

TekExpress® CEI-VSR
Compliance and Debug Solution
Printable Application Help



077-0872-00

Tektronix

TekExpress® CEI-VSR
Compliance and Debug Solution
Printable Application Help

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TekExpress CEI-VSR Application Help, 076-0330-00.

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- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

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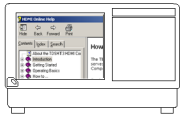

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Related documentation

The following manuals are available as part of the TekExpress® CEI-VSR Automated Test and Compliance Solution documentation set.

Table 1: Product documentation

Item	Purpose	Location
Help	Application operation and User Interface help	
PDF of the help	Printable version of the compiled help	 www.Tektronix.com PDF file that ships with CEI-VSR software distribution (<i>CEI-VSR-Automated-Test-Solution-Software-Printable-Help-EN-US.pdf</i>).

See also




[Technical support \(see page 2\)](#)

Conventions used in help

Online Help uses the following conventions:

- The term “DUT” is an abbreviation for Device Under Test.
- The term “select” is a generic term that applies to the two methods of choosing a screen item (button, control, list item): using a mouse or using the touch screen.

Table 2: Icon descriptions

Icon	Meaning
	This icon identifies important information.
	This icon identifies conditions or practices that could result in loss of data.
	This icon identifies additional information that will help you use the application more efficiently.

Technical support

Tektronix values your feedback on our products. To help us serve you better, please send us your suggestions, ideas, or comments on your application or oscilloscope. Contact Tektronix through mail, telephone, or the Web site. See [Contacting Tektronix](#) for more information.

When you contact Tektronix Technical Support, please include the following information (be as specific as possible):

General information

- All instrument model numbers
- Hardware options, if any
- Probes used
- Your name, company, mailing address, phone number, FAX number
- Please indicate if you would like to be contacted by Tektronix about your suggestion or comments.

Application specific information

- Software version number
- Description of the problem such that technical support can duplicate the problem
- If possible, save the setup files for all the instruments used and the application
- If possible, save the TekExpress setup files, log.xml, *.TekX (session files and folders), and status messages text file
- If possible, save the waveform on which you are performing the measurement as a .wfm file

Minimum system requirements

The following table shows the minimum system requirements to run TekExpress CEI-VSR.

Table 3: System requirements

Oscilloscope	Tektronix DSA8300 Digital Serial Analyzer Required equipment (see page 5)
Processor	Same as the oscilloscope
Operating System	Same as the oscilloscope: <ul style="list-style-type: none"> ■ Windows 7 Windows 7 user account settings (see page 3)
Memory	Same as the oscilloscope
Hard Disk	Same as the oscilloscope
Display	Super VGA resolution or higher video adapter (800 x 600 minimum video resolution for small fonts or 1024 x 768 minimum video resolution for large fonts). The application is best viewed at 96 dpi display settings ¹
Firmware	<ul style="list-style-type: none"> ■ TekScope 6.3.1.3 and later (for Windows 7)
Software	<ul style="list-style-type: none"> ■ TekExpress Framework (version 3.0.x or later) installed. ■ Microsoft .NET 4.0 Framework ■ Opt JNB01 – 80SJNB Advanced (required for CEI-VSR testing) ■ Opt ADVTRIG – Advanced triggers with pattern sync (required for CEI-VSR testing) ■ Microsoft Internet Explorer 7.0 SP1 or later, or other Web browser for viewing reports. ■ Adobe Reader software 7.0 or later for viewing portable document format (PDF) files.
Other Devices	<ul style="list-style-type: none"> ■ Microsoft compatible mouse or compatible pointing device. ■ Two USB ports (four USB ports recommended). ■ PCI-GPIB or equivalent interface for instrument connectivity².

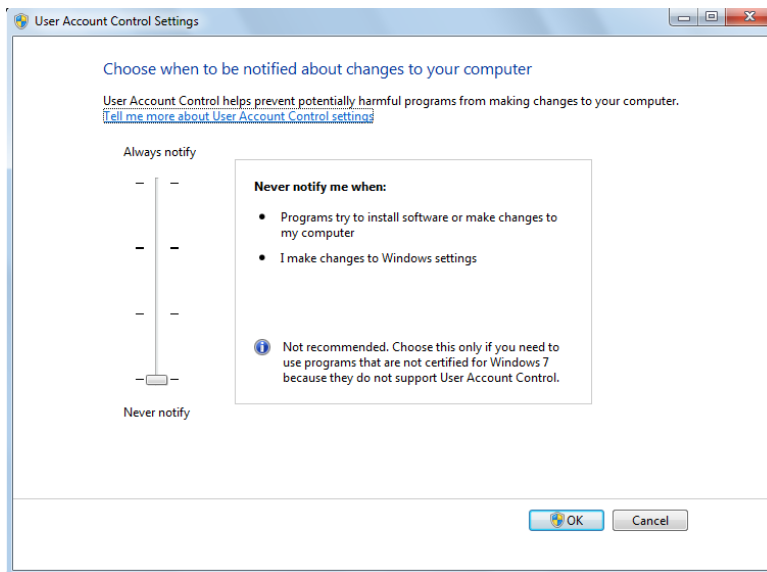
¹ If TekExpress is running on an instrument that has a video resolution less than 800x600, connect and configure a second monitor to the instrument.

² If TekExpress is installed on a Tektronix oscilloscope, TekExpress cannot use the virtual GPIB port to communicate with oscilloscope applications. If using external devices for instrument connectivity (such as USB-GPIB adapters or equivalent), enable the Talker Listener utility in the GPIB menu of the Tektronix DSA8300 oscilloscope.

Windows 7 user account settings

Windows 7 instruments need to have the User Account Control Settings set to **Never Notify**. To set User Account Control Settings:

1. Go to **Control Panel > User Accounts > Change User Account Control settings**.
2. set it to **Never Notify** as shown in the image.



See also

[Required equipment \(see page 5\)](#)

Required equipment

Table 4: Required equipment

Resource	Model supported
Sampling oscilloscope	Tektronix DSA8300 Digital Serial Analyzer FW Version: 6.3.1.3 or greater 80SJNB SW Version: 3.1.4.0 or greater
Sampling oscilloscope modules	80E09, 80E09B (Dual channel, 60 GHz, w/TDR) 80E10, 80E10B (Dual channel, 50 GHz) 82A04, 82A04B (Phase reference)
Clock Recovery Module	CR286A
Module extender cables	80X01 (1 meter) 80X02 (2 meters)
Other accessories	DC Block (2), (4 kHz–65 GHz, 2.4 mm connectors, male/female) Pick-off T (2), (2.4 mm, female/male/female) Cables: 50 GHz, 2.4 mm, male connectors 65 GHz, 1.85 mm, male connectors, 6 in Adapters: 1.85 mm male, to 2.92 mm female 2.4 mm male, to 2.92 mm female

See also

[Minimum system requirements \(see page 3\)](#)

Install the software

Use the following steps to obtain the latest CEI-VSR software from the Tektronix Web site and install on any compatible instrument running Microsoft Windows 7 (32-bit). See [Minimum System Requirements \(see page 3\)](#) for details.

1. Close all applications (including the TekScope application).
2. Go to the www.tek.com Web site and locate the **Downloads** fields.
3. Enter **TekExpress CEI-VSR** in the *Model or Keyword* field, select **Software** from the *Select Download Type* list, and click **GO**.
4. Select the latest version of software. Follow instructions to download the software file.
5. Copy or download the CEI-VSR installer executable file to the oscilloscope.
6. Double-click the installer .exe file to extract the installation files and launch the InstallShield Wizard. Follow the on-screen instructions.

Software is installed at C:\Program Files\Tektronix\TekExpress\TekExpress CEI-VSR

7. [Verify application installation \(see page 6\)](#)

See also

[Minimum system requirements \(see page 3\)](#)

[Supported instruments \(see page 5\)](#)

[Required \My TekExpress folder settings \(see page 8\)](#)

Verify application installation

To verify the installation was successful:

1. Open the TekScope application.
2. Click the **Application** menu.
3. Verify that **CEI-VSR** is listed in the Application menu.
4. Click **CEI-VSR** to open the CEI-VSR application. Verify that the application opens successfully.

See also

[Activate the license \(see page 7\)](#)

[Required \My TekExpress folder settings \(see page 8\)](#)

Activate the license

Activate the license using the **Option Installation** wizard in the TekScope application:

1. In the TekScope application menu bar, click **Utilities > Option Installation**.

The TekScope Option Installation wizard opens.

2. Push the **F1** key on the oscilloscope keyboard to open the Option Installation help topic.
3. Follow the directions in the help topic to activate the license.

See also

[View version and license information \(see page 7\)](#)

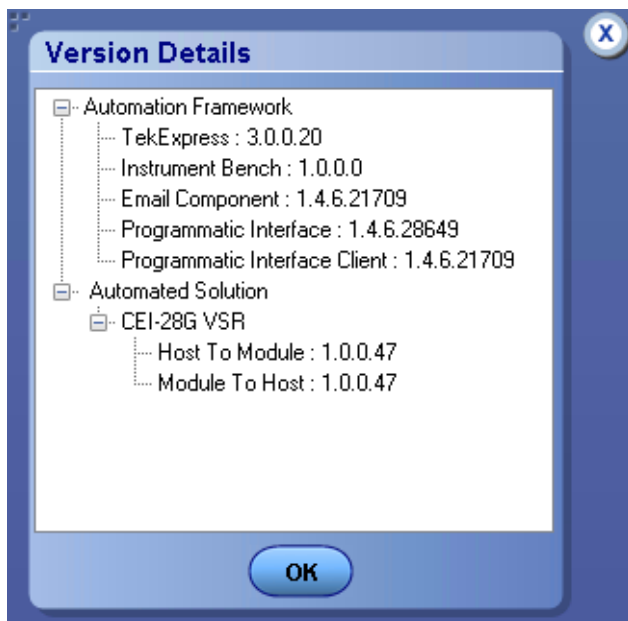
[Required \My TekExpress folder settings \(see page 8\)](#)

View software version and license information

Use the following instructions to view version information for the application and for the application modules such as the Programmatic Interface and the Programmatic Interface Client.

To view version information for CEI-VSR:

1. In the CEI-VSR application, click the **Options** button and select **About TekExpress**.
2. Click the View Version Details link to view the version numbers of the installed test suites.



NOTE. *This example shows a typical Version Details dialog box, and may not reflect the actual values as shown when you open this item in the application.*

To view license and option key information:

1. In the TekScope application, select **Help > About DSA8300**.
2. Scroll through the **Options** section list to locate **CEI-VSR: TekExpress CEI-VSR**.
3. To view the Option key, look below the **Options** list.

See also

[Activate the license \(see page 7\)](#)

[Options menu \(see page 17\)](#)

Required \My TekExpress folder settings

Before you run tests for the first time, do the following:

1. [Map the \My TekExpress folder to Drive X \(see page 9\)](#)
2. [Set the \My TekExpress folder permissions \(see page 10\)](#)

See also

[Application directories and usage \(see page 11\)](#)

[File name extensions \(see page 12\)](#)

Map the My TekExpress folder to drive X

The first time you run TekExpress CEI-VSR, it creates the following folders on the oscilloscope:

- \My Documents\My TekExpress\CEI-VSR
- \My Documents\My TekExpress\CEI-VSR\Untitled Session

You need to map the shared **My TekExpress** folder as drive **X:** on the instrument running the CEI-VSR application. CEI-VSR uses this shared folder to save session waveform files and for other application file transfer operations.

To map the My TekExpress folder on the instrument to be drive X:

1. Open Microsoft Windows Explorer.
2. From the Windows Explorer menu, click **Computer** and select **Map network drive**.
3. Select the Drive letter as **X:** (if there is any previous connection on X:, disconnect it first through **Tools > Disconnect Network drive** menu of Windows Explorer. If you do not see the Tools menu, press the **Alt** key).
4. In the **Folder** field, enter the remote My TekExpress folder path (for example, \\192.158.97.65\My TekExpress).

To determine the IP address of the instrument where the My TekExpress folder exists, do the following:

1. On the instrument where the My TekExpress folder exists, click **Start** and select **Run**.
2. Enter **cmd** and press **Enter**.
3. At the command prompt, enter **ipconfig** and press **Enter**.

NOTE. The My TekExpress folder has the share name format <domain><user ID>My TekExpress.

If the instrument is not connected to a domain, the share name format is <instrument name><user ID>My TekExpress.

NOTE. If the X: drive is mapped to any other shared folder, the application displays a warning message asking you to disconnect the X: drive manually.

See also

[Set the \My TekExpress folder permissions \(see page 10\)](#)

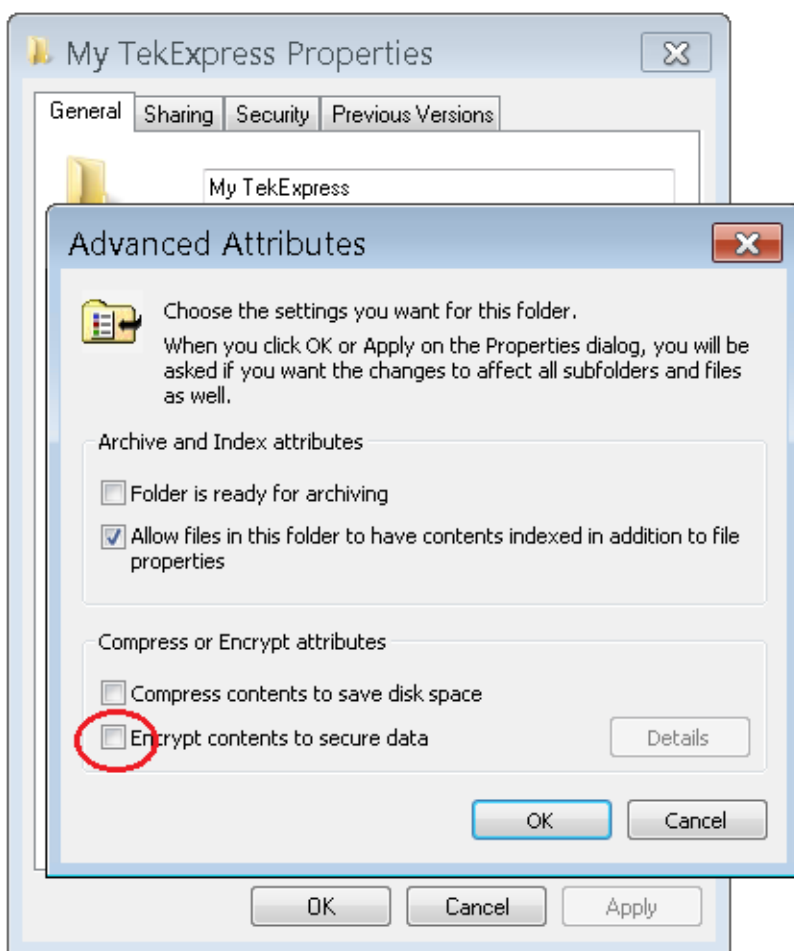
[Application directories and usage \(see page 11\)](#)

[File name extensions \(see page 12\)](#)

Set the \My TekExpress folder permissions

Make sure that the My TekExpress folder has read and write access. Also verify that the folder is not set to be encrypted:

1. Right-click the folder and select **Properties**.
2. Select the **General** tab and then click **Advanced**.
3. In the Advanced Attributes dialog box, make sure that the option **Encrypt contents to secure data** is NOT selected.



4. Click the **Security** tab and verify that the correct read and write permissions are set.

See also

[Map the \My TekExpress folder to Drive X \(see page 9\)](#)
[Application directories and usage \(see page 11\)](#)

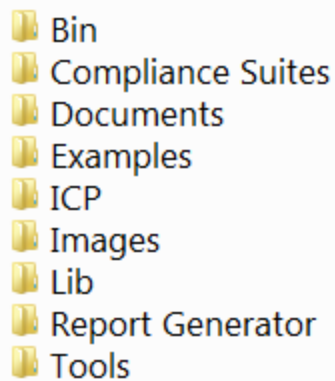
[File name extensions \(see page 12\)](#)

Application directories and their contents

TekExpress CEI-VSR application

The TekExpress CEI-VSR application files are installed at the following location:

C:\Program Files\Tektronix\TekExpress\TekExpress CEI-VSR



The following table lists the application directory names and their purpose.

Table 5: Application directories and usage

Directory names	Usage
Bin	Contains CEI-VSR application libraries
Compliance Suites	Contains compliance-specific files
Documents	Contains the technical documentation for the CEI-VSR application
Examples	Contains various support files
ICP	Contains instrument and CEI-VSR application-specific interface libraries
Images	Contains images of the CEI-VSR application
Lib	Contains utility files specific to the CEI-VSR application
Report Generator	Contains style sheets for report generation
Tools	Contains instrument and CEI-VSR application-specific files

See also

[View test-related files \(see page 36\)](#)

[File name extensions \(see page 12\)](#)

File name extensions

The TekExpress CEI-VSR application uses the following file name extensions:

File name extension	Description
.TekX	Application session files (the extensions may not be displayed)
.py	Python sequence file
.xml	Test-specific configuration information (encrypted) files Application log files
.wfm	Test waveform files
.mht	Test result reports (default) Test reports can also be saved in HTML format (see page 37)
.flt	Filter files
.xslt	Style sheet used to generate reports

See also

[View test-related files \(see page 36\)](#)

[Application directories and their contents \(see page 11\)](#)

Where test files are stored

When you launch TekExpress CEI-VSR for the first time, it creates the following folders on the oscilloscope:

- \My Documents\My TekExpress\CEI-VSR
- \My Documents\My TekExpress\CEI-VSR\Untitled Session

Every time you launch TekExpress CEI-VSR, an **Untitled Session** folder is created in the **CEI-VSR** folder. The **Untitled Session** folder is automatically deleted when you exit the **CEI-VSR** application. To preserve your test session files, save the test setup before exiting the TekExpress application.

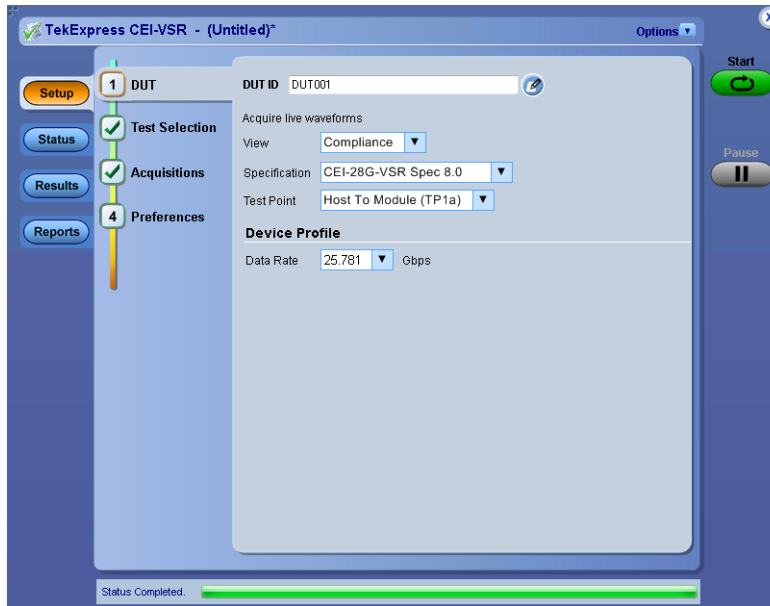


CAUTION. *Do not modify any of the session files or folders because this may result in loss of data or corrupted session files. Each session has multiple files associated with it. When you save a session, a .TekX file, and a folder named for the session that contains associated files, is created on the oscilloscope X: drive.*

See also

[Map the \My TekExpress folder to Drive X \(see page 9\)](#)
[Set the \My TekExpress folder permissions \(see page 10\)](#)
[Application directories and usage \(see page 11\)](#)
[File name extensions \(see page 12\)](#)

TekExpress® CEI-VSR key features



Welcome to the TekExpress® CEI-VSR Automated Test Solution Software application (referred to as TekExpress CEI-VSR or CEI-VSR in the rest of the document). TekExpress CEI-VSR provides an automated, simple, and efficient way to test CEI-VSR Host to Module and Module to Host Interfaces to the requirements of the CEI-VSR specifications.

Key features and benefits of TekExpress CEI-VSR include:

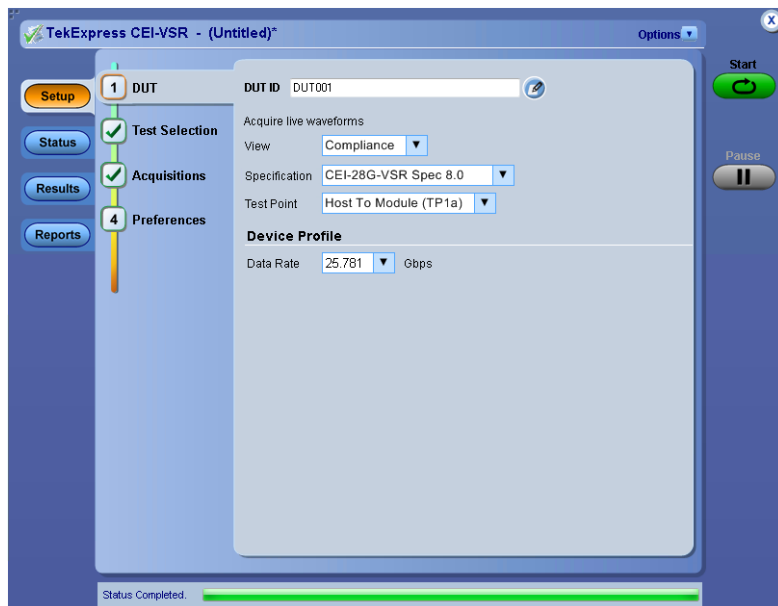
- Comprehensive test coverage; select or deselect individual tests
- Accurate and reliable results
- Automatically scans and finds the best CTLE
- Complete programmatic interface enables automation scripts to call CEI-VSR functions

Run the application

To launch the TekExpress CEI-VSR application, do either of the following:

- Select **Application > CEI-VSR** from the TekScope menu.
- Double-click any saved TekExpress CEI-VSR session file (<file name>.TekX).

The oscilloscope opens the TekExpress CEI-VSR application:



When you first run the application after installation, the application checks for a file called `Resources.xml` located in the `C:\Users\<username>\My TekExpress\CEI-VSR` folder. The `Resources.xml` file gets mapped to the `X:` drive when the application launches. Session files are then stored inside the `X:\CEI-VSR` folder.

The `Resources.xml` file contains information about available network-connected instruments. If this file is not found, the application runs an instrument discovery program to detect connected instruments before launching CEI-VSR.

NOTE. Do the steps in the [Required \My TekExpress folder settings \(see page 8\)](#) topic before running tests with the CEI-VSR application for the first time.

To keep the CEI-VSR application window on top, select **Keep On Top** from the CEI-VSR [Options menu \(see page 17\)](#). If the application goes behind the oscilloscope application, click **Application > CEI-VSR** to move the application to be in front.

See also

[Required My TekExpress folder settings \(see page 8\)](#)


[Activate the license \(see page 7\)](#)

[Exit the application \(see page 16\)](#)

[Application controls \(see page 16\)](#)

[Application panel overview \(see page 24\)](#)

Exit the application

To exit the application, click  on the application title bar. Follow on-screen prompts to save any unsaved session, save test setup files, or exit the application.

NOTE. Using other methods to exit the application can result in abnormal termination of the application.

Application controls

Table 6: Application controls descriptions


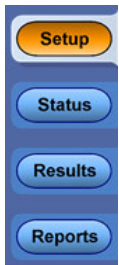
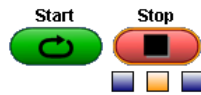



Item	Description
Options menu (see page 17) 	Menu to display global application controls.
Test Panel buttons (see page 24) 	Controls that open panels for configuring test settings and options.
Start / Stop button 	<p>Use the Start button to start the test run of the measurements in the selected order. If prior acquired measurements have not been cleared, the new measurements are added to the existing set.</p> <p>The button toggles to the Stop mode while tests are running. Use the Stop button to abort the test.</p>
Pause / Continue button 	<p>Use the Pause button to temporarily interrupt the current acquisition. When a test is paused, the button name changes to “Continue.”</p>

Table 6: Application controls descriptions (cont.)

Item	Description
Clear button 	Use the Clear button to clear all existing measurement results. Adding or deleting a measurement, or changing a configuration parameter of an existing measurement, also clears measurements. This is to prevent the accumulation of measurement statistics or sets of statistics that are not coherent. This button is available only on the Results panel (see page 35) .
Application window move icon 	Place the cursor over the three-dot pattern in the upper left corner of the application window. When the cursor changes to a hand, drag the window to the desired location.

See also

[Application panel overview \(see page 24\)](#)

Options menu overview

The Options menu is located in the upper right corner of the application.

The [Options menu \(see page 18\)](#) has the following selections:

Menu	Function
Default Test Setup	Opens an untitled test setup with defaults selected
Open Test Setup	Opens a saved test setup
Save Test Setup	Saves the current test setup selections
Save Test Setup As	Creates a new test setup based on an existing one
Open Recent	Displays a menu of recently opened test setups to select from
Instrument Control Settings (see page 18)	Detects, lists, and refreshes the connected instruments found on specified connections (LAN, GPIB, USB, and so on)
Keep On Top	Keeps the TekExpress CEI-VSR application on top of other open windows on the desktop
Email Settings (see page 21)	Use to configure email options for test run and results notifications

Menu	Function
Help	Displays the TekExpress CEI-VSR help
About TekExpress	<ul style="list-style-type: none"> ■ Displays application details such as software name, version number, and copyright ■ Provides access to license information (see page 7) for your CEI-VSR installation ■ Provides a link to the Tektronix Web site



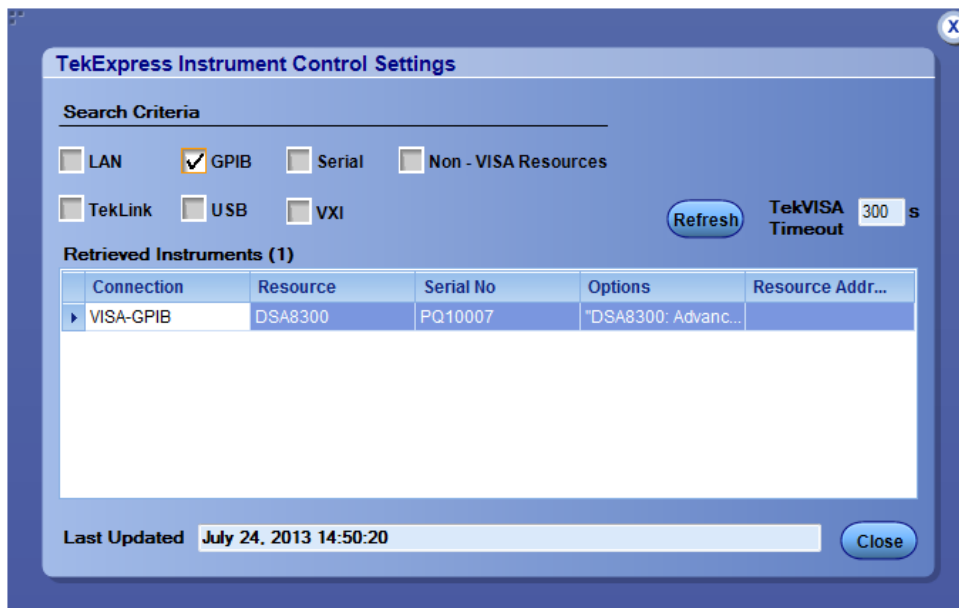
See also

[Application controls \(see page 16\)](#)

Instrument control settings

Use the TekExpress Instrument Control Settings dialog box to search for and list the connected resources (instruments) found on specified connections (LAN, GPIB, USB, and so on), and each instruments connection information.

Access this dialog box from the **Options** menu.



Use the Instrument Control Settings feature to [search for connected instruments \(see page 19\)](#) and view instrument connection details. Connected instruments displayed here can be selected for use under Global Settings in the test configuration section.

See also

[Options menu overview \(see page 17\)](#)

View connected instruments

Use the Instrument Control Settings dialog box to view or search for connected instruments required for the tests. The application uses TekVISA to discover the connected instruments on all selected connection types.

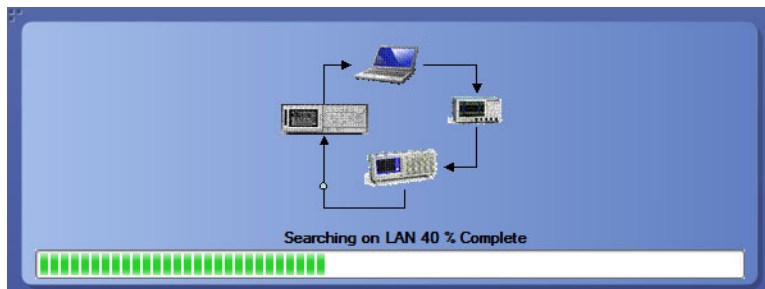
NOTE. *The correct instruments for the current test setup must be connected and recognized by CEI-VSR before running tests.*

To refresh the list of connected instruments:

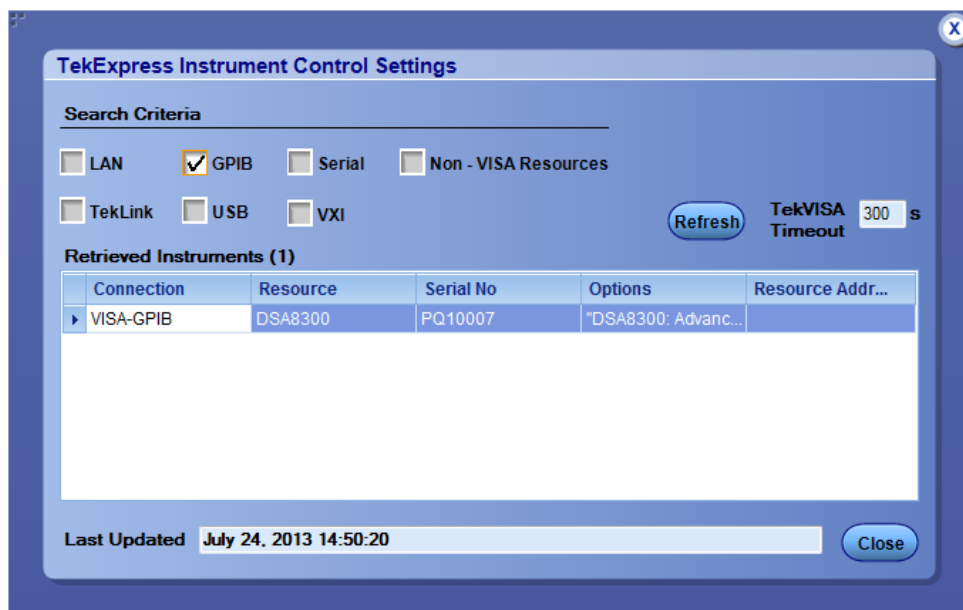
1. From the Options menu, select **Instrument Control Settings**.
2. In the **Search Criteria** section of the Instrument Control Settings dialog box, select the connection types of the instruments for which to search.

Instrument search is based on the VISA layer, but different connections determine the resource type, such as LAN, GPIB, and USB. For example, if you choose LAN, the search will include all the instruments supported by TekExpress that are communicating over the LAN.

3. Click **Refresh**. TekExpress searches for connected instruments.



4. After searching, the dialog box lists the instrument-related details based on the search criteria you selected. For example, if you selected LAN and GPIB as the search criteria, the application checks for the availability of instruments over LAN, then GPIB, and then lists detected instruments on those connection types.



The details of the instruments are displayed in the Retrieved Instruments table. The time and date of instrument refresh is displayed in the Last Updated field.

See also

[Configuration test parameters \(see page 32\)](#)

[Equipment connection setup \(see page 58\)](#)

Email settings

Use the Email Settings utility to [configure email notifications \(see page 21\)](#) to receive notifications when a test completes, produces an error, or fails. Select the type of test session information to include in the notification, such as test reports and test logs, the email message format, and the email message size limit.

Select **Options > Email Settings** to open this dialog box.

NOTE. *Recipient email address, sender's address, and SMTP Server are mandatory fields.*

See also

[Configure email settings \(see page 21\)](#)

[Options menu \(see page 17\)](#)

[Select test notification preferences \(see page 32\)](#)

Configure email settings

Use the Email Settings dialog box to be notified by email when a test completes, fails, or produces an error:

1. Select **Options > Email Settings** to open the [Email Settings \(see page 23\)](#) dialog box.
2. (Required) For Recipient email Address(es), enter one or more email addresses to which to send the test notification. To include multiple addresses, separate the addresses with commas.

3. (Required) For Sender's Address, enter the email address used by the instrument. This address consists of the instrument name followed by an underscore followed by the instrument serial number, then the @ symbol and the email server used. For example: DSA8300_B130099@yourcompany.com.
4. (Required) In the Server Configuration section, type the SMTP Server address of the Mail server configured at the client location, and the SMTP Port number, in the corresponding fields.

If this server requires password authentication, enter a valid login name, password, and host name in the corresponding fields.

NOTE. *If any of the above required fields are left blank, the settings will not be saved and email notifications will not be sent.*

5. In the Email Attachments section, select from the following options:
 - **Reports:** Select to receive the test report with the notification email.
 - **Status Log:** Select to receive the test status log with the notification email. If you select this option, then also select whether you want to receive the full log or just the last 20 lines.
6. In the Email Configuration section:
 - Select the message file format to send: HTML (the default) or plain text.
 - Enter a maximum file size for the email message. Messages with attachments larger than this limit will not be sent. The default is 5 MB.
 - Enter the number in the Number of Attempts to Send field, to limit the number of attempts that the system makes to send a notification. The default is 1. You can also specify a timeout period.
7. Select the **Email Test Results When complete or on error** check box. Use this check box to quickly enable or disable email notifications.
8. To test your email settings, click **Test Email**.
9. To apply your settings, click **Apply**.
10. Click **Close** when finished.

Email settings

Email Settings

Recipient e-mail Address(es)

Note: Separate Email addresses with a comma

Sender's Address

Email Attachments
☒ Reports
☒ Status Log ☐ Last 20 Lines ☐ Full Log

Server Configuration
SMTP Server SMTP Port
Login
Password
Host Name

Email Configuration
Email Format ☒ HTML ☐ Plain Text
Max Email Size (MB)
Number of Attempts to Send
Timeout (Sec)

☐ Email Test Results When complete or on error

Test Email

Apply

Close

Application panels overview

TekExpress CEI-VSR uses panels to group related configuration, test, and results settings. Click on a button to open the associated panel. A panel may have one or more tabs that list the selections available in that panel. Controls in a panel can change depending on settings made in that panel or another panel.

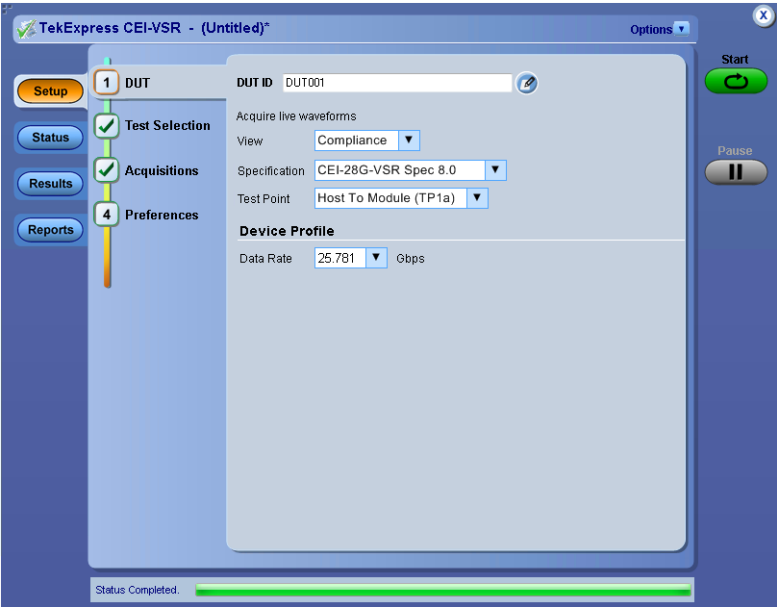


Table 7: Application panels overview

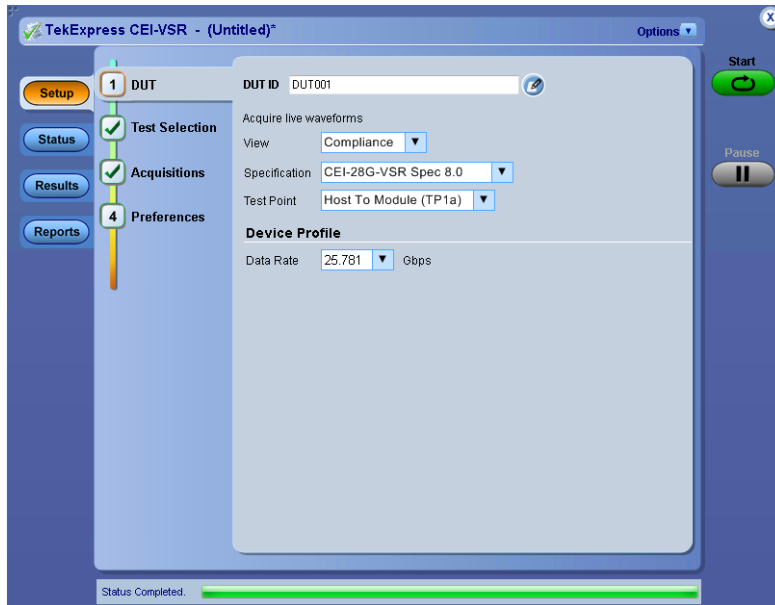
Panel Name	Purpose
Setup (see page 25)	<p>The Setup panel shows the test setup controls. Click the Setup button to open this panel.</p> <p>Use this panel to:</p> <ul style="list-style-type: none">■ Select DUTparameters (see page 25).■ Select the test(s) (see page 26).■ Set acquisitions parameters (see page 27) for selected tests.■ Configuration test parameters (see page 32)■ Select test notification preferences (see page 32).
Status (see page 33)	View the progress and analysis status of the selected tests, and view test logs.
Results (see page 35)	View a summary of test results and select result viewing preferences.
Reports (see page 37)	Browse for reports, save reports as specific file types, specify report naming conventions, select report content to include (such as summary information, detailed information, user comments, setup configuration, application configuration), and select report viewing options.

See also

[Application controls \(see page 16\)](#)

Setup control overview

The Setup panel contains sequentially ordered tabs that help guide you through a typical test setup and execution process. Click on a tab to open the associated controls.



The tabs on this panel are:

DUT: [Set the DUT parameters \(see page 25\)](#)

Test Selection: [Select test\(s\) \(see page 26\)](#)

Configuration: [Set the configuration tab parameters \(see page 29\)](#)

Acquisitions: [Select acquisition parameters \(see page 27\)](#)


Preferences: [Select test fail notification preferences \(see page 32\)](#)

Set DUT parameters

Use the DUT tab to select parameters for the device under test. The settings are global and apply to all tests for the current session. DUT settings also affect the list of available tests in the Test Selection tab.

Click **Setup** > **DUT** to access the DUT parameters:

Table 8: DUT tab settings

Setting	Description
DUT ID	Adds an optional text label for the DUT to reports. The default value is DUT001. The maximum number of characters is 32. You cannot use the following characters in a ID name: (,.,,...,\,/:?"<> *)
 Comments icon (to the right of the DUT ID field)	Opens a Comments dialog box in which to enter optional text to add to a report. Maximum size is 256 characters. To enable or disable comments appearing on the test report, see Select report options (see page 37).
Acquire live waveforms	Acquire active signals from the DUT for measurement and analysis.
View	Select Compliance or Advanced from the drop-down list.
Specification	Lists the supported CEI-VSR test specification(s).
Test Point	Sets the DUT device type to test (Device to Module or Host to Module).
Device Profile	
Data Rate	Select the data rate of the DUT to be tested from the drop-down list.

See also

[Select a test \(see page 26\)](#)

Select tests

Use the **Test Selection** tab to select CEI-VSR tests.

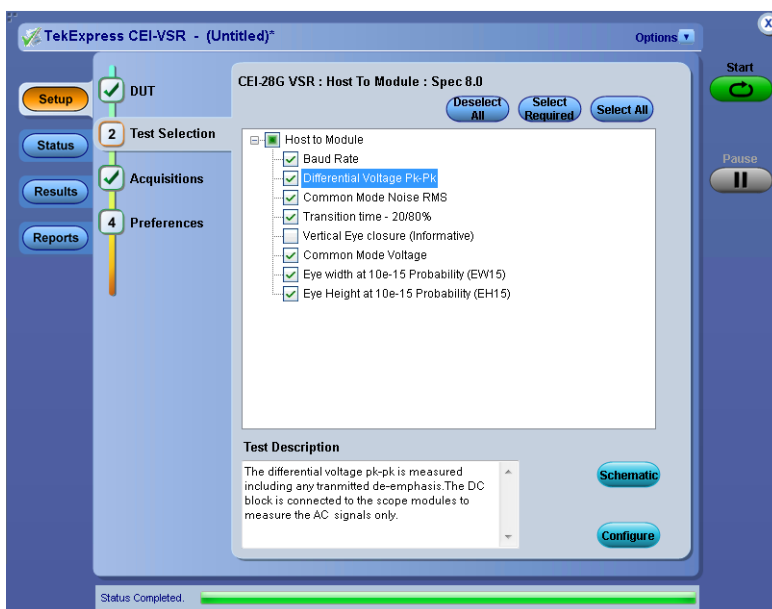


Table 9: Test Selection tab settings

Setting	Description
Deselect All, Select Required, Select All buttons	Deselect or select tests in the list. The Select Required button selects all required tests when in Compliance test mode.
Tests	Click on a test to select or unselect. Highlight a test to show details in the Test Description pane. All required tests are selected when in Compliance test mode. Measurements are grouped according to standard specifications such as Host-to-Module (see page 27) and Module-to-Host (see page 27) ..
Test Description	Shows a brief description of the highlighted test in the Test field.
Schematic button	Shows an equipment and test fixture setup schematic for the selected test. Use to set up the equipment and fixtures or to verify the setup before running the test.

NOTE. *All informative tests except Vertical Eye Closure (VEC) are selected by default.*

Host-to-Module

Includes Baud Rate, Differential Voltage pk-pk, Common Mode Noise rms, Transition Time 20/80%, Common Mode Voltage, Vertical Eye Closure (VEC), Eye width at 10e–15 probability (EW15) and Eye height at 10e–15 probability (EH15).

Module-to-Host

Includes Baud Rate, Differential Voltage pk-pk, Common Mode Noise rms, Transition Time 20/80%, Vertical Eye Closure (VEC), Eye width at 10e–15 probability (EW15) and Eye height at 10e–15 probability (EH15).

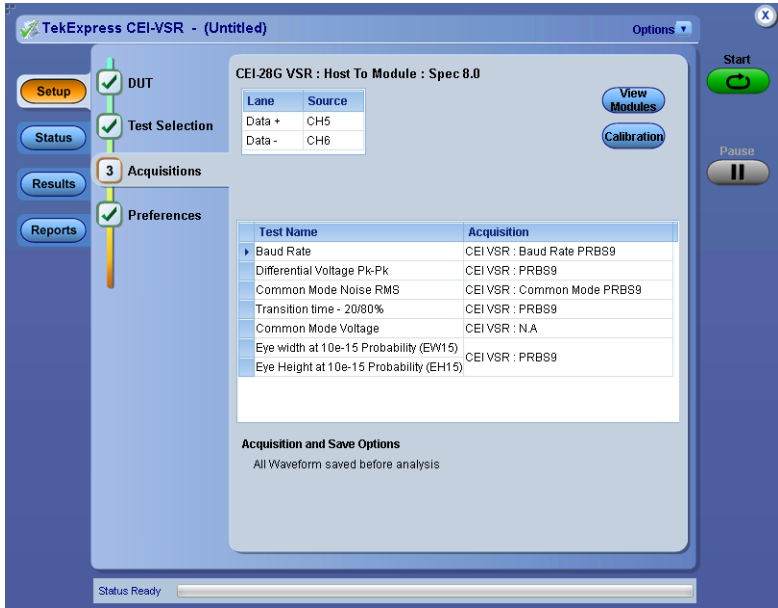
See also

[Set acquisition parameters \(see page 27\)](#)

Set acquisition parameters

Use the **Acquisition** tab in the Setup panel to view test acquisition parameters. You also use this tab to load prerecorded (saved) test session waveform files on which to run tests.

Contents displayed on this tab depend on the DUT type and selected tests.



NOTE. CEI-VSR acquires all waveforms required by each test group before performing analysis.

Table 10: Acquisitions tab settings

Setting	Description
View Modules button	Shows the detected modules that are installed in the instrument.
Calibration button	Shows the results of the most recent instrument calibration. Use the Calibrations dialog box to view the status of Deskew, external attenuation, scope calibration and instrumentation noise. Update these parameters by clicking the associated Refresh or Measure button. Calibration guidelines (see page 41)

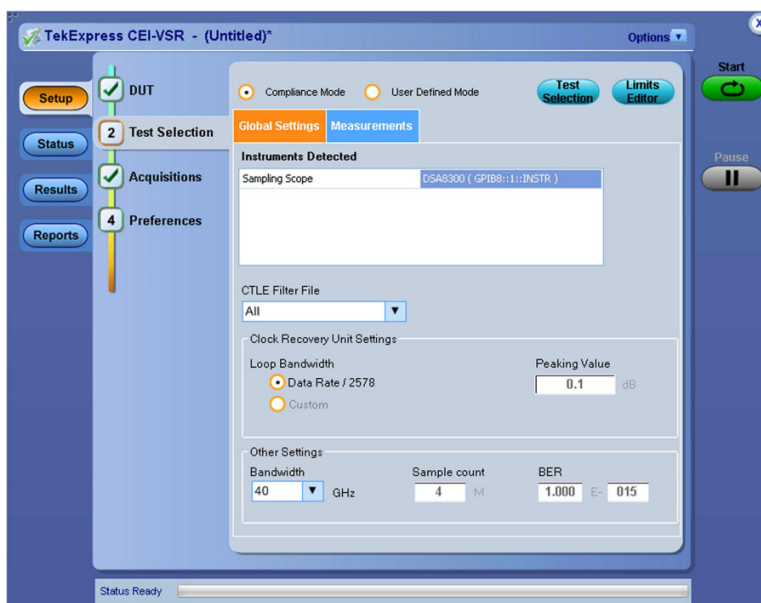
CEI-VSR saves all acquisition waveforms to files by default. Waveforms are saved to a folder that is unique to each session (a session starts when you click the Start button). The folder path is X:\CEI-VSR\Untitled Session\<dutid>\<date>_<time>. Images created for each analysis, CSV files with result values, reports, and other information specific to that particular execution are also saved in this folder.

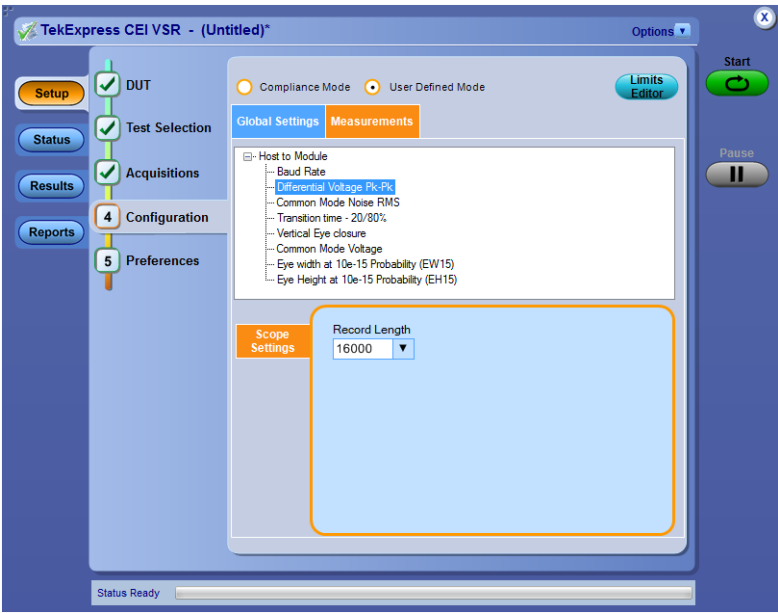
When the session is saved, content is moved to that session folder and the “Untitled Session” name is replaced by the session name.

Set the configuration tab parameters

Use the **Configuration** tab to set and view global instrument parameters for the selected tests. Which fields are available to edit depends on the selected test mode (Compliance or User Defined) as set in this tab or the DUT tab.

NOTE. *You cannot change test parameters that are grayed out.*





Configuration tab: Measurements

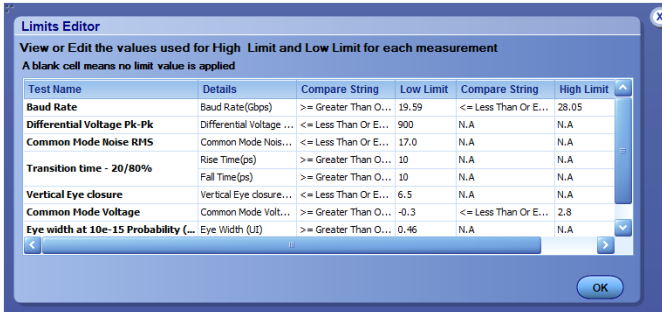
See also

- [Configuration tab: Global Settings parameters \(see page 30\)](#)
- [Configuration tab: Measurements parameters \(see page 32\)](#)

Configuration tab: Global Settings parameters

The following table lists the Configuration tab settings and parameters. Fields shown on this tab can change depending on selected items.

Table 11: Configuration tab Global Settings

Control	Description
Test Mode	<p>Determines whether test parameters are in compliance or can be edited.</p> <ul style="list-style-type: none"> ■ Compliance: Most test parameter values cannot be edited. Select this for compliance mode testing. ■ User Defined: Enables editing of parameters.
Limits Editor button	<p>Opens the Limits Editor dialog box.</p> <p>In User Defined Mode, use the Limits Editor to edit individual test limit settings.</p>
	
<p>To edit a value, click that field and either select from the displayed list or enter a new value. Use scroll bars to view all available fields.</p> <p>In Compliance Mode, use the Limits Editor to view the measurement high and low limits used for selected tests. You cannot edit values while in Compliance mode.</p>	
Instruments Detected	<p>Displays a list of the connected instruments found during the instrument discovery. Instrument types include equipment such as sampling oscilloscopes. Select Options > Instrument Control Settings to refresh the connected instrument list (see page 18).</p>
CTLE Filter File (1-8)	<p>Select the CTLE filter appropriate for your measurement.</p>
Clock Recovery Units Settings	<p>Sets the Loop bandwidth and Peaking units for the Tektronix CR286A Clock Recovery module. Default values set to meet compliance testing.</p>
Other Settings	<p>Bandwidth: Sets the oscilloscope bandwidth parameter.</p> <p>BER: Sets the BER parameter for the 80SJNB software. Default value is 10e-15.</p> <p>Sample count: Sets the number of samples to be acquired using the 80SJNB software. Default value is 4M.</p>

See also

[About acquisitions \(see page 27\)](#)

Configuration tab: Measurement parameters

Lists all selected tests. All measurements have either pattern type or record length configuration parameters.

See also

[Set acquisition parameters \(see page 27\)](#)

Preferences tab

Use the Preferences tab to set the application action when a test measurement fails.

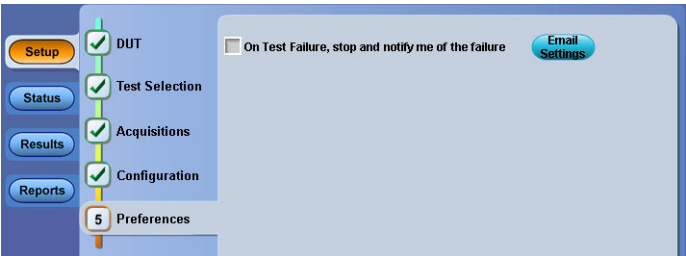


Table 12: Preferences tab settings

Setting	Description
On Test Failure, stop and notify me of the failure	Stops the test and sends an email when a test fails. Click Email Settings to verify that Email Test Results when complete or on error is selected, and to verify the address to which the email is sent.

Status panel overview

The Status button accesses the Test Status and Log View tabs, which provide status on test acquisition and analysis ([Test Status \(see page 33\)](#) tab) and a listing of test tasks performed ([Log View \(see page 34\)](#) tab). The application opens the Test Status tab when you start a test run. You can select the Test Status or the Log View tab to view these items while tests are running.

Test status view

The screenshot displays the 'Test status view' window for 'TekExpress CEI-VSR - (Untitled)*'. The window has a sidebar with buttons for 'Setup', 'Status' (highlighted), 'Results', and 'Reports'. The main area shows the 'Test Status' tab with a table of test results. The table has four columns: 'Test Name', 'Acquisition', 'Acquire Status', and 'Analysis Status'. The data is as follows:

Test Name	Acquisition	Acquire Status	Analysis Status
CEI VSR			
Baud Rate	Baud Rate PRBS9	Completed	Completed
Differential Voltage Pk-Pk	PRBS9	Completed	Completed
Common Mode Noise RMS	Common Mode PRBS9	Completed	Completed
Transition time - 20/80%	PRBS9	Completed	Completed
Common Mode Voltage	N.A	Completed	Completed
Eye width at 10e-15 Probability (EW15)	PRBS9	Completed	Completed
Eye Height at 10e-15 Probability (EH15)	PRBS9	Completed	Completed

On the right side of the window, there are 'Start' and 'Pause' buttons. At the bottom, a green progress bar indicates 'Status Completed'.

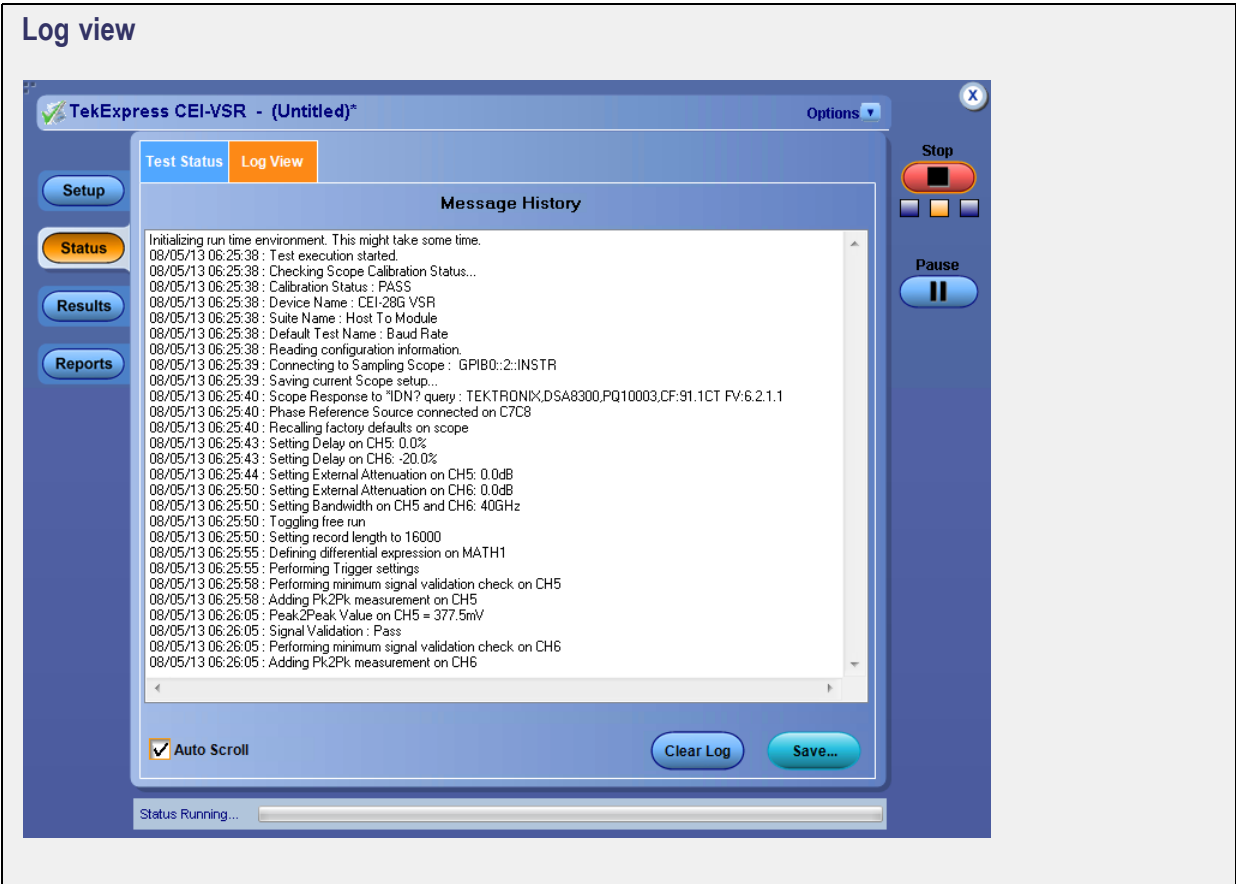


Table 13: Status panel settings

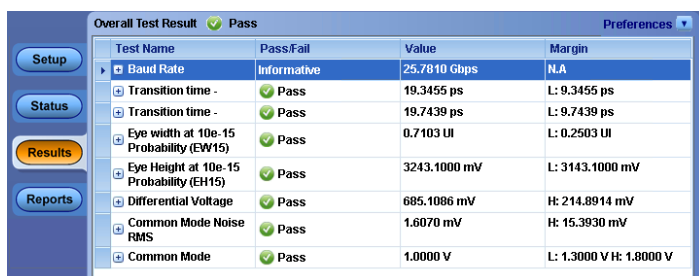
Control	Description
Message History	Window that lists all executed test operations and timestamp information.
Show Detailed Log	Enables recording a more-detailed history of test execution.
	NOTE. This must be selected before starting a measurement.
Auto Scroll	Enables automatic scrolling of the log view as information is added to the log during the test.
Clear Log	Clears all messages from the log view.
Save	Saves the log file to a text file. Use the standard Save File window to navigate to and specify the folder and file name to which to save the log text.

See also

[Application panel overview \(see page 24\)](#)

Results panel overview

When a test finishes, the application automatically opens the **Results** panel to display a summary of signal and preset test results.



Overall Test Result Pass		Preferences	
Test Name	Pass/Fail	Value	Margin
Baud Rate	Informative	25.7810 Gbps	N/A
Transition time -	Pass	19.3455 ps	L: 9.3455 ps
Transition time -	Pass	19.7439 ps	L: 9.7439 ps
Eye width at 10e-15 Probability (EW15)	Pass	0.7103 UI	L: 0.2503 UI
Eye Height at 10e-15 Probability (EH15)	Pass	3243.1000 mV	L: 3143.1000 mV
Differential Voltage	Pass	685.1086 mV	H: 214.8914 mV
Common Mode Noise RMS	Pass	1.6070 mV	H: 15.3930 mV
Common Mode	Pass	1.0000 V	L: 1.3000 V H: 1.8000 V

The Overall Test Result is displayed at the top left of the Results table. If all of the tests for the session pass, the overall test result is **Pass**. If one or more tests fail, the overall test result is **Fail**.

Set viewing preferences for this panel from the [Preferences menu \(see page 35\)](#) in the upper right corner. Viewing preferences include showing whether a test passed or failed, summary or detailed results, and enabling wordwrap.

Each test result occupies a row in the Results table. By default, results are displayed in summary format with the measurement details collapsed and with the Pass/Fail column visible. Change the view in the following ways:

- To expand and collapse tests to show more or less detail, click the plus and minus buttons in the table.
- To expand the width of a column, place the cursor over the vertical line that separates the column from the column to the right. When the cursor changes to a double-ended arrow, hold down the mouse button and drag the column to the desired width.
- To clear all test results displayed, click **Clear**.
- Use the [Preferences menu \(see page 35\)](#) to change how some items display in the Results panel.

See also

[View a report \(see page 39\)](#)

[Application panels overview \(see page 24\)](#)

Preferences menu

The Preferences menu is part of the Results panel display. Use the Preferences menu to change how some items display in the Results panel.

- To show or hide the Pass/Fail column, select **Preferences > Show Pass/Fail**.
- To collapse all expanded tests, select **Preferences > View Results Summary**.
- To expand all tests listed, select **Preferences > View Results Details**.
- To enable or disable the wordwrap feature, select **Preferences > Enable Wordwrap**.

See also

[Results panel overview \(see page 35\)](#)

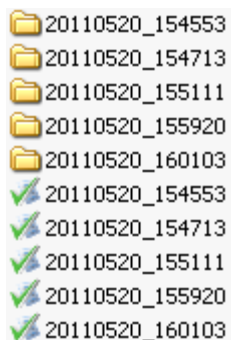
View test-related files

Files related to tests are stored in the `My TekExpress\CEI-VSR` folder. Each test setup in this folder has a test setup file and a test setup folder, both with the test setup name.

The test setup file is preceded by the TekExpress icon and usually has no visible file name extension.

Inside the test setup folder is another folder named for the DUT ID used in the test sessions. The default is DUT001.

Inside the DUT001 folder are the session folders and files. Each session also has a folder and file pair, both named for the test session using the naming convention (date)_(time). Each session file is stored outside its matching session folder:



Each session folder contains image files of any plots generated from running the test session. If you selected to save all waveforms or ran tests using prerecorded waveform files, these are included here.

The first time you run a new, unsaved session, the session files are stored in the **Untitled Session** folder located at `.. \My TekExpress\CEI-VSR`. When you name and save the session, the files are placed in a folder with the name that you specify. A copy of the test files stay in the **Untitled Session** folder until you run a new test or until you close the CEI-VSR application.

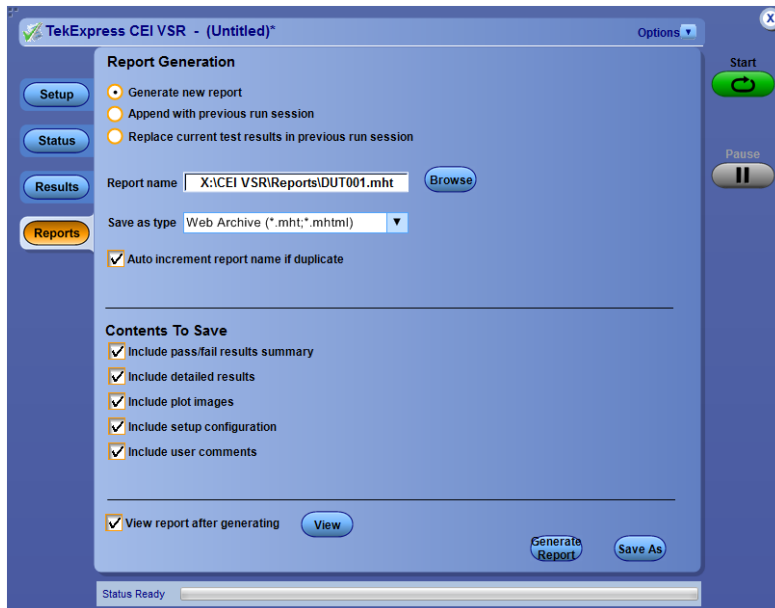
See also

[File name extensions \(see page 12\)](#)

[Required \My TekExpress folder settings \(see page 8\)](#)

Reports panel overview

Use the Reports panel to browse for reports, name and save reports, select test content to include in reports, and select report viewing options.



For information on setting up reports, see [Select report options \(see page 37\)](#). For information on viewing reports, see [View a Report \(see page 39\)](#).

See also

[About panels \(see page 24\)](#)

Select report options

Click the **Reports** button and use the Reports panel controls to select which test result information to include in the report, and the naming conventions to use for the report. For example, always give the report a unique name or select to have the same name increment each time you run a particular test.

Select report options before running a test or when creating and saving test setups. Report settings are included in saved test setups.

In the Reports panel, select from the following report options:

Table 14: Report options

Setting	Description
Report Generation	
Generate new report	Creates a new report. The report can be in either .mht or .pdf file formats.
Append with previous run session	Appends the latest test results to the end of the current test results report.
Replace current test in previous run session	Replaces the previous test results with the latest test results. Results from newly added tests are appended to the end of the report.
Report name	<p>Displays the name and location from which to open a report. The default location is at <i>My TekExpress\CEI-VSR\Untitled Session</i>. The report file in this folder gets overwritten each time you run a test unless you specify a unique name or select to auto increment the report name.</p> <p>Change the report name or location.</p> <p>Do one of the following:</p> <ul style="list-style-type: none"> ■ In the Report Path field, type over the current folder path and name. ■ Double-click in the Report Path field and then make selections from the popup keyboard and click the Enter button. <p>Be sure to include the entire folder path, the file name, and the file extension. For example: C:\Documents and Settings\your user name\My Documents\My TekExpress\CEI-VSR\DUT001.mht.</p> <p>NOTE. You cannot set the file location using the Browse button.</p> <p>Open an existing report.</p> <p>Click Browse, locate and select the report file and then click View at the bottom of the panel.</p>
Save as type	<p>Saves a report in the specified file type. Lists supported file types to choose from.</p> <p>NOTE. If you select a file type different from the default, be sure to change the report file name extension in the Report Name field to match.</p>
Auto increment report name if duplicate	Sets the application to automatically increment the name of the report file if the application finds a file with the same name as the one being generated. For example: DUT001, DUT002, DUT003. This option is enabled by default.
Contents To Save	
Include pass/fail results summary	Sets the application to include the color block labeled Test Result (indicating whether the test passed or failed) in the report. For details, see Report Contents in View a report (see page 39) .
Include detailed results	Sets the application to include parameter limits, execution time, and test-specific comments generated during the test.
Include plot images	Sets the application to include plotted diagrams such as Eye diagrams.
Include setup configuration	Sets the application to include hardware and software information in the summary box at the top of the report. Information includes: the oscilloscope model and serial number, the oscilloscope firmware version, and software versions for applications used in the measurements.

Table 14: Report options (cont.)

Setting	Description
Include user comments	Select to include any comments about the test that you or another user added in the DUT tab of the Setup panel. Comments appear in the Comments section, under the summary box at the beginning of each report.
View Report After Generating	Automatically opens the report in a Web browser when the test completes. This option is selected by default.
View	Click to view the most current report.
Generate Report	Generates a new report based on the current analysis results.
Save As	Specify a name for the report.

View a report

The application automatically generates a report when test analysis is completed and displays the report in your default Web browser (unless you cleared the **View Report After Generating** check box in the Reports panel before running the test). If you cleared this check box, or to view a different test report, do the following:

1. Click the **Reports** button.
2. Click the **Browse** button and locate and select the report file to view.
3. In the Reports panel, click **View**.

For information on changing the file type, file name, and other report options, see [Select report options \(see page 37\)](#).

Report contents

A report shows detailed results and plots, as set in the Reports panel.

Tektronix

TekExpress CEI-VSR

TekExpress CEI-VSR Host To Module Test Report

Setup Information

DUT ID	DUT001	Scope Model	DSA8300
Date/Time	2013-10-28 15:14:45	Scope Serial Number	C040103
TekExpress Version	CEI-VSR:1.0.0.65 Framework:3.0.0.21	Scope F/W Version	6.3.1.3
Execution Mode	Live	Data+ connected to	CH3 "80E10"
Overall Compliance Mode	Yes	Data- connected to	CH4 "80E10"
Overall Execution Time	0:06:26	Phase Reference connected to	CH1 CH2 "82A04B"
Overall Test Result	Pass	Data Rate	25.781Gbps
DUT COMMENT:	General Comment - CEI-VSR		

Test Name Summary Table

Baud Rate	Informative
Differential Voltage Pk-Pk	Pass
Common Mode Noise RMS	Pass
Transition time - 20/80%	Pass
Common Mode Voltage	Pass
Eye width at 10e-15 Probability (EW15)	Pass
Eye Height at 10e-15 Probability (EH15)	Pass

Baud Rate

Measurement Details	Measured Value	Test Result	Margin	Low Limit	High Limit
Baud Rate	25.7810 Gbps	Informative	N.A	N.A	N.A
COMMENTS					

Back to Summary Table

Differential Voltage Pk-Pk

Measurement Details	Measured Value	Test Result	Margin	Low Limit	High Limit
Differential Voltage Pk-Pk	762.0335mV	Pass	H: 137.9665 mV	N.A	900mV
COMMENTS					

Back to Summary Table

Setup configuration information

Setup configuration information is listed in the summary box at the beginning of the report. This information includes the oscilloscope model and serial number, and software versions.

To exclude this information from a report, clear the **Include Setup Configuration** check box in the Reports panel before running the test.

User comments

If you selected to include comments in the test report, any comments you added in the DUT tab are shown at the top of the report.

Test result summary

The Test Result column indicates whether a test passed or failed. If the test passed, the cell text is green. If the test failed, the text is red. To exclude this information from a report, clear the **Include Pass/Fail Results Summary** check box in the Reports panel before running the test.

See also

[Results panel overview \(see page 35\)](#)

[View test-related files \(see page 36\)](#)

Pre-measurement calibration guidelines

- You need to perform the following calibration procedures before starting a measurement session using the CEI-VSR software, and any time after that you make changes to the setup configuration, such as after installing or moving any sampling modules, cables, or connectors.
- The calibration procedures in this section **require** specific cables, connectors, and accessories to ensure measurement accuracy. See the *DSA8300 Digital Serial Analyzer Practices for Measurements on 25 Gb/s Signaling Application Note* (Tektronix part number 071-3207-XX) for information on where and how to obtain these parts.
- Perform the procedures in the following order:

[Instrument noise measurement \(see page 42\)](#)

[Vertical gain calibration \(see page 43\)](#)

[Deskew calibration \(minimize common mode waveform method\) \(see page 48\)](#)

[Deskew calibration \(minimize eye crossing method\) \(see page 53\)](#)

Calibrations

Calibration Type	Date/Time	Value	Status	Action
Scope Calibration	08/26/2013 10:33AM		PASS	Refresh
Instrumentation Noise	08/21/2013 12:21AM	0.056mV	PASS	Measure
External Attenuation	08/21/2013 12:22AM	Data + (CH5): 14.0dB Data - (CH6): 14.0dB		Refresh
Deskew	08/21/2013 12:22AM	Data + (CH5): 0.0 % Data - (CH6): 0.0 %		Refresh

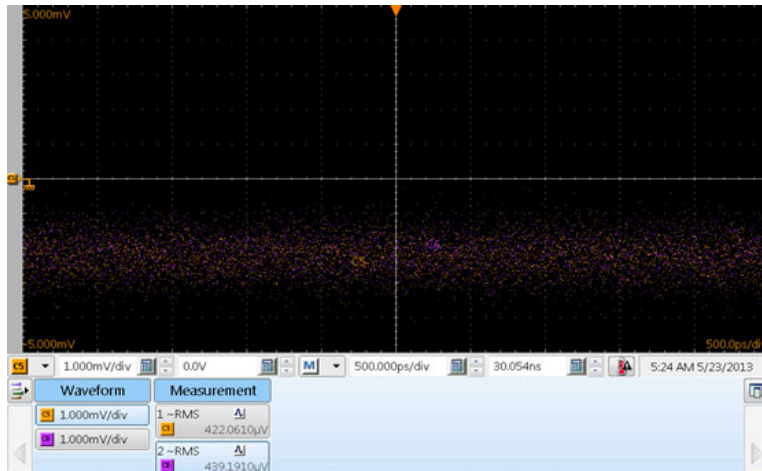
Close

Instrument noise measurement

NOTE. The following instrument noise measurement procedure assumes that the DUT Data+ and Data– lanes are connected to oscilloscope channels 5 and 6, respectively (80E09/B or 80E10/B Modules). Adjust the procedure accordingly if you connect the Data lanes to other channels for your measurements. This procedure is performed automatically when you click the Measure button under the Calibration Panel in the Acquisition Menu.

Instrumentation noise calibration

1. Disconnect all of the signals that are connected to the sampling oscilloscope.
2. Select **Setup > Vert > waveform C5 and C6 to On.**
3. Set the Ch 5 and Ch 6 Bandwidth to **40 GHz.**
4. Set the minimum vertical scale per division to **1 mV/div** for Ch 5 and Ch 6.
5. Set the Trigger Source to **Free Run.**
6. Select measurement **Setup > Meas > Meas 1 > Pulse Amplitude: AC RMS.**
7. Set **Setup > Meas > Signal Type: Pulse.**
8. Set **Setups > Meas > Source: C5.**
9. Uncheck the **Use Wfm Database** control for the measurement.
10. Record the Ch 5 RMS value.
11. Select measurement **Setup > Meas > Meas 2 > Pulse Amplitude: AC RMS.**
12. Set **Setup > Meas > Signal Type: Pulse.**
13. Set **Setup > Meas > Source: C6.**
14. Uncheck the **Use Wfm Database** control for the measurement.
15. Record the Ch 6 RMS value as reported in the measurement readout.



16. Use the following formula to calculate noise:

$$\text{SQRT} ((\text{AC_RMS} (C5))^2 + \text{AC_RMS} (C6)^2)$$

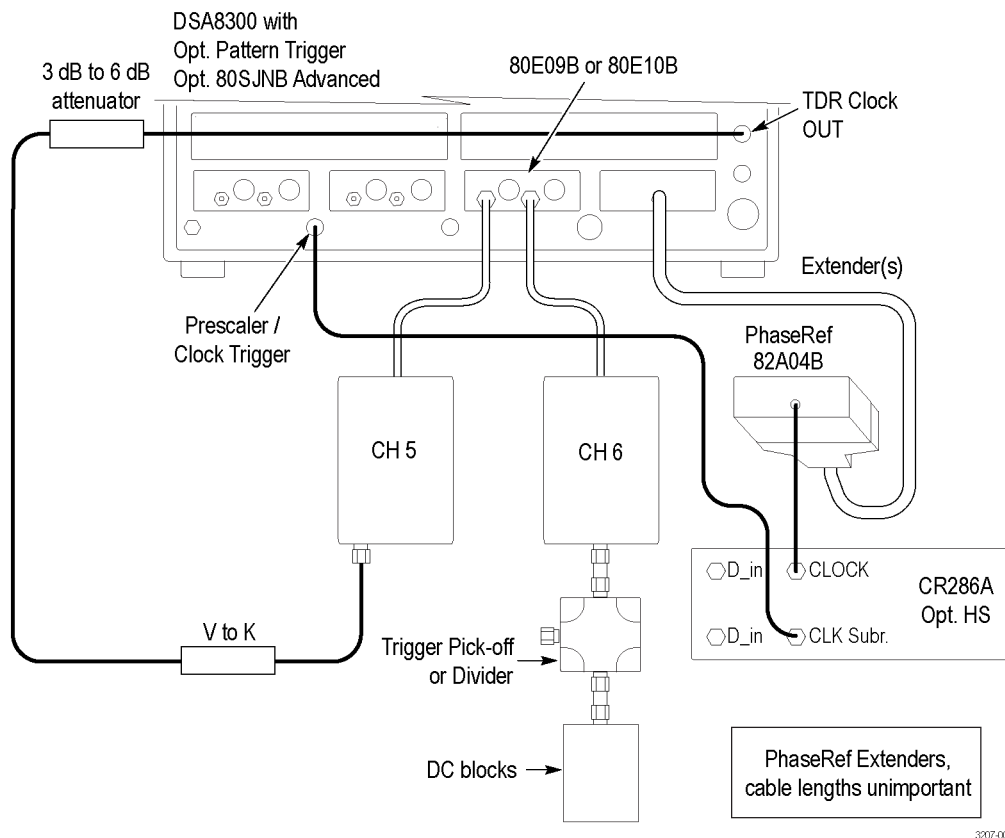
Noise level measurement should be in the range of **200 µV – 1 mV**.

If the noise level measurement is not within the limits, perform an oscilloscope compensation and then perform the instrument noise measurement again. If the measured noise level is still outside of the above limits, please contact Tektronix Customer Support. [Contacting Tektronix](#))

Vertical gain calibration

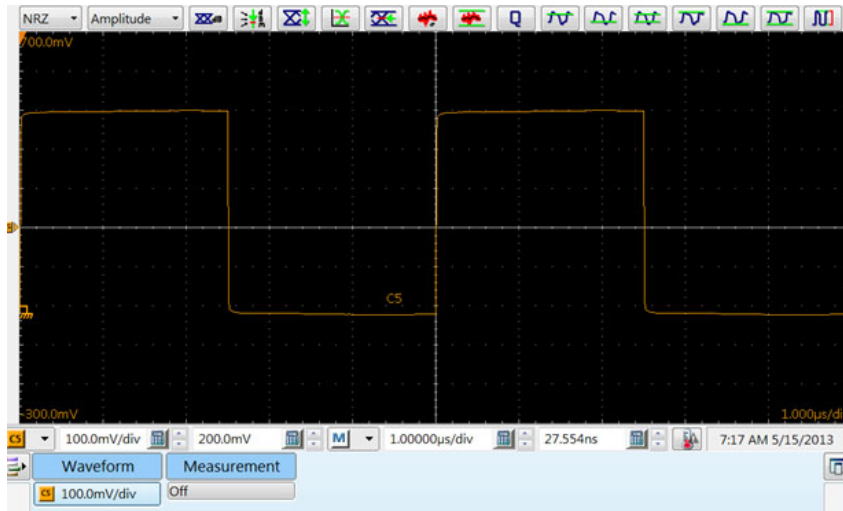
Use the following procedure to calculate the test configuration Vertical Gain:

1. Connect the instrument as shown in the following setup diagram:

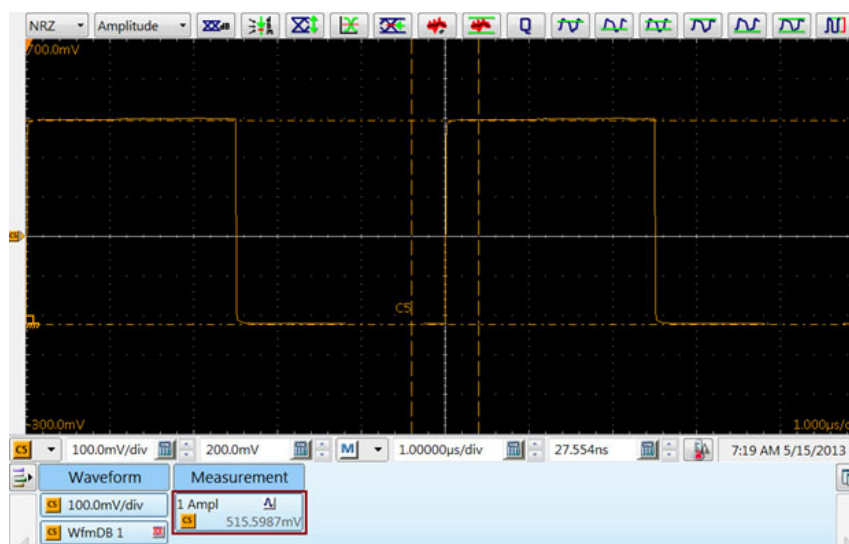


3207-006

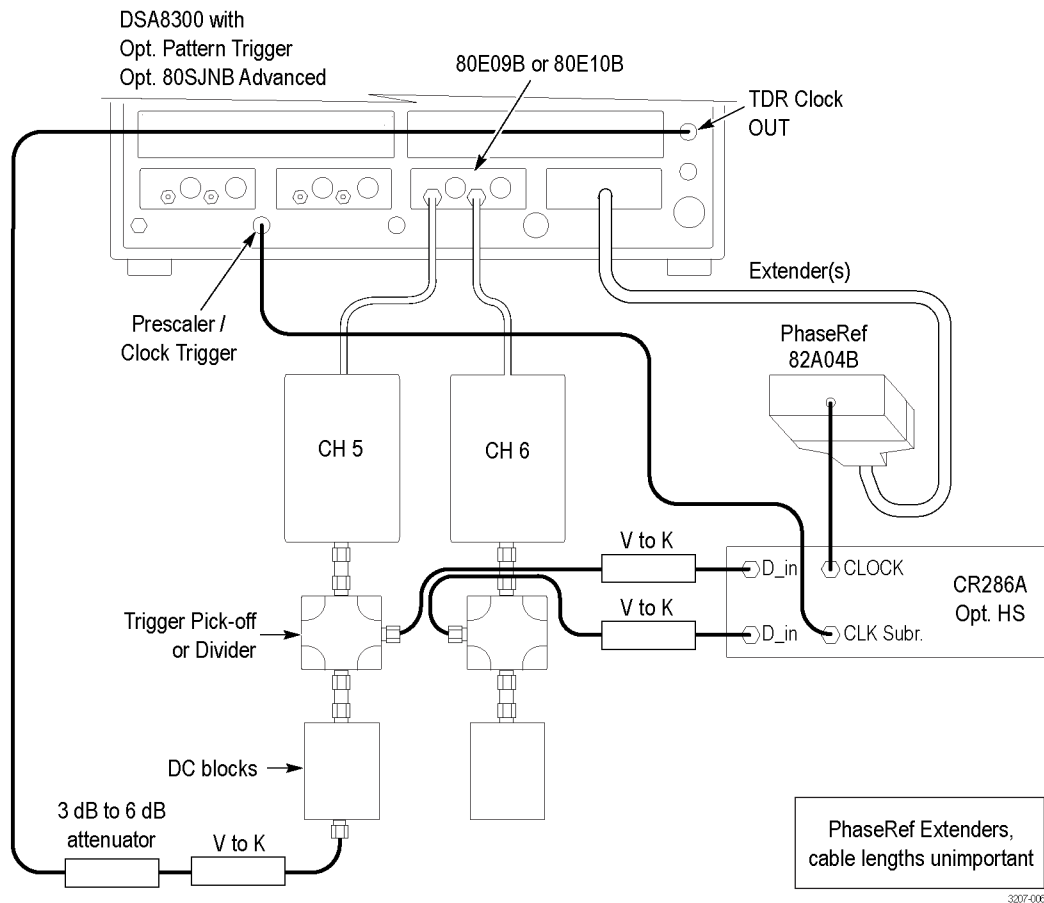
2. Push **Default Setup**.
3. Set **Setup > Mode/Trigger > Trigger Source: TDR**.
4. Set **Setup > Vert > waveform C5 to On**.
5. Set **Horizontal Scale time/div to 1 us/div**.
6. Set **Setup > Horz > Record Length > 1000(samples)**.
7. Set **Setup > Disp > Style: Show Vectors**.
8. Set oscilloscope Run/Stop state to **Run**.
9. Set **Setup > Acq > Acquisition Mode: Average (16 samples)**.
10. Set **Setup > Vertical > Channel: Offset (on C5) to 200 mV** to the waveform within the dynamic range.



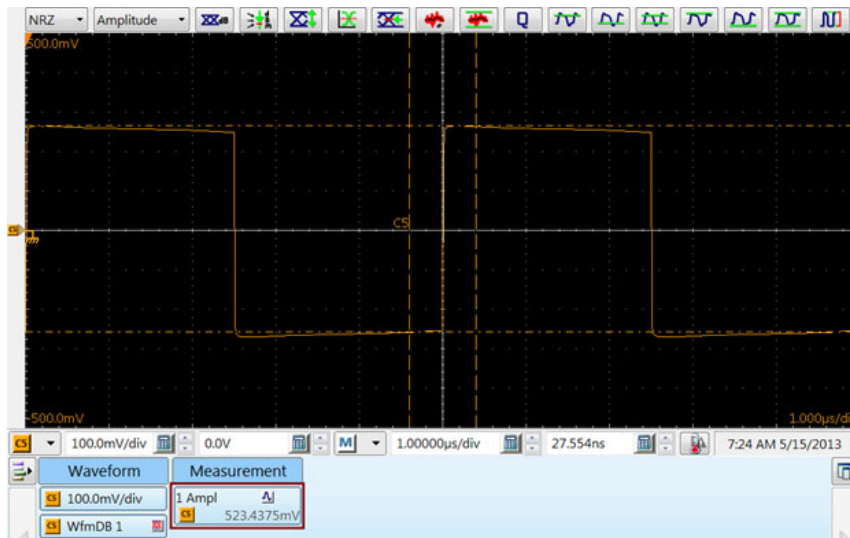
11. Add Amplitude measurement and configure the following settings:
 - a. Setup > Meas > Signal Type: Pulse
 - b. Setup > Meas > Source: C5
 - c. Setup > Meas > Pulse Amplitude: Amplitude
 - d. Setup > Meas > Meas1: select On (The oscilloscope creates this as Meas1)
 - e. Setup > Meas > Region to On
 - f. Setup > Meas > Region: Gates G1 to 46%
 - g. Setup > Meas > Region: Gates G1: 54%
 - h. Setup > Meas> Annotations: On
 - i. Measure the Amplitude Referenced as shown in the following screen shot.



12. Change the instrument connections as shown in the following figure (connect DC block and 6 dB attenuator to Ch 5 and other end to TDR Clock).



13. After making the connections shown in the above figure, measure the amplitude again.
14. Measure the Amplitude Apparent as shown in the following screen shot.

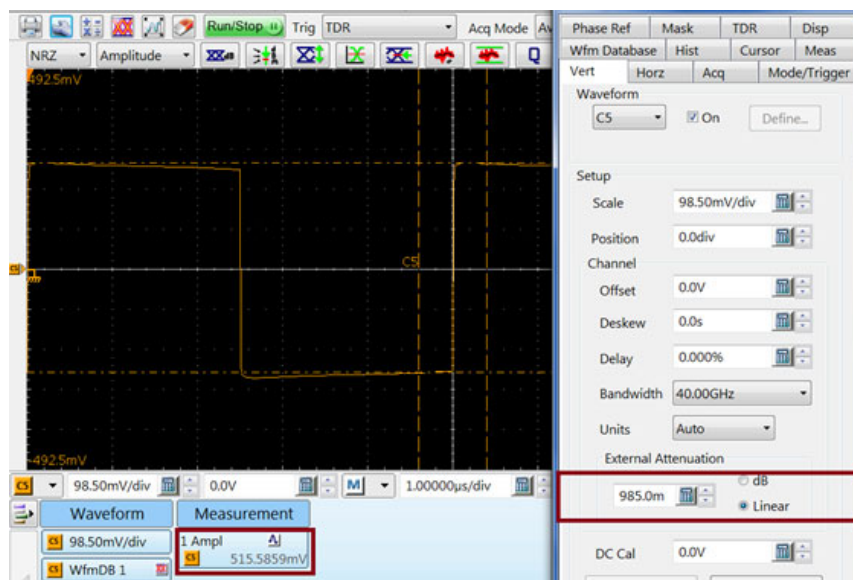


15. Calculate the Gain Correction factor for Channel 5:

Channel 5 Gain correction factor = Amplitude_Referenced ÷ Amplitude_Apparent

16. Enter this correction factor into the instrument:

- Setup > Vert: set waveform to C5
- Set External Attenuation to Linear and
- Enter the Gain correction factor for Channel 5 into the **External Attenuation** field as shown in the following image.



17. Repeat steps 2 through 16, using Channel 6 instead of Channel 5, to calculate and enter the gain correction factor for Channel 6.

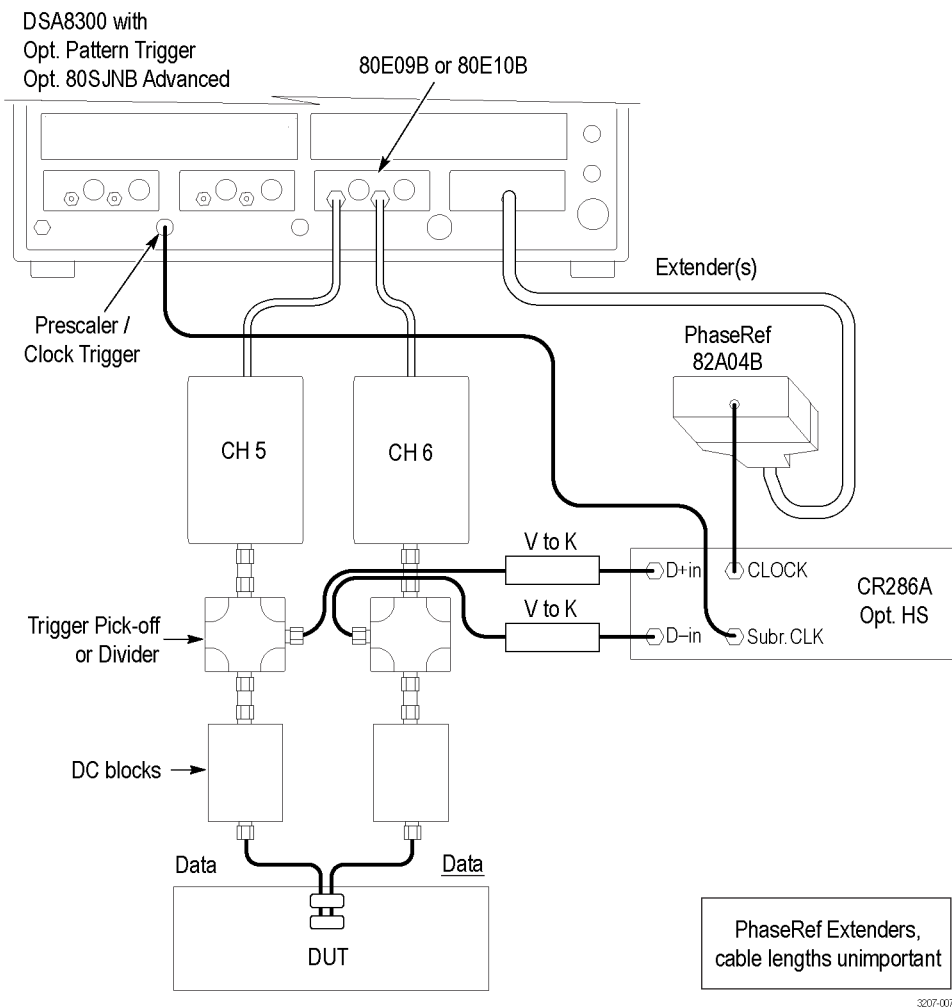
Deskew calibration (minimize common mode waveform method)

NOTE. This procedure achieves deskew by minimizing the energy of a common mode waveform. This method is less sensitive to large skews, but can provide multiple minima.

Another method is to [minimize the eye-crossing to eye-crossing \(see page 53\)](#). The minimize eye crossing method fails for large initial skew, but if the initial skew is less than $\frac{1}{2}$ UI it provides the best result.

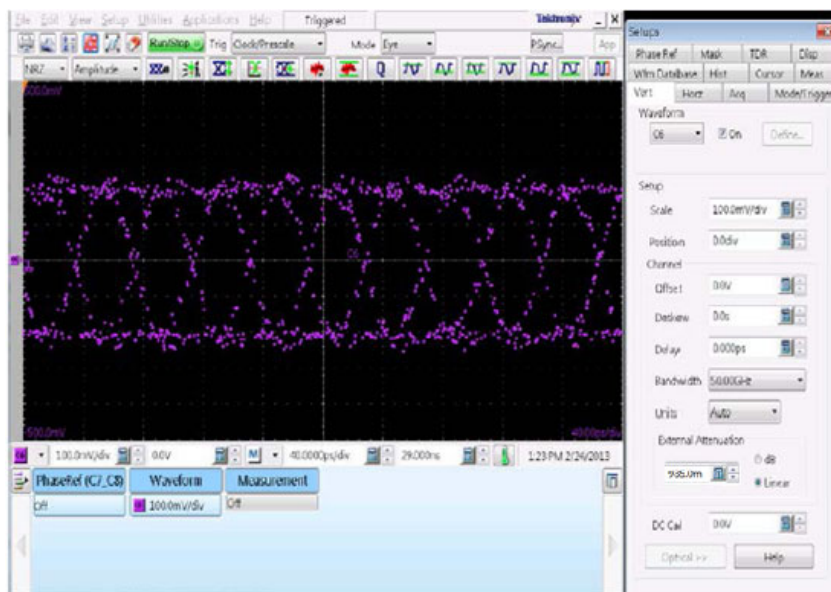
Thus the best result is obtained by following the two procedures in the order given here. The user can select just one or the other, depending on the need.

1. Connect the instrument as shown in the following setup diagram:



2. Configure the DUT settings:
 - a. Set the DUT output for standard operation
 - b. Set the DUT to generate a **PRBS9** pattern

3. Configure the oscilloscope channel settings:
 - a. **Setup > Mode/Trigger > Trigger Source to Clock/Prescale**
 - b. Select (enable) **C6** (Channel 6); turn OFF any other channel
 - c. **Setup > Acq > Acquisition Mode to Sample**
 - d. **Setup > Disp > Style:** uncheck **Show Vectors**
 - e. **Setup > Meas:** unselect (clear) On for all measurements
 - f. Set **Horizontal time/div** to approximately 1 UI/div (for example, 40 ps for 25 Gb/s)
 - g. Set **Setup > Horz > Record Length > 1000 [(Samples)]**
 - h. Select **Utilities > Autoset Properties:** clear (uncheck) Options: Horizontal, click Autoset
 - i. Close Autoset Properties
 - j. Set the oscilloscope Run/Stop state to **Run**
4. Observe that dimly visible eye diagrams are visible on the screen. If not, manually set the channel 6 V/div, Vertical Position, and Vertical Offset controls to position the waveform in the middle of the screen, as shown in the following figure:



Eye diagrams Autoset, Vectors off. (sample dots enhanced in this picture)

5. Set **Setup > Vert > Waveform** to **C5**
6. Set **Setup > Vert > C6 Bandwidth** to **40 GHz**
7. Set **Setup > Vert > C5 Bandwidth** to **40 GHz**
8. Verify that both C5 and C6 have the External Attenuation values entered that were determined from the [Vertical gain calibration procedure](#) (see page 43).

Pattern trigger settings:

Select **Setup > Mode/Trigger**: click **Pattern Sync/Framescan Setup**

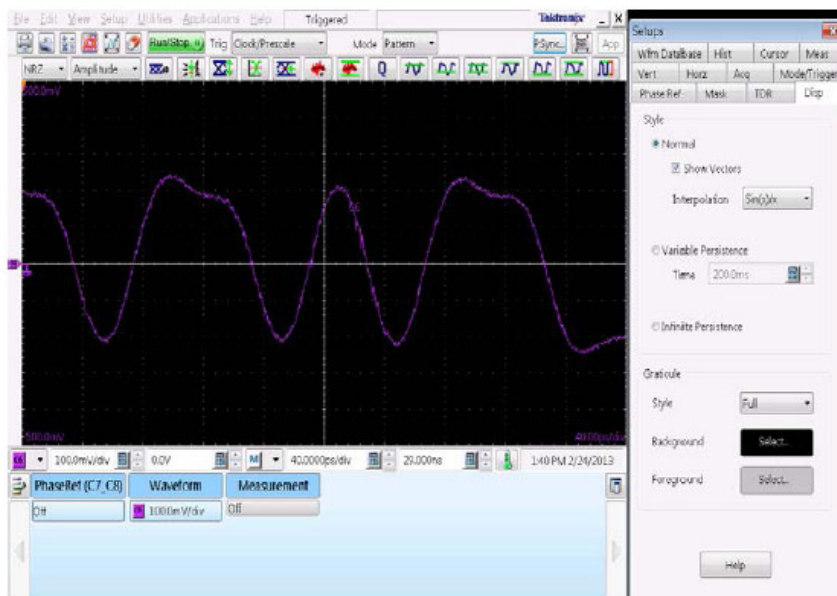
Clear the value in the **Data Rate** field and enter the correct Data Rate value (for example, 25.781Gb/s).

Set the **Pattern Length** field to **511** bits.

Click **AutoSync** to selected waveform.

Click **Close** to exit the **Pattern Sync/Framescan Setup** dialog box.

Select **Setup > Disp**: set Style to **Show Vectors**.



Select **Setup > Vert**: enable channel 6 waveform.

Set channel 6 **Vert Bandwidth** to **40 GHz**.

NOTE. Observe both C5 and C6 displayed mid-screen, w/o clipping. Both signals should be of similar amplitude – if not, troubleshoot the interconnect to the DUT.

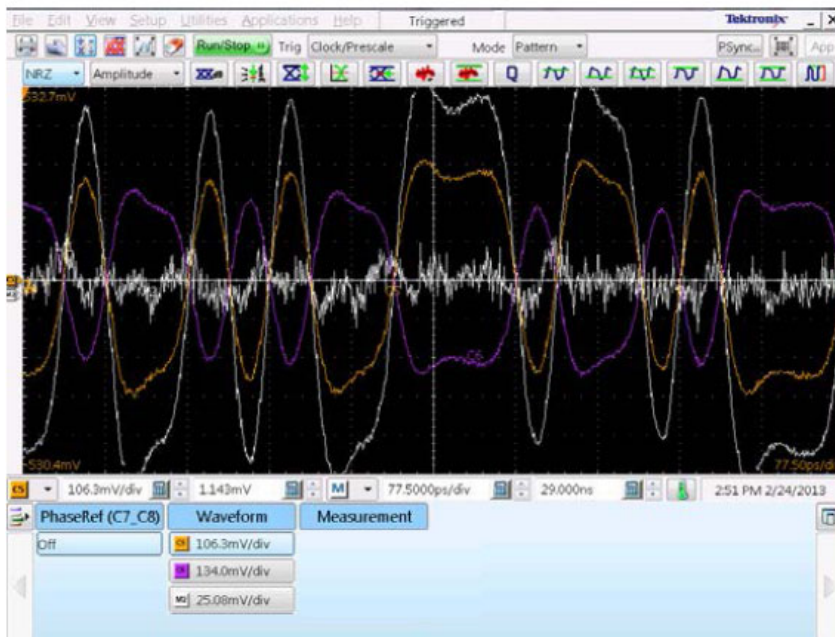
NOTE. Position the screen such that multiple zero-crossings are seen. An alternative is to slow down time/div such that the longest run-length in the pattern would be no more than 1/3 of the screen. For example, if the pattern is PRBS9, the longest run-length is 9 bits; if the UI is 40 ps, then the duration of the longest RL is $40 \times 9 = 360$ ps. Set the time/div to $3 \times 360 / 10$ (for example, approx. 110 ps/div).

Math measurement M2 settings:

Push the **Math** front-panel button

Define the math waveform **M2** to be **C5+C6**. Click **OK**.

Observe the common-mode waveform as the white trace as shown in the following figure.



Deskew of channel 6 to channel 5:

Select **Setup > Meas** and set the following parameters for the AC RMS measurement:

Set **Meas1** to **On**

Set **Signal Type** to **Pulse**

Set **Source** to **M2**

Set **Pulse Amplitude** to **AC RMS**

Set **Meas1** to **Select**

Setup > Vert > Waveform: Use the Front Panel **Fine** button and the Front Panel knob to set the C6 Adjust
Channel: Delay to minimize the size of the M2 (white trace), or type values into the **Delay** window.

Math measurement M1 settings:

Push the **Math** front-panel button

Define the math waveform **M1** to be **C5-C6**. Click **OK**.

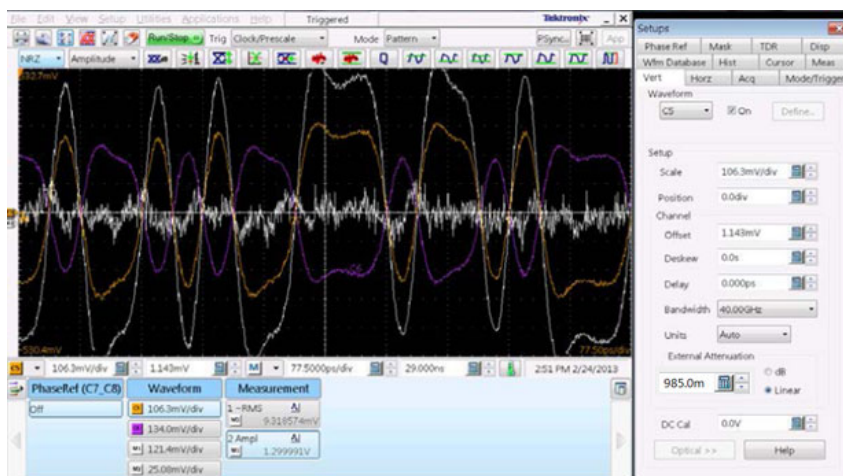
Observe the deskewed differential signal. Adjust M1 V/div if desired. If desired, enable diff. signal Amplitude measurement:

Setup > Meas: set **Signal Type** to **Pulse**

Setup > Meas: set **Source** to **M1**

Setup > Meas: set **Pulse Amplitude** to **Amplitude**

Setup > Meas: set **Meas2** to **On**



NOTE. External Attenuation and Delay values are in the Vert tab fields.

- End of Deskew calibration (minimize common mode waveform method) procedure •
- Go to [Deskew calibration \(minimize eye crossing method\) \(see page 53\)](#) procedure •

Deskew calibration (minimize eye crossing method)

NOTE. This procedure achieves deskew by minimizing the waveform eye-crossing to eye-crossing. The eye crossing method fails for large initial skew, but if the initial skew is less than $\frac{1}{2}$ UI it provides the best result.

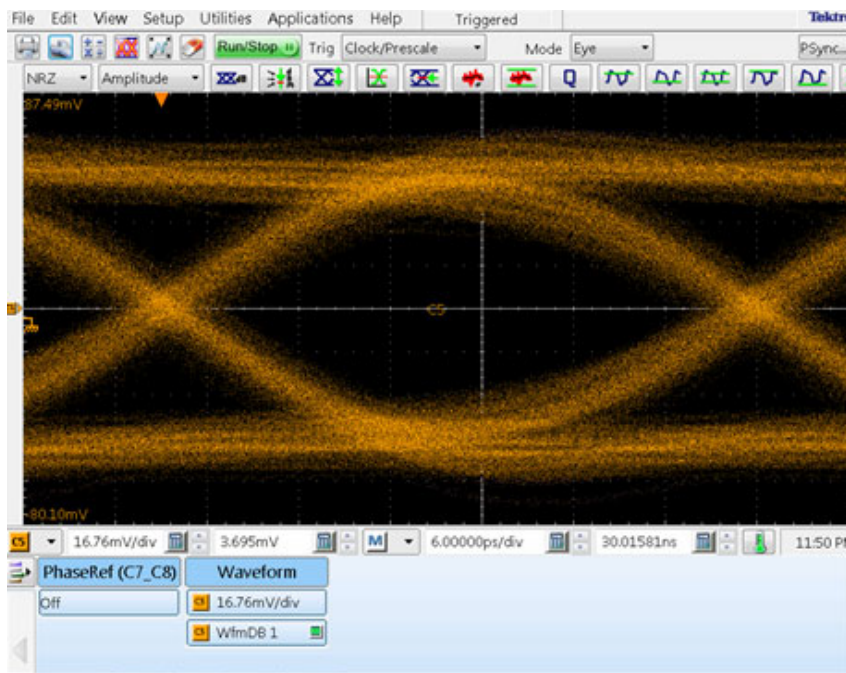
Another method is to [minimize the energy of a common mode waveform \(see page 48\)](#). The common mode waveform method is less sensitive to large skews, but can provide multiple minima.

The best result is obtained by following the two procedures in the order given (minimize common mode waveform, minimize eye crossing). The user can select just one or the other, depending on the need.

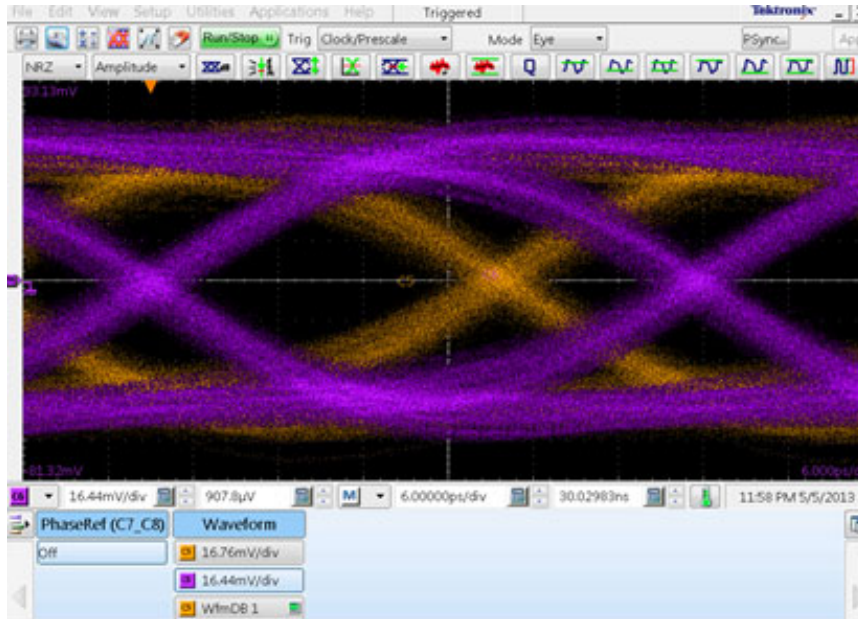
This procedure uses the same connection setup as in the common mode procedure. To fine tune the deskew values by minimizing the interval between eye crossings:

1. Select C5 on front panel
2. Setup > Vert: set waveform-Ch5 to **On**.
3. Set the BW to **40 GHz**.

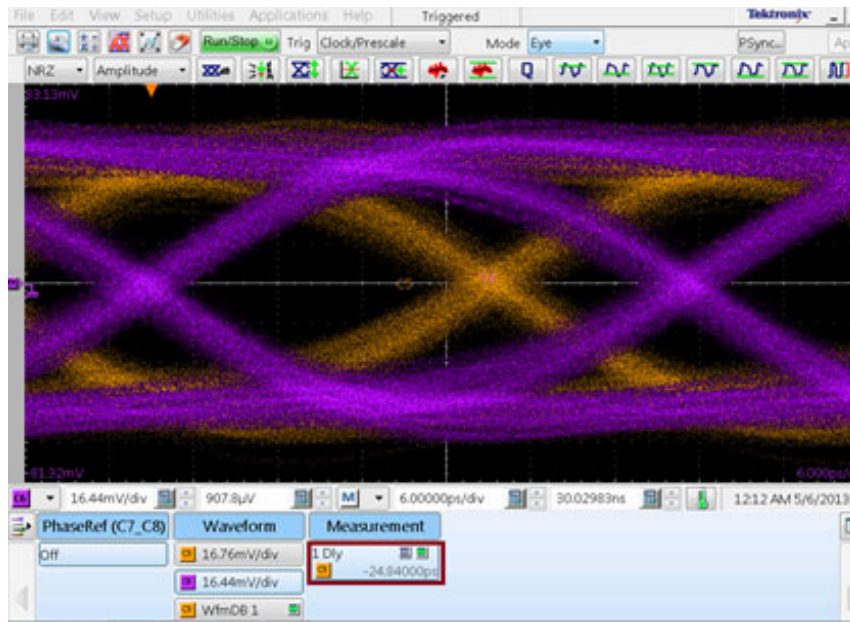
4. Setup > Horz: set the Bit Rate to the DUT's bit rate (for example, 25.781 Gb/s).
5. Setup > Horz: set the Record Length to any value above **1000** (1000 is the minimum recommended record length. Your measurement requirements may need more than 1000 records).
6. Setup > Horz: set the Horizontal Reference to **0%**.
7. Setup > Mode/Trigger: set the Scope Mode to **Eye**.
8. Setup > Wfm Database (Wfm DB1): select Source as C5; enable (check) **Display**; set Persistence to **Variable**; set Waveforms to **500**; set Display Options to **Intensity**.
9. Set the oscilloscope Run/Stop mode to **Run**.
10. Press **Autoset** front-panel button.



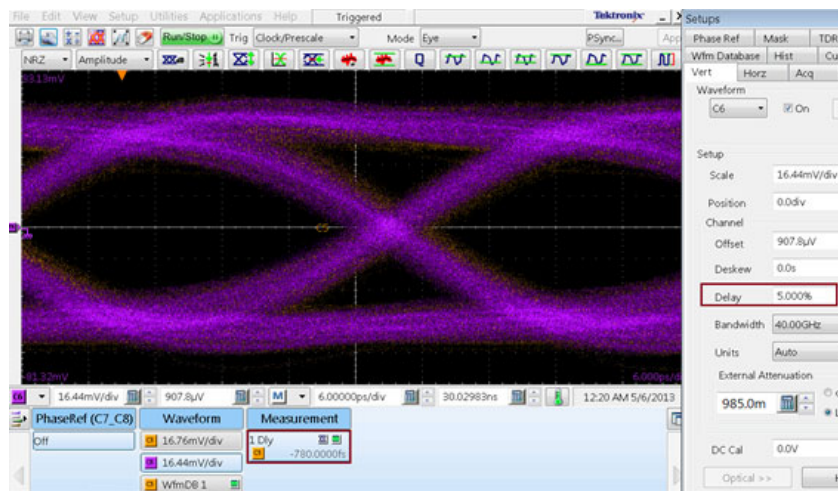
11. Select (enable) **C6** (Channel 6) front panel button.
12. Setup > Wfm Database (Wfm DB2): select Source as **C6**; enable (check) **Display**; set Persistence to **Variable**; set Waveforms to **500**
13. Press **Autoset** front-panel button.



14. Set up a delay measurement between the C5 eye crossing and C6 eye crossing in the Setup > Meas tab:
- Setup > Meas > Select Meas > NRZ Timing > Delay.
 - Setup > Meas: click **Source1** and set Source to **C5** on **Main**.
 - Setup > Meas: set Source Signal Type to **NRZ**.
 - Setup > Meas: set Meas1 to **On**.
 - Setup > Meas: click **Source2**: set source to **C6** on **Main**.
 - Setup > Meas: click **Source1**.



15. Setup > Vert: Adjust the **Delay** value to minimize the delay between Ch5 and Ch6 eye crossings. Adjust the C6 channel delay until the delay measurement value becomes less than $\frac{1}{4}$ UI, as shown in the following image.



- End of Deskew calibration (minimize eye crossing method) procedure •

Transition time algorithm procedure

1. Input the differential waveform exported from the 80SJNB application.
2. Find the position of the rising and falling edges in the input waveform, depending on the signal type. If you are using a PRBS9 test pattern, search for a transition sequence of five zeros and four ones.
3. The v_{High} and v_{Low} is estimated by the average signal within windows, from -3 UI to -2 UI, and from 2 UI to 3 UI, relative to the edge for a PRBS9 test pattern. The average of central 1 UI is used for the 8180 pattern.
4. On each rising edge, traverse forward until the first point crossing the upper limit (80%) is found (=End), and then traverse backward until the first point crossing the lower limit (20%) is found (=Start).
5. On each falling edge, traverse backward until the first point crossing the upper limit (80%) is found (=Start), and then traverse forward until the first point crossing the lower limit (20%) is found (=End).
6. Transition time is computed as $\text{Transition time} = (\text{End} - \text{Start})$. This value is averaged across all edges.

Instrument and DUT connection setup

Click the **Setup > Test Selection > Schematic** button to open a PDF file that shows the compliance test setup diagram(s) (instrument, DUT, connections, and cabling) for supported compliance testing configurations.

See also

[Minimum system requirements \(see page 3\)](#)

[View connected instruments \(see page 19\)](#)

Running tests

After selecting and configuring tests, review the [prerun checklist \(see page 59\)](#) and then click **Start** to run the tests. While tests are running, you cannot access the Setup or Reports panels. To monitor the test progress, switch back and forth between the Status panel and the Results panel.

While the tests are running, other applications may display windows in the background. The TekScope application takes precedence over other applications, but you can switch to other applications by using the **Alt + Tab** key combination. To keep the TekExpress CEI-VSR application on top, select **Keep On Top** from the TekExpress Options menu.

The application displays a report when the tests are complete.

See also

[Configuration tab parameters \(see page 29\)](#)

Prerun checklist

Do the following before you click Start to run a test:

NOTE. *If this is the first time you are running a test on the application, make sure that you have done the steps in [Required \My TekExpress folder settings \(see page 8\)](#) and the Calibration procedures, before continuing.*

1. Make sure that all the required instruments are properly warmed up (approximately 20 minutes).
2. Perform compensation:
 - a. On the oscilloscope main menu, select **Utilities > Instrument Compensation**.
 - b. Click the **Help** button in the Compensation window for information on how to perform instrument compensation.

See also

[Instrument and DUT connection setup \(see page 58\)](#)

Test setup files overview

Saved test setup information (such as the selected oscilloscope, general parameters, acquisition parameters, measurement limits, waveforms (if applicable), and other configuration settings) are all saved under the setup name at **X:\CEI-VSR**.

Use test setups to:

- Run a new session, acquiring live waveforms, using a saved test configuration.
- Create a new test setup based on an existing one.
- View all the information associated with a saved test, including the log file, the history of the test status as it executed, and the results summary.
- Run a saved test using saved waveforms.

See also

[Save a test setup \(see page 61\)](#)

[Recall a saved test setup \(see page 62\)](#)

Save a test setup file

Save a test setup before or after running a test to save the test settings. Create a new test setup from any open setup or from the default setup. When you select the default test setup, all parameters are returned to the application's default values.

To immediately save the current setup session to the same setup name, select **Options > Save Test Setup**.

To immediately save the current setup session to a new setup name, select **Options > Save Test Setup As**.

To create and save a new setup from the default test setup:

1. Select **Options > Default Test Setup** to return the application to default test settings.
2. Click the application **Setup** button and use the setup tabs to set required options and parameters (DUT, Test Selection, and so on).
3. Click the application **Reports** button and set your [report options \(see page 37\)](#).
4. Optional: Click **Start** to run the test and verify that it runs correctly and captures the specified test information and reports. If it does not, edit the parameters and repeat this step until the test runs to your satisfaction.

Running the test helps verify that all parameters are set correctly, but it is not a necessary step.

5. Select **Options > Save Test Setup**. Enter the file name for the new setup file. The application saves the file to **X:\CEI-VSR\<session_name>**.

See also[View test-related files \(see page 36\)](#)[Configuration tab parameters \(see page 29\)](#)

Open (load) a saved test setup file

These instructions are for recalling saved test setups.

1. Select **Options > Open Test Setup**.
2. Select the setup from the list and click **Open**. Setup files must be located at **X:\CEI-VSR**.

See also[About test setups \(see page 61\)](#)[Create a new test setup based on an existing one \(see page 62\)](#)

Create a new test setup file based on an existing one

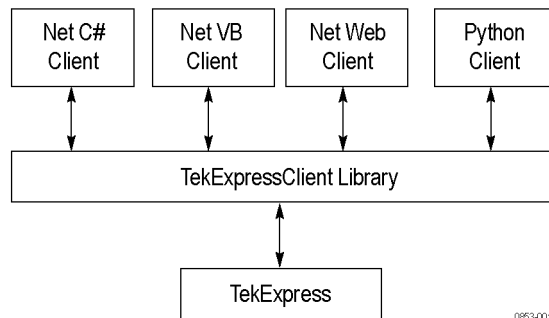
Use this method to create a variation on a test setup without having to create the setup from the beginning.

1. Select **Options > Open Test Setup**.
2. Select a setup from the list and then click **Open**.
3. Use the **Setup** and **Reports** panels to modify the parameters to meet your testing requirements.
4. Select **Options > Save Test Setup As**.
5. Enter a test setup name and click **Save**.

See also[About test setups \(see page 61\)](#)[Set DUT parameters \(see page 25\)](#)[Configuration parameters \(see page 32\)](#)[Select acquisitions \(see page 27\)](#)

About the programmatic interface

The Programmatic interface seamlessly integrates the TekExpress test automation application with the high-level automation layer. This also lets you control the state of the TekExpress application running on a local or a remote computer.



The following terminology is used in this section to simplify description text:

- **TekExpress Client:** A high-level automation application that communicates with TekExpress using TekExpress Programmatic Interface.
- **TekExpress Server:** The TekExpress application when being controlled by TekExpress Client.

TekExpress leverages .Net Marshalling to enable the Programmatic Interface for TekExpress Client. TekExpress provides a client library for TekExpress clients to use the programmatic interface. The TekExpress client library is inherited from .Net MarshalByRef class to provide the proxy object for the clients. The TekExpress client library maintains a reference to the TekExpress Server and this reference allows the client to control the server state.

See also

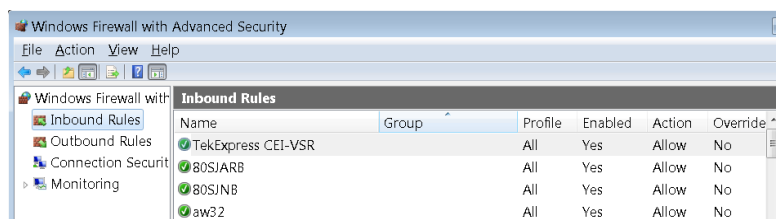
[Requirements for Developing TekExpress Client \(see page 66\)](#)

To enable remote access

To access and remotely control an instrument using the TekExpress programmatic interface, you need to change specific firewall settings as follows:

1. Access the Windows Control Panel and open the Windows Firewall tool (**Start > Control Panel > All Control Panel Items > Windows Firewall**).
2. Click **Advance Settings > Inbound Rules**.

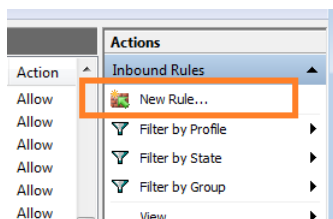
3. Scroll through the **Inbound Rules** list to see if the following items (or with a similar name) are shown:
 - TekExpress CEI-VSR
 - TekExpress



4. If both items are shown, you do not need to set up any rules. Exit the Windows Firewall tool.
5. If one or both are missing, use the following procedure to run the **New Inbound Rule Wizard** and add these executables to the rules to enable remote access to the TekExpress application.

Run the New Inbound Rule Wizard

1. Click on **New Rule** (in Actions column) to start the **New Inbound Rule Wizard**.

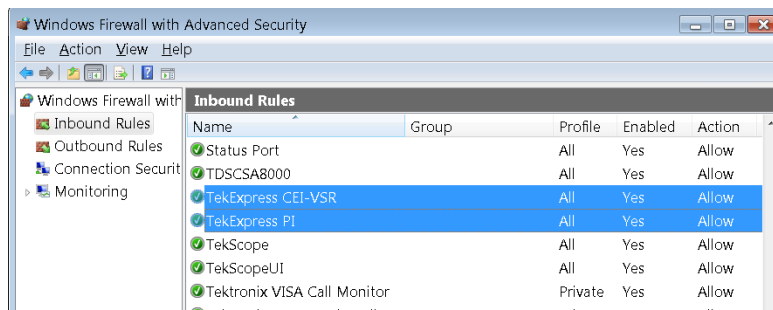


2. Verify that **Program** is selected in the Rule Type panel and click **Next**.
3. Click **Browse** in the Program panel and navigate to and select one of the following TekExpress applications (depending on the one for which you need to create a rule):
4. TekExpress CEI-VSR.exe
5. TekExpress.exe

NOTE. See [Application directories and content \(see page 11\)](#) for the path to the application files.

6. Click **Next**.
7. Verify that **Allow the connection** is selected in the Action panel and click **Next**.
8. Verify that all fields are selected (**Domain**, **Private**, and **Public**) in the Profile panel and click **Next**.
9. Use the fields in the Name panel to enter a name and optional description for the rule. For example, a name for the TekExpress CEI-VSR application could be **TekExpress CEI-VSR Application**. Add description text to further identify the rule.
10. Click **Finish** to return to the main Windows Firewall screen.

11. Scroll through the Inbound Rules list and verify that the list shows the rule that you just entered.



12. Repeat steps 1 through 11 to enter the other TekExpress executable if it is missing from the list. Enter **TekExpress PI** as the name.
13. Scroll through the Inbound Rules list and verify that the list shows the rule that you just entered.
14. Exit the Windows Firewall tool.

To use the remote access:

1. Obtain the IP address of the instrument on which you are running TekExpress CEI-VSR. For example, 134.64.235.198.
2. On the PC from which you are accessing the remote instrument, use the instrument IP address as part of the TekExpress CEI-VSR PI code to access that instrument. For example:

```
object obj = piclient.Connect("134.64.235.198",out clientid);
```

Requirements for developing TekExpress client

While developing TekExpress Client, use the TekExpressClient.dll. The client can be a VB .Net, C# .Net, Python, or Web application. The examples for interfaces in each of these applications are in the samples folder.

References required

- TekExpressClient.dll has an internal reference to IIdlglib.dll and IRemoteInterface.dll.
- IIdlglib.dll has a reference to TekDotNetLib.dll.
- IRemoteInterface.dll provides the interfaces required to perform the remote automations. It is an interface that forms the communication line between the server and the client.
- IIdlglib.dll provides the methods to generate and direct the secondary dialog messages at the client-end.

NOTE. The end-user client application does not need any reference to the above mentioned DLL files. It is essential to have these DLLs (IRemoteInterface.dll, IIdlglib.dll and TekDotNetLib.dll) in the same folder as that of TekExpressClient.dll.

Required steps for a client

The client uses the following steps to use TekExpressClient.dll to programmatically control the server:

Develop a client UI to access the interfaces exposed through the server. This client loads TekExpressClient.dll to access the interfaces. After TekExpressClient.dll is loaded, the client UI can call the specific functions to run the operations requested by the client. When the client is up and running, it does the following to run a remote operation:

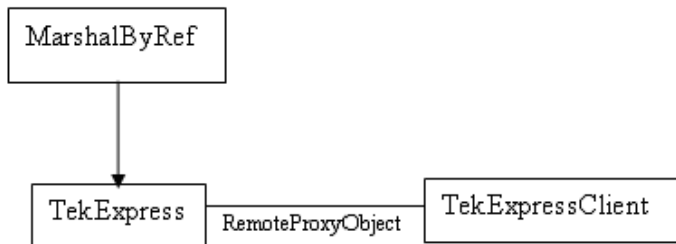
1. To connect to the server, the client provides the IP address of the PC where the server is running.
2. The client locks the server application to avoid conflict with any other Client that may try to control the server simultaneously. “Lock” would also disable all user controls on the server so that server state cannot be changed by manual operation.

If any other client tries to access a server that is locked, it will receive a notification that the server is locked by another client.

3. When the client has connected to and locked the server, the client can access any of the programmatic controls needed to run the remote automations.
4. After the client operations finish, the client unlocks the server.

Remote proxy object

The server exposes a remote object to let the remote client access and perform the server-side operations remotely. The proxy object is instantiated and exposed at the server-end through marshalling.



The following is an example:

```
RemotingConfiguration.RegisterWellKnownServiceType (typeof (TekExpressRemoteInterface), "TekExpress Remote interface", WellKnownObjectMode.Singleton);
```

This object lets the remote client access the interfaces exposed at the server side. The client gets the reference to this object when the client gets connected to the server.

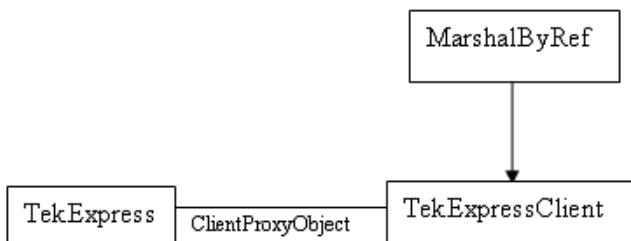
For example,

```
//Get a reference to the remote object
```

```
remoteObject = (IRemoteInterface)Activator.GetObject(typeof(IRemoteInterface), URL.ToString());
```

Client proxy object

Client exposes a proxy object to receive certain information.



For example,

```
//Register the client proxy object
```

```
wellKnownServiceTypeEntry[] e = RemotingConfiguration.GetRegisteredWellKnownServiceTypes();
```

```
clientInterface = new ClientInterface();
```

```
RemotingConfiguration.RegisterWellKnownServiceType(typeof(ClientInterface),  
"Remote Client Interface", wellKnownObjectMode.Singleton);
```

```
//Expose the client proxy object through marshalling
```

```
RemotingServices.Marshal(clientInterface, "Remote Client Inteface");
```

The client proxy object is used for the following:

- To get the secondary dialog messages from the server.
- To get the file transfer commands from the server while transferring the report.

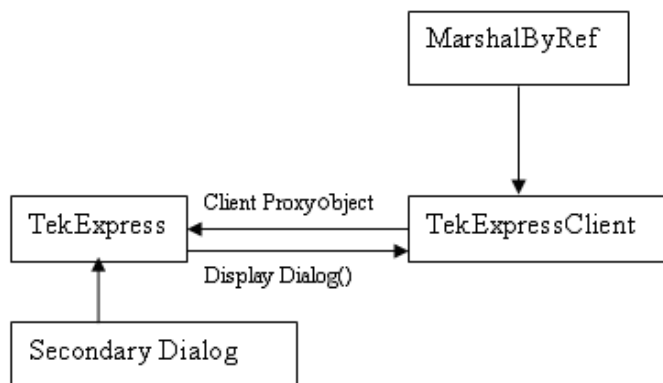
Examples

```
clientObject.clientIntf.DisplayDialog(caption, msg, iconType, btnType);
```

```
clientObject.clientIntf.TransferBytes(buffer, read, fileLength);
```

For more information, click the following links:

Secondary Dialog Message Handling



The secondary dialog messages from the Secondary Dialog library are redirected to the client-end when a client is performing the automations at the remote end.

In the secondary dialog library, the assembly that is calling for the dialog box to be displayed is checked and if a remote connection is detected, the messages are directed to the remote end.

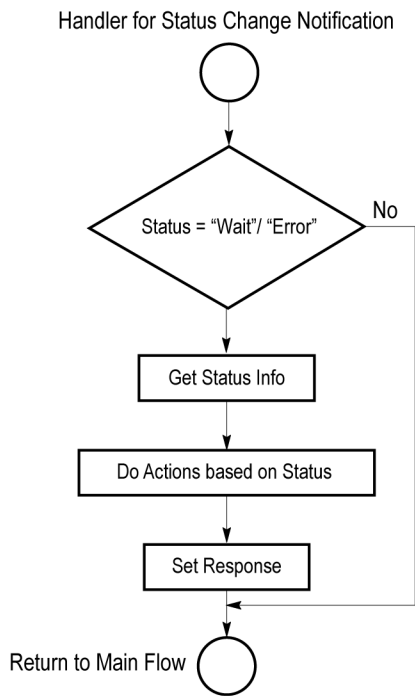
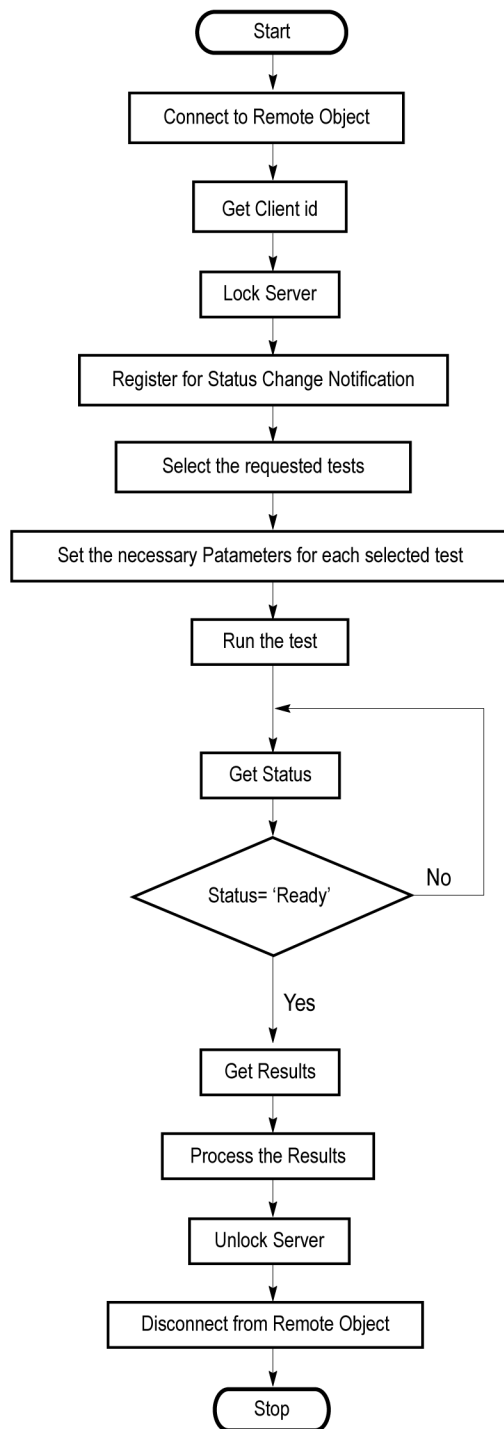
File Transfer Events

When the client requests the transfer of the report, the server reads the report and transfers the file by calling the file transfer methods at the client-end.

Client programmatic interface example

An example of the client programmatic interface is described and shown as follows:

Process flowchart



1. Connect to a server or remote object using the programmatic interface provided.
2. Get the client ID that is created when connecting to the remote object. This client ID is one of the required parameters to communicate with the server.

NOTE. *The server identifies the client with this ID only and rejects any request if the ID is invalid.*

3. Lock the server for further operations. This disables the application interface.

NOTE. *You can get values from the server or set values from the server to the client only if the application is locked.*

4. Register for receiving notifications on status change events on the server. To register you need to give a handler as a parameter.

NOTE. *Whenever there is a change in the status of the server, all the clients registered with the server receive a notification from the server.*

5. Select the tests that you want to run through the programmatic interface.
6. Set the necessary parameters for each test.
7. Run the tests.
8. Poll for the status of the application.

NOTE. *Skip step 8 if you are registered for the status change notification and the status is Ready.*

9. After completing the tests, get the results.
10. Create a report or display the results and verify or process the results.
11. Unlock the server after you complete all the tasks.
12. Disconnect from the remote object.

Handler of status change notification

1. Get the status. If the status is Wait or Error, get the information that contains the title, message description, and the expected responses for the status.
2. Perform the actions based on the status information.
3. Set the response as expected.

See also

[Program remote access code example \(see page 72\)](#)

Program remote access code example

This code example shows how to communicate between a remote PC and TekExpress CEI-VSR

Table 15: Remote access code example

Task	Code
Start the application	
Connect through an IP address.	'assigns client IP address to variable clientID; address valid until connection or measurement session ends (Disconnect). See Connect() <code>clientID = " "</code> <code>m_Client.Connect("localhost",out clientID)'True or False</code>
Lock the server	<code>m_Client.LockServer(clientID)</code>
Disable the Popups	<code>m_Client.SetVerboseMode(clientID, false)</code>
Set the DUT ID	<code>m_Client.SetDutId(clientID, "DUT_Name")</code>
Run with set configurations	<code>m_Client.Run(clientID)</code>
Wait for the test to complete.	Do <code>Thread.Sleep(500)</code> <code>m_Client.Application_Status(clientID)</code> Select Case status Case "wait"
Get the current state information	<code>mClient.GetCurrentStateInfo(clientID, waitingMsbBxCaption, waitingMsbBxMessage, waitingMsbBxButtontexts)</code>
Send the response	<code>mClient.SendResponse(clientID, waitingMsbBxCaption, waitingMsbBxMessage, waitingMsbBxResponse)</code> End Select Loop Until status = "Ready"
Save results	'Save all results values from folder for current run <code>m_Client.TransferResult(clientID, logDirname)</code>
Unlock the server	<code>m_Client.UnlockServer(clientID)</code>
Disconnect from server	<code>m_Client.Disconnect()</code>
Exit the application	

ApplicationStatus()

ApplicationStatus(clientId)

This method gets the status (ready, running, paused) of the server application.

Parameters

Name	Type	Direction	Description
clientId	string	IN	Identifier of the client that is performing the remote function. clientId variable (see page 74)

NOTE. *The Fail condition for PI commands occurs in any of the following cases:*

The server is LOCKED and the message displayed is "Server is locked by another client".

The session is UNLOCKED and the message displayed is "Lock Session to execute the command".

The server is NOTFOUND and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Return value

String value that gives the status of the server application.

Example

```
m_Client = new Client() //m_Client is a reference to the Client class in the Client DLL.
```

```
returnval as string
```

```
returnval=m_Client.ApplicationStatus(clientID)
```

Comments

The application is in the Running, Paused, Wait, or Error state at any given time.

Related command(s)

[GetCurrentStateInfo \(see page 80\)](#)

[QueryStatus \(see page 88\)](#)

[SendResponse \(see page 93\)](#)

[Status \(see page 109\)](#)

clientId variable

clientId is a user-defined variable that stores the client ID address information. Use the Connect() command to fill this variable:

```
clientId = " "
```

```
m_Client.Connect("localhost",out clientId)'True or False
```

The clientId variable is stored until you call the Disconnect command.

ChangeDutId()

ChangeDutId(clientId, dutName)

This command changes the DUT id of the set-up. The client has to provide a valid DUT id.

Parameters

Parameter	Type	Direction	Description
clientId	String	IN	Identifier of the client that is performing the remote function. clientId variable (see page 74)
dutName	String	IN	The new DUT id of the set-up.

Return value

String that indicates the status of the operation upon completion.

NOTE. The Fail condition for PI commands occurs in any of the following cases:

The server is *LOCKED* and the message displayed is "Server is locked by another client".

The session is *UNLOCKED* and the message displayed is "Lock Session to execute the command".

The server is *NOTFOUND* and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Example

```
If (dut Id.Length <=0 && locked == true)
    return "Enter a valid DUT-ID";
```

```
returnVal = remoteObject.ChangeDutId(clientId, dutId);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
    return "DUT Id Changed...";  
else  
    return CommandFailed(returnVal);
```

Comments

If the dutName parameter is null, the client is prompted to provide a valid DUT id.

Related command(s)

[GetDutId \(see page 82\)](#)

CheckSessionSaved()

CheckSessionSaved(clientID, out savedStatus)

This command checks whether the current session is saved.

Parameters

Parameter	Type	Direction	Description
HostIPAddress	string	IN	The IP address of the server to which the client is trying to connect. This is required to establish the connection between the server and the client.
clientID	string	IN	Identifier of the client that is performing the remote function. clientID variable (see page 74)
savedStatus	boolean	OUT	Boolean representing whether the current session is saved

Return value

Return value is either True or False.

Example

```
m_Client = new Client() //m_Client is a reference to the Client class in the Client DLL.
```

```
returnval as string
```

```
returnval=m_Client.CheckSessionSaved(m_clientID, out savedStatus)
```

Comments

Related command(s)

CheckSessionSaved

RecallSession

SaveSession

SaveSessionAs

Connect()

Connect(string HostIPAddress, out string clientID)

This command connects the client to the server; address is the IP address of the server to which the client is trying to connect. This is required to establish the connection between the client and the server.

NOTE. *The server must be active and running for the client to connect to the server. Any number of clients can be connected to the server at a time.*

Parameters

Parameter	Type	Direction	Description
HostIPAddress	string	IN	Obtains the IP address of the server to which the client is trying to connect. This is required to establish the connection between the server and the client.
clientID	string	OUT	Identifier of the client that is performing the remote function. clientID variable (see page 74)

Return value

Value that indicates the connection status (connection was established or an error occurred). The return value can be a boolean value (true), or a string (returning the error message).

NOTE. *The Fail condition for PI commands occurs in any of the following cases:*

The server is LOCKED and the message displayed is "Server is locked by another client".

The session is UNLOCKED and the message displayed is "Lock Session to execute the command".

The server is NOTFOUND and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Example

```
try {
    m_Client = new Client() //m_Client is a reference to the Client class in the Client DLL
    clientID = " "
    m_Client.Connect("localhost",out clientID)'True or False
}
```

Comments

The server has to be active and running for the client to connect to the server. Any number of clients can be connected to the server at a time. Each client will get a unique id.

Related command(s)

[Disconnect \(see page 77\)](#)

Disconnect()

Disconnect(clientId)

This command disconnects the client from the server it is connected to.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is performing the remote function. clientId variable (see page 74)

Return value

Integer value that indicates the status of the operation upon completion.

1: Success

-1: Failure

Example

```
try
{
    string returnUrl = UnlockServer (clientId);
    remoteObject.Disconnect (clientId);
    return 1;
}
```

Comments

When the client is disconnected, it is unlocked from the server and then disconnected. The id is reused.

Related command(s)

[Connect \(see page 77\)](#)

GetCurrentStateInfo()

GetCurrentStateInfo(clientID, WaitingMsbBxCaption, WaitingMsbBxMessage, WaitingMsbBxButton-texts)

This command gets the additional information of the states when the application is in Wait or Error state.

Except client ID, all the others are Out parameters.

NOTE. *This command is used when the application is running and is in the wait or error state.*

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is performing the remote function. clientId variable (see page 74)
WaitingMsbBxCaption	string	OUT	The wait state or error state message sent to you
WaitingMsbBxMessage	string	OUT	The wait state/error state message sent to you
WaitingMsbBxButtontexts	string array	OUT	An array of strings containing the possible response types that you can send

NOTE. *The Fail condition for PI commands occurs in any of the following cases:*

The server is LOCKED and the message displayed is "Server is locked by another client".

The session is UNLOCKED and the message displayed is "Lock Session to execute the command".

The server is NOTFOUND and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Return value

This command does not return any value.

This function populates the Out parameters that are passed when invoking this function.

Example

```
m_Client = new Client() //m_Client is a reference to the Client class in the Client DLL
```



```
mClient.GetCurrentStateInfo(clientID, WaitingMsbBxCaption, WaitingMsbBxMessage,  
WaitingMsbBxButtontexts)
```

Comments

Related command(s)

[ApplicationStatus](#) (see page 73)

[QueryStatus](#) (see page 88)

[SendResponse](#) (see page 93)

GetDutId()

GetDutId(clientId, out dutId)

This command returns the DUT id of the current set-up.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is performing the remote function. clientId variable (see page 74)
dutId	string	OUT	The DUT id of the setup.

Return value

String value that indicates the status of the operation upon completion.

Example

```
returnVal = remoteObject.GetDutId(clientId, out dutId);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
{  
    return id;  
}  
else  
    return CommandFailed(returnVal);
```

Comments

The dutId is an OUT parameter whose value is set after the server processes the request.

Related command(s)

[ChangeDutId \(see page 74\)](#)

[SetDutId \(see page 97\)](#)

GetPassFailStatus()

GetPassFailStatus(clientId, device, suite, test)

This command gets the pass or fail status of the measurement after test completion.

NOTE. *Execute this command after completing the measurement.*

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
device	string	IN	Specifies the DUT type (CEI-28G VSR)
suite	string	IN	string with device connection type. Valid values are Host To Module and Module to Host .
test	string	IN	Specifies the name of the test for which to obtain the pass or fail status.

Return value

String Value that indicates the status of the operation upon completion.

Example

```
GetPassFailStatus(clientId, "CEI-28G VSR", "Host to Module", test);
```

```
GetPassFailStatus(clientId, "Host", "Module to Host", test);
```

GetReportParameter()

GetReportParameter(clientId, device, suite, test, parameterString)

This command gets the general report details such as oscilloscope model and TekExpress version.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
device	string	IN	Specifies the DUT type (CEI-28G VSR).
suite	string	IN	string with device connection type. Valid values are Host To Module and Module to Host .
test	string	IN	Specifies the name of the test for which to obtain the pass or fail status or a test result value.
parameterString	string	IN	Specifies to return the measured value for the indicated test. Enter "Scope Model" , "TekExpress Version" , or "Application Version" for this argument

NOTE. *The Fail condition for PI commands occurs in any of the following cases:*

The server is LOCKED and the message displayed is "Server is locked by another client".

The session is UNLOCKED and the message displayed is "Lock Session to execute the command".

The server is NOTFOUND and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Return value

The return value is the connected oscilloscope model, TekExpress base software version, or CEI-VSR application version.

Example

```
GetReportParameter(clientId, "Device", "suite", test, "Application Version")
```

GetResultsValue()

GetResultsValue(clientId, device, suite, test, parameterString)

This command gets the result values of the specified measurement after the run.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
device	string	IN	Specifies the DUT type (CEI-28G VSR).
suite	string	IN	string with device connection type. Valid values are Host To Module and Module to Host .
test	string	IN	Specifies the name of the test for which to obtain the test result value.
parameterString	string	IN	Specifies to return the measured value for the indicated test. Enter "Value" for this argument

NOTE. The Fail condition for PI commands occurs in any of the following cases:

The server is **LOCKED** and the message displayed is "Server is locked by another client".

The session is **UNLOCKED** and the message displayed is "Lock Session to execute the command".

The server is **NOTFOUND** and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Return value

String value that indicates the status of the operation upon completion. Returns the result value in the form of a string.

Example

```
GetResultsValue(clientId, "Device", "suite", test, "Value");
```

GetTimeOut()

GetTimeOut(clientId)

Returns the current timeout period set by the client.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)

Return value

String value that indicates the status of the operation upon completion. The default return value is 1800000. Returnval as string.

NOTE. *The Fail condition for PI commands occurs in any of the following cases:*

The server is LOCKED and the message displayed is "Server is locked by another client".

The session is UNLOCKED and the message displayed is "Lock Session to execute the command".

The server is NOTFOUND and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Example

```
m_Client = new Client() //m_Client is a reference to the Client class in the Client DLL.
```

```
returnval as string
```

```
returnval=m_Client.GetTimeOut()
```

Comments

Related command(s)

[SetTimeOut \(see page 106\)](#)

LockSession()

LockSession(clientId)

This command locks the server. The client has to call this command before running any of the remote automations. The server is locked by only one client.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is performing the remote function. clientId variable (see page 74)

Return value

Returns the status of the operation upon completion.

Example

```
if (locked)
    return "Session has already been locked!";
returnVal = remoteObject.LockSession(clientId);
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)
{
    locked = true;
    return "Session Locked...";
}
```

Comments

When the client tries to lock a server that is locked by another client, the client gets a message that the server is already locked and it has to wait until the server is unlocked.

If the client locks the server and is idle for a certain amount of time, then the server is automatically unlocked from that client.

Related command(s)

[UnlockSession \(see page 113\)](#)

QueryStatus()

QueryStatus(clientID, out status)

This command transfers Analyze panel status messages from the server to the client.

Parameters

Parameter	Type	Direction	Description
clientID	string	IN	Identifier of the client that is connected to the server clientID variable (see page 74)
status	string array	OUT	The list of status messages generated during the run

NOTE. The Fail condition for PI commands occurs in any of the following cases:

The server is **LOCKED** and the message displayed is "Server is locked by another client".

The session is **UNLOCKED** and the message displayed is "Lock Session to execute the command".

The server is **NOTFOUND** and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Return value

String value that indicates the status of the operation upon completion. On success the return value is "Transferred...".

Example

```
returnVal=m_Client.QueryStatus(clientID, out statusMessages)
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)
    return "Status updated..."
else
    return CommandFailed(returnVal)
```

Related command(s)

[ApplicationStatus \(see page 73\)](#)

[GetCurrentStateInfo \(see page 80\)](#)

[SendResponse \(see page 93\)](#)

RecallSession()

RecallSession(clientId,sessionName)

Recalls a saved session. The name of the session is provided by the client.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is performing the remote function. clientId variable (see page 74)
sessionName	string	IN	The name of the session being recalled.

Return value

String that indicates the status of the operation upon completion.

Example

```
returnVal = remoteObject.RecallSession(clientId,sessionName);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
    return "Session Recalled...";  
else  
    return CommandFailed(returnVal);
```

Comments

The name parameter cannot be empty. If it is empty, the client is prompted to provide a valid name.

Related command(s)

[SaveSession \(see page 91\)](#)

[SaveSessionAs \(see page 92\)](#)

Run()

Run(clientId)

Runs the setup. Once the server is set up and configured, it can be run remotely using this function.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)

Return value

String that returns the status of the operation after completion.

Example

```
returnVal = remoteObject.Run(clientId);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
    return "Run started...";  
else  
    return CommandFailed(returnVal);
```

Comments

When the run is performed the status of the run is updated periodically using a timer.

SaveSession()

SaveSession(clientId,sessionName)

Saves the current session. The name of the session is provided by the client.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
sessionName	string	IN	The name of the session being saved.

Return value

String that indicates the status of the operation upon completion.

Example

```
returnVal = remoteObject.SaveSession(clientId,sessionName);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
    return "Session Saved...";  
else  
    return CommandFailed(returnVal);
```

Comments

The name parameter cannot be empty. If it is empty, the client is prompted to provide a valid name.

Once the session is saved under 'name,' you cannot use this command to save the session with a different name. Use SaveSessionAs to save the session to a new name.

Related command(s)

[RecallSession \(see page 89\)](#)

[SaveSessionAs \(see page 92\)](#)

SaveSessionAs()

SaveSessionAs(clientId,sessionName)

Saves the current session in a different name every time this command is called. The name of the session is provided by the client.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
sessionName	string	IN	The name of the session being saved.

Return value

String that indicates the status of the operation upon completion.

Example

```
returnVal = remoteObject.SaveSessionAs(clientId,sessionName);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
    return "Session saved...";  
else  
    return CommandFailed(returnVal);
```

Comments

The same session is saved under different names using this command. The name parameter cannot be empty. If it is empty, the client is prompted to provide a valid name.

Related command(s)

[RecallSession \(see page 89\)](#)

[SaveSession \(see page 91\)](#)

SendResponse()

SendResponse(clientID, WaitingMsbBxCaption, WaitingMsbBxMessage, WaitingMsbBxButtontexts)

After receiving the additional information using the command GetCurrentStateInfo(), the client can decide which response to send and then send the response to the application using this function. The response should be one of the strings that was received earlier as a string array in the GetCurrentStateInfo function. The `_caption` and `_message` should match the information received earlier in the GetCurrentStateInfo function.

NOTE. *This command is used when the application is running and is in the wait or error state.*

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
WaitingMsbBxCaption	string	OUT	The wait state or error state message sent to you
WaitingMsbBxMessage	string	OUT	The wait state/error state message sent to you
WaitingMsbBxButtontexts	string array	OUT	An array of strings containing the possible response types that you can send

NOTE. *The Fail condition for PI commands occurs in any of the following cases:*

The server is LOCKED and the message displayed is "Server is locked by another client".

The session is UNLOCKED and the message displayed is "Lock Session to execute the command".

The server is NOTFOUND and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Return value

This command does not return any value.

Example

```
m_Client = new Client() //m_Client is a reference to the Client class in the Client DLL
```

```
mClient.SendResponse(clientID, out WaitingMsbBxCaption, out WaitingMsbBxMessage, out  
WaitingMsbBxButtonTexts)
```

Related command(s)[ApplicationStatus \(see page 73\)](#)[GetCurrentStateInfo \(see page 80\)](#)[QueryStatus \(see page 88\)](#)

SelectDevice()

SelectDevice(clientId, device, true)

This command selects the DUT type (Host or Device).

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
device	string	IN	Specifies the DUT type (CEI-28G VSR)

Return value

String value that indicates the status of the operation upon completion.

Example

```
SelectDevice(clientId,"CEI-28G VSR")
```

SelectSuite()

SelectSuite(clientId, device, suite, true)

This command selects one of the two suites: "Host to Module" or "Module to Host."

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
device	string	IN	Specifies the DUT type (CEI-28G VSR)
suite	string	IN	string with device connection type. Valid values are Host to Module and Module to Host .

Return value

String value that indicates the status of the operation upon completion.

Example

```
SelectSuite(clientId,"CEI-28G VSR","Host to Module",true);
```

```
SelectSuite(clientId,"CEI-28G VSR","Module to Host",true);
```

SelectTest()

SelectTest(clientId, device, suite, test, true)

This command selects a test.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
device	string	IN	Specifies the DUT type (CEI-28G VSR).
suite	string	IN	string with device connection type. Valid values are Host to Module and Module to Host
test	string	IN	Name of the CEI-VSR test.

Return value

String value that indicates the status of the operation upon completion.

Example

```
SelectTest(clientId, device, suite, "Differential Voltage Pk-Pk", true);
```


SetDutId()

SetDutId(clientID,newDutId)

This command changes the DUT ID of the setup. The client must provide a valid DUT ID.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
newDutId	string	IN	The new DUT ID of the setup.

Return value

String that gives the status of the operation after it was performed.

Return value is “DUT Id Changed” on success.

Example

```
m_Client = new Client() //m_Client is a reference to the Client class in the Client DLL.
```

```
returnval as string
```

```
return=m_Client.SetDutId(clientID,desiredDutId)
```

Comments

Related command(s)

[GetDutId \(see page 82\)](#)

SetAcquireParameter()

SetAcquireParameter(clientId, device, suite, testName, paramString)

This command sets the acquire parameter and its value based on the "paramString" argument values as listed. TekExpress programmatic interface SetAcquireParameter ()

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
device	string	IN	Specifies the DUT type (CEI-28G VSR).
suite	string	IN	Valid values are Host to Module and Module to Host .
test	string	IN	Specifies the name of the test for which to set the value for acquire parameter.
parameterString	string	IN	Specifies the control to set. See the following links for argument values and examples for this field.

Return value

String value that indicates the status of the operation upon completion.

paramString argument values

Use the following links to see the paramString values associated with specific application settings.

Set Pattern Type ([see page 98](#))

Set Record Length Value ([see page 99](#))

Set Pattern Type

Use this paramString value to set the pattern type for Transition time – 20/80% test. This is the same as selecting the Pattern Type control on the Configuration > Measurements > Transition Time – 20/80% tab.

The value in bold font is the default value.

Values:

For test Transition Time – 20/80%.

PRBS9\$AcquisitionIncluded\$True

8180\$AcquisitionIncluded\$False

PRBS9\$AcquisitionIncluded\$False

8180\$AcquisitionIncluded\$True

Example

```
SetAcquireParameter(clientId, "CEI-28G VSR", "Host To Module", "Transition time – 20/80%", "PRBS9$AcquisitionIncluded$False");
```

```
SetAcquireParameter(clientId, "CEI-28G VSR", "Host To Module", "Transition time – 20/80%", "8180$AcquisitionIncluded$True");
```

Set Record Length Value

Use this paramString value to set the record length Value. This is the same as selecting the Record Length control on the Configuration > Measurements > Selected test in tree view tab.

The value in bold font is the default value.

Values:

For test Common Mode Noise.

- RMS Common Mode Noise PRBS9\$Record Length\$4000
- Common Mode Noise PRBS9\$Record Length\$8000
- **Common Mode Noise PRBS9\$Record Length\$16000**

For test Differential Voltage Pk-Pk.

- PRBS9\$Record Length\$4000
- PRBS9\$Record Length\$8000
- **PRBS9\$Record Length\$16000**

Example

```
SetAcquireParameter(clientId, "CEI-28G VSR", "Host To Module", "Common Mode Noise RMS", "Common Mode Noise PRBS9$Record Length$4000");
```

```
SetAcquireParameter(clientId, "CEI-28G VSR", "Host To Module", "Differential Voltage Pk-Pk", "PRBS9$Record Length$4000");
```

SetGeneralParameter()

SetGeneralParameter(clientId, device, suite, "", paramString)

This command sets the general parameter and its value based on the "paramString" argument values as listed.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
device	string	IN	Specifies the DUT type (CEI-28G VSR).
suite	string	IN	Valid values are Host To Module and Module to Host .
test	string	IN	Specifies the name of the test for which to obtain the pass or fail status or a test result value. Enter a null value for this field ("").
parameterString	string	IN	Specifies the control to set. See the following links for argument values and examples for this field.

Return value

String value that indicates the status of the operation upon completion.

paramString argument values

Use the following links to see the paramString values associated with specific application settings.

Select Channel for Data– Signal ([see page 100](#))

Select Channel for Data+ Signal ([see page 101](#))

Select Data Rate ([see page 101](#))

Set Bandwidth of scope ([see page 102](#))

Set BER Value ([see page 102](#))

Set CRU Loop Bandwidth Custom Mode value ([see page 103](#))

Set CRU Loop Bandwidth Mode ([see page 103](#))

Set CRU Peaking Value ([see page 104](#))

Set CTLE Filter file ([see page 106](#))

Select Channel for Data– Signal

Use this paramString value to select the channel where Data– signal is connected used by the application. This is the same as using the **Lane Channel Selection Table** controls on the **Acquisition** tab.

The value in bold font is the default value.

Values:

Lane0 Connected to:Data –:Single Ended\$<Channel><Channel> corresponds to one of the following values CH1,CH2,CH3,CH4,CH5,CH6,CH7,CH8

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "Lane0 Connected to:Data  
+:Single Ended$CH1")
```

Select Channel for Data+ Signal

Use this paramString value to select the channel where Data+ signal is connected used by the application. This is the same as using the **Lane Channel Selection Table** controls on the **Acquisition** tab.

The value in bold font is the default value.

Values:

Lane0 Connected to:Data +:Single Ended\$<Channel><Channel> corresponds to one of the following values CH1,CH2,CH3,CH4,CH5,CH6,CH7,CH8

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "Lane0 Connected to:Data  
+:Single Ended$CH1")
```

Select Data Rate

Use this paramString value to set the Data Rate used by the application. This is the same as selecting the Data Rate control on the DUT tab.

The value in bold font is the default value.

Values:

- **Data Rate\$25.781**
- Data Rate\$27.952
- Data Rate\$28.050

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "Data Rate$27.952");  
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "Version$Tx Pins – Near End");
```

Set Bandwidth of oscilloscope

Use this paramString value to set the oscilloscope bandwidth. This is the same as selecting the Other Settings>**Bandwidth** control on the **Configuration** > **Global Settings** tab.

The value in bold font is the default value.

Values:

- **BandWidth\$40**
- BandWidth\$50

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "BandWidth$50");
```

Set BER Value

Use this paramString value to set the BER Value. This is the same as selecting the BER control on the Configuration > Global Settings tab.

The value in bold font is the default value.

Values:

BER\$1E-15

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "BER$1E-15");
```

Set CRU Loop Bandwidth Custom Mode value

Use this paramString value to set the CRU Loop Bandwidth Mode. This is the same as selecting the **CRU Loop Bandwidth Custom Mode value** control on the **Configuration > Global Settings** tab.

The value in bold font is the default value.

Values:

- **CRU Loop BandWidth Custom\$10**
The value should be between 10 and 12.
- CRU Loop BandWidth Mode\$Custom

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "CRU Loop BandWidth Custom$10.5");
```

Set CRU Loop Bandwidth Mode

Use this paramString value to set the CRU Loop Bandwidth Mode. This is the same as selecting the **CRU Loop Bandwidth** control on the **Configuration > Global Settings** tab.

The value in bold font is the default value.

Values:

- **CRU Loop BandWidth Mode\$DataRate / 2578**
- CRU Loop BandWidth Mode\$Custom

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "CRU Loop BandWidth Mode$Custom");
```

Set CRU Peaking Value

Use this paramString value to set the CRU Peaking Value. This is the same as selecting the Peaking Value control on the Configuration > Global Settings tab.

The value in bold font is the default value.

Values:

CRU Peaking Value\$0.1 The value should be between 0.1 to 1.0

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "CRU Peaking Value$0.2");
```


Set CTLE Filter file

Use this paramString value to set the CTLE filter file. This is the same as selecting the **CTLE Filter File** control on the **Configuration > Global Settings** tab.

The value in bold font is the default value.

Values:

For Host To Module.

- **CTLE FilterFile\$All**
- CTLE FilterFile \$ sdlaCtle_JNB_1dB.ft
- CTLE FilterFile \$ sdlaCtle_JNB_2dB.ft
- CTLE FilterFile \$ sdlaCtle_JNB_3dB.ft
- CTLE FilterFile \$ sdlaCtle_JNB_4dB.ft
- CTLE FilterFile \$ sdlaCtle_JNB_5dB.ft
- CTLE FilterFile \$ sdlaCtle_JNB_6dB.ft
- CTLE FilterFile \$ sdlaCtle_JNB_7dB.ft

For Module To Host.

- CTLE FilterFile \$ sdlaCtle_JNB_8dB.ft
- CTLE FilterFile\$All CTLE FilterFile \$ sdlaCtle_JNB_1dB.ft
- CTLE FilterFile \$ sdlaCtle_JNB_2dB.ft

Example

```
SetGeneralParameter(clientId, , "CEI-28G VSR", "Host To Module", "", "CTLE FilterFile $  
sdlaCtle_JNB_1dB.ft ");
```

```
SetGeneralParameter(clientId, , "CEI-28G VSR", "Module To Host", "", "CTLE FilterFile $  
sdlaCtle_JNB_1dB.ft ");
```

Set Sample Count Value

Use this paramString value to set the sample count value. This is the same as setting the **Sample Count Value** on the **Configuration > Global Settings** tab.

The value in bold font is the default value.

Values:

SAMPLE COUNT\$4

Example

```
SetGeneralParameter(clientId, "CEI-28G VSR", "Host To Module", "", "Sample Count$4");
```

SetTimeout()

SetTimeout(clientId, time)

Sets a timeout period specified by the client. After this timeout period expires, the server is unlocked automatically.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
time	string	IN	The time in seconds that refers to the timeout period

Return value

String value that indicates the status of the operation upon completion. On success the return value is "TimeOut Period Changed".

NOTE. *The Fail condition for PI commands occurs in any of the following cases:*

The server is LOCKED and the message displayed is "Server is locked by another client".

The session is UNLOCKED and the message displayed is "Lock Session to execute the command".

The server is NOTFOUND and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Example

m_Client = new Client() //m_Client is a reference to the Client class in the Client DLL.

returnval as string

returnval=m_Client.SetTimeOut(clientID, time)

Comments

setVerboseMode()

setVerboseMode(clientId, verboseMode)

This command sets the verbose mode to either true or false.

When the value is set to true, any message boxes that appear during the application are routed to the client machine that is controlling TekExpress.

When the value is set to false, all the message boxes are shown on the server machine.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
verboseMode	boolean	IN	Sets the verbose mode to be turned ON (true) or OFF (false).

Return value

String that gives the status of the operation after it was performed. Returnval as string

When Verbose mode is set to true, the return value is "Verbose mode turned on. All dialog boxes will be shown to client".

When Verbose mode is set to false, the return value is “Verbose mode turned off. All dialog boxes will be shown to server”.

NOTE. *The Fail condition for PI commands occurs in any of the following cases:*

The server is LOCKED and the message displayed is "Server is locked by another client".

The session is UNLOCKED and the message displayed is "Lock Session to execute the command".

The server is NOTFOUND and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Example

`m_Client = new Client()` //m_Client is a reference to the Client class in the Client DLL.

Turn on verbose mode:

`return=m_Client.SetVerboseMode(clientId, true)`

Turn off verbose mode:

`returnval=m_Client.SetVerboseMode(clientId, false)`

Status()

Status(clientId, out statusMessages)

This command gives the status of the run as messages. The status messages are generated once the run is started.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
statusMessage	string array	OUT	The list of status messages generated during run.

Return value

String that indicates the status of the operation upon completion.

Example

```
returnVal = remoteObject.QueryStatus(clientId, out statusMessages);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
    return "Status updated...";  
else  
    return CommandFailed(returnVal);
```

Comments

The status messages are updated periodically after the run begins. The status is an out parameter which is set when the server processes the request.

Related command(s)

[ApplicationStatus \(see page 73\)](#)

Stop()

Stop(clientId)

Stops the run operation.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)

Return value

String that indicates the status of the operation upon completion.

Example

```
returnVal = remoteObject.Stop(clientId);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
    return "Stopped...";  
else  
    return CommandFailed(returnVal);
```

Comments

When the session is stopped the client is prompted to stop the session and is stopped at the consent.

TransferImages()

TransferImages(clientId, filePath)

This command transfers all the images (screen shots) to the specified client and folder (directory) from the current run.

NOTE. Every time you click Start, a folder is created in the X: drive. Transfer the waveforms before clicking Start.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
filePath	string	IN	The location where the screen shots must be saved in the client. NOTE. If the client does not provide the location to save the report, the report is saved at C:\ProgramFiles.

NOTE. The Fail condition for PI commands occurs in any of the following cases:

The server is **LOCKED** and the message displayed is "Server is locked by another client".

The session is **UNLOCKED** and the message displayed is "Lock Session to execute the command".

The server is **NOTFOUND** and the message displayed is "Server not found...Disconnect!".

When none of these fail conditions occur, then the message displayed is "Failed...".

Return value

String value that indicates the status of the operation upon completion. Transfers all the images in the form of a string.

Example

```
TransferImages(clientId, "C:\Waveforms")
```

TransferReport()

TransferReport(clientId, filePath)

This command transfers the report generated after the run to the specified folder (directory). The report contains the summary of the run. The client has to provide the location where the report is to be saved at the client-end.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)
filePath	string	IN	Path to the target folder to which to transfer the report file. Enclose the path in quotes.

Return value

String that indicates the status of the operation upon completion.

Example

```
TransferReport(clientId, "C:\Report")
```

Comments

If the client does not provide the location to save the report, the report is saved at C:\ProgramFiles.

UnlockSession()

UnlockSession(clientId)

This command unlocks the server from the client. The client id of the client to be unlocked has to be provided.

Parameters

Parameter	Type	Direction	Description
clientId	string	IN	Identifier of the client that is connected to the server clientId variable (see page 74)

Return value

String that indicates the status of the operation upon completion.

Example

```
returnVal = remoteObject.UnlockSession(clientId);  
if ((OP_STATUS)returnVal == OP_STATUS.SUCCESS)  
{  
    locked = false;  
    return "Session UnLocked...";  
}
```

Comments

When the client is disconnected, it is automatically unlocked.

Related commands

[LockSession \(see page 88\)](#)

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