

RIGOL

Application Guide

UltraDAQ_Lite User Manual

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RIGOL TECHNOLOGIES CO., LTD.

Guaranty and Declaration

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Document Overview

This manual introduces the how to use the multi-channel high-speed data acquisition software ULTRADAQ_LITE. The software is used to work with the DS8000-R series digital oscilloscope to realize the synchronous acquisition, observation, and analysis for the multi-channel signals.

To use the software properly, read this user manual first before using the software.

Main Topics in this Manual

- To Install and Run the Software
- To Operate the Software

Format Conventions in this Manual

- The function menu is expressed in bold format. For example, **Inst Config** in bold indicates the "Inst Config" menu.
- ">" indicates the next operation. For example, **Inst Config > Reg Dev** indicates clicking the "Inst Config" menu first and then clicking "Reg Dev" to register the device.

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Software Installation and Running

This manual introduces the configuration requirements for the software ULTRADAQ_LITE, how to install and launch the software.

1.1 Configuration Requirements

This section introduces the installation and running conditions for the ULTRADAQ_LITE software to work with the specified oscilloscope model.

Before using the software, ensure that your computer has the following configurations.

1.1.1 Hardware Configuration Requirements

- **Processor:** 2 GHz or higher
- **Internal Memory:** 2 GB or higher (4 GB or higher is recommended.)
- **Monitor:** 1024x800 or higher resolution.
- **Disk Capacity:** based on the data quantity (1 M data per channel)

1.1.2 Running Environment

Windows 7 (32-bit, Chinese and English), Windows 7 (64-bit, Chinese and English), Windows 10 (32-bit, Chinese and English), Windows 10 (64-bit, Chinese and English)

Note: This document introduces how to install and run the software on Windows 7 (64-bit, Chinese).

1.1.3 Oscilloscope Model

DS8000-R series

1.2 To Run the Software

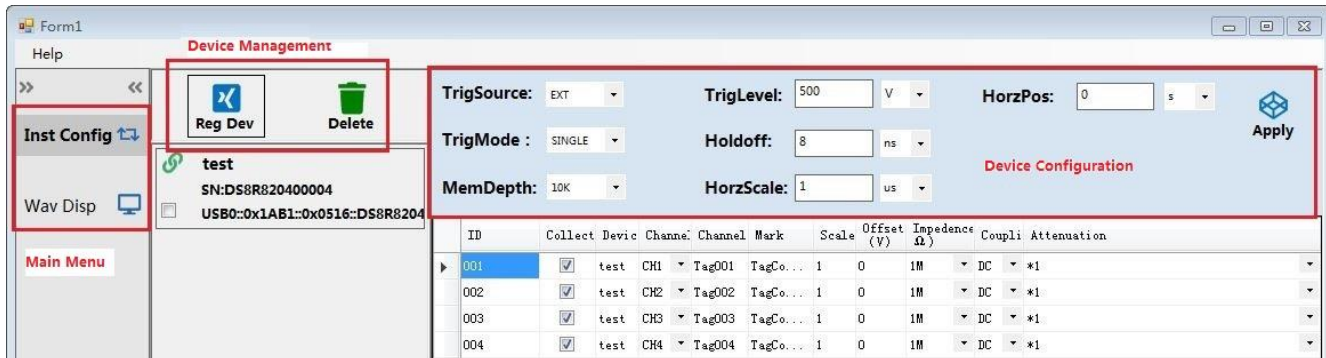
This manual introduces how to access and install and ULTRADAQ_LITE software.

Installation Procedures

1. Log in to the **RIGOL** official website (www.rigol.com) to download the software package "UltraDAQ_Lite.rar" to the local path.
2. Unzip the "UltraDAQ_Lite.rar" compressed package.
3. Open the directory "UltraDAQ_Lite\bin\Debug" and double-click the "UltraDAQ_Lite.exe" file to launch the UltraDAQ_Lite software.

Chapter 1 Interface Layout

The main interface of the ULTRADAQ_LITE software is shown below.





2.1 Main Menu

- **Inst Config:** Click **Inst Config** to enter the configuration interface.
- **Wav Disp:** Click **Wav Disp** to enter the waveform display interface.

2.2 Function Menu

- **Device Management:**

- **Reg Dev:** Click the  icon, then you can register the device in the local area network to the ULTRADAQ_LITE software.
- **Delete:** Click the  icon, then you can delete the device that has been registered to the ULTRADAQ_LITE software.

- **Device Configuration:** Configures the parameters of the registered device and applies the configuration to the registered device.

2.3 Operation Menu

Click **Wav Disp** to enter the waveform display interface. You can use the operation menu to control the waveform acquisition and storage.



- **Collect:** After completing the operation in the **Inst Config** menu, click **Collect** to start to acquire the waveforms. Click **Collect** again to stop waveform acquisition.
- **Update:** Click this button to trigger waveform acquisition forcibly.
- **Save:** Click this button to save the acquired waveform data to the local path.

Chapter 2 Software Operation and Application

This chapter introduces the detailed operation of the software and its application instances.


3.1 Device Management

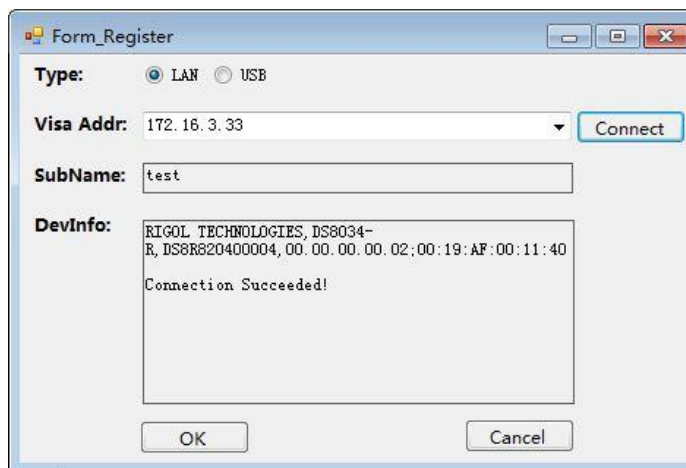
3.1.1. To Register a Device

You can register a device through the LAN or USB connection. The operation procedures are as follows:

- **LAN**

1. Through the LAN interface, connect the device to be registered to the local area network where the host (that has installed the UltraDAQ_Lite software) resides.


2. Click the  icon, then the device registration window is displayed, as shown in the following figure.

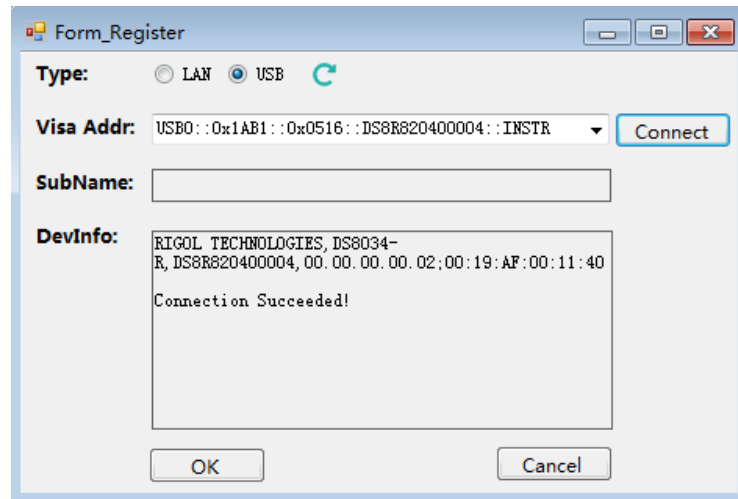



3. Select "LAN" for the **Type** item.
4. Input the IP address of the device to be registered into the **Visa Addr** field, then click **Connect**. The connection status will be displayed in the right section of the **DevInfo** field.
5. Input the registered device into the **SubName** field.
6. Click **OK** to complete registration. Then, all the currently registered devices will be displayed under the device management menu.

- **USB**

1. Connect the device to be registered to the host that has installed the UltraDAQ_Lite software via the USB DEVICE interface.


2. Click the  icon, then the device registration window is displayed, as shown in the following figure.

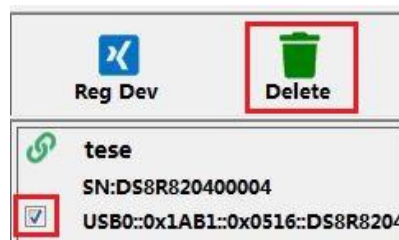


3. Select "USB" for the **Type** item. Click the  button, and then the current device information is displayed in the **Visa Addr** field.
4. click **Connect**. The connection status will be displayed in the **DevInfo** field.
5. Input the registered device into the **SubName** field.
6. Click **OK** to complete registration. Then, all the currently registered devices will be displayed under the device management menu.

Note: UltraDAQ_Lite supports at most four registered devices.


3.1.2. To Delete a Device

As shown in the following figure, select the device to be deleted, click the checkbox of the VISA address of the device. Then, click the  **Delete** icon, then you can delete the device that has been registered to the ULTRADAQ_LITE software.



3.2 Device Configuration

After completing the device registration, all the acquisition channels of the registered device will be displayed at the right section of the interface. The upper section of the following figure shows the parameters that can be configured for each channel.

TrigSource:	EXT	TrigLevel:	500	V	HorzPos:	0	s	 Apply	
TrigMode :	SINGLE	Holdoff:	8	ns					
MemDepth:	10K	HorzScale:	1	us					

ID	Collect	Device	Channel	Channel1	Mark	Scale (V)	Offset (V)	Impedance (Ω)	Coupling	Attenuation
001	<input checked="" type="checkbox"/>	test	CH1	Tag001	TagComment001	1	0	1M	DC	*1
002	<input checked="" type="checkbox"/>	test	CH2	Tag002	TagComment002	1	0	1M	DC	*1
003	<input checked="" type="checkbox"/>	test	CH3	Tag003	TagComment003	1	0	1M	DC	*1
004	<input checked="" type="checkbox"/>	test	CH4	Tag004	TagComment004	1	0	1M	DC	*1

3.2.1 To Configure the Global Parameters

- **TrigSource:** indicates trigger source. You can select CHAN1~CHAN4 or EXT as the trigger source from the drop-down list. By default, EXT is selected.
- **TrigMode:** indicates trigger mode. You can select SINGLE, NORMAL, or AUTO from the drop-down list. By default, SINGLE is selected.
- **TrigLevel:** indicates trigger level. When the trigger source is CHAN1-CHAN4, its range is related to the current scale of the channel. When the trigger source is EXT, the range of the trigger level is from -5 V to +5 V. By default, it is 500 mV.
- **MemDepth:** indicates memory depth. You can select 1K, 10K, 100K, or 1M from the drop-down list. By default, it is 10K.
- **Holdoff:** The range of the holdoff time is from 8 ns to 10 s. By default, it is 8 ns.
- **HorzScale:** indicates horizontal scale. The range of the horizontal scale is from 200 ps/div to 1 ks/div. By default, it is 1 us.
- **HorzPos:** indicates the horizontal position. The range is related to the horizontal timebase. By default, it is 0.


3.2.2 To Configure the Channel Parameters

Below the device configuration operation page, you can view the information about the data acquisition channel of all the registered devices. You can make configurations for each channel.

- **Collect:** checks or unchecks the checkbox to enable or disable the channel.
- **Device:** shows the name of the registered device for each channel.
- **Channel:** indicates the channel number of the registered device.
- **ChannelTag:** indicates the channel tag. It is used to identify the channel.

- **Mark:** makes remarks for the channel tag.
- **Scale:** sets the vertical scale of the channel. The unit is V.
- **Offset:** sets the vertical offset of the channel. The unit is V.
- **Impedance:** sets the impedance of the channel. The available values are 50Ω and 1 MΩ. By default, it is 1 MΩ.
- **Coupling:** sets the coupling mode. The available value is DC, AC, and GND. By default, it is DC.
- **Attenuation:** sets the probe attention ratio. The available values are *1 and *10. By default, it is *1.

3.2.3 To Apply the Configuration



After configuring the channel, click the  icon to apply the relevant parameters of the instrument to the registered device. A process bar will be displayed to show the configuration process. After all the parameters are configured, a window showing the channel configuration completion will be displayed.

3.3 Waveform Monitoring

This chapter introduces how to acquire waveform data and observe the waveforms.

3.3.1. To Control the Waveforms


- **Start Receiving**

After completing the system configuration, click **Collect**  in the operation menu to start to receive data. While the system starts to collect data, the button turns out to be .

- **Stop Receiving**

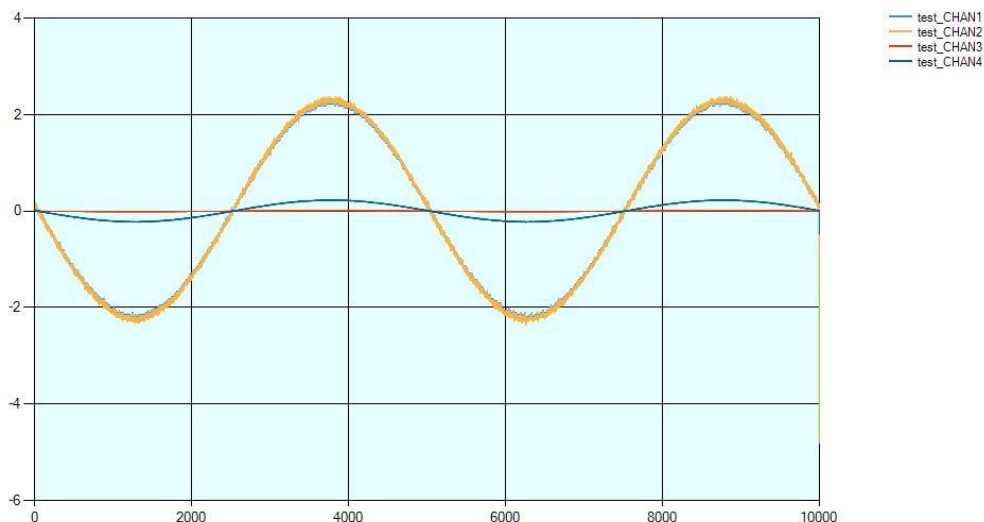
After completing the data acquisition, click  to stop receiving the data. Then the **Collect** button turns out to be .

- **To Trigger to Collect**

After starting to collect the data, click  to get the updated waveforms according to the configured parameters.

3.3.2. To Display the Waveforms

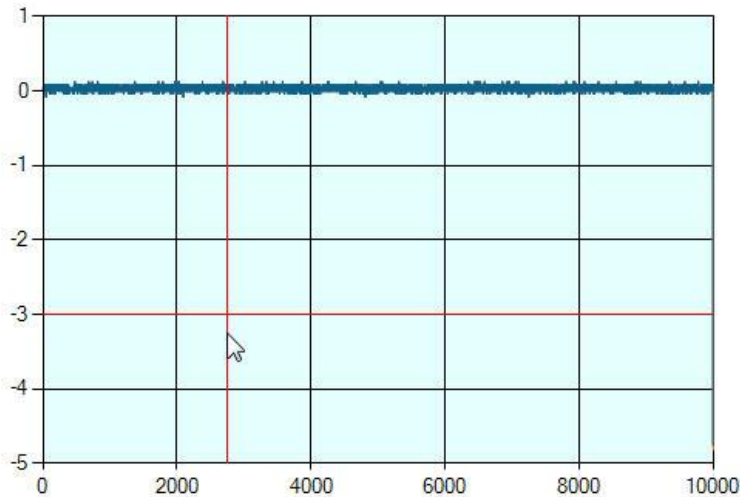
The acquired waveforms will be displayed below the operation interface, with different colors being displayed for different channels.



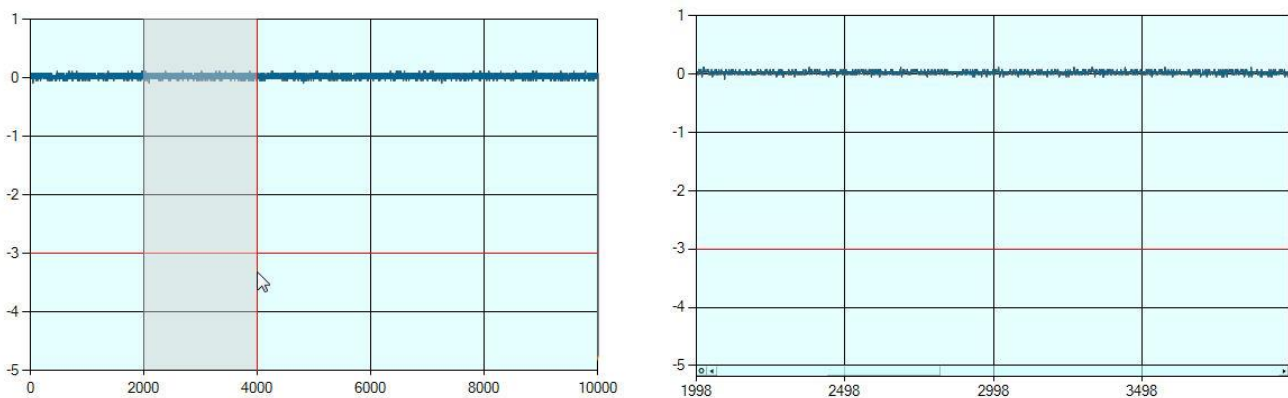
To better observe the waveforms, you can adjust the horizontal and vertical axis with the following methods.

- **Enlarge**

Click the waveform display area, then the horizontal and vertical cursors will be displayed, as indicated by red lines in the following figure.



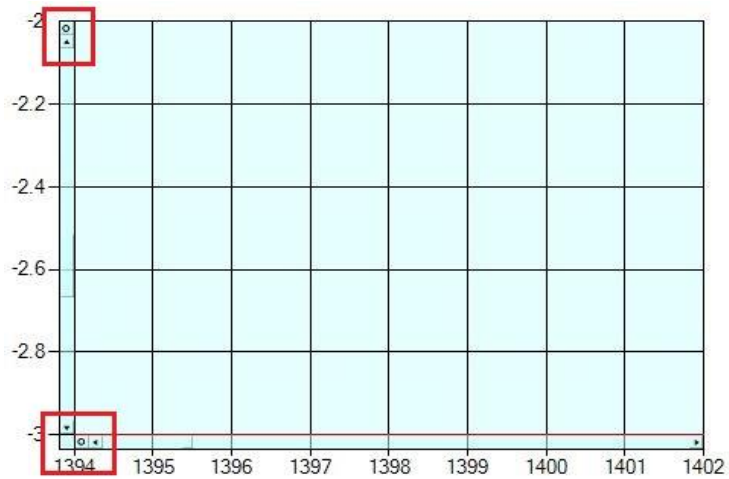
- Drag the vertical cursor to move some distance horizontally. The distance enlarged in its horizontal axis can be shown to the full, as shown in the following figure. The left one is the diagram before the enlargement, and the right one shows the enlarged section.






- Drag the horizontal cursor to move some distance vertically. The distance enlarged in its vertical axis can be shown to the full.
- Drag the mouse to select one area, and this area can be enlarged to be displayed fully on the waveform monitor.

● Move


When the horizontal axis and vertical axis are enlarged, the ▲ and ○ icons can be seen on the axis, as shown in the following figure. Clicking ▲ and ▼ can move up and down the vertical axis. Clicking ◀ and ▶ in the horizontal axis can move left and right the horizontal axis.



- **Restore**

As shown in the above figure, clicking the  icon in the horizontal or vertical axis can restore the axis to the previous state. Clicking it continuously can restore the axis to its original state until the  and  icons are disappeared.

3.3.3. To Save the Waveform Data

Click the **Save** button , and a window for browsing and selecting the folder is displayed. Select the local path for storage, then click **OK** to save the acquired waveform data file to the local path. After completing the save operation, a file suffixed with "*.csv" that contains acquired data of each channel will be generated and saved to the specified path.