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RES Data Acquisition v1.0.0 User's Manual

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ABSTRACT

The following discussion contains a detailed description of how to interface and operate Radiation Effects Sciences (RES) Data Acquisition v1.0.0 software application. It describes the input required to run the application and actions to take for troubleshooting.

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ACRONYMS AND DEFINITIONS

Abbreviation	Definition
AC	Alternating Current
DC	Direct Current
FTP	File Transfer Protocol
GB	gigabyte
IP	Internet Protocol
IPv4	Internet Protocol Version 4
mV	Millivolts
OS	operating system
RES	Radiation Effects Sciences
RES DAQ v1.0.0	RES Data Acquisition v1.0.0
V	volts
VISA	Virtual Instrument Software Architecture
VPN	Virtual Private Network

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1. GENERAL INFORMATION

Information provided in this section explains in general terms the system and its intended purpose.

1.1. System Overview

Radiation Effects Sciences (RES) Data Acquisition v1.0.0 is a software application. The application controls instrumentation for Yokogawa DL850/E and Teledyne LeCroy HDO4104 oscilloscope instruments. The software allows the user to configure oscilloscope settings, start and stop data acquisition and save acquired data.

1.2. Points of Contact

Table 1-1 provides points of contact for *RES Data Acquisition v1.0.0* subject matter experts.

Table 1-1. Points of Contact

Organization	Office	Name	Phone
8841	6585/2108	Steven Adriel Ruiz	(505) 844-3288

1.3. Organization of the Manual

RES Data Acquisition v1.0.0 user's manual consists of four sections: General Information, System Summary, Getting Started, and Using the System.

1. The General Information section explains in general terms the system and its intended purpose.
2. The System Summary section provides a general overview of the system and outlines the uses of the system hardware and software requirements, system configuration, user access levels, and contingencies.
3. The Getting Started section explains the steps to start using RES Data Acquisition v1.0.0. The section briefly presents details to run RES Data Acquisition v1.0.0.
4. The Using The System section provides a detailed description of additional system functions and troubleshooting.

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2. GENERAL INFORMATION

This section outlines the uses of the system hardware and software requirements, system configuration, user access levels, and contingencies.

2.1. System Configuration

RES Data Acquisition v1.0.0, hereafter referred to as *RES DAQ v1.0.0*, operates on laptop, personal, and workstation computers running *Windows 10 64-bit* operating system (OS) or greater. *RES DAQ v1.0.0* is not backwards compatible with operating systems less than *Windows 10 64-bit*. *RES DAQ v1.0.0* requires a 64-bit architecture computer with 2 Gigabytes (GB) of hard disk storage space at time of installation.

NOTE: The application is only available for Windows 10 operating systems. Teledyne instruments do not support Linux/Unix operating systems and cannot interface with such operating systems.

2.2. User Access Levels

The application is only available for *Windows 10* OS. Teledyne instruments do not support and cannot interface with Linux/Unix operating systems.

2.3. Contingencies

Third-party software must be installed prior to running *RES DAQ v1.0.0*. The first application is the National Instruments Virtual Instrument Software Architecture (VISA) driver allowing communication between the controller and the instrument. The second is FileZilla File Transfer Protocol (FTP) server. The FTP server allows the Yokogawa DL850/E to automatically save acquired data to the controller. *RES DAQ v1.0.0* will not execute properly without either application. Installation and setup for each application is found in Appendix B and Appendix C.

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3. GETTING STARTED

This section explains the steps to start using *RES DAQ v1.0.0* and briefly presents details to run the application.

3.1. Application Installation

RES DAQ v1.0.0 must be installed before continuing. Installation and setup for *RES DAQ v1.0.0* is found in Appendix A.

3.2. Starting Application

The user can start the application by double clicking the application executable from the installation folder or desktop shortcut icon. *RES DAQ v1.0.0* will display the splash screen as shown in Figure 3-1. Allow up to 15-30 seconds to initialize.

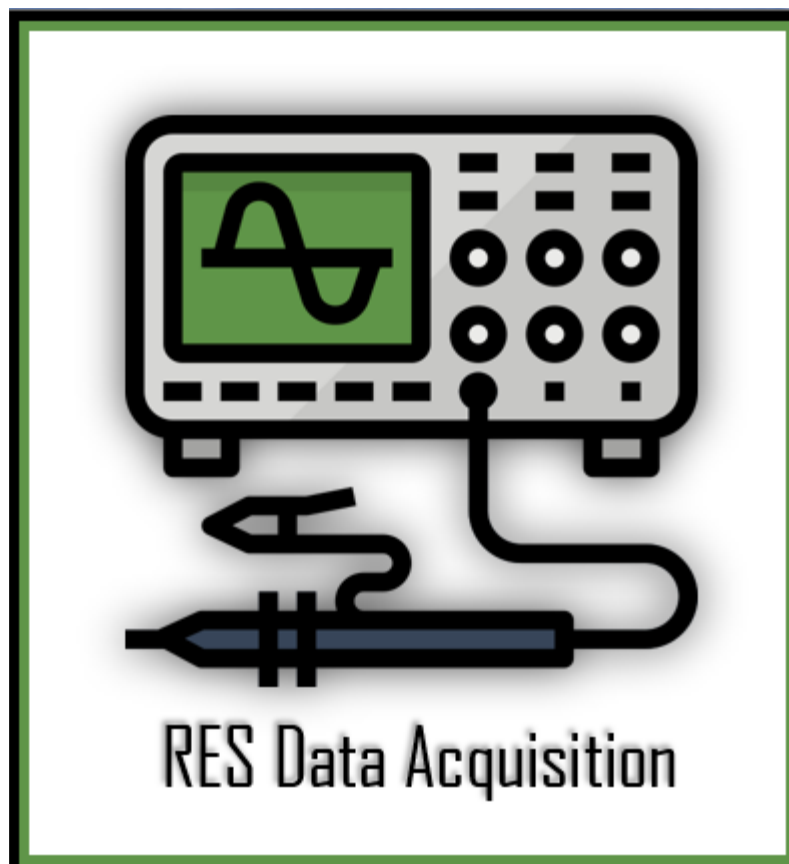


Figure 3-1. RES DAQ Splash Screen

3.2.1. Main User Interface Navigation

After initialization, the *RES DAQ v1.0.0* main menu will appear as shown in Figure 3-2.

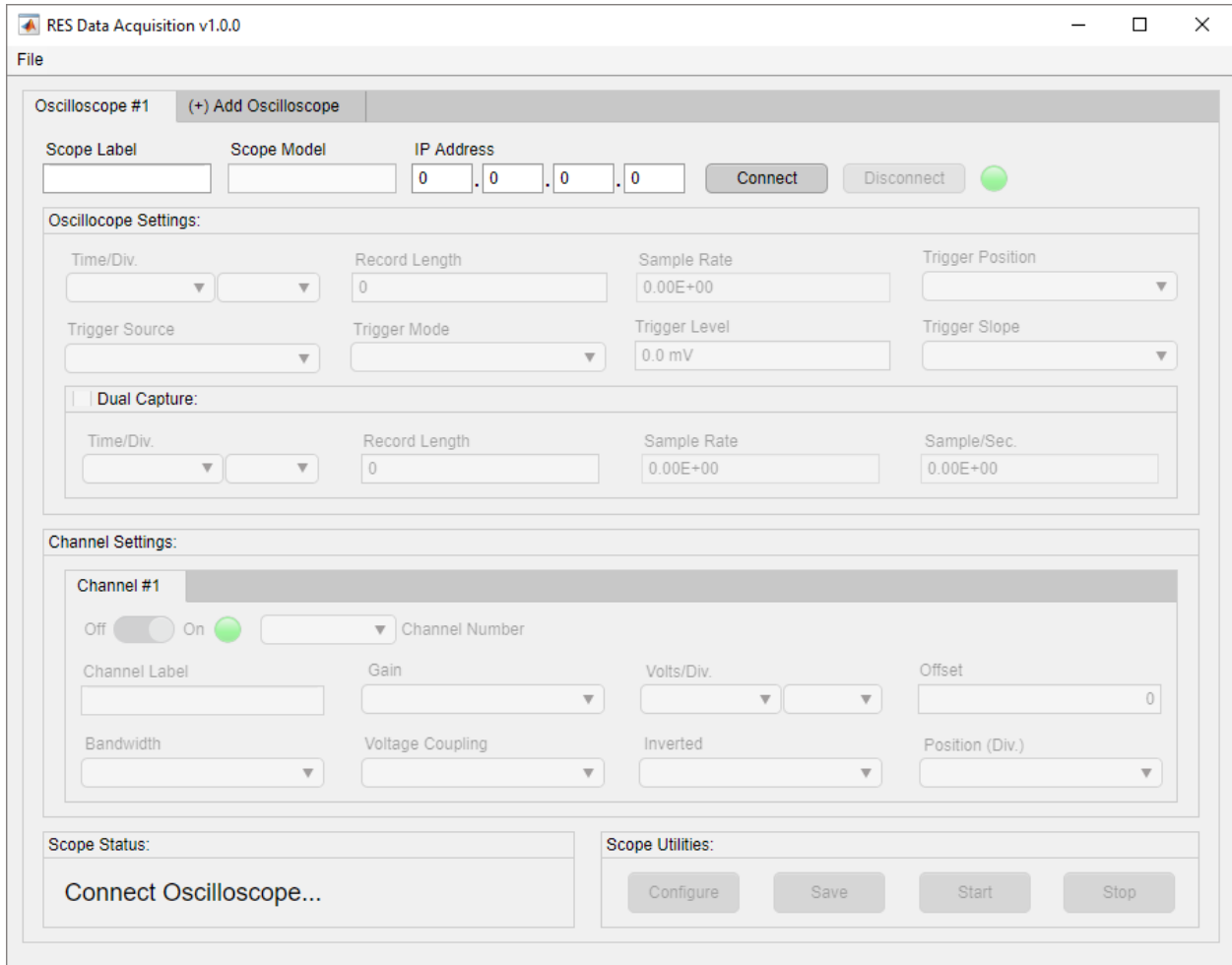


Figure 3-2. Main User Interface

3.2.2. Add Oscilloscope

The Add Oscilloscope tab gives the user the ability to add multiple oscilloscope tabs to a single instance of *RES DAQ v1.0.0*. Clicking the Add Oscilloscope tab will create an additional oscilloscope tab and will appear on the user interface as shown in Figure 3-3.

NOTE: The label for each additional tab is automatically numbered and cannot be renamed.

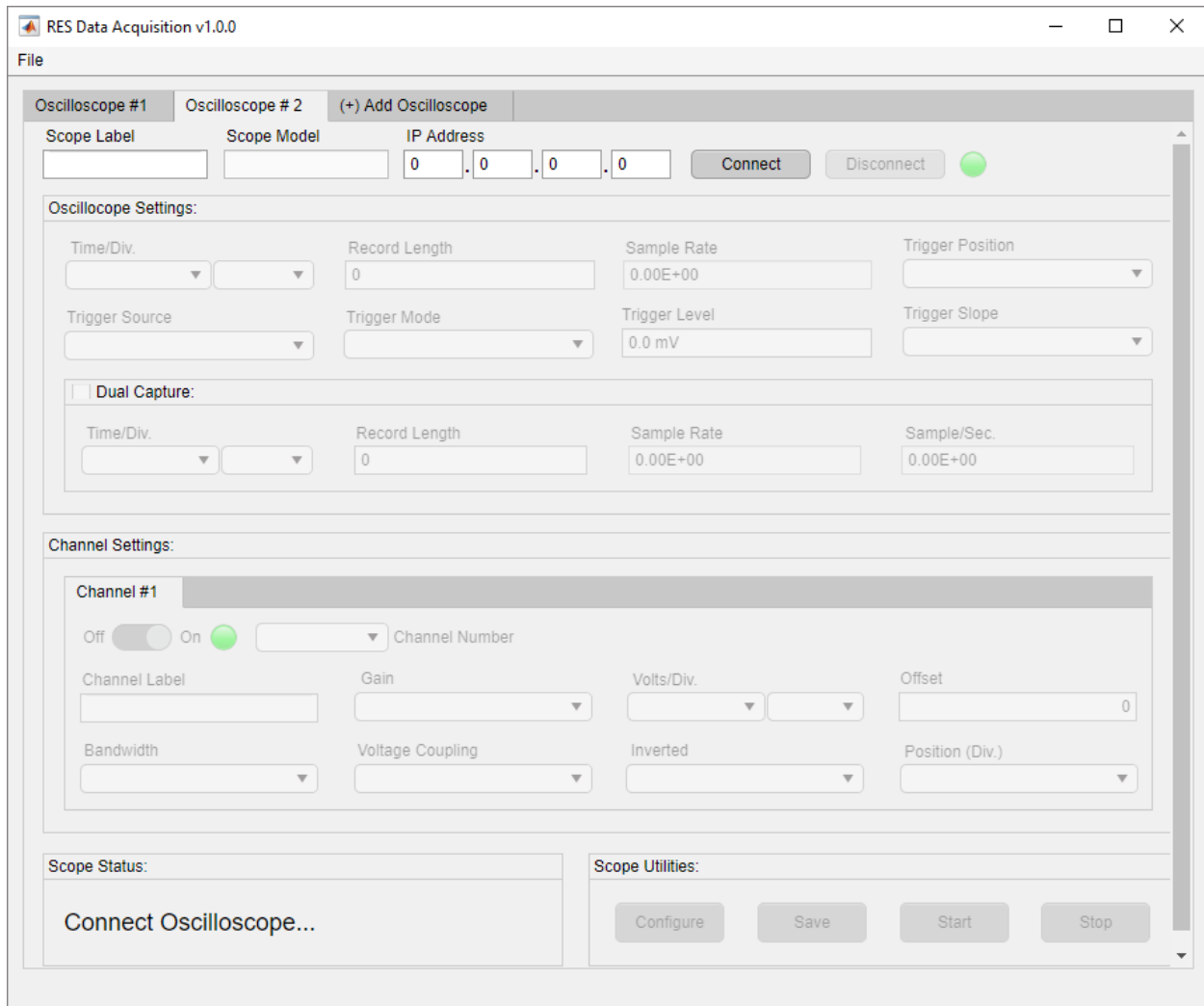


Figure 3-3. Add Oscilloscope Tab

3.2.3. Instrument Connection

This section describes the minimum input required to establish an instrument connection.

3.2.3.1. Oscilloscope Label

The Scope Label identifies the oscilloscope. Although it is not required to establish a connection, it is recommended the user enter a label. The label can be any combination of ASCII characters and should be limited to twenty characters in length for file naming purposes. The user must click in the Scope Label field and enter an oscilloscope label as shown in Figure 3-4.

NOTE: The oscilloscope label can be entered at any step of the configuration.

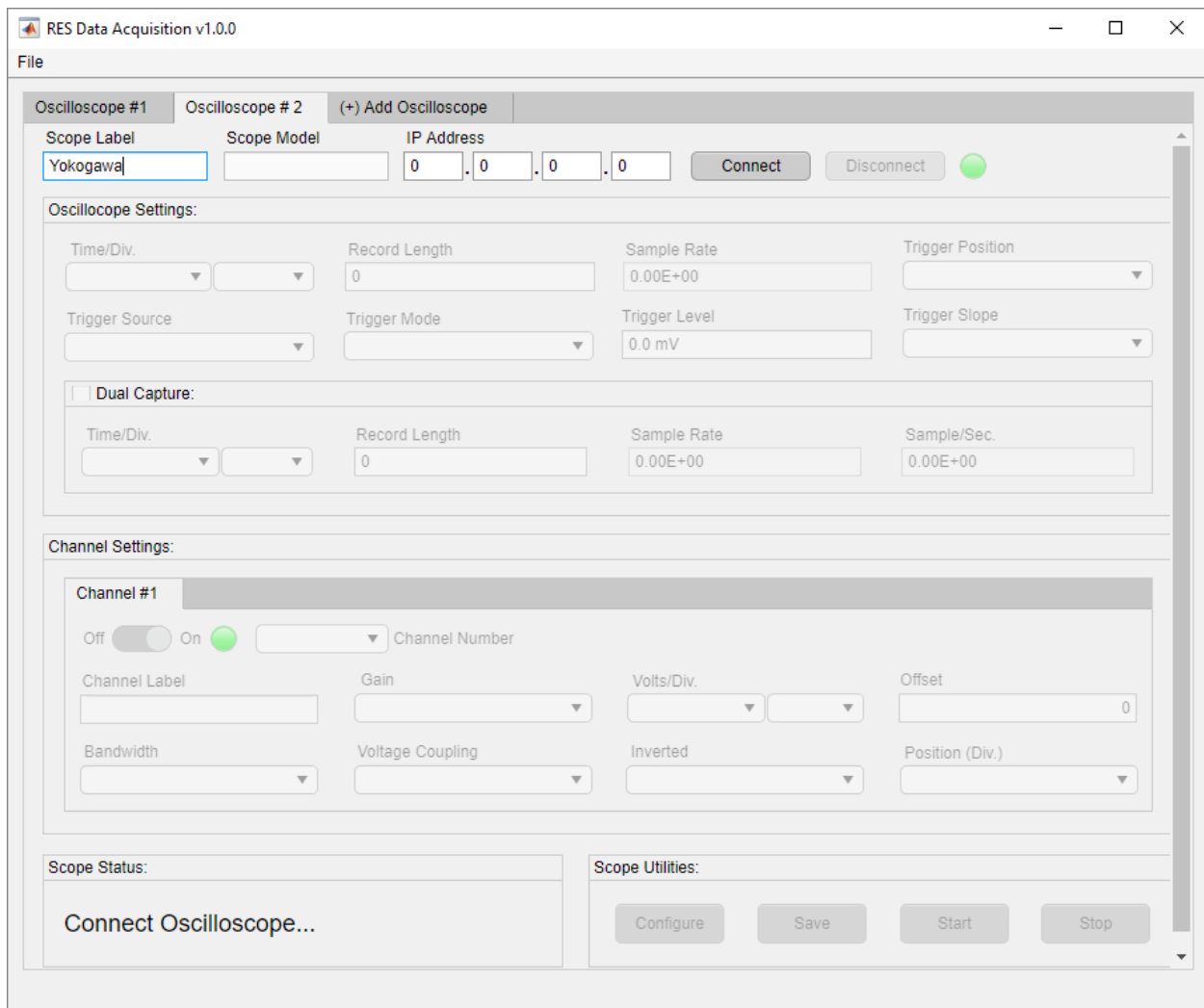


Figure 3-4. Input Scope Label

3.2.3.2. Oscilloscope Model

The Scope Model field displays the oscilloscope model when an instrument connection is made as shown in Figure 3-8.

NOTE: The oscilloscope model field is for display purposes only and cannot be adjusted.

3.2.3.3. Internet Protocol (IP) Address

The Internet Protocol (IP) address is the address of the target instrument. The IP address follows the standard Internet Protocol Version 4 (IPv4) format with each octet in the range of 0 to 255. *RES DAQ v1.0.0* will restrict the user from entering nonnumerical characters as shown in Figure 3-5.

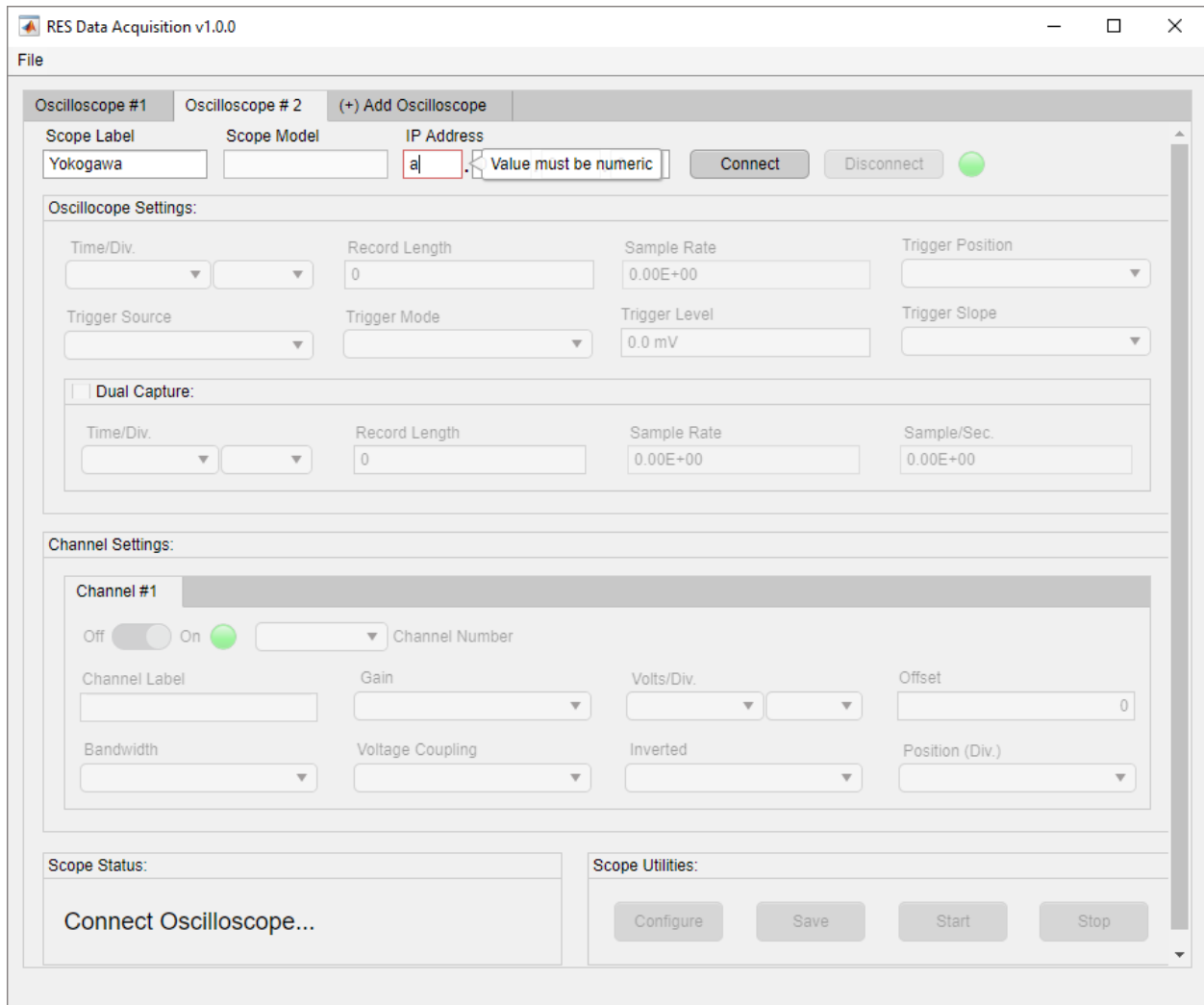


Figure 3-5. IP Address Nonnumerical Restriction

RES DAQ v1.0.0 will restrict all numerical values outside the octet range as seen in Figure 3-6.

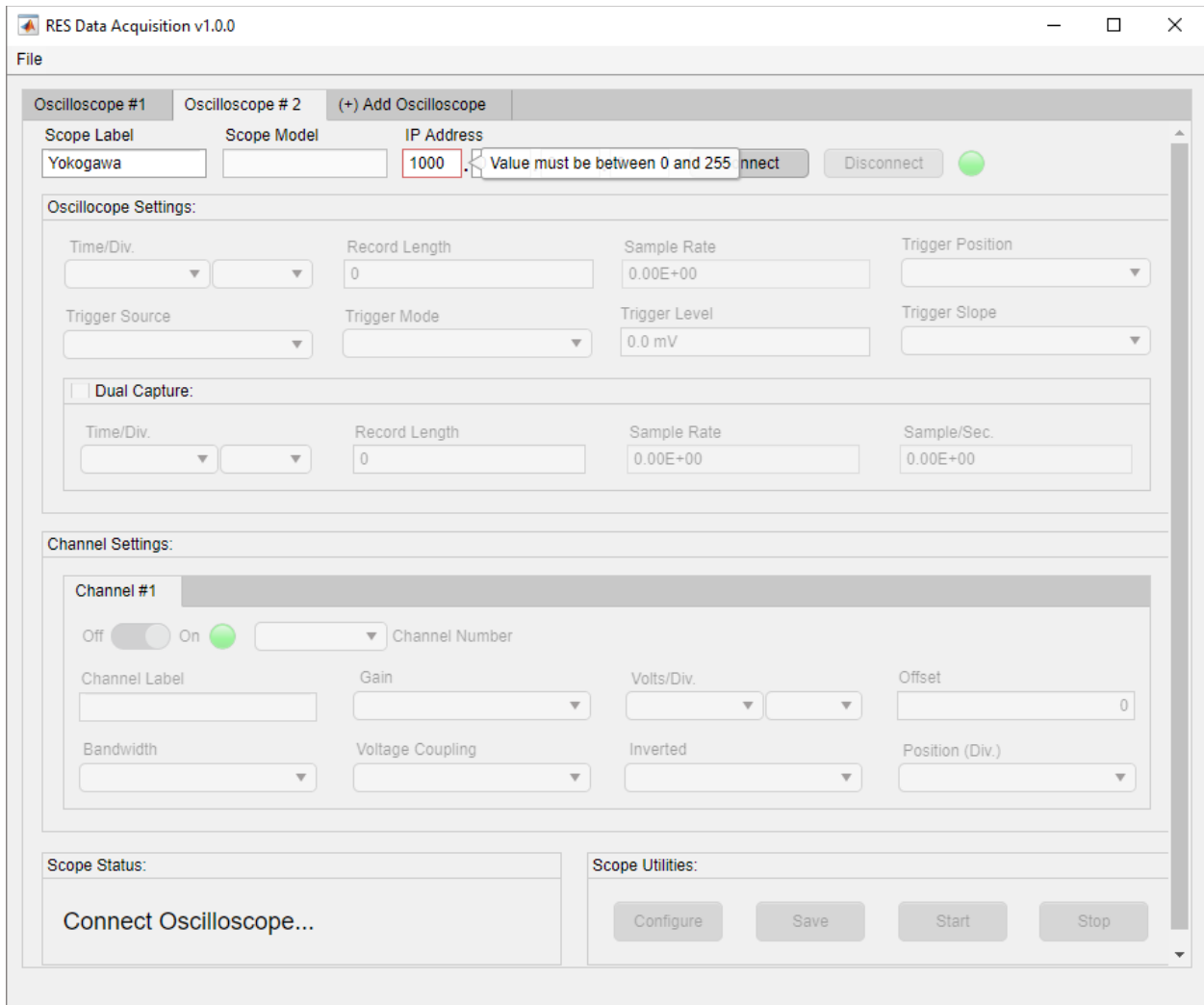


Figure 3-6. IP Address Octet Range Restriction

The user must enter an IP address following the RES *DAQ v1.0.0* restrictions. As seen in Figure 3-7, restriction flags will not appear if the IP address is valid.

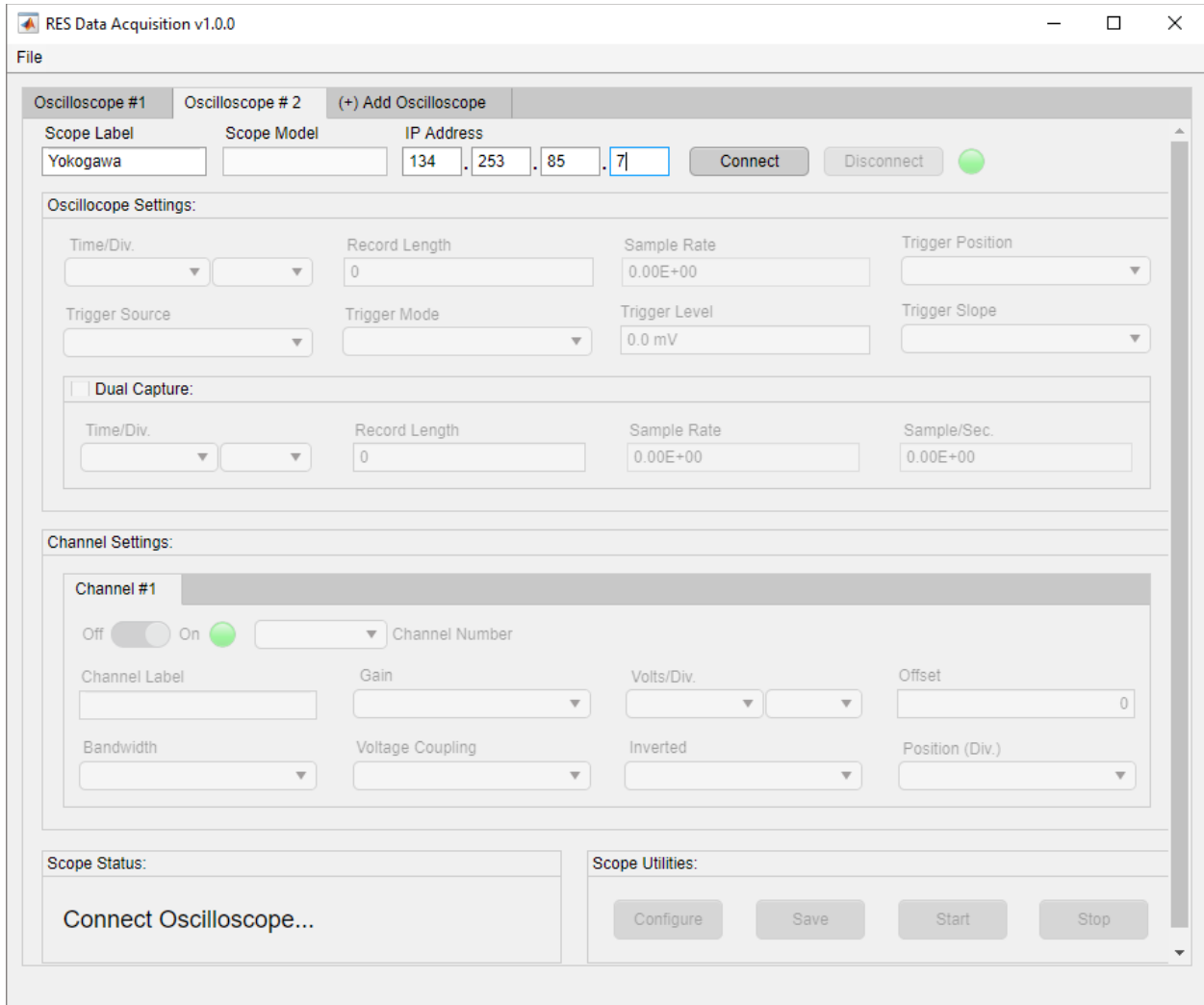


Figure 3-7. Valid IP Address

3.2.3.4. Connect to Instrument

After entering an oscilloscope label and instrument IP address, the user must click the Connect button (Figure 3-7). This action will attempt to establish a connection with the instrument at the defined IP address. When a successful connection is established, the connection lamp will illuminate and a connected status will appear in the Scope Status panel (Figure 3-8). Users can troubleshoot connections errors as seen in section 5.1.

NOTE: Allow up to 10 seconds to establish a connection and to enable the user interface.

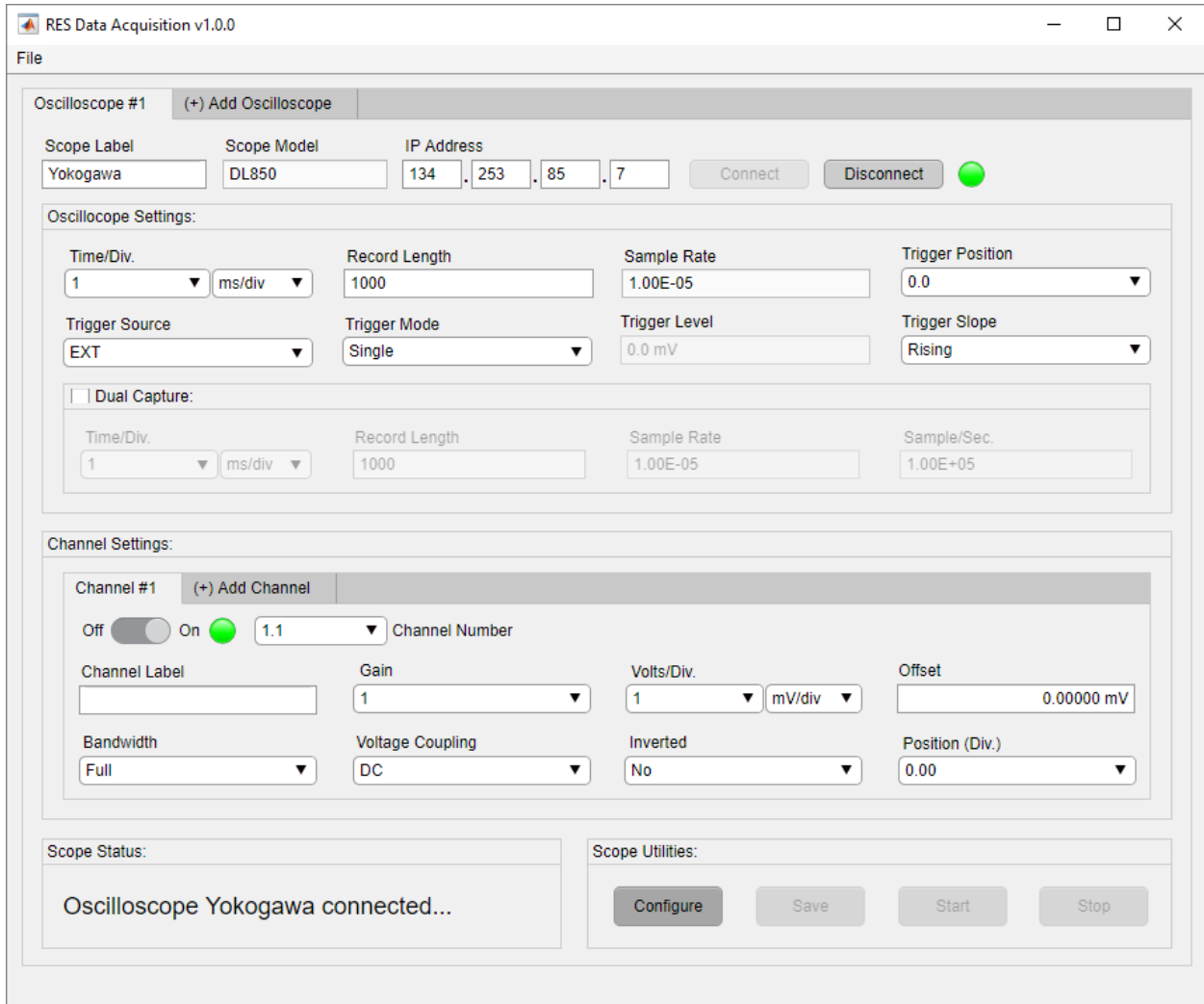


Figure 3-8. Successful Instrument Connection

3.2.4. Setting Oscilloscope Settings

When a connection is established, *RES DAQ v1.0.0* will enable oscilloscope settings specific to the connected instrument and populate each scope setting field with default values as shown in Figure 3-9. The user is now able to configure the oscilloscope settings.

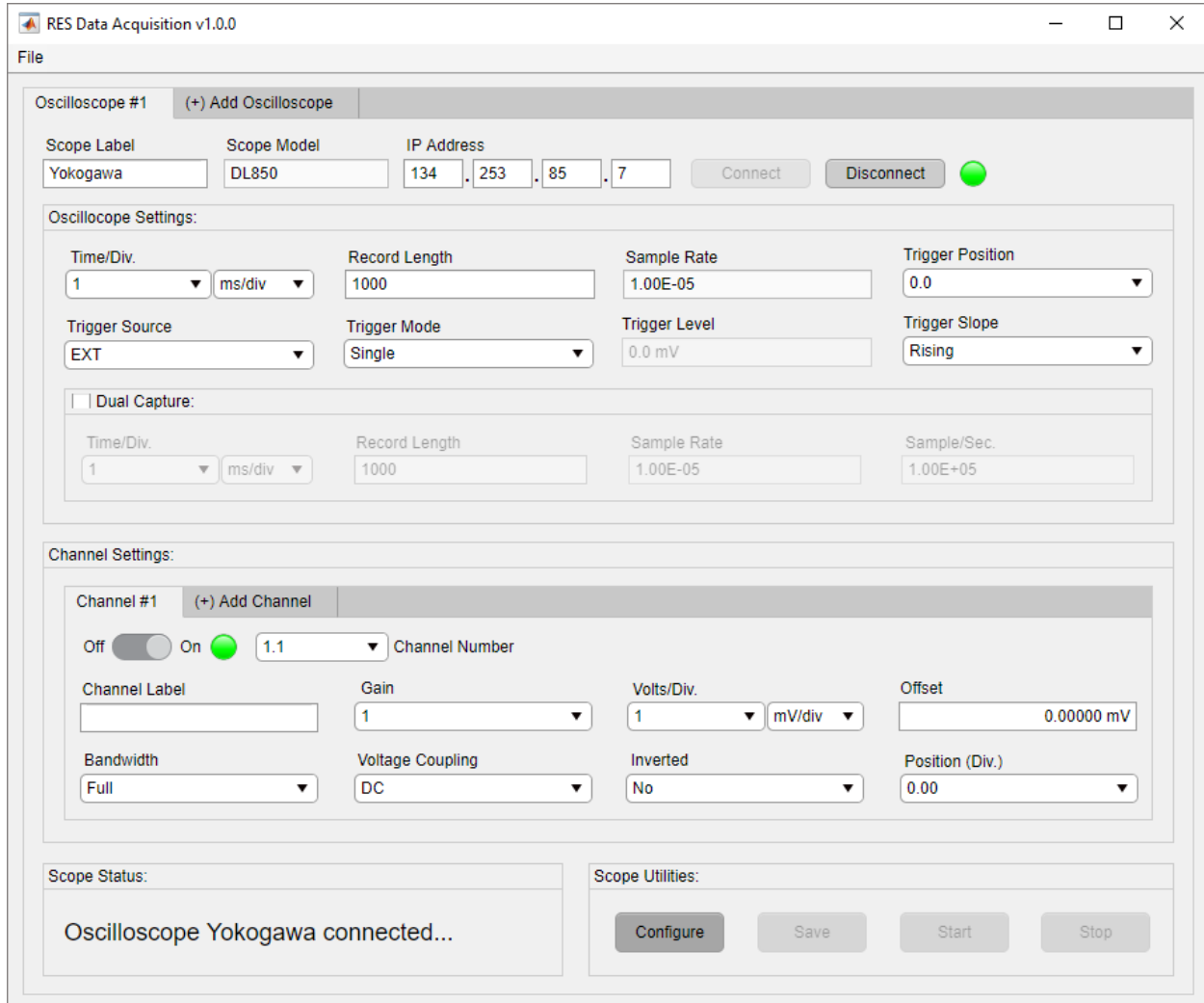


Figure 3-9. Oscilloscope Setting Default Values

3.2.4.1. Time Per Division

The Time Per Division setting is located in the Oscilloscope Settings panel. This setting controls the horizontal scale/time scale of the acquisition window. The Time Per Division field consists of two dropdown menus, one containing time values and the other containing division values. The number of options in the time dropdown will change based on the time division value selected as shown in Figure 3-10 and Figure 3-11. This is congruent with the Time Per Division setting adjusted on the oscilloscope itself.

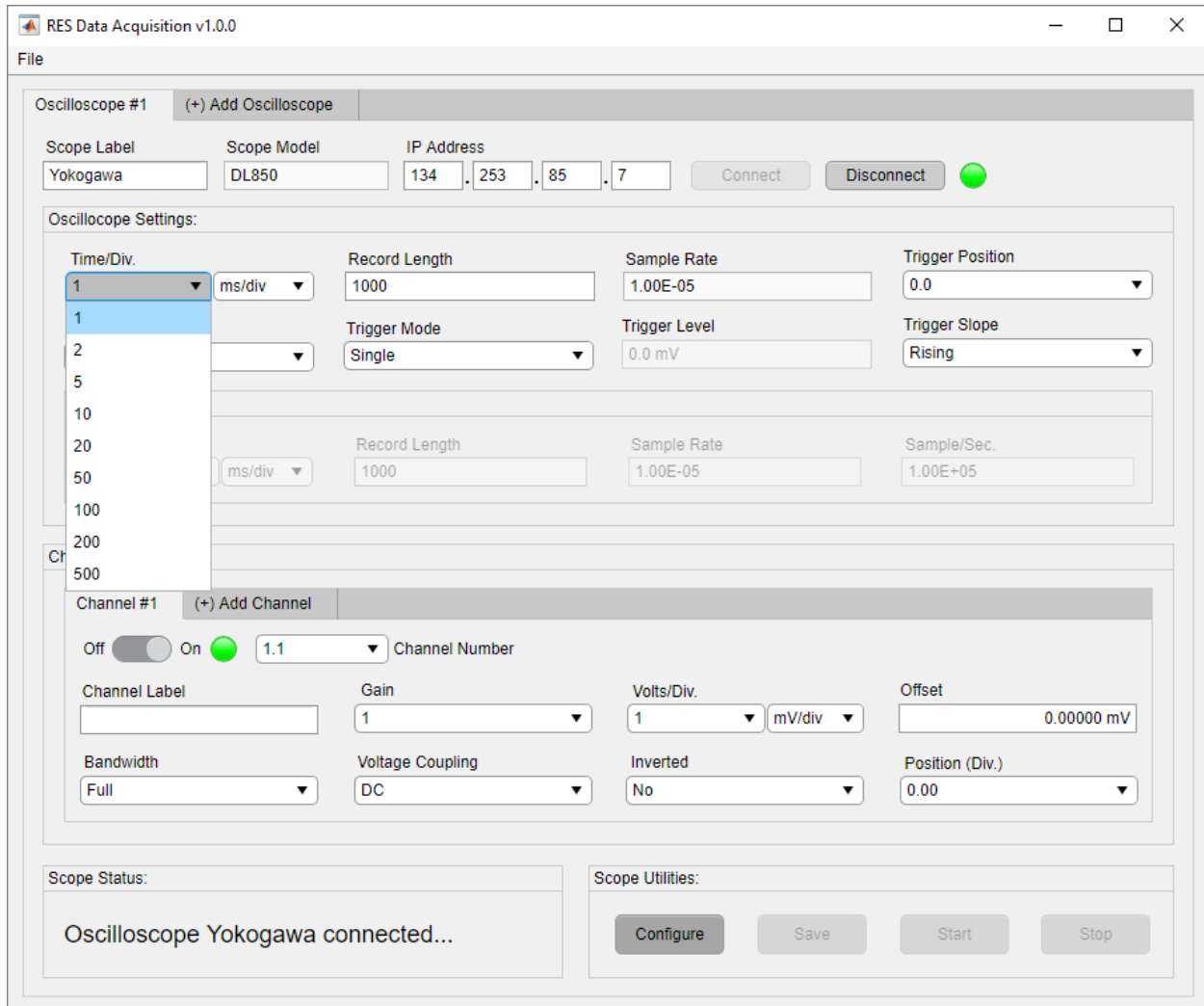


Figure 3-10. Time Values for Millisecond Per Division

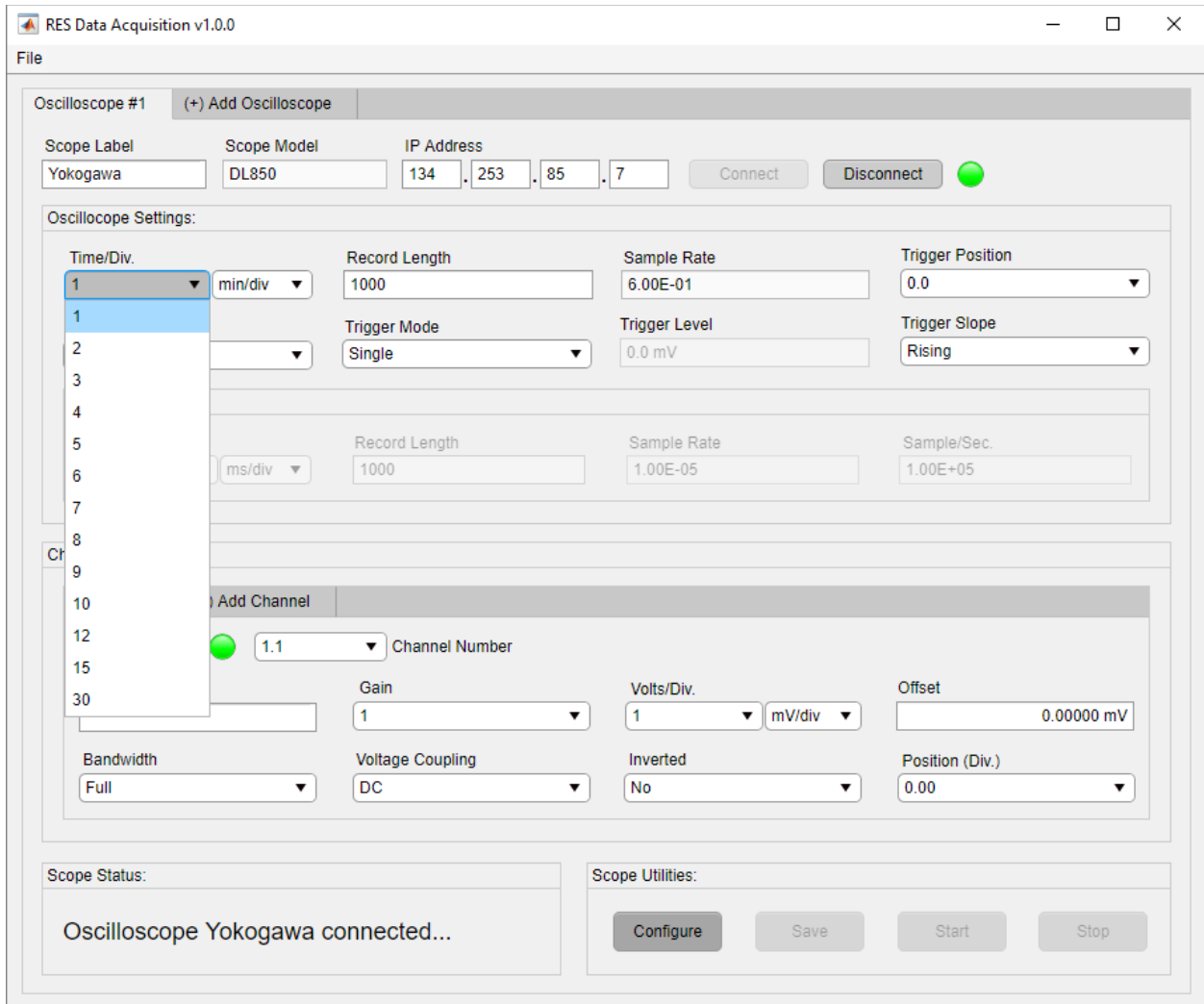


Figure 3-11. Time Values for Minute Per Division

As shown in Figure 3-12 and Figure 3-13, click the down arrow to select a value in the Time/Div. dropdown menus.

NOTE: The options for time and time division will differ based on oscilloscope model.

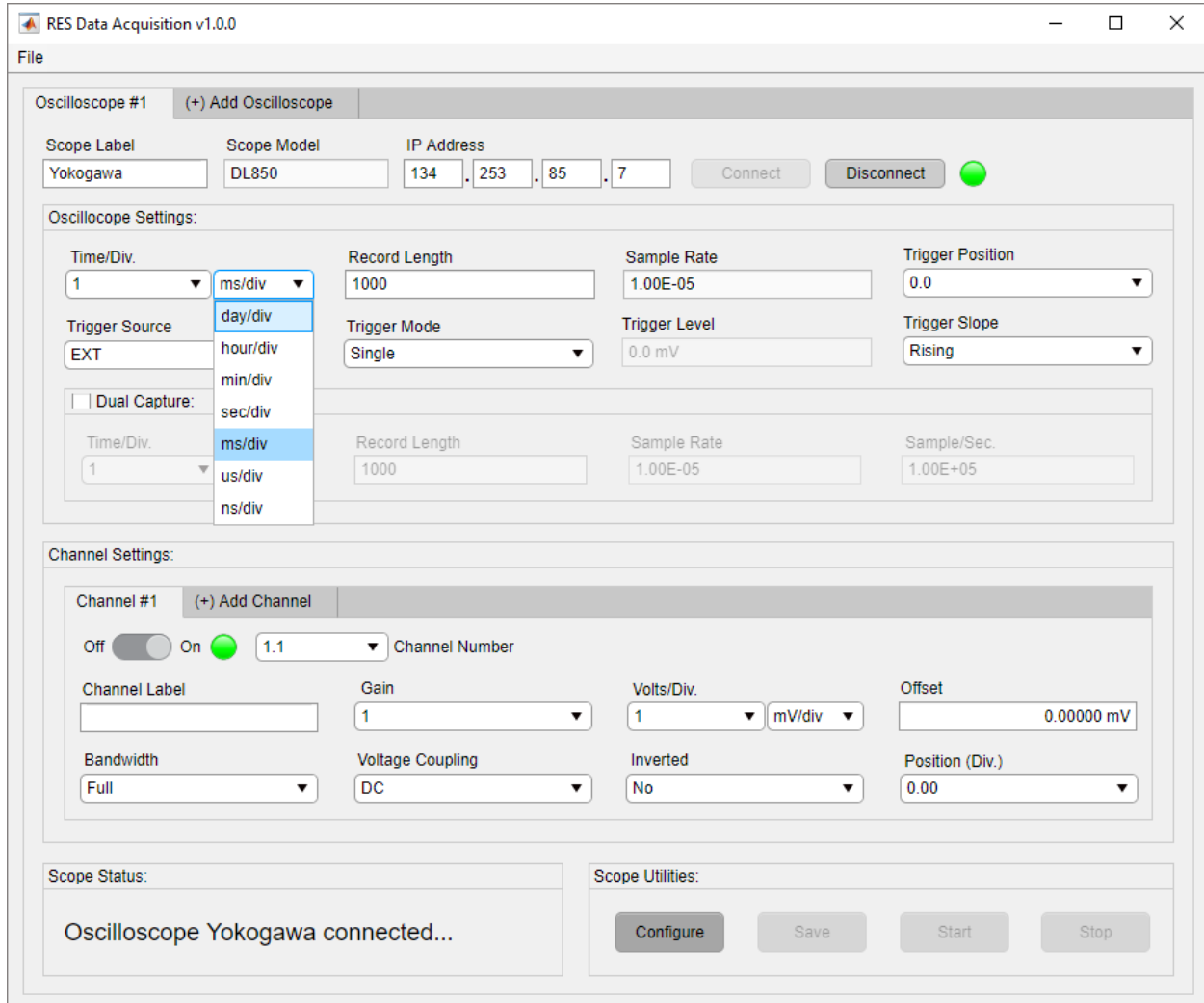


Figure 3-12. Select Time Division Value

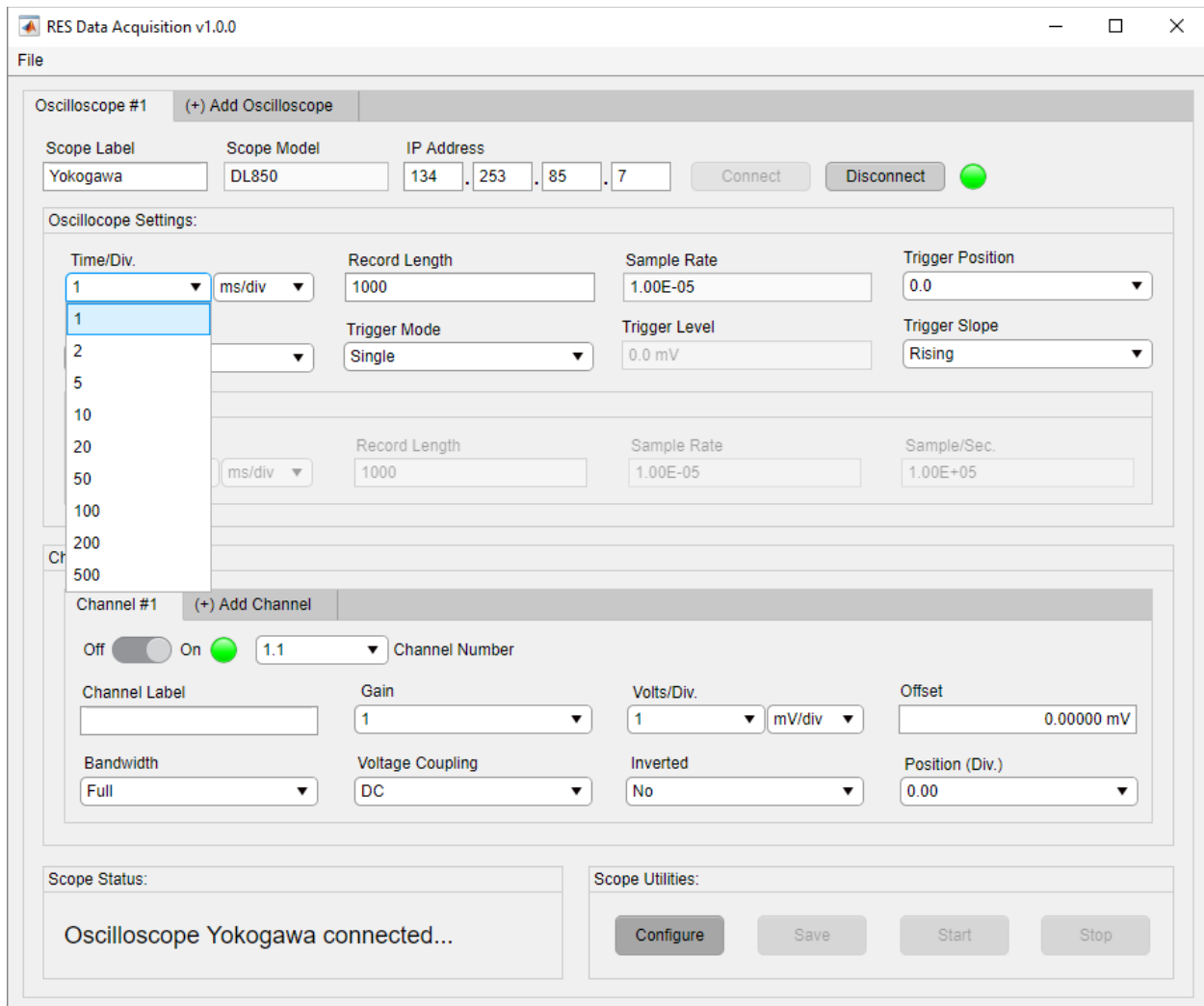


Figure 3-13. Select Time Value

3.2.4.2. Record Length

The Record Length is located in the Oscilloscope Settings panel. The Record Length is the number of samples to be recorded and is dependent on the time per division setting. *RES DAQ v1.0.0* will restrict the user entering any nonnumerical characters (Figure 3-14) and values outside the range of the recording length (Figure 3-15). The recording length must be entered as a whole number.

NOTE: The range for record length will differ based on oscilloscope model.

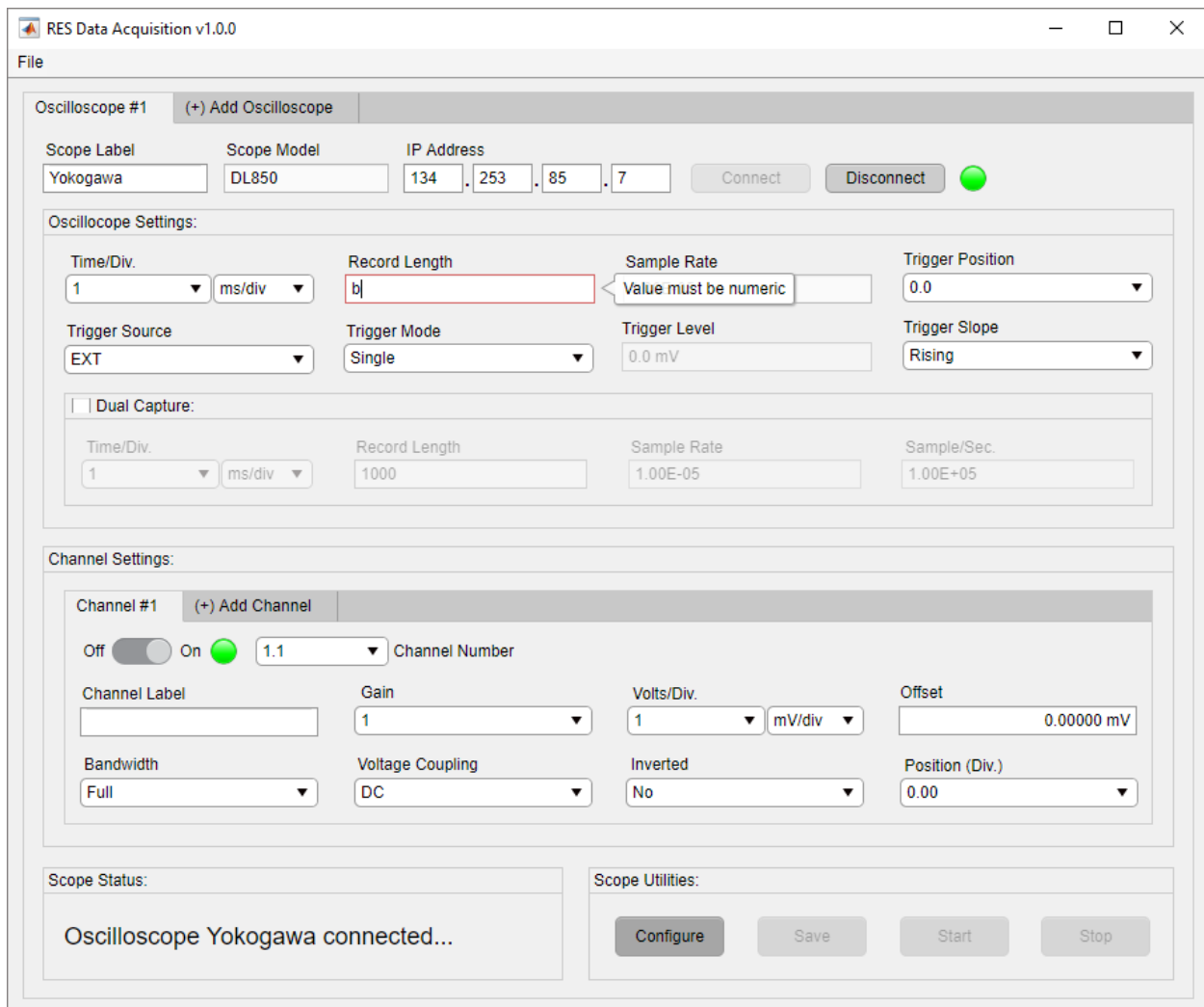


Figure 3-14. Record Length Nonnumerical Restriction

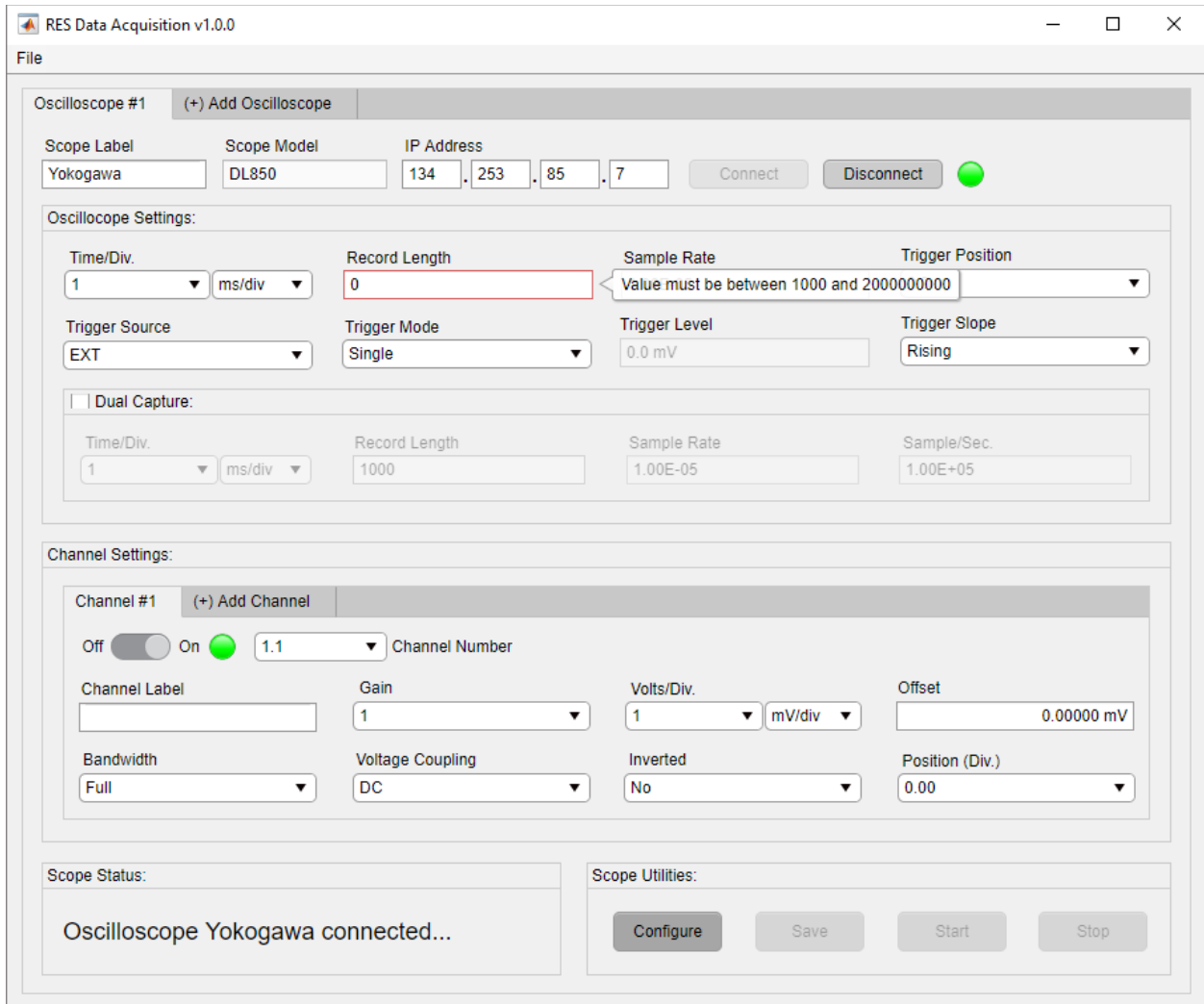


Figure 3-15. Record Length Range Restriction

Next, type a value abiding by the RES *DAQ v1.0.0* restrictions in the recording length field (Figure 3-16).

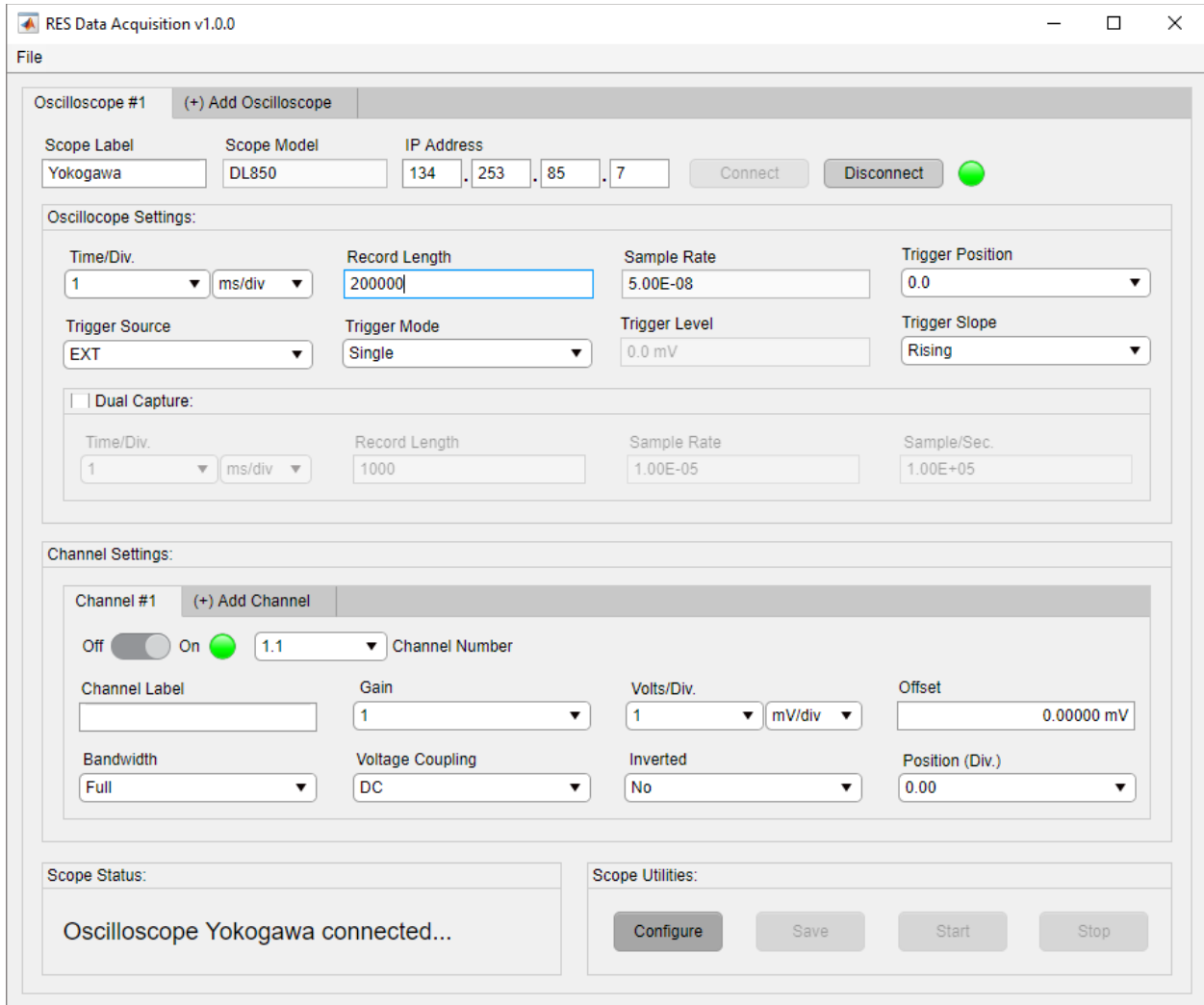


Figure 3-16. Input Record Length

3.2.4.3. Sample Rate

The Sample Rate is located in the Oscilloscope Settings panel. The Sample Rate field displays samples per second. The value displayed is updated when the time per division or recorded length settings are altered as shown in Figure 3-17 and Figure 3-18.

NOTE: The user cannot adjust this field; it is for display purposes only.

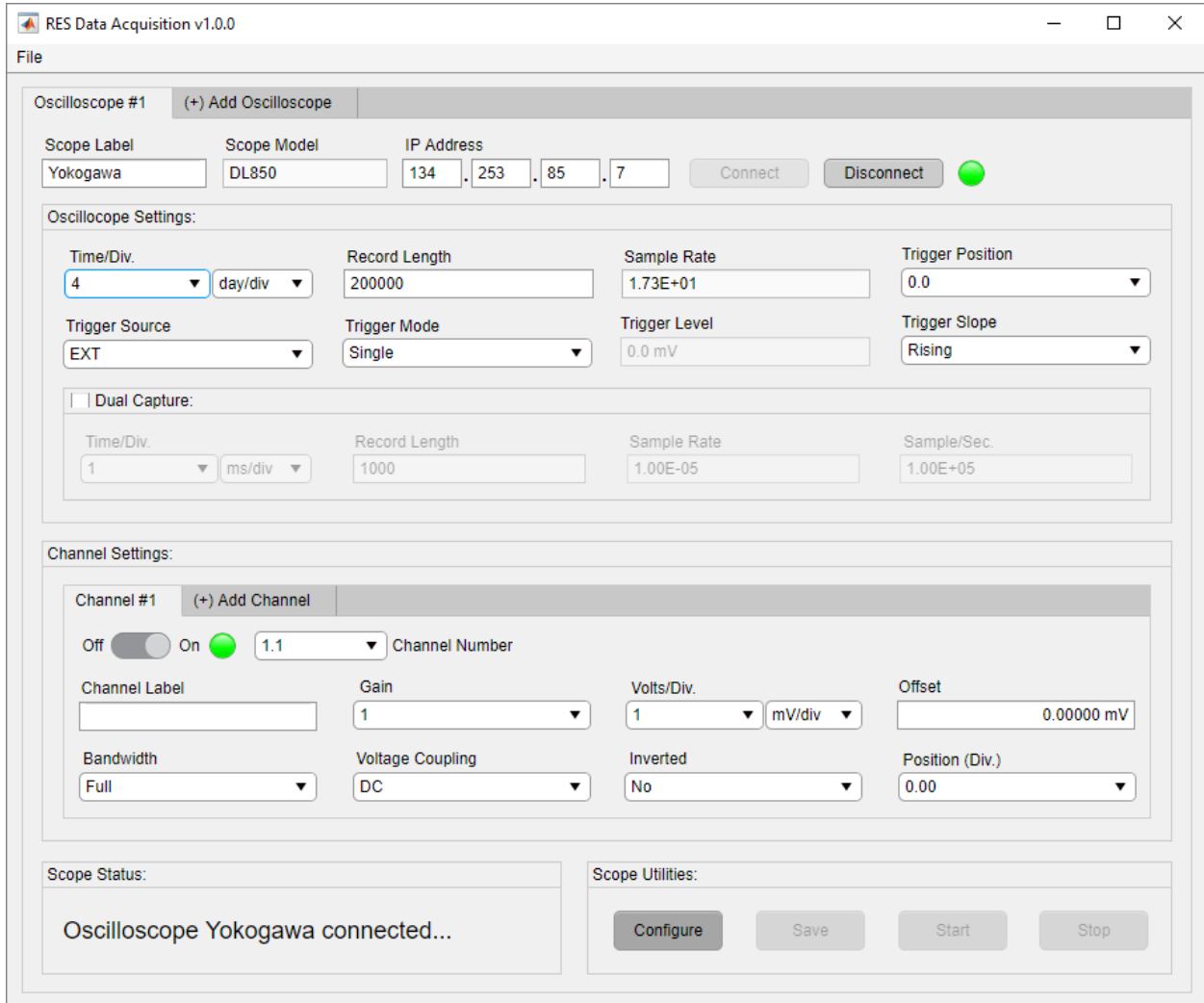


Figure 3-17. Update Sample Rate from Time Per Division

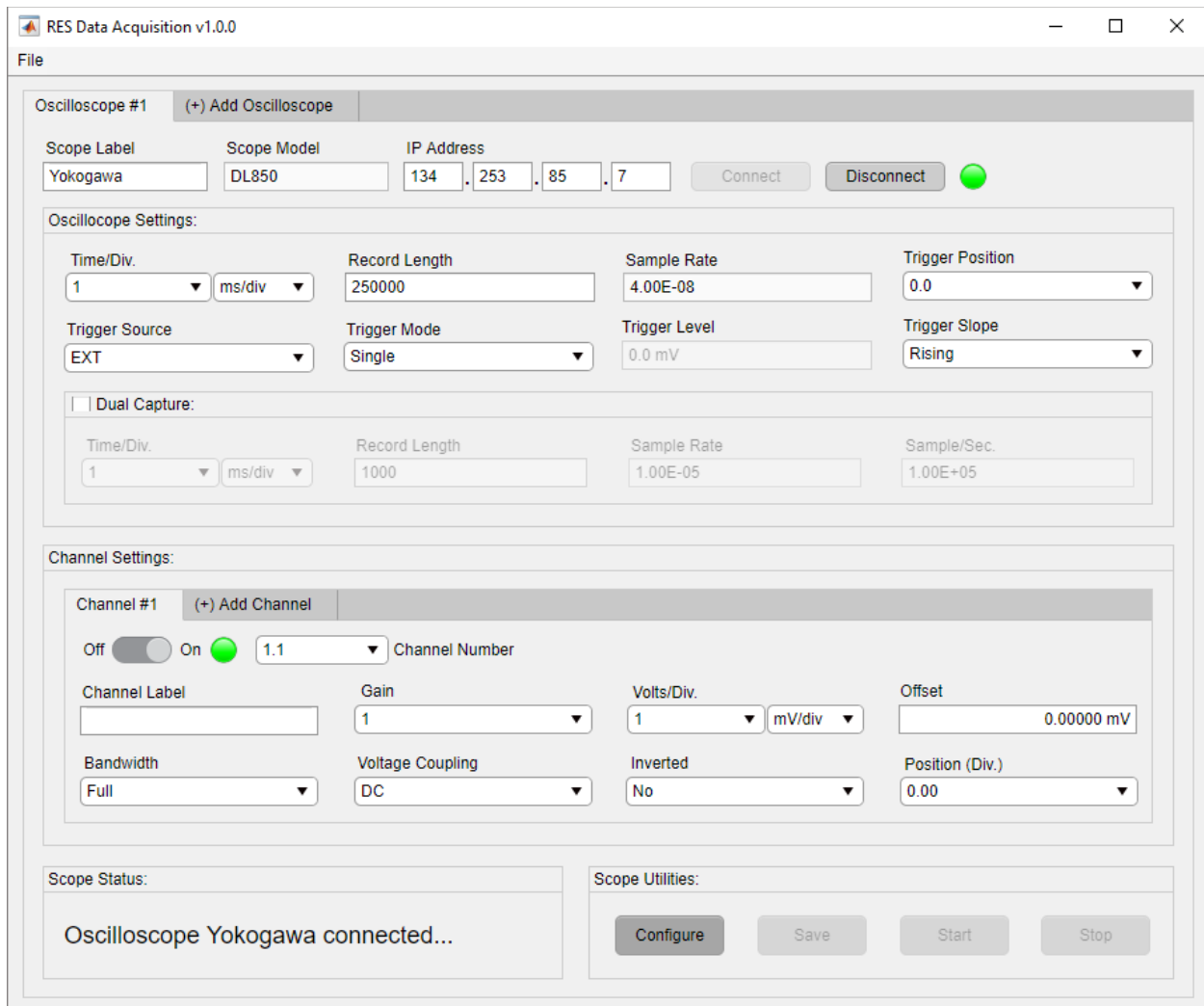


Figure 3-18. Update Sample Rate from Record Length

3.2.4.4. Trigger Position

The Trigger Position is located in the Oscilloscope Settings panel. The Trigger Position is the horizontal position of the trigger in the acquisition window and is represented as a percentage of displayed data before the trigger point. The range of the position is 0.0 to 100.0 percent and is rounded to one decimal place. The user must click the down arrow to select a desired trigger position value as shown in Figure 3-19.

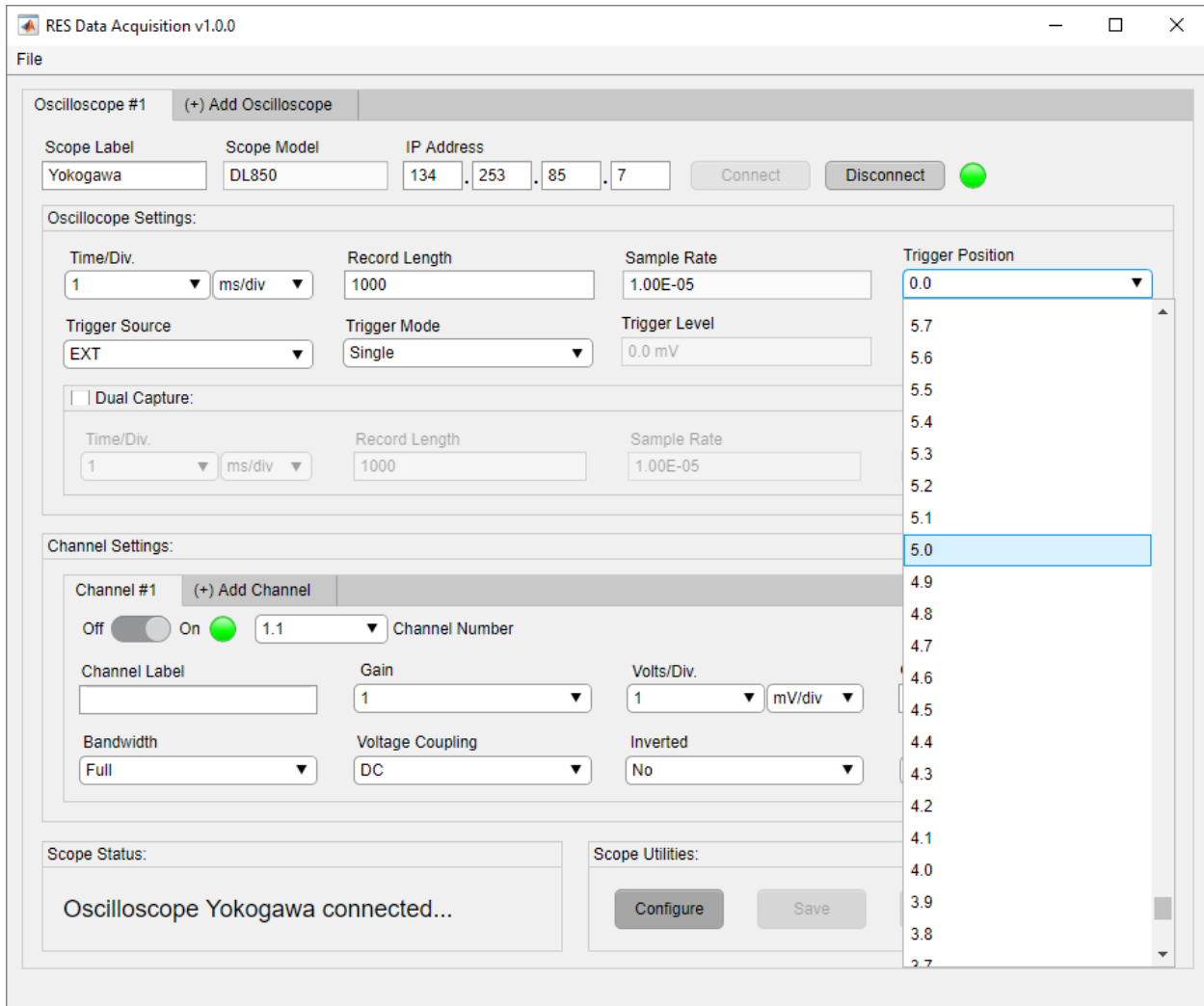


Figure 3-19. Input Trigger Position

3.2.4.5. Trigger Source

The Trigger Source is in the Oscilloscope Settings panel. This setting allows the user to choose the source for a given trigger event. The trigger source field contains channel sources listed in the Channel Number field for each visible channel tab. As shown in Figure 3-20, if the first and second channel tabs are displaying 1.1 and 2.1, then channels 1.1 and 2.1 will be added to the trigger source menu. The options in the trigger source menu change dynamically based on the Channel Number displayed in each channel tab. The details about the channel number field is found in section 3.2.5.3 and details about adding channel tabs is found in section 3.2.5.1.

NOTE: The default trigger source is the external trigger.

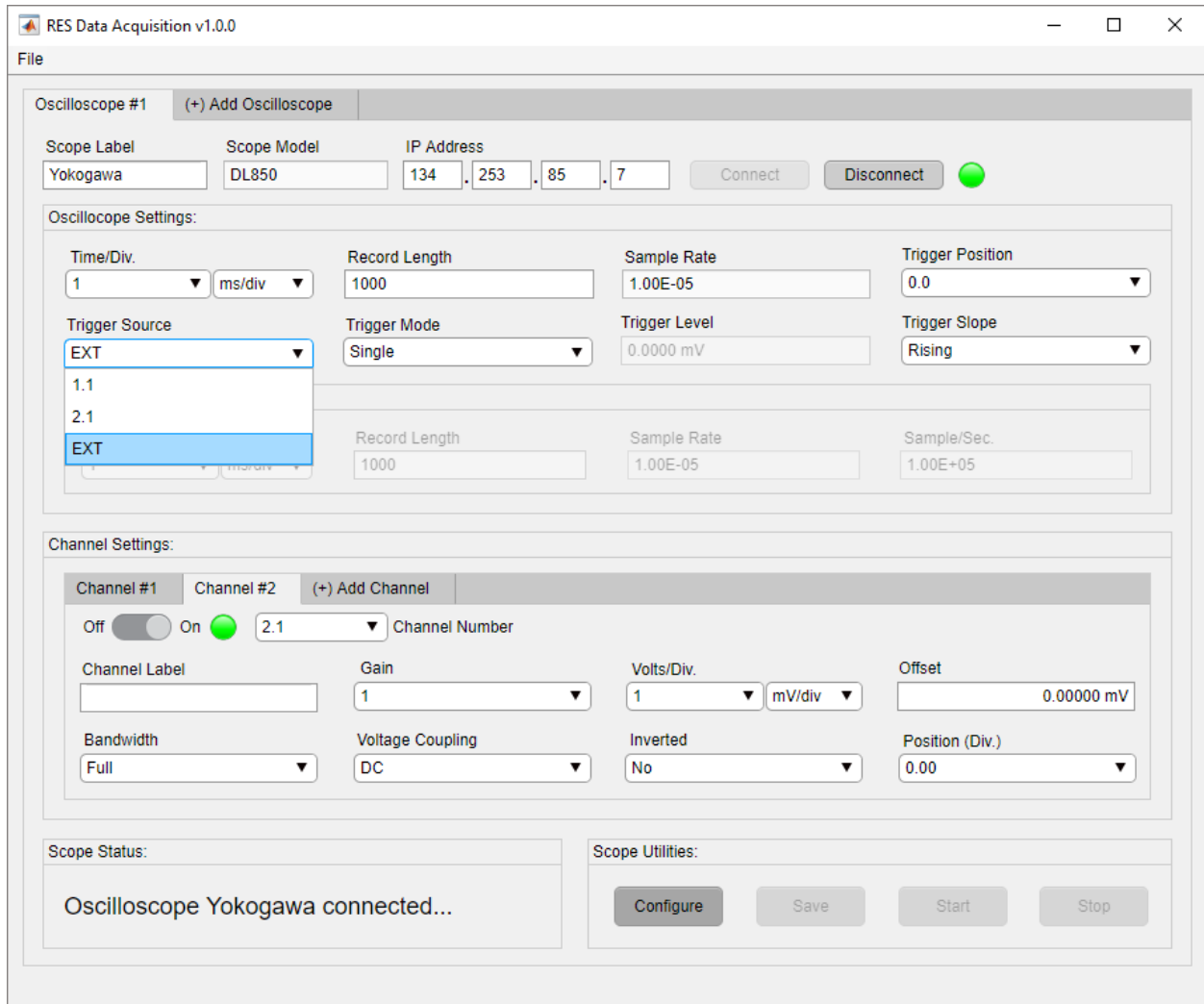


Figure 3-20. Channel 1.1 and 2.1 Trigger Source Items

The user must click the down arrow to select a trigger source value. Next, the user must select the desired value as shown in Figure 3-21.

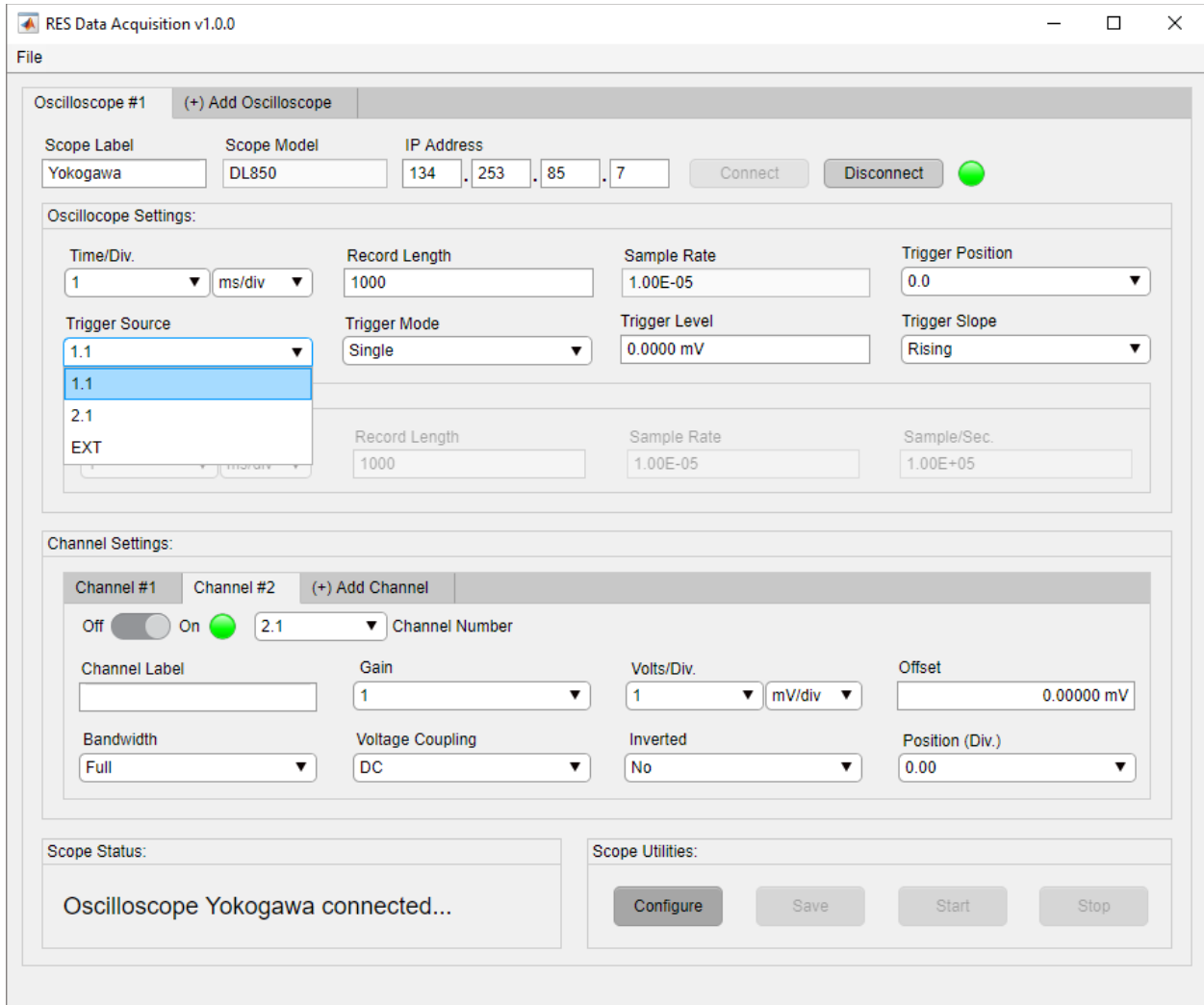


Figure 3-21. Input Trigger Source

3.2.4.6. Trigger Mode

The Trigger Mode is located in the Oscilloscope Settings panel. The Trigger Mode determines and notifies the oscilloscope to draw a waveform based on a trigger event. The user must click the down arrow menu to select a trigger mode. Next, the user must select the desired value as shown in Figure 3-22.

NOTE: Trigger mode values will vary based on oscilloscope model.

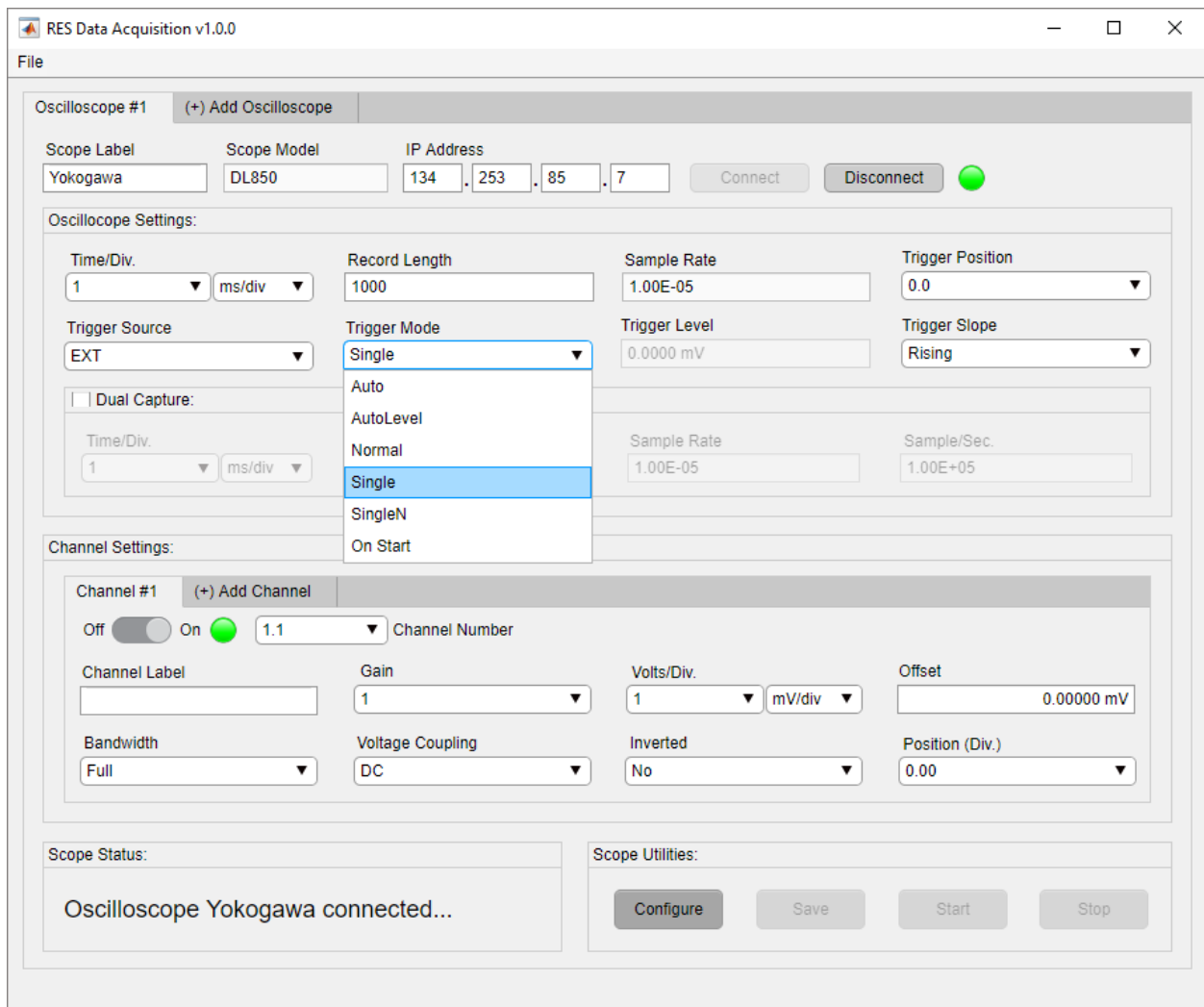


Figure 3-22. Input Trigger Mode

3.2.4.7. Trigger Level

The Trigger Level is located in the Oscilloscope Settings panel. The Trigger Level setting refers to the signal level, measured in voltage, used to detect a signal's high or low state. The trigger level units dynamically update when the voltage per division setting is altered for the displayed trigger source as seen in Figure 3-23 and Figure 3-24.

NOTE: The trigger level field is disabled when the Trigger Source is set to the external trigger EXT option for Yokogawa instruments only.

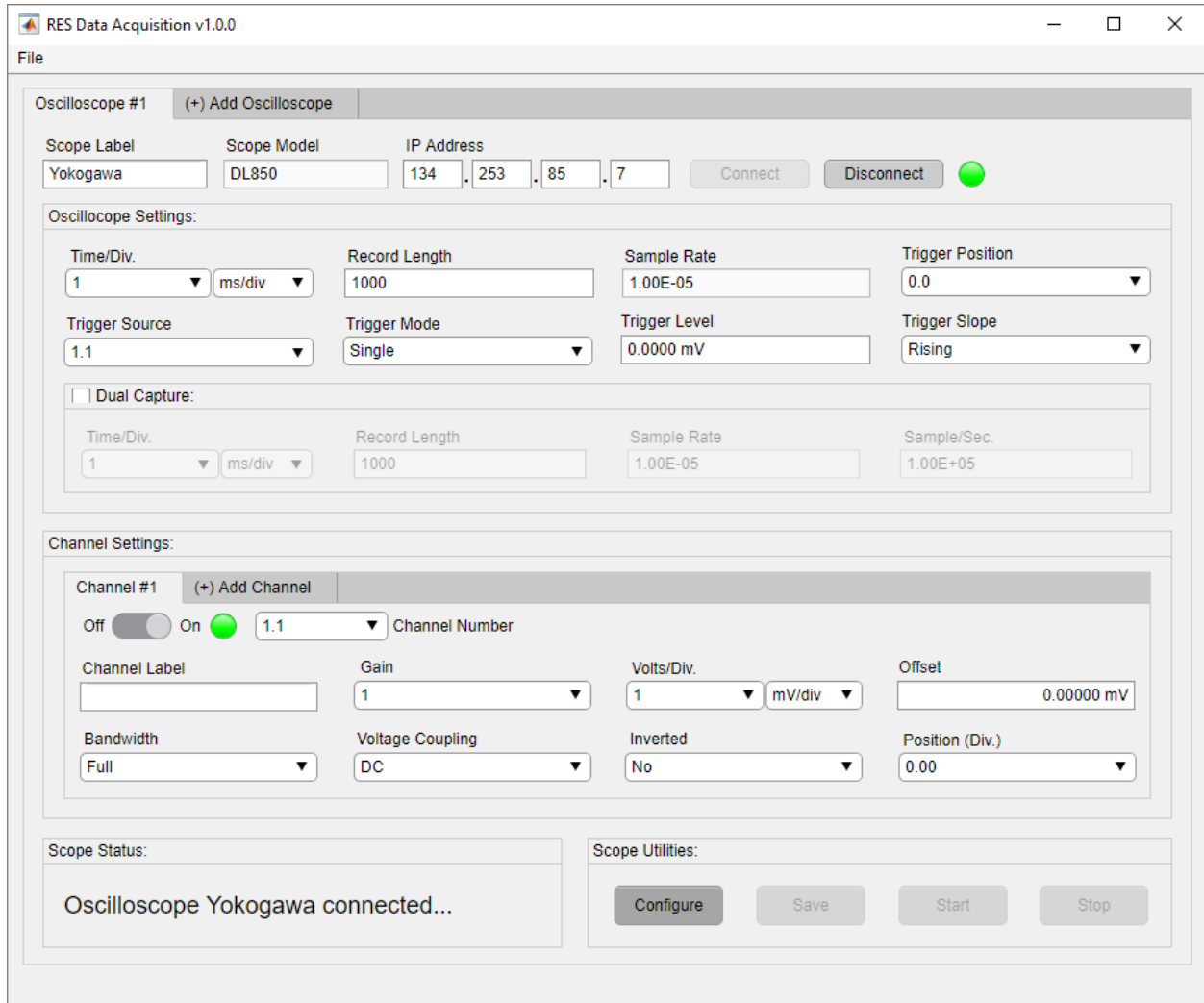


Figure 3-23. Trigger Level Units Default Value

As shown in Figure 3-23, the trigger level units change from Millivolts (mV) to volts (V). This change reflects the voltage per division setting seen in the channel tab (Figure 3-24).

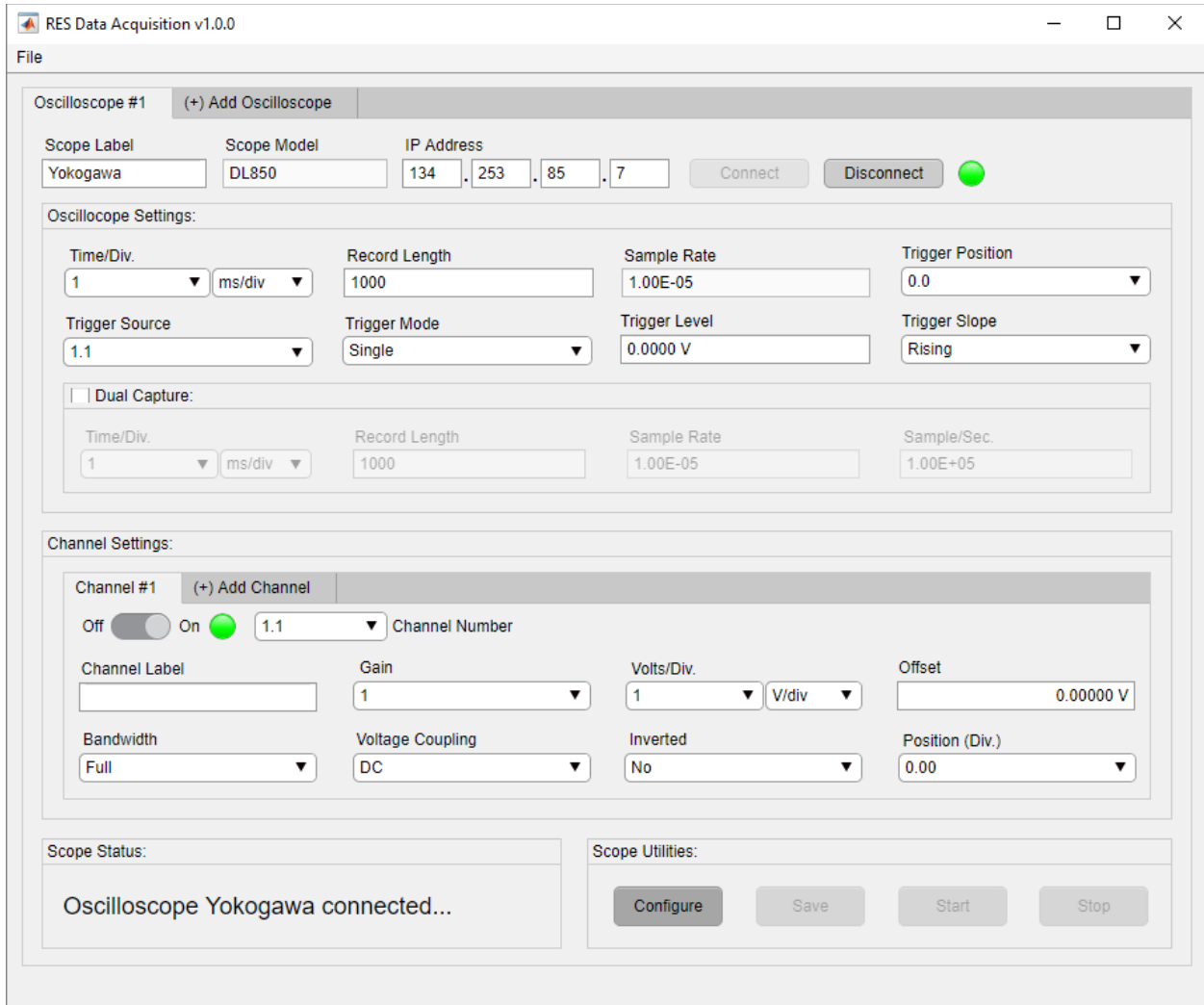


Figure 3-24. Trigger Level Units Change

RES DAQ v1.0.0 restricts the user entering nonnumerical characters in Trigger Level field (Figure 3-25) and values outside the range of the trigger level as seen in Figure 3-26.

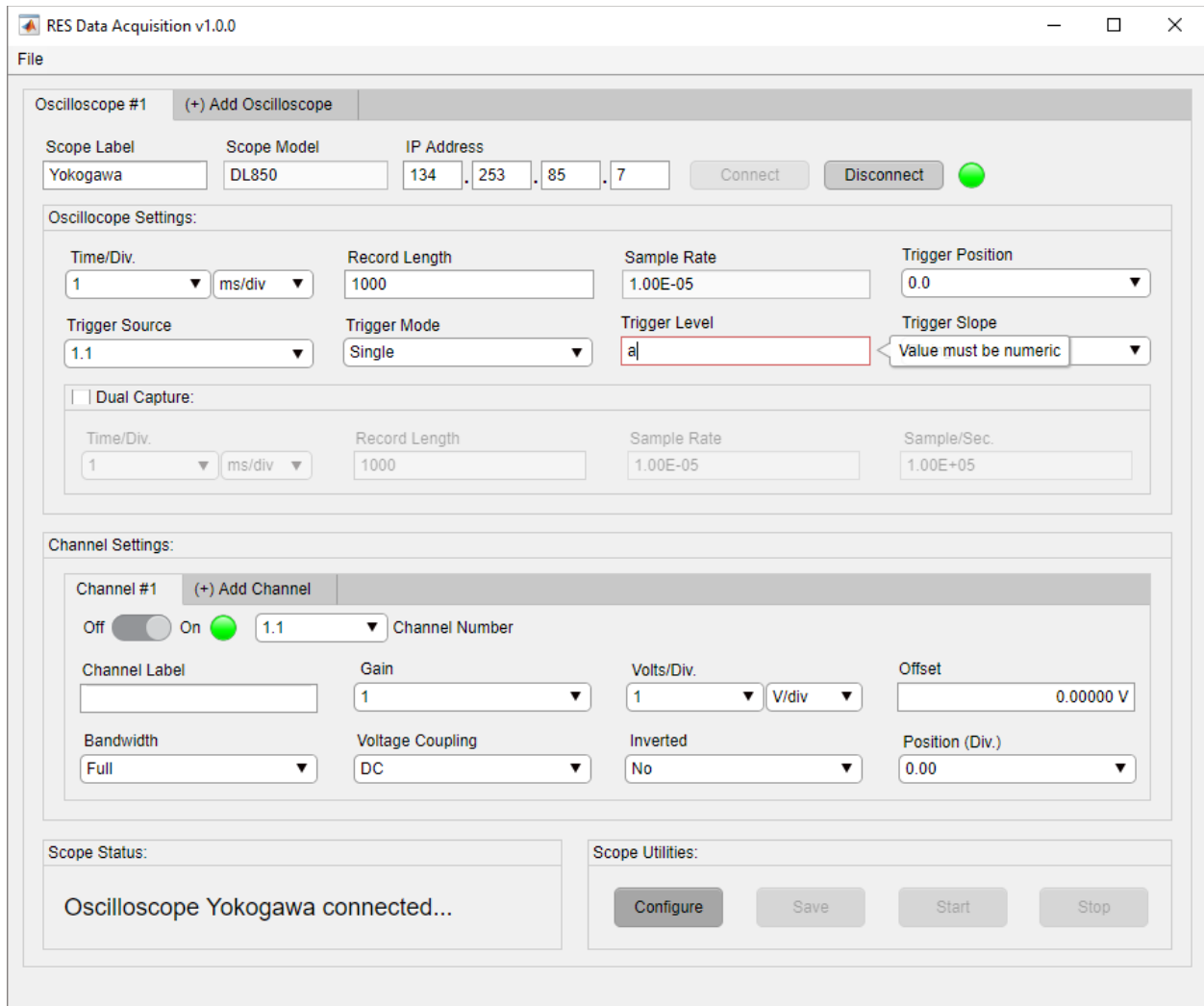


Figure 3-25. Trigger Level Nonnumerical Restriction

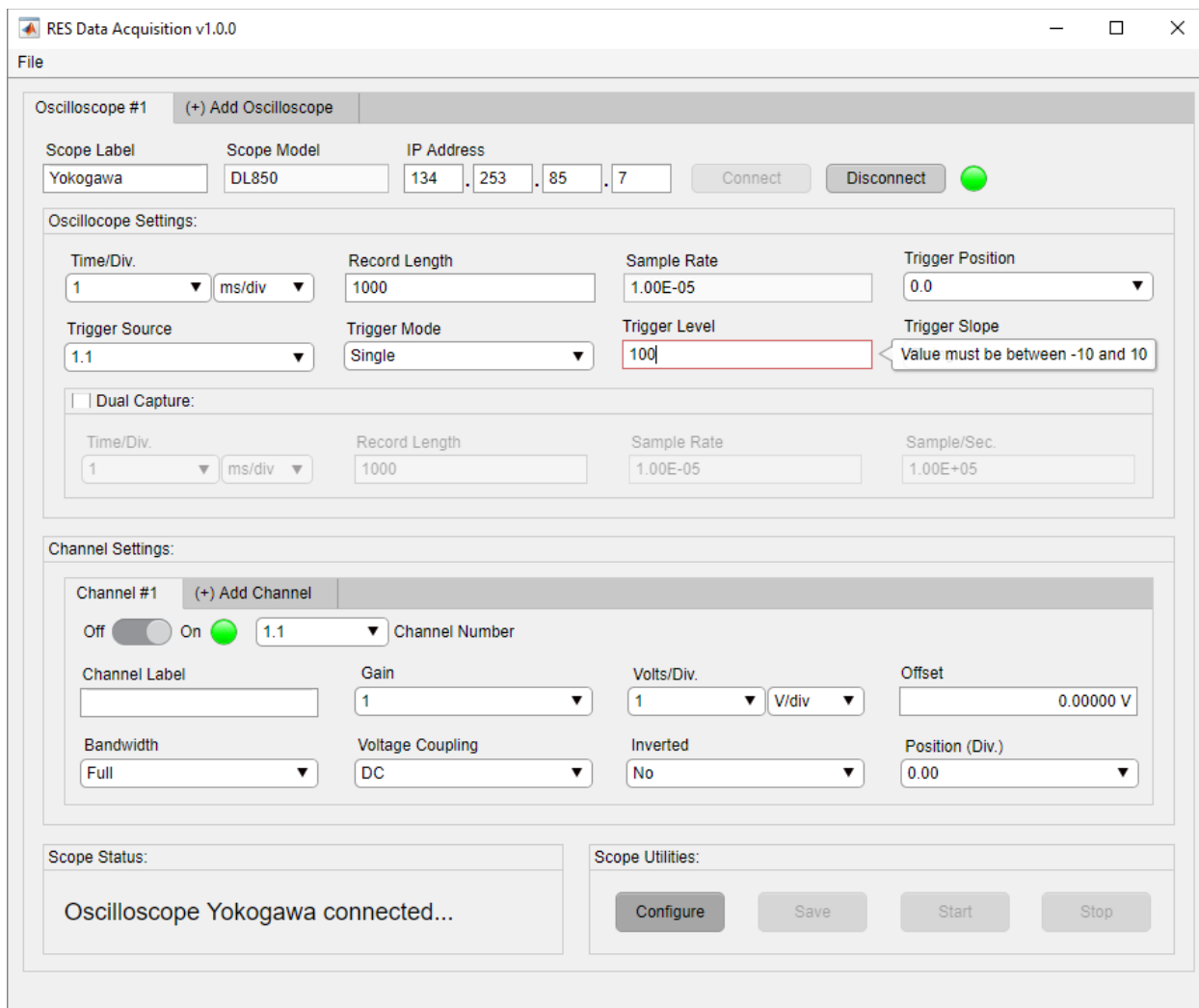


Figure 3-26. Trigger Level Range Restriction

The user must click inside the Trigger Level field and enter a trigger level value following the nonnumerical criteria as seen in Figure 3-26. A valid entry is shown in Figure 3-27.

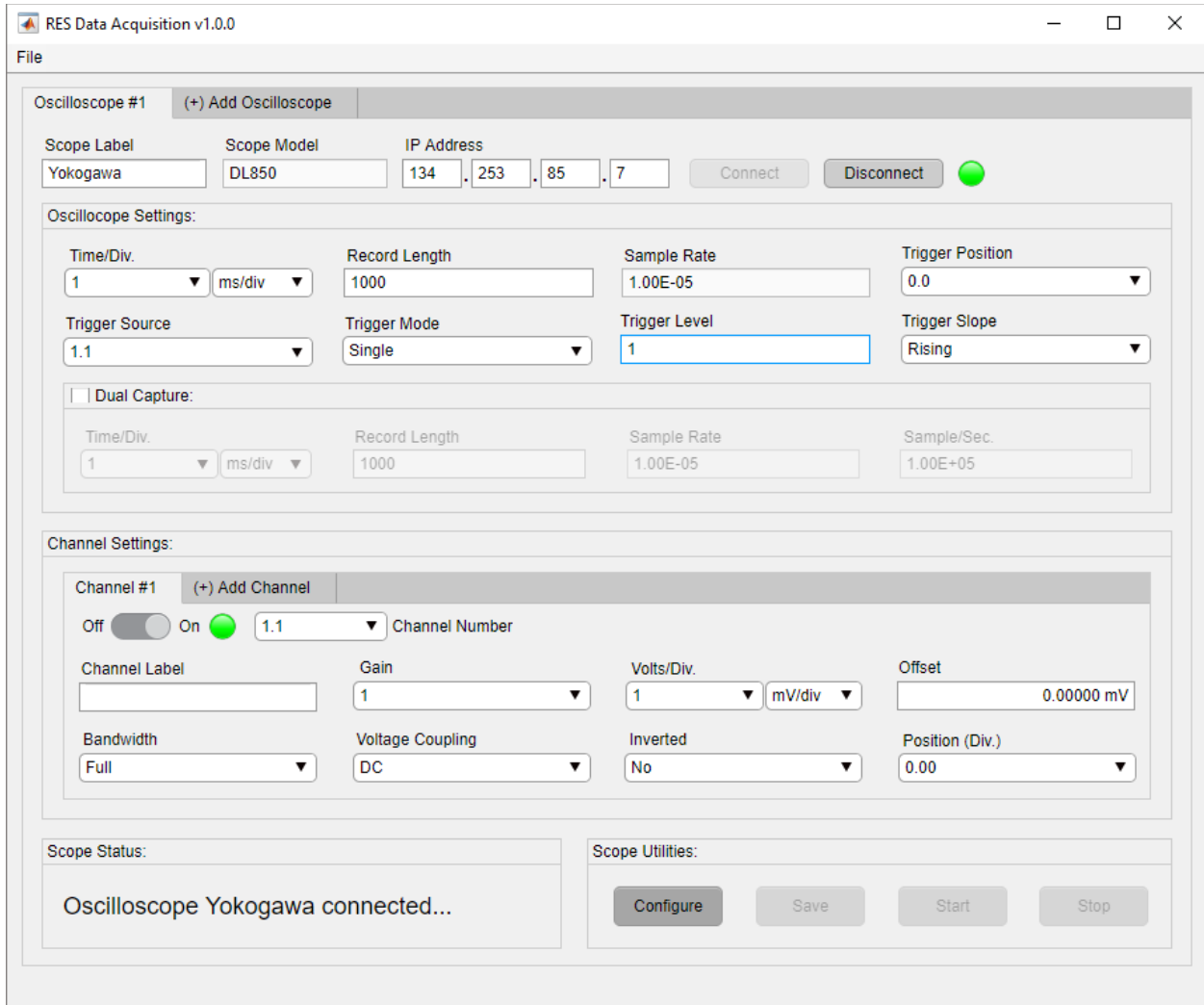


Figure 3-27. Input Trigger Level

After entering a valid trigger level value, the field will display the appropriate units and decimal places as shown in Figure 3-28.

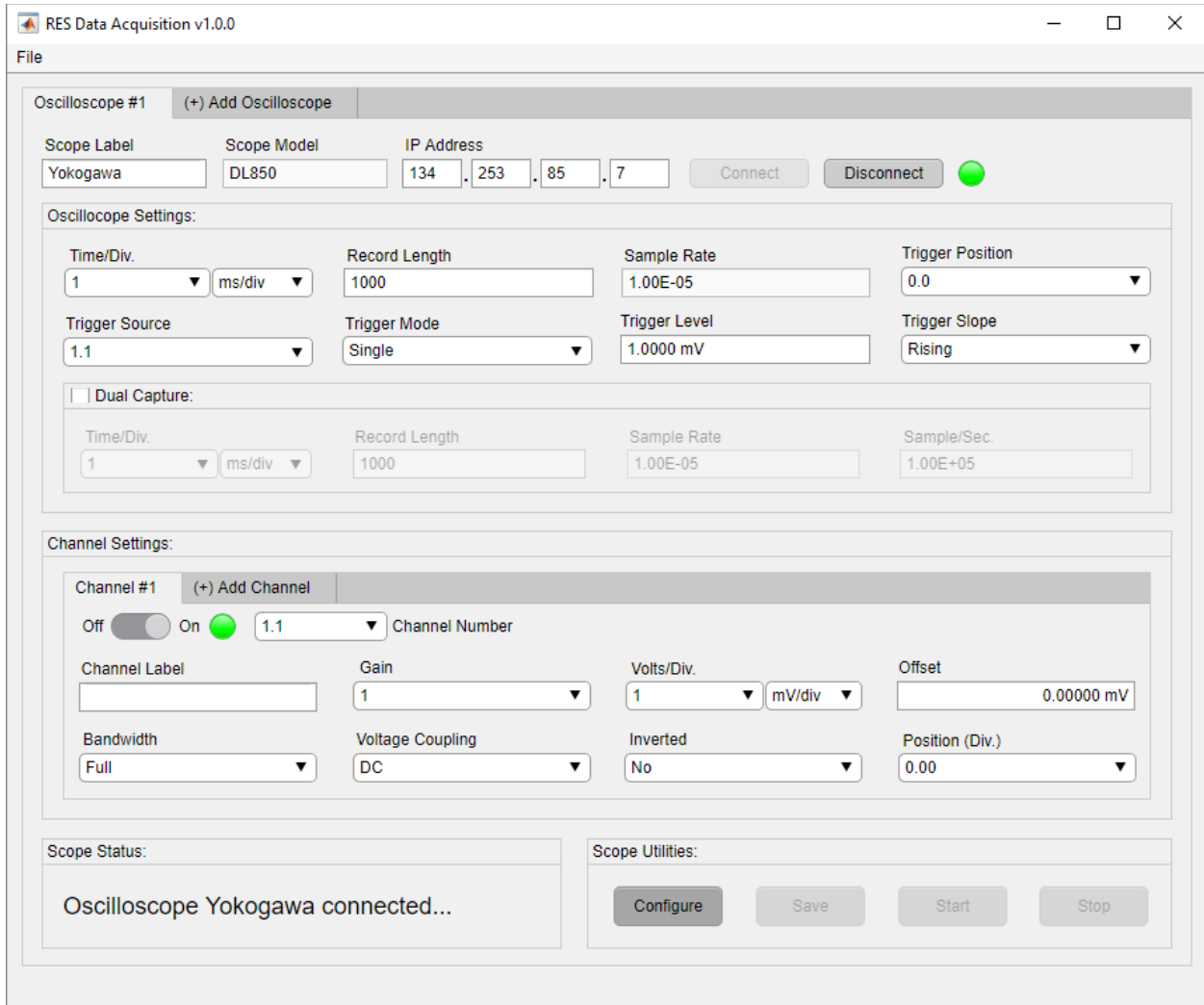


Figure 3-28. Trigger Level Display

3.2.4.8. Trigger Slope

The Trigger Slope is located in the Oscilloscope Settings panel. The user must click the down arrow to select a desired trigger slope value (Figure 3-29). The Trigger Mode setting refers to the movement being detected for the trigger source signal. Movement detection occurs when the signal alternates voltage levels in either direction.

NOTE: Some trigger slope options are excluded when the displayed trigger source is set to the external trigger.

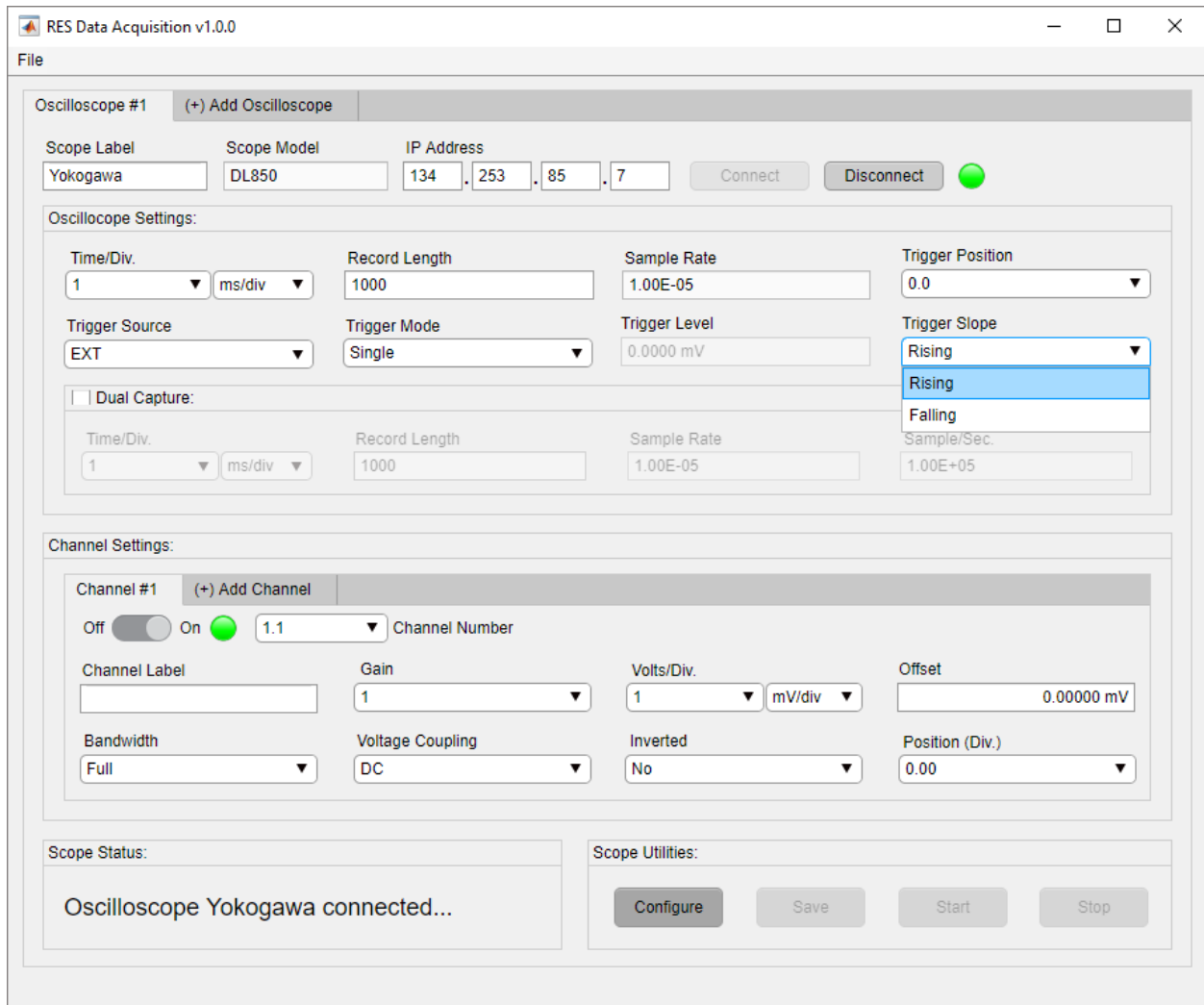


Figure 3-29. Insert Trigger Slope

3.2.4.9. Dual Capture

The Dual Capture settings are housed in the Dual Capture panel. The Dual Capture configures capture settings for waveforms simultaneously recording at two different sample rates. The user must click the checkbox to enable the Dual Capture. The setting fields will highlight as shown in Figure 3-30.

NOTE: Dual Capture is only available for Yokogawa instruments. If connected to a LeCroy instrument, Dual Capture will be disabled.

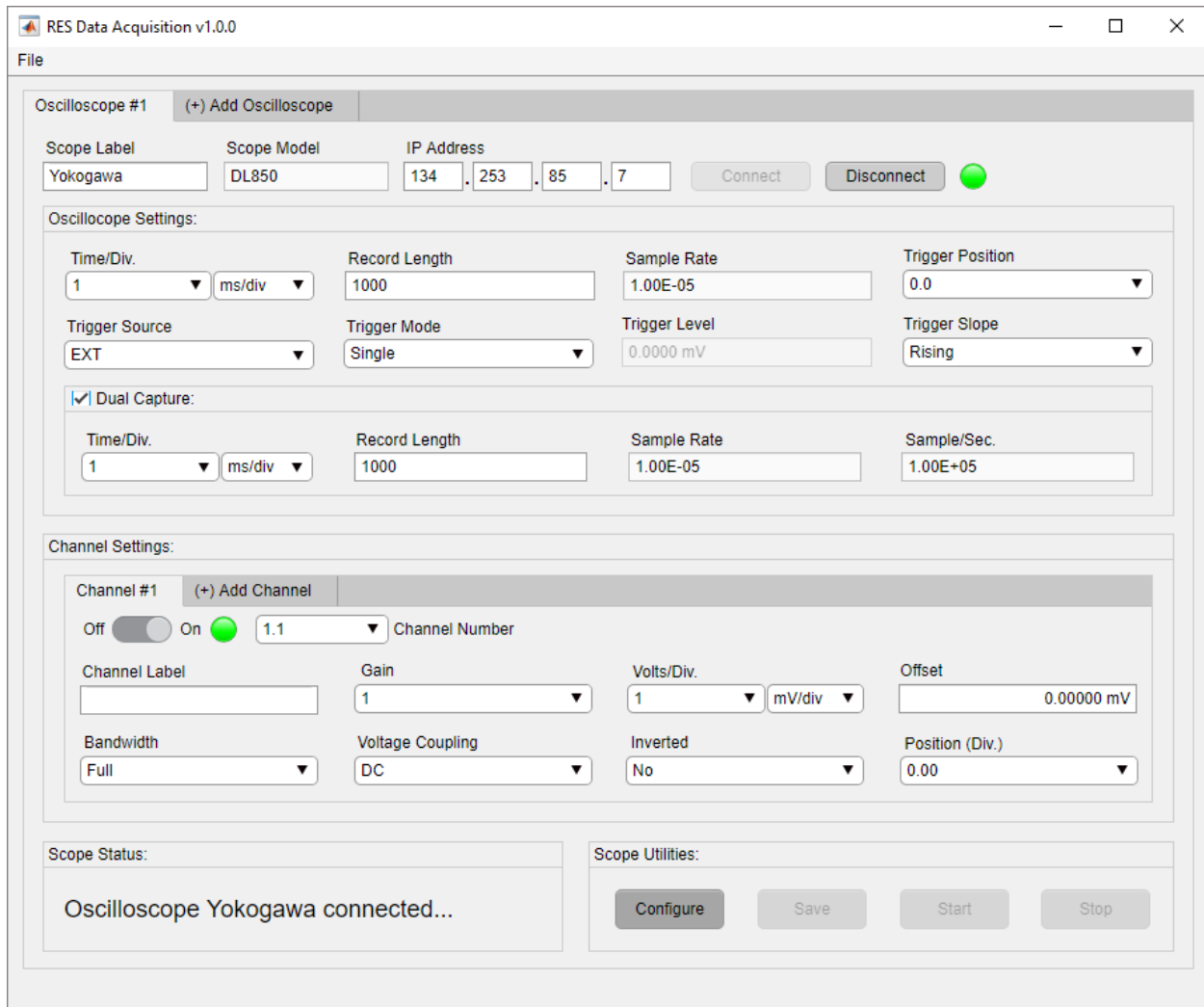


Figure 3-30. Enable Dual Capture Settings

3.2.4.9.1. Dual Capture Time Per Division

The Dual Capture Time Per Division setting adjusts the horizontal scale/time scale of the dual capture acquisition window. The Dual Capture Time Per Division field operates identical to the Time Per Division setting detailed in section 3.2.4.1. Click the down arrow and select the desired time per division setting as seen in Figure 3-31 and Figure 3-32.

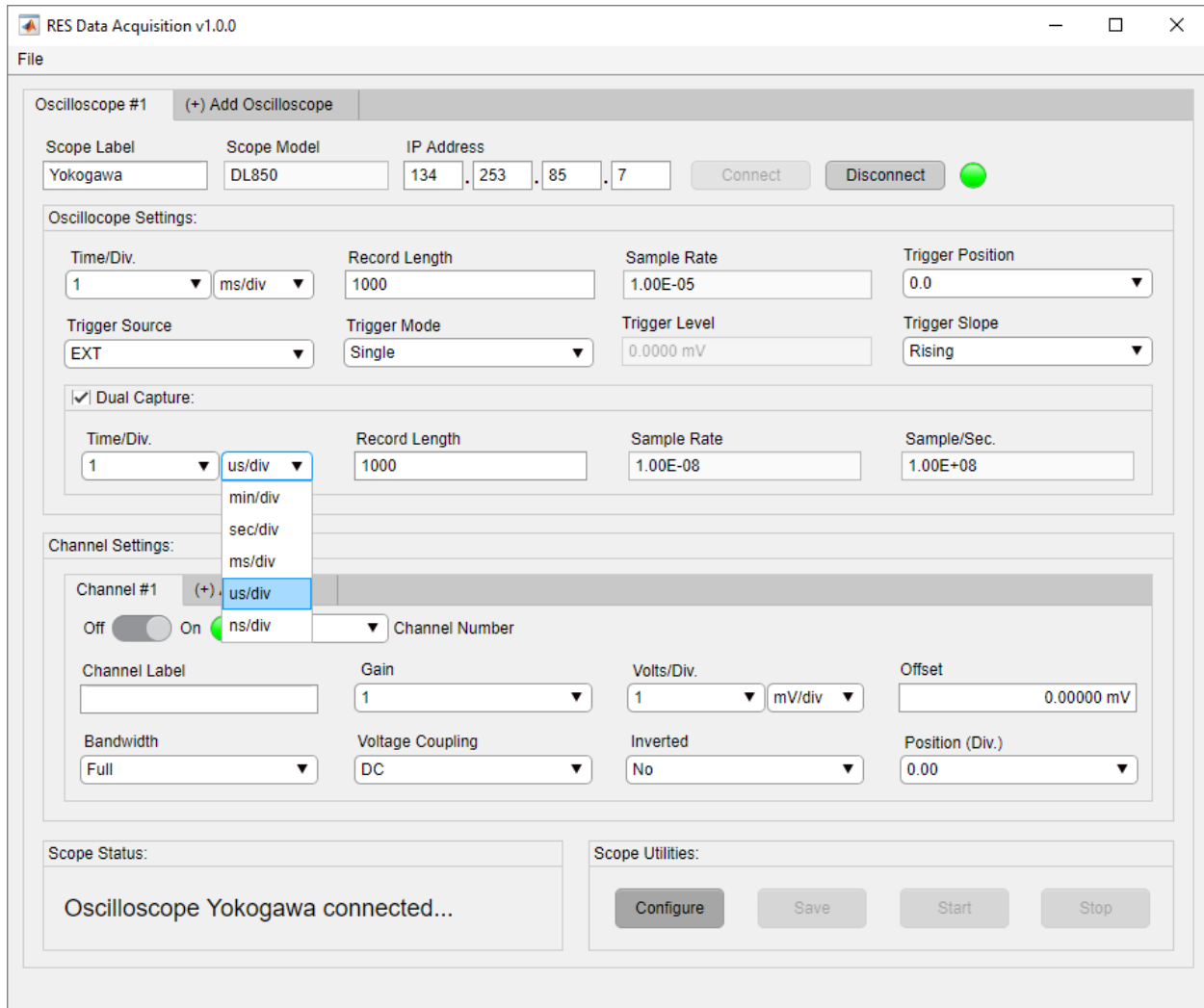


Figure 3-31. Select Dual Capture Time Division Value

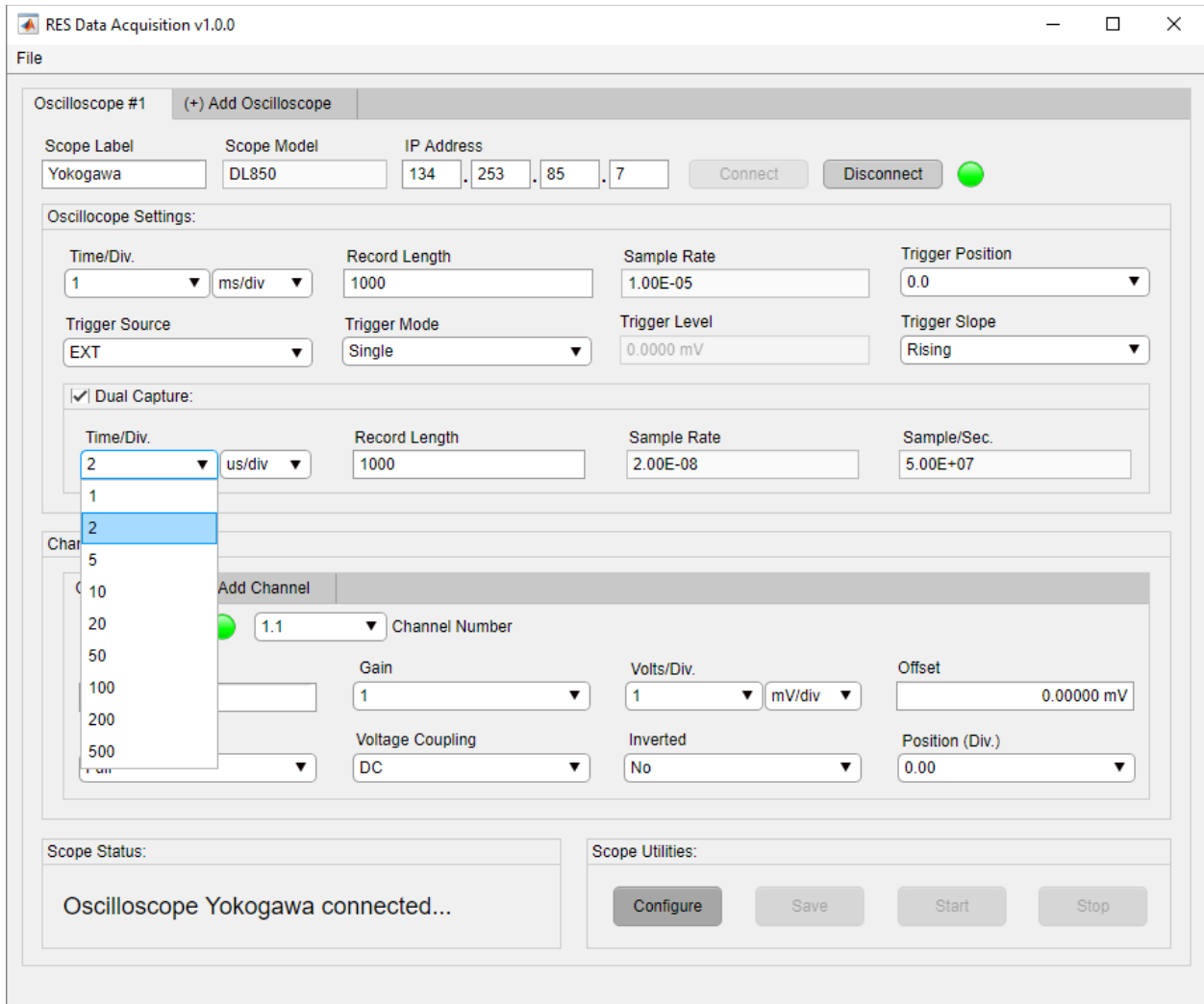


Figure 3-32. Select Dual Capture Time Value

3.2.4.9.2. Dual Capture Record Length

The Dual Capture Record Length configures the number of samples to be recorded when acquiring a Dual Capture waveform. The restrictions used to filter the Record Length input are identical to the record length field described in section 3.2.4.2. Following the input restriction, the user must enter a whole number value by clicking in the Record Length field and inserting a value as seen in Figure 3-33.

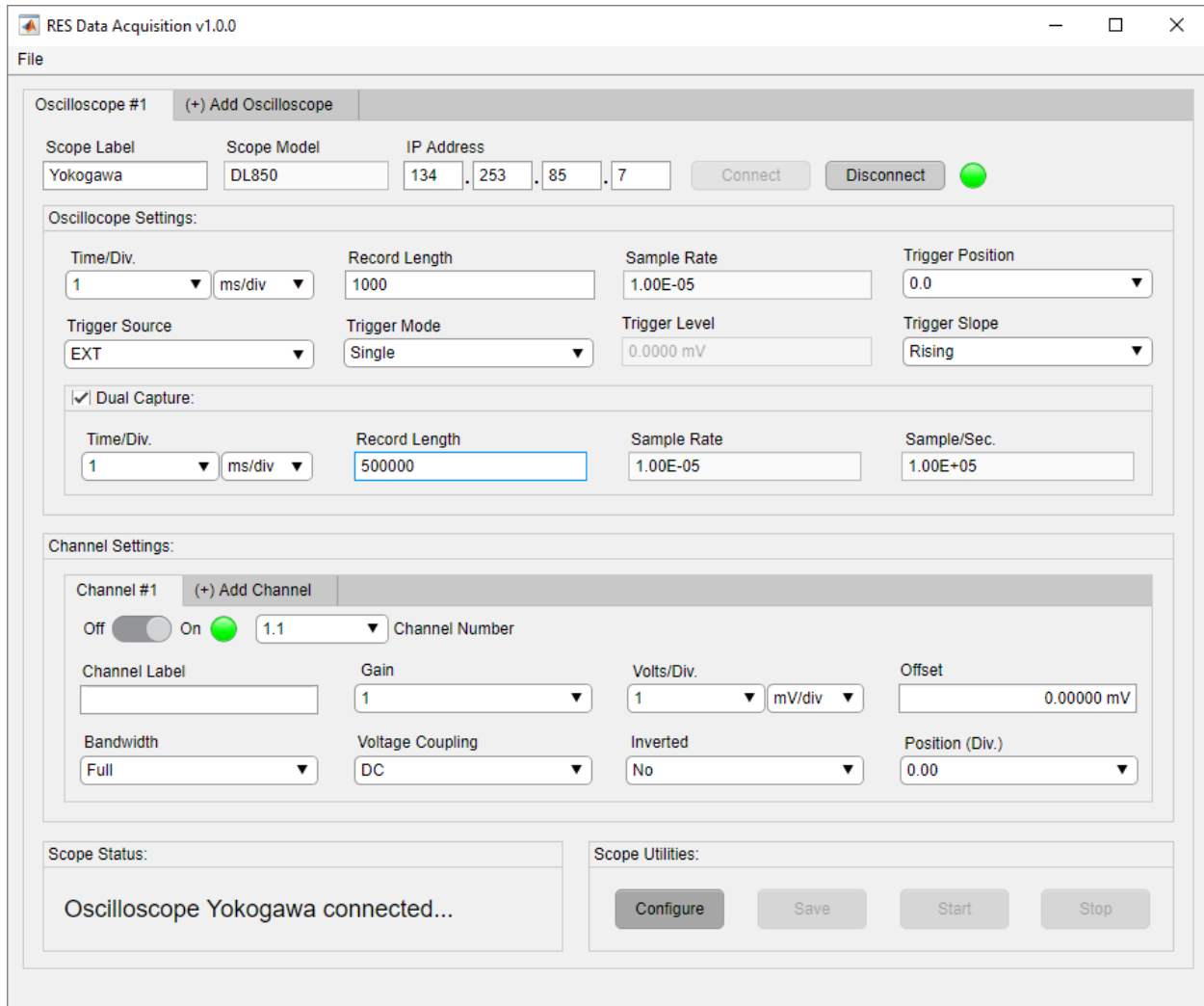


Figure 3-33. Input Dual Capture Record Length

3.2.4.9.3. Dual Capture Sample Rate

The Dual Capture Sample Rate field displays samples per second for the Dual Capture configuration. The sample rate value displayed is updated when the Dual Capture time per division or record length fields are altered as shown in Figure 3-34.

NOTE: The user cannot adjust this field; it is for display purposes only.

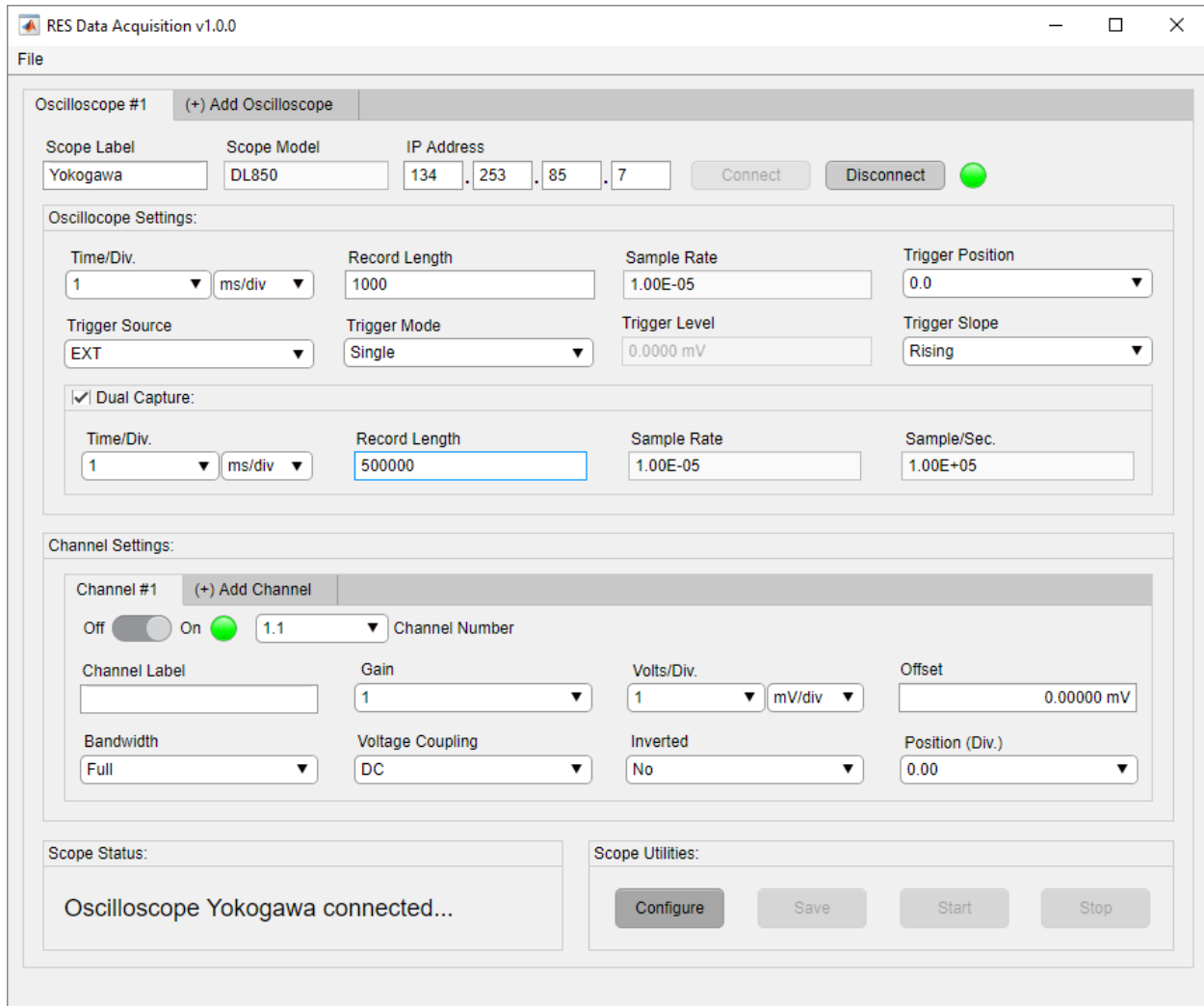


Figure 3-34. Update Dual Capture Sample Rate Display Value

3.2.4.9.4. Dual Capture Samples Per Second

The Dual Capture Samples Per Second is located in the Dual Capture panel. The Samples Per Second displays the number of samples being recorded per second for the current Dual Capture configuration. This value is updated when the Dual Capture time per division or record length fields are altered as shown in Figure 3-35.

NOTE: The user cannot adjust this field; it is for display purposes only.

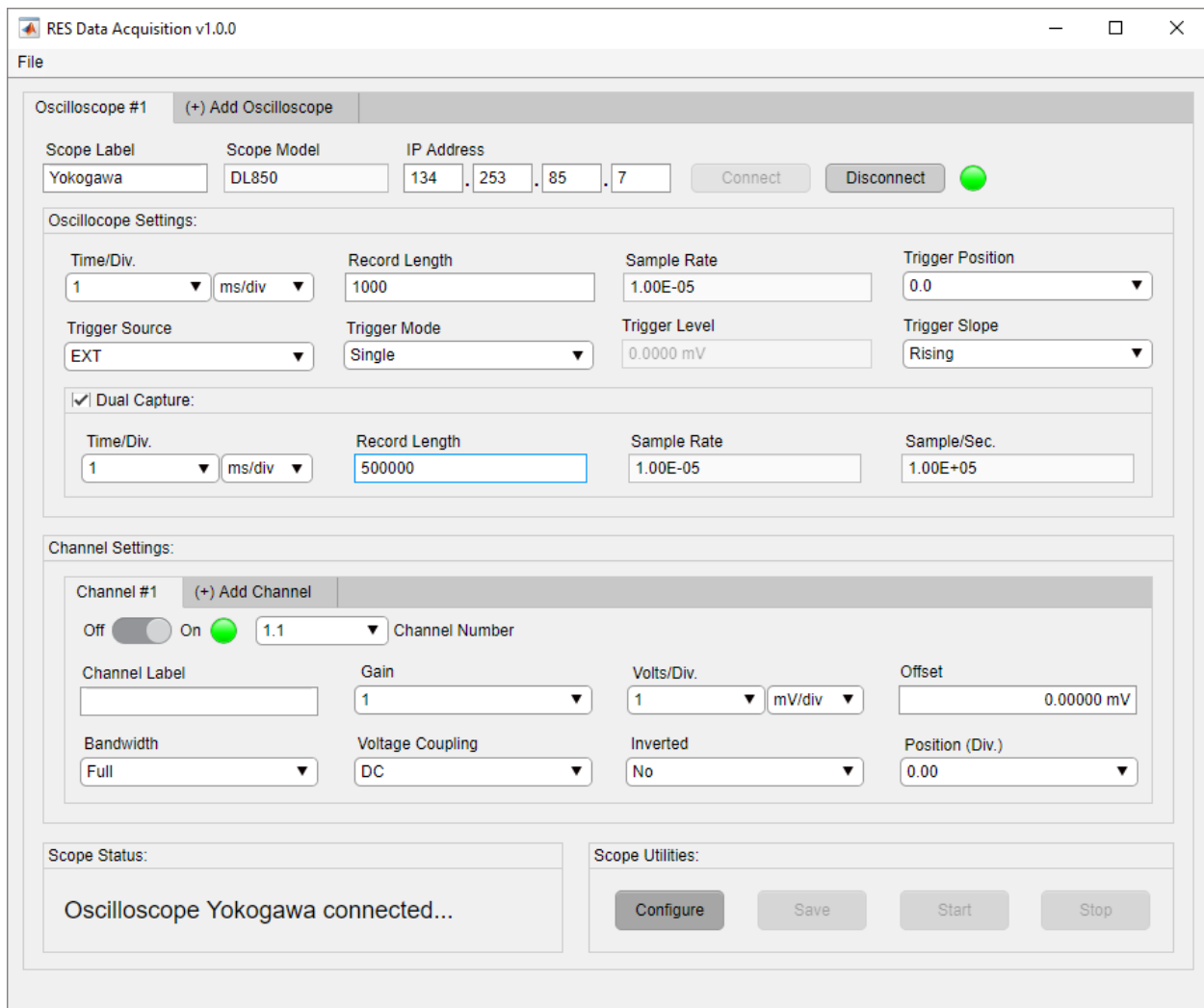


Figure 3-35. Update Dual Capture Samples Per Second Display Value

3.2.5. Setting Channel Settings

When an established connection is completed, *RES DAQ v1.0.0* will enable channel settings specific to the connected instrument and populate each channel field with default values as shown in Figure 3-36. The user is now able to configure the channel settings.

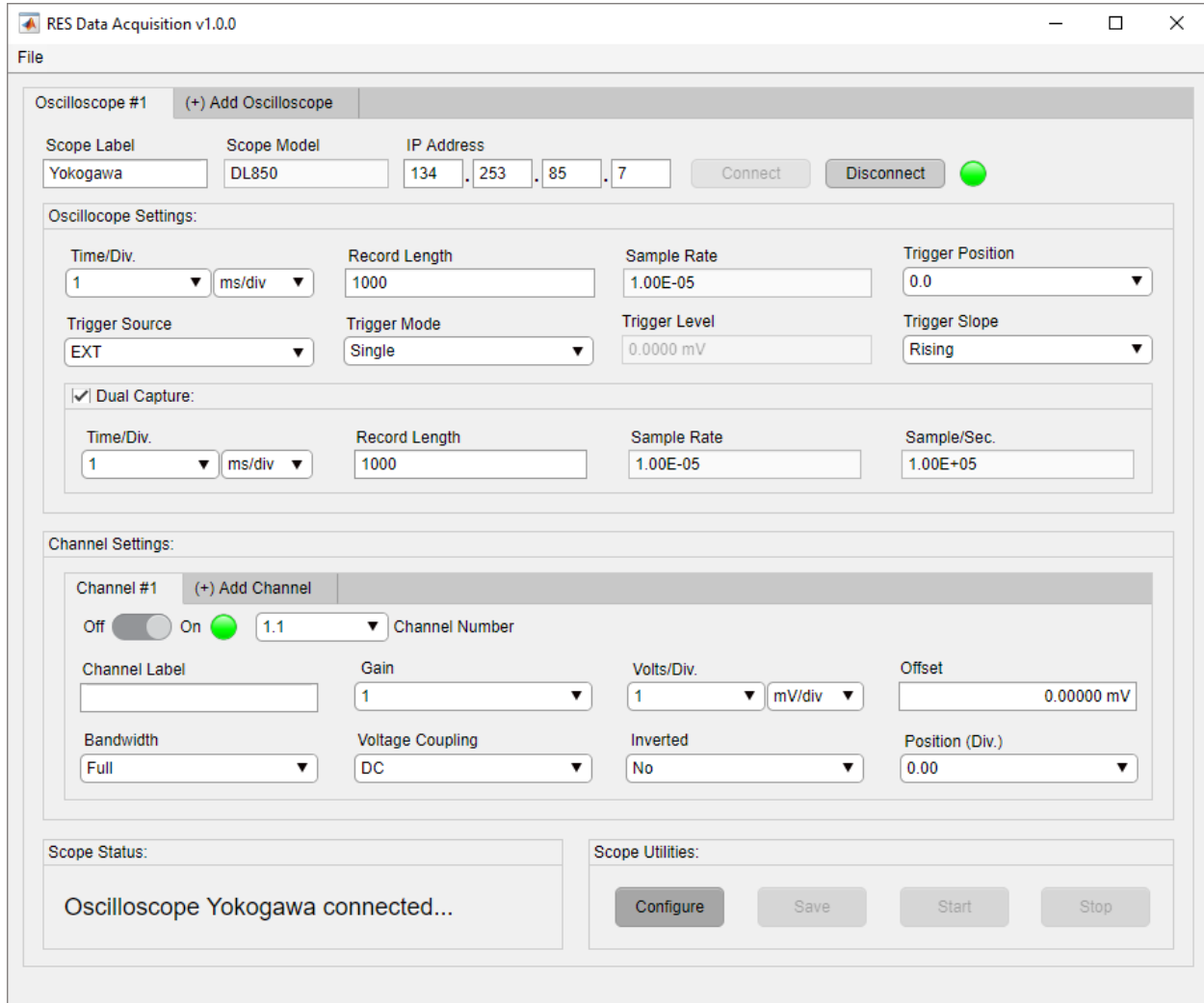


Figure 3-36. Channel Setting Default Values

3.2.5.1. Add Channel

The Add Channel tab, located in the Channel Setting panel and allows the user to add multiple channel tabs to a single configuration. The user can create an additional channel tab by clicking the Add Channel tab as shown in Figure 3-37. The label for each additional tab is automatically numbered and cannot be renamed.

NOTE: Multiple channel tabs can be added to single configuration but is limited to the number of channels on a given oscilloscope.

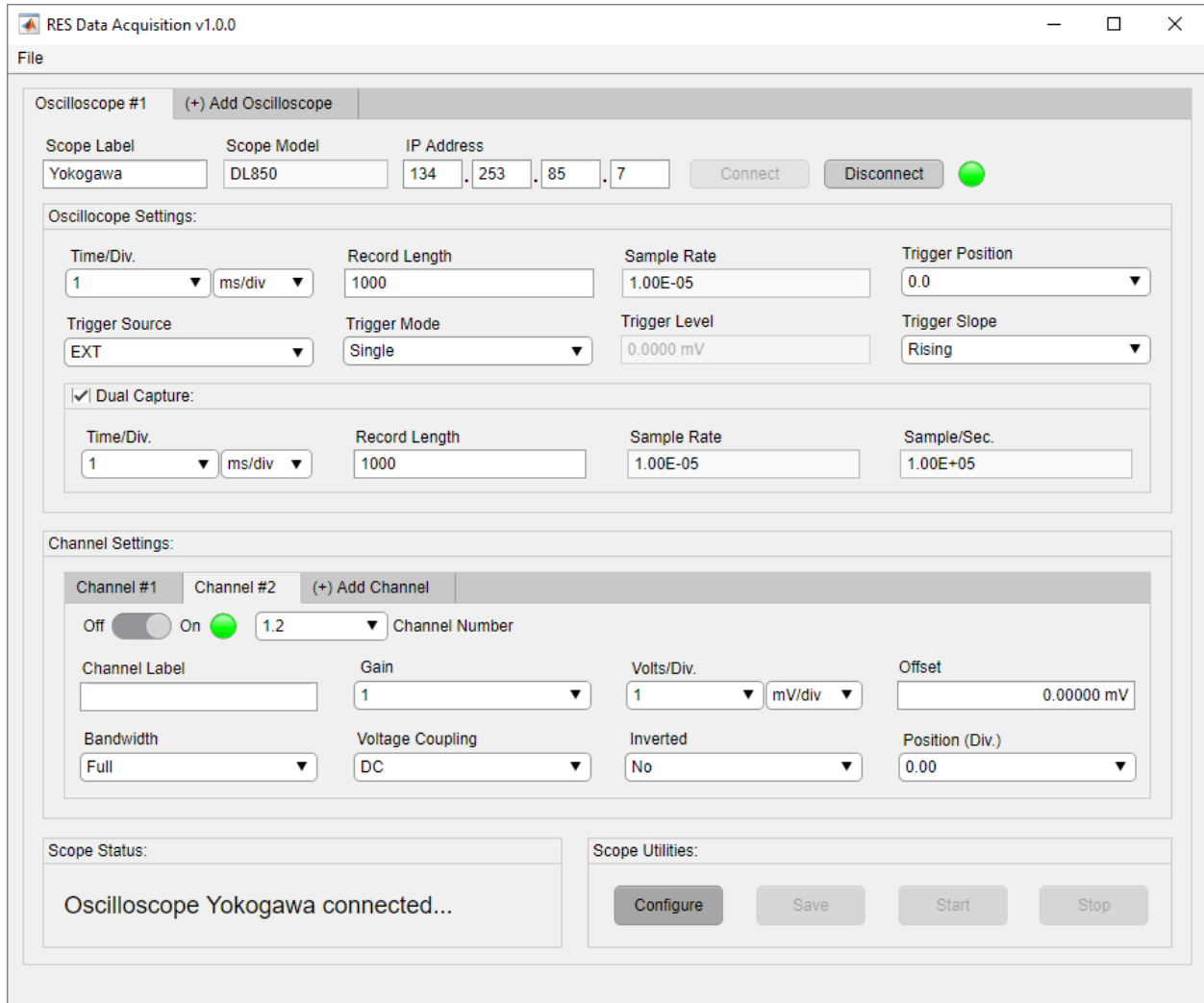


Figure 3-37. Add Channel Tab

3.2.5.2. Channel Enable

The Channel Enable is located in the Channel Settings panel in the currently selected channel tab. The Channel Enable sets the channel view and is configured by toggling the switch to the desired value as shown in Figure 3-38 and Figure 3-39. If a channel is enabled, the adjacent lamp will be illuminated as shown in Figure 3-39.

NOTE: The channel enable switch defaults to On, but the Channel settings are disabled if Channel Enable is toggled off.

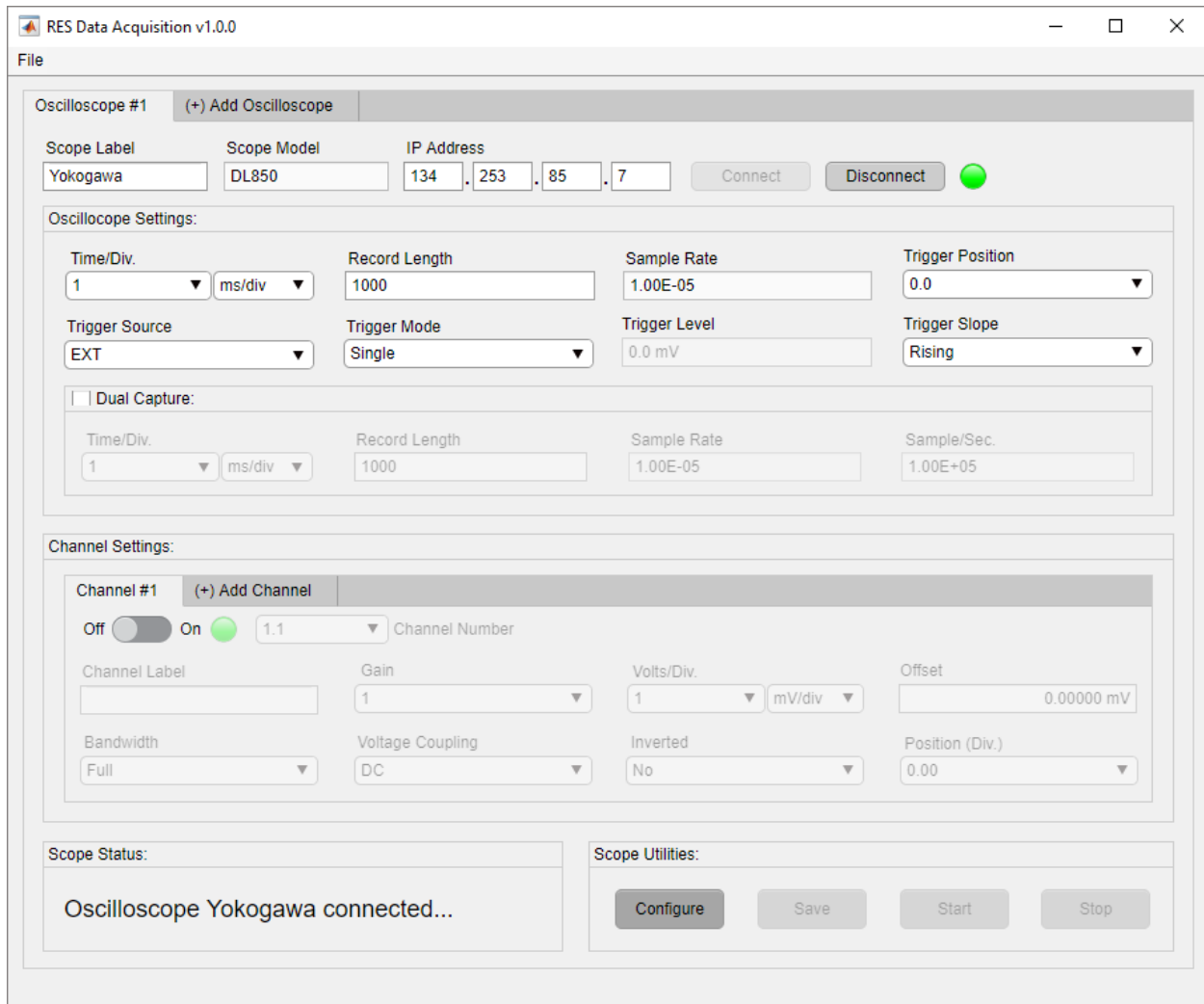


Figure 3-38. Channel Enable Toggled Off

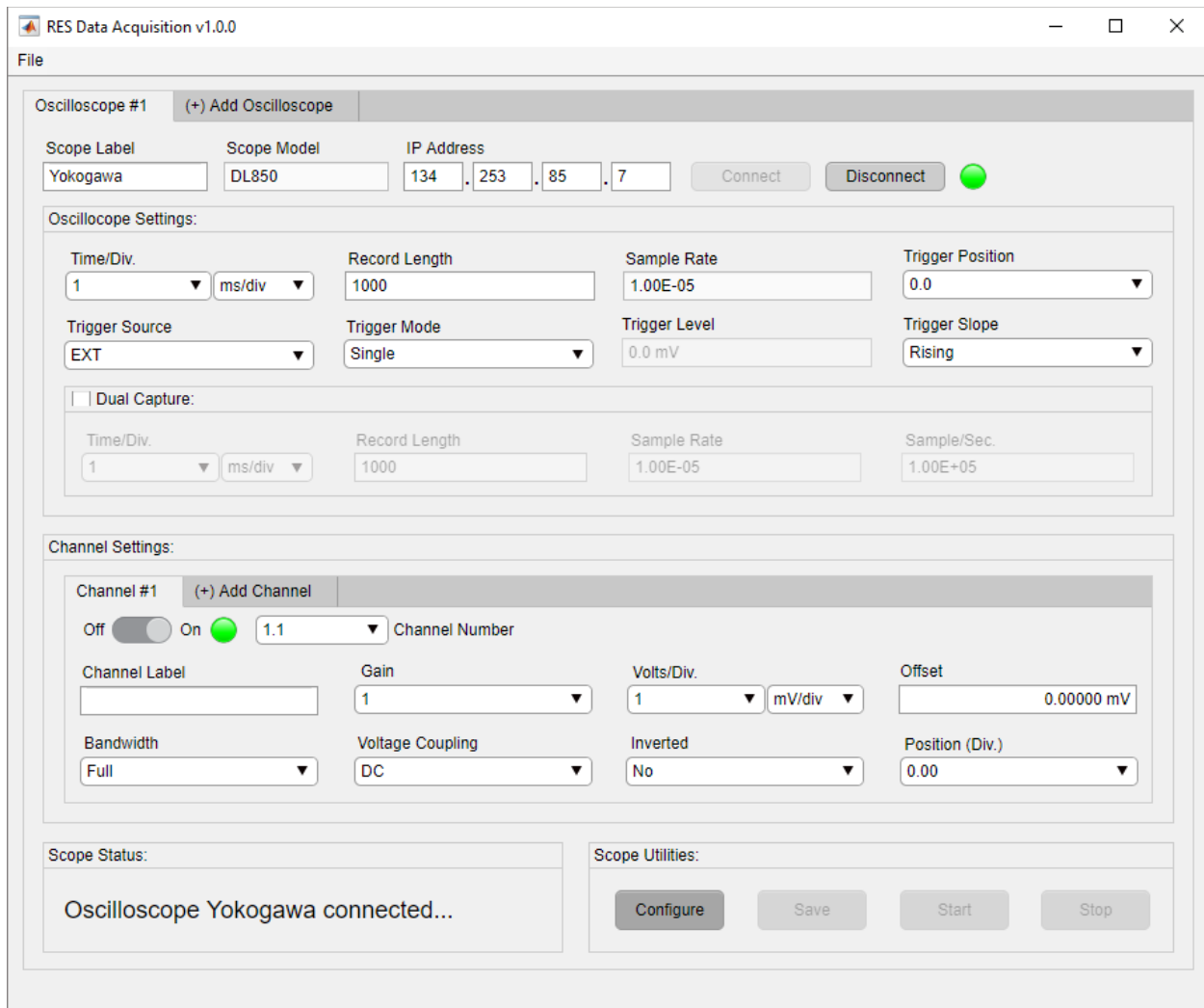


Figure 3-39. Channel Enable Toggled On

3.2.5.3. Channel Number

The Channel Number is located in the currently selected channel tab. This field displays the channel number for a particular channel tab and gives the user the ability to change the displayed channel number. The channel number field is automatically populated with the next available channel for each created channel tab. The user must click the down arrow to select a channel number value as shown in Figure 3-40.

NOTE: The user has the ability to select the identical channel numbers for different tabs, but it is not recommended. The user may experience unwanted behavior.

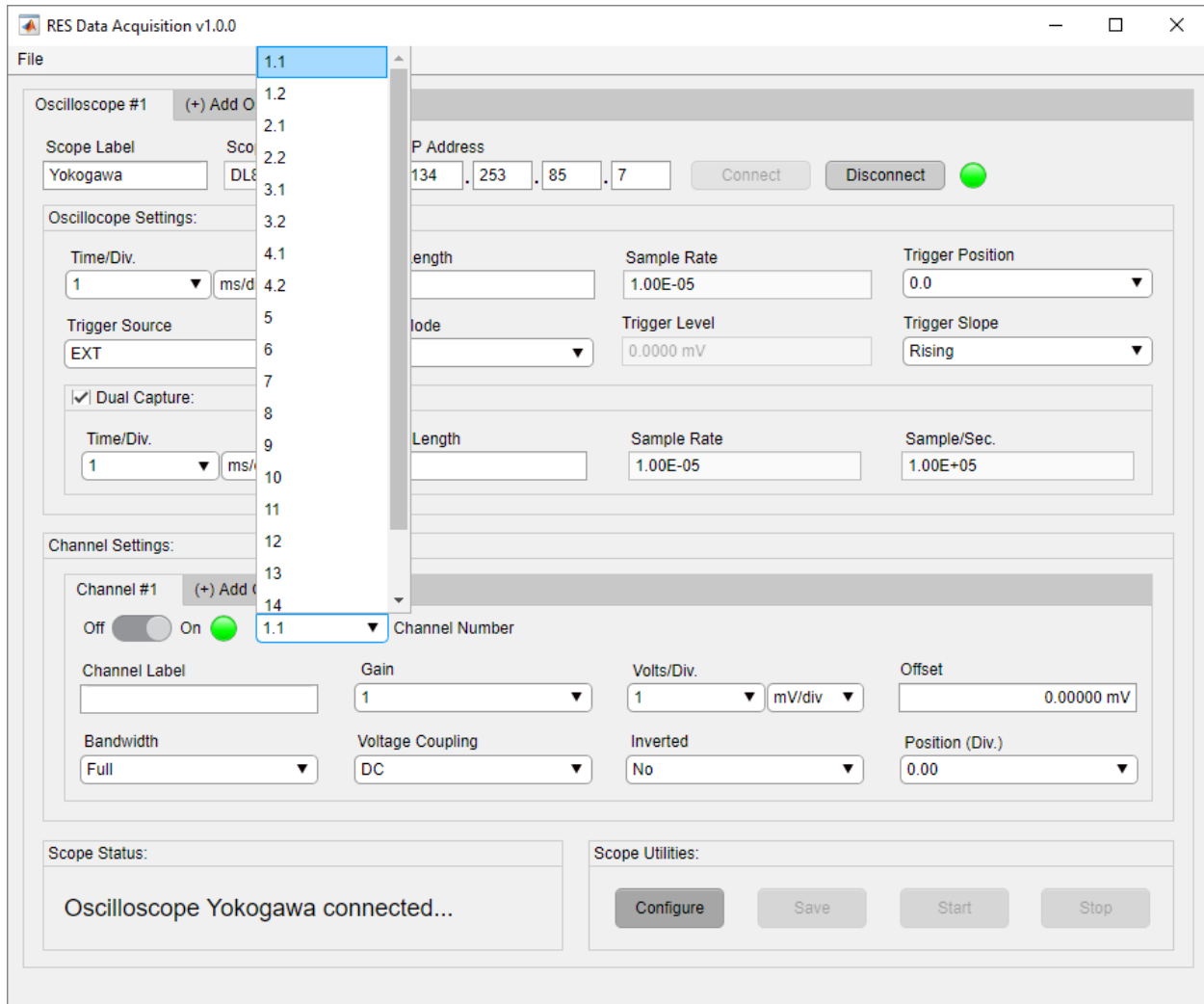


Figure 3-40. Input Channel Number

3.2.5.4. Channel Label

The Channel Label is located in the currently selected channel tab and is used to identify a given channel. Although it is not required, it is recommended the user enter a label. The label can be any combination of ASCII characters and is limited to character lengths described in the instrument's user manual. The user must click inside the Channel Label field to enter a channel label as shown in Figure 3-41.

NOTE: The channel label can be entered at any step of the configuration.

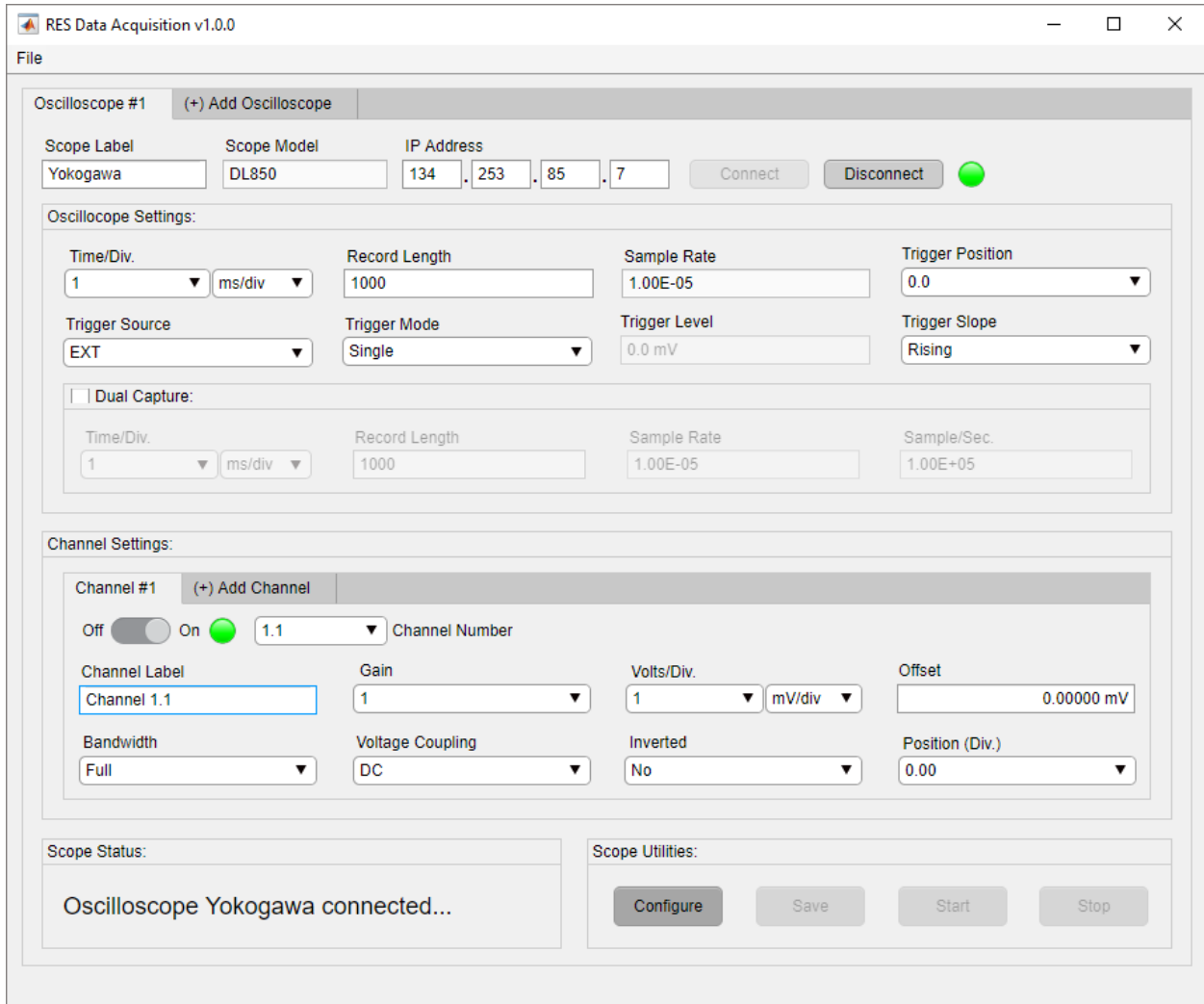


Figure 3-41. Input Channel Label

3.2.5.5. Gain/Probe Attenuation

The Gain, also known as Probe Attenuation, is located in the currently selected channel tab. This setting expands the range the channel can measure, typically in voltage. Click on the down arrow to select a gain/probe attenuation. Next, choose the desired value as shown in Figure 3-42.

NOTE: Teledyne LeCroy instruments automatically detect probe attenuation for a probe attached to a given channel. The Gain/Probe Attenuation cannot be adjusted in this scenario.

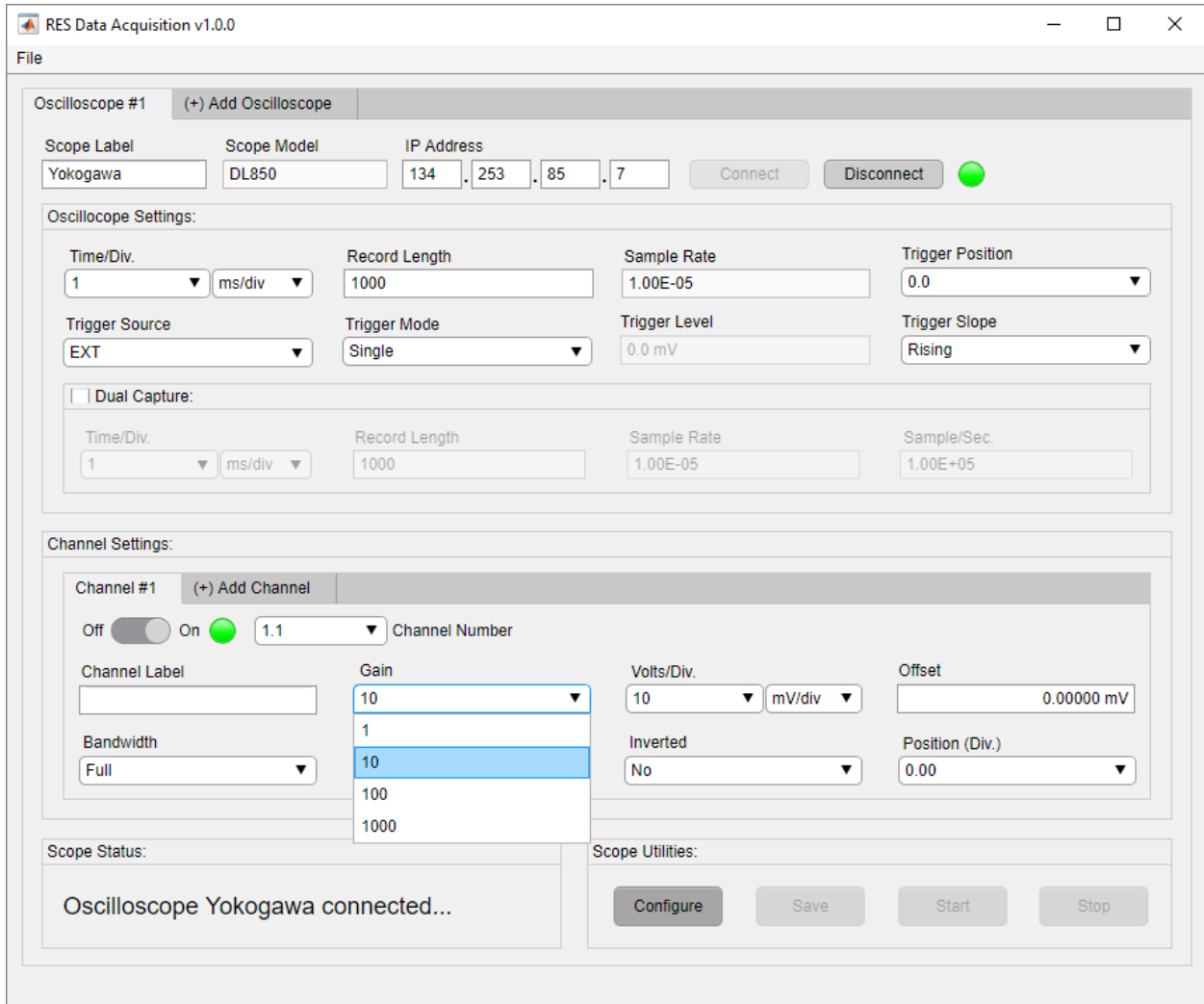


Figure 3-42. Input Gain/Probe Attenuation

3.2.5.6. Volts Per Division

The Volts Per Division is located in the currently selected channel tab. This setting refers to the vertical scale of the acquisition window. The Volts Per Division field consists of two dropdown menus, one containing voltage values and the other containing division values. The number of options in the voltage dropdown will change based on the voltage division value selected as shown in Figure 3-43 and Figure 3-44. This is congruent with the Volts Per Division setting adjusted on the oscilloscope itself.

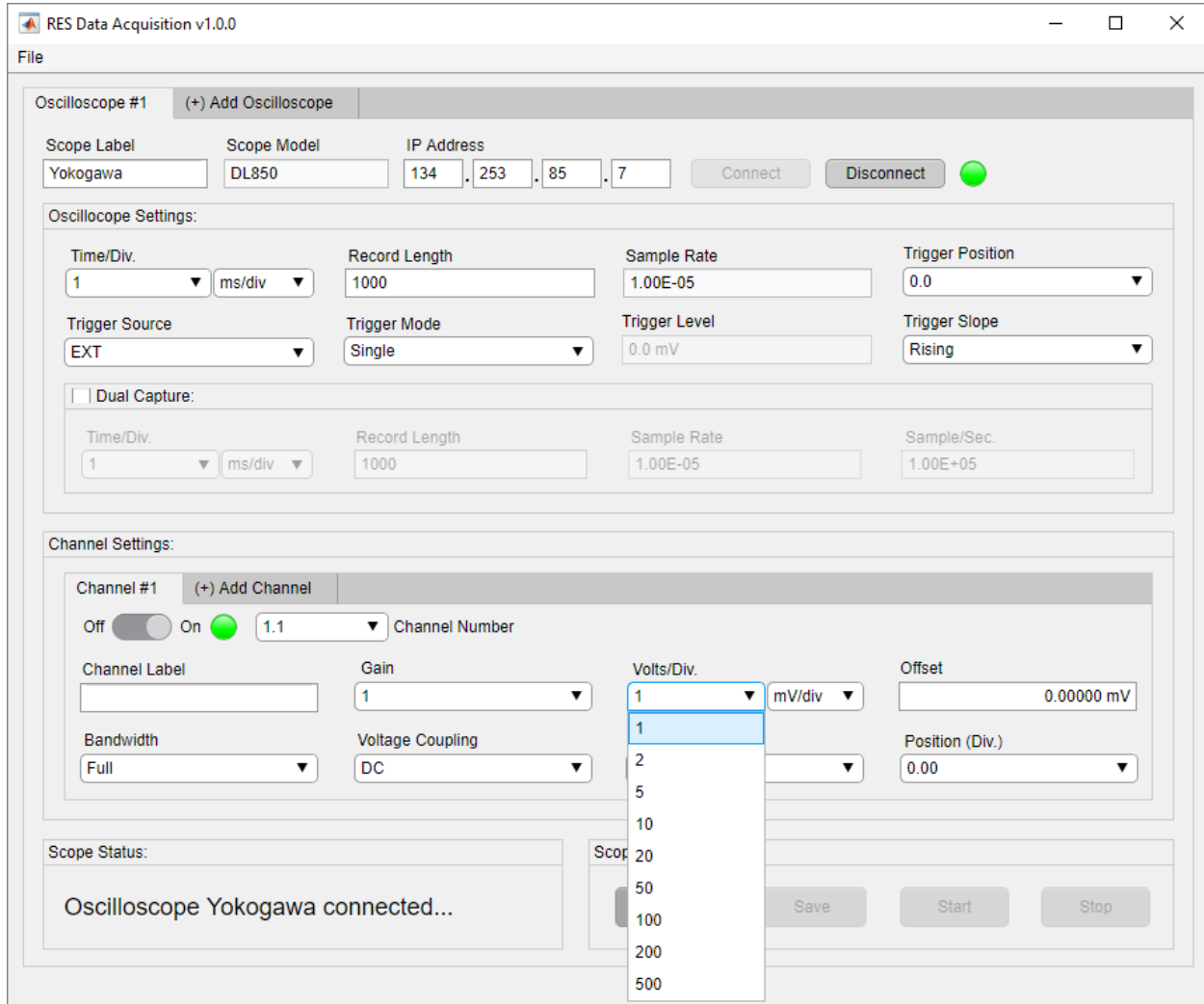


Figure 3-43. Voltage Values for mV Per Division

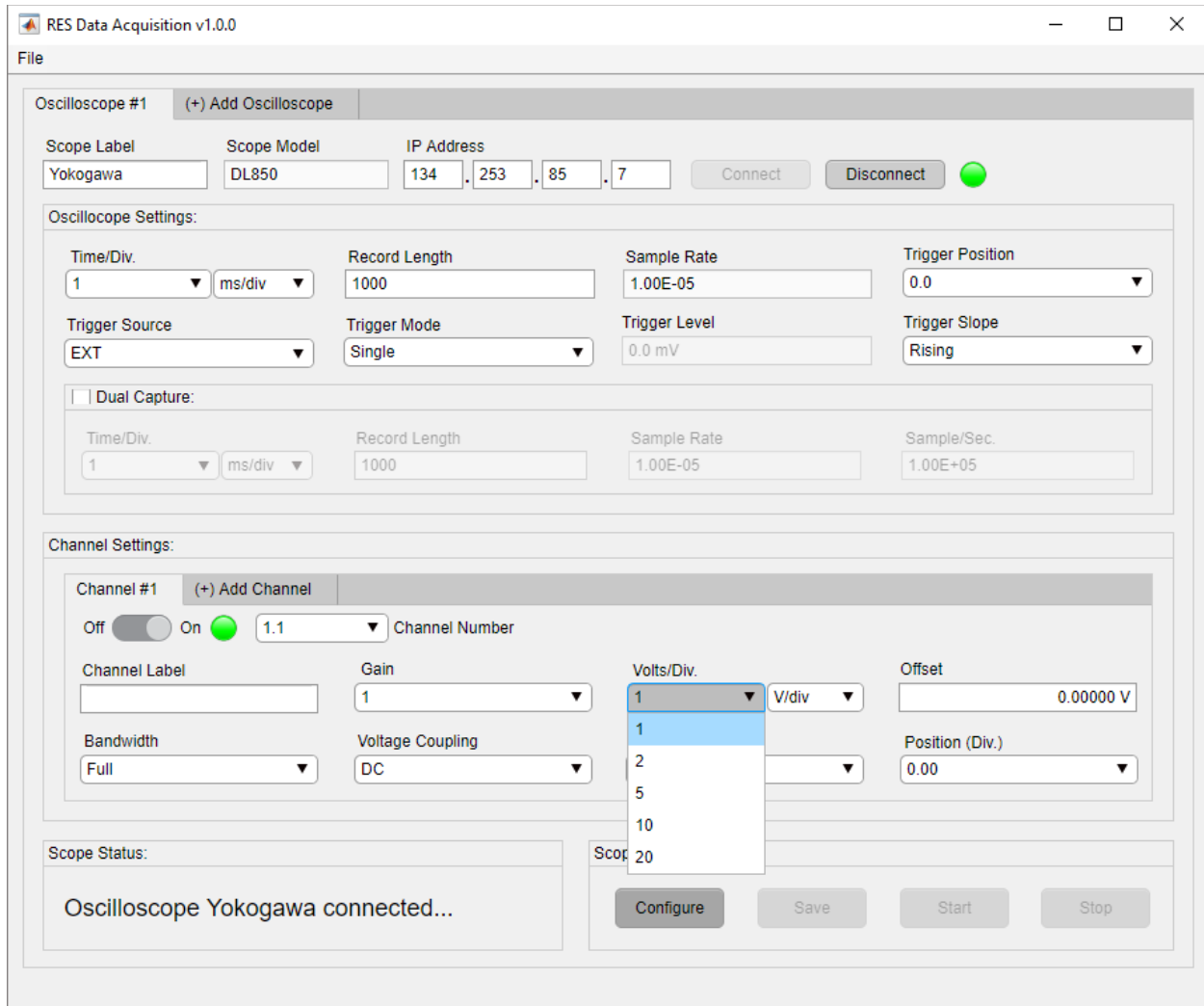


Figure 3-44. Voltage Values for Volts Per Division

The Volts Per Division setting is dependent on the probe attenuation setting. When the Gain/Probe Attenuation is altered, the values for the Volts Per Division field change accordingly as seen in Figure 3-45 and Figure 3-46.

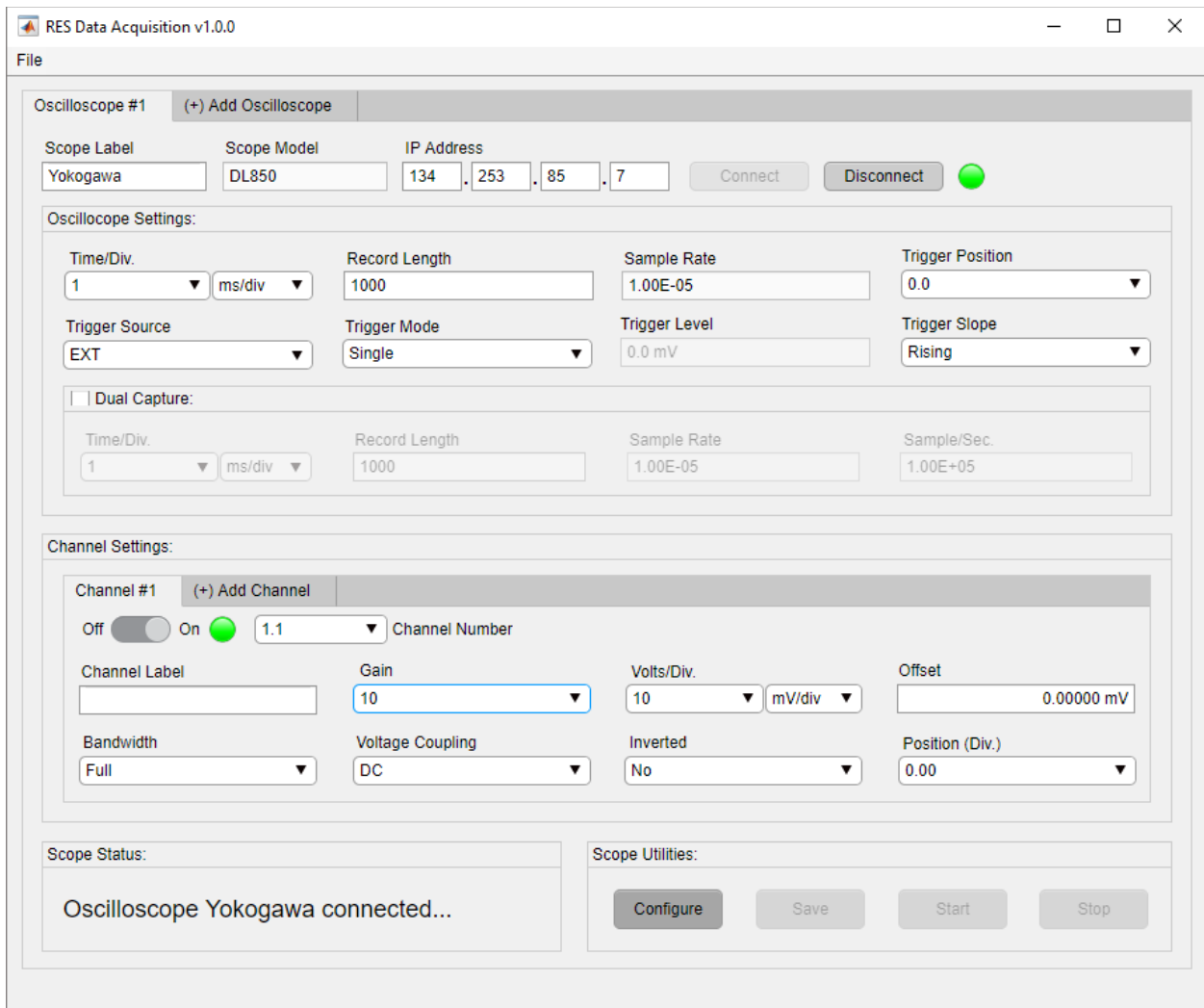


Figure 3-45. Volts Per Division Values for Gain of 10

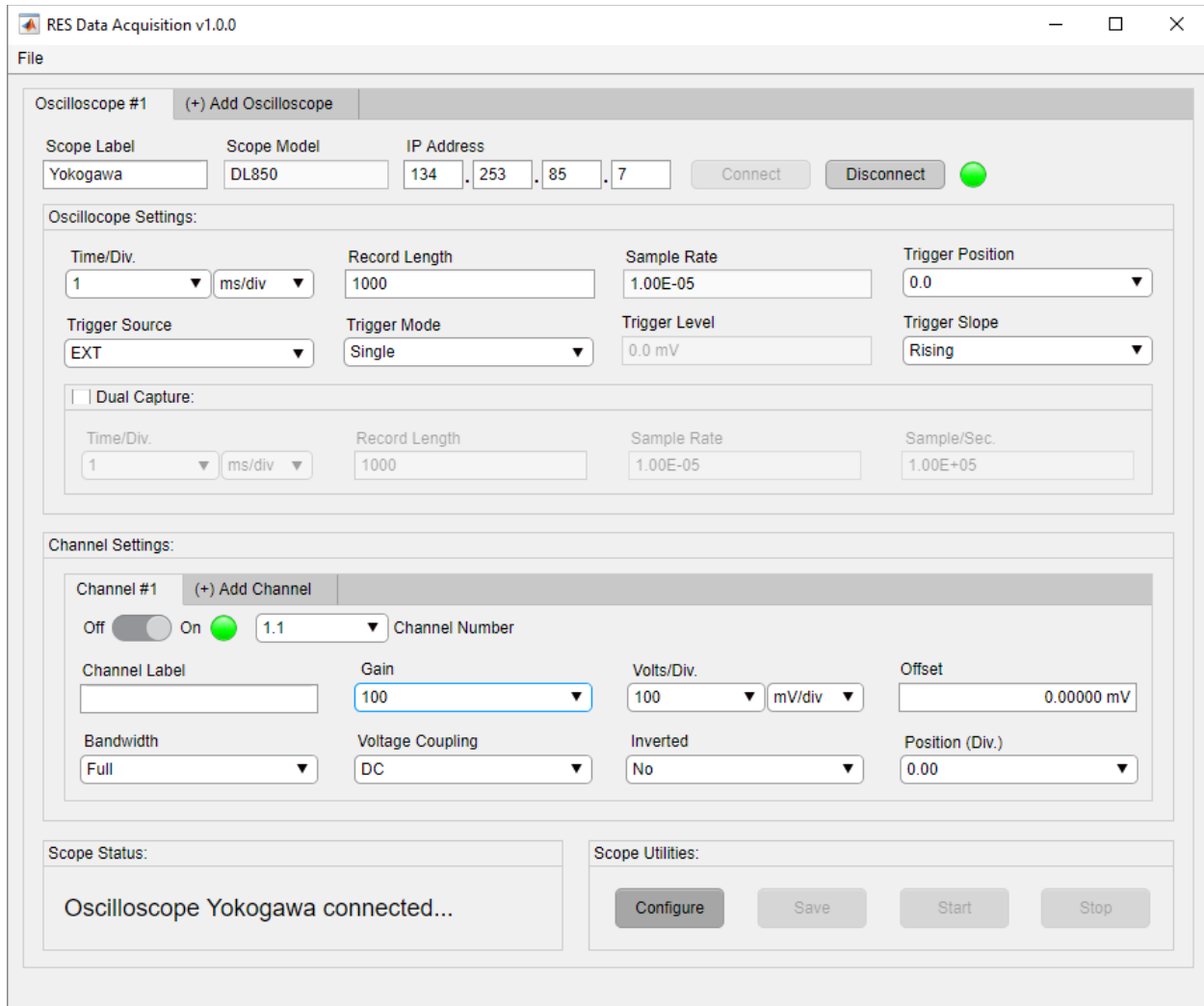


Figure 3-46. Volts Per Division Values for Gain of 100

Click on the down arrow to select a value in either dropdown menu as shown in Figure 3-47 and Figure 3-48.

NOTE: The options for voltage and voltage division will differ based on oscilloscope model.

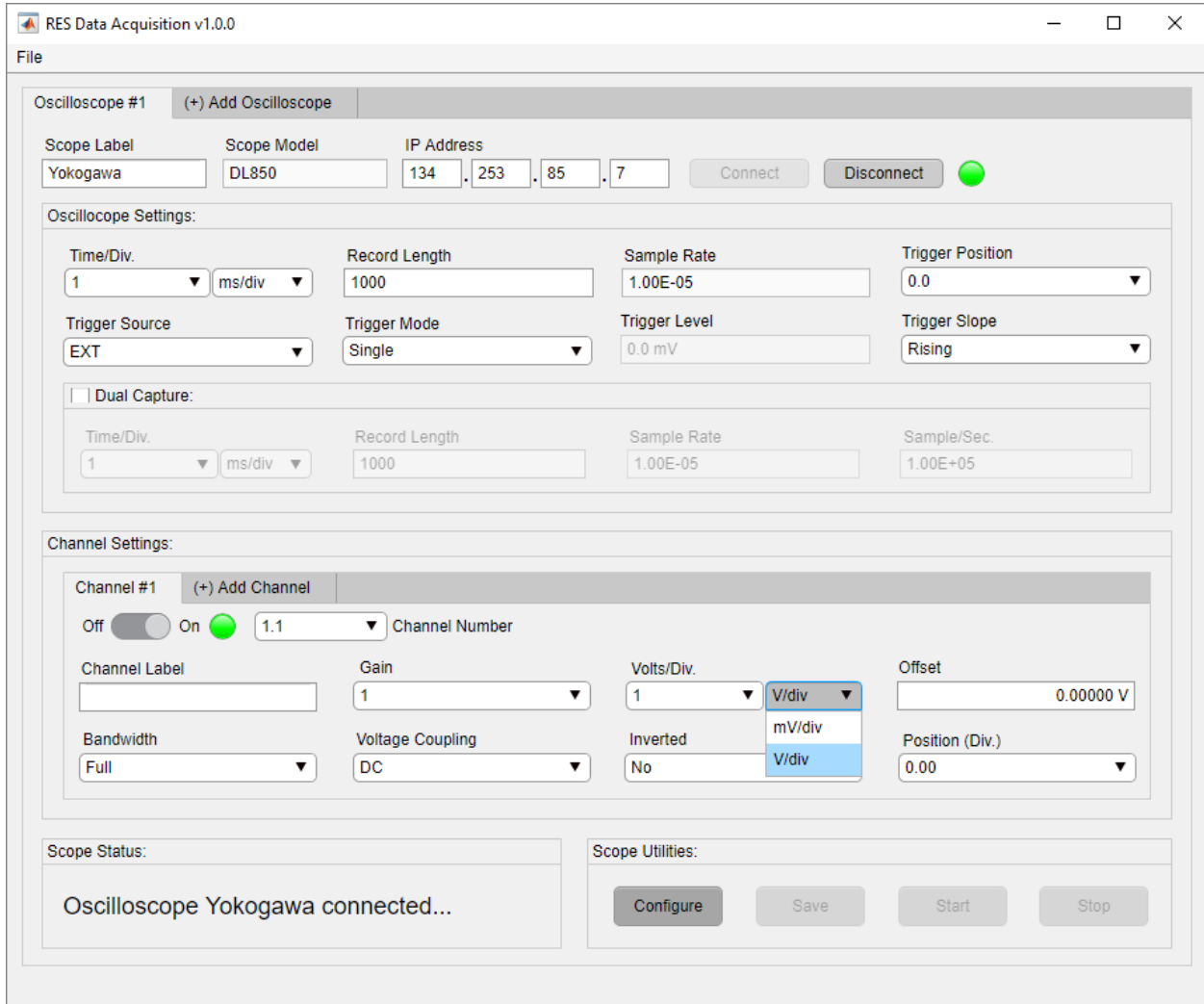


Figure 3-47. Select Voltage Division Value

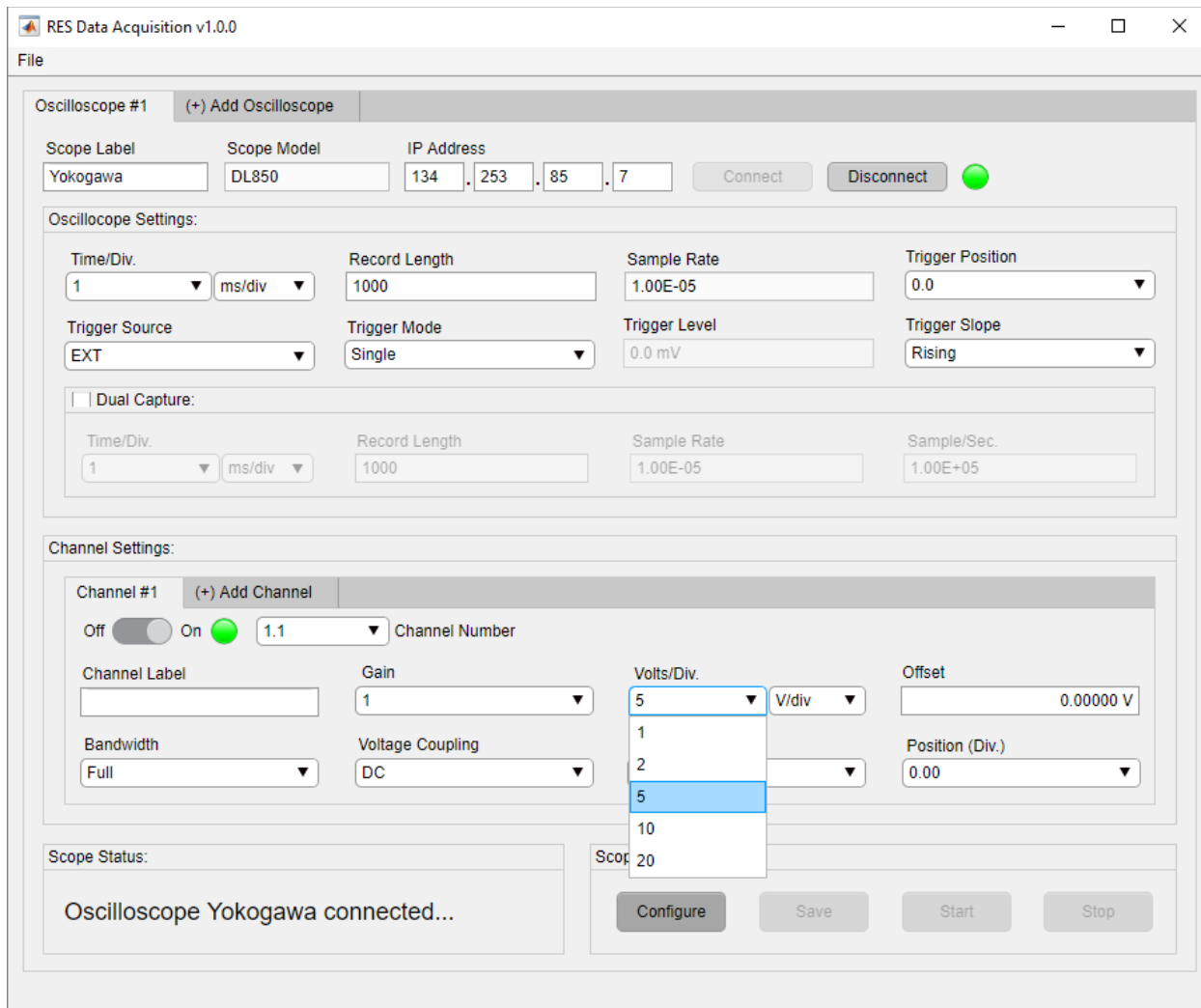


Figure 3-48. Select Voltage Value

3.2.5.7. Offset/Vertical Offset

The Offset, also known as Vertical Offset, is located in the currently selected channel tab. The offset adjusts the vertical position of a waveform in terms of voltage. The vertical offset units, seen in the Offset field, dynamically update when the voltage per division setting is altered for the currently selected channel tab as seen in Figure 3-49 and Figure 3-50.

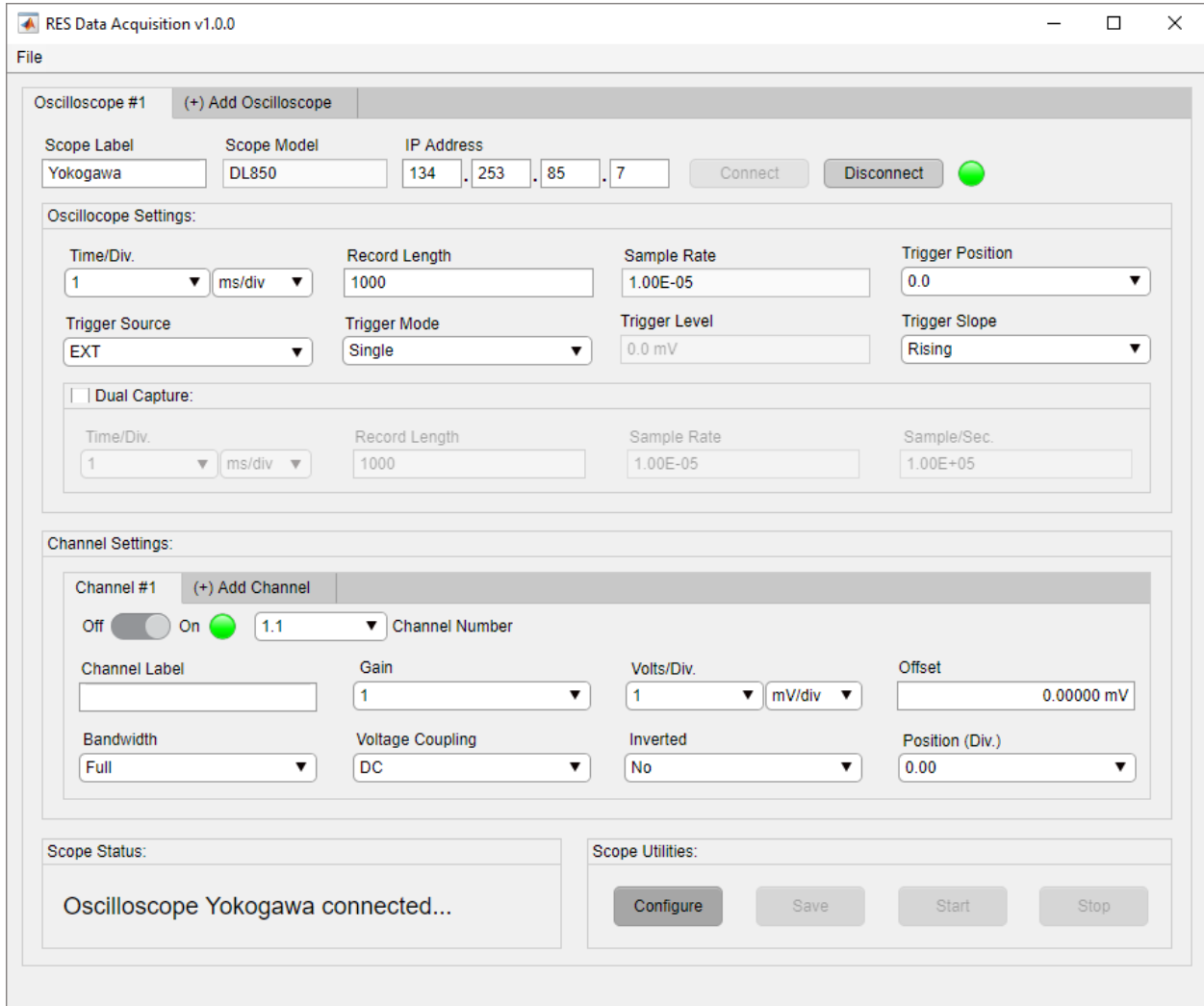


Figure 3-49. Vertical Offset Units for 1 mV/div

The vertical offset units change from mV to V as seen in Figure 3-49. The change reflects the adjustment made for the voltage per division setting seen in Figure 3-50.

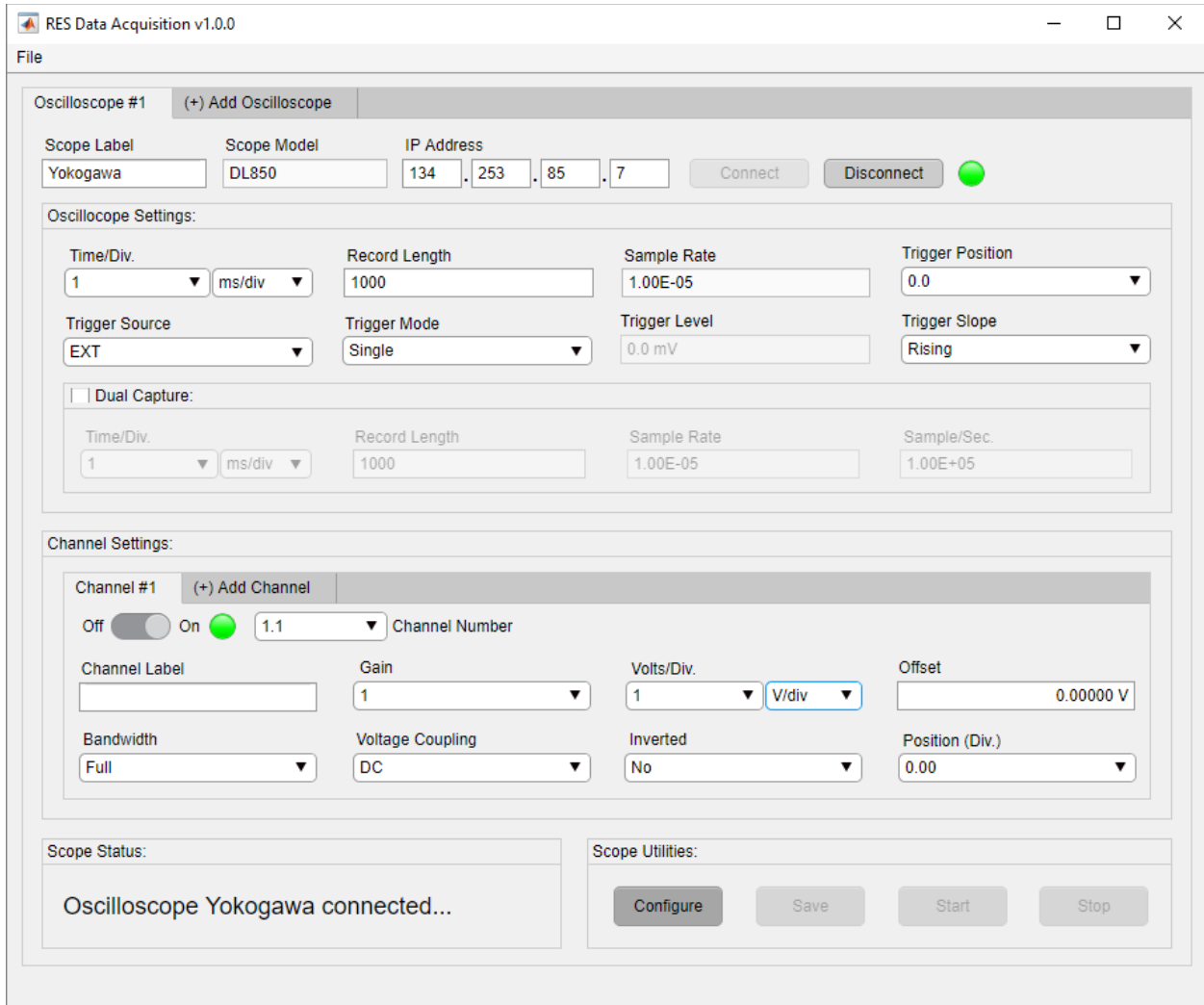


Figure 3-50. Vertical Offset Units for 1 V/div

RES DAQ v1.0.0 restricts the user entering nonnumerical characters (Figure 3-51) and values outside the range of the vertical offset (Figure 3-52).

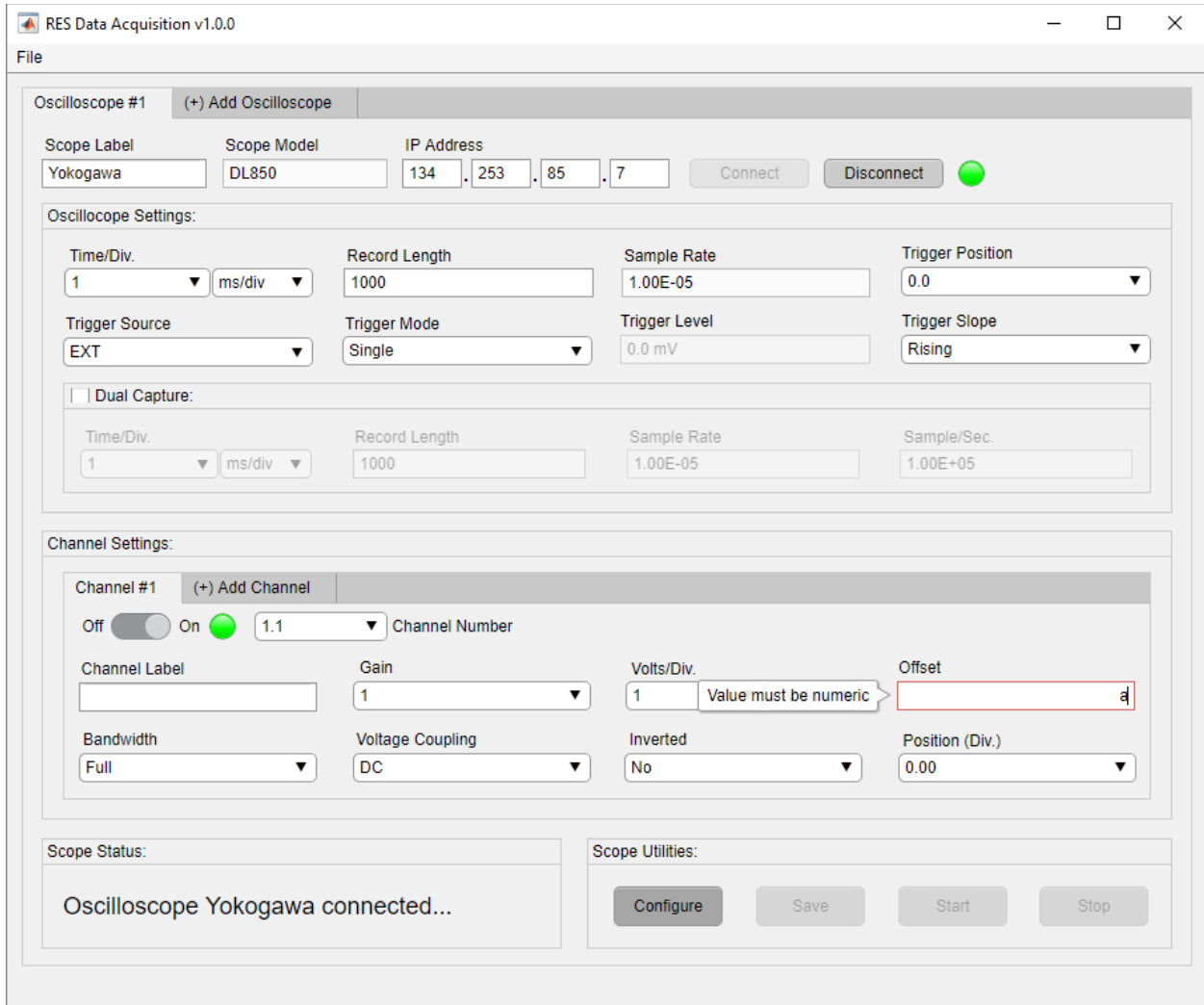


Figure 3-51. Vertical Offset Nonnumerical Restriction

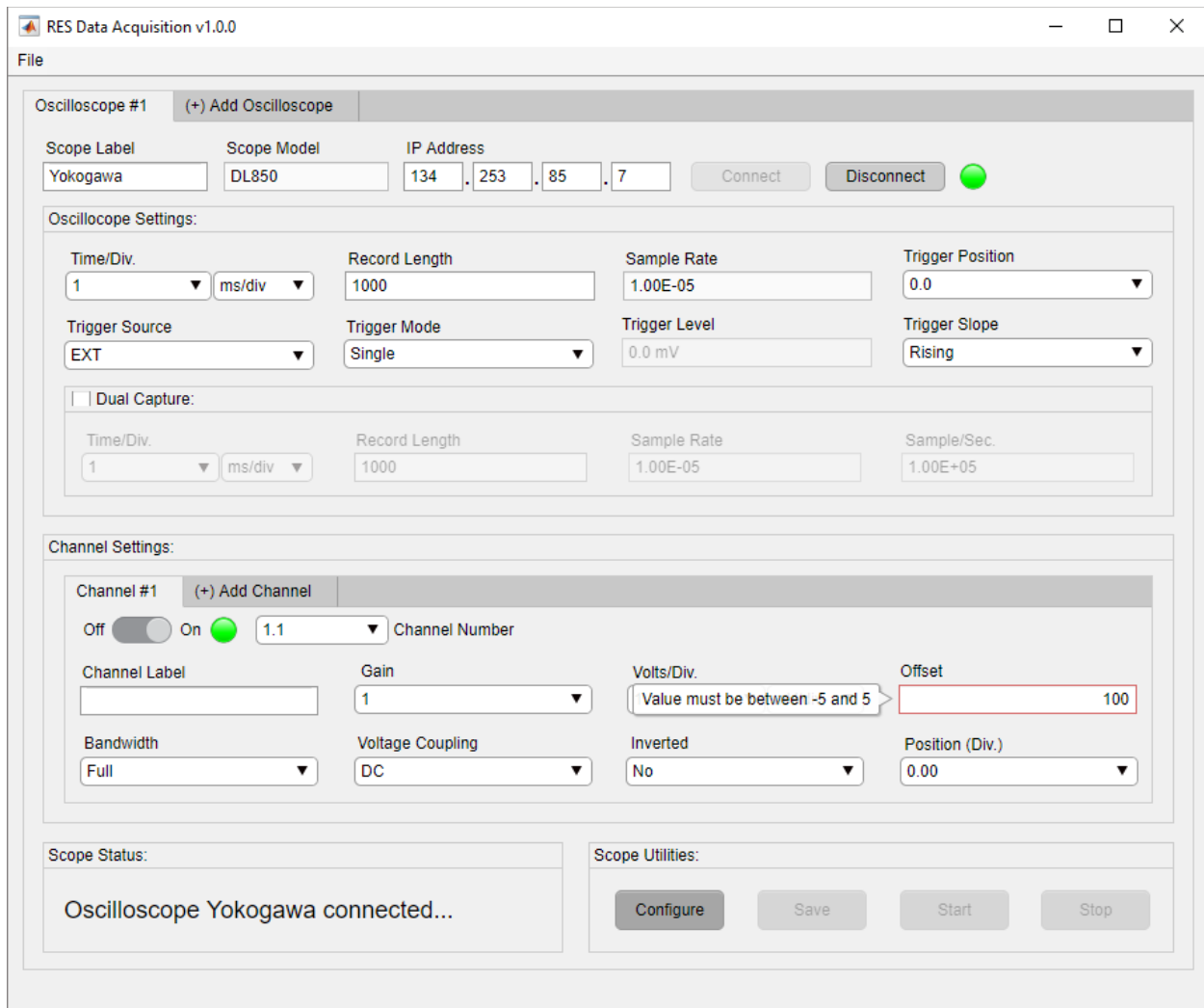


Figure 3-52. Vertical Offset Range Restriction

The user must click inside the vertical offset field (Figure 3-53) and enter a value following the *RES DAQ v1.0.0* restrictions as shown in Figure 3-51 and Figure 3-52.

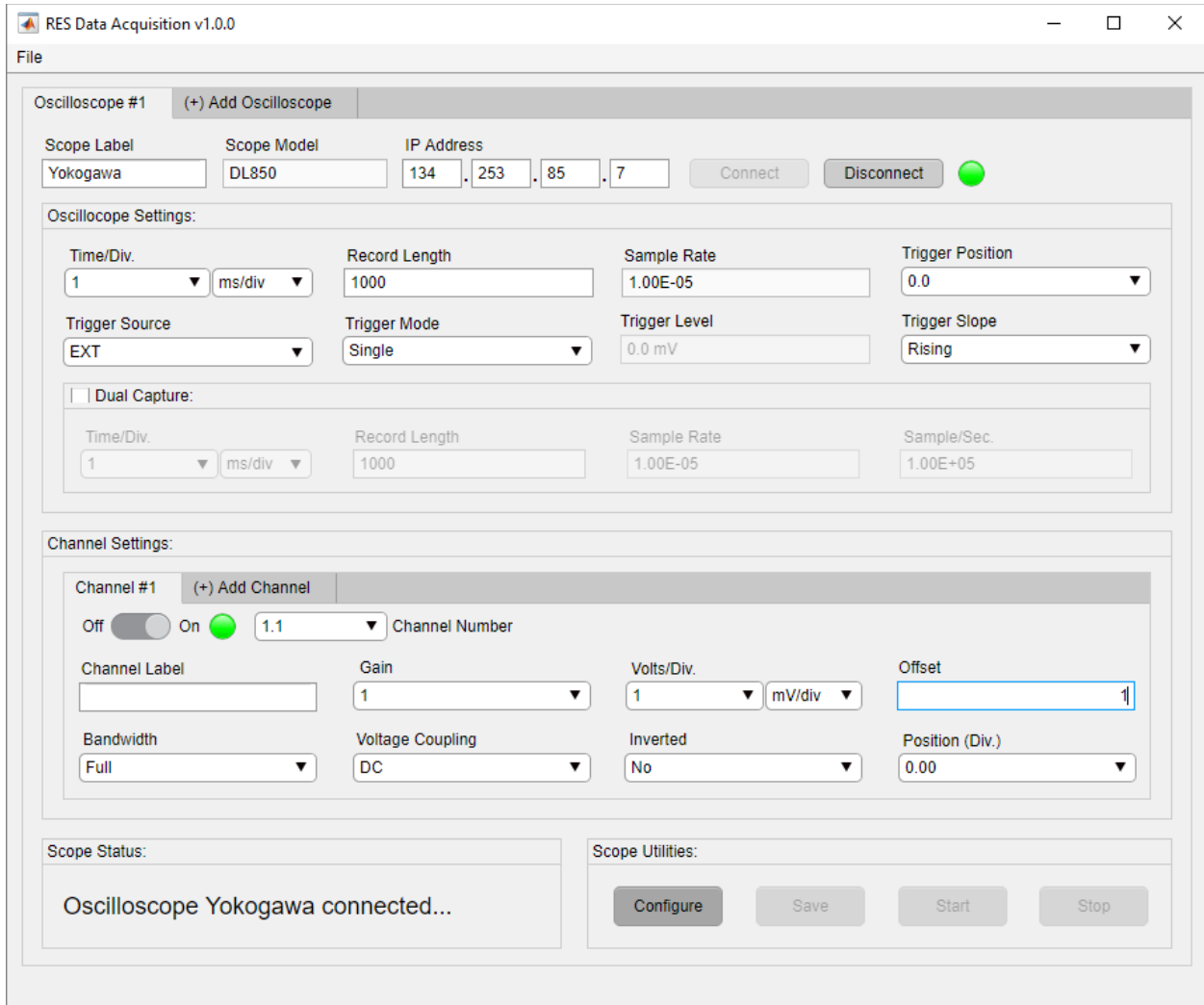


Figure 3-53. Input Vertical Offset

After entering a valid offset value, the Offset field will display the appropriate units and decimal places shown in Figure 3-54.

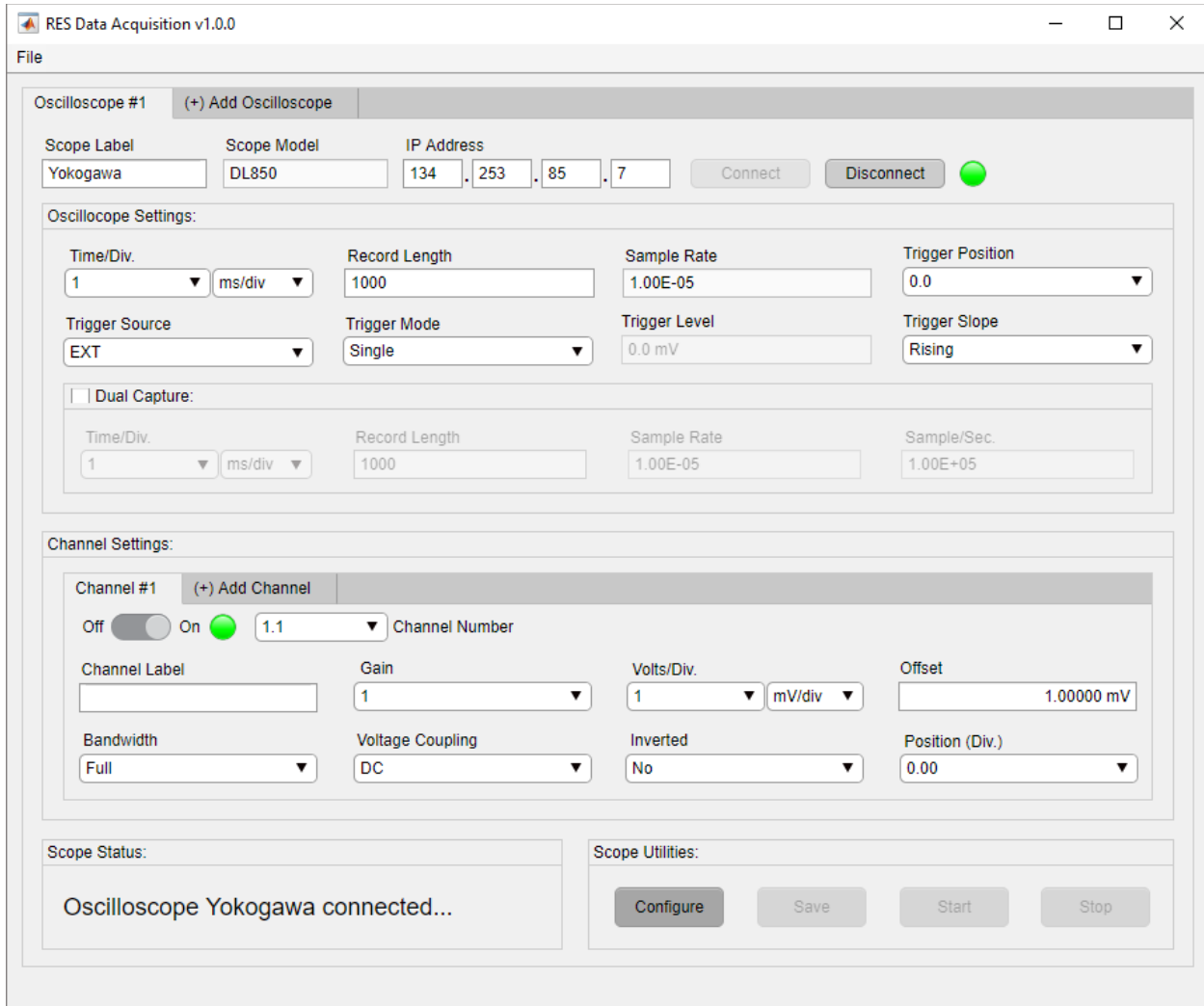


Figure 3-54. Vertical Offset Display

3.2.5.8. Bandwidth

The Bandwidth is located in the currently selected channel tab. This setting acts as a digital filter to remove noisy components of a desired signal. Click the down arrow to select a desired bandwidth value as shown in Figure 3-55.

NOTE: Bandwidth values will vary based on oscilloscope model.

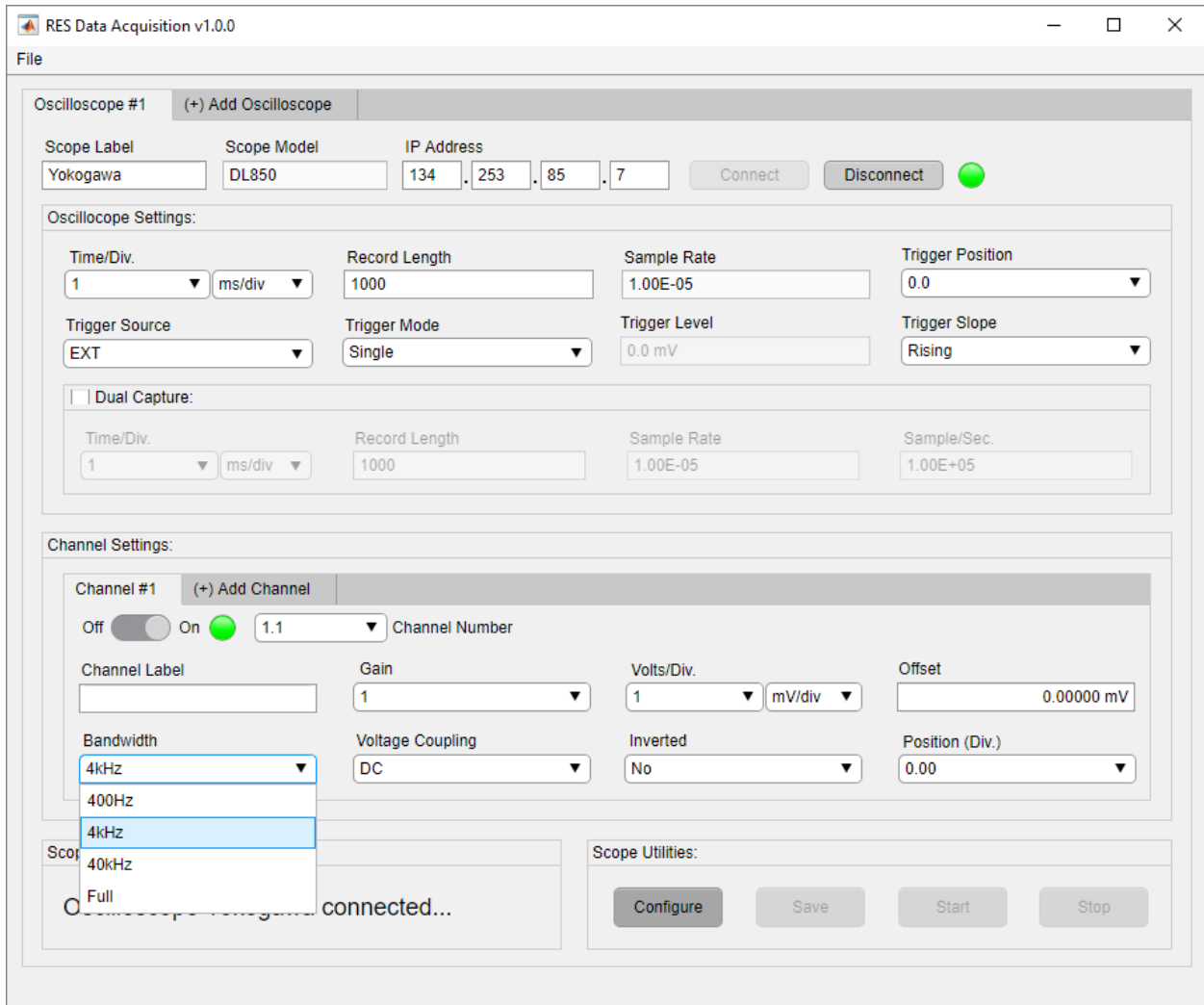


Figure 3-55. Input Bandwidth

3.2.5.9. Voltage/Vertical Coupling

The Voltage Coupling, also known as Vertical Coupling, is located in the currently selected channel tab. The coupling allows the user to visually inspect Alternating Current (AC) and Direct Current (DC) components of a signal. Click the down arrow to select a desired coupling value as shown in Figure 3-56.

NOTE: Coupling values will vary based on oscilloscope model.

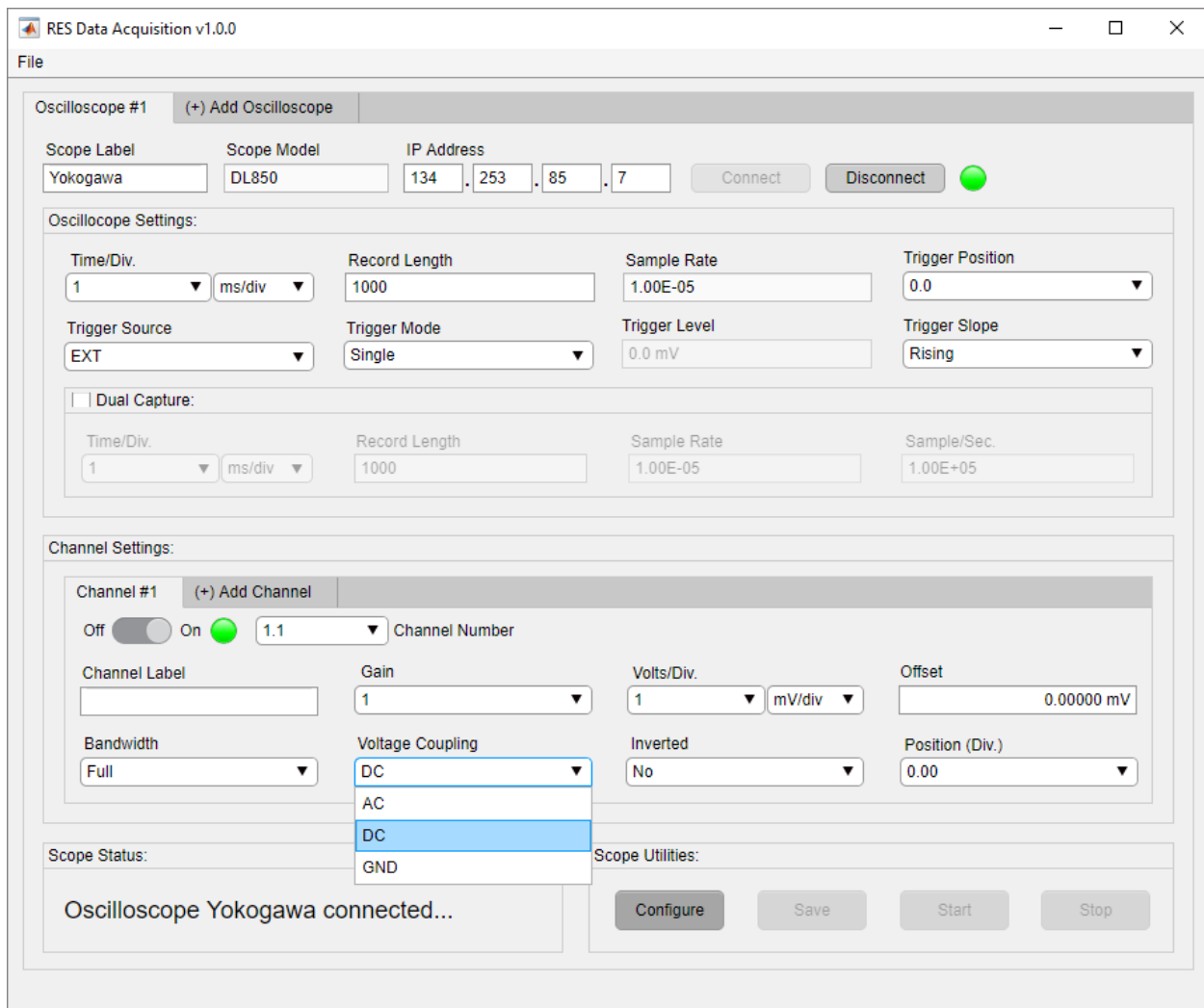


Figure 3-56. Input Voltage/Vertical Coupling

3.2.5.10. Channel Invert

The Channel Invert is located in the currently selected channel tab. This setting inverts the signal for a given channel. Click the down arrow to select a desired invert value as shown in Figure 3-57.

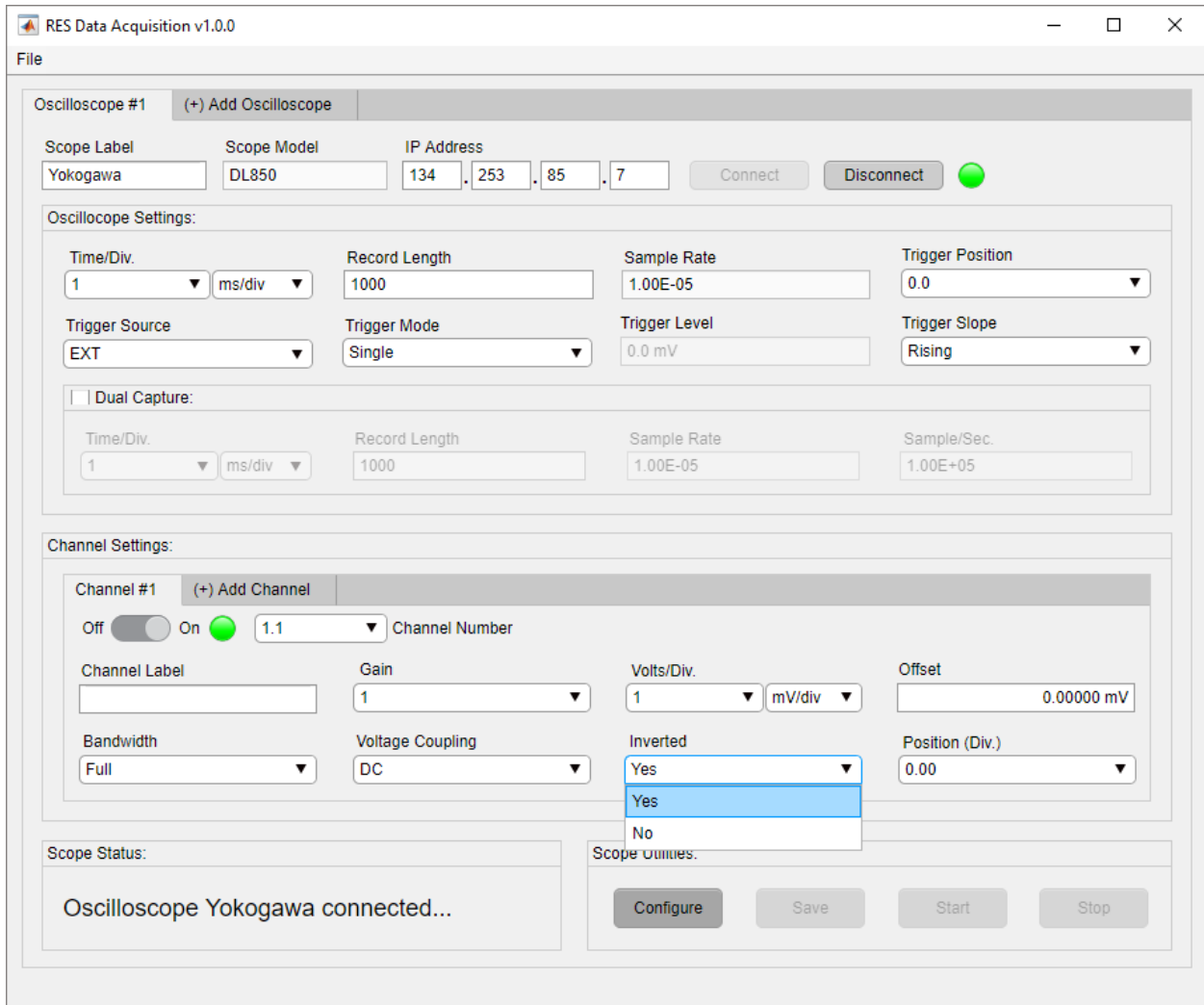


Figure 3-57. Input Channel Invert

3.2.5.11. Position/Vertical Position

The Position, also known as Vertical Position, is located in the currently selected channel tab. This setting adjusts the vertical position of a waveform in terms of divisions. Click the down arrow to select a desired invert value as shown in Figure 3-58.

NOTE: Position is only available for Yokogawa instruments. If connected to a LeCroy instrument, the Position setting will be disabled.

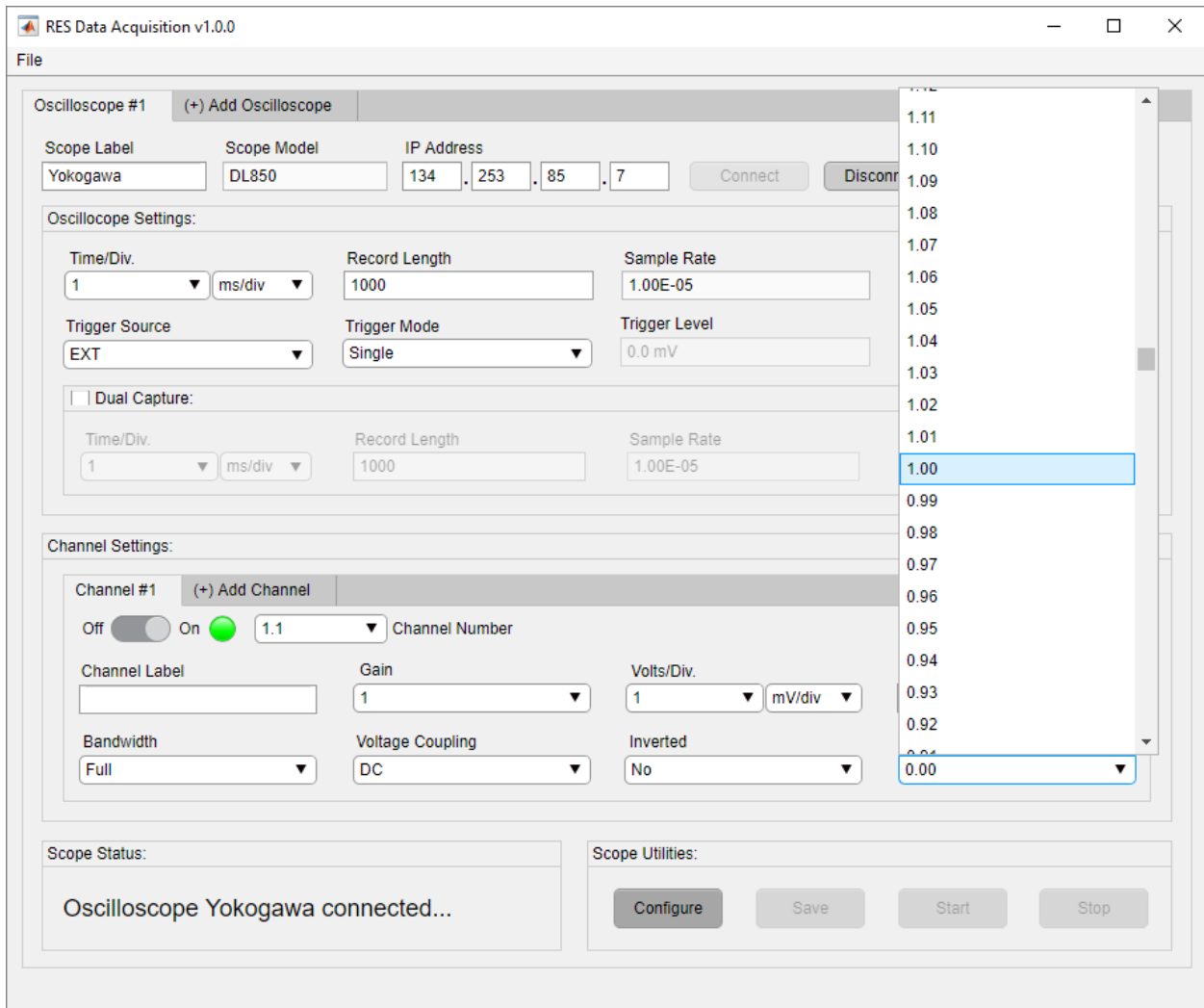


Figure 3-58. Input Vertical Position

3.2.6. Configure Oscilloscope

The instrument is ready to be configured when the desired settings are selected. *RES DAQ v1.0.0* will send the current oscilloscope and channel settings configuration to the oscilloscope when the user clicks the Configuration button. *RES DAQ v1.0.0* will enable the Start button and display the configured status in the Scope Status panel if the instrument is correctly configured, (Figure 3-59). Next, the oscilloscope is ready to start acquiring data. Users can troubleshoot configuration errors section 5.2.

NOTE: Various setting values displayed on RES DAQ v1.0.0 cannot be configured to the connected instrument. When a selected value cannot be configured, the oscilloscope selects the next closest value.

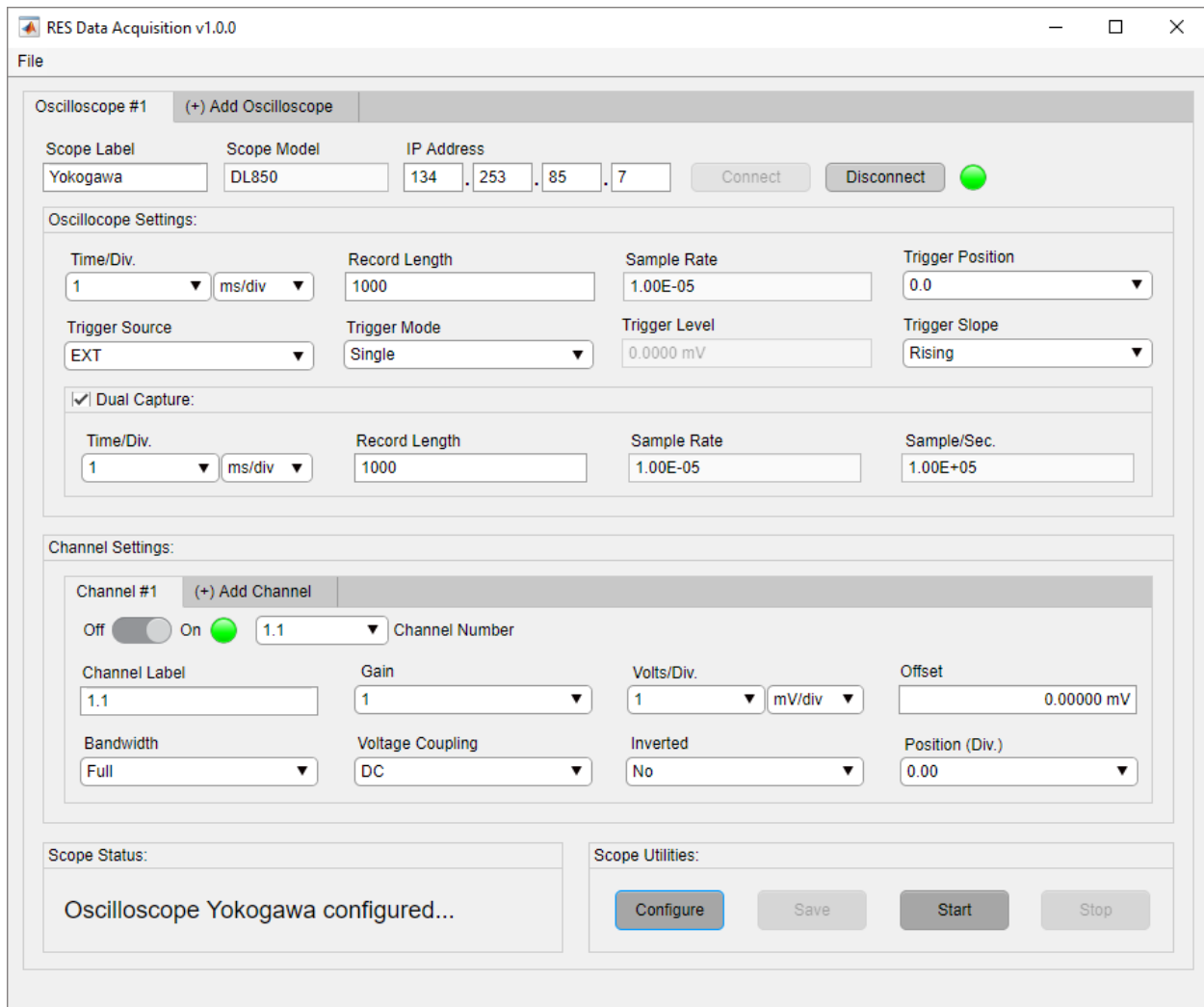


Figure 3-59. Successful Instrument Configuration

3.2.7. Start Data Acquisition

The instrument is ready to acquire data after the desired settings are configured to the instrument. When the user clicks the Configure button, located in the Scope Utilities panel, *RES DAQ v1.0.0* sends a signal to the oscilloscope to start acquiring data. *RES DAQ v1.0.0* will display the starting status in the Scope Status panel and enable the Stop button and disable the Configure and Start buttons if the instrument is started correctly (Figure 3-60). At this step, the oscilloscope is waiting for a trigger event to occur. Users can troubleshoot start errors as seen in see section 5.4.

NOTE: The instrument must be configured prior to acquiring data. Configuring the instrument will enable the Start button as described in section 3.2.6.

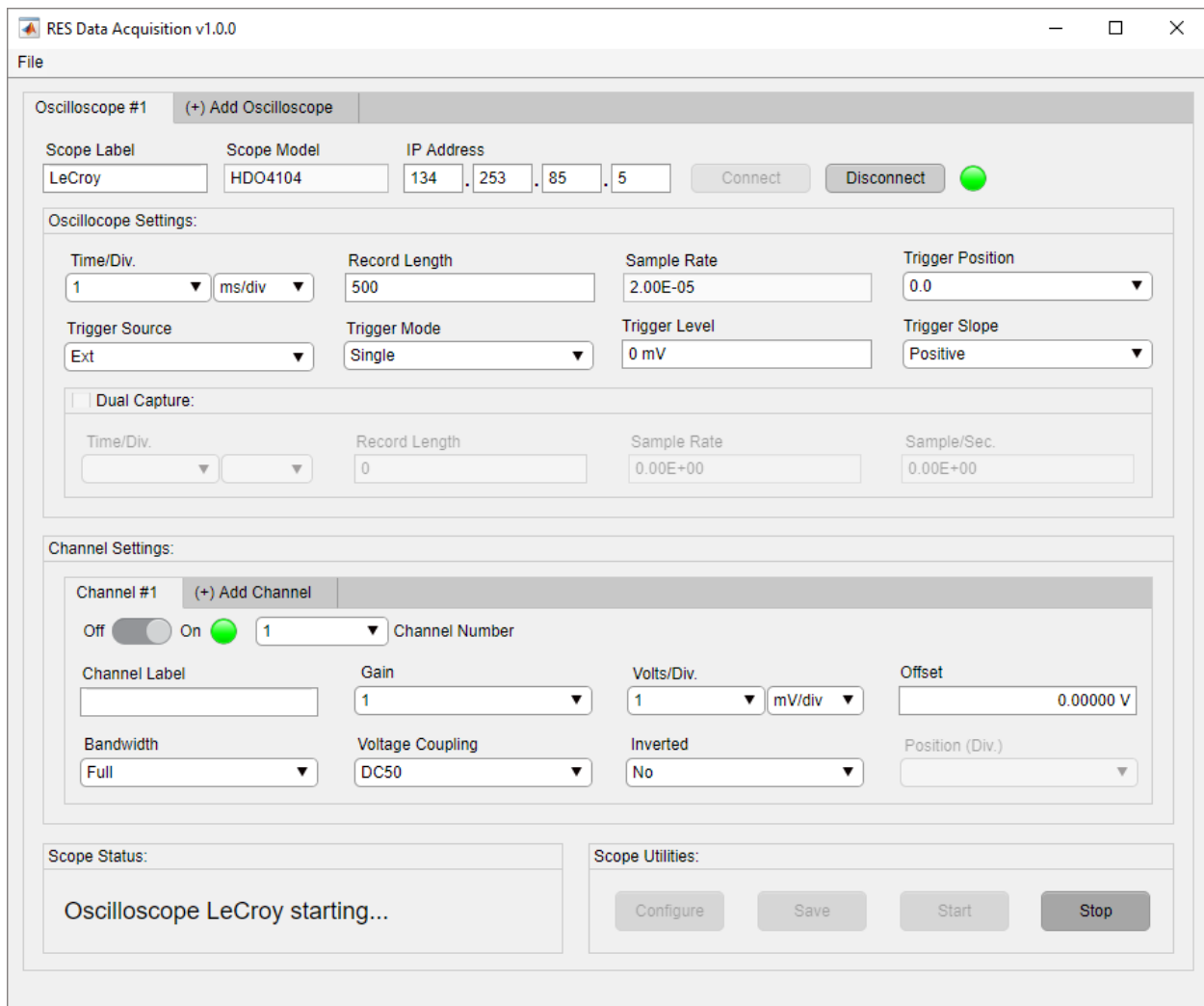


Figure 3-60. Starting Data Acquisition

3.2.7.1. Trigger Event

After starting the oscilloscope, *RES DAQ v1.0.0* will display the armed status in the Scope Status panel as shown in Figure 3-61. In this state, the oscilloscope is armed and waiting for a trigger event.

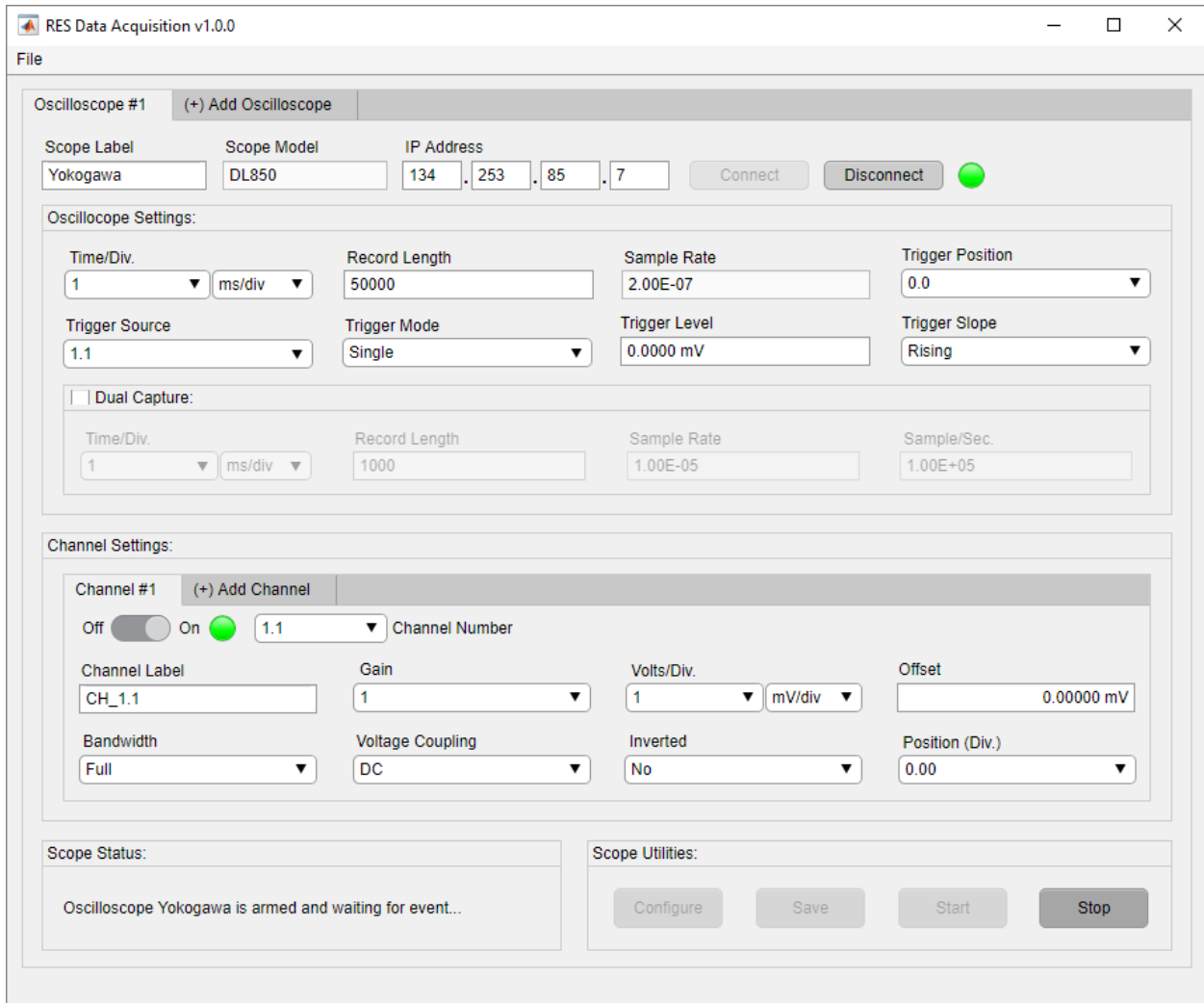


Figure 3-61. Waiting for Trigger Event

When the trigger event occurs, *RES DAQ v1.0.0* will display the triggered status in the Scope Status panel (Figure 3-62).

NOTE: Auto and normal trigger modes continually sweep the acquisition window. RES DAQ v1.0.0 reflects this behavior by alternating between the armed and triggered status in the Scope Status panel.

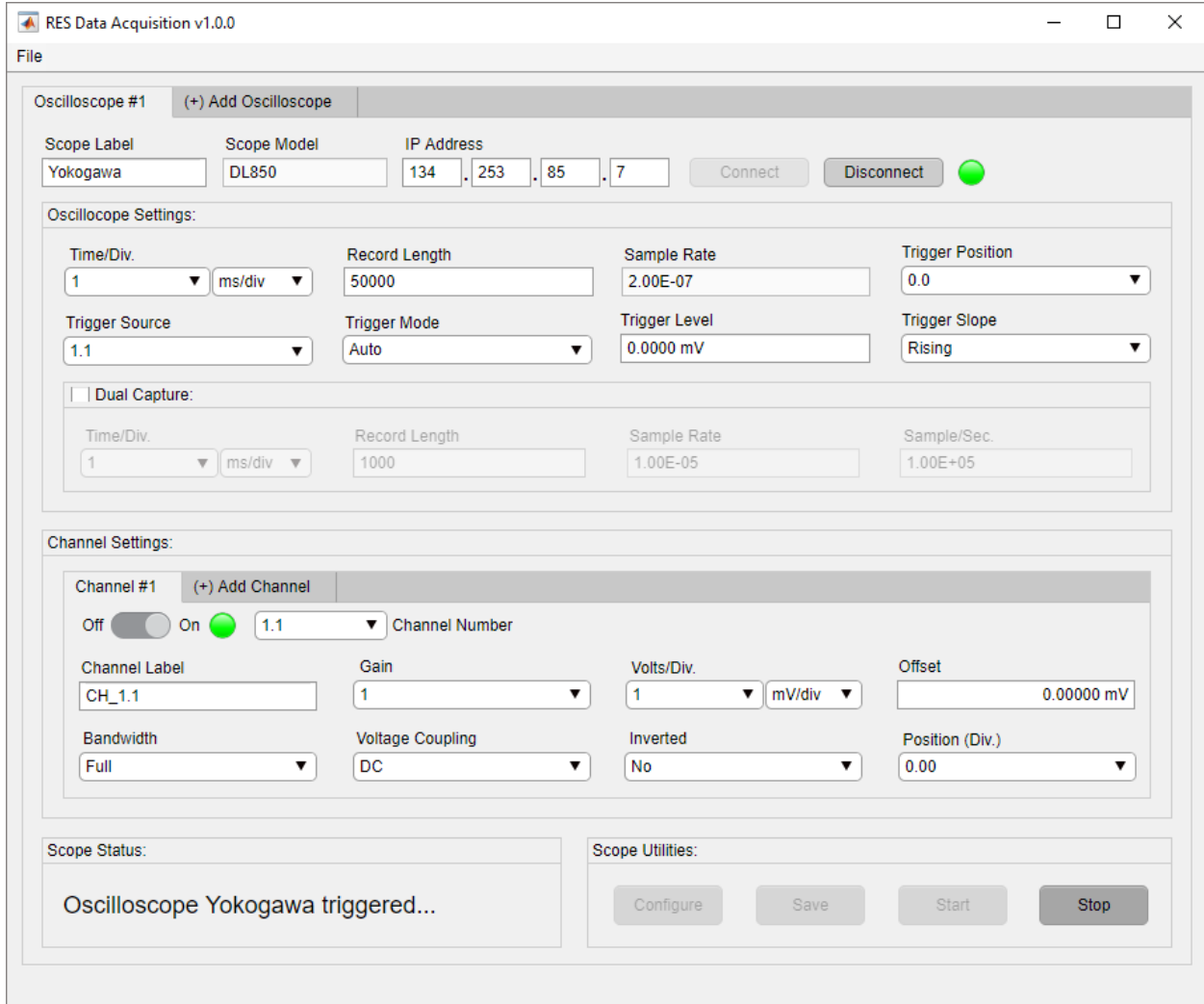


Figure 3-62. Trigger Event Occurs

3.2.8. Stop Data Acquisition

Data acquisition can be stopped at any point after acquisition commences. *RES DAQ v1.0.0* sends a signal the oscilloscope to stop data acquisition when the user clicks the Stop button. When a *Teledyne LeCroy* instrument is stopped correctly, *RES DAQ v1.0.0* will display the stopped status in the Scope Status panel and enable the Configure and Save buttons (Figure 3-63). The details about acquired data saved on the *Teledyne LeCroy* instrument is found in section 3.2.9.1.

NOTE: In single mode, data acquisition stops after detecting a single trigger event and is reflected in RES DAQ v1.0.0.

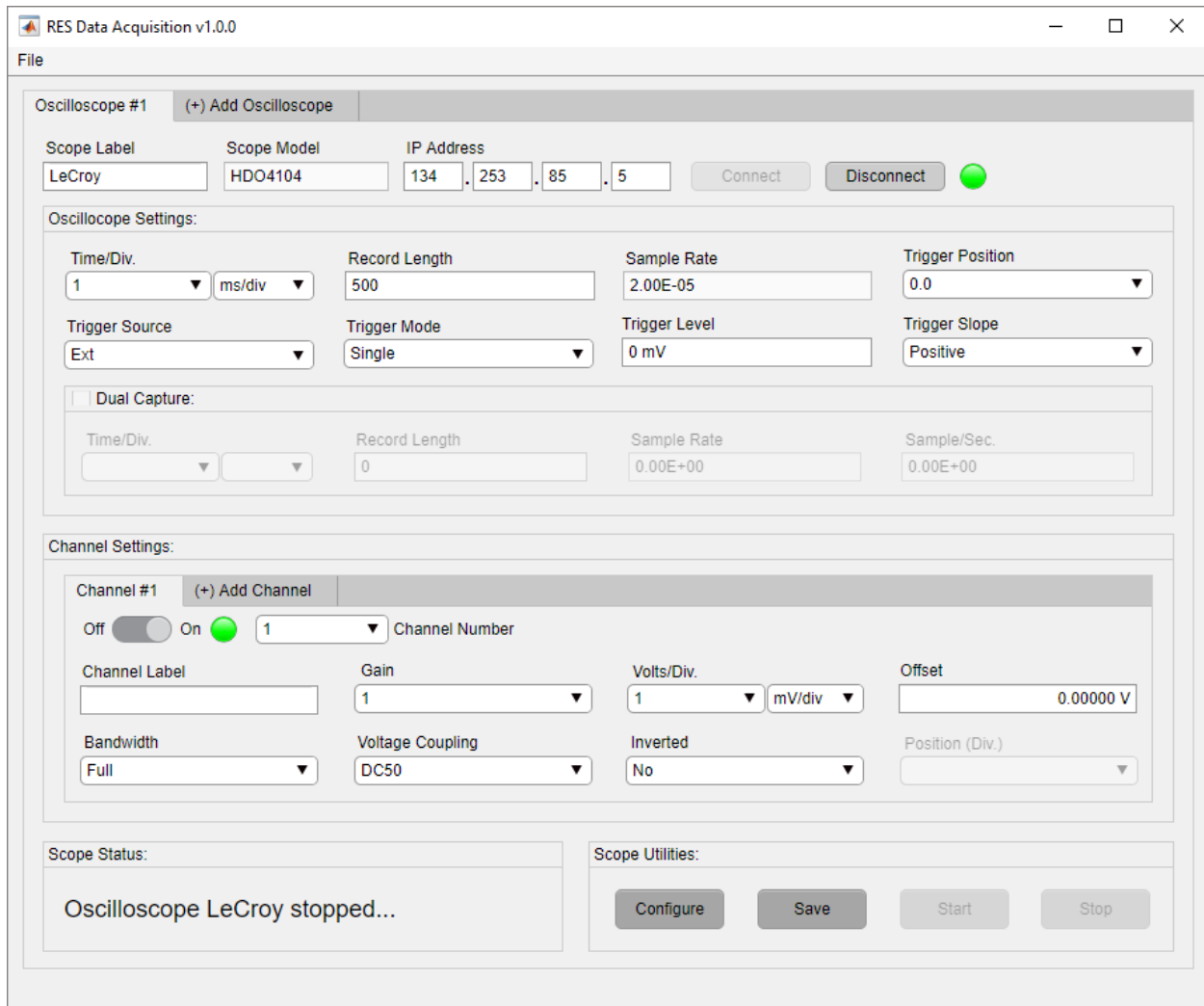


Figure 3-63. LeCroy Instrument Stopped

RES DAQ v1.0.0 will display the stopped status in the Scope Status panel and only enable the Configure button when a *Yokogawa* instrument is stopped correctly (Figure 3-64). The details about acquired data saved on the *Yokogawa* instrument is found in section 3.2.9.2.

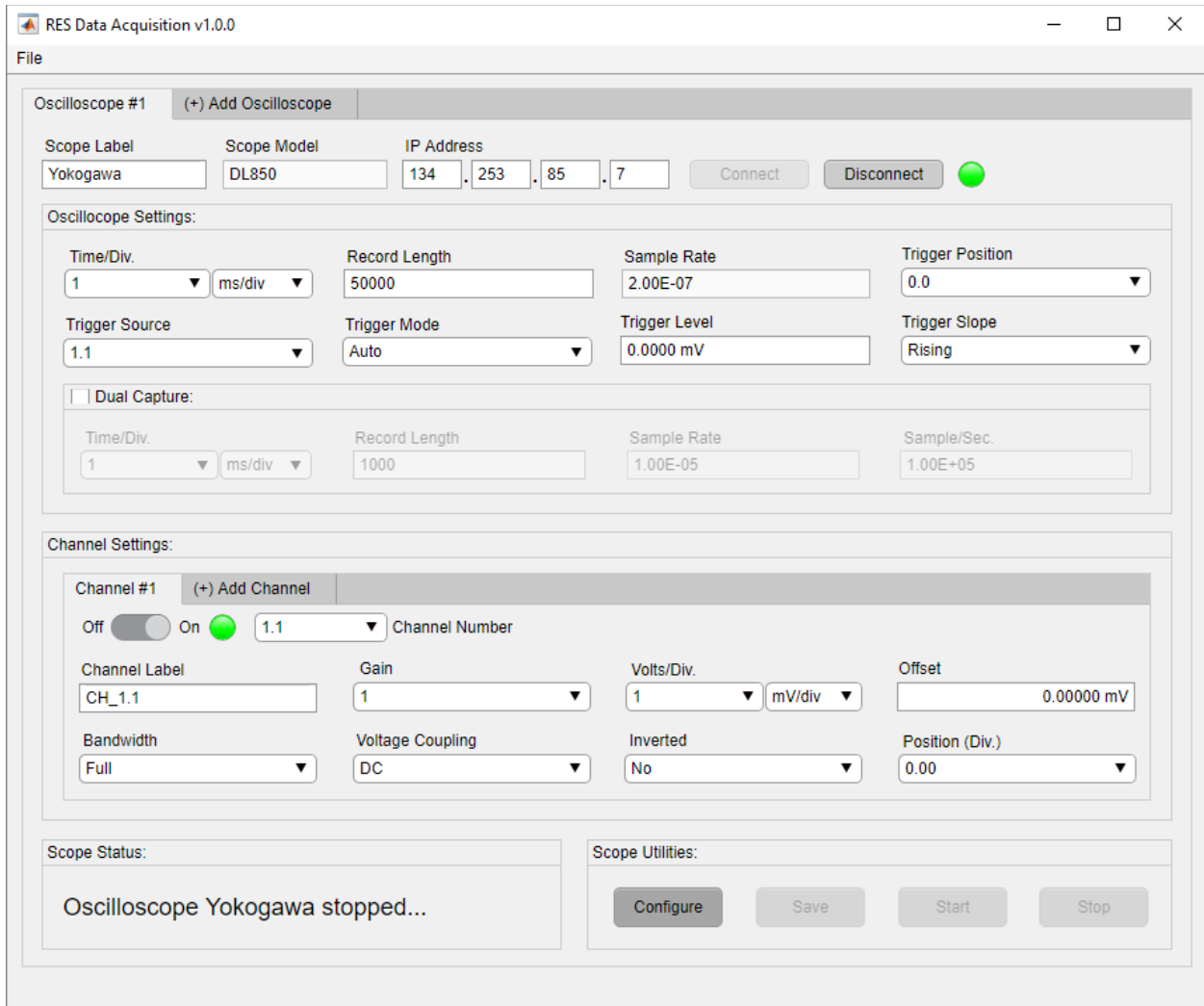


Figure 3-64. Yokogawa Instrument Stopped

3.2.9. Saving Acquired Data

After transitioning from acquiring data to stopping the acquisition, *RES DAQ v1.0.0* will automatically save a copy of the acquired data to a location varying by oscilloscope model. These locations are described in the sections 3.2.9.1 and 3.2.9.2. Users can troubleshoot save errors as seen in section 5.6.

3.2.9.1. Saving Data from LeCroy

When the acquisition is stopped from a *Teledyne LeCroy* instrument, a copy of the acquired data automatically saves to the instrument's internal hard drive in binary format. The saved data is automatically named and numbered. Details of the naming convention can be found in the instrument's user manual. *RES DAQ v1.0.0* gives the user the ability to save acquired data externally. The user must connect an external hard drive to the oscilloscope and click the Save button located in the System Utilities panel to save data externally (Figure 3-65).

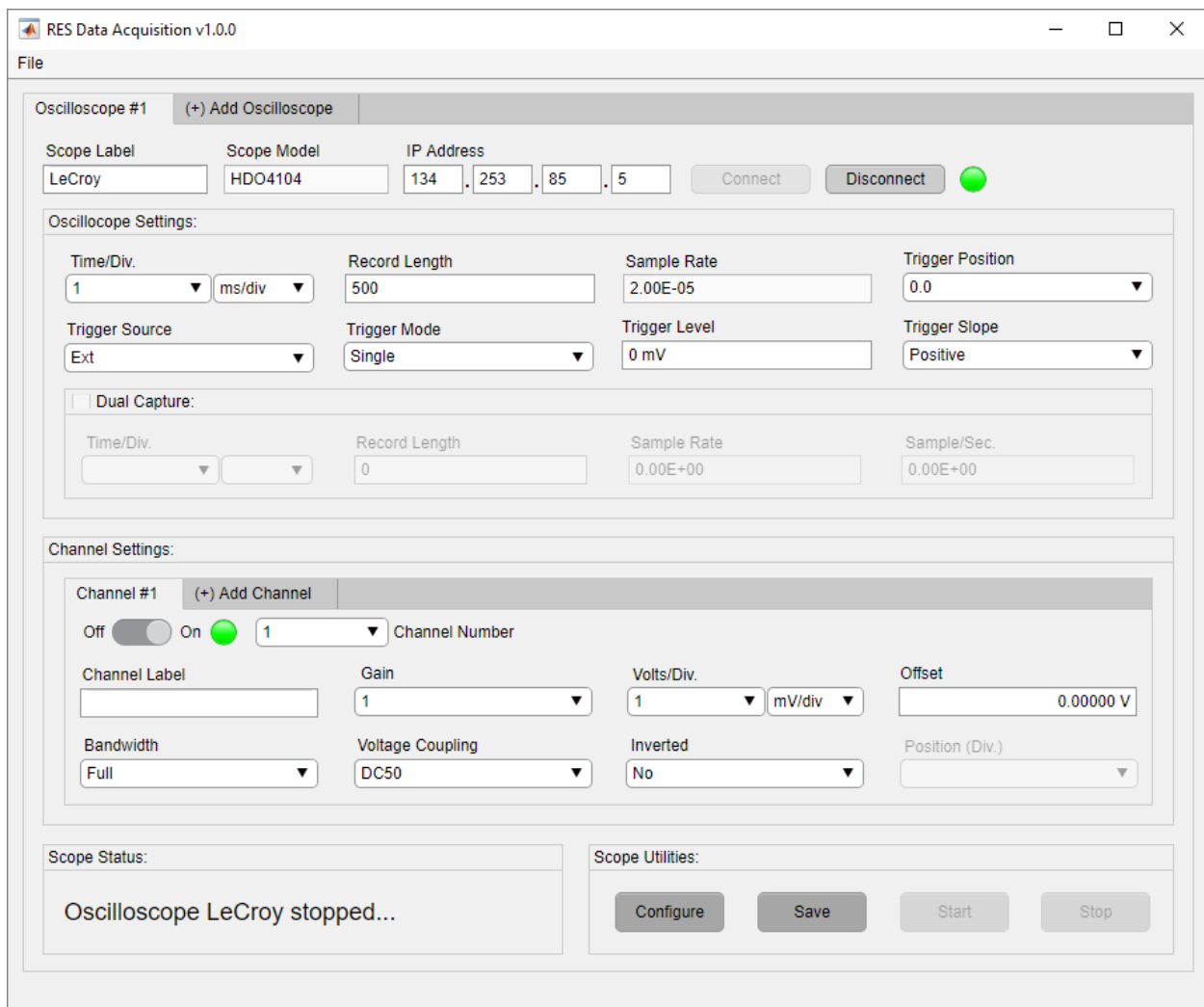


Figure 3-65. Save Button Enabled

After clicking the Save button, the user will be prompted with the dialog box shown in Figure 3-66. The user must specify the location of the mounted external hard drive. If the location of the external drive is not correct, *RES DAQ v1.0.0* will display an error status. Click OK to continue.

NOTE: The External Drive dialog defaults the to the letter drive E:\.

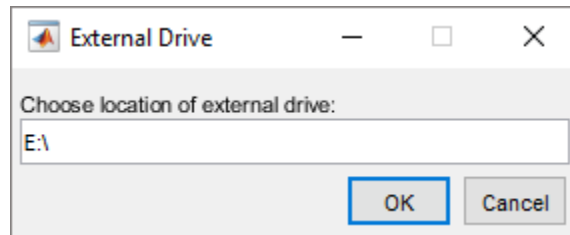


Figure 3-66. Select Location for External Save

If the instrument has saved the data correctly, *RES DAQ v1.0.0* will display the saved status in the Scope Status panel as seen Figure 3-67.

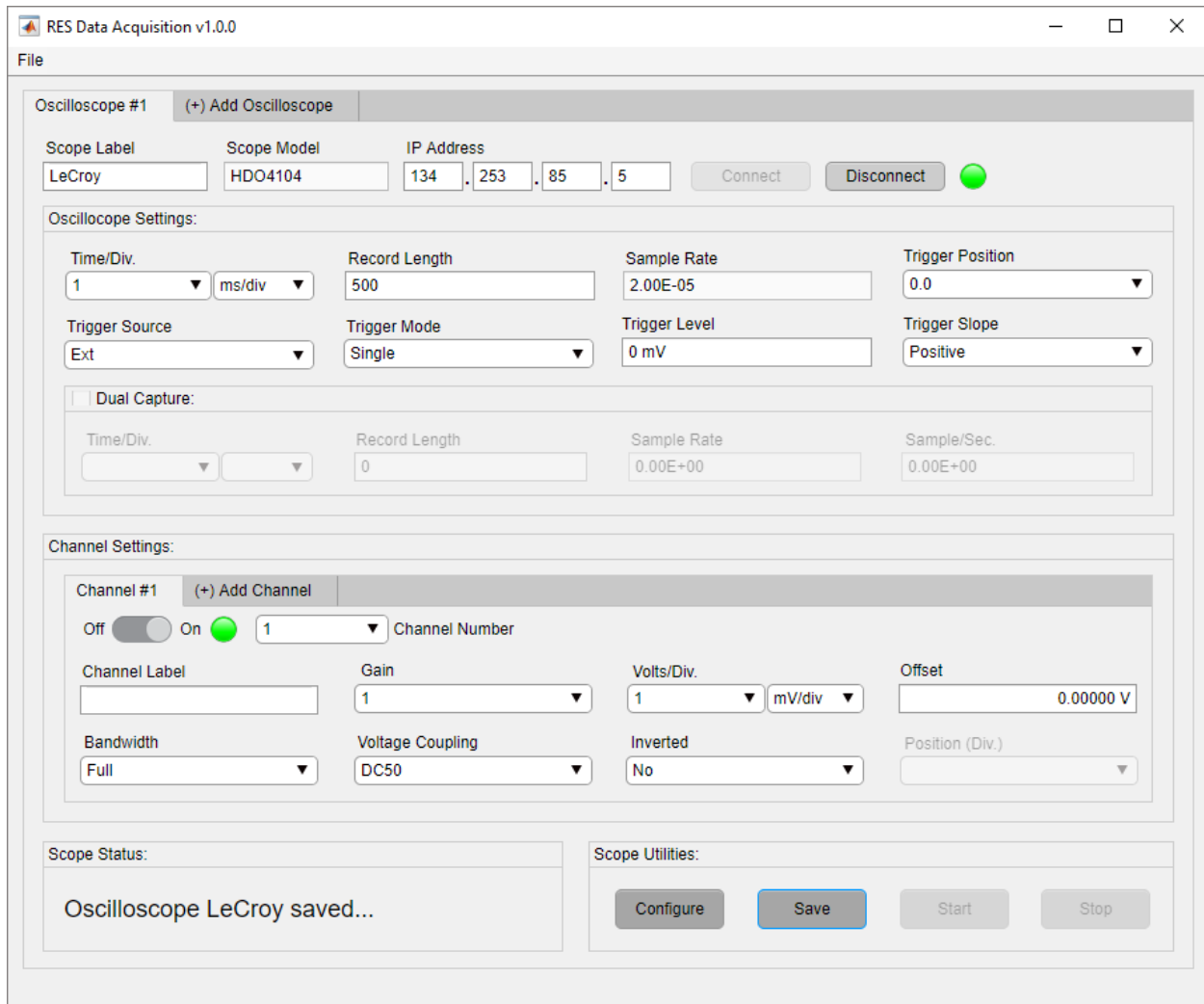


Figure 3-67. Successful Instrument Save

3.2.9.2. Saving Data from Yokogawa

When the acquisition is stopped from a *Yokogawa* instrument, a copy of the acquired data automatically saves to *RES DAQ v1.0.0's* controlling computer. The details to configure this feature is found in Appendix A. *RES DAQ v1.0.0* uses the Scope Label, described in section 3.2.3.1 to name saved data. If the Scope Label is not provided, *RES DAQ v1.0.0* will save the binary files using a datetime stamp.

NOTE: The Save button is only enabled for Teledyne LeCroy instruments. *RES DAQ v1.0.0* uses an FTP server to transfer and save files for Yokogawa instruments.

3.2.10. Disconnect from Instrument

The user can terminate an instrument connection at any time. The user must click the Disconnect button, located in the Oscilloscope tab, to disconnect. Next, *RES DAQ v1.0.0* will attempt to terminate the underlying VISA object connection. The VISA object is the mechanism connecting *RES DAQ v1.0.0* with a given instrument. If the instrument is disconnected correctly, the connection lamp will dim and the disconnected status will appear in the Scope Status panel (Figure 3-68). Users can troubleshoot disconnection status errors as seen in section 5.2.

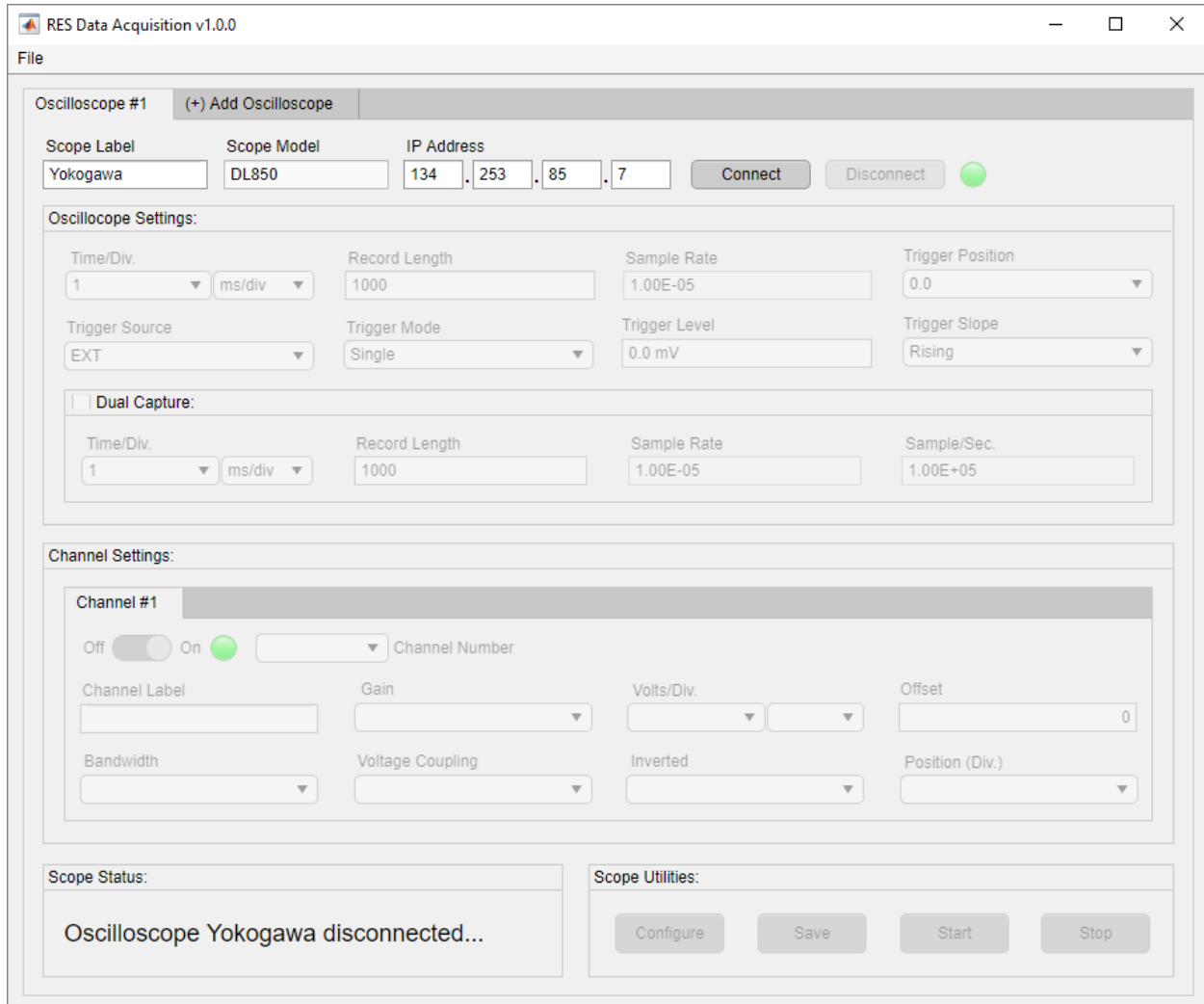


Figure 3-68. Successful Instrument Disconnection

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4. ADDITIONAL FEATURES

This section provides a detailed description of additional system functions.

4.1. Load Configuration

RES DAQ v1.0.0 garners the ability to automate configurations for multiple oscilloscopes using the Load Configuration feature. The Load Configuration option is contained in the File menu located on the user interface (Figure 4-1).

4.1.1. Configuration File

Users must first generate a configuration file to use the Load Configuration feature. The configuration file is ASCII text format and uses the file extension `.config` with no naming convention restrictions. It contains all the settings configured by *RES DAQ v1.0.0* as shown in Figure 4-2. It is recommended to use the configuration file templates included with the installation. These template files are located in the application directory as shown in Figure 4-1.

NOTE: Although the template files can be edited by any text editor, it is recommended to use Notepad++.

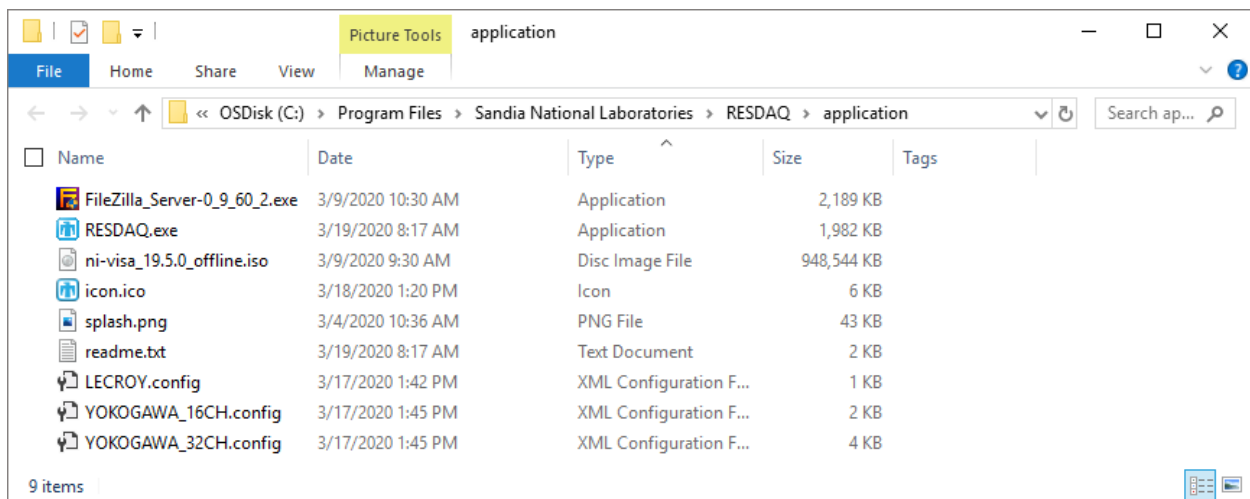


Figure 4-1. Configuration File Template Location

When editing the template configuration file, users must preserve the format of the configuration file shown in Figure 4-2. Users abiding by the following restrictions will avoid any unwanted behavior.

1. Under the oscilloscope settings, the user must only edit text right of the equals sign.
2. Under the channel settings, the user must only edit text under each table heading to the end marker.
3. Under each table heading, adjacent channel settings must be padded with whitespace in the form of spaces as seen below.
4. The time per division and volts per division settings must be entered as one continuous string with no whitespace as seen in Figure 4-2.

- The number of channels entered in the configuration file must be less than or equal to the number of channels on the oscilloscope. Channel numbers can be entered in any order. When the configuration file is populated with the desired values, the user must save and store the file in the configuration file directory described in section 4.1.2.

NOTE: Entered oscilloscope and channel settings are not case sensitive.

```

1  # RES DATA ACQUISITION CONFIGURATION FILE #
2  # ----- #
3
4  **OSCILLOSCOPE SETTINGS**
5  IP_ADDRESS      =134.253.85.5
6  INSTRUMENT_NAME =LeCroy
7  TIME_DIV        =1ms/div
8  RECORD_LENGTH  =500
9  TRIGGER_POSITION=0.0
10 TRIGGER_SOURCE  =Ext
11 TRIGGER_MODE    =Single
12 TRIGGER_LEVEL   =0.0
13 TRIGGER_SLOPE   =Positive
14 AUTO_CONFIGURE  =No
15 AUTO_START      =No
16
17 **CHANNEL SETTINGS**
18 CHANNEL_NUMBER LABEL ON_OFF GAIN VOLTS_DIV OFFSET BANDWIDTH COUPLING INVERTED
19 -----
20 1          CH_1 On      1    1mV/div  0.0    Full    DC     No
21 2          CH_2 On      1    1mV/div  0.0    Full    DC     No
22 3          CH_3 On      1    1mV/div  0.0    Full    DC     No
23 4          CH_4 On      1    1mV/div  0.0    Full    DC     No
24 **END**

```

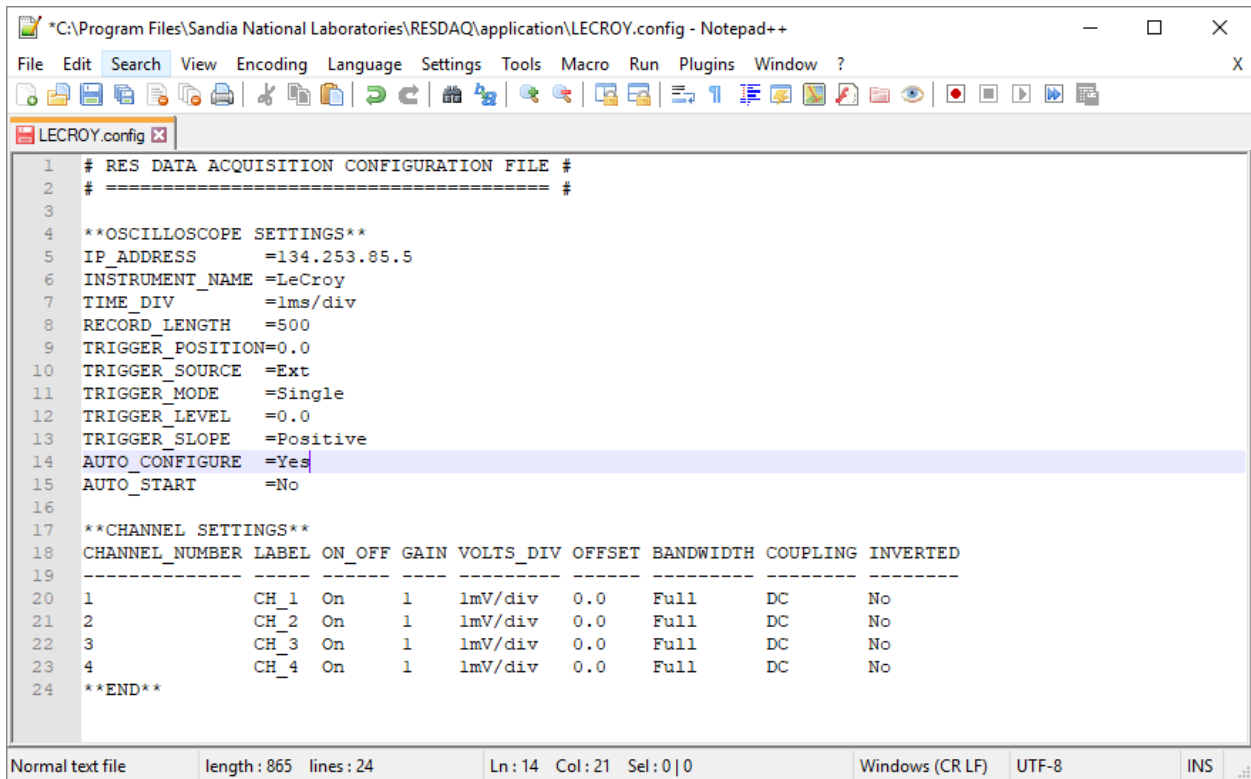
Normal text file length : 864 lines : 24 Ln:1 Col:1 Sel:0|0 Windows (CR LF) UTF-8 INS

Figure 4-2. LeCroy Configuration File Template

4.1.1.1. Auto-Configure

The Auto Configure setting allows the user to autonomously configure the instrument. If disabled, the user must manually configure the instrument by clicking the Configure button after loading a configuration. Enter yes in the auto configure field to enable the Auto Configure as seen in Figure 4-3.

NOTE: The auto configure entry is not case sensitive.



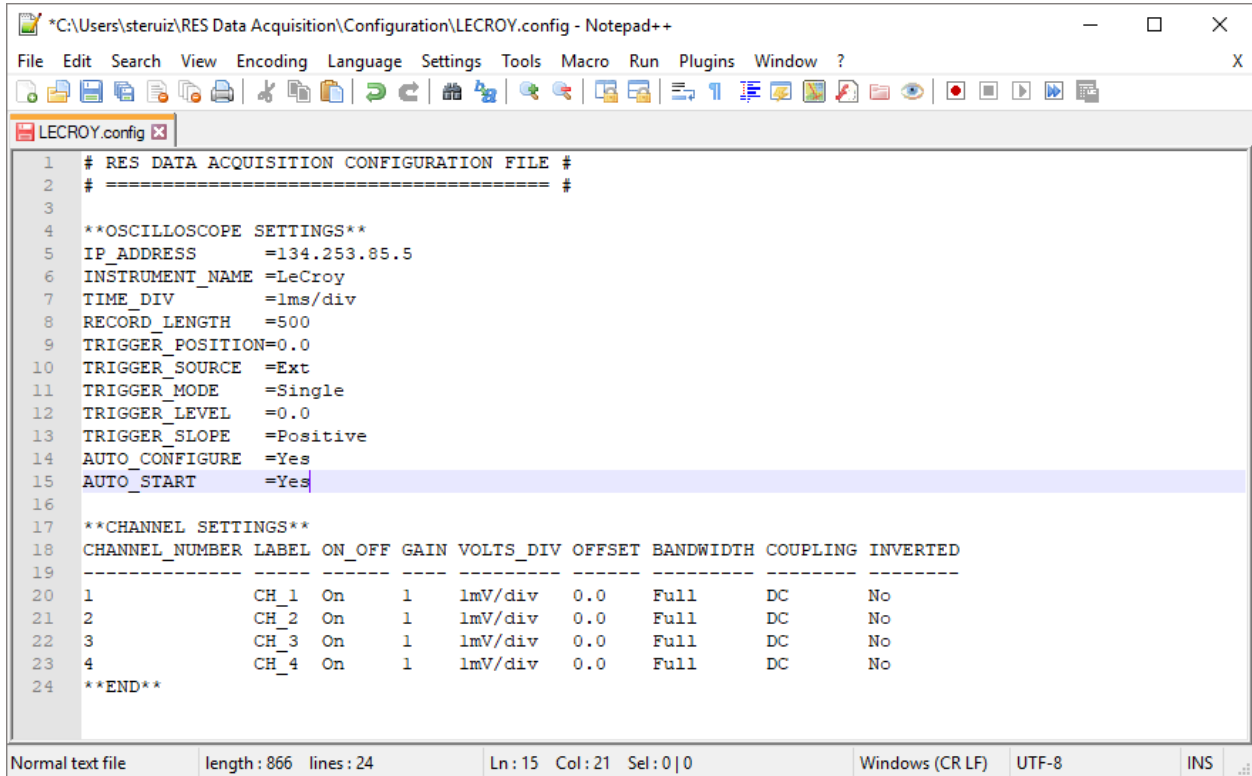
```
*C:\Program Files\Sandia National Laboratories\RESDAQ\application\LECROY.config - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
LECROY.config x
1 # RES DATA ACQUISITION CONFIGURATION FILE #
2 # ----- #
3
4 **OSCILLOSCOPE SETTINGS**
5 IP_ADDRESS =134.253.85.5
6 INSTRUMENT_NAME =LeCroy
7 TIME_DIV =1ms/div
8 RECORD_LENGTH =500
9 TRIGGER_POSITION=0.0
10 TRIGGER_SOURCE =Ext
11 TRIGGER_MODE =Single
12 TRIGGER_LEVEL =0.0
13 TRIGGER_SLOPE =Positive
14 AUTO_CONFIGURE =Yes
15 AUTO_START =No
16
17 **CHANNEL SETTINGS**
18 CHANNEL_NUMBER LABEL ON_OFF GAIN VOLTS_DIV OFFSET BANDWIDTH COUPLING INVERTED
19 -----
20 1 CH_1 On 1 1mV/div 0.0 Full DC No
21 2 CH_2 On 1 1mV/div 0.0 Full DC No
22 3 CH_3 On 1 1mV/div 0.0 Full DC No
23 4 CH_4 On 1 1mV/div 0.0 Full DC No
24 **END**
Normal text file length : 865 lines : 24 Ln : 14 Col : 21 Sel : 0 | 0 Windows (CR LF) UTF-8 INS
```

Figure 4-3. Input Auto Configure

4.1.1.2. Auto-Start

The Auto Start setting allows the user to autonomously arm the instrument. If disabled, the user must manually arm the instrument by clicking the Start button after loading a configuration. Enter yes in the auto start field to enable the auto start as seen in Figure 4-4.

NOTE: The auto start entry is not case sensitive.



```
*C:\Users\steruiz\RES Data Acquisition\Configuration\LECROY.config - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
LECROY.config x
1 # RES DATA ACQUISITION CONFIGURATION FILE #
2 # ===== #
3
4 **OSCILLOSCOPE SETTINGS**
5 IP_ADDRESS =134.253.85.5
6 INSTRUMENT_NAME =LeCroy
7 TIME_DIV =lms/div
8 RECORD_LENGTH =500
9 TRIGGER_POSITION=0.0
10 TRIGGER_SOURCE =Ext
11 TRIGGER_MODE =Single
12 TRIGGER_LEVEL =0.0
13 TRIGGER_SLOPE =Positive
14 AUTO_CONFIGURE =Yes
15 AUTO_START =Yes
16
17 **CHANNEL SETTINGS**
18 CHANNEL_NUMBER LABEL ON_OFF GAIN VOLTS_DIV OFFSET BANDWIDTH COUPLING INVERTED
19 -----
20 1 CH_1 On 1 1mV/div 0.0 Full DC No
21 2 CH_2 On 1 1mV/div 0.0 Full DC No
22 3 CH_3 On 1 1mV/div 0.0 Full DC No
23 4 CH_4 On 1 1mV/div 0.0 Full DC No
24 **END**
Normal text file length: 866 lines: 24 Ln: 15 Col: 21 Sel: 0|0 Windows (CR LF) UTF-8 INS
```

Figure 4-4. Input Auto Start

4.1.2. Configuration File Directory

Each generated configuration file must be saved and stored in a configuration file directory. The configuration file directory is a single directory, created by the user, containing every *RES DAQ v1.0.0* configuration file as seen in Figure 4-5. The configuration file directory does not have any file structure constraints when creating and naming files.

NOTE: Configurations containing only a single configuration file must be stored in a configuration file directory.

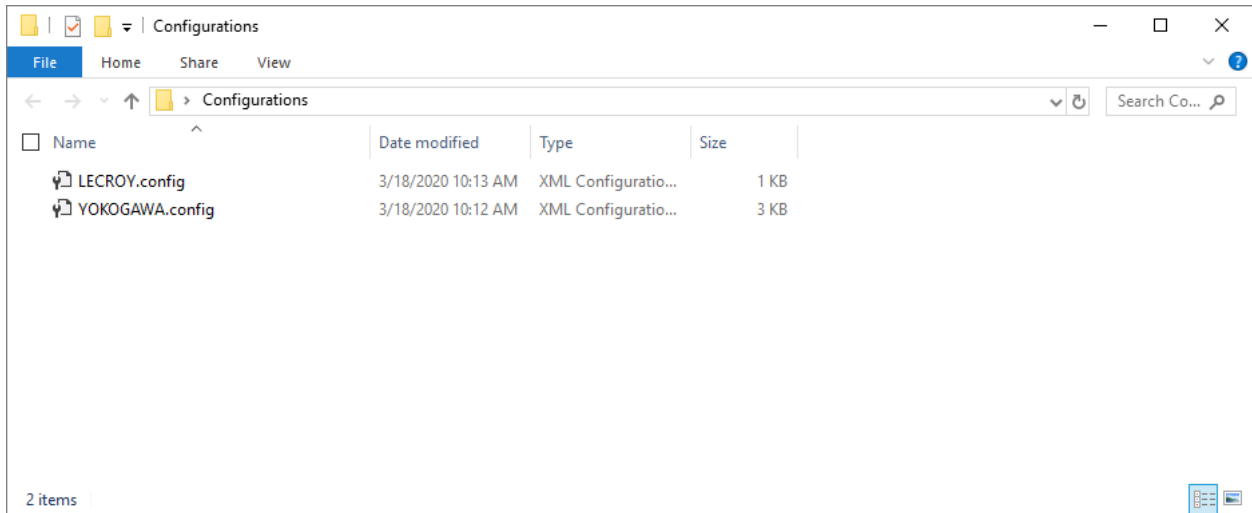


Figure 4-5. Configuration File Directory

4.1.3. Loading Configuration

After generating configuration files and storing them in a configuration file directory, as described in sections 4.1.1 and 4.1.2, *RES DAQ v1.0.0* will be ready to load a configuration. The Load Configuration option automates the process of configuring the oscilloscope settings and is contained in the File menu located on the user interface. The user must click the File menu and click the Load Configuration option to load a configuration as seen in Figure 4-6.

NOTE: The configuration can be reloaded indefinitely for a single instance of RES DAQ v1.0.0.

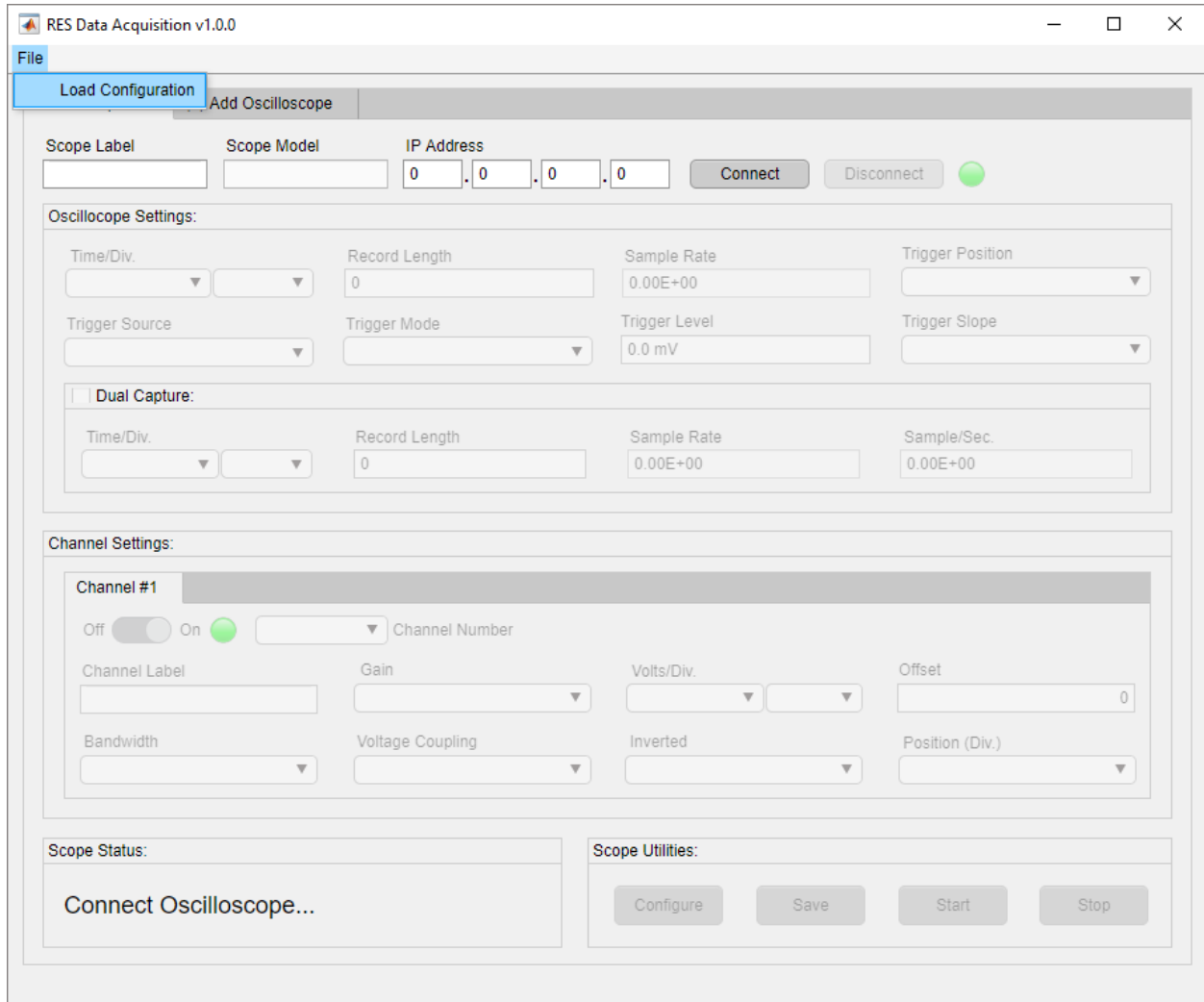


Figure 4-6. Load Configuration Option

After clicking the Load Configuration option, the user will be prompted with a folder to open dialog box. The user must choose the configuration file directory containing the configuration files as shown in Figure 4-7. Click the Select Folder button to continue.

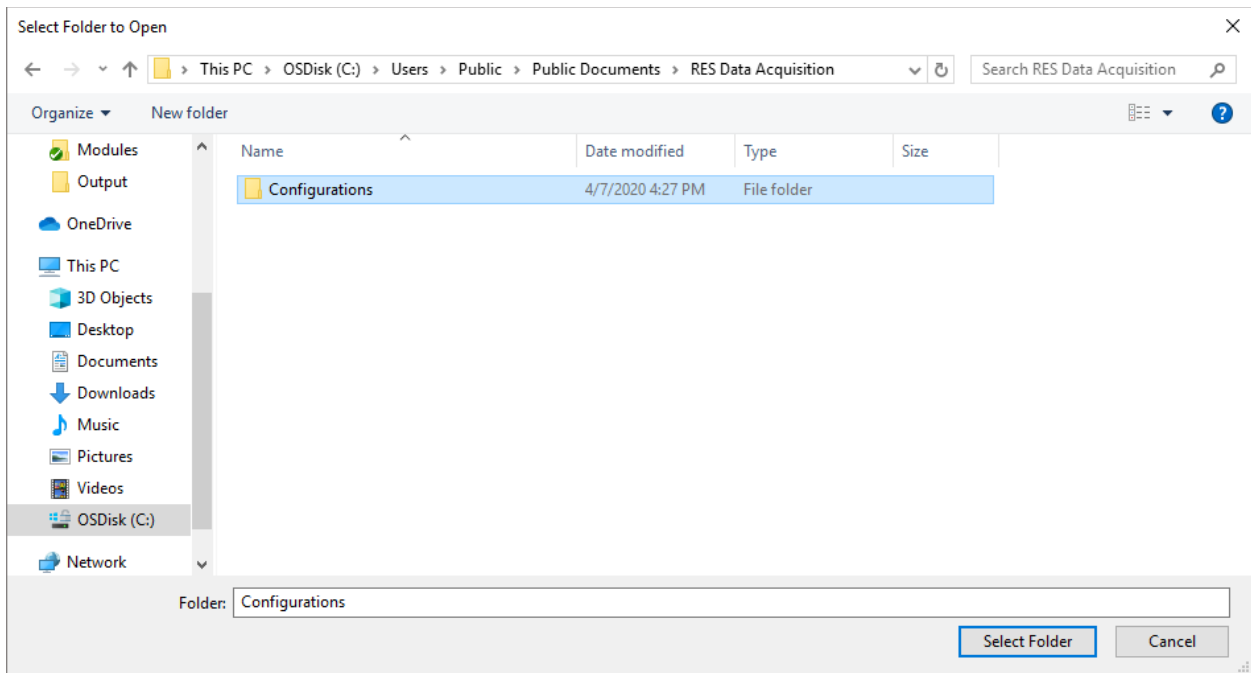


Figure 4-7. Input Configuration File Directory

After choosing the appropriate configuration file directory, *RES DAQ v1.0.0* will create an oscilloscope tab for each configuration file. Within each oscilloscope tab, *RES DAQ v1.0.0* will enter setting field values identical to the values found in each configuration file as seen in Figure 4-8 and Figure 4-9.

NOTE: To automate the setting configuration, enable the Auto Configure and Auto Start features described in 4.1.1.1 and 4.1.1.2.

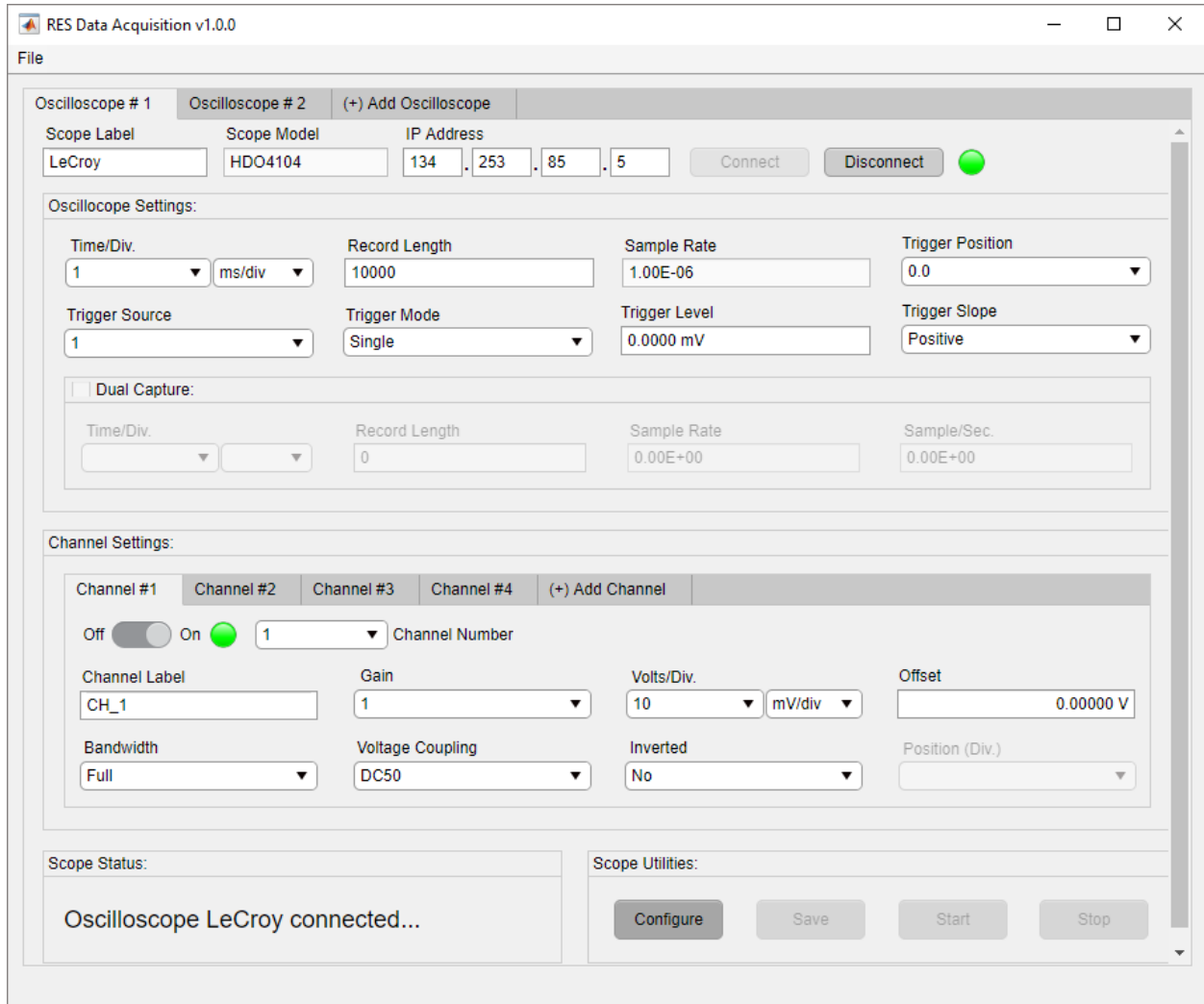


Figure 4-8. LeCroy Configuration Loaded

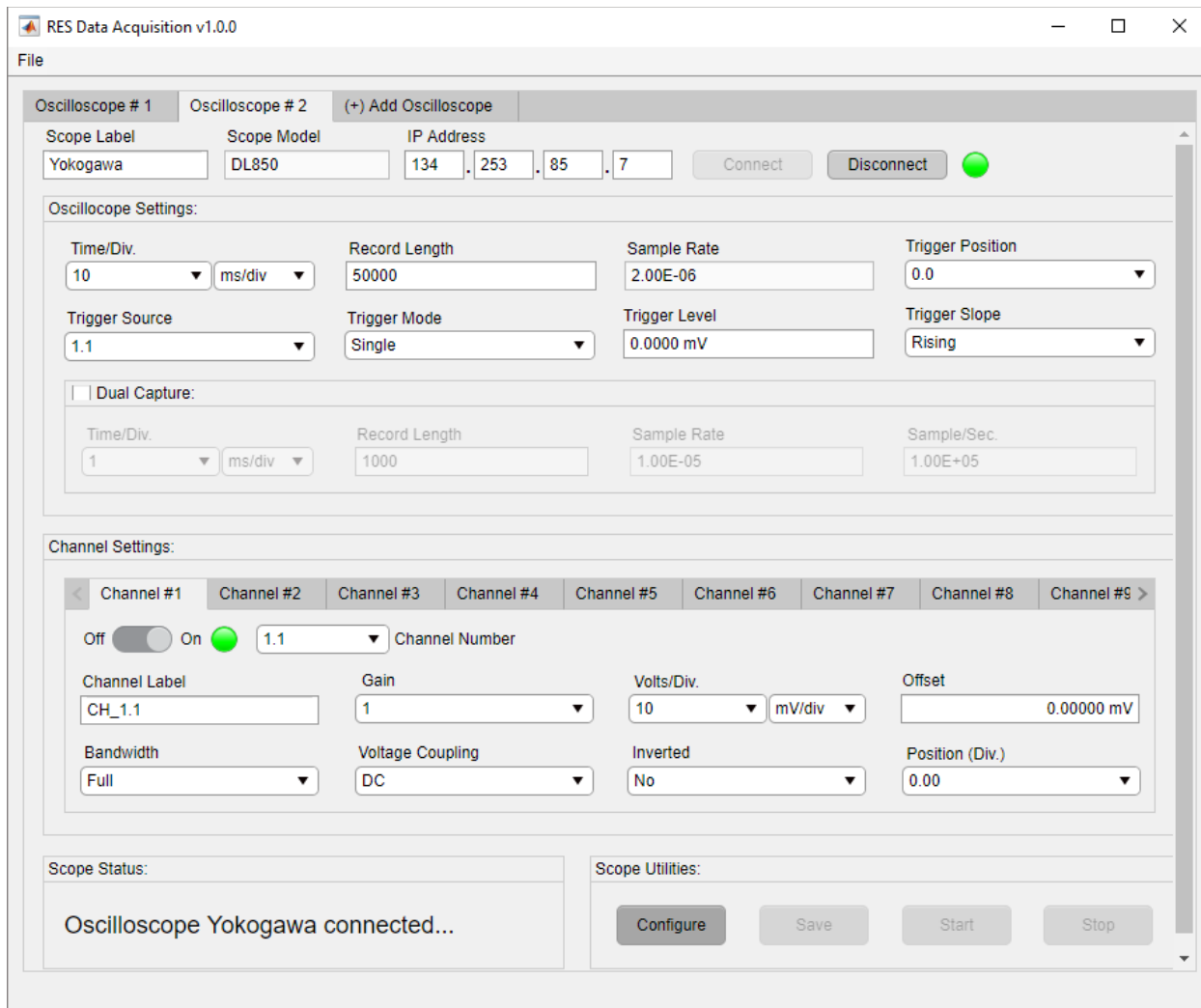


Figure 4-9. Yokogawa Configuration Loaded

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5. TROUBLESHOOTING

This section provides a detailed description of troubleshooting. Contact the Point of Contact if errors are not amendable.

5.1. Connection Errors

5.1.1. No Device at IP Address

RES DAQ v1.0.0 will transmit a network data packet to the IP address provided by the user before attempting to open an instrument communication port. As shown in Figure 5-1, the Scope Status panel will display the error status if *RES DAQ v1.0.0* does not receive a response.

To alleviate this connection error, users must inspect the following items.

1. The Local Network of the host machine and attached instrumentation devices. Each component of the instrumentation setup must be connected to the same local network. *RES DAQ v1.0.0* cannot access instruments on a remote network.
2. The network interface IPv4 properties of the host machine. The IP address of the host machine must be configured for a local network and assigned with a unique address.
3. The network interface IPv4 properties of the target instrument. The IP address of the target instrument must be allocated a unique address closely related to the IP address of the hosting machine.
4. The IP Address entered in the *RES DAQ v1.0.0* user interface. The user must ensure the address entered matches the IP address of the target instrument.
5. A Virtual Private Network (VPN) running on the host machine. Connectivity issues will arise if the hosting computer's network traffic is directed through a VPN.
6. A security firewall running on the hosting machine. In rare cases, the security firewall will obstruct local network traffic.

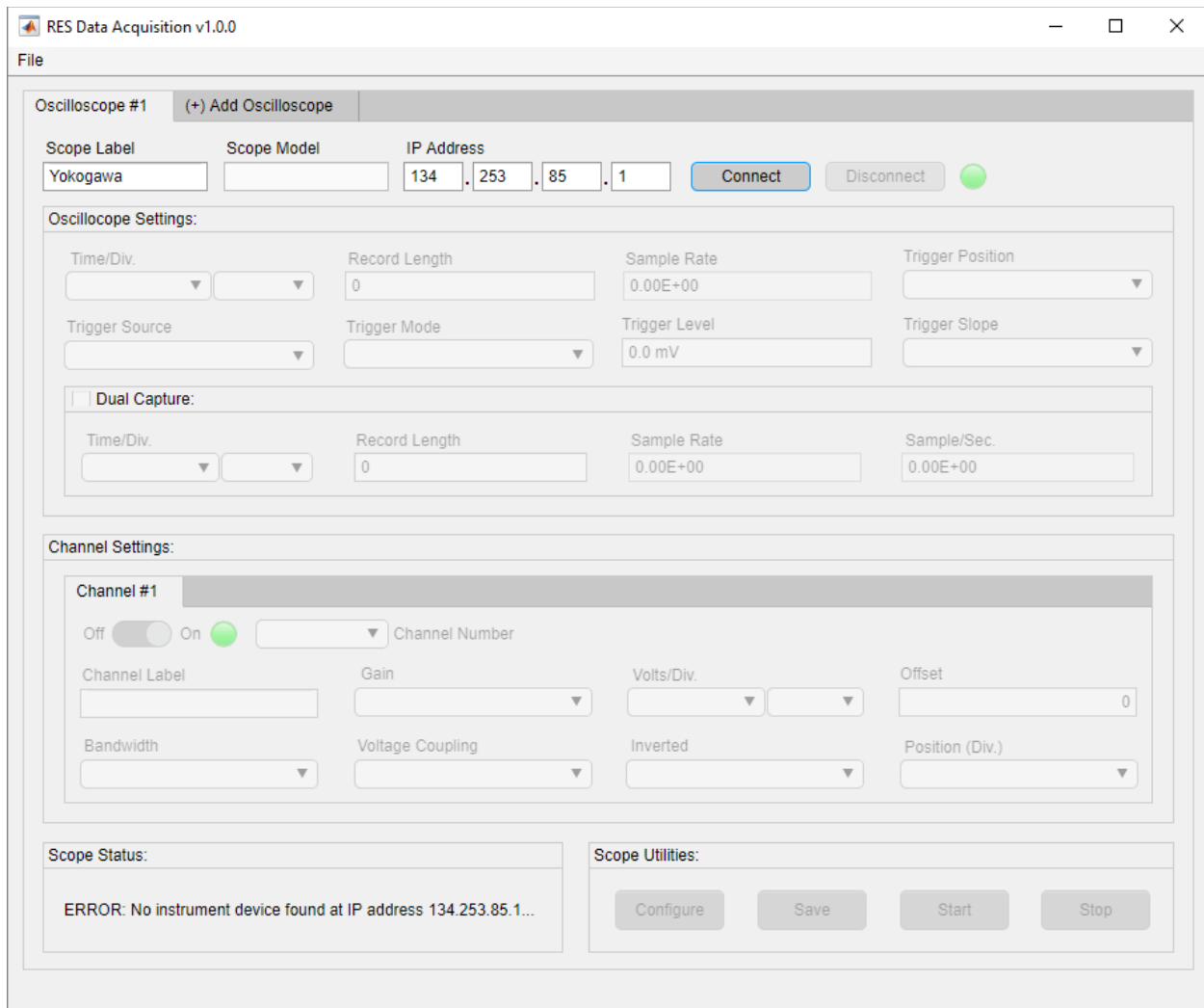


Figure 5-1. No Device at IP Address Error

5.1.2. Cannot Establish Connection

After successfully querying the network status of a target instrument, *RES DAQ v1.0.0* will create a VISA object and attempt to open an instrument connection. If *RES DAQ v1.0.0* is unsuccessful in either operation, the Scope Status panel will display the error status shown in Figure 5-2.

To alleviate this connection error, users must inspect the following items.

1. The IP Address entered in the *RES DAQ v1.0.0* user interface. Users must ensure the address is not assigned and matches the IP address of the target instrument.
2. A VPN running on the host machine. Connectivity issues will arise if the hosting computer's network traffic is directed through a VPN.

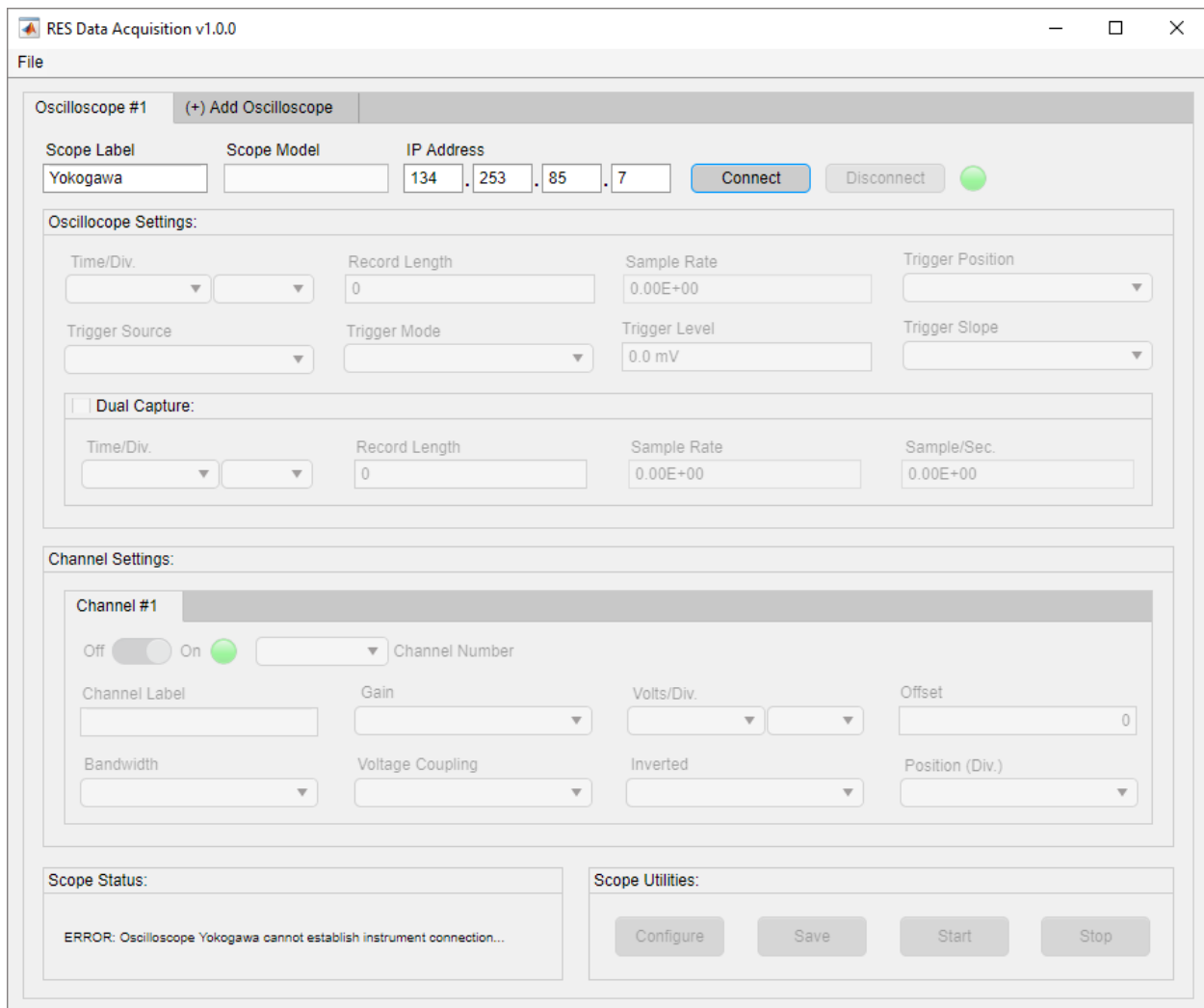


Figure 5-2. Cannot Establish Connection Error

5.2. Disconnection Errors

When closing an instrument connection, *RES DAQ v1.0.0* will attempt to terminate the VISA object maintaining the connection. If *RES DAQ v1.0.0* is unsuccessful in this operation, the Scope Status panel will display the error status seen in Figure 5-3.

To alleviate disconnection errors, users must inspect the following items.

1. Physical connections. The user must ensure ethernet connections are not severed.
2. Virtual connections. In rare cases, network connections are dropped for a variety of reasons. Users must inspect the network inference properties of the hosting machine.
3. A VPN running on the host machine. Connectivity issues will arise if the hosting computer's network traffic is directed through a VPN.

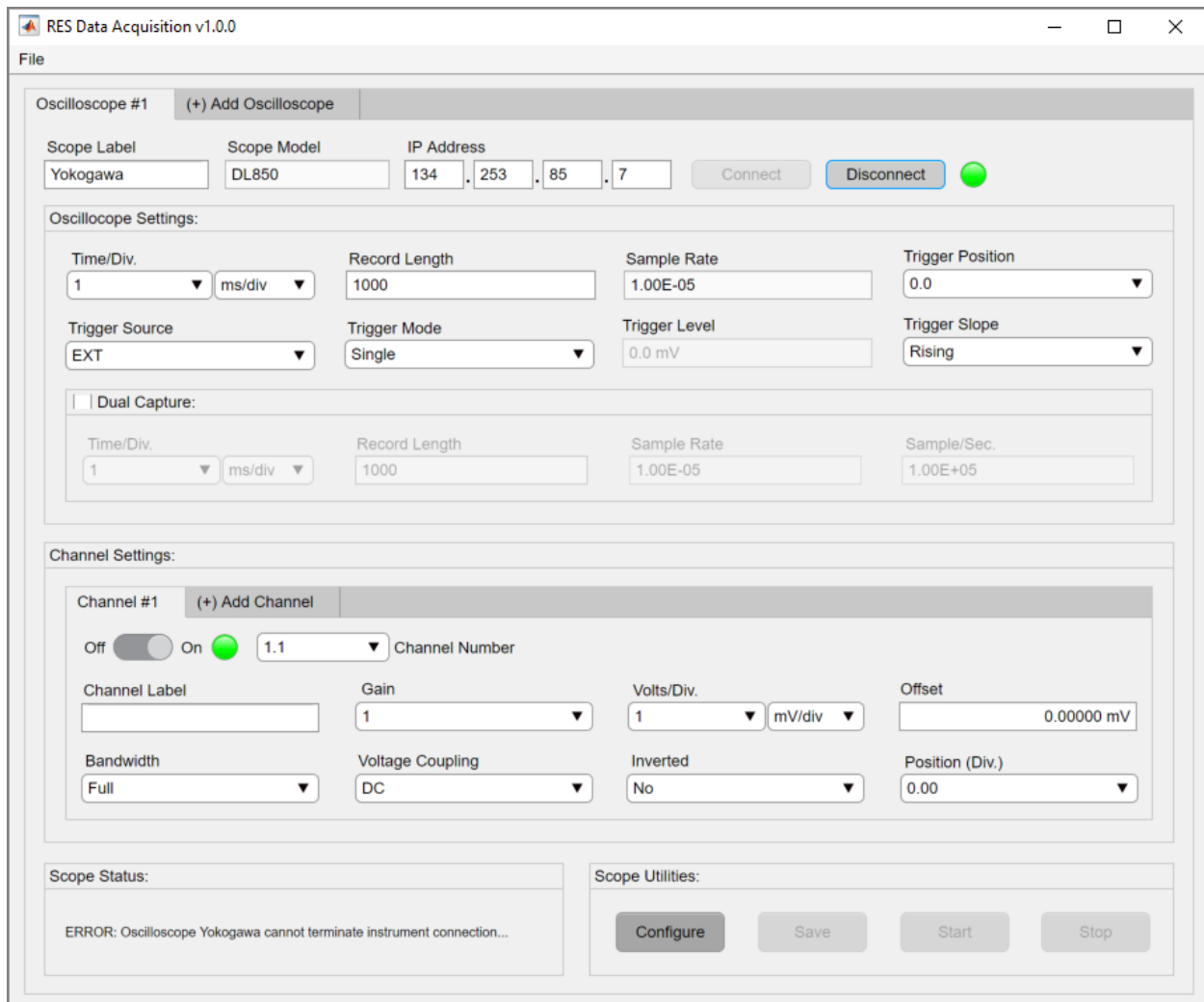


Figure 5-3. Cannot Terminate Connection Error

5.3. Configuration Errors

When configuring a target instrument, *RES DAQ v1.0.0* will attempt to send the entered settings via instrument connection. If *RES DAQ v1.0.0* is unsuccessful sending the configuration, the Scope Status panel will display the error status seen in Figure 5-4.

To alleviate configuration errors, users must inspect the following items.

1. Physical connections. The user must ensure ethernet connections are not severed.
2. Virtual connections. In rare cases, network connections are dropped for a variety of reasons. Users must inspect the network inference properties of the hosting machine.
3. A VPN running on the host machine. Connectivity issues will arise if the hosting computer's network traffic is directed through a VPN.

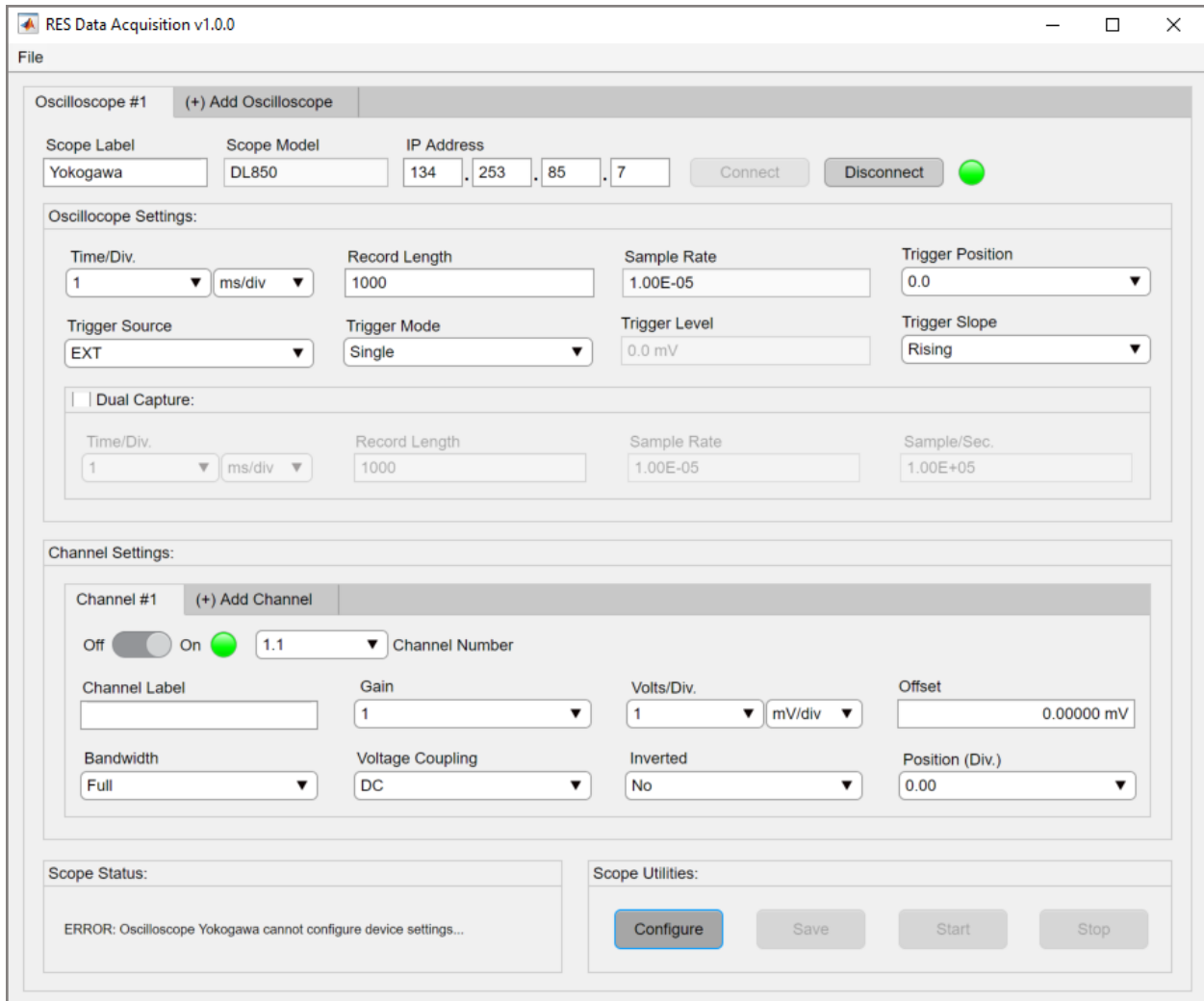


Figure 5-4. Cannot Configure Device Error

5.4. Starting Errors

When arming a target instrument to start data acquisition, *RES DAQ v1.0.0* will attempt to signal the instrument to start via instrument connection. If *RES DAQ v1.0.0* is unsuccessful transmitting the signal, the Scope Status panel will display the error status seen in Figure 5-5.

To alleviate configuration errors, users must inspect the following items.

1. Physical connections. The user must ensure ethernet connections are not severed.
2. Virtual connections. In rare cases, network connections are dropped for a variety of reasons. Users must inspect the network inference properties of the hosting machine.
3. A VPN running on the host machine. Connectivity issues will arise if the hosting computer's network traffic is directed through a VPN.

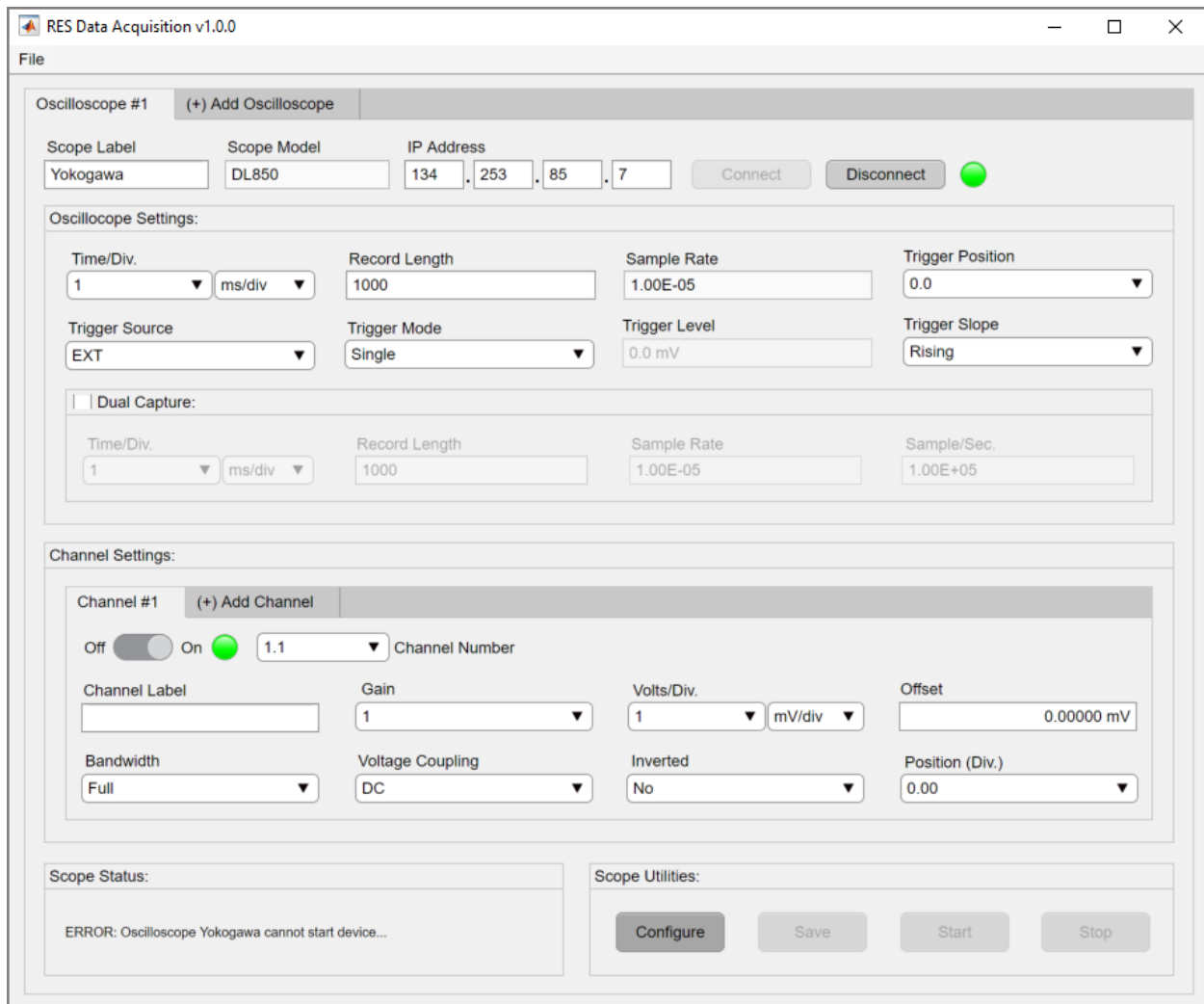


Figure 5-5. Cannot Start Device Error

5.5. Stopping Errors

When stopping a target instrument from acquiring data, *RES DAQ v1.0.0* will attempt to signal the instrument to stop via instrument connection. If *RES DAQ v1.0.0* is unsuccessful transmitting the signal, the Scope Status panel will display the error status seen in Figure 5-6.

To alleviate configuration errors, users must inspect the following items.

1. Physical connections. The user must ensure ethernet connections are not severed.
2. Virtual connections. In rare cases, network connections are dropped for a variety of reasons. Users must inspect the network inference properties of the hosting machine.
3. A VPN running on the host machine. Connectivity issues will arise if the hosting computer's network traffic is directed through a VPN.

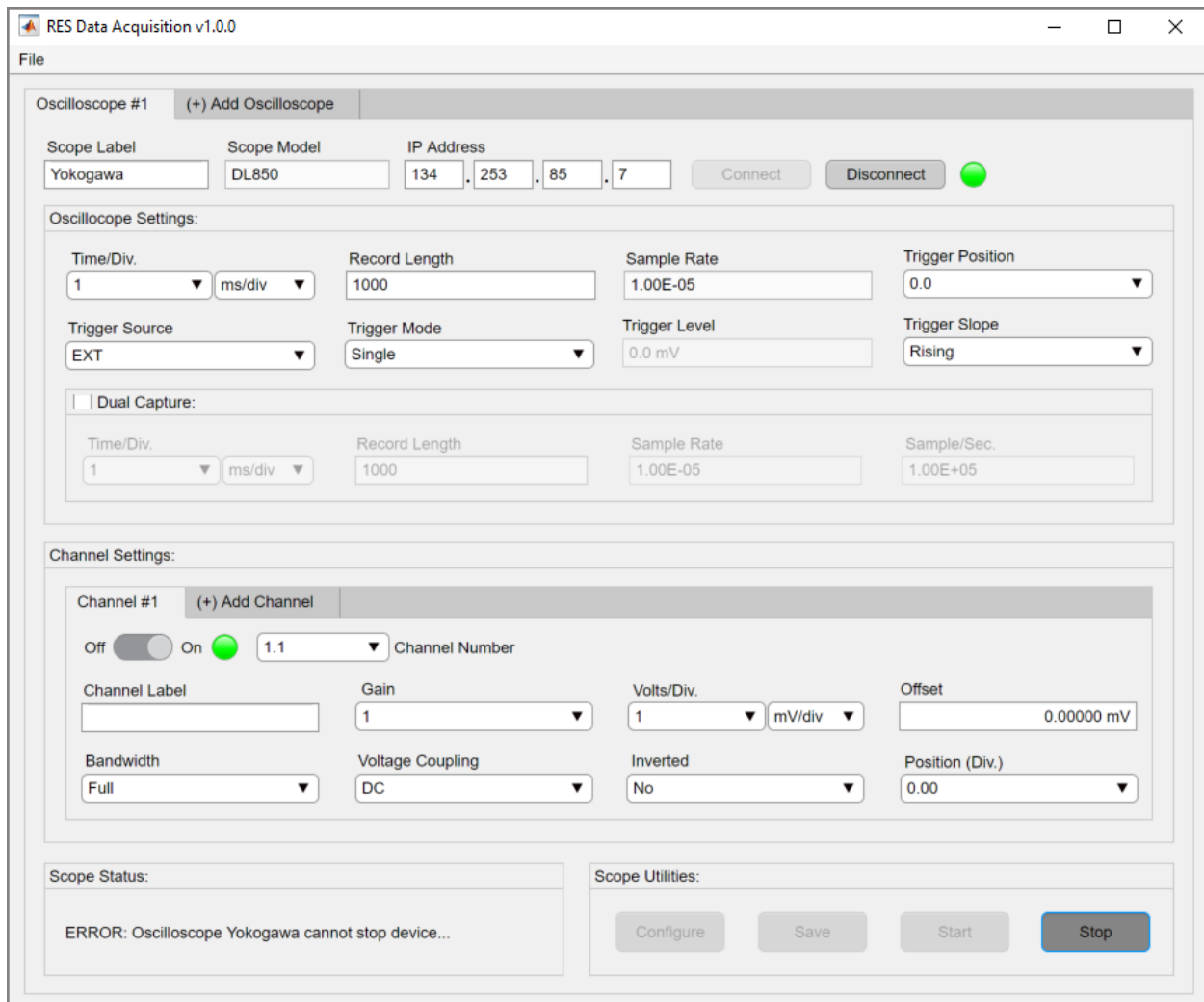


Figure 5-6. Cannot Stop Device Error

5.6. Saving Errors

5.6.1. LeCroy Saving Errors

Saving acquired data from a LeCroy instrument is described in section 3.2.9.1. If any saving operation faulters, *RES DAQ v1.0.0* will display the error status shown in Figure 5-7.

To alleviate LeCroy saving errors, users must inspect the following items.

1. Physical connections. The user must ensure ethernet connections are not severed.
2. Virtual connections. In rare cases, network connections are dropped for a variety of reasons. Users must inspect the network inference properties of the hosting machine.
3. A VPN running on the host machine. Connectivity issues will arise if the hosting computer's network traffic is directed through a VPN.
4. The letter drive entered in the External Drive dialog described in section 3.2.9.1. The user must ensure the letter drive and mounted external hard drive letter are identical before attempting to save.

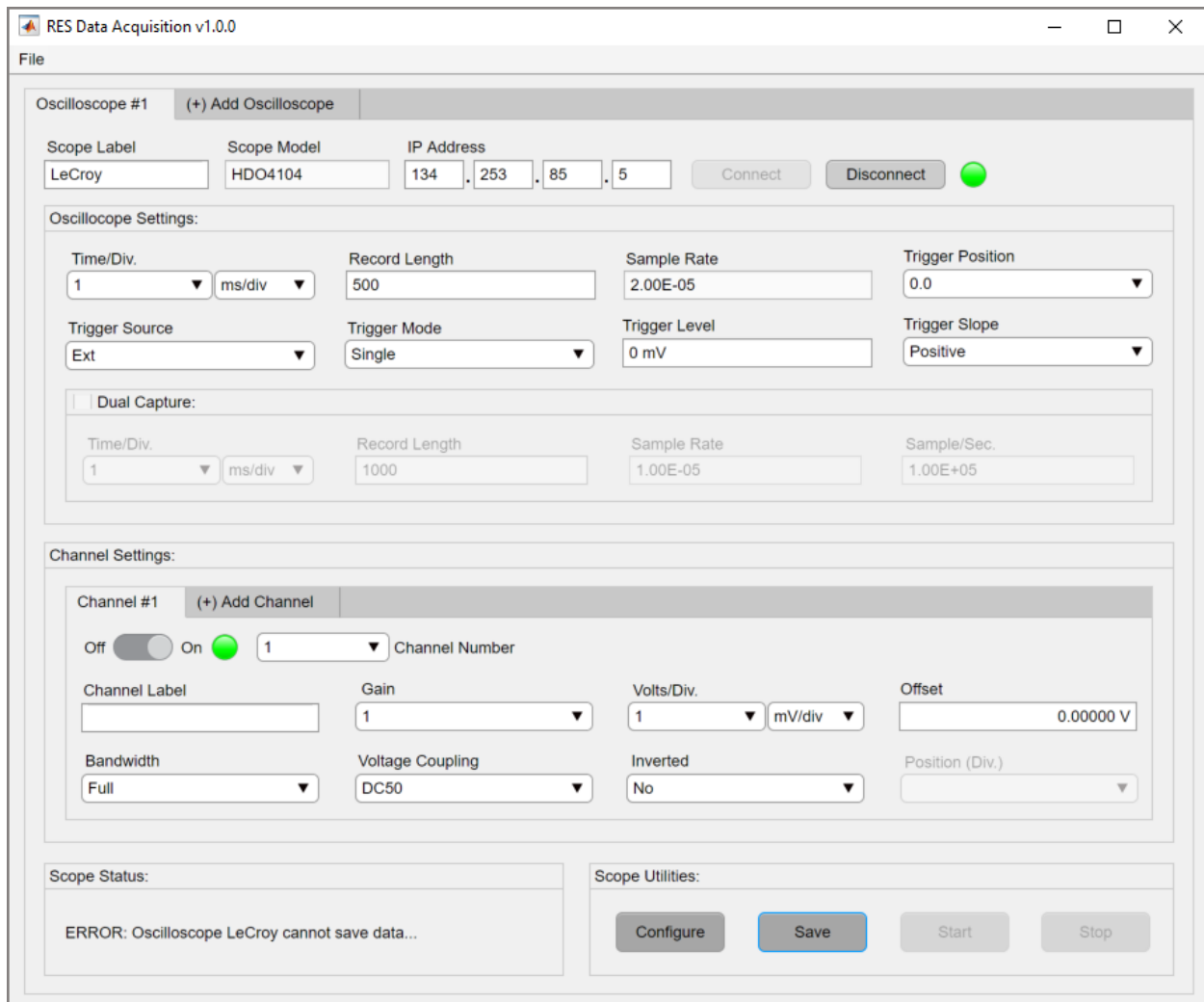


Figure 5-7. Cannot Save Data Error

5.6.2. Yokogawa Saving Errors

Saving acquired data from a Yokogawa instrument is described in section 3.2.9.2. If any saving operation falters, users must inspect the following items.

1. Physical connections. The user must ensure ethernet connections are not severed.
2. Virtual connections. In rare cases, network connections are dropped for a variety of reasons. Users must inspect the network inference properties of the hosting machine.
3. A VPN running on the host machine. Connectivity issues will arise if the hosting computer's network traffic is directed through a VPN.
4. A security firewall running on the hosting machine. In rare cases, the security firewall will obstruct local network traffic.
5. The FileZilla FTP setup described in Appendix A. The user must ensure all FTP server settings are correctly configured.

6. REFERENCES

- [1] Teledyne LeCroy. 2013. *Teledyne LeCroy Operator's Manual*. Chesnut Ridge, NY: Teledyne LeCroy Corporation.
- [2] Yokogawa. 2015. *DL850E/DL850EV ScopeCorder User's Manual Features Guide*. Sugar Land, TX: Yokogawa Meters & Instruments Corporation.

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APPENDIX A. RES DATA ACQUISITION INSTALLATION

This section provides a detailed description of the installation process for *RES DAQ v1.0.0*. A copy of the *RES DAQ v1.0.0* installer must be obtained from the Point of Contact. The installer is packaged in a compressed folder or zip file containing set up data and an executable file for *Windows 10 64-bit* OS. Unzip the compressed folder and double click the installation file labeled *RESDAQ_Installer.exe* as shown in Figure A-1.

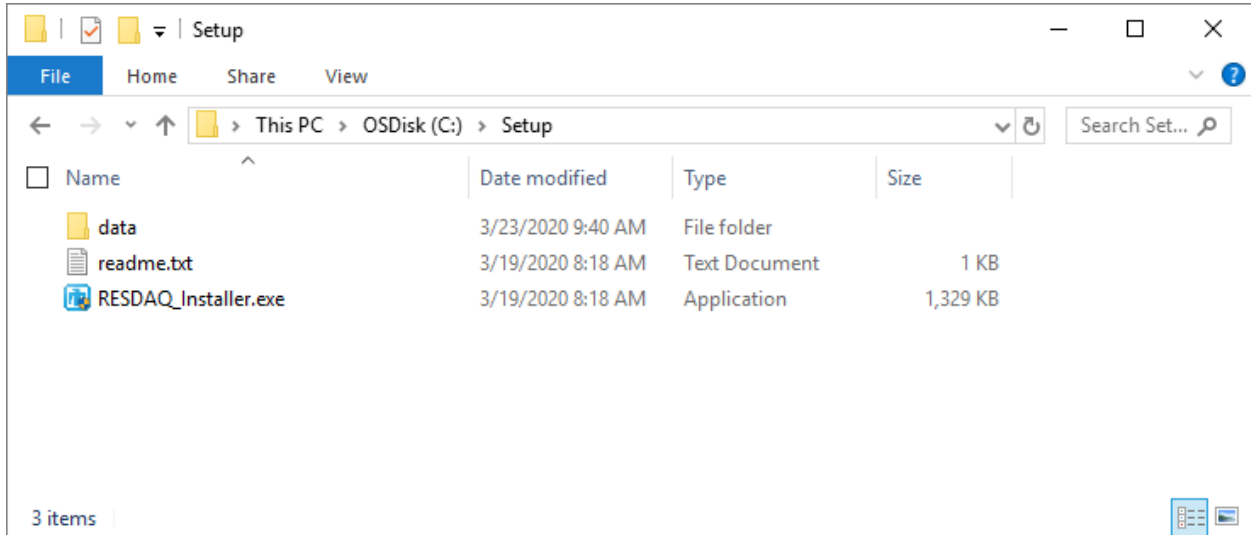


Figure A-1. RES DAQ Installation Files

Page one of the installation will display as shown in Figure A-2. This page contains general information about the application and provides a Point of Contact. Click Next to continue.

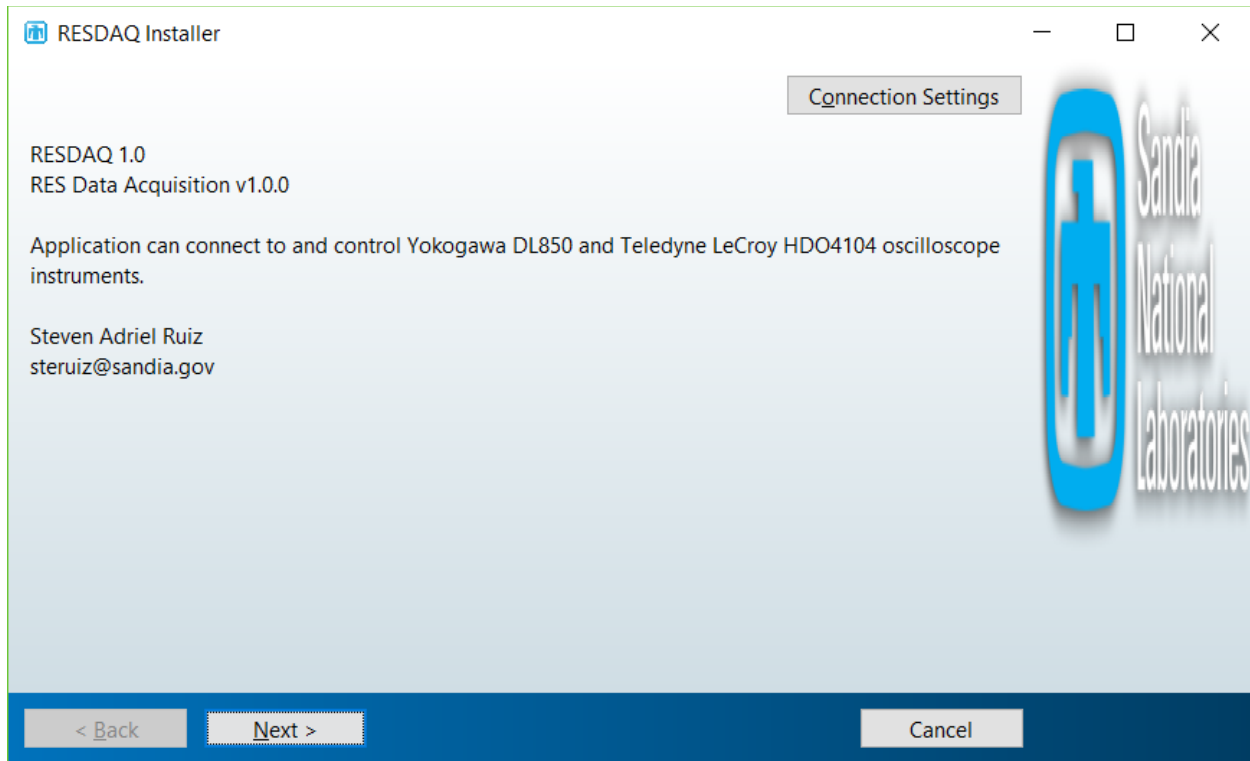


Figure A-2. RES DAQ Installer Page 1

Page two of the installation displays the Installation Options as shown in Figure A-3. The user must choose an installation folder to store program files. The installer assigns the default location to the Program Files directory. It is recommended the user creates a shortcut to the desktop by checking the Add a Shortcut to the Desktop. Click Next to continue.

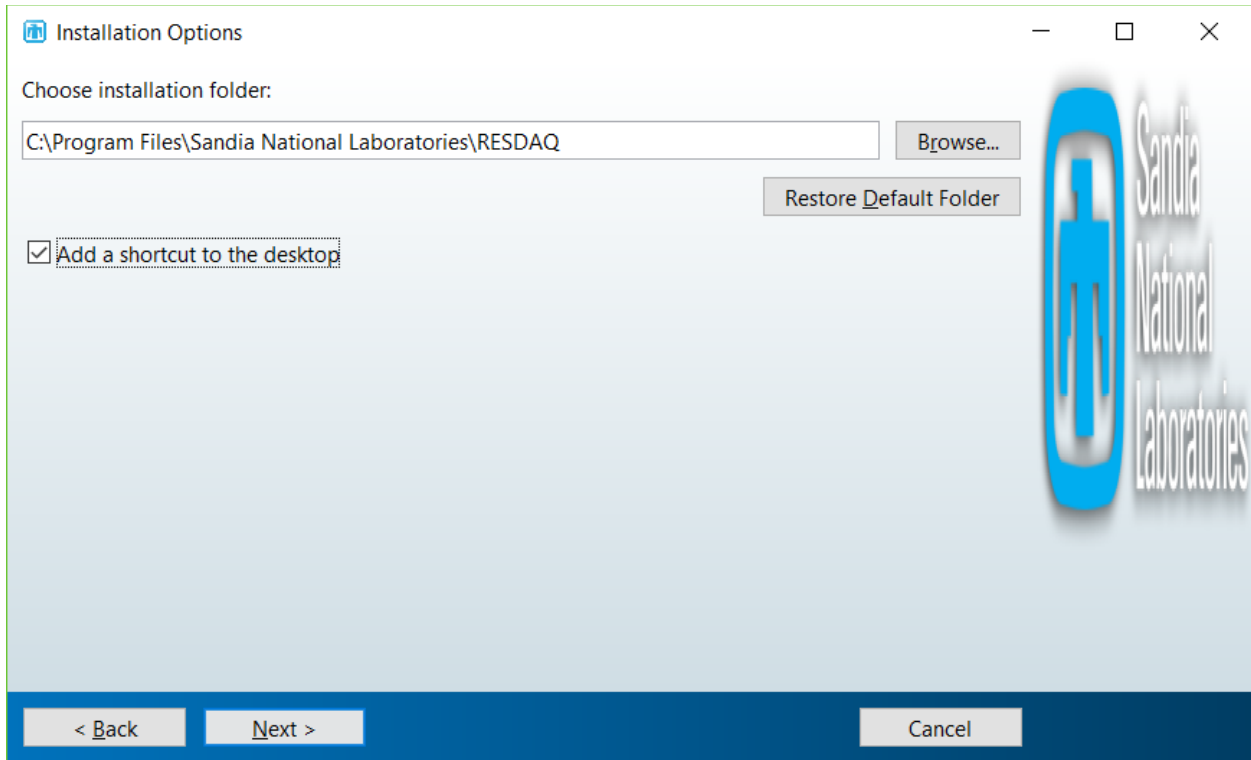


Figure A-3. RES DAQ Installer Page 2

The next step is to install the *MATLAB Runtime* software as shown in Figure A-4. This software allows compiled *MATLAB* applications and components to run without an installed version of *MATLAB*. The user must choose an installation folder defaulted to the Programs Files directory. Click Next to move to the next step of the installation.

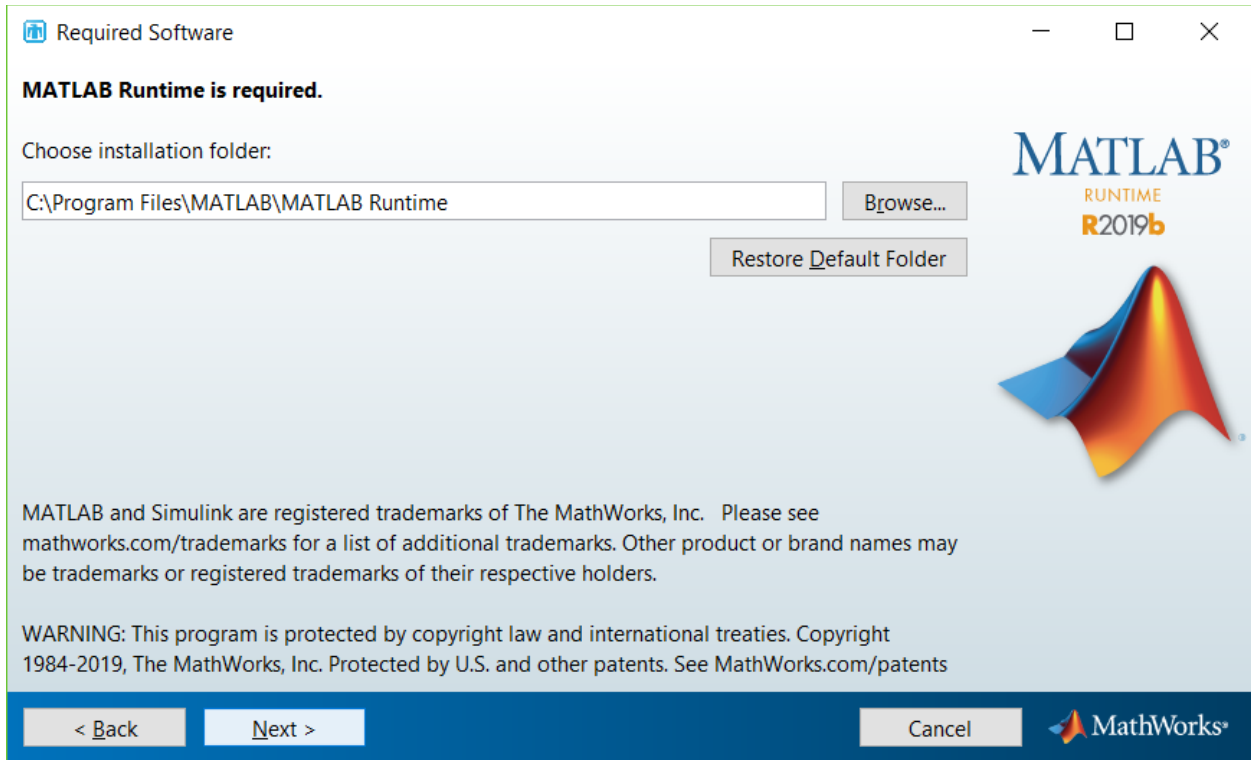


Figure A-4. RES DAQ Installer Page 3

Next is the *MathWorks MATLAB Runtime* license agreement as shown in Figure A-5. Accept the terms of the license agreement by selecting Yes and clicking Next to continue.

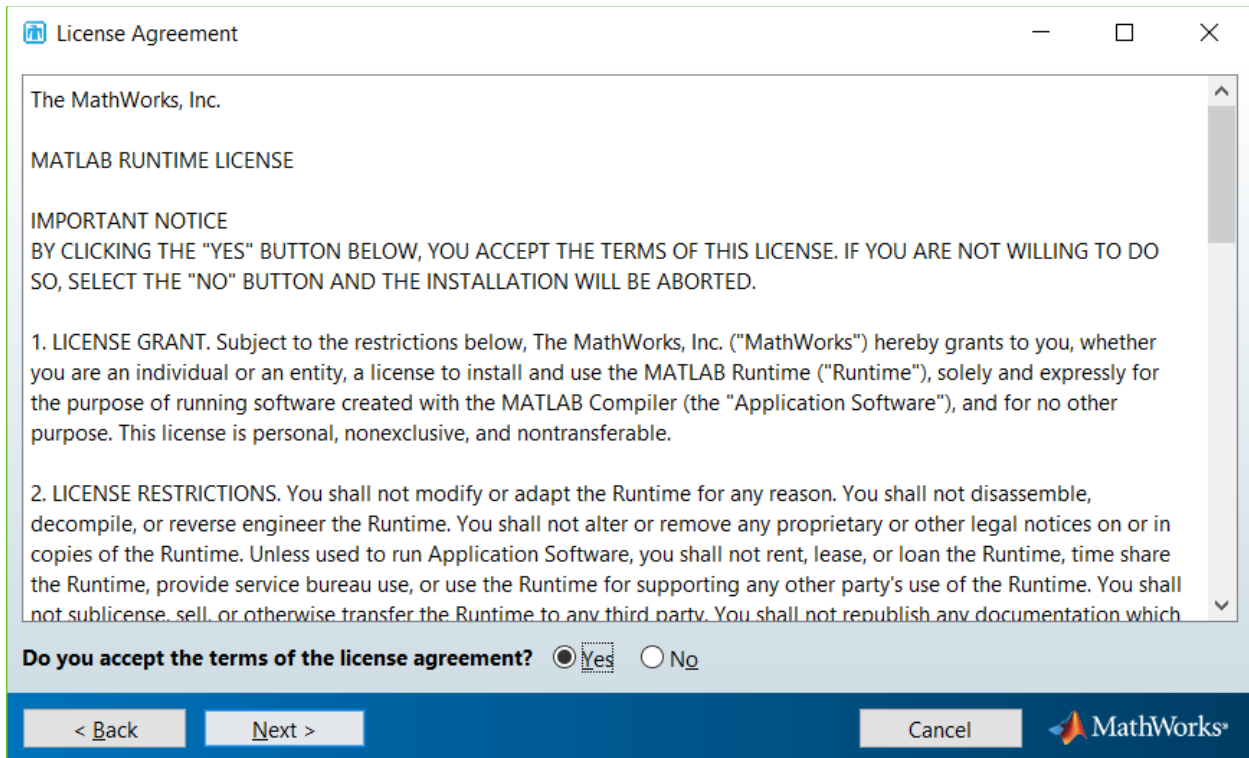


Figure A-5. RES DAQ Installer Page 4

Page five of the installation verifies the application setup. The dialog displays the version of the *MATLAB Runtime* and the folder locations chosen for *RES DAQ v1.0.0* and *MATLAB Runtime* as shown in Figure A-6. Click Install to begin installation.

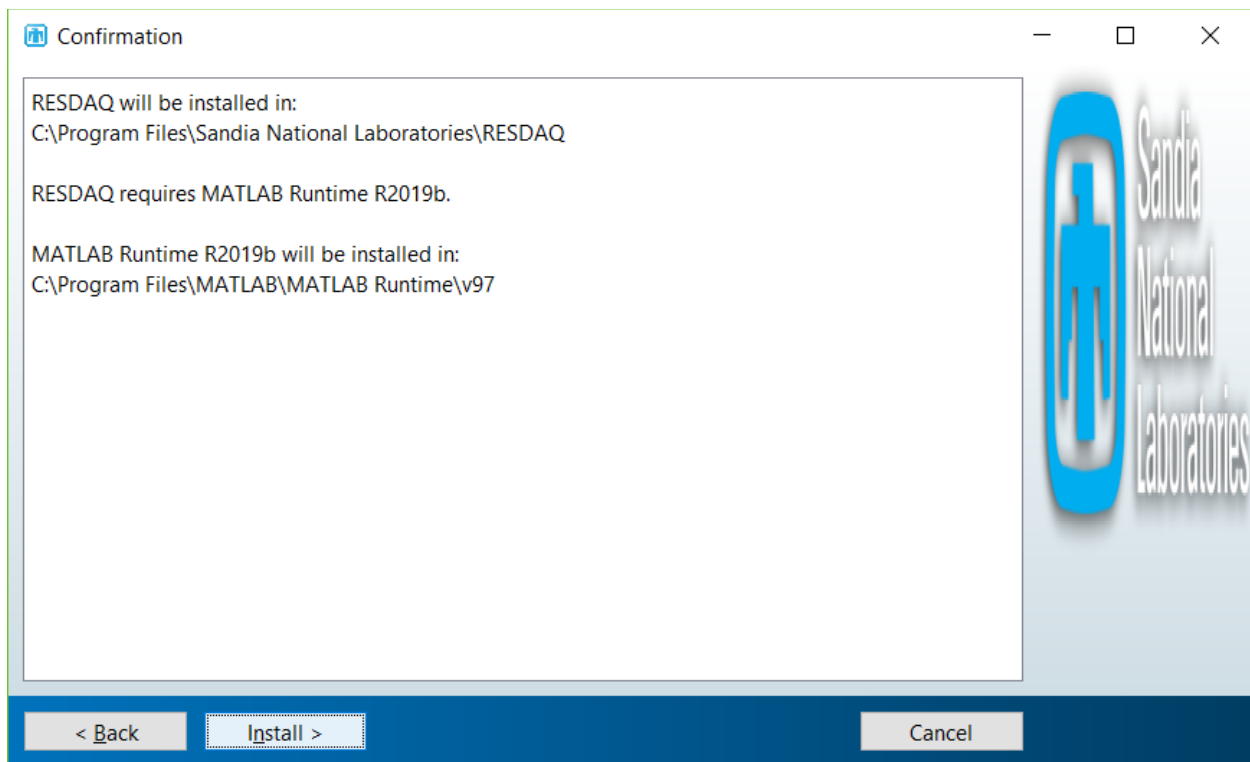


Figure A-6. RES DAQ Installer Page 5

Next, the user will see the following screen indicating the installation has successfully started. (Figure A-7).

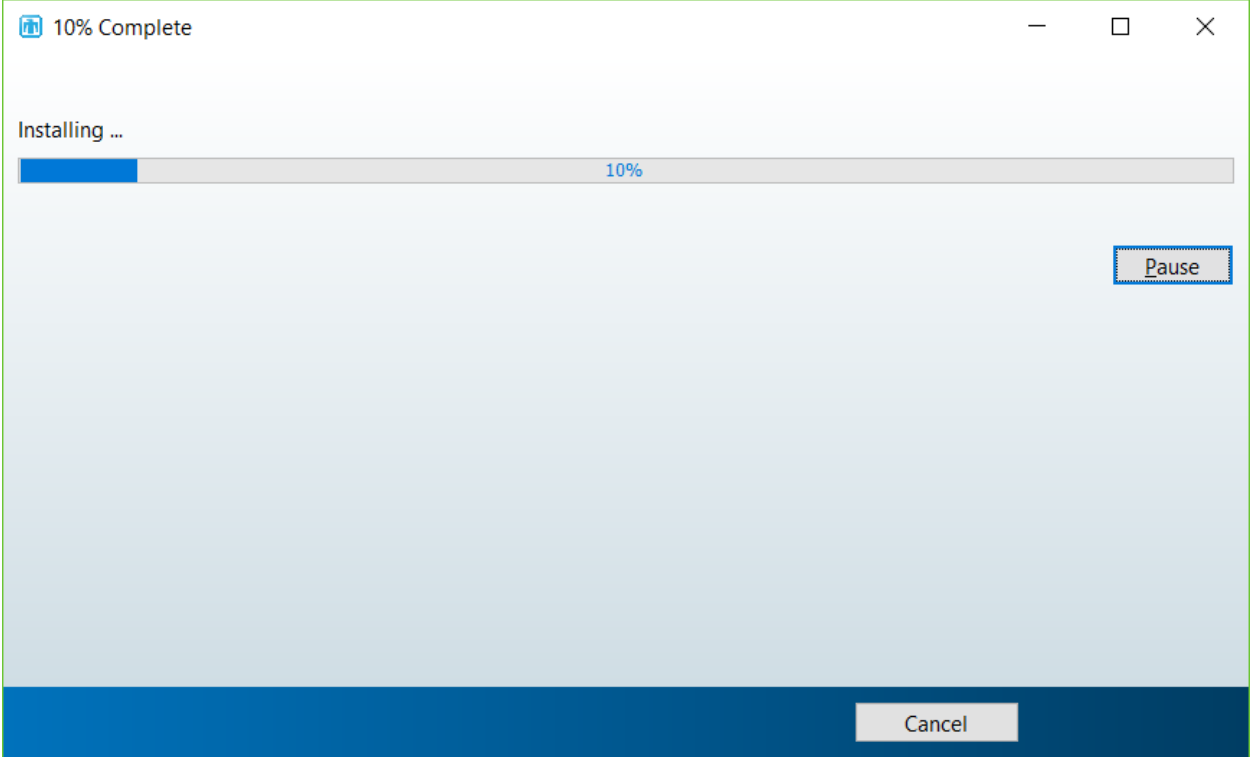


Figure A-7. RES DAQ Installer Page 6

After the installation is complete, the user will be prompted with a screen showing a successful installation (Figure A-8). Click Finish to conclude the installation.

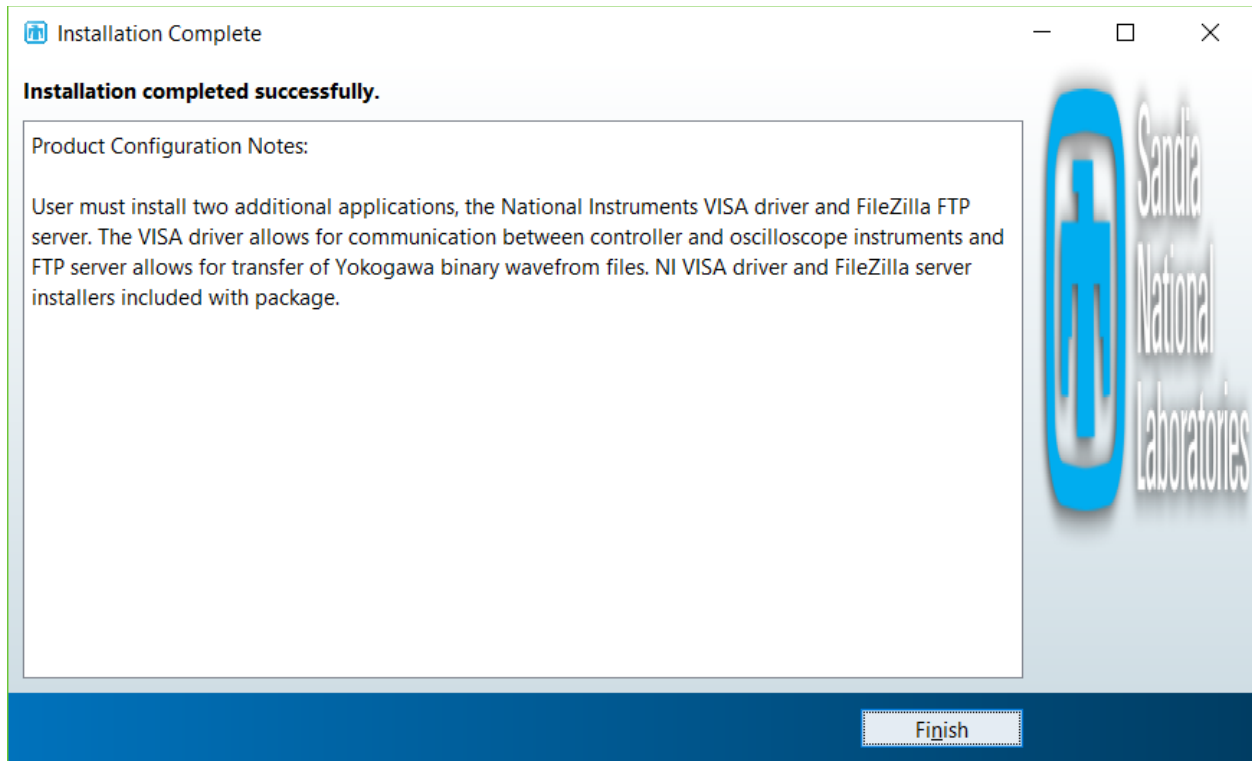


Figure A-8. RES DAQ Installer Page 7

APPENDIX B. NATIONAL INSTRUMENTS VISA DRIVER INSTALLATION

This section provides a detailed description of the installation process for the *National Instruments VISA* driver. The *VISA* driver installation file is packaged with the *RES DAQ v1.0.0* installer and is unpacked upon installation. It is located in the application directory in the *RES DAQ v1.0.0* installation folder as shown in Figure B-1.

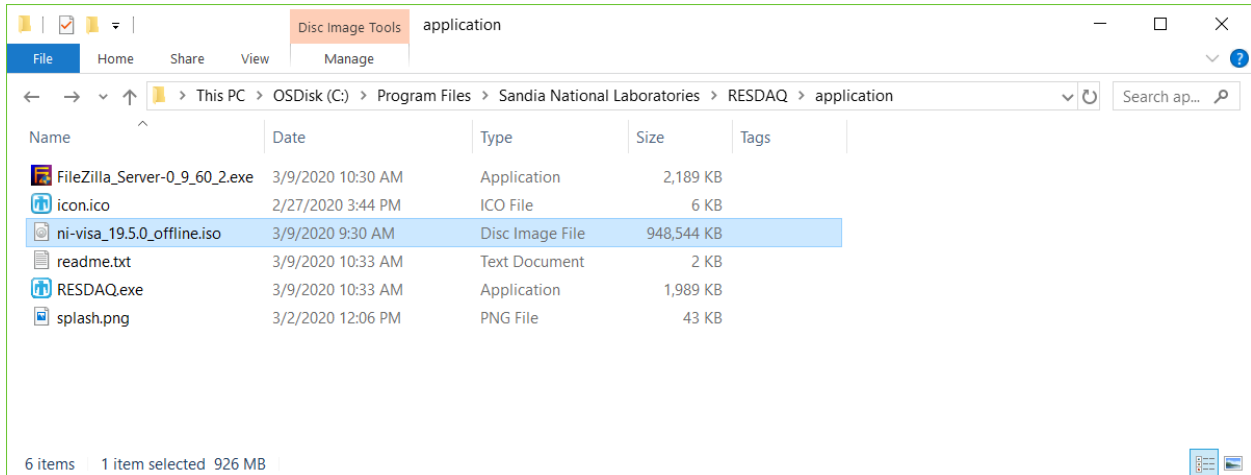


Figure B-1. NI Visa Installer Location

Double click on the ISO file labeled `ni-visa_19.5.0_offline.iso` to begin as seen in Figure B-1. This action will mount the ISO file to a drive allocated by the OS. Next, the drive will display the ISO VISA installer file as seen in Figure B-2. Double click the executable file labeled `Install.exe`.

NOTE: The user should only install the NI VISA driver if it is not currently installed on the target machine. The installer will display the message No operation to be performed if the VISA driver already installed.

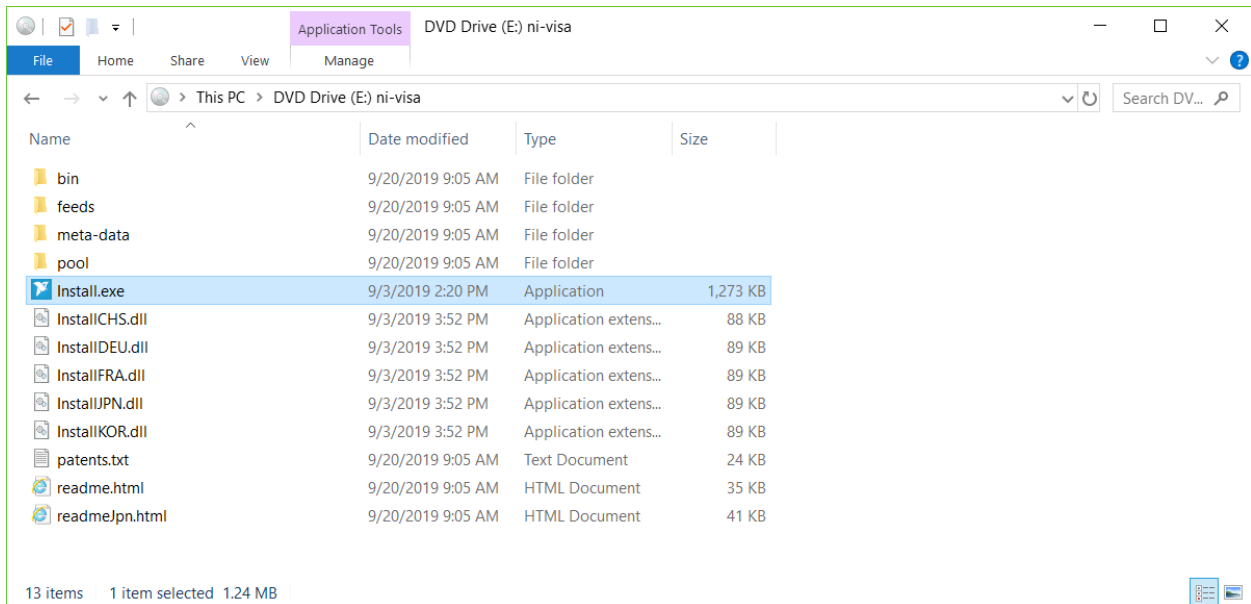


Figure B-2. Mounted ISO VISA Installer

Next, the NI Package Manager splash screen will appear as shown in Figure B-3.



Figure B-3. NI Package Manager Splash Screen

The next page is the NI Package Manager license agreement as shown in Figure B-4. Accept the license agreement and click Next to continue.

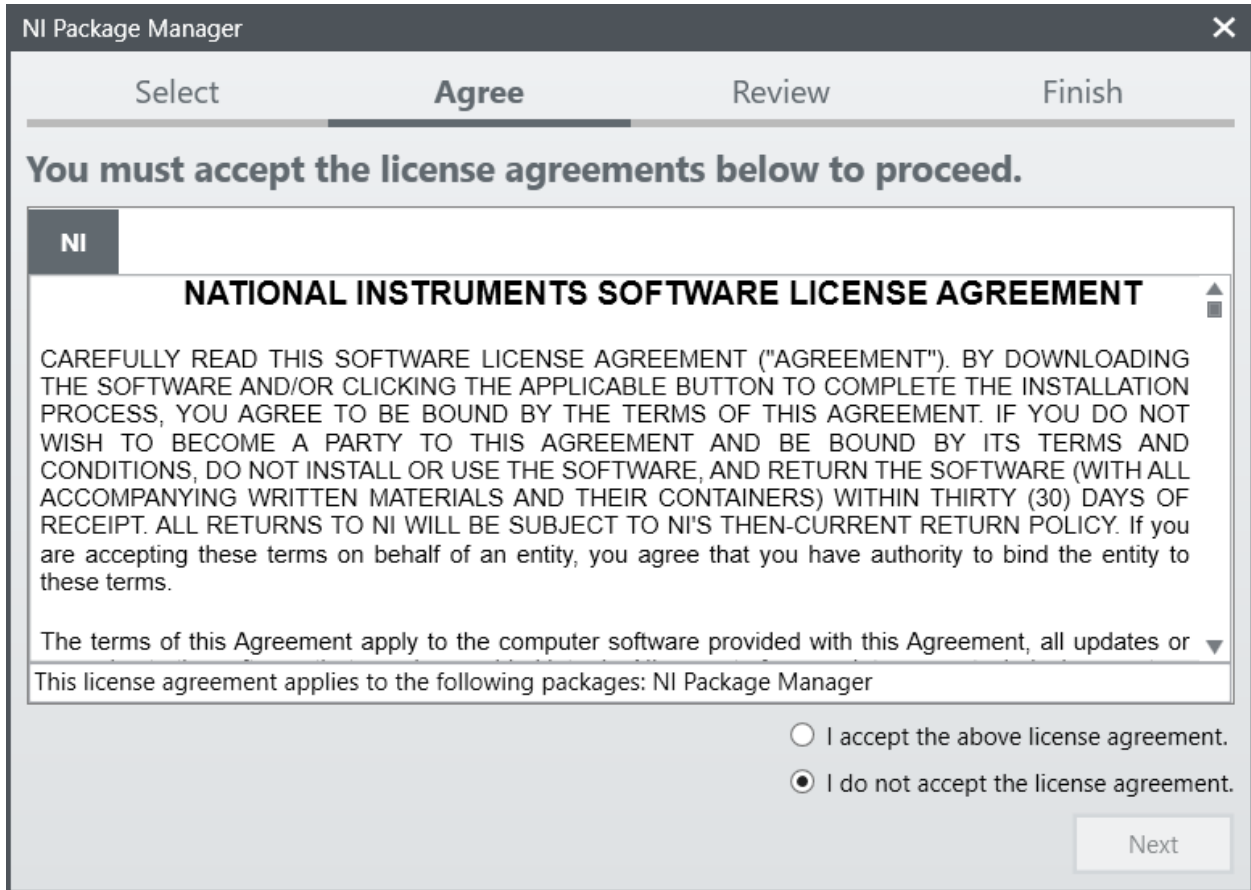


Figure B-4. NI Package Manager License Agreement

The installer recommends turning off *Windows Fast Startup* before the *NI Package Manager* installation begins as shown in Figure B-5. Check *Disable Windows fast startup* and click *Next* to continue.

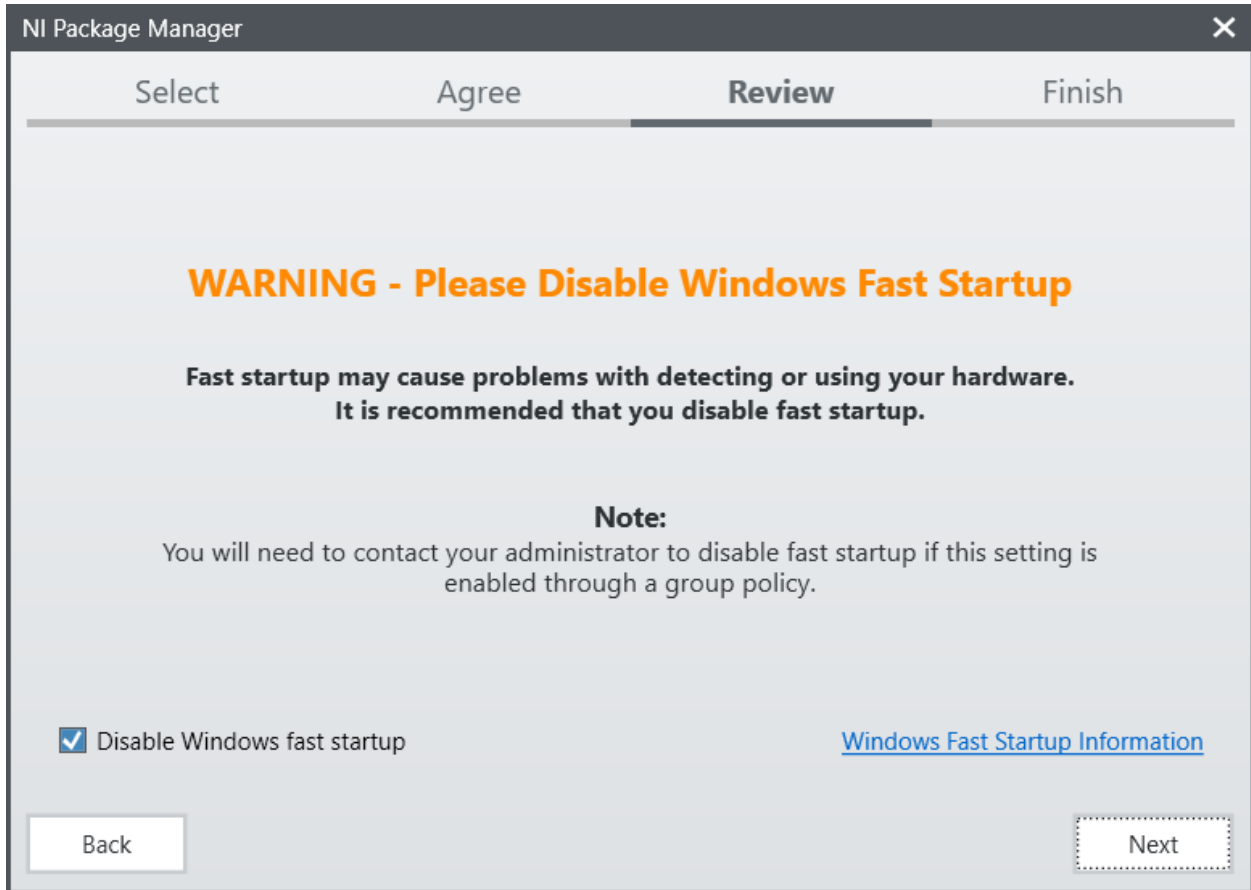


Figure B-5. NI Package Manager Disable Fast Startup

Next, the *NI Package Manager* summary review displays the version of the package manager as shown in Figure B-6. Click Next to continue the installation.

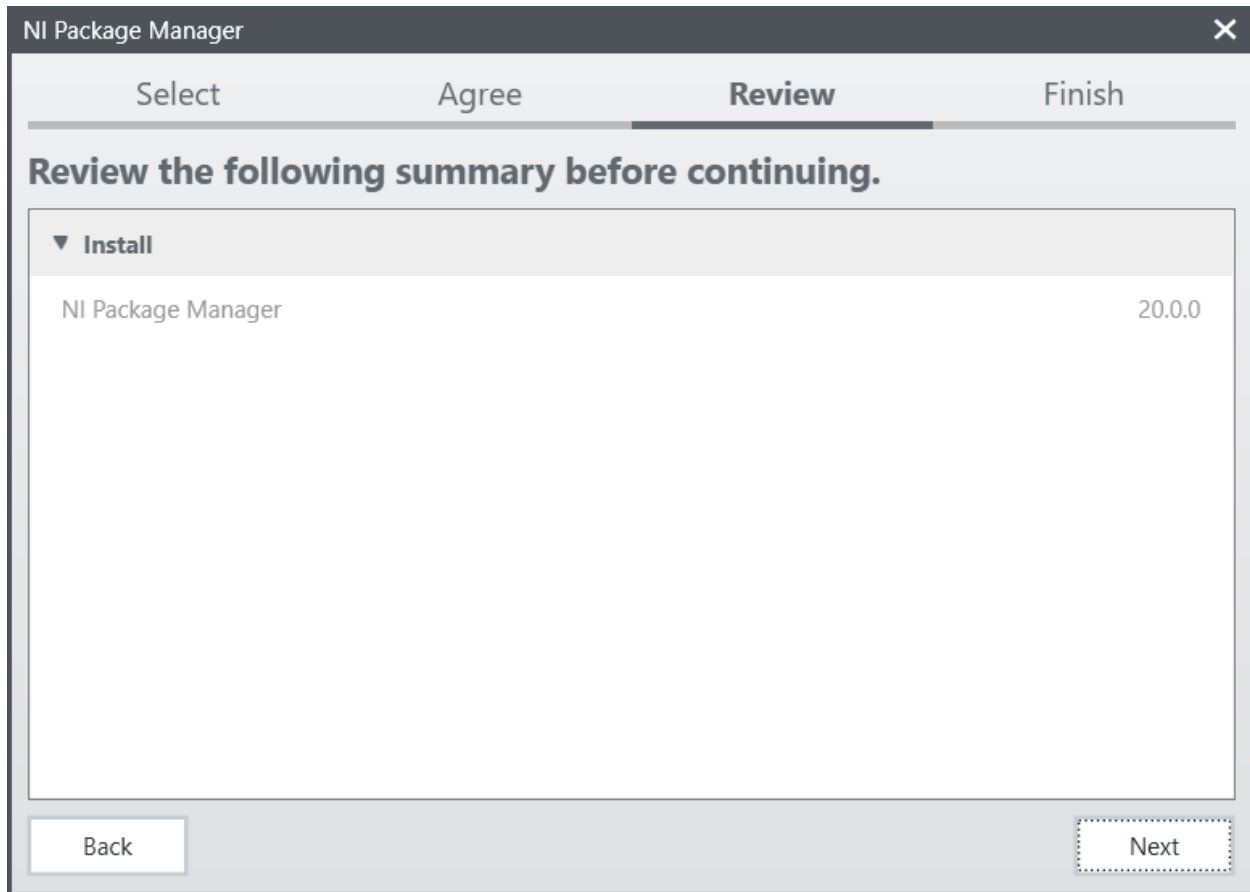


Figure B-6. Review NI Package Manager Installation

The next page shows the installation progress of the *NI Package Manager* (Figure B-7). Click Next after the installation is complete.

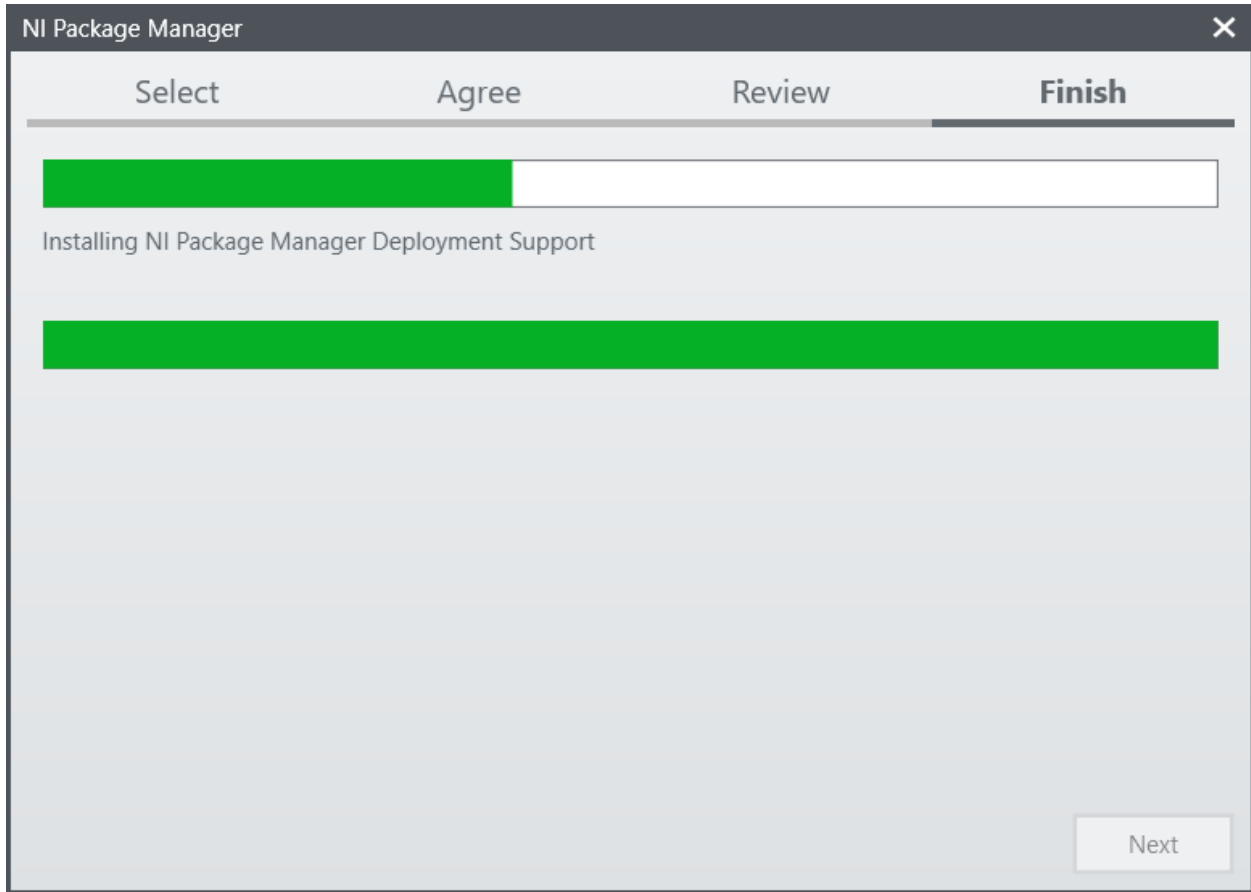


Figure B-7. Installing NI Package Manager

Next, the user will be presented with the *NI VISA* installation page as shown in Figure B-8. The installation page gives the option to choose various *NI VISA* components. It is recommended the user leaves the default selections. Click Next to proceed.

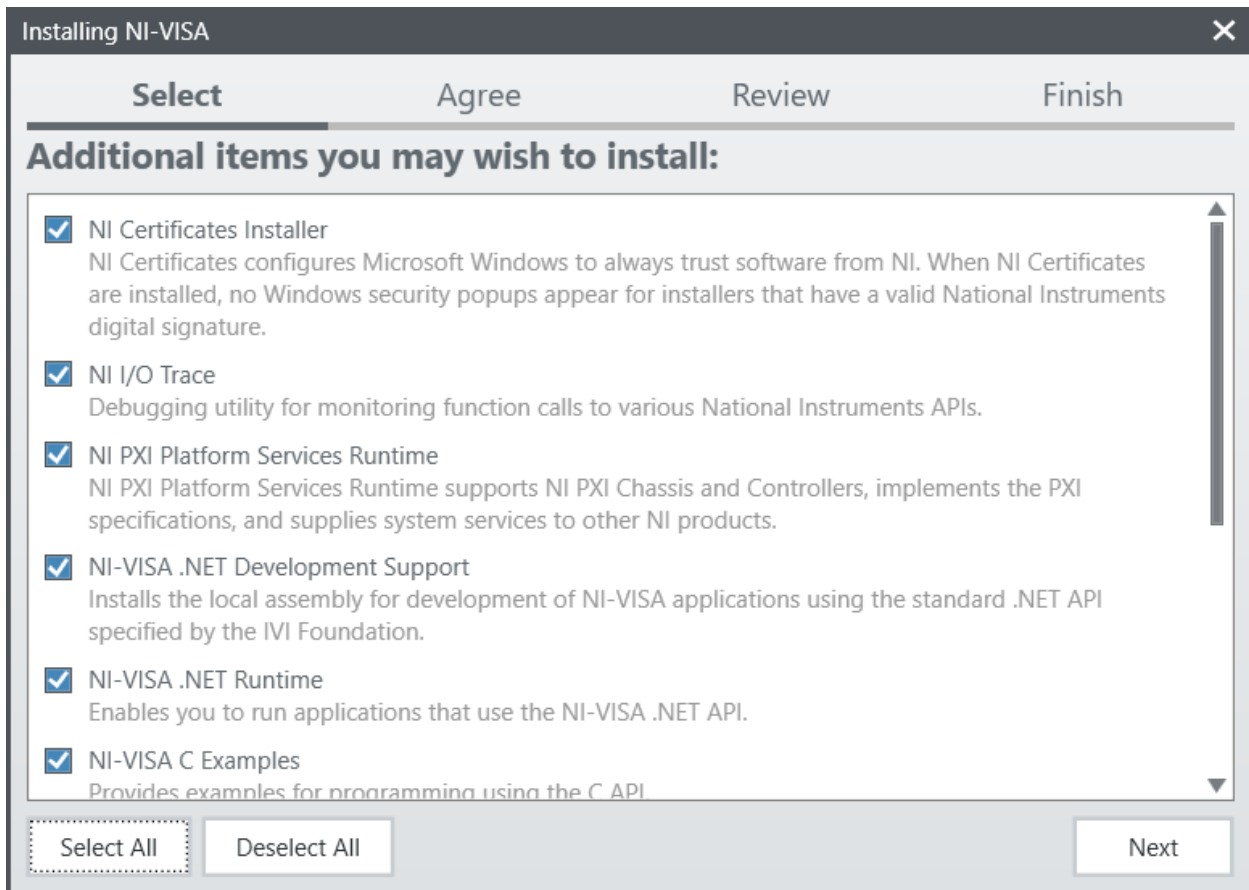


Figure B-8. NI VISA Package Selection

After selecting the desired *NI VISA* components, the user will be presented with the license agreement for *LabVIEW Runtime* and *NI VISA*. Accept the license agreements and click Next as seen in Figure B-9.

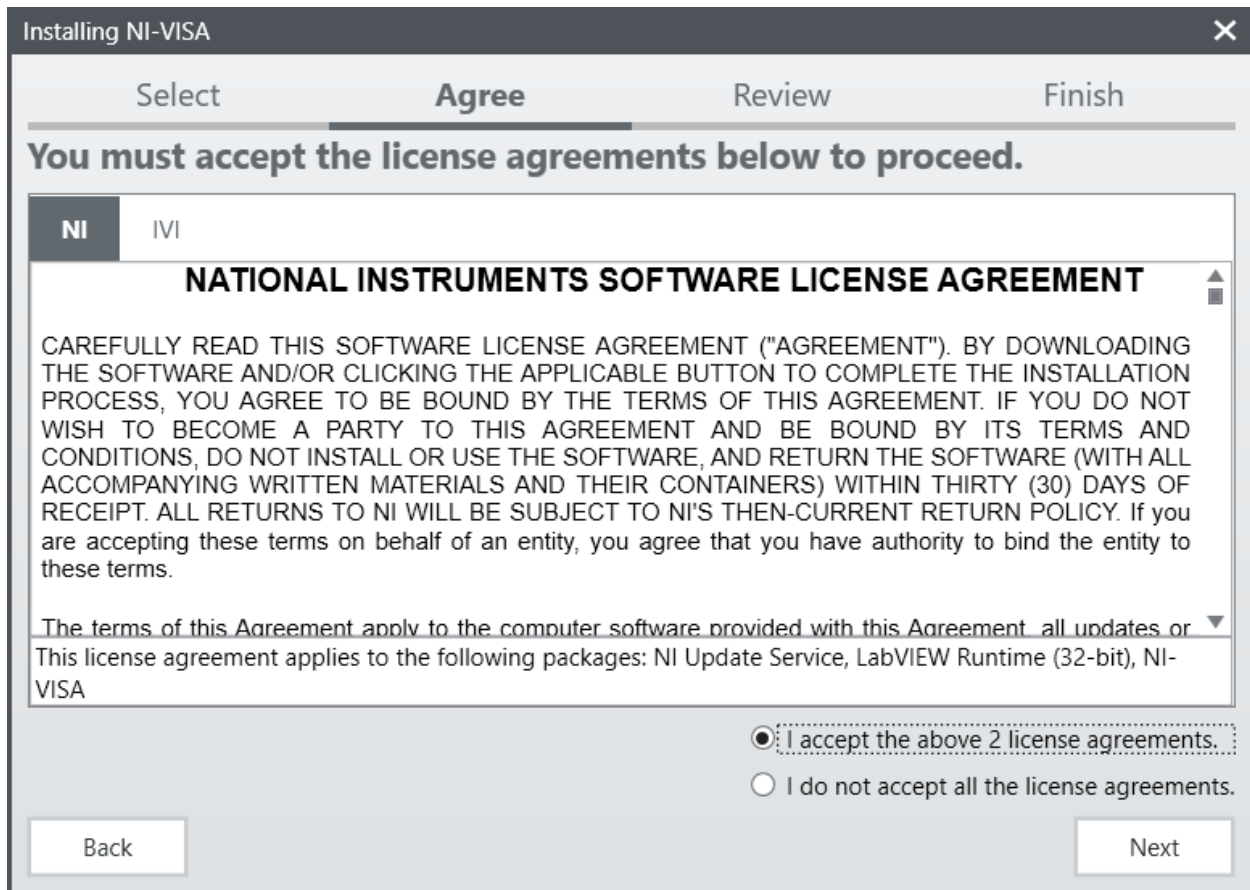


Figure B-9. NI VISA License Agreements

Next is the license agreement for *Microsoft Silverlight* as shown in Figure B-10. Accept the license agreements and click Next to continue.

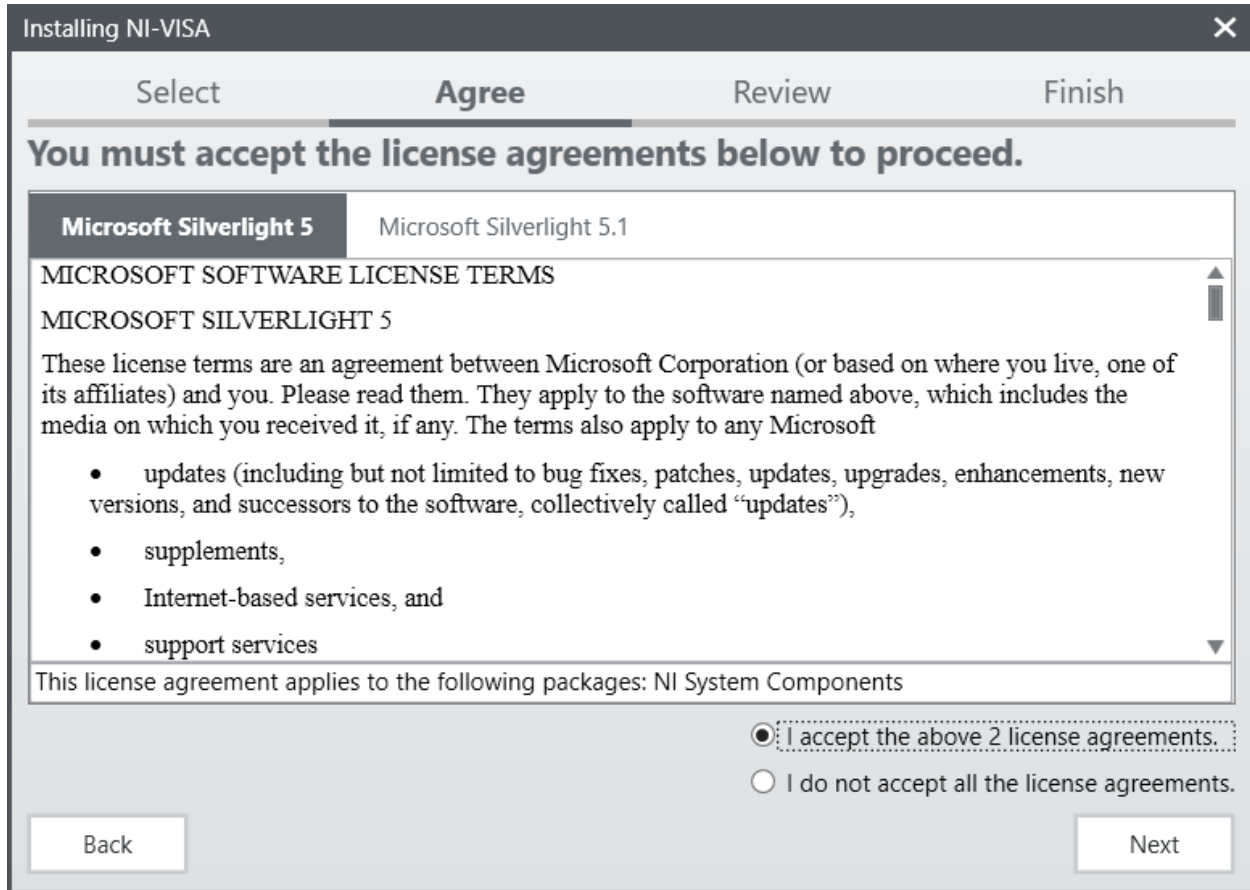


Figure B-10. Microsoft Silverlight License Agreements

The *NI Package Manager* will present the user with a list of software components being installed before finalizing the installation (Figure B-11). If the component installation summary is correct, click Next to continue.

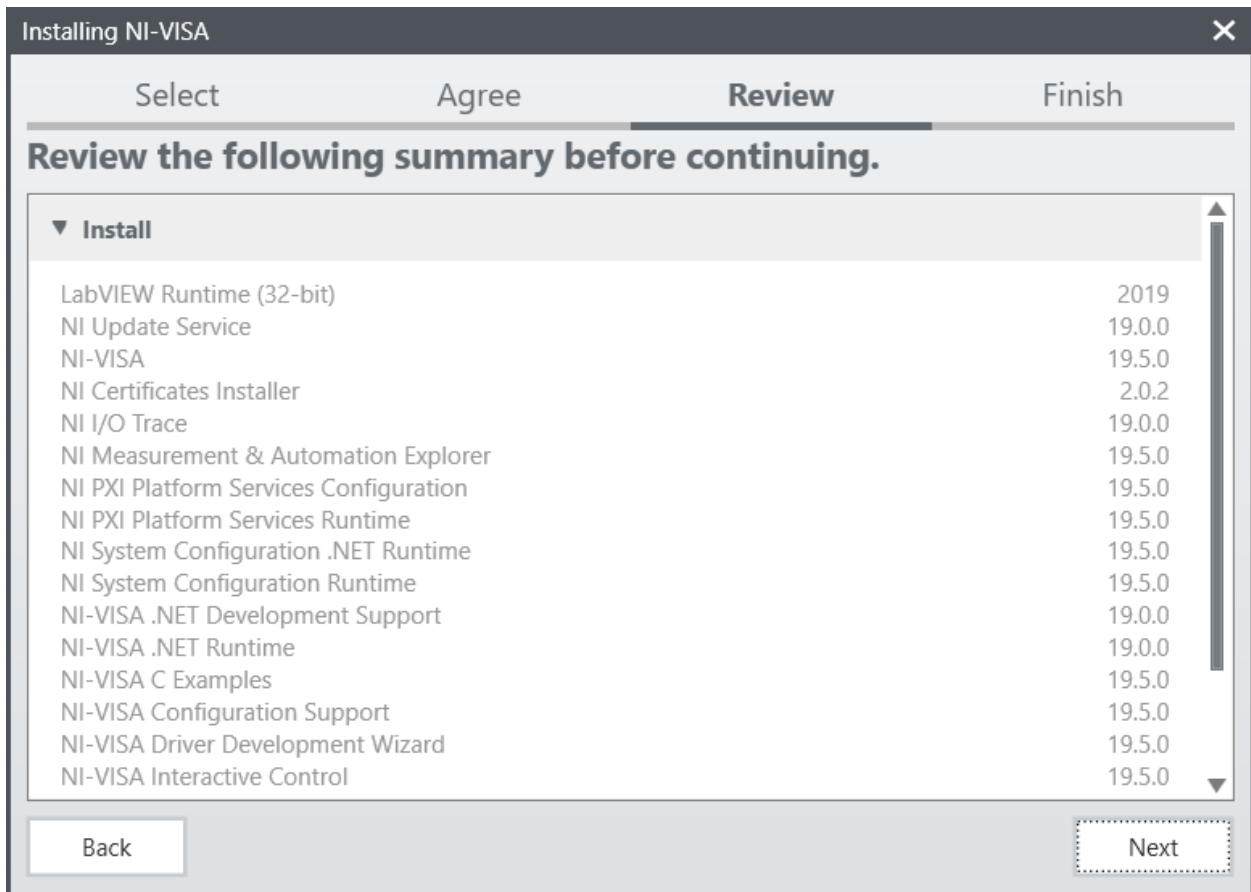


Figure B-11. NI VISA Review Installation

The next page shows the installation progress for the *NI VISA* driver (Figure B-12). When the installation is complete, click Next.

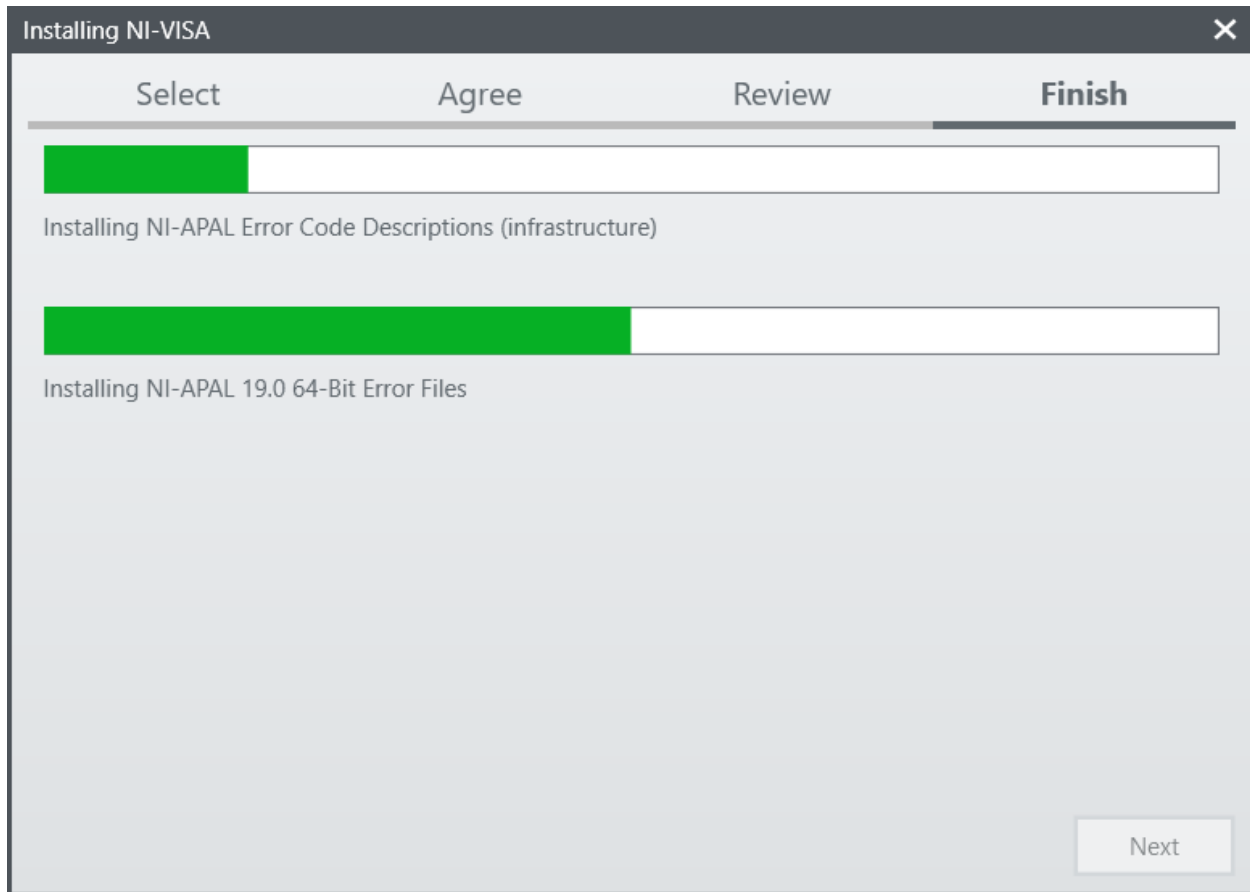


Figure B-12. NI VISA Installation

The user will be presented with the Installation Complete screen when installation is successful (Figure B-13). The user must reboot the computer to complete the installation. Click Reboot Now to reboot the computer.

NOTE: No additional setup is required after the reboot.

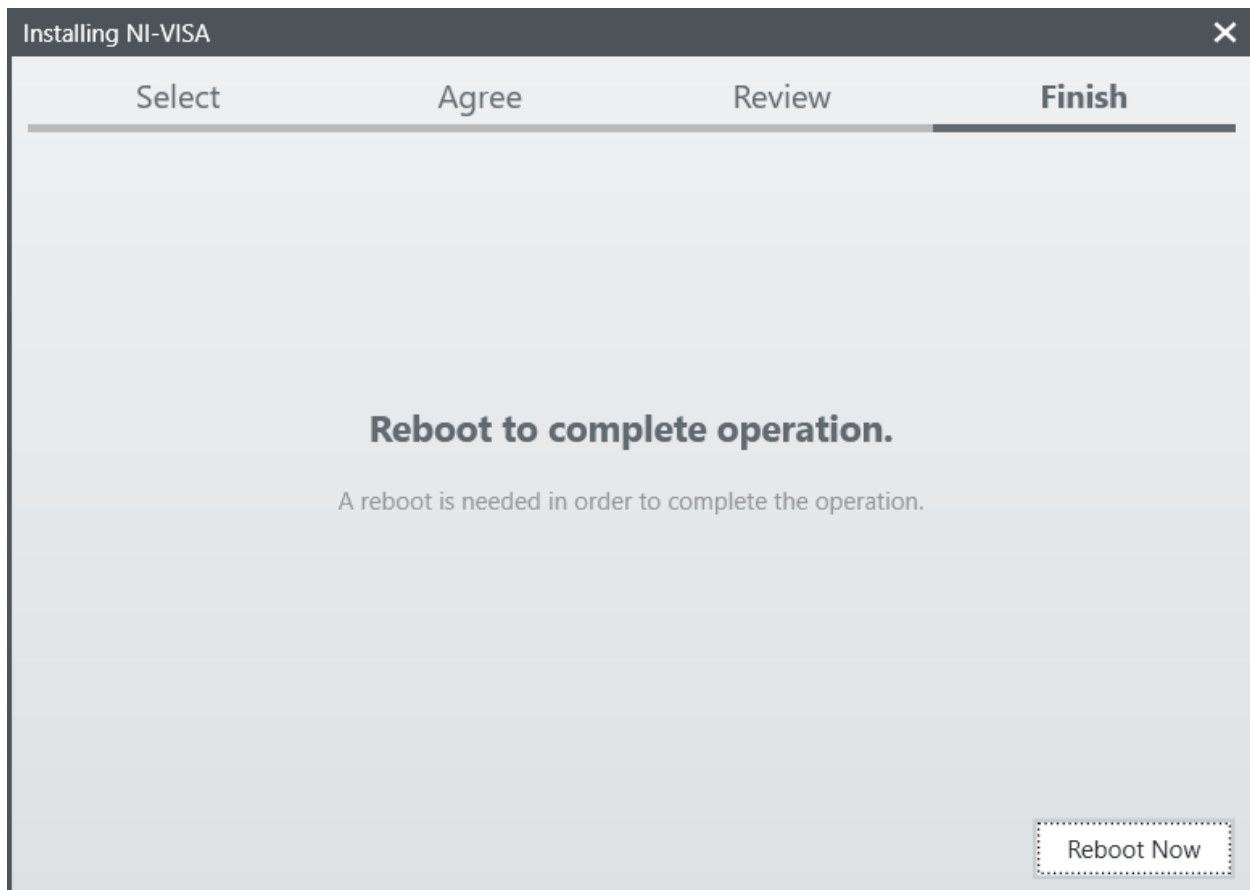


Figure B-13. NI VISA Installation Complete

APPENDIX C. FILEZILLA SERVER INSTALLATION AND SETUP

This appendix provides a detailed description of the installation and setup for the *FileZilla Server*.

C.1. FileZilla Server Installation

The *FileZilla Server* installation file is packaged with the *RES DAQ v1.0.0* installer and is unpacked upon installation. It is located in the application directory in the installation folder of *RES DAQ v1.0.0* as shown in Figure C-1. Double click the executable labeled *FileZilla_Server-0_9_60_2.exe* to begin installation.

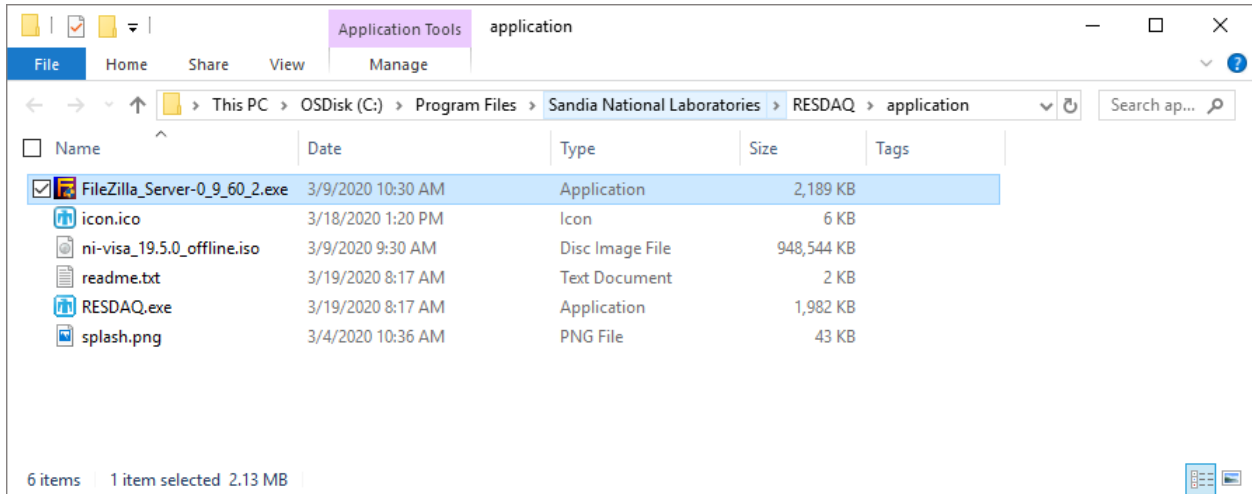


Figure C-1. FileZilla Server Installer Location

At the start of the installation, the FileZilla Server license agreement page is displayed (Figure C-2). Accept the license agreement by clicking I Agree and continue the installation.

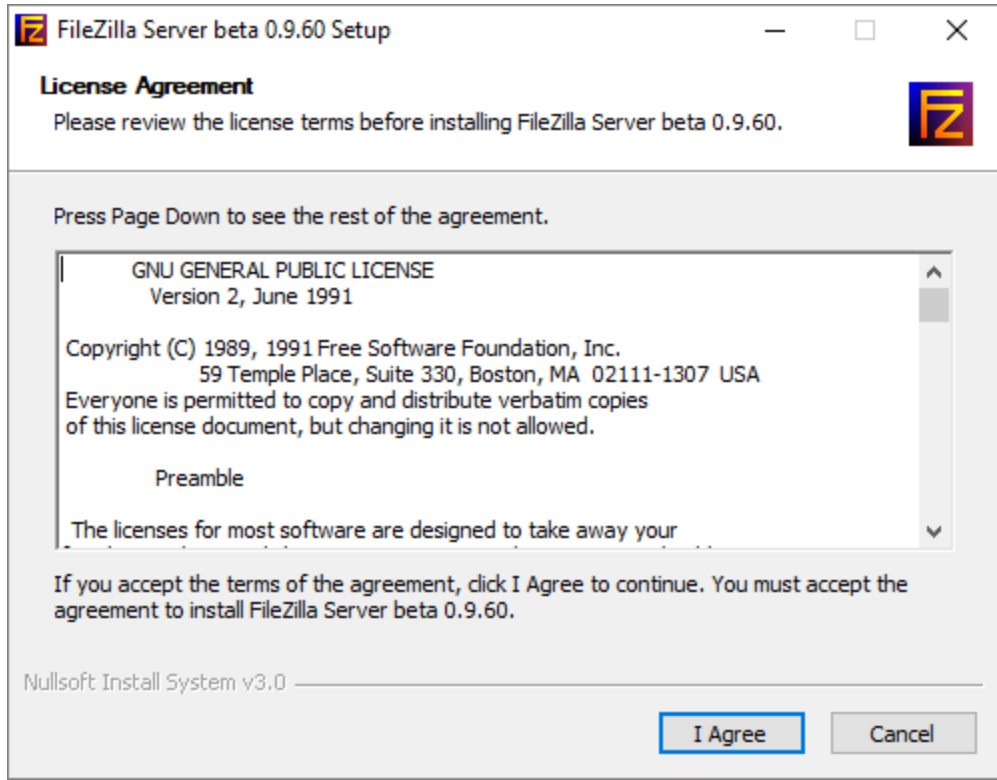


Figure C-2. FileZilla Server License Agreement

As shown in Figure C-3, the user is presented with the Components menu. It is recommended to leave the default selections. Click Next.

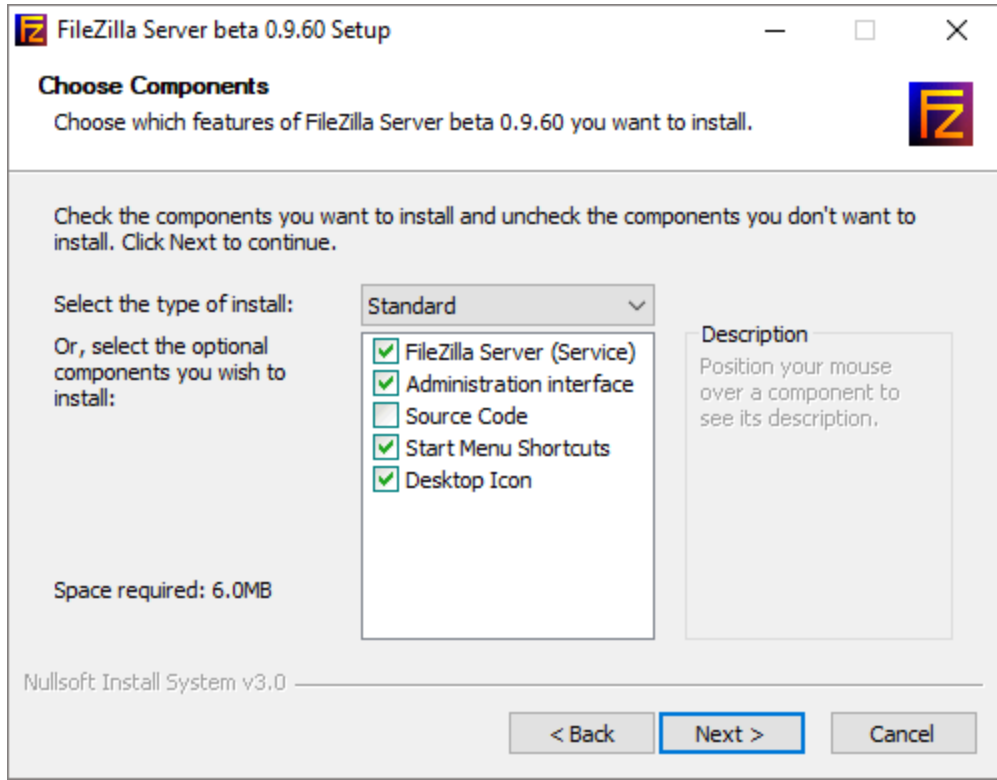


Figure C-3. FileZilla Server Components

The next page displays the Installation Location menu shown in Figure C-4. The install location defaults to the Program Files directory. It is recommended to leave the default location. After specifying the install location, click Next to continue.

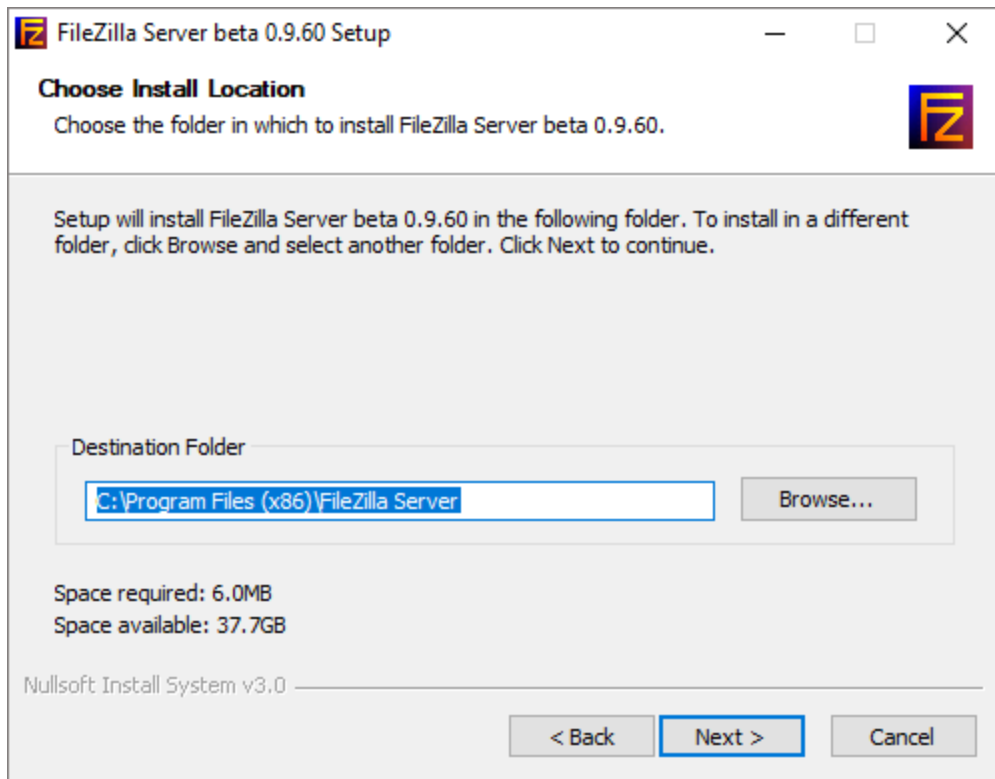


Figure C-4. FileZilla Server Install Location

Next the user is prompted with the Startup Setting page shown in Figure C-5. The user must choose a listening port for the FTP server. The default port value is 14147 and works in most situations. The port number is at the user's discretion and must be a valid port. Enter a port value and click Next to continue.

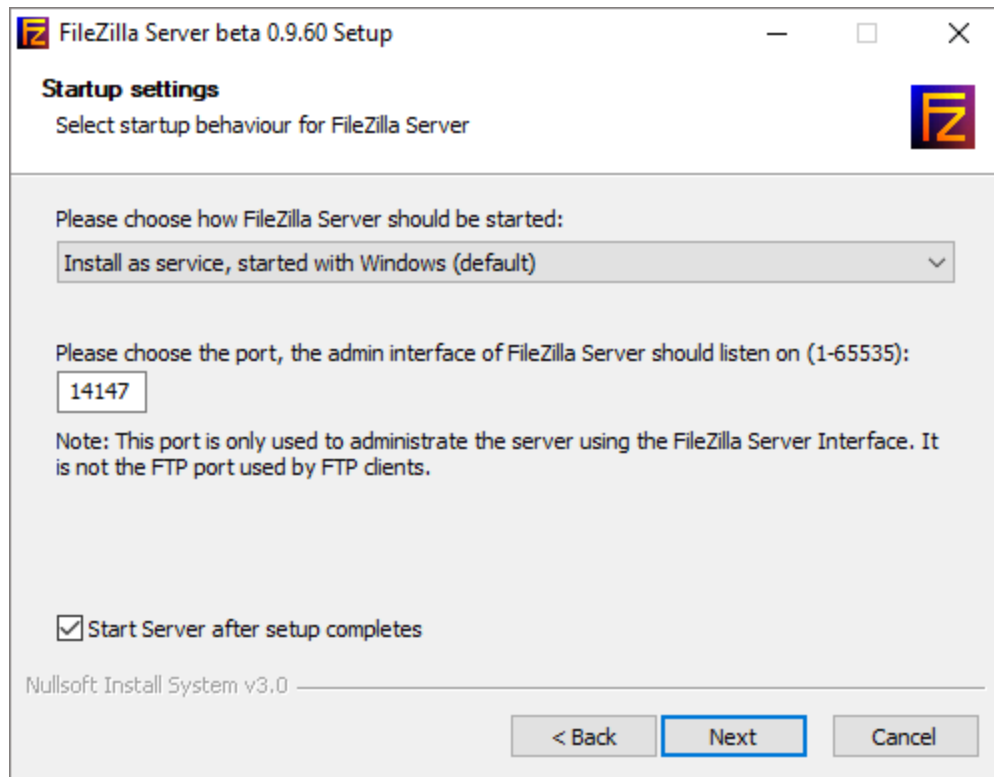


Figure C-5. FileZilla Server Startup Settings Page 1

After choosing the port, page two of the Startup Settings will display (Figure C-6). The user must choose to include *FileZilla Server* to the startup programs. It is recommended to leave the default setting if the FTP server is frequently used. Click Install to begin the application install.

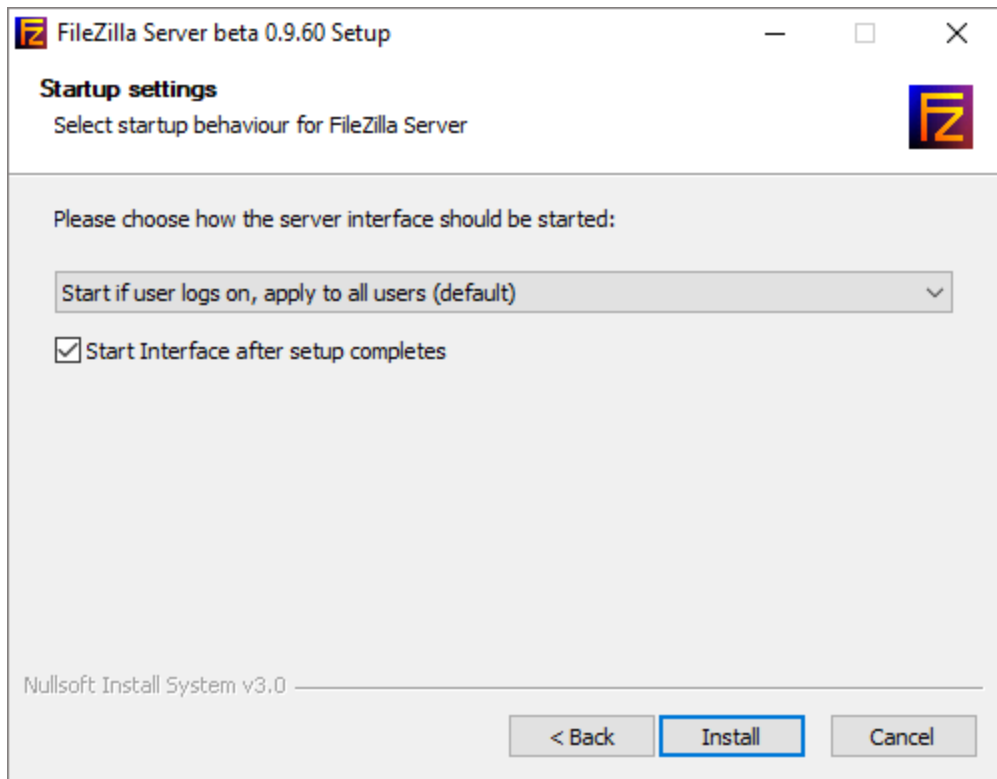


Figure C-6. FileZilla Server Startup Settings Page 2

As seen in Figure C-7, the installer will move to the next page displaying the installation progress.

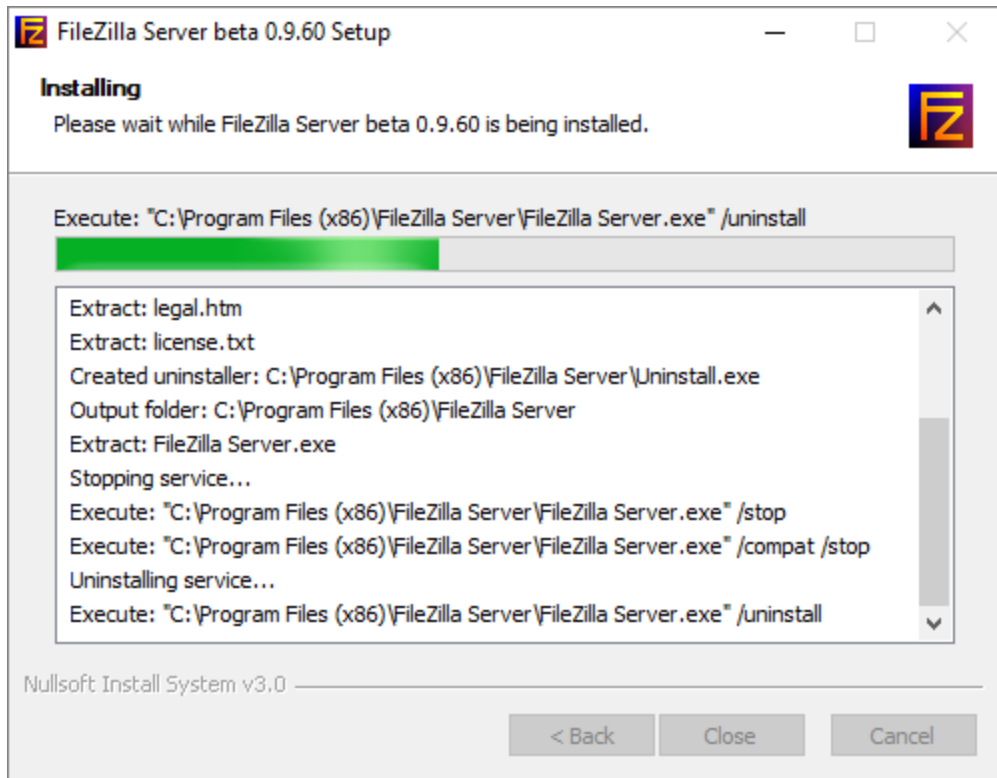


Figure C-7. FileZilla Installation Progress

The user will be prompted with the Installation Complete screen when the installation is successful (Figure C-8). Click Close to complete the installation. Next, the server must be configured as described in section C.2.

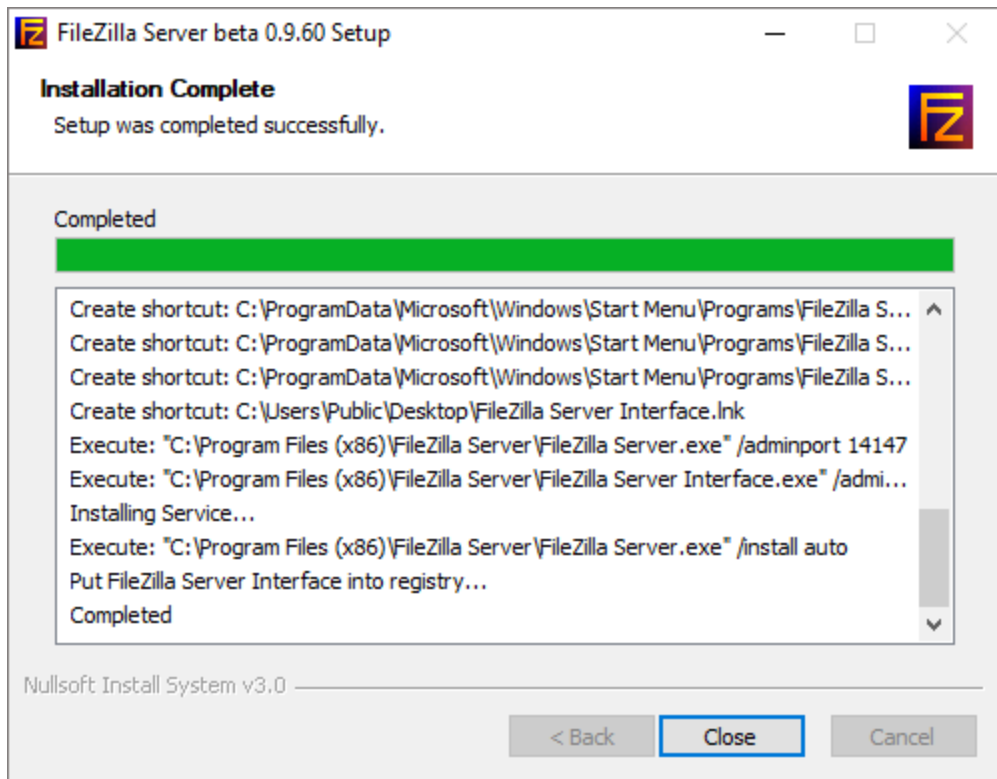
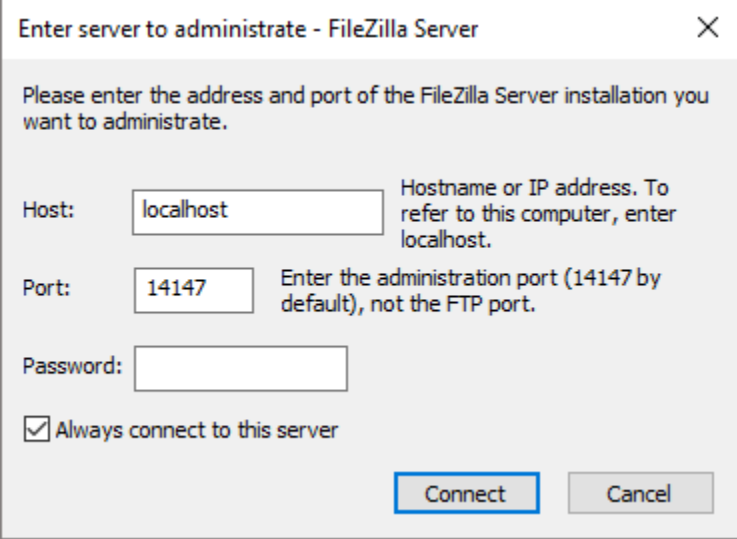


Figure C-8. FileZilla Installation Complete

C.2. FileZilla Server Setup

The user will be presented with the Address and Port menu as the *FileZilla Server* application begins (Figure C-9). The server is running on the host computer and users must specify localhost as the address and 14747 as the port number. The user must leave the password field blank and check Always connect to the server option. Next, click Connect.



The image shows a dialog box titled "Enter server to administrate - FileZilla Server". The dialog contains the following elements:

- A title bar with a close button (X).
- Instructional text: "Please enter the address and port of the FileZilla Server installation you want to administrate."
- Host field: A text box containing "localhost". To its right is the text: "Hostname or IP address. To refer to this computer, enter localhost."
- Port field: A text box containing "14147". To its right is the text: "Enter the administration port (14147 by default), not the FTP port."
- Password field: An empty text box.
- Checkbox: A checked checkbox labeled "Always connect to this server".
- Buttons: "Connect" and "Cancel" buttons at the bottom right.

Figure C-9. FileZilla Server Address & Port Menu

After binding to the server local host, the main interface will display a connection status as shown in Figure C-10.

NOTE: Ignore the FTP over TLS warning. These settings do not need to be configured for file transfer.

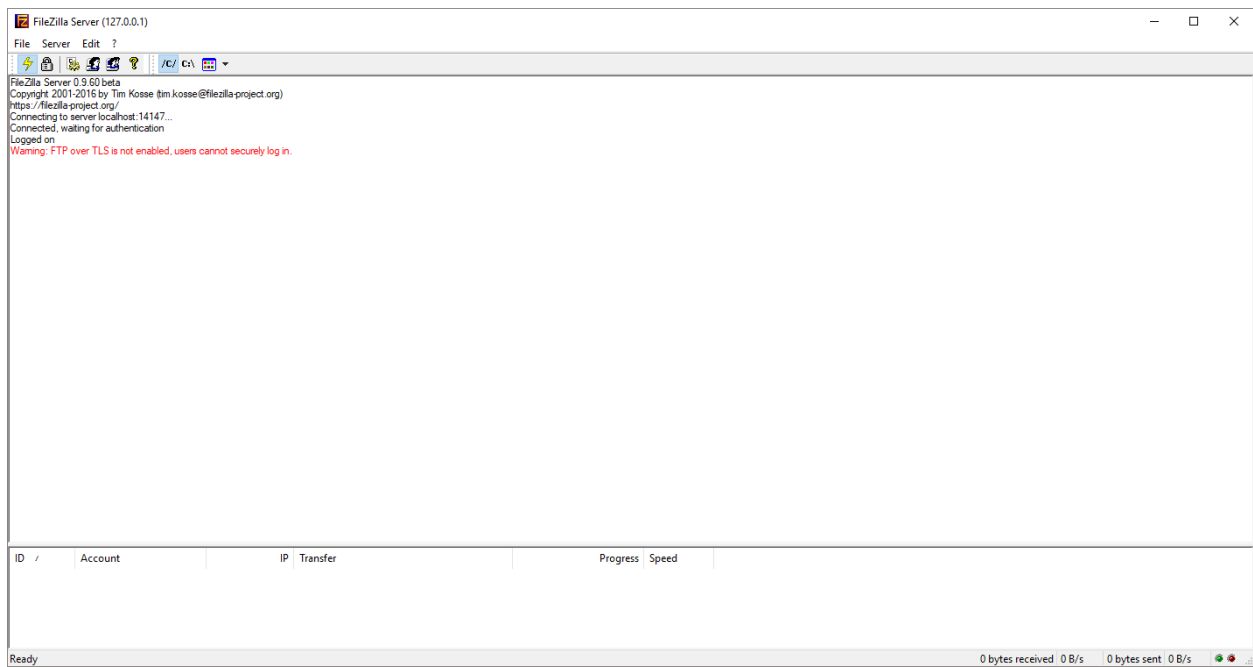


Figure C-10. FileZilla Server Main Interface

Next, a user profile must be created. Users must access the Users menu by selecting the Edit menu as seen in Figure C-10. Click the Users option from the Edit menu. Users must add a profile by clicking the Add button in the Users panel (Figure C-11).

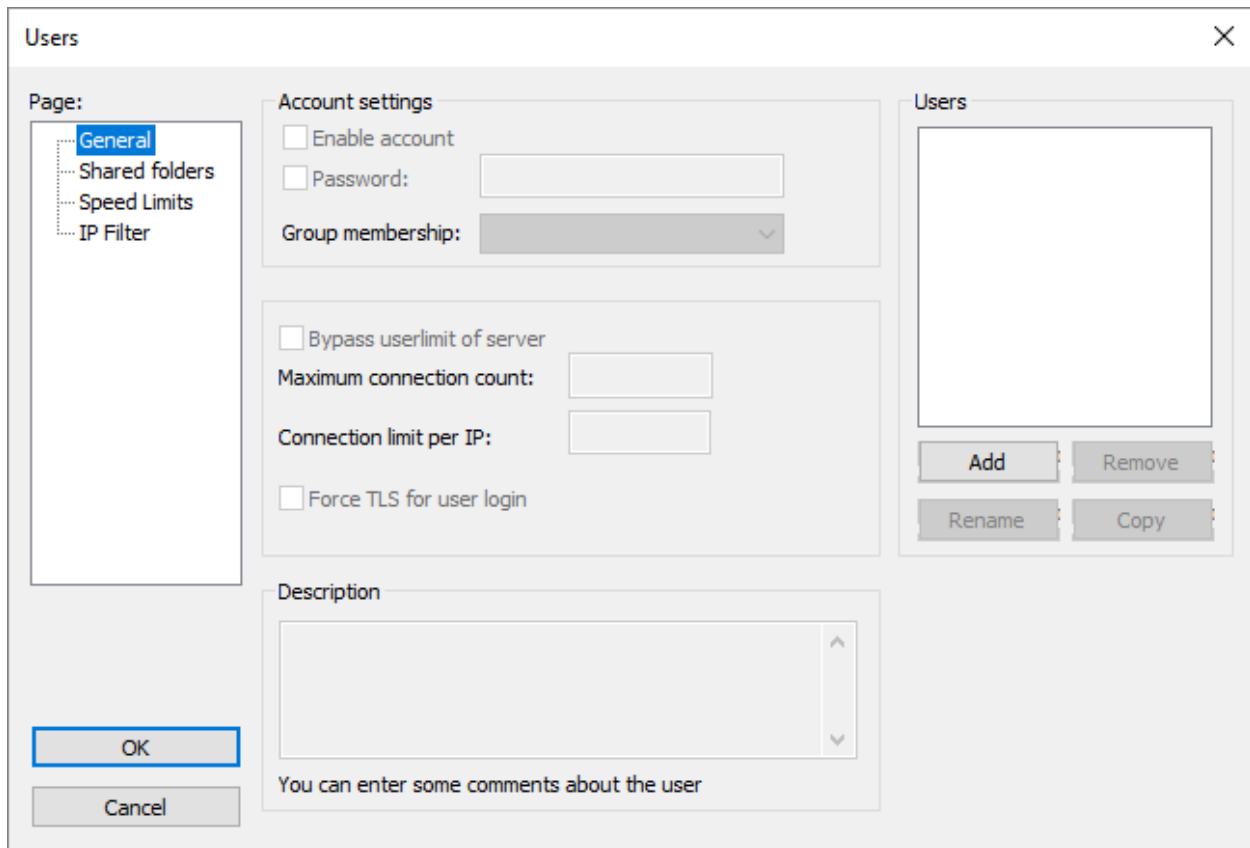


Figure C-11. FileZilla Users Menu

After clicking the Add button, the Add User Account menu will appear. It is recommended to use DL850E as the user account name in the first entry field and leave the second field as the default value as shown in Figure C-12. Click OK to continue.

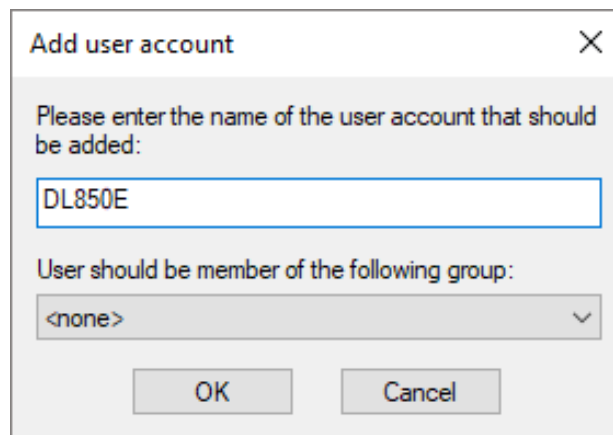


Figure C-12. FileZilla Server Add User Account Menu

After adding the user profile, it will appear under the Users group as seen in Figure C-13.

NOTE: It is only necessary to create one user profile for multiple instruments.

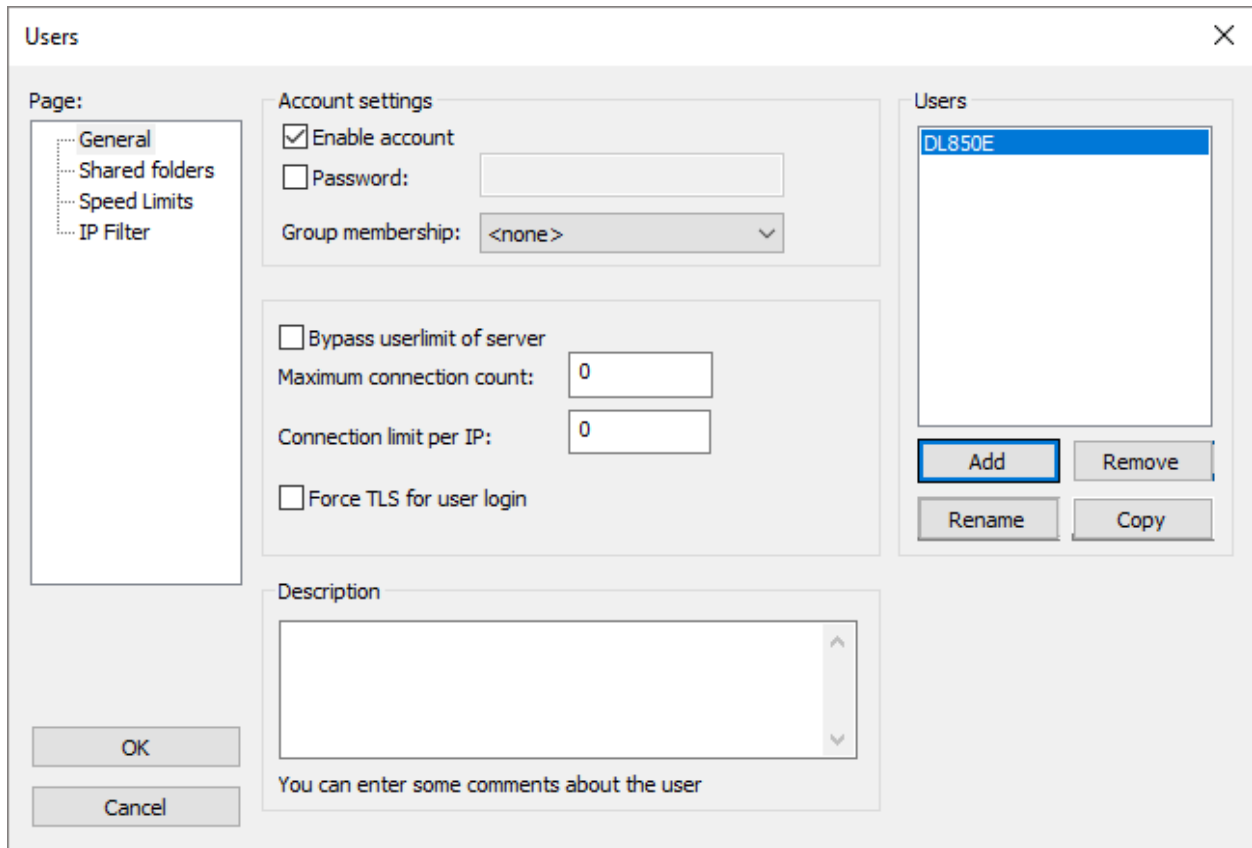


Figure C-13. Add DL850E to Users Group

As seen in Figure C-13, the user must confirm the DL850E user profile is highlighted. Next, the user must select the Shared folders option. Confirm the Shared folders group is highlighted as shown in Figure C-14. Click the Add button to choose a shared folder location.

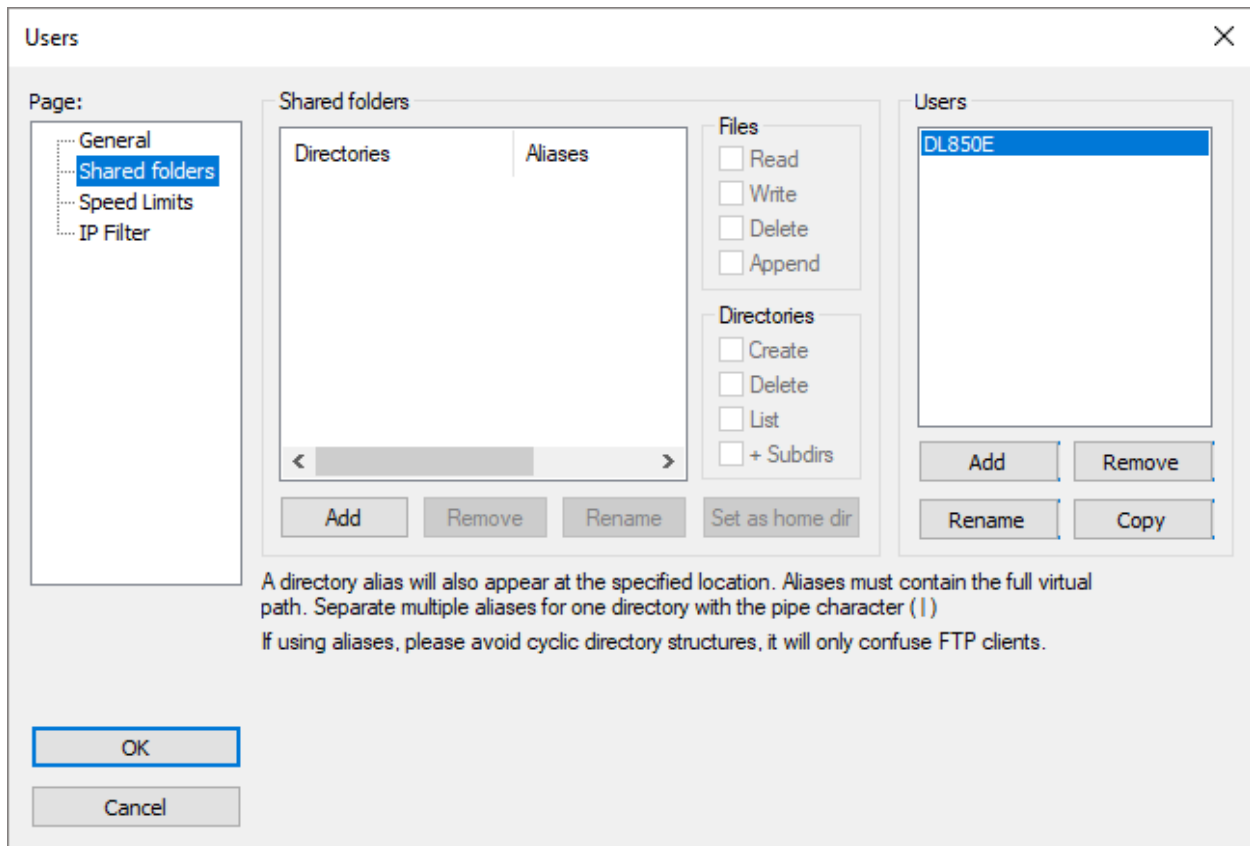


Figure C-14. Shared Folders Selection

As seen in Figure C-15, the user is prompted to choose a shared folder location. Click OK to continue.

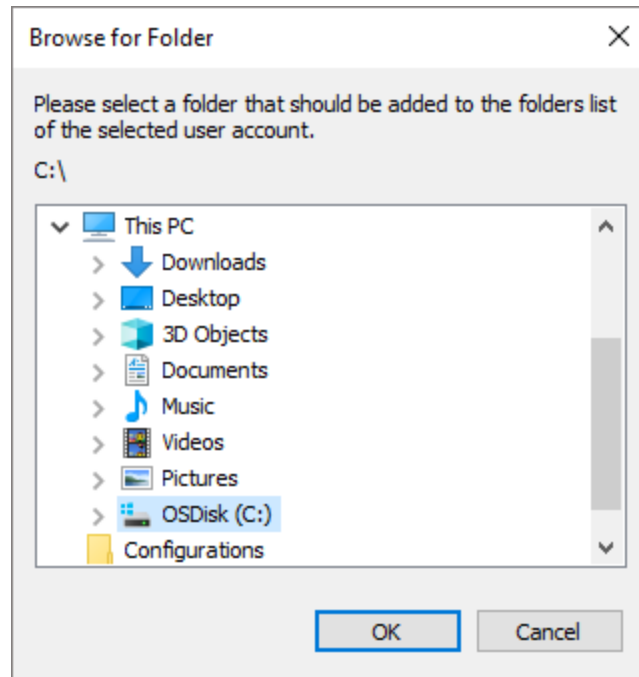


Figure C-15. Browse Shared Folder Location

The shared folder location will appear under the Shared folders group. The user must set read and write permissions for the shared folder by checking all the options under the File and Directories groups as shown in Figure C-16. Click OK to continue.

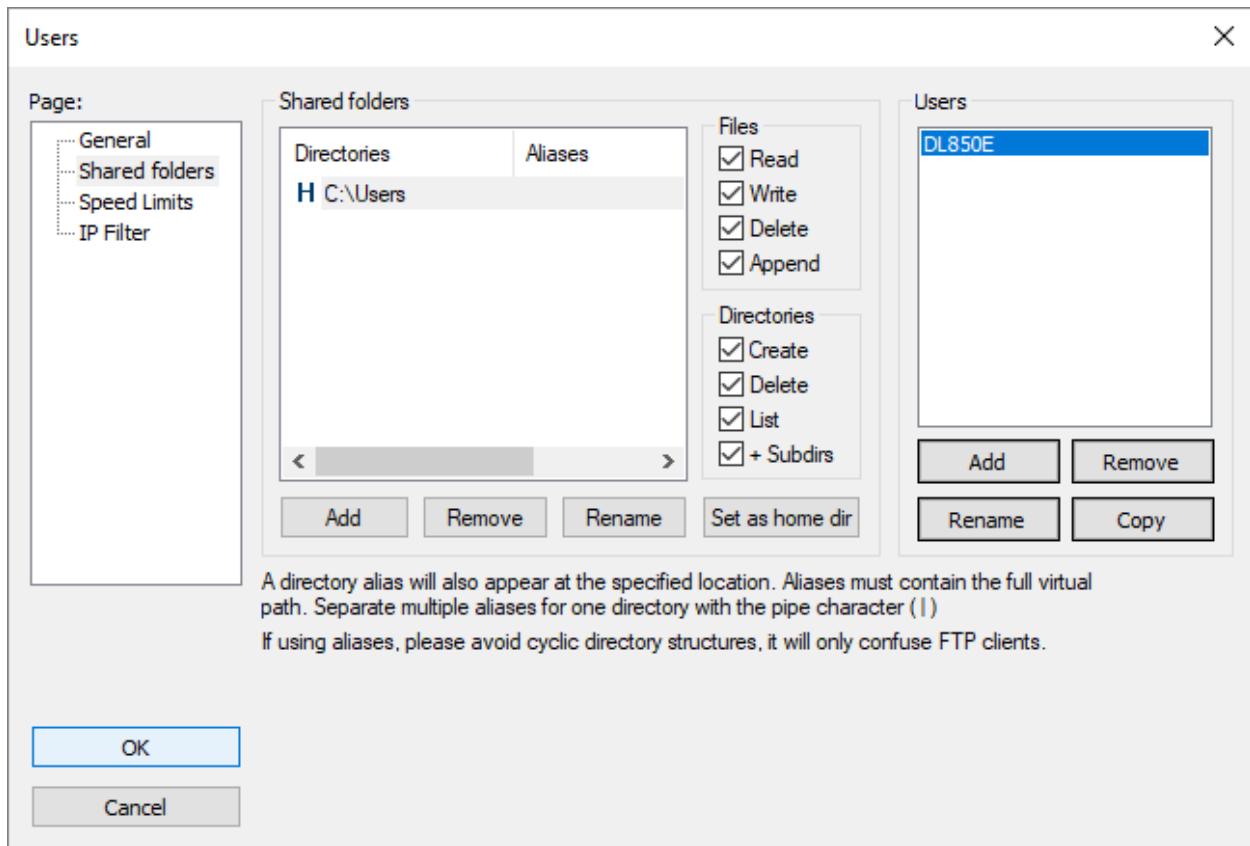


Figure C-16. Set Read & Write Privileges for Shared Folder

The main interface will display the setting changes after the user profile settings are saved as shown Figure C-17.



Figure C-17. User Account Settings Saved

Next the user must configure the *Yokogawa* instrument. The user must push the Utility button to access the utility setting . As shown in Figure C-18, the utilities menu will appear. Next, the user must select the Network option.

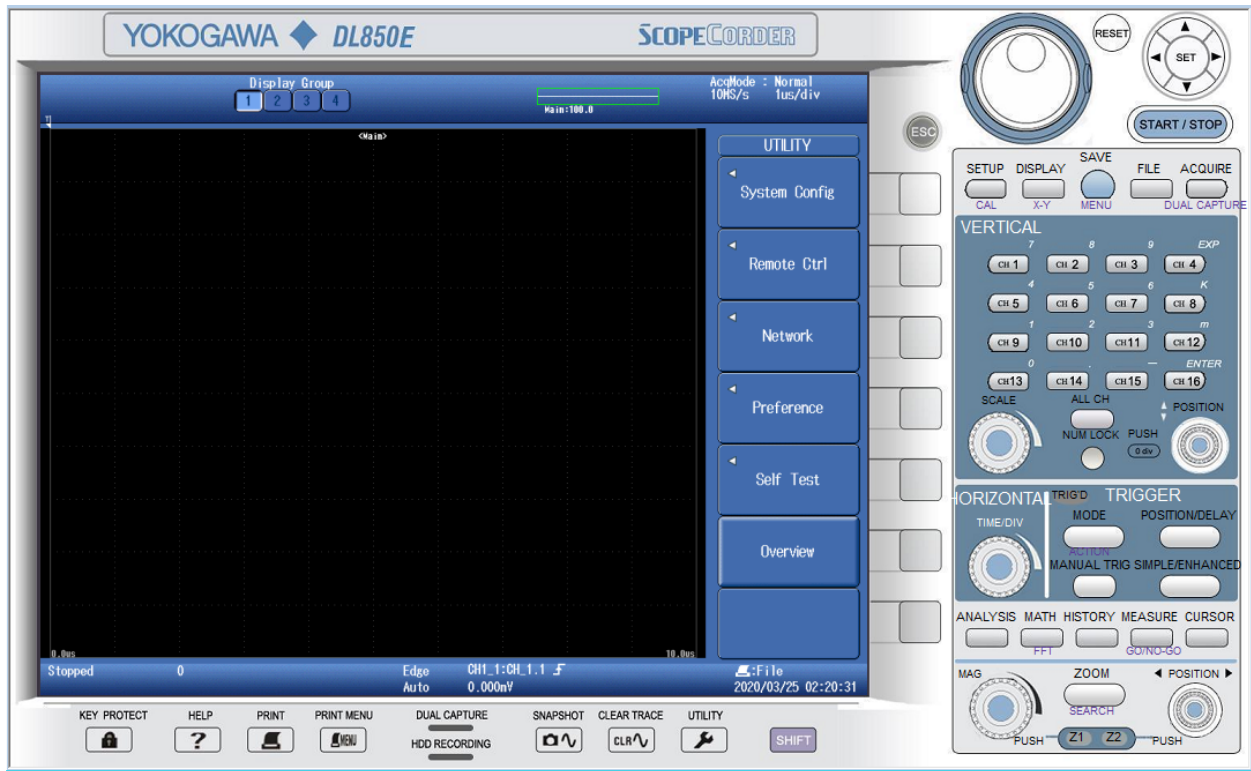


Figure C-18. Yokogawa Utility Menu

The network menu will appear as shown in Figure C-19. Next, the user must select the Net Drive option.



Figure C-19. Yokogawa Network Menu

As seen in Figure C-20, the Net Drive menu will appear. The user must configure the network drive settings.



Figure C-20 Yokogawa Net Drive Menu

First, the user must enter the IP address of the host computer running the *FileZilla Server* in the FTP Server entry field (Figure C-21).

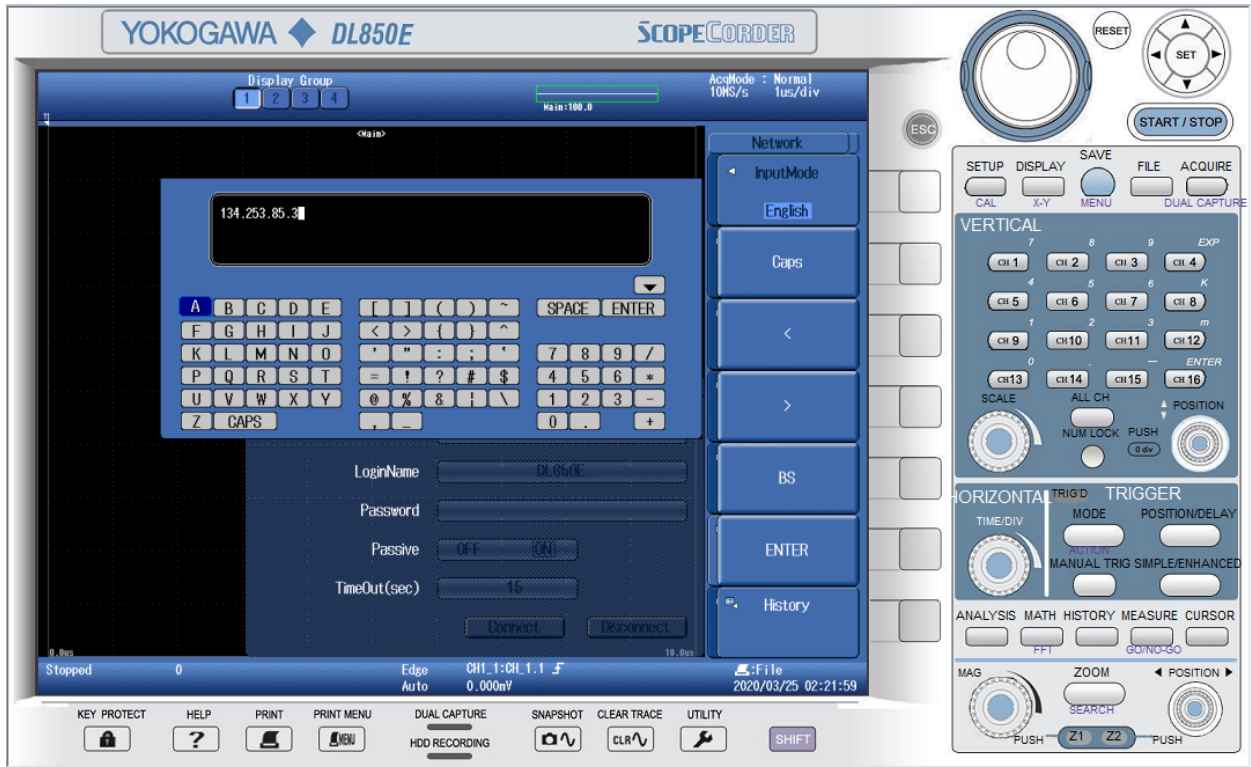


Figure C-21. FTP Server IP Address

Next, the user must enter the username in the LoginName entry field as specified in the *FileZilla Server* setup (Figure C-22). It is important the *Yokogawa* login name and *FileZilla Server* username are identical.

NOTE: The user must leave the Password field blank as it matches the password specified in the FileZilla Server setup.

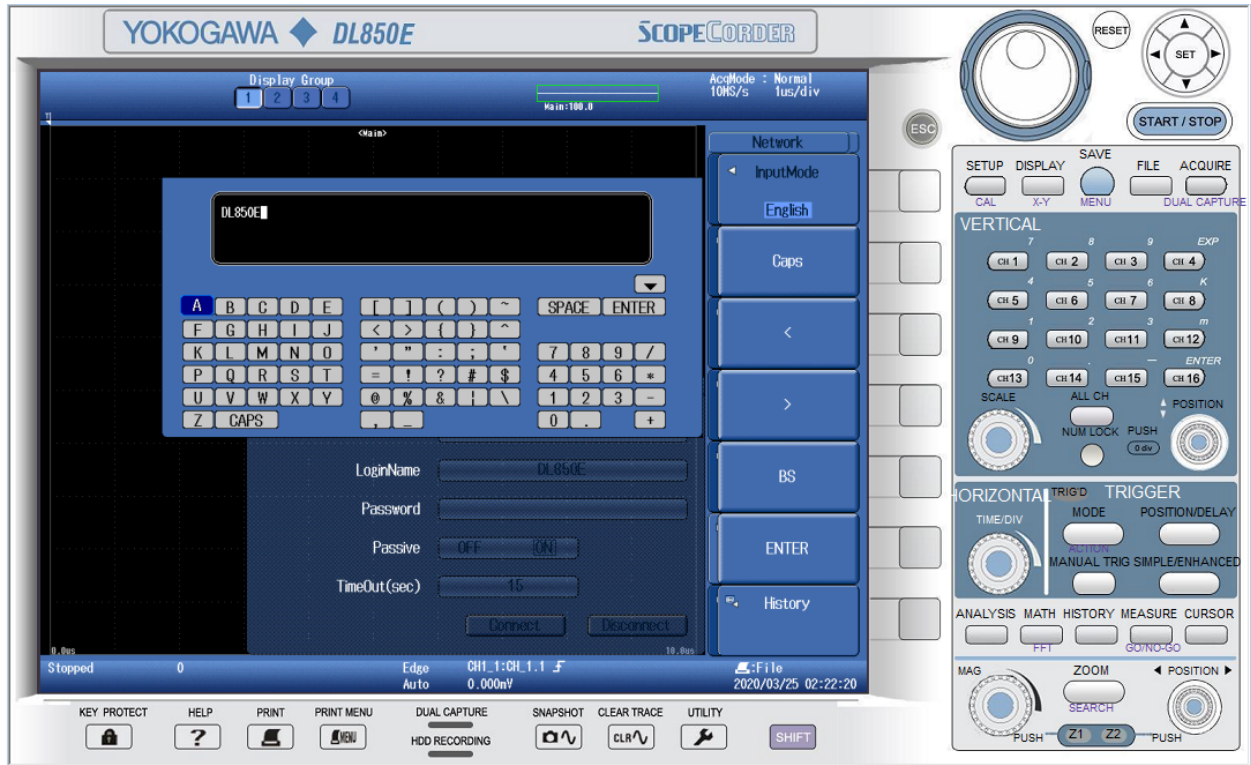


Figure C-22. FTP Server Login Name

Click the Connect button following the network drive settings configuration. If connected, the *Yokogawa* instrument will display a white network icon as shown in Figure C-23.



Figure C-23. Connect to FTP Server

When a connection is established, the *FileZilla Server* interface will display the credentials of the *Yokogawa* instrument and prompt the FTP server ready for use (Figure C-24). Acquired waveform data will transfer automatically with the FTP server configuration enabled.

NOTE: FileZilla FTP server must be running and connected at any given time to transfer files.

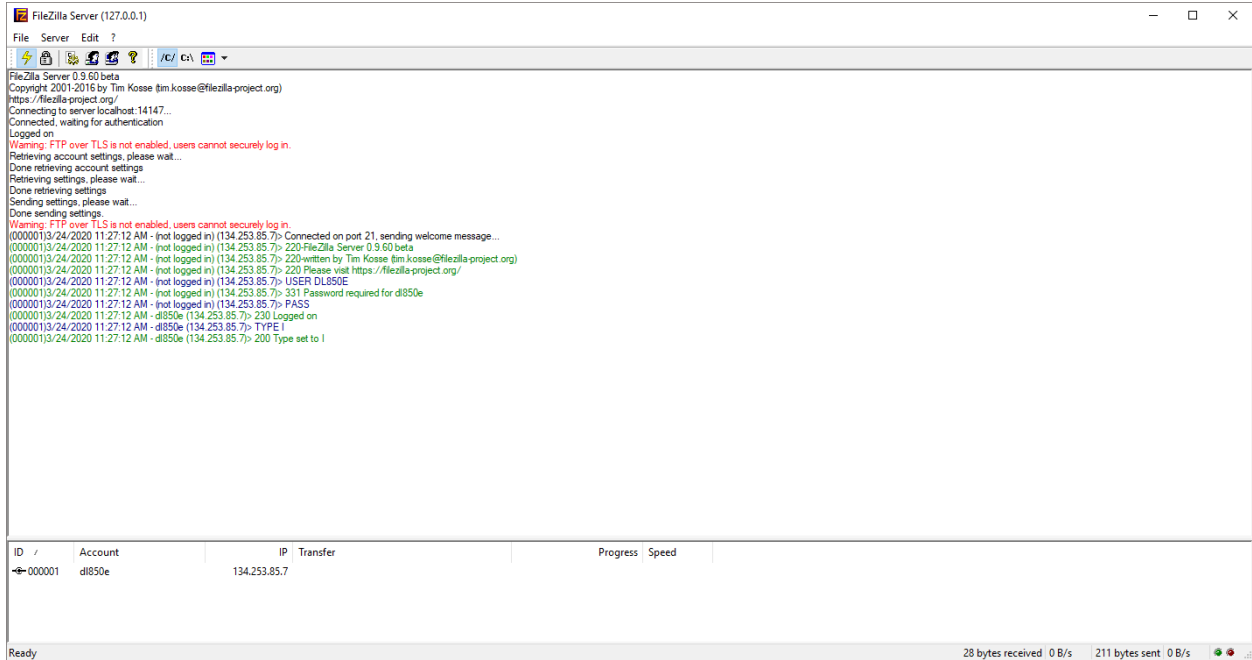


Figure C-24. Instrument Credentials

DISTRIBUTION

Email—Internal

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Elliott Pelfrey	01384	eapelfr@sandia.gov
Steven A. Ruiz	08841	steruiz@sandia.gov
Gary Rochau	08841	gerocha@sandia.gov
Rodney Keith	08841	rkeith@sandia.gov
Technical Library	9536	libref@sandia.gov

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