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# **DigiView User's Guide**

© 2012 TechTools

# DigiView User's Guide

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# Installing the Software

**Part**



# 1 Installing the Software

Version 7.1 1/23/2012



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**Chances are that you already know this part but ...**

## ***Installing from CD ROM***

Insert the CD ROM in your CD Drive. If the installation program does not auto-start, then go to the CD ROM drive and dbl-click on the only executable file in the root directory of the CD. If you are presented with a choice of products, select the DIGIVIEW software and follow the prompts to complete the installation. All of the defaults offered are acceptable but you may over-ride any of them you want.

## ***Installing from a WEB Download***

If you downloaded the software from our web site, double-click on the file you downloaded to launch the self-extracting install program. Follow the prompts to install the software. All of the defaults offered are acceptable but you may over-ride any of them you want.

(see also: [Installing USB Drivers](#) <sup>(2)</sup>)

## 1.1 Installing the USB Drivers

We have 2 versions of the installer; the Current Release and a Legacy Release. The CURRENT RELEASE supports 32 and 64 bit versions of XP, Vista and Win7. The Legacy release supports Win98se, Win98Me and Win2K. It is available from our web site but is no longer updated or supported.

Our DigiView software and drivers are Authenticode signed.

**If Windows reports that the publisher is unknown or that the software is not signed, then the files are corrupt, infected or otherwise modified. Cancel the installation, delete the file and download an authentic copy from our web site: <http://www.tech-tools.com>.** The Authenticode signature is timestamped to ensure the signature remains valid even if our Certificate eventually expires. In other words, it will not 'time-out.' You will be able to re-install the software and drivers, even if we go out of business or fail to renew our certificate.

Run the application installer **BEFORE plugging in the hardware**. It installs the application software and pre-installs the drivers. You can accept the defaults or modify to suite your needs. Depending on your Windows version and system settings, Windows might ask your permission to install the application and again to install the drivers.

When the installation is complete, plug the DigiView into a high-speed USB port (preferably to a port directly connected to the motherboard at the rear of the computer or a port anywhere on the computer case that utilizes a high quality cable internally). Current versions of Windows will see the hardware and will find the pre-installed drivers automatically. Other versions will present a **Add New Hardware Wizard**.

Answer as follows for the smoothest installation:

**Win 7:**

No action needed.

**Vista:**

No action needed.

**XP:**

Search Windows Update? : "No,not at this time" (just saves time)  
"Install the software automatically" (the default)

**Win Me:**

"Specify the location of the driver"  
Select "Specify a location:" Then enter the path to the TechTools\drivers directory in the edit box. If you used the defaults during installation, this would be: "C:\Program Files\TechTools\DigiView\drivers"

**Win 98se:**

"Search for the best driver..."  
Select "Specify a location:" Then enter the path to the TechTools\drivers directory in the edit box. If you used the defaults during installation, this would be: "C:\Program Files\TechTools\DigiView\drivers"

If this is the first driver on your system to use the latest driver framework, Windows will take additional steps to update the system. Newer frameworks coexists with any older frameworks, ensuring that existing drivers continue to operate as before. Unfortunately, this takes Windows several minutes and requires a system reboot to complete. Note that this update occurs (if required) when you plug in the DigiView – not during our application install.



# Configuration

**Part**



## 2 Configuration

The DigiView software is designed to make configuration an easy task and less time consuming than most PC based analyzer systems. The easier it is to configure and understand your Capture and Analysis tool, the easier it will be to achieve successful results.

Configuration options can be accessed by using the CONFIG menu.

After the hardware is connected to the PC, the first step of configuration is to attach the physical channels to the circuit and create a Signal definition that uses those channels.

The first topic in this section, after some brief USB information, covers the physical channel connections and cable color scheme. The next section provides detailed information on defining trigger conditions and associating a signal type with the physical channels. The remaining sections deal with user preferences.

[USB Connection](#) <sup>5</sup>

[Connecting Data Lines](#) <sup>6</sup>

[Defining Signals and Triggers](#) <sup>7</sup>

[Analyzer Options](#) <sup>49</sup>

[Acquisition Options](#) <sup>53</sup>

[Color Themes](#) <sup>55</sup>

[Environment Options](#) <sup>57</sup>

### 2.1 USB Connection

#### Power:

DV3100, DV3200:

Plug DigiView into a POWERED HUB (one with its own power supply) or directly into a USB port on your PC. You can not use a bus-powered hub; it does not have enough power to operate DigiView.

DV3400:

Powered by an external power supply, so USB power is of no concern.

#### Speed:

DV3100, DV3200, DV3400:

You will experience better performance on a 2.0 port, but a 1.1 port is sufficient.

#### Connection Quality:

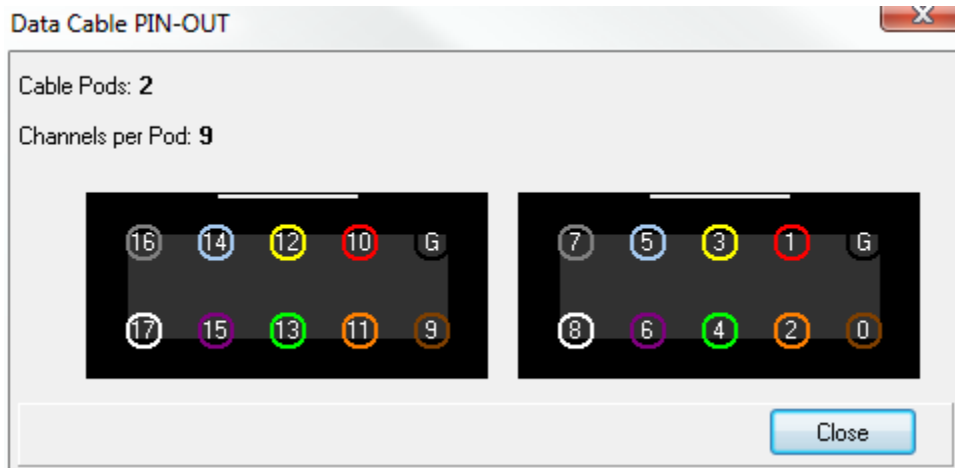
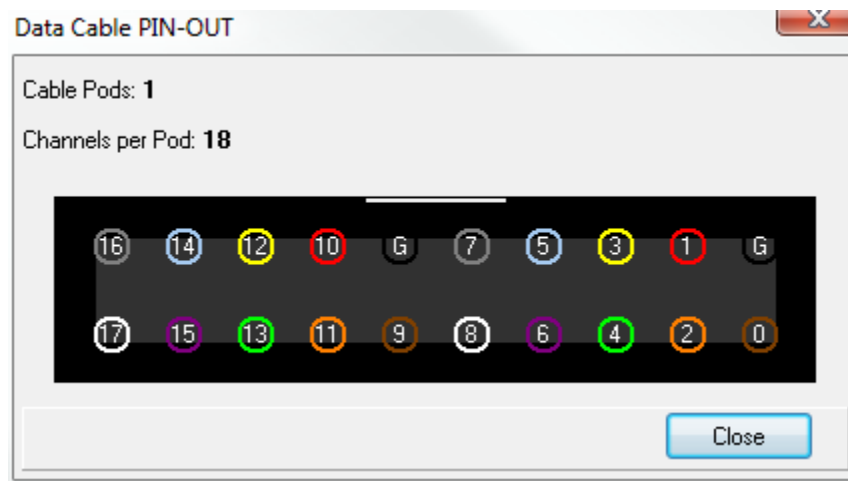
Preferably, use a high-speed USB port located directly on the motherboard at the rear of the computer or a port anywhere on the computer case that utilizes a high quality cable internally. If

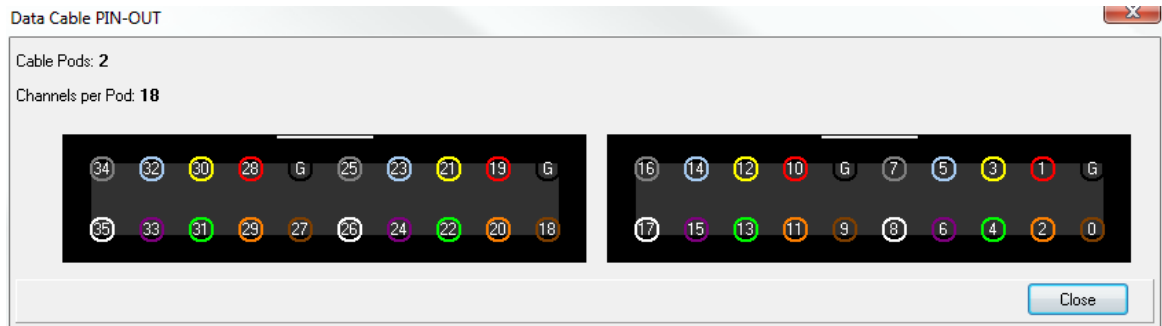
you use a different USB cable than the one provided with the unit, it should match the full rated speed of the USB connection to prevent communication errors or loss of data.

## 2.2 Connecting the Data Lines

The DigiView data cable has 18 data lines and 2 grounds (or 9 data lines and 1 ground on some models). These are partitioned into 2 identical groups. **Each group has a ground and 9 data signals.** The leads are color-coded. Black is ground, brown is the first data signal, red is the second data signal and so on in standard resistor color-code order. Additional groups of signals follow the same pattern.

The images below show the physical layout of the cable, data line definitions and color codes on various models. This figure is available by clicking the PINOUT button in the "[Edit Triggers & Signals](#)" window (selected from the CONFIG menu). This opens a non-modal window so you can leave it open while you work if desired.





The data cable is made of high quality, extremely flexible wire and high quality connectors. It is expensive, so please remember to pull on the connectors; not the wires.

The connectors are designed to mate to .025 square posts and can be side-stacked on 100mil centers, making them ideal for direct connection to standard square post connectors. Additionally, they mate firmly with the included micro-grabber hooks for connecting to IC leads.


DigiView Models DV3100 and DV3200 are designed for signals in the -20 to 20V range and Model DV3400 is designed for signals in the -50 to 50V range. Standard overshoots and undershoots common to digital systems will not harm it. **The data lines have extra static protection circuits, current limits and impulse suppression.** However, mishandling could still damage them. Simply treat them like you (should) treat your valuable one-of-a-kind target and DigiView will give you years of service.

## 2.3 Defining Signals and Triggers

The hardware will ignore any data lines that are not defined as part of a waveform or part of a trigger. This prevents unused signals from eating up the sample buffer space, even if they are connected to active signals. Waveforms that are defined but disabled will not be displayed, but may still be captured if the signal's definition includes a channel that is in use by another signal definition.

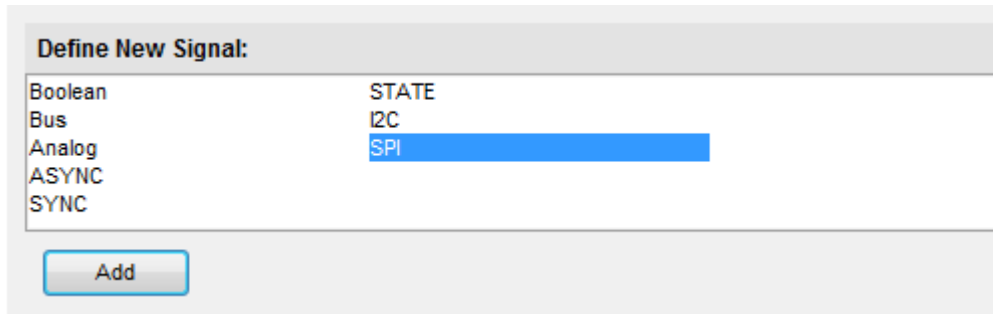
[Signals](#)   
[Triggers](#) 

### 2.3.1 Signals

Current DigiView hardware has either 18 or 36 physical channels. However, we like to think in terms of symbolic names representing individual signals (clock,ALE) or groups of signals (DataBus, Address) rather than channel numbers(0,1,2..). We start by defining SIGNALS in terms of CHANNELS. This is the only place we deal directly with physical channels. The remainder of the software deals in terms of signal names rather than channel numbers. When we define signals, we are mapping a signal NAME to one or more physical channels. This also makes it possible to share the same physical channel with multiple signal definitions (see: [Signal Editors](#) ).

#### Adding Signals to the Project

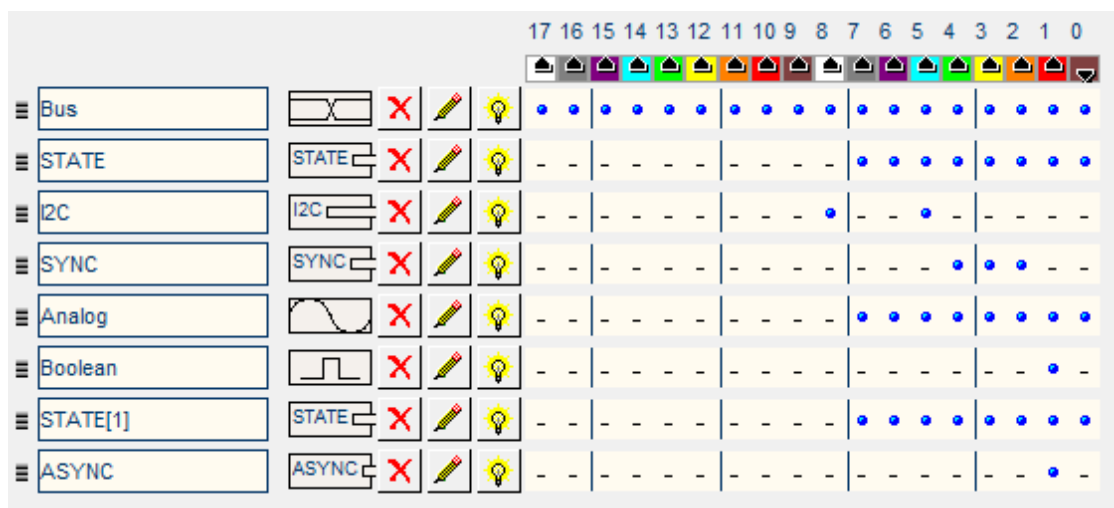
To create a Signal, select "Config->Signals..." from the main menu, which will open the "Project Settings" window to the Signal Definition tab.



Double-Click on one of the "Define New Signal" selections to create a new signal or Highlight your choice and select "Add". A new signal of the chosen type will be created and its property editor will appear. You can rename the signal, change the physical channels to use for this signal definition and set all associated options from the signal's editor. (For details on signal options, see the section: [Signal Editors](#))

### Summary of the Project's Signals

The main purpose of the lower section of the config screen is to provide an overview of all current signal definitions and their related channels. You can also Edit or Delete signals from this section, determine each signal's type, its basic colors and its enabled status. The configuration section is arranged in a grid with columns representing the physical channels and one row per defined signal. Notice that the same channel can be assigned to multiple signal definitions. In the image below, channel 0 has been assigned to the Bus, STATE, Analog and STATE[1] signal definitions.



Channel 0 is in the farthest right column and channel 17 (or 35) is in the farthest left column (as marked in the header.) Light blue lines appear every 4th channel (or nibble).

In addition to the color references at the top of the window, you can click on the 'Cable Connector Pinout' button at the bottom of the window to see a physical layout of the attached analyzer's channel connector, with color codes.

Note that it is important to enable only channels that are actually being connected to your circuit. The remaining, unconnected channels will be floating and will most likely pick up noise or power line hum. If enabled, these transitions will get stored, wasting storage space. It is also important to connect the black ground wires to your target's ground so that the analyzer and the target have a common ground reference.

### Changing the Signal order -

When adding a large number of signal definitions, you may want to change some of their positions to organize or group related signals. To change the display order, grab the small handle in the left margin with your mouse and drag the definition to a new position.

### Signal Name -

The name of this signal definition. This value can be changed by editing the signal's properties. (see: [Signal Editors](#) <sup>(9)</sup>)

### Signal Colors and Type - , etc.

You can see the color of a signal and determine the type by this graphical indicator (displayed to the right of the name assigned to the signal). Each signal type will display a unique graphic with representative colors.

### Delete Signal -

You can delete a signal definition by clicking on the 'X'.

### Edit Signal Properties -

You can change the properties of a signal definition by clicking this button. (see: [Signal Editors](#) <sup>(9)</sup>)

### Enabled Status -

Indicates the enabled state of the signal. When the lightbulb is ON, the signal is enabled. Click this button to toggle the "enabled" status of the signal. This value can also be changed by editing the signal's properties. (see: [Signal Editors](#) <sup>(9)</sup>)

### Associated Channels -

All channels associated with this signal definition will be indicated in this display as a blue "dot". Channel 0 is in the farthest right column and channel 17 (or 35) is in the farthest left column (as marked in the header.) Light blue lines appear every 4th channel and non associated channels appear as '-' as a reference. Also, colored squares at the top show each channel's wire color. Notice that there are only 9 colors so the color sequence repeats (channels 0 and 9 are both brown - the color Black is used for ground connections).

## 2.3.1.1 Signal Editors

DigiView provides several "Signal" type definitions which allow unique methods of interpreting and

displaying the raw data captured on the logic channels. Each Signal type has a unique editor with relevant options for its type. From the editor you will also assign some of the physical logic channels to be used for this new signal definition. (see: [Signals](#)<sup>[7]</sup>, [Connecting Data Lines](#)<sup>[6]</sup>)

You may choose to repeat the use of some channels in multiple Signal definitions in order to interpret the data differently and gain a perspective that is relative to your current point of interest. This can be done easily by creating a new Signal using the definition with the properties you require. Using the same channels in multiple definitions will not have any effect on the actual capture, but can greatly increase your ability to analyze the data and present visual representation to others.

NOTE: For your convenience, the signal editors display a darker background on channels that are already assigned to other signals. However, the same channel can be assigned to as many signal definitions as you need. For instance, if you want to capture the Read and Write cycles of an SPI bus using separate signal definitions (instead of the combined read/write of the SPI signal type), you can create 2 Synchronous Serial signals and assign the same channel as the Clock for each definition.

The currently available Signal Types are listed below. Details of each type's properties are described in the following sections.

#### [Analog](#)<sup>[16]</sup>

Multiple channels combined to a single analog view.

#### [Asynchronous](#)<sup>[13]</sup>

Serial UART analysis, pre-selected and custom baud rates, channel inversion option, from 4 to 8 bit selectable, parity option, Framing options and Glitch filter.

#### [Boolean](#)<sup>[11]</sup>

Single channel viewing.

#### [Bus](#)<sup>[12]</sup>

Multi-channel viewing.

#### [I2C](#)<sup>[17]</sup>

Complete I2C protocol analysis. 7bit/10bit addressing, High Speed Mode Master Codes, General Call support, Glitch filter.

#### [SPI](#)<sup>[25]</sup>

Master/Slave data from two Synchronous Serial data channels using the SPI protocol.

#### [State](#)<sup>[20]</sup>

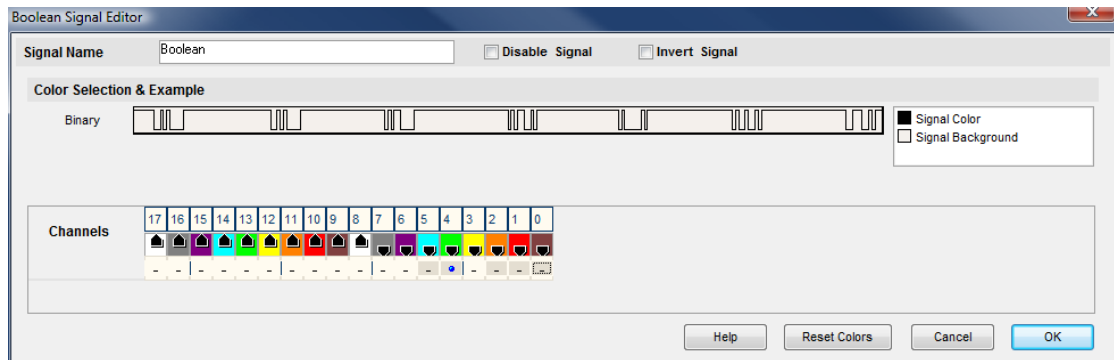
Filters multi-channel data by state of a single channel, selectable CLK/DATA inversion, selectable transition state of Rising/Falling/Both, Framing and timeout options, additional Select and Sync channel for filtering.

#### [Synchronous](#)<sup>[22]</sup>

From 1 to 32 bit protocols, suitable for SPI analysis, selectable CLK/DATA inversion, selectable Rising/Falling/Both clock edges, LSB/MSB selection, additional Select, Frame Sync and Field Sync channels for filtering and synchronizing.

2.3.1.1.1 Boolean

The Boolean Signal is the most common method of viewing captured data. Boolean Signals provide viewing of the logic level of a single channel at any given point in time.



**Signal Name** - Change the text displayed here to help you identify this signal definition. If the name has already been used, it will automatically be appended with a numerical value in brackets (i.e. [2]). The name displayed here will be used in the Waveform Views, searches, tables, lists (if applicable), exports and all menu references.

**Color Selection & Examples** - If this signal definition has multiple Wave Form viewing modes, an example of each mode is displayed in the current color scheme, followed by a listing of any items that allow custom colors (i.e. Signal Color, Signal Background). Click on an item in the list to select a new color.

**Disable Signal** - Select (check) this item to completely disable the Signal Definition. It is recommended to disable any signals that use channels that are not connected to a physical device. When a capture takes place ("Run"), any channels that are assigned to disabled signals will be ignored instead of using valuable capture space.

**Invert Signal** - Check this item to have the value of the captured channels "inverted" before processing or displaying data for this signal definition. This setting will not effect any other signal definitions that may use the same channels.

**Channels** - This is where you will associate a signal definition with the physical channels or connections to the outside world. Each signal definition type will have one or more channel selection groups and will allow one or more channels to be selected for each group. Each channel selection group will be identified on its left if more than one group is available for the signal type.

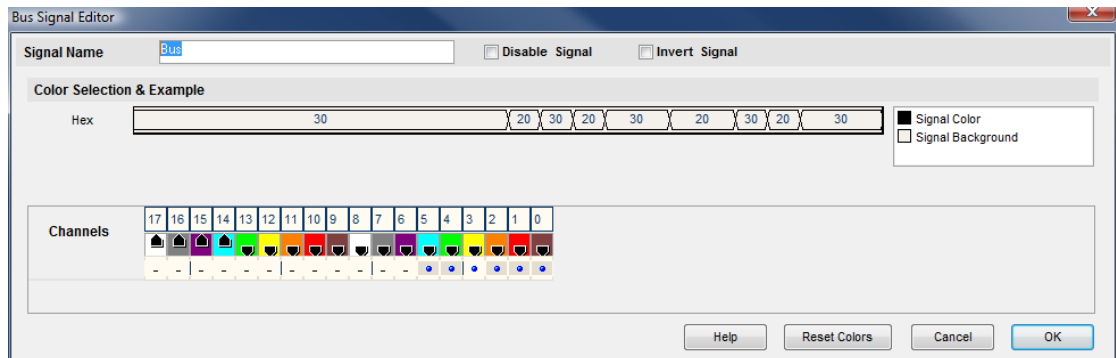
To select a channel, click on the " - " below the proper color (and channel number) that corresponds to the physical connection of the DigiView Cable (see: [Connecting the Data Lines](#)<sup>[6]</sup>). Channels that are selected for this signal will replace the " - " with a blue "dot" as shown above. Channels that are already defined in other signal definitions will have a darker color around the selection area for the channel (as channels 0, 1, 2, 4 and 5 do in the graphic above).

**Reset Colors** - This button will reset the colors for this signal so that they will match the currently selected color theme (see: [Color Themes](#)<sup>[55]</sup>).



## 2.3.1.1.2 Bus

The Bus Signal is the second most common method of viewing captured data. Bus Signals provide viewing of multiple channels as a single value at any given point in time.



**Signal Name** - Change the text displayed here to help you identify this signal definition. If the name has already been used, it will automatically be appended with a numerical value in brackets (i.e. [2]). The name displayed here will be used in the Waveform Views, searches, tables, lists (if applicable), exports and all menu references.

**Color Selection & Examples** - If this signal definition has multiple Wave Form viewing modes, an example of each mode is displayed in the current color scheme, followed by a listing of any items that allow custom colors (i.e. Signal Color, Signal Background). Click on an item in the list to select a new color.

**Disable Signal** - Check this item to completely disable the Signal Definition. It is recommended to disable any signals that use channels that are not connected to a physical device. When a capture takes place ("Run"), any channels that are assigned to disabled signals will be ignored instead of using valuable capture space.

#### Invert Signal

This item is de-selected (unchecked) by default. Check this item to have the value of the captured channels "inverted" before processing or displaying for this signal definition. This setting will not effect any other signal definitions that may use the same channels.

#### Channels

This is where you will associate a signal definition with the physical channels or connections to the outside world. Each signal definition type will have one or more channel selection groups and will allow one or more channels to be selected for each group. Each channel selection group will be identified on its left if more than one group is available for the signal type.

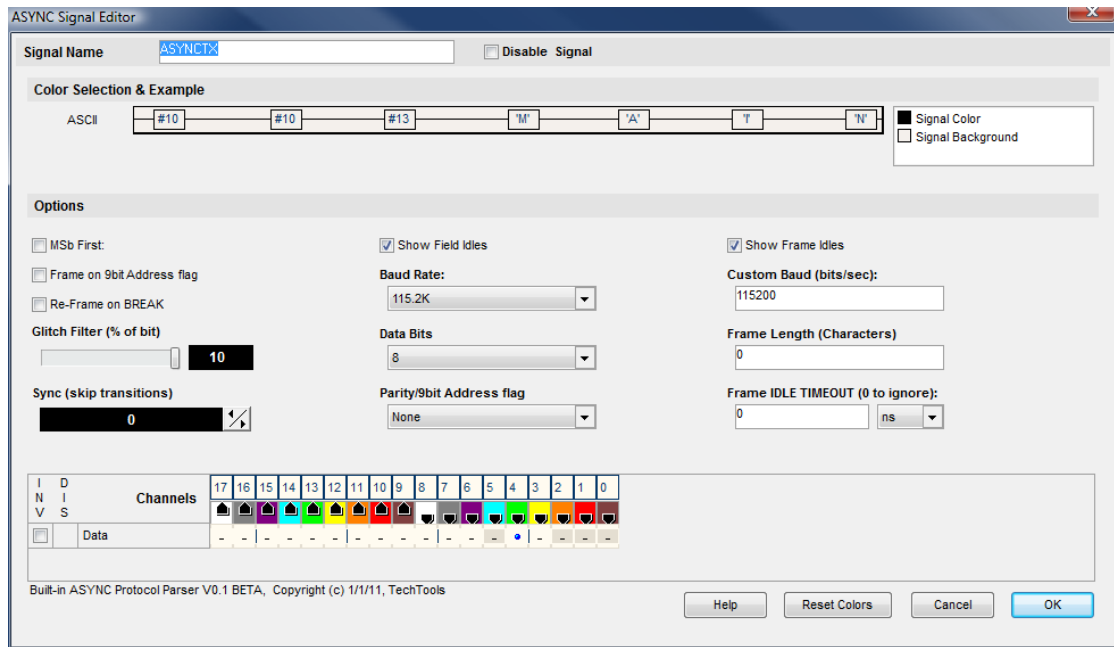
To select a channel, click on the " - " below the proper color (and channel number) that corresponds to the physical connection of the DigiView Cable (see: [Connecting the Data Lines](#)). Channels that are selected for this signal will replace the " - " with a blue "dot" as shown above. Channels that are already defined in other signal definitions will have a darker

color around the selection area for the channel (as channels 0, 1, 2, 4 and 5 do in the graphic above).

**Reset Colors** - This button will reset the colors for this signal so that they will match the currently selected color theme (see: [Color Themes](#) <sup>[55]</sup>).

2.3.1.1.3 Asynchronous

Use the Asynchronous Signal type to see the capture from a single channel decoded and displayed as serial characters or frames of characters with a specific bit count and baud rate.



**Signal Name**

Change the text displayed here to help you identify this signal definition. If the name has already been used, it will automatically be appended with a numerical value in brackets (i.e. [2]). The name displayed here will be used in the Waveform Views, Searches, Tables, Lists, Exports and all menu references.

**Color Selection & Examples**

An example is displayed in the current color scheme, followed by a listing of any items that allow custom colors (i.e. Signal Color, Signal Background). Click on an item in the list to select a new color.

**Data**

Selects which physical channel to assign to the DATA bus.

**Baud Rate:**

Selects from a list of standard BAUD rates or 'use custom'.

**Custom Baud (bits/sec):**

The BAUD rate to use if BAUD RATE is set to 'use custom'.

**Data Bits**

Selects the number of data bits in a character.

**Parity/9bit Address flag**

Selects from odd,even,one,zero,non standard parity settings.  
Also allows selection of 9bit addressing mode with and address field flagged with a '1' or with a '0'.

**Glitch Filter (% of bit)**

Select noise filter setting of none-10% of a bit width.

**Sync (skip transitions)**

Specifies how many transitions to ignore at the start of the buffer.  
Useful for syncing up when capture starts mid-character.

**MSB First:**

Specifies that bits are received in MSB first order (VERY rare).

**Frame Length (Characters)**

Number of characters in a frame. Set to 0 to disable.

**Frame IDLE TIMEOUT (0 to ignore):**

A new frame is started if no characters are seen for more than the specified time.  
Set to 0 to disable. This can be useful if there are none of the other frame methods apply, but you can see a consistent pause before each frame starts.

**Frame on 9bit Address flag**

Start a new frame when a 9bit address byte is detected (if parity set to 9bit mode).

**Re-Frame on BREAK**

Terminate and start a new frame when BREAK detected.

**Show Field Idles**

Specifies whether idle time between fields should be shown as a hashed field or if the current field should just extend to the next field.

**Show Frame Idles**

Specifies whether idle time between frames should be shown as a single center line or if the current frame should just extend to the start of the next frame.

**Disable Signal Channels**

Check this item to completely disable the Signal Definition. It is recommended to disable any signals that use channels that are not connected to a physical device. When a capture takes place ("Run"), any channels that are assigned to disabled signals will be ignored instead of using valuable capture space.

**Channel Selection**

This is where you will associate a signal definition with the physical channels or connections to the outside world. Each signal definition type will have one or more channel selection groups and will allow one or more channels to be selected for each group. Each channel selection group will be identified on its left if more than one group is available for the signal type.

To select a channel, click on the " - " below the proper color (and channel number) that corresponds to the physical connection of the DigiView Cable (see: [Connecting the Data Lines](#)<sup>[67]</sup>). Channels that are selected for this signal will replace the " - " with a blue "dot" as shown above. Channels that are already defined in other signal definitions will have a darker color around the selection area for the channel (as channels 0, 1, 2 and 5 do in the graphic above).

**Reset Colors** - This button will reset the colors for this signal so that they will match the currently selected color theme (see: [Color Themes](#)<sup>[55]</sup>).

## Display Fields

### DATA

Field type used for most characters. Shows the received data

### Address

Field type used for 9 bit address bytes. Shows the received data

### BREAK

Field type used for break events. Prints the word BREAK

### ParityError

Field type used to display parity errors. Shows ' P '

### FrameError

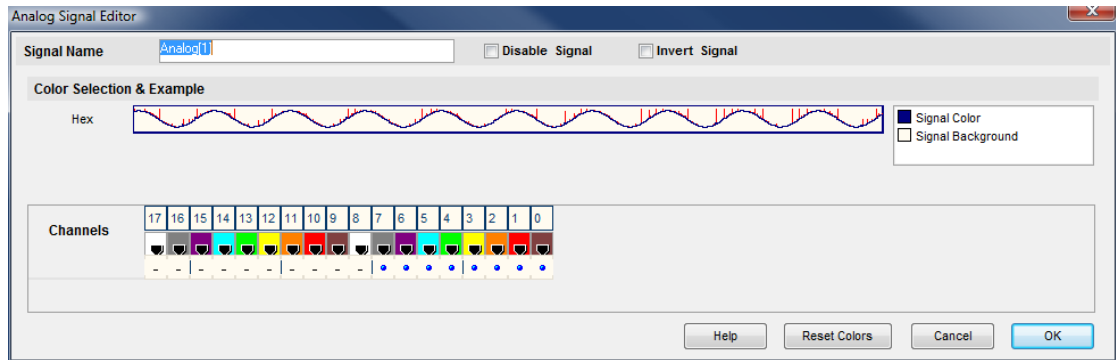
Field type used to display character framing errors. Shows ' F '

**NOTE:** Multiple framing methods can be used at the same time. For example, you could use a frame length specifier and the frames will be broken into the specified lengths. If a timeout is specified, it will override and terminate a frame if the specified time is exceeded.

## 2.3.1.1.4 Analog

Use the Analog Signal type to see a group of channels shown as an analog type plot. For example, you could look at the output of an A/D as a graph rather than numbers in a bus format.

The chosen channels do not have to be consecutive. Any "skipped" channels in this definition will be ignored and the selected channels "packed" to form the bits of a single value. The lowest selected channel will be the least significant bit (LSB). In the graphic below, channel 0 is the LSB and channel 7 is the MSB.



### Signal Name

Change the text displayed here to help you identify this signal definition. If the name has already been used, it will automatically be appended with a numerical value in brackets (i.e. [2]). The name displayed here will be used in the Waveform Views, Searches, Tables, Lists, Exports and all menu references.

### Disable Signal

Causes this signal to be ignored in future captures and in all current searches and displays windows.

### Invert Signal

Causes the channel to be logically inverted before being displayed.

### Color Selection & Examples

An example is displayed in the current color scheme, followed by a listing of any items that allow custom colors (i.e. Signal Color, Signal Background). Click on an item in the list to select a new color.

### Channel Selection

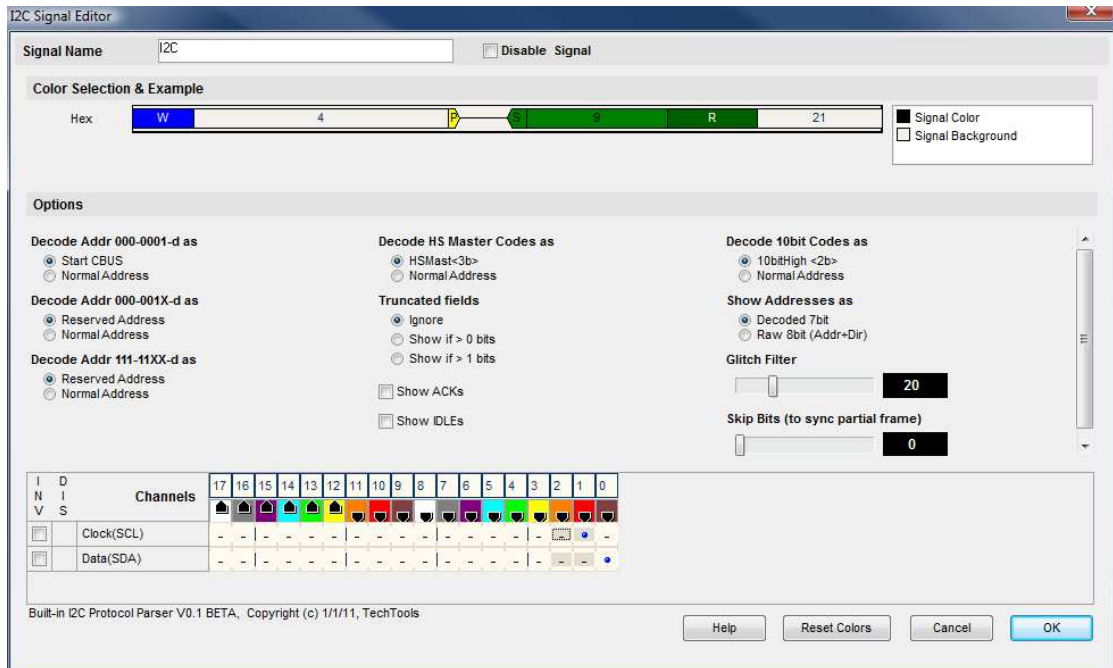
Selects which physical channels to assign to the signal. You can select two or more. They do not have to be contiguous. The total number of selected channels will become the bus width, regardless of which channels are selected. The highest numbered channel will be become the MSB and the lowest numbered channel will become the LSB (bit 0).

To select a channel, click on the "-" below the proper color (and channel number) that corresponds to the physical connection of the DigiView Cable (see: [Connecting the Data Lines](#)). Channels that are selected for this signal will replace the "-" with a blue "dot" as shown above. Channels that are already defined in other signal definitions will have a darker color around the selection area for the channel.

**Reset Colors** - This button will reset the colors for this signal so that they will match the currently selected color theme (see: [Color Themes](#)<sup>[55]</sup>).

2.3.1.1.5 I2C

Use the I2C Signal type to decode two channels using the full I2C serial protocol.



**Signal Name**

Change the text displayed here to help you identify this signal definition. If the name has already been used, it will automatically be appended with a numerical value in brackets (i.e. [2]). The name displayed here will be used in the Waveform Views, Searches, Tables, Lists, Exports and all menu references.

**Color Selection & Examples**

An example is displayed in the current color scheme, followed by a listing of any items that allow custom colors (i.e. Signal Color, Signal Background). Click on an item in the list to select a new color.

**Clock (SCL)**

Selects which physical channel to assign to the CLOCK.

**Data (SDA)**

Selects which physical channel to assign to the DATA bus.

**Glitch Filter**

Selects the amount of noise filtering. Should be set to 50ns for low speed buses and

reduces for FAST buses.

**Skip Bits (to sync partial frame)**

Specifies how many bits to ignore at the start of the buffer. Useful for syncing up when capture starts mid-frame.

**Decode Addr 000-0001-d as**

Selects between the standard I2C decoding for this address range or decoding it as normal 7 bit devices.

**Decode Addr 000-001X-d as**

Selects between the standard I2C decoding for this address range or decoding it as normal 7 bit devices.

**Decode Addr 111-11XX-d as**

Selects between the standard I2C decoding for this address range or decoding it as normal 7 bit devices.

**Decode HS Master Codes as**

Selects between the standard I2C decoding for this address range or decoding it as normal 7 bit devices.

**Decode 10bit Codes as**

Selects between the standard I2C decoding for this address range or decoding it as normal 7 bit devices.

**Truncated fields**

Specified whether to show truncated/partial fields or not. 1 bit truncated fields common and unavoidable so the options include showing only if > 1 bit.

**Show ACKs**

Selects whether to show ACKs in the waveforms, tables and searches NAKs are always shown.

**Show Addresses as**

The I2C spec defines 7 bit addresses and a 1 bit direction (R/W) in the first field. Sometimes it is convenient to think of this as a single 8 bit value. This option specifies whether to show as 2 fields (per spec.) or as a single 8 bit field.

**Show IDLEs**

Specifies whether idle time between fields should be shown as a hashed field or if the current field should just extend to the next field.

**Channel Selection**

This is where you will associate a signal definition with the physical channels or connections to the outside world. Each signal definition type will have one or more channel selection groups and will allow one or more channels to be selected for each group. Each channel selection group will be identified on its left if more than one group is available for the signal type.

To select a channel, click on the " - " below the proper color (and channel number) that corresponds to the physical connection of the DigiView Cable (see: [Connecting the Data Lines](#)<sup>[6]</sup>). Channels that are selected for this signal will replace the " - " with a blue "dot" as shown above. Channels that are already defined in other signal definitions will have a darker color around the selection area for the channel (as channels 1 and 2 do in the graphic

above).

### Reset Colors

This button will reset the colors for this signal so that they will match the currently selected color theme (see: [Color Themes](#)<sup>[55]</sup>).

## Display Fields

### Start

Field type used to show start and repeated start event.  
Shows ' S ' for start or ' Sr ' for repeated start.

### Stop

Field type used for stop events. Shows ' P '.

### Addr

Field type used for normal 7bit address fields

### Addr8

Field type used to show first byte as 8 bit address+direction

### Data

Field type used for most characters. Shows the received byte

### Ack

Field type used to show Acknowledge bit. Shows ' A '

### Nak

Field type used to show Nak bits. Shows ' N '.

### WRITE

Field type used to show WRITE bits. Shows ' W '.

### READ

Field type used to show READ bits. Shows ' R '.

### General-Call

Field type used to show first byte code is General-Call.  
Shows ' Gen-Call '

### Start-Byte

Field type used when the first byte code is START BYTE.  
Shows ' START '.

### HS Master

Field type used when first byte code is High Speed Master.  
Shows ' HS Master: ' followed by the 3 bit master ID

### CBUS

Field type used when the first byte code is CBUS.  
Prints the word CBUS.

### Reserved

Field type used when the first byte is a reserved address.



Prints the word 'RESERVED:' followed by the actual data

### 10bitMode

Field type used when the first byte code is 10 bit Mode.

Prints '10bitMode:' followed by the high 2 bits of the 10bit address.

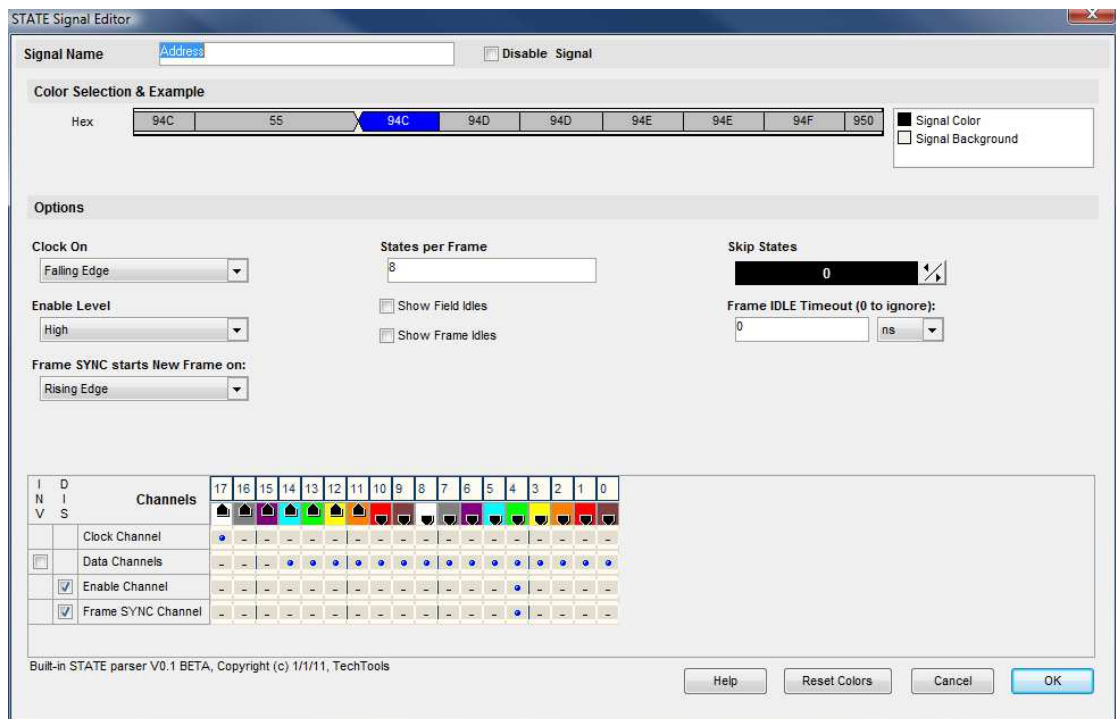
### Truncated

Field type used when a byte is truncated (bt a stop or repeated start)

Prints 'T:' followed by the received data.

#### 2.3.1.1.6 State

Use the State Signal type to see the data from one or more channels only when the state of another channel changes. This other channel will be used as a "state clock" and optionally the Clock can be qualified by the logic state of an additional channel (Enable). This signal type can be used to mask invalid data during bus transitional periods or the "noise" that occurs during unqualified periods, making it easier to analyze true data.



### Signal Name

Change the text displayed here to help you identify this signal definition. If the name has already been used, it will automatically be appended with a numerical value in brackets (i.e. [2]). The name displayed here will be used in the Waveform Views, Searches, Tables, Lists (if applicable), Exports and all menu references.

### Color Selection & Examples

An example is displayed in the current color scheme, followed by a listing of any items that

allow custom colors (i.e. Signal Color, Signal Background). Click on an item in the list to select a new color.

**Clock Channel**

Selects which physical channel to assign to the CLOCK.

**Data Channels**

Selects which physical channels to assign to the DATA bus.

**Enable Channel**

Selects which physical channel to assign to the ENABLE. The enable can be disabled if not used.

**Frame SYNC Channel**

Selects which physical channel to assign to the FRAME SYNC. The FRAME SYNC can be disabled if not used. This can be used to identify frame limits.

**Clock On**

Selects which edge of the clock to use to strobe in then data.

**Enable Level**

Selects the active level for the Enable signal.

**Skip States**

Specifies how many states to ignore before starting a frame. Useful for syncing up data that has no framing signals.

**States per Frame**

Specifies how many states are in a frame (if fixed). Set to 0 to ignore if other framing methods are being used.

**Frame SYNC starts New Frame on:**

Specifies how the Frame Sync signal is used (if enabled). Rising, Falling and Either edges specify what starts a new frame (and terminates the previous frame). The last two options specify that one edge starts a frame and the other edge terminates the frame. Any startframe will automatically end the previous frame. Specifying the endframe just ends it earlier for aesthetics.

**Frame IDLE Timeout (0 to ignore):**

A new frame is started if no new states are seen for more than the specified time. Set to 0 to disable. This can be useful if there are no sync lines or field counts but you can see a consistent pause before each frame starts.

**Show Field Idles**

Specifies whether idle time between fields should be shown as a hashed field or if the current field should just extend to the next field.

**Show Frame Idles**

Specifies whether idle time between frames should be shown as a single center line or if the current frame should just extend to the start of the next frame.

**Reset Colors**

This button will reset the colors for this signal so that they will match the currently selected color theme (see: [Color Themes](#)<sup>[55]</sup>).