ScanaPLUS workspace

SCANASTUDIO

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ℹ **NOTE:** This page is being re-written to better reflect the latest graphical user interface of ScanaStudio

ℹ **NOTE:** Information on this page applies to ScanaStudio v2.0 and above

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Introduction

ScanaPLUS is a logic analyzer device supported by ScanaStudio 2.0. This section explains how to configure a ScanaPLUS device to capture logic signals. In order to use a ScanaPLUS device, first you need to create (add) a new ScanaPLUS workspace. Do that by clicking on "File > New", then select "ScanaPLUS" as the type of device for that workspace. Then open the device configuration panel by clicking on the ScanaPLUS icon as in the image below:


This will display the ScanaPLUS configuration panel as in the image below. This panel allow you to:

- Configure the inputs of your ScanaPLUS device.
- Select the number of samples to capture (and hence the total sampling time)
- Configure the trigger options
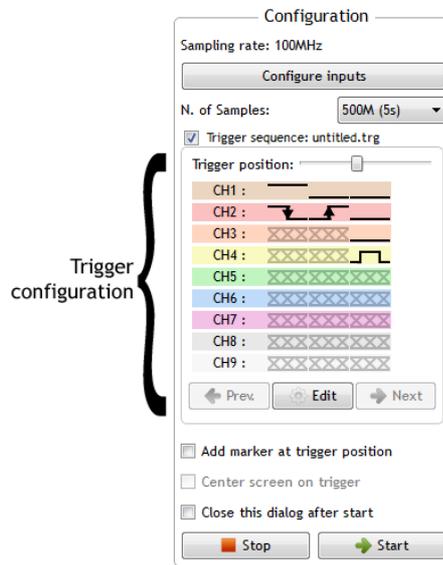
General principle of operation

ScanaPLUS device mode of operation is illustrated in the image below: It samples the logic signals on all 9 channels at a maximum sampling frequency of 100 MHz, and records the exact time of each and every transition. In the same time, it compresses these information and streams it to a host computer running ScanaStudio. That implies that there is no need to adjust the sampling frequency and number of samples to reach a compromise between sampling time and accuracy: With ScanaPLUS you can use the maximum sampling frequency without sacrificing the sampling time.
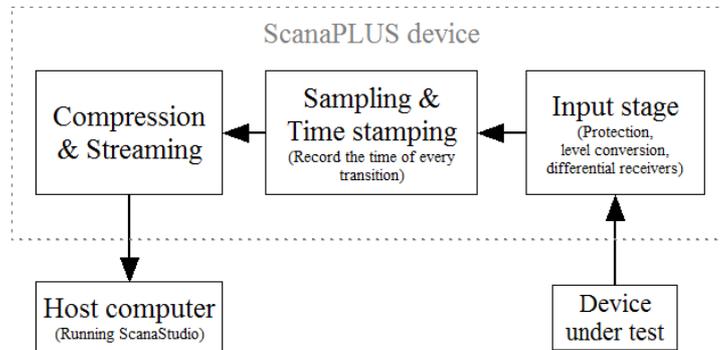
Starting a new capture

After you have added a new ScanaPLUS workspace, to start capturing logic signals, you need to click on the "Start" button shown in the image below:

Alternatively, you can find the same button at the bottom of the device configuration panel.

You can click on the "Stop" button next the "Start" button to abort any device operation.

Configuring input types

ScanaPLUS allows the user to finely adjust input types and configure them:

- Adjust the logic threshold of the first 4 channels (CH1 to CH4)
- Adjust a different logic threshold on the other channels (CH5 to CH9)
- Configure some channels as RS232 receiver or LIN bus receivers
- Configure some channels pairs as differential receivers for RS485 or CAN bus.

This configuration is done using a simple user friendly wizard, that can be called by clicking on "Configure inputs" in the ScanaPLUS configuration panel shown above. You then need to follow the steps to configure the inputs of your ScanaPLUS device according to your application. If you select to use differential inputs, this wizard will also show you how to connect your device to the differential lines, like in the example image below:
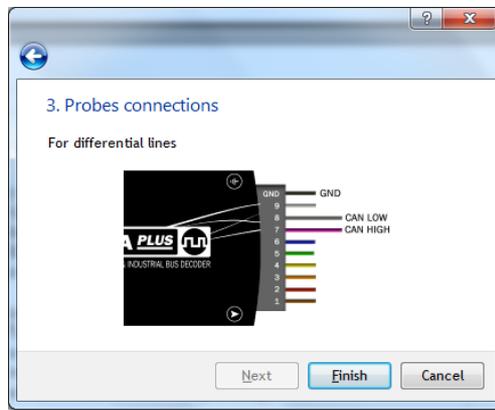
Configuring trigger

ScanaPLUS has a sophisticated but easy to use trigger system, that was designed to cover almost all the possible triggering schemes.

ScanaPLUS trigger is based on "Trigger Steps": The data collected by the analyzer are compared against the first trigger step, if there is a match, it looks for the next trigger step and so on until all trigger steps have been "validated" (that is, a match occurred for each and every trigger step).

ScanaPLUS trigger steps are built by combining some or all of those trigger elements:

| Icon in ScanaStudio	Event type	Comments
XXX	Don't care	Channels marked as "Don't care" won't affect in anyway the trigger step.
⌐L	Falling edge	A falling edge must occur for the step to be validated.
⌐Γ	Rising edge	A rising edge must occur for the step to be validated.
⌐Π	High pulse	A sequence of a rising edge then falling edge must occur for the step to be validated. The width of that pulse can be configured.
⌐U	Low pulse	A sequence of a falling edge then rising edge must occur for the step to be validated. The width of that pulse can be configured.
—	High level	A hight level must be present on that channel for a trigger step to be validated.
—	Low level	A low level must be present on that channel for a trigger step to be validated.

Important notes and rules to follow when designing a trigger sequence:

1. Each trigger step can only have only 1 edge based trigger (falling edge, rising edge, high pulse, low pulse). This prevents the user from creating trigger conditions that are impossible to be met. For example, it is impossible to trigger on rising edge for 2 channels, as it would imply that the two rising edge would have to happen exactly at the same time, down to the nanosecond! However, you can design a trigger sequence when two rising edge on two different channels have to happen one after the other. In that case, each rising edge would be defined on a separate trigger step.
2. Each trigger step can have various levels defined for various channels.
3. All the conditions of a trigger step will have to be met for a step to be validated.
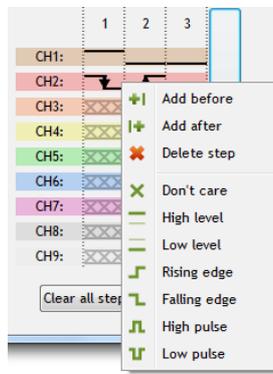
Configuring trigger steps

To configure the trigger steps, first activate the trigger sequence by checking the check-box next to "trigger sequence" in the ScanaPLUS device configuration panel, then click on "Edit".

You should a see a dialog box like this one:
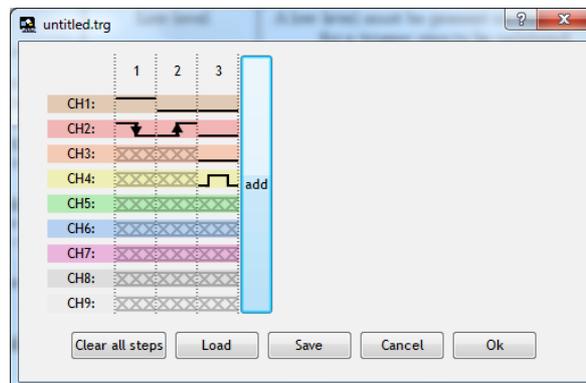
This dialog allows you to add an unlimited number of steps by clicking on the "add" button (in this example there are only 3 steps). You can also clear all the steps, load and save this trigger sequence using the buttons in the bottom row.

To change the type of trigger for each step and each channel, simply right click on it and select the desired trigger event from the list, as in the image below:

Configuring High and Low pulses triggering

When adding a pulse as a trigger condition to be met, it is important to give ScanaStudio some timing specifications about this pulse. You can do this by right clicking on a "pulse" element in the trigger sequence and adjusting the minimum and maximum time of that pulse as shown in the image below:
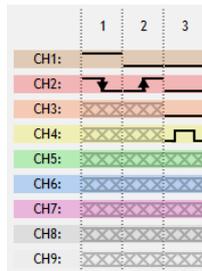

Note that you can use all the conventional units when entering the minimum and maximum time. Here are example of text entries that are accepted by ScanaStudio and are all equivalent:

- 1400 ns
- 1.4 µs
- 1.4 us
- 1.4 e-6

Example:

Below is an example of a trigger sequence, composed of 3 steps:


In that example ScanaPLUS will wait for the following events (in that exact order) before capturing the data and displaying it on the screen:

1. A falling edge on channel 2, while channel 1 is logic high

2. A rising edge on channel 2, while channel 1 is logic low

3. A high pulse on channel 4, while channels 1, 2 and 3 are logic low. The pulse width must meet the specifications defined by the user.

Trigger position

Finally, it is important to note that with ScanaPLUS, you can easily choose the trigger position relative to the full length of the capture. This is done using the track-bar in the trigger configuration box in the ScanaPLUS device configuration panel, as in the image below:
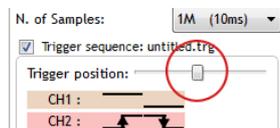
This allows you to dedicate as much as you wish of the sampling depth to analyze post or pre trigger samples. There is no optimal position for this trigger position track-bar, and it totally depends on your application and on the signals you are sampling.

For example, if you have configured a capture length (number of samples) of 5 seconds, and set the trigger position track-bar at the middle (approximately), you will end up with half of the capture length (2.5 seconds) dedicated to pre-trigger data.

Getting further help

If you need more assistance with ScanaStudio usage or with your logic analyzer device, please don't hesitate to contact us (https://www.ikalogic.com/contact/) or leave a comment below.

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