# Verifying signal acquisition with CSTest+

CSTest+ is a utility program that allows acquisition and display of data from a CompuScope card using CompuScope 4.xx drivers. It acts as a test to ensure that your CompuScope card(s) is fully functional.

Now that you have successfully installed the CompuScope drivers and have tested driver installation with the CompuScope Manager utility, you can run CSTest+ to verify that these drivers are properly communicating with your CompuScope card(s).

#### Setting-up your Hardware

Using a function (signal) generator, generate a 1 MHz sine wave signal and connect it to the CH1 input of your CompuScope card.

#### Running CSTest+

You can run CSTest+ from the Windows Start Menu:



Note that if you are using a 32-bit operating system, you should select **CsTest+**. For 64-bit operating systems, select **CsTest64**. However, when using a 64 bit operating system, you can test the 32-bit emulation of the drivers by using CsTest+ and the 64-bit native drivers using CsTest64.

If there is more than one acquisition system, be it a single CompuScope card, a Master/Slave multi-card system, or a Multiple/Independent multi-card system, installed on the same computer, you should see the **Select System** dialog pop-up. Select the acquisition system you want to test then click OK. You will not see this dialog if there is only one acquisition system installed in the computer.

Select System	
CS12400 128 M CSVS12 32 M CS8VS14 32 M	
OK )	Cancel

You should now see a window labeled **CsTest+**. You can view the sine wave that you have generated using the function generator that you have previously connected by selecting **Acquire** from the **Controls** menu:

🚰 C	S12400	- CsTest+								
File	Controls F	Parameters	Tools	Data Transfer	Debug	Extended Ops	Help			
	Acquire	F1								
	Continuo	us F2								
	Force Tri	nder F4								
	System R	Reset F5								ļ
	Select Sy	stem F10								
0000		TxTi	me = 0	.000 msecs				•	•	HORZ: 128 Samples/Div

To view the sine wave continuously in time, go to the **Controls** menu and click on **Continuous**. Note that the sine wave on the screen starts from the positive slope. As you change the frequency of the sine wave on your function generator, you will see a corresponding change in the sine wave displayed in CSTest+.

**Note:** You may have noticed the four-digit number in the bottom left corner of the CSTest+ window. This is a counter. Every time CSTest+ acquires data, the counter is incremented by 1.

On the right of the counter is the acquisition status. The acquisition status can be one of the following:

Ready	Ready for another data acquisition.
Waiting For Trigger	Data acquisition is in progress, the trigger condition has not been met
Triggered	Data acquisition is in progress.
Data Transfer	Data transfer from on-board memory to PC memory is in progress.



Now, go back to the Controls menu and click on Abort. This will stop any further acquisition.

We will now change a trigger parameter such as **Trigger Slope** to verify that all controls for the card are working as they should. Go to the **Parameters** menu and select **Trigger Config**.



You should see a new dialog box: (Depending on the version of drivers that you have installed, the dialog may look slightly different)

Trigger configuration 🛛 🔀					
Complex triggering					
Source	Channel 1 💌				
Condition Rising					
Level, %	0				
External trigger parameters –					
O AC	$C \pm 1 \forall$				
O DC	C ±5 ∀				
OK	Cancel				

Change the trigger condition from **Rising** to **Falling**. Click on **OK** for this change to be registered and to close the dialog box.

When you go back to the **Controls** menu and click on **Continuous**, you should see the same sine wave, but starting from a negative slope.

This short experiment proves that communication between a utility program (CSTest+), the CompuScope drivers, and a CompuScope card has been successfully established. The following screens describe the other functionalities available with CSTest+:

Note: The menu above only allows implementation of simple triggering. For complex triggering, select the complex triggering checkbox, this will expand the menu:

Trigger configuration							
Complex triggering							
Source Channel 1 💌	Source	Condidion	Level				
,	Channel 1	Rising	0				
Condition Rising -	Channel 2	Rising	0				
,							
Level, % 0							
External trigger parameters							
ODC O±5V							
OK Cancel	1						

The newly-revealed box on the right lists all available logical trigger engines, in order. To change settings for a specific logical trigger engine, highlight the corresponding line and adjust the Source, Condition, and Level.

Refer to the Complex Triggering section in this hardware manual for more information on complex triggering.

#### File - Save Channels

**Save Channels** saves data captured from different channels into different files in GaGe's SIG file format. The GaGe SIG file can be read from applications that support GaGe's SIG file, such as GageScope.

To exit CSTest+, select Exit from the Controls menu.

## **Controls – Force Trigger**

Force Trigger causes the acquisition system to be triggered immediately, no matter what the trigger configuration parameters are.

### **Controls – System Reset**

**System Reset** resets the acquisition system to the default state. The current data acquisition will be aborted and all configuration parameters (Acquisition, Channels and Triggers configurations) will be reset to the default settings.

#### **Controls - Select System**

If there is more than one acquisition system installed in the same computer, **Select System** allows the user to select another acquisition system and make it the active acquisition system in CsTest+.

### **Parameters – Acquisition Config**

(Depending on the acquisition system and version of drivers you have installed, the dialog may look slightly different)

Acquisition Config allows users to modify different acquisition configuration parameters such as Pre-Trigger and Post-Trigger depth, Multiple Recording, Sample Rate, Trigger Timeout...

Acquisition Config	
- Mode	
Dual	🗖 Power On
	🔲 Streaming
🔲 External Clock	SW Averaging
Beference clock	🔲 User 1
	HW Averaging
Sample Rate	Number of records
200 MS/s 🔍	Π 1
Depth	
Pretrigger	Posttrigger
0	8192
Trigger timeout, μs -1	
UK	Cancel

# **Parameters – Channel Config**

(Depending on the acquisition system and version of drivers that you have installed, the dialog may look slightly different)

**Channel Config** allows users to modify signal conditioning parameters such as Coupling, Impedance and Gain....

**Calib** [==0==] is Null Channel Input, which will force the recalibration of the hardware, taking the average value of the current input as a new reference for the zero level.

Channel Config					
CHANNEL 1 Coupling Coupling C A.C. C D.C.	✓ All Channels Impedance C 1M Ohms				
Direct ADC	Differential Input				
Input Range ±1.0 V	DC Offset, mV				
□ Calib [== 0 ==]					
OK Cancel					

# **Parameters – Trigger Config**

(Depending on the acquisition system and version of drivers you have installed, the dialog may look slightly different)

**Trigger Config** allows users to modify different trigger configuration parameters such as trigger source, level and slope...

Trigger configuration 🛛 🔀				
Complex triggering				
Source Channel 1 💌	Channel 1 💌			
Condition Rising				
Level, % 0				
External trigger parameters -				
C AC C ±1 V				
C DC C ±5 V				
OK Cancel				

### **Tools – Performance**

**Performance** allows you to verify the Pulse Repeat Frequency (PRF) performance of the CompuScope system using the current configuration parameters.

Performance test	<			
Number of Acquisitions ( Max 1000000 )				
1000				
Test In Progress				
Start Test Cancel/Exit				

## **Data Transfer – Busmaster Synchronous**



The Data Transfer menu allows the user to select the PCI data transfer mode: Busmaster - Synchronous (default), Busmaster - Asynchronous, and Slave - Synchronous. Usage of default mode is recommended unless other modes are specifically required.

# Help – Display Controls

Display Controls shows different shortcuts to control the display of the captured data.