click-and-drag mouse icon**. When this icon appears, you can vertically click-and-drag the signal to a new location.

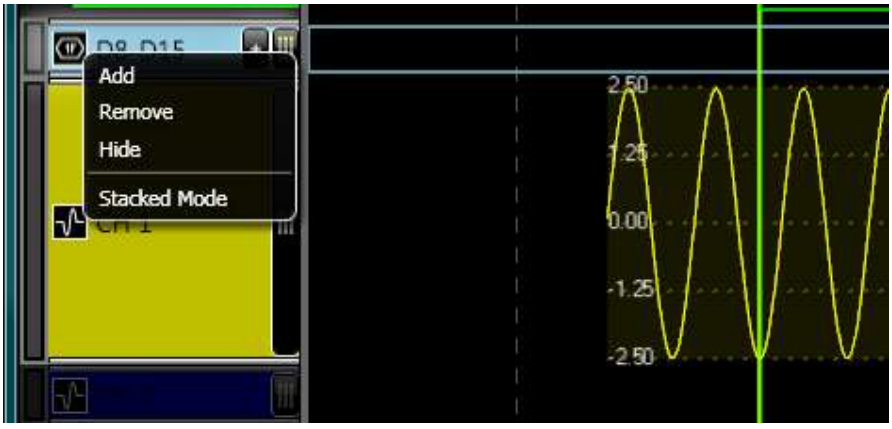


- You can **resize the height of a given signal** in the waveform display area by clicking-and-dragging the bottom edge of a signal to increase/decrease its height.
- Add a new signal to the list by pressing the **Add New Signal** button. With a signals selected in the waveform display area, click the **Delete Selected Signal** button to remove the signal and its configuration. Delete signals one at a time.

The Context Menu

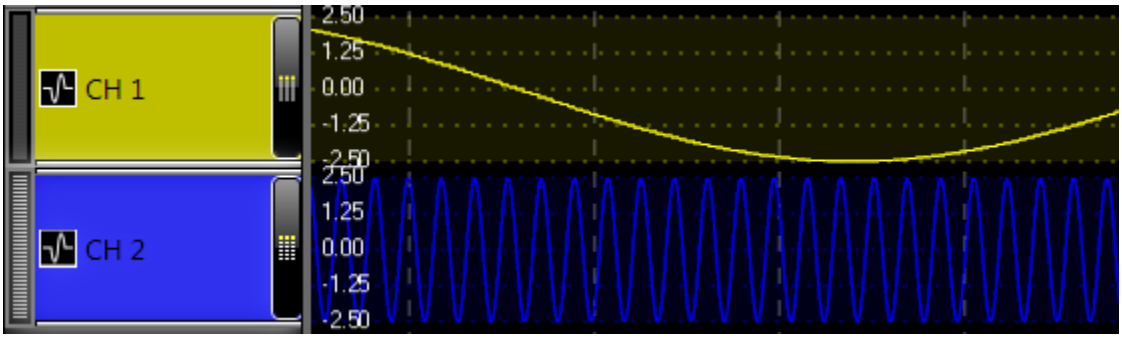
Right-click on the signal control side of a desired signal to show its corresponding context menu complete with the following options:

- **Add** – Inserts a new signal after the one currently selected.
- **Remove** – Deletes the currently selected signal.
- **Show/Hide** – Allows you to remove signals from view without deleting the configuration.

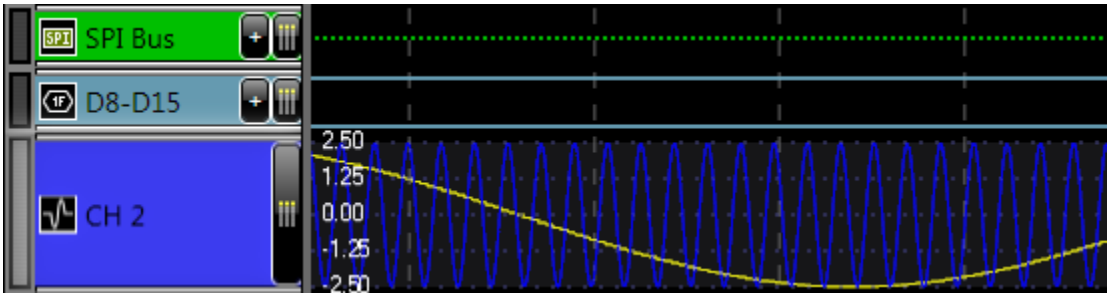


- **Stacked/Freeform Modes** –The signal control panel automatically displays signals in **Stacked** mode - meaning they are shown as individual rows listed in the waveform display area. However, when you change the signal control panel setting to **Freeform** mode, you can use the grip area's (on the left of a given signal) **vertical click-and-drag mouse icon** to drag signals and superimpose them over other signals in the waveform display area.

Note: When in Stacked mode, the grip area's **vertical click-and-drag mouse icon** rearranges the order of your signals (see **Arranging Your Signals** for more information) instead of superimposing the signals.



Channels 1 and 2 in Stacked Mode.



Channel 2 superimposed over Channel 1 using Freeform Mode.

Modifying a Signal

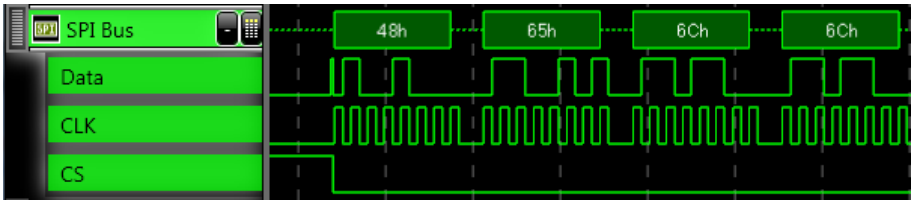
Click a signal's colored name box and corresponding details for the signal are shown on a dialog at the bottom of the waveform display area. This dialog shows contents based on the selected signal's type. It's also the same dialog used for individual rows on the **Signals List** setup screen.

The following screenshot shows a SPI decode signal dialog.

Complex Signals

Digital Bus, Digital Wave, and IS2/SPI/UART Decode type signals are all complex signals that can be comprised of more than one source channel. Signals of these types have an expand/collapse button on their right side allowing you to show/hide the individual source channels as Digital Line type signals.

These sub-signals cannot be directly modified and are automatically named based on how they apply to the complex signal. An example of an expanded SPI Decode is shown in the following screenshot.



The Data Table

Clicking the **Data Table** button on the right edge of a given signal (left of the waveform display area) shows a pop-up. The pop-up contains a tabular list of all transition data associated with the signal as follows:

Sample	Time	Value
4661	560ns	48h
5088	17.64us	65h
5515	34.72us	6Ch
5919	50.88us	6Ch
6347	68us	6Fh
6774	85.08us	20h
7178	101.24us	4Ch
7605	118.32us	65h
8033	135.44us	43h
8460	152.52us	72h
8864	168.68us	6Fh
9291	185.76us	79h
9718	202.84us	27h
10122	219us	73h
10550	236.12us	20h
10977	253.2us	53h
11381	269.36us	50h
11808	286.44us	49h
12236	303.56us	20h
12663	320.64us	57h
13067	336.8us	6Fh
13494	353.88us	72h
13921	370.96us	6Ch

From this pop-up, you can **scroll through the data**, use the **Radix** drop-down field to change the data values (provided the chosen signal supports your selection). The data can also be **Exported** to a CSV file.

Clicking or using the up/down arrow keys to select a row on the table centers the waveform display timeframe on the selected sample and highlights the transition with a vertical bar glowing in the color of the given signal. Use this feature to quickly jump the display to samples of interest on the Data Table.

Note: You can leave this pop-up open for one or more signals while you capture new acquisitions. The table data updates to show current information as acquisitions are completed.

The Dashboard

The **Dashboard** is comprised of all control and information GUI elements seen when you first start the application. You can perform many powerful operations and quickly access most of the functions from the **Dashboard**.

Device Connections

Two **Device Connection** buttons are shown on the upper-left corner of the screen, just below the menu bars.

These buttons handle digital pod and oscilloscope device connections, respectively. Clicking either button attempts to connect to the device or disconnect from the device (depending on the current state). These buttons have a blue glow when the status is connected.

A red **X** over the button indicates the device is not currently present or has been explicitly disconnected by the user.

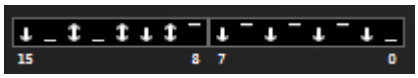
You cannot make new acquisitions without a connection to a digital pod. However, you do not need to have an oscilloscope connected to create acquisitions.

PLEASE NOTE THE FOLLOWING:

- Toggling this button connects and disconnects the last connected oscilloscope. If no last connected oscilloscope is in memory, the **Scope Finder** window is shown.
- Manually disabling or disconnecting the oscilloscope can speed up the rate of acquisitions if you temporarily don't need the analog data.
- Refer to the Oscilloscope Models Supported by topic for a list of supported oscilloscopes.

Pin Activity

The **Pin Activity** display is located at the top of the dashboard. It shows the activity status of all digital device channels in real-time (regardless of application or device state).

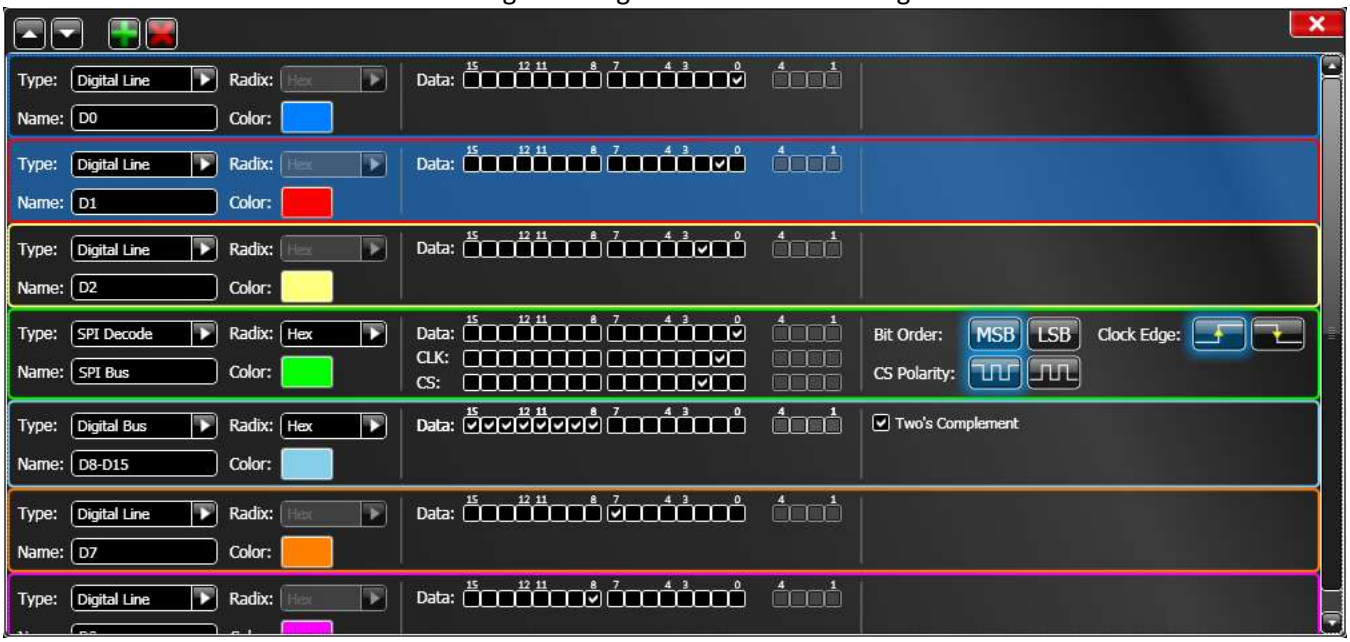


Setup

Three **Setup** buttons are directly to the right of the device connection buttons. The **Setup** buttons allow for configuring the application and digital device.

Signals List

Clicking the **Signals** button shows a screen containing a list of all signals to be rendered on the waveform display. The Signal listing looks like the following:



The Signals list allows you to conveniently configure all the signals at the same time. Each row represents a single signal. Inside a single row, you can modify the signal **Type**, **Name**, **Color**, and **Source Channel(s)**, along with additional options depending on the signal **Type** selected.

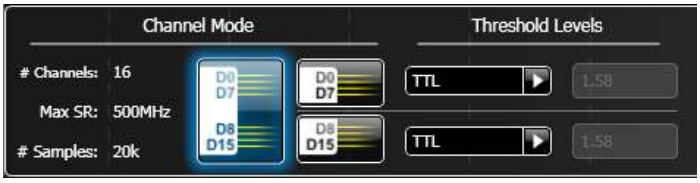
Supported signal **Types** include **Digital Line**, **Digital Bus**, **Digital Wave**, **Analog Channel**, and **I2C/SPI/UART Decodes**.

Buttons at the top of the Signals list window allow you to **add**, **delete**, and **reorder** the list.

Note: Making any modifications to the Signals List or the Signal Setup in any way (even adding new signals) immediately affects currently displayed acquisition data on the Waveform Display Area without requiring a refresh from the device(s).

Instrument

The **Instrument** setup button shows a configuration screen where you can configure how the digital instrument samples data - including the half/full channel mode selection and setting threshold levels. Changes made on the **Instrument** setup screen take effect on the next acquisition.



Note: If you select a different channel mode, the information shown on the left of this setup display is updated to match acquisition details for your choice.

Trigger

The **Trigger** setup button opens a pop-up used for configuring trigger conditions for the digital device. The trigger pop-up has four tabs for different trigger categories.

Note: It's important to note that the trigger logic always runs at a rate of 500 MHz under all modes, regardless of the selected Sample Rate. This allows you to continue triggering on fast events even when lowering the Sample Rate to obtain a longer timeframe of data. However, this may result in trigger events that cannot be seen in the slower sampled acquisition data when presented on the waveform display area.

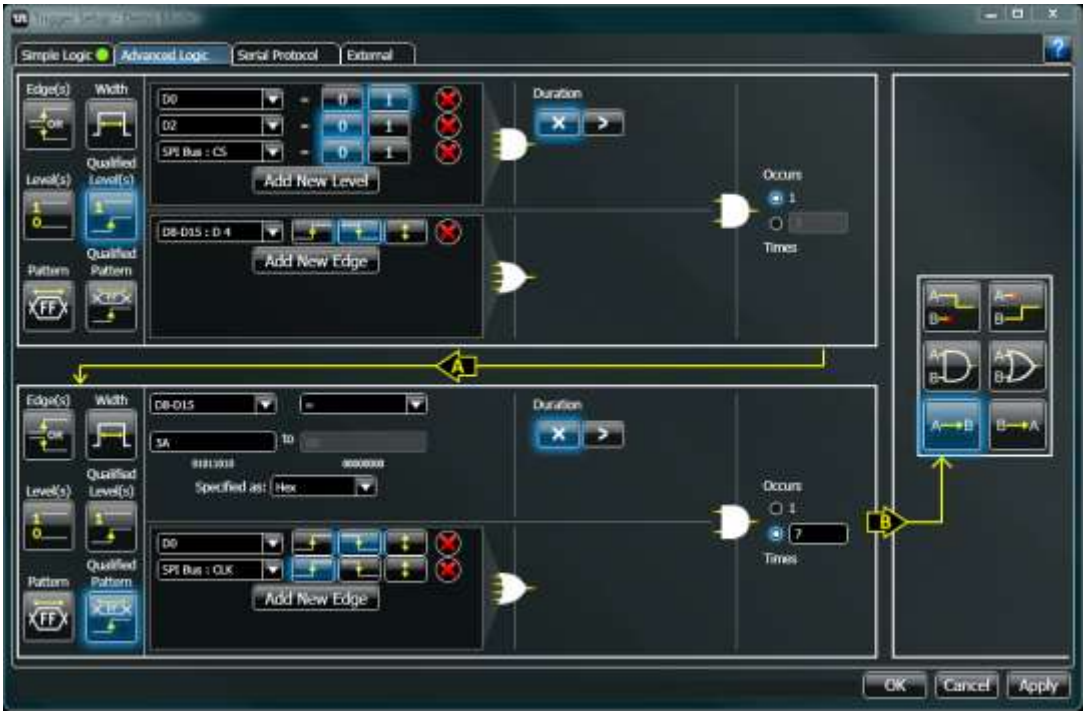
Simple Logic Tab

Use this tab to setup simple, logic-based triggers. Modes include **Edge**, **Level**, **Pattern**, and **Immediate** triggers.

Advanced Logic Tab

Use this tab to set up more complex logic-based triggers. You can set the trigger mode from **Edge(s)**, **Width**, **Level(s)**, **Qualified Level(s)**, **Pattern**, and **Qualified Pattern** choices. A different trigger mode can also be selected for each of two trigger blocks (A and B) and then they can be combined in different logical ways including: **A only, B only, A and B, A or B, A then B, and B then A**.

The yellow arrows update to display the logical flow based on your choice. An example of the **Advanced** tab is shown here.



Serial Protocol Tab

Use this tab to define triggers on serial decode signals you may have defined for **I2C**, **SPI**, or **UART** protocols. An example of an I^2C trigger is shown here.

External Tab

Use this tab to set the logic pod to trigger on an external input signal. A threshold voltage for the signal can be specified.

Sample Rate

The **Sample Rate** spinner control is located at the top of the dashboard just to the right of the **Setup** buttons. It shows the selected rate of sampling for the digital pod. Use the up/down arrow buttons at the right of the control to cycle through the higher/lower sample rates available on the device. Changes made on the **Sample Rate** take effect on subsequent acquisitions.

The Menu Bar

The Menu Bar is a series of pull down listings along the top of the application screen. These pull down listings provide access to some additional features and alternative ways use some aforementioned functions and controls.

Save/Load Setup, Acquisition, or Screenshot

Save/Load functions are accessed under **File** on the menu bar.

Save/Load Setup

Located under **File → Save/Load Setup** on the menu bar, this function lets you save your current configuration to a file or load a previously saved file back into LogicStudio. This includes all configurations of signals, device settings, triggering, and view state.

Default Setup

Located under **File → Default Setup** on the menu bar, this function resets the application setup to the default configuration. The default setup contains 16 simple digital line signals D0 – D15.

Save/Load Acquisition

Located under **File → Save/Load Acquisition** on the menu bar, this function allows you to save the complete set of samples (digital and/or analog) included in your currently displayed acquisition. When using the RearView tool, the currently selected acquisition is saved. The resulting acquisition file can then be re-opened in LogicStudio for further examination, or sent to another LogicStudio user (along with your **Setup** configuration) for additional analysis. Data loaded into LogicStudio can be manipulated and displayed exactly the same as when it's acquired live.

Note: All raw samples are saved. This means you can reconfigure your signals after reloading an acquisition file to view different channel in new ways.

Save Screenshot

Located under **File → Save Screenshot** on the menu bar, this function provides an easy way for the user to capture a screenshot of the application in its current state and save it to a specified location. Your screenshot can be saved into most standard image formats.

Send Files

Located under **File → Send Files To…** on the menu bar, this function allows for easily sharing your current data and configuration. It creates a blank email using your default email client and automatically attaches your current setup, acquisition data, and a screenshot so that you can share them with other LogicStudio users.

Devices

Devices functions are accessed under **Devices** on the menu bar.

Device Connections

The LogicStudio 16 and oscilloscope options behave exactly like the **Device Connections** buttons on the dashboard.

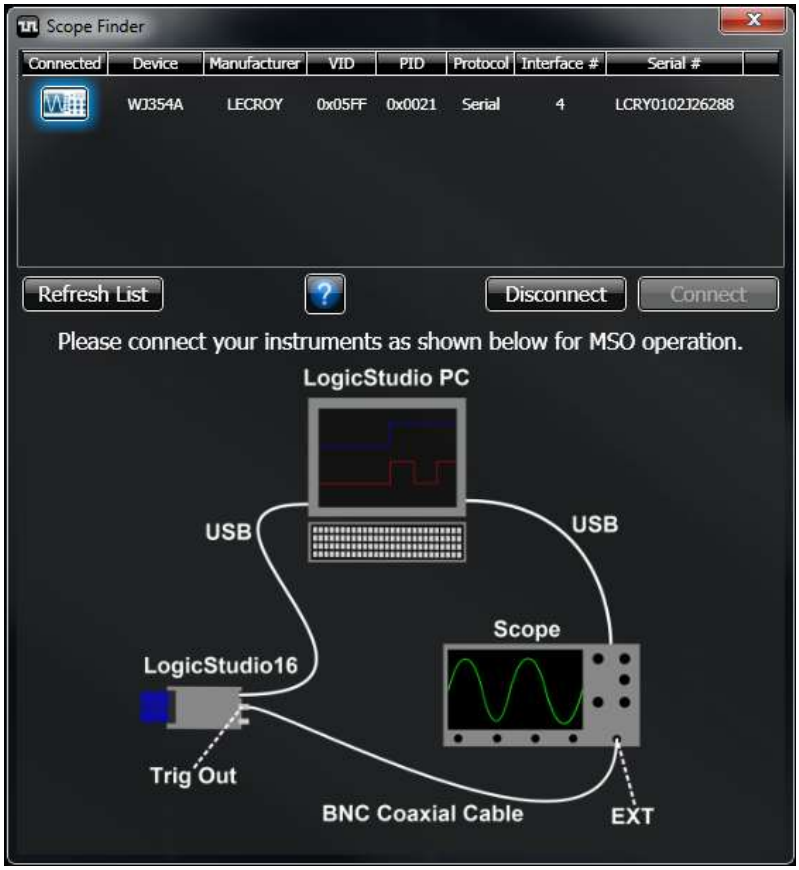
Scope Finder

Located under **Devices → Scope Finder**, the **Scope Finder** window lists oscilloscopes from supported manufacturers currently attached to your PC via USB. The interface allows for selecting a specific oscilloscope enabling LogicStudio connectivity for mixed signal operations (analog and digital). The list of attached devices automatically updates when the **Scope Finder** window is opened or whenever items are attached or removed from your PC.

Connect to an oscilloscope shown on the list by double-clicking its name or highlighting the name and using the **Connect** and **Disconnect** buttons.

PLEASE NOTE THE FOLLOWING:

- It's not necessary to disconnect from an oscilloscope in order to connect to a different one. Simply connect to the new one and the previous one is disconnected automatically.
- If a connected oscilloscope is not on the list it may be an unsupported manufacturer/model. Otherwise, use the Refresh List option force detection. If it still does not appear, check the connection and oscilloscope settings and try again.
- If a connected oscilloscope is not working properly, verify the software version of the connected oscilloscope. LogicStudio works best with the most recent software version.



LogicStudio remembers the currently-selected oscilloscope which can then be toggled on and off using the **Oscilloscope Device Connection** button or on the **Devices** menu.

If the currently-selected oscilloscope cannot be found using either of these means, the Scope Finder window is shown. During subsequent program startups, LogicStudio remembers and, if available, auto-connects to the last selected oscilloscope.

Note: Before you can perform mixed signal acquisitions (analog and digital) using LogicStudio, ensure a proper oscilloscope/PC USB connection and make sure the **Trig Out** line from LogicStudio16 is connected to the external trigger input on your oscilloscope using with the BNC cable provided with your LogicStudio16.

A proper connection configuration diagram is provided right on the **Scope Finder** window.

Oscilloscope Models Supported by LogicStudio

LeCroy

Support for LeCroy WaveJet oscilloscopes is included with the LogicStudio installation. No additional software is needed. The following oscilloscopes are supported:

- WaveJet 300A Series

Agilent

Support for Agilent oscilloscopes requires a VISA implementation installed on the PC you're using. Agilent **IOLibSuite** software includes their VISA implementation and can be obtained from the software included with the oscilloscope or from the Agilent website at www.agilent.com. The following oscilloscopes are supported:

- DSO5000A Series
- DSO6000A Series
- DSO7000A and 7000B Series

Tektronix

Support for Tektronix oscilloscopes requires a VISA implementation installed on the PC you're using. Tektronix **TEKVISA** software is their VISA implementation and can be obtained from the software included with your oscilloscope or from the Tektronix website at www.tek.com.

Note: Tektronix offers guidelines for using a 64-bit operating system with Tektronix instruments. Please contact Tektronix or visit their FAQ at: http://www2.tek.com/cmswpt/faqdetails.lotr?ct=FAQ&cs=faq&ci=6253&lc=EN

The following oscilloscopes are supported:

- DPO2000 and MSO2000 Series
- DPO3000 and MSO3000 Series
- DPO4000 and MSO4000 Series
- TDS 1000B Series
- TDS 2000B and TDS2000C Series
- TDS 3000C Series

PLEASE NOTE THE FOLLOWING:

- When using TDS oscilloscopes, ensure the **Rear USB Port** setting on the instrument is set to **Computer**. This setting is made pressing the **Utility** button on the oscilloscope and selecting **Options**.
- At time per division settings of 100ns/div and faster, the TDS1000 and TDS2000 series oscilloscopes interpolate points between samples. This makes the available timeline shorter with no increased resolution and is not recommended for use with LogicStudio as it may cause your trigger event to be outside the acquired oscilloscope timeline.

Simulate Devices

Toggle this option to switch demo mode on/off. When in demo mode no real devices are necessary and pre-generated data can be acquired from a simulated digital pod and oscilloscope. Aside from triggering and threshold settings, most LogicStudio features are fully functional and behave exactly as they would for real devices.

Setup

Setup functions are accessed under **Setup** on the menu bar.

The setup menu provides alternative access to **Signals**, **Instrument**, and **Trigger** setup windows identical to the buttons on the dashboard.

The Mixed Signal Setup Dialog

Located under **Setup → Mixed Signal** on the menu bar, this function shows the Mixed Signal Setup Dialog where you can specify (in nanoseconds) an **analog trigger alignment correction** value. This setting can be used to fine-tune analog data acquired from the oscilloscope to the data from the digital pod (for example to compensate if a different length of cross-trigger cable is used). Positive values shift the analog trigger point later in time and make the analog data move earlier in time relative to the digital data on the Waveform Display Area. Negative value behaves inversely.

Help

Help information is accessed under **Help** on the menu bar.

Access the **User Manual** to conveniently retrieve this same documentation or click **About LogicStudio** for the software version and LeCroy contact information.

Tell LeCroy

Under Help on the menu bar, the **Tell LeCroy** option is always available for providing your feedback. It creates and sends an email to LogicStudio support at LeCroy. You can even automatically attach your current setup and data with your feedback.

Reference

China RoHS Compliance

部件名称	有毒有害物质和元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr^{6+})	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
PCBAs	X	O	X	X	X	X
机械硬件	O	O	X	O	O	O
金属片	O	O	X	O	O	O
塑料部件	O	O	O	O	X	X
电缆组件	X	O	X	O	X	X
探头(如有)	X	O	X	O	X	X
产品外壳(如有)	O	O	O	O	X	X
适配器/模块(如有)	X	O	O	O	O	O
O: 表明该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求之下。						
X: 表明该有毒有害物质至少在该部件的某一均质材料中的含量超过 SJ/T11363-2006 标准规定的限量要求。						

EFUP (对环境友好的使用时间) 使用条件：参阅本手册“规范”部分规定的环境条件。

电池 EFUP：5 年

China RoHS Compliance (English Version)

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr⁺⁶)	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCBAs	X	O	X	X	X	X
Mechanical Hardware	O	O	X	O	O	O
Sheet Metal	O	O	X	O	O	O
Plastic Parts	O	O	O	O	X	X
Cable Assemblies	X	O	X	O	X	X
Probes (if present)	X	O	X	O	X	X
Product Case (if present)	O	O	O	O	X	X
Adapters/ Modules (if present)	X	O	O	O	O	O

PLEASE NOTE THE FOLLOWING:

- **O**: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement specified in SJ/T11363-2006.
- **X**: Indicates that this toxic or hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement specified in SJ/T11363-2006.
- **EFUP (Environmental Friendly Use Period) Use Conditions**: Refer to the environmental conditions stated in the specifications section of the Getting Started Manual.

EC Declaration of Conformity

according to EN ISO/IEC 17050-1:2004 & 17050-2:2004

Manufacturer's Name: LeCroy Corporation
Manufacturer's Address: 700 Chestnut Ridge Road
Chestnut Ridge, NY, 10977-6499
USA

Herewith declare that

Product/Model: LogicStudio 16

including all their options are in conformity with the provisions of the following EC directive(s), including the latest amendments, and with national legislation implementing these directives:

2006/95/EC Low Voltage Directive
2004/108/EC EMC Directive

and that conformity with Council Directive 2006/95/EC is based on
EN/IEC 61010-1:2001 - Safety requirements for electrical equipment for measurement control and laboratory use

and that conformity with Council Directive 2004/108/EC is based on
EN/IEC 61326-1:2006 - EMC requirements for electrical equipment for measurement control and laboratory use

By: David C. Graef
Vice President and Chief Technology Officer
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