DAQ-Data Logger

For DAQ-9600

PC Software Manual

VERSION V.1.00

ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

This manual contains proprietary information, which is protected by copyrights. All rights are reserved. No part of this manual may be photocopied, reproduced or translated to another language without prior written consent of Good Will company.

The information in this manual was correct at the time of printing. However, Good Will continues to improve products and reserves the right to change specifications, equipment, and maintenance procedures at any time without notice.

Good Will Instrument Co., Ltd.

No. 7-1, Jhongsing Rd., Tucheng Dist., New Taipei City 236, Taiwan.

TABLE OF CONTENTS

INTRODUCTION 4

SETUP 5

Wire Connection 5

Installation 9

Uninstallation 10

Configuration 11

SCAN & MEASUREMENT 14

Configure Channels 14

Configure Parameter 16

Start & Stop Scan & Measurement 18

Data Display 20

GRAPH DISPLAY MODE 21

Trend Chart 21

Histogram 26

MISCELLANEOUS 30

VERSION 32

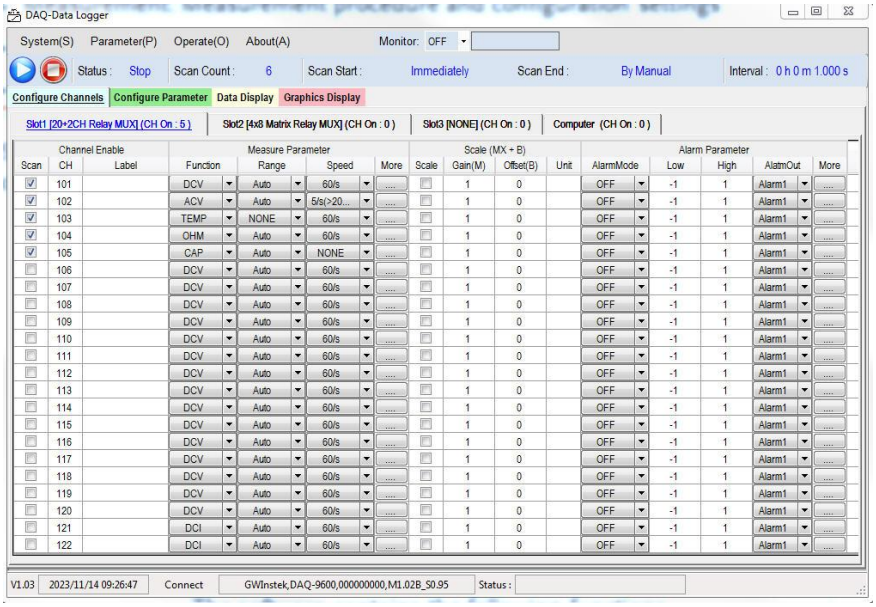
INTRODUCTION

The DAQ-Data Logger Guide is intended for showing how to use the remote PC software, DAQ-Data Logger, on Windows OS based computers (Windows 7 32bit or 64bit, Windows 8 32bit or 64bit, Windows 10 32bit or 64bit supported).

This manual consists of the following chapters.

- Setup: Connection, Installation, Uninstallation, Configuration
- Measurement: Measurement procedure and configuration settings
- Graphic Display Modes: Trend Chart and Histogram display modes
- Version: Accessing the software version of DAQ-Data Logger

Software overview



The software contains the following functions.

- Making measurements in real-time
- Displaying measurement result in real-time
- Saving and loading measurement parameters
- Data Display, Trend Chart and Histogram displays

SETUP

Wire Connection

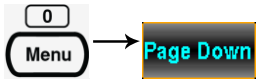
Read the following instructions regarding how to set up remote interface on DAQ-9600 and method of cable connection when operating DAQ-Data Logger in conjunction with the DAQ-9600.

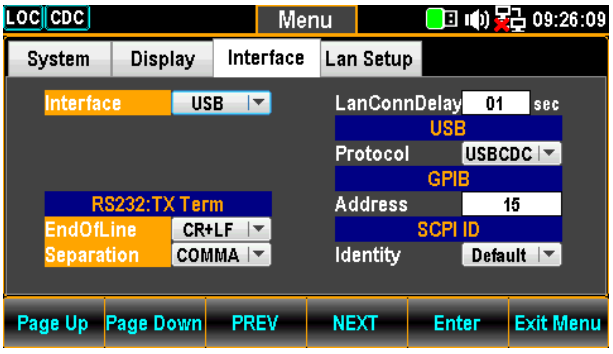
⚠Note

There are several interfaces (USB, LAN, GPIB) to connect DAQ-9600 and DAQ-Data Logger. The following procedure describes an example of USB connection configuration and procedure.

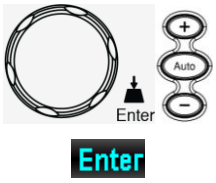
1. Configure to USB interface

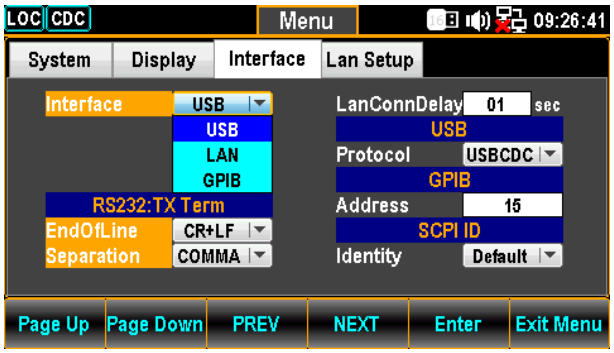
1. Press the Menu key, and then the Page Down key repeatedly until the Interface configuration menu appears.





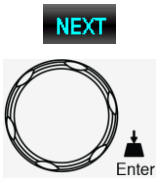
2. Press the F5 (Enter) key or Knob key followed by scrolling Knob key or pressing +/- keys to land on the USB option.

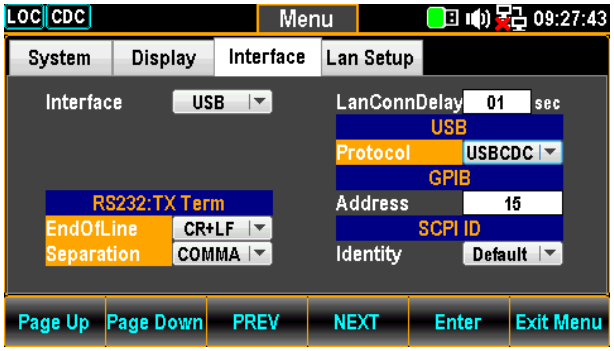




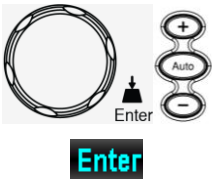
3. Press the F5 (Enter) key or Knob key to select the USB option.

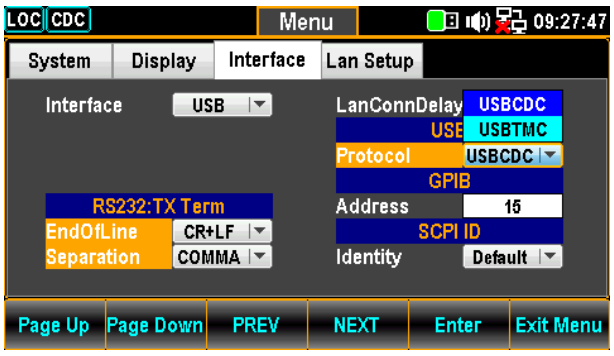
4. Press the F4 (NEXT) key repeatedly or scroll the Knob key to move to the USB - Protocol field.





5. Press the F5 (Enter) key or Knob key followed by scrolling Knob key or pressing +/- keys to land on the desired USB Protocol option.

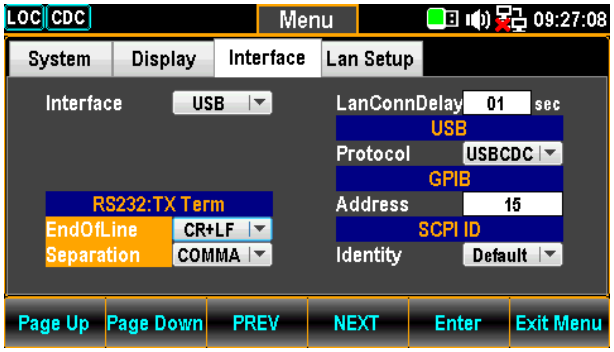




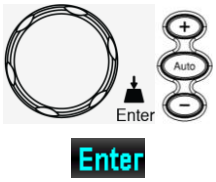
6. Press the F5 (Enter) key or Knob key again to confirm the USB Protocol option. It is suggested to choose "USBTMC" protocol.

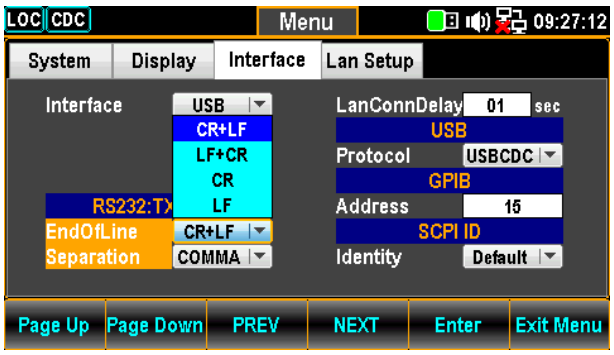
NOTE When "USBCDC" option is selected, user can proceed to the following RS232:TX Term setting.

1. Press the F4 (NEXT) key repeatedly or scroll the Knob key to move to the EndOfLine field.



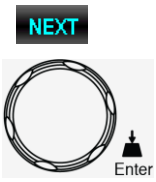
2. Press the F5 (Enter) key or Knob key followed by scrolling Knob key or pressing +/- keys to land on the desired option of EndOfLine field.

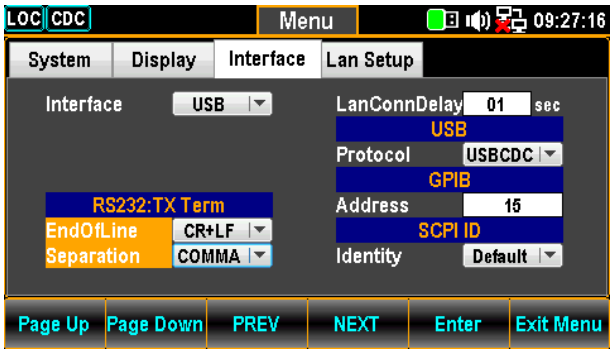




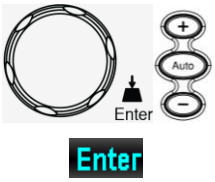
3. Press the F5 (Enter) key or Knob key again to confirm the selected option of EndOfLine field.

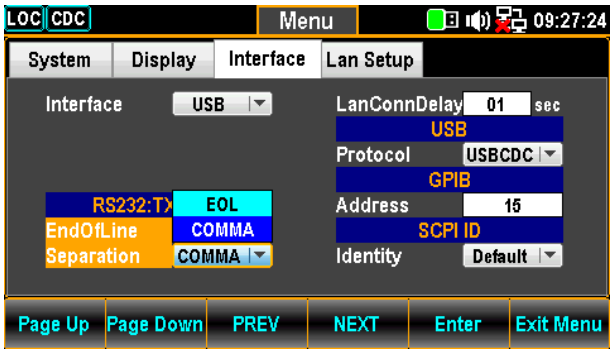
4. Press the F4 (NEXT) key repeatedly or scroll the Knob key to move to the Separation field.





5. Press the F5 (Enter) key or Knob key followed by scrolling Knob key or pressing +/- keys to land on the desired option of Separation field.



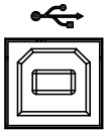


6. Press the F5 (Enter) key or Knob key again to confirm the selected option of Separation field.

2. Connect the USB cable

1. Connect the one end of USB cable (USB Type B) to the corresponding port on the rear panel of DAQ-9600 for connection.

USB Type B port on the rear panel

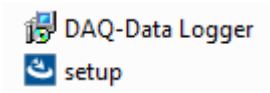
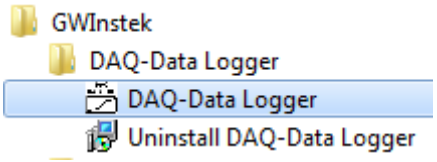


2. Connect the other end of the USB cable (USB Type A) to the corresponding port on the host PC.

Installation

The software, NI VISA, is required to be pre-installed onto the host PC prior to DAQ-Data Logger software installation.

Further, install the DAQ-Data Logger software, which can be downloaded from the GW INSTEK official website, onto the host PC.

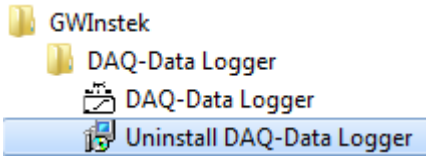
1. Preparation	The software listed below is required prior to DAQ-Data Logger installation. Please make sure that you have installed it beforehand. ▪ NI VISA RunTime or Full Version 17.5 or later (32-bit only).
2. Install the DAQ-Data Logger	1. Go to the DAQ-Data Logger folder downloaded from the GW INSTEK official website. 2. Click on the setup.exe  3. The installation wizard will start up. Follow the directions of the installation wizard. When choosing an install location it is recommended that the default location is chosen. The default location of the software is C:\Program Files (x86)\GWInstek\DAQ-Data Logger A program icon should be available from the Start Menu. 
⚠Note	To check the software version please see page 30.

Uninstallation

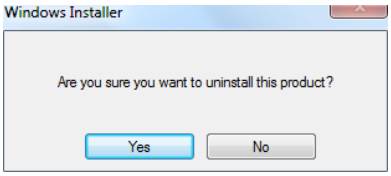
Follow the procedures described in this section when the DAQ-Data Logger software needs to be removed.

1. Uninstall the DAQ-Data Logger from Start Menu

1. Click on **Uninstall DAQ-Data Logger** under the default folder of **GWInstek** from Start Menu.



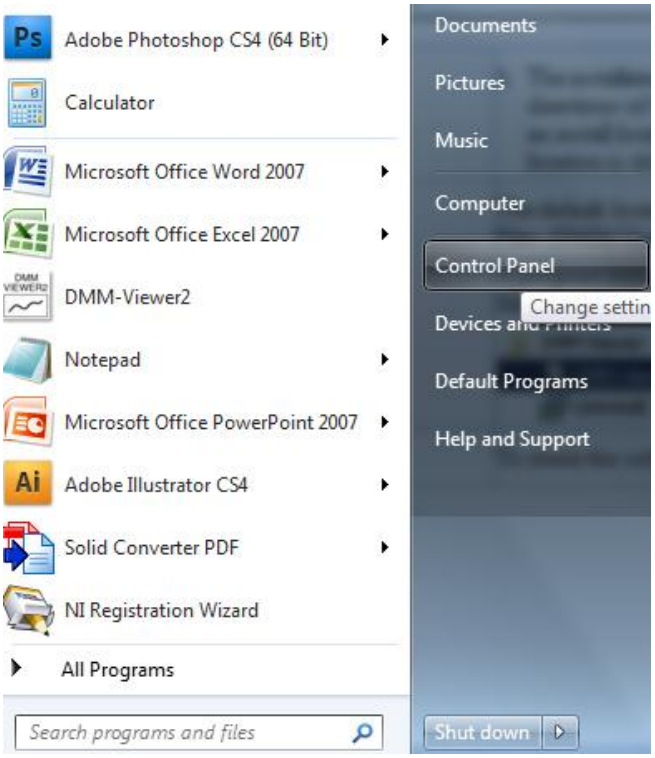
2. Click on **Yes** from the prompt message showing "Are you sure you want to uninstall this product?"



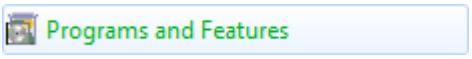
3. The uninstalling process will proceed automatically until complete finish.

2. Uninstall the DAQ-Data Logger from Control Panel

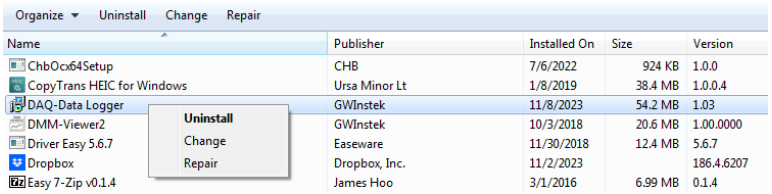
1. Press **Control Panel** from the Windows Start menu.



2. Click **Programs and Features** option.



3. Select **DAQ-Data Logger** followed by pressing the **Uninstall** button.

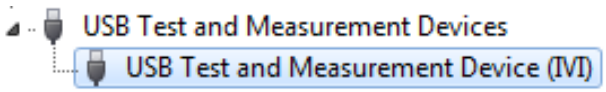


4. Follow the instructions step by step to complete the uninstalling process.

Configuration

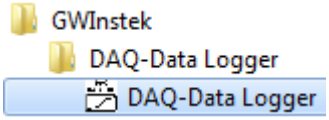
1. Configure the host PC

1. Make sure the DAQ-9600 is recognized by the PC via opening the **Device Manager (Start > Control Panel > (System) > Device Manager**. When using USB interface, for instance, the "**USB Test and Measurement Devices (IVI)**" should be displayed

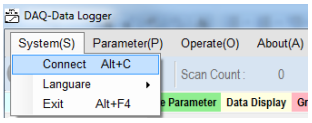


2. Configure the DAQ-Data Logger

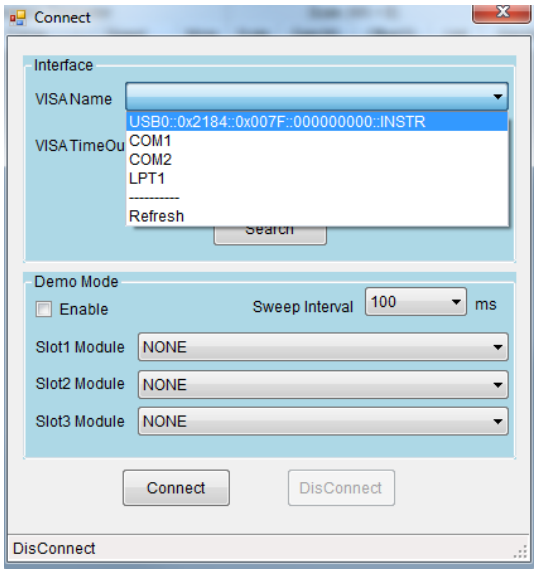
1. Activate the DAQ-Data Logger from the Start Menu.



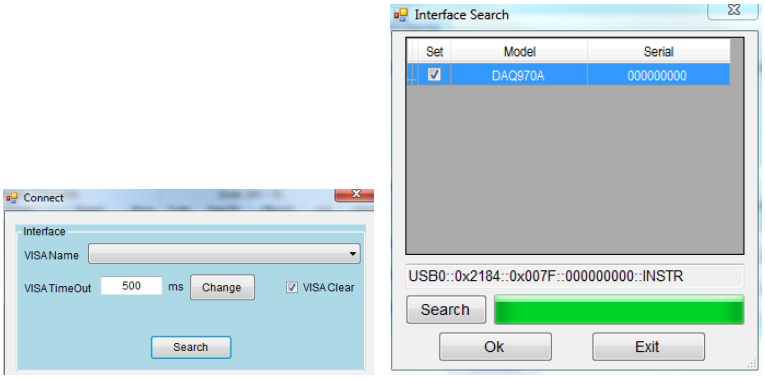
2. Click on the **System(S)** tab from the top Tool Bar and open the **Connect** dialog.



3. Select the target interface from the dropdown menu of VISA Name. We choose the "**USB0::0x2184::0x007F::000000000::INSTR**", which represents the USB-TMC connection between the host PC and DAQ-9600, for this example.

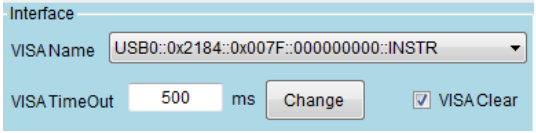


4. Also, it is available to press the **Search** button and the Interface Search window prompts where user presses the **Search** button followed by checking the box of the DAQ model found from the list. And press the **OK** to complete.

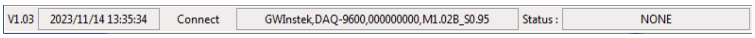


5. The **VIS TimeOut** allows user to define a period before timeout. From the figure below where the default 500ms indicates if there's no response from the DAQ-9600 over the set 500 ms (max. 99999 ms), the measurement will be halted accordingly.

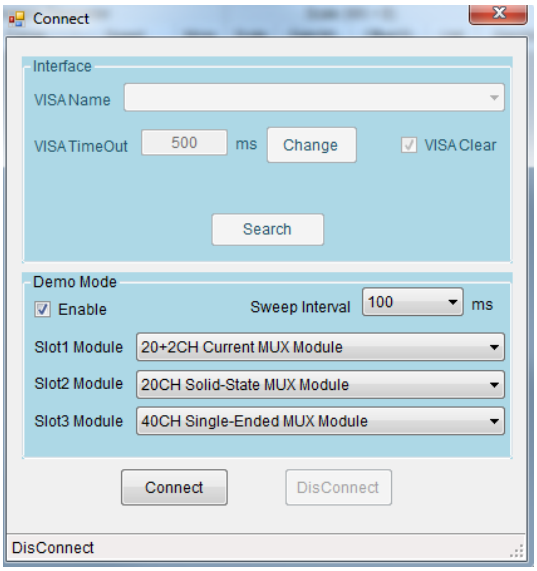
   If checking the checkbox of **VISA Clear**, DAQ-9600 will restore to the default setting before measurement. If not checking it, the measurement will begin with the last time setting on DAQ-9600.



6. Click the **Connect** button, the successful message will appear in the bottom line of DAQ-Data Logger.



7. In addition, the DAQ-Data Logger provides an alternate test, which is "**Demo Mode**" meaning user can connect and operate measurement scan without connecting to a physical DAQ-9600. Check the **Enable** box and select a time of **Sweep Interval** first. Then it is freely to choose different module cards for each slot (1 to 3) followed by pressing the **Connect** button to establish a demo test.

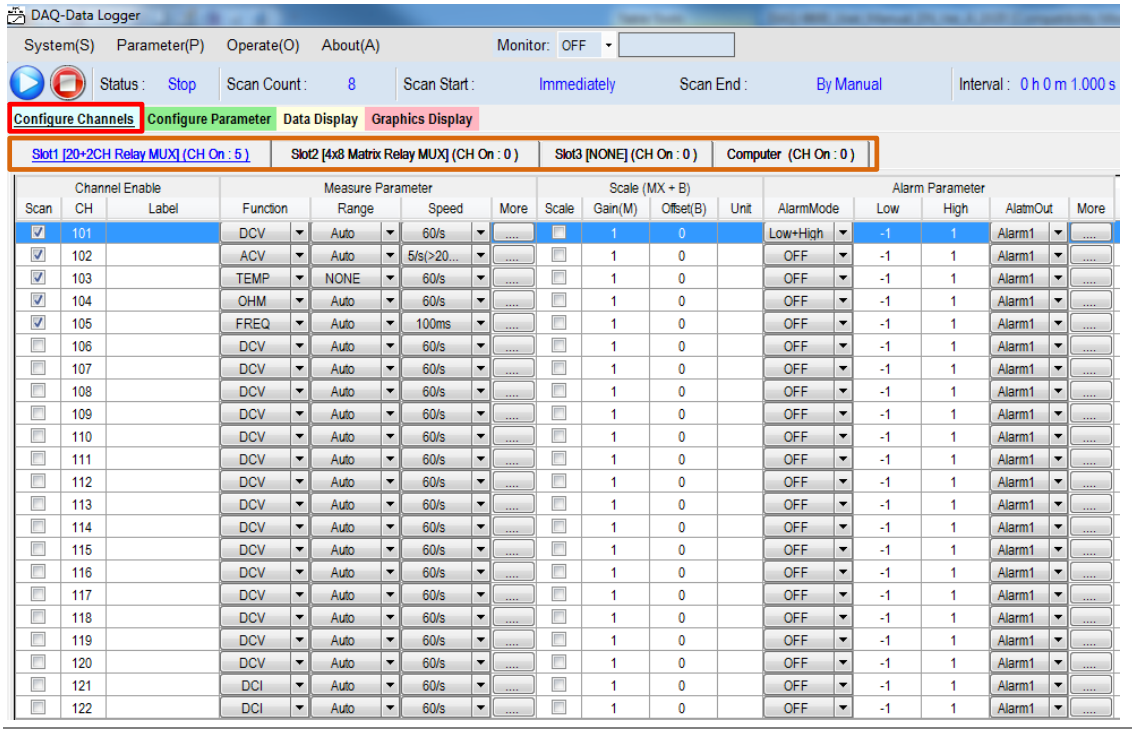


8. Move on to the Scan & Measurement chapter starting from the page 14.

SCAN & MEASUREMENT

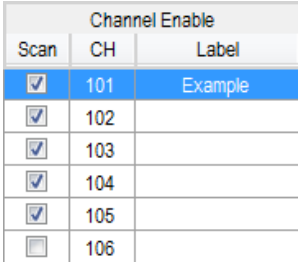
Configure Channels

Press the tab of the **Configure Channels** (red highlight)to display the available module card(s) (up to 4 at the maximum including Slot 1 to Slot 3 plus a Computer)on the upper bar (orange highlight) where user can navigate through each module card with a simple click. And each module card has its own specific numbers of channels to configure, individually.



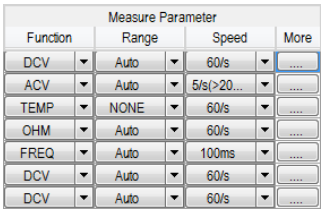
Channel Enable

Tick checkbox(s) of Scan column to select each channel for scan function. And the Lable column is available for user to designate name for each channel.



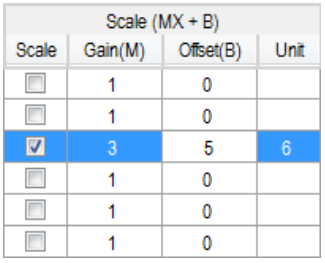
Measure Parameter

Select measurements from the Function column for each channel and define the affiliated parameters like Range, Speed and More in which more available parameters vary by measuring functions. Refer to the User Manual for more details of function parameters if necessary.



Scale (MX + B)

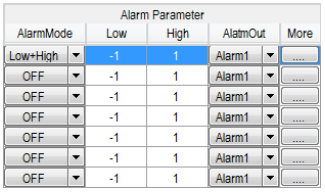
Tick checkbox(s) of Scale column to select each channel for MX + B function, which means multiplies the reading (X) by the Gain (M) and adds/subtracts Offset (B). Specify Gain(M) and Offset(B) values from each column and also designate user-defined Unit (e.g., °C) for each channel, individually.



Note Only when the Scale box is checked, can the following parameters be configured accordingly.

Alarm Parameter

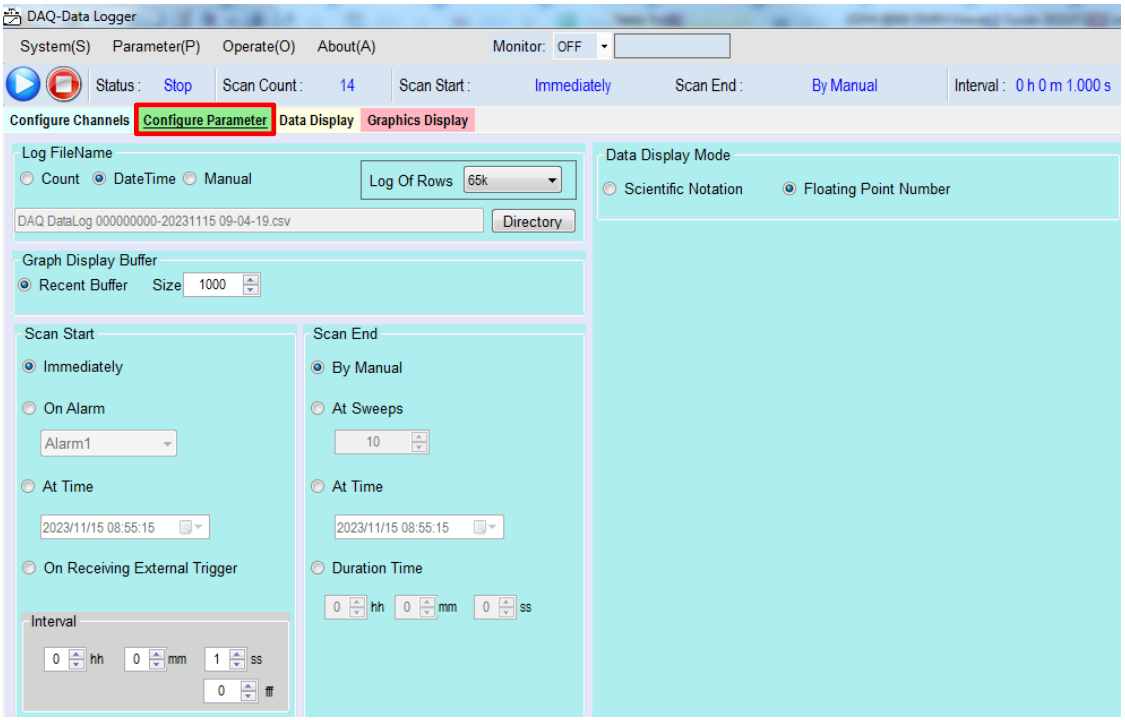
Enable alarm conditions for each channel from the Alarm Mode column followed by setting either Low or High or both values of alarm triggering for each channel. The Alarm Out column is to configure which port to output alarm of each channel. Click the More column to prompt a window in which all alarm parameters are shown. Tick the Stop Scan box to stop scan immediately when the alarm is triggered and check the Beep box to activate beep for the alarm.



Note Only when the Alarm Mode box is checked, can the following parameters be configured accordingly.

Configure Parameter

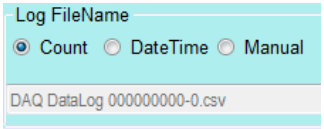
Press the tab of the **Configure Parameter** (red highlight)to display the general configurations including Name of Log File, Graph Display Buffer, Scan Start, Interval, Scan End and Data Display Mode.



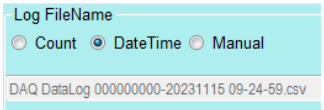
Log File Name

Determine the name of saving data before measurement and scan. Select **Count**, which adds a serial number in suffix of data name, or **Date Time**, which adopts current date & time for data name, or **Manual**, which allows user to customize data name in preference. Also, the **Log Of Rows** has few options for user to define the maximum rows for log data. And pressing the **Directory** button can access to the log file location promptly.

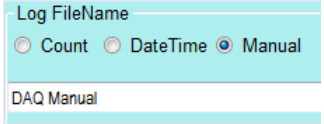
Count



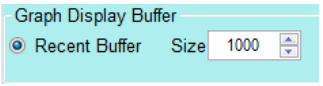
Data Time

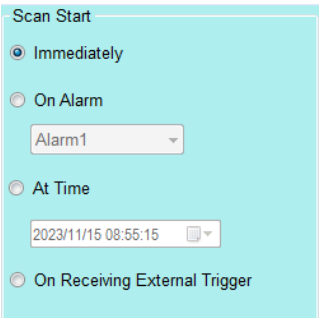


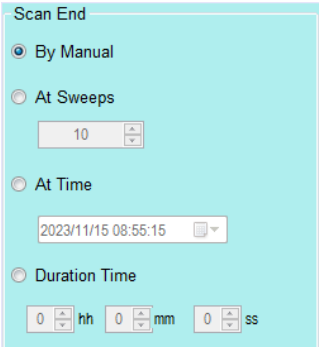
Manual



Graph Display Buffer	Configure the **Size** of **Recent Buffer** for Graph Display mode. It indicates that the maximum measurements to display for both Trend Chart and Histogram under Graph Display. In the Trend Chart, when setting 1,000 in Size, there're up to the latest 1,000 measurements from each selected channel displayed simultaneously. In the Histogram, when setting 1,000 in Size, it means up to the latest 1,000 measurements from the single selected channel displayed.
Scan Start	Decide which way to begin scan. **Immediately** allows user to start scan right away by manually pressing the button. **On Alarm** signals that only when the selected alarm (1 to 4) is triggered, can scan start. **At Time** indicates that user defines certain date & time to start scan. And **On Receiving External Trigger** means scan only begins when external trigger is received.
Interval	In theory, interval of each scan count is determined by the Functions and Speed options, which come with varied interval ranges individually. However, it is available for user to define preferable interval by inputting **hh** (hour), **mm** (minute), **ss** (second) and **fff** (millisecond) fields respectively for scan count interval.
Scan End	Determine which way to end scan. **Manual** allows user to halt scan by manually pressing the button. **At Sweeps** indicates scan stops when the set sweep number for scan count is met. **At Time** signals that user defines certain date & time to stop scan. **Duration** simply means how long the set duration for scan to last.



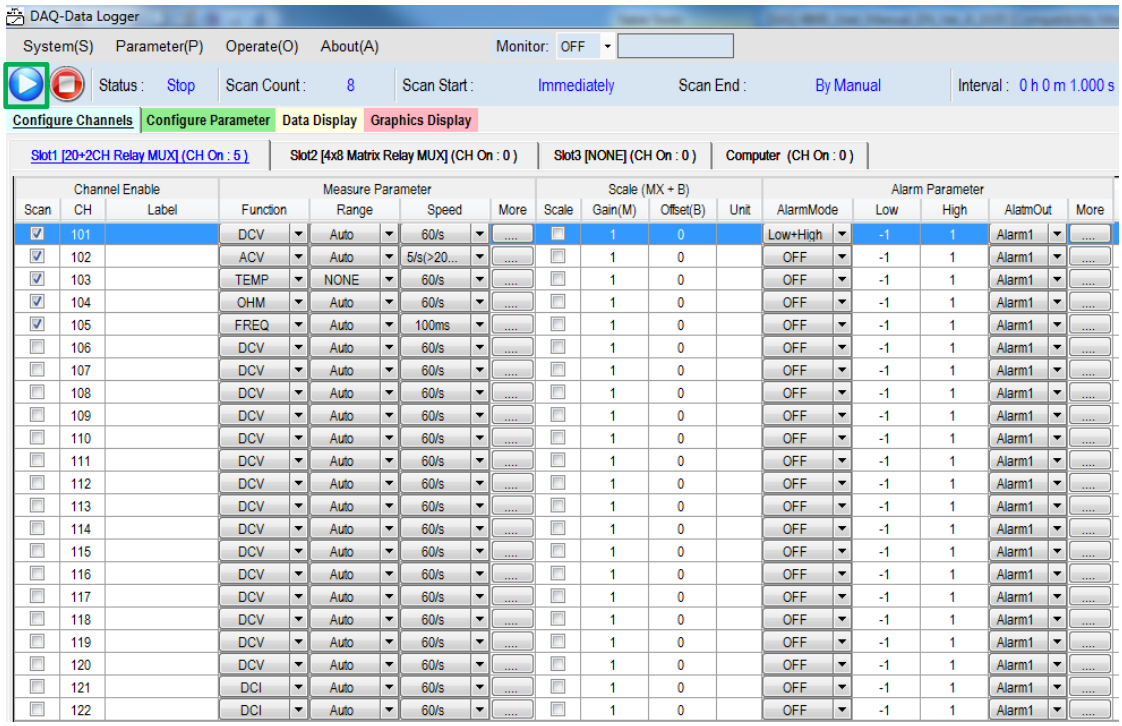




Data Display Mode	This configuration applies to Data Display mode, for which refer to page 20 for details. It offers two ways to display readings. The **Scientific Notation** stands that the decimal point of reading is fixed with scientific exponent in suffix. For example, reading from -1.15387534E-03 to +1.15029248E-03. The **Floating Point Number** instead indicates that the decimal point of reading can be floating to any position necessary. For instance, reading from 0.752494 mVDC to -1.144105 mVDC.

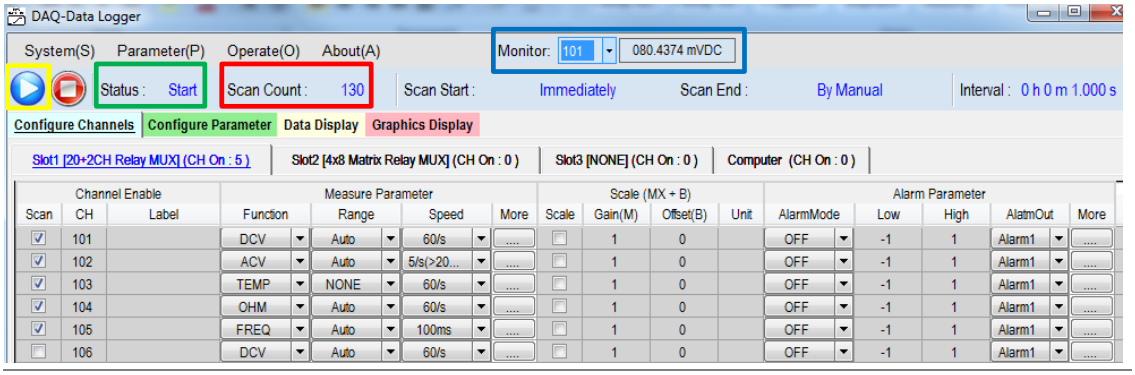
Start & Stop Scan & Measurement

After configuring both the Channel and Parameter settings, click on the **Blue** arrow button in the upper-left corner to launch scan and measurement. The measured reading is updated in real time in both the Monitor and Data Display sections, which will be further introduced in the later parts.



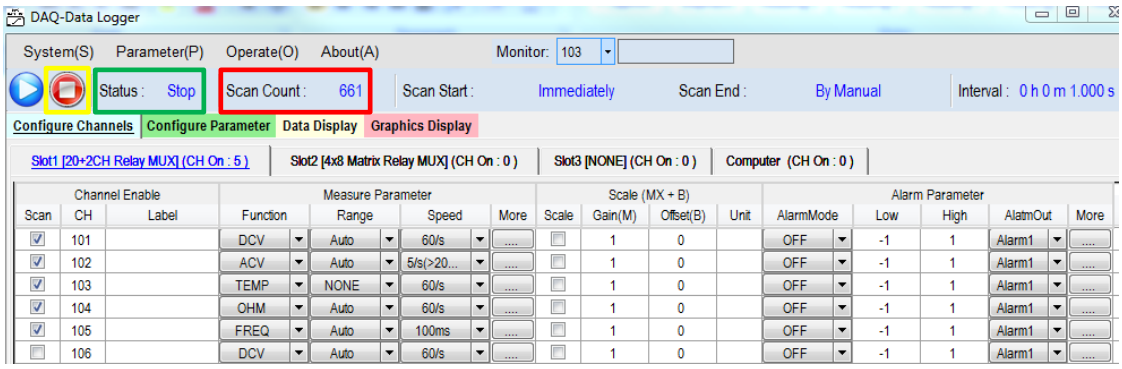
Start Scan & Measurement

After pressing the **Blue** arrow button (yellow highlight), the scan starts and is being indicated "Start" in the **Status** section (green highlight). The ongoing sweep number is being recorded in the **Scan Count** section (red highlight). And it is practical to monitor the latest measured reading of each selected channel from the **Monitor** section (blue highlight) in which user can toggle among different channels from the dropdown menu. In addition, during scan process, it is Not able to change any parameter from the Configure Channels where the color becoming gray in background indicates no action is allowed. Plus, the Scan Start, Scan End as well as Interval settings correspond to the previous configurations from the Configure Parameter by user.



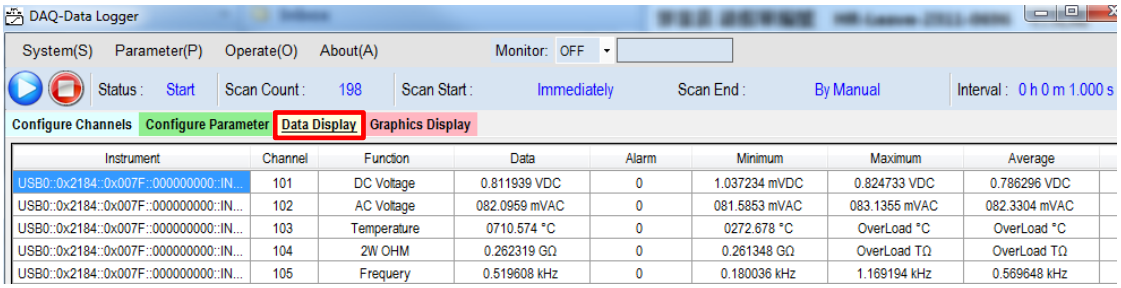
Stop Scan & Measurement

After pressing the **Red** arrow button (yellow highlight), the scan stops and is indicated "Stop" in the **Status** section (green highlight). The total sweep number is written in the **Scan Count** section (red highlight). In addition, the color becoming white in background of Configure Channel indicates it is available to re-configure parameters of each channel.



Data Display

While conducting scan and measurement operation, press the tab of the **Data Display** (red highlight) to show not only the latest measured reading of each select channle (Data column), but also other information consisting of triggered alarm times (**Alarm** column), measured minimum value (**Minimum** column), measured maximum value (**Maximum** column) and average value (**Average** column). Also, the basic information including physical DAQ unit (**Instrument** column), channel serial number (**Channel** column) as well as select measurement function (**Function** column) are clearly displayed.



Instrument	Channel	Function	Data	Alarm	Minimum	Maximum	Average
USB0::0x2184::0x007F::000000000::IN...	101	DC Voltage	0.811939 VDC	0	1.037234 mVDC	0.824733 VDC	0.786296 VDC
USB0::0x2184::0x007F::000000000::IN...	102	AC Voltage	082.0959 mVAC	0	081.5853 mVAC	083.1355 mVAC	082.3304 mVAC
USB0::0x2184::0x007F::000000000::IN...	103	Temperature	0710.574 °C	0	0272.678 °C	OverLoad °C	OverLoad °C
USB0::0x2184::0x007F::000000000::IN...	104	2W OHM	0.262319 GΩ	0	0.261348 GΩ	OverLoad TΩ	OverLoad TΩ
USB0::0x2184::0x007F::000000000::IN...	105	Frequery	0.519608 kHz	0	0.180036 kHz	1.169194 kHz	0.569648 kHz

Per introduction of Data Display Mode in the previous chapter of Configure Parameter, user can choose one of the data display modes in preference.

- **Scientific Notation**

  Decimal point of reading is fixed with scientific exponent in suffix. For example, reading from -1.15387534E-03 to +1.15029248E-03.

- **Floating Point Number**

  Decimal point of reading can be floating to any position necessary. For instance, reading from 0.752494 mVDC to -1.144105 mVDC.

Scientific Notation

Instrument	Channel	Function	Data	Alarm	Minimum	Maximum	Average
USB0::0x2184::0x007F::000000000::IN...	101	DC Voltage	0.801361 VDC	0	1.037234 mVDC	0.824733 VDC	0.788439 VDC
USB0::0x2184::0x007F::000000000::IN...	102	AC Voltage	083.0125 mVAC	0	081.5853 mVAC	083.1465 mVAC	082.4174 mVAC
USB0::0x2184::0x007F::000000000::IN...	103	Temperature	OverLoad °C	0	0272.678 °C	OverLoad °C	OverLoad °C
USB0::0x2184::0x007F::000000000::IN...	104	2W OHM	0.262873 GΩ	0	0.261348 GΩ	OverLoad TΩ	OverLoad TΩ
USB0::0x2184::0x007F::000000000::IN...	105	Frequery	0.416172 kHz	0	0.180036 kHz	01.20126 kHz	0.575709 kHz

Floating Point Number

Instrument	Channel	Function	Data	Alarm	Minimum	Maximum	Average
USB0::0x2184::0x007F::000000000::IN...	101	DC Voltage	+7.46736445E-01	0	1.03723437E-03	8.24733422E-01	7.87983477E-01
USB0::0x2184::0x007F::000000000::IN...	102	AC Voltage	+8.29163610E-02	0	8.15853864E-02	8.31465242E-02	8.24279882E-02
USB0::0x2184::0x007F::000000000::IN...	103	Temperature	+9.90000000E+37	0	2.72678908E+02	9.90000000E+37	4.53214286E+37
USB0::0x2184::0x007F::000000000::IN...	104	2W OHM	+2.63648978E+08	0	2.61348016E+08	9.90000000E+37	3.21428571E+35
USB0::0x2184::0x007F::000000000::IN...	105	Frequery	+8.98388793E+02	0	1.80036277E+02	1.20126162E+03	5.77565225E+02

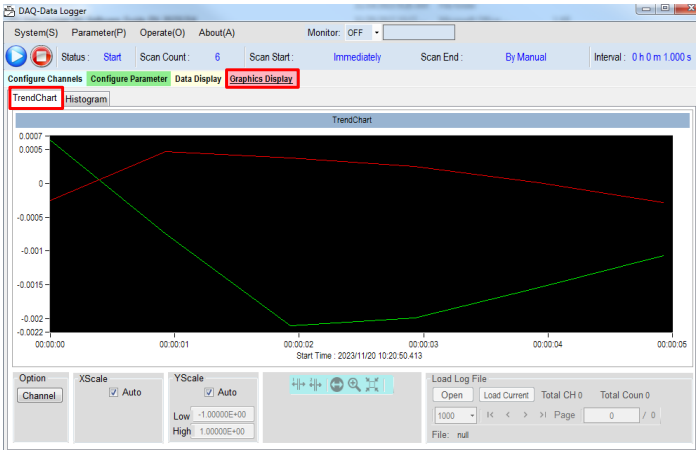
GRAPH DISPLAY MODE

DAQ-Data Logger provides two modes, Trend Chart and Histogram, in the graph display for user to observe the scanned and measured readings in a preferable manner. The following chapters will further introduce the graph display modes in details for better manipulation.

Trend Chart

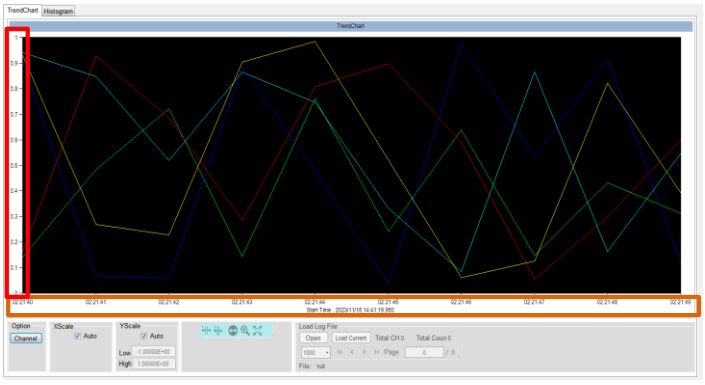
Background

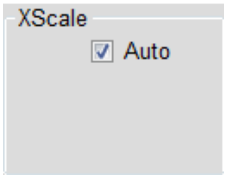
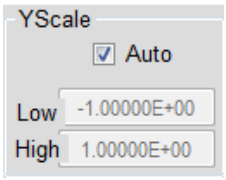
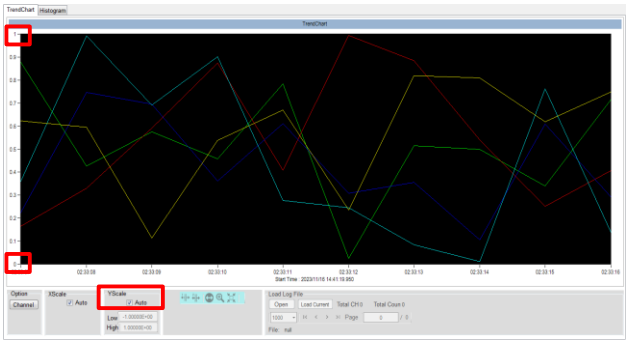
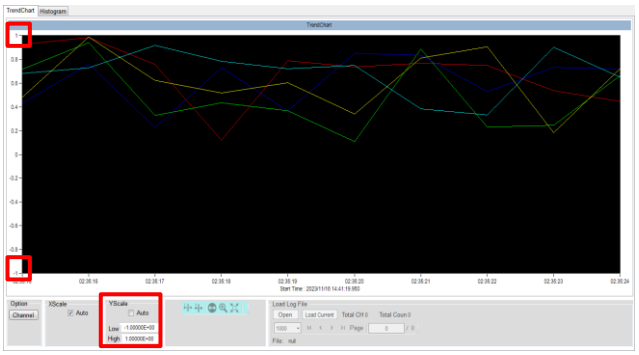
The scanned and measured readings are observed in trend chart display. After starting scan opeation, click on the tab **Graphics Display** followed by **TrendChart** button and the screen will be shown as the figure below.



Trend chart Overview

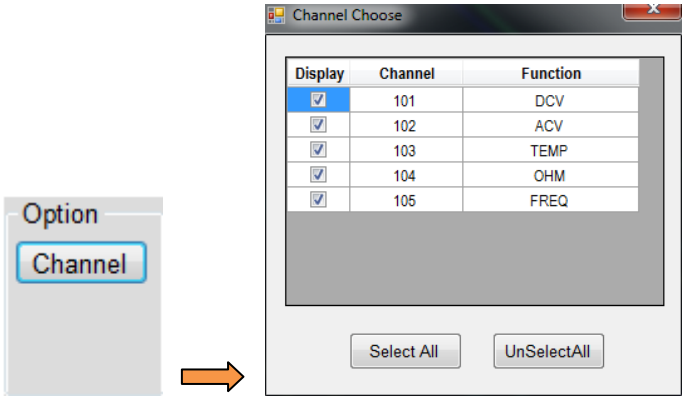
Of the trend chart display, X scale in orange indicates the range of the measured time, whilst Y scale in red represents the range of the measured values.



X Scale	X Scale indicates the X axis of range of the latest measured time for trend chart display. The avilable displayed range of measured time varies in accordance with select channel numbers and count numbers. 
Auto X Scale	Ticking the **Auto** checkbox lets software determine the X range in accord with the numbers of select channels and measured counts. Note that without checking the box, user can Not monitor the latest range of measured time.
Y Scale	Y Scale indicates the Y axis of range between the minimum (Low) and the maximum (High) measured values for trend chart display. 
Auto Y Scale	Ticking the **Auto** checkbox lets software determine the Y range in accord with the entire measured values. 
Manual Y Scale	Deselecting the checkbox of Auto allows user to decide the Y range by manually input preferable low & high values, respectively, regardless of the entire measured values. 

Option - Channel

Click the **Channel** button to prompt the Channel Choose window in which user can select/unselect available channels as wish. The unselected channels will not be shown on the trend chart display accordingly.

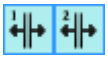


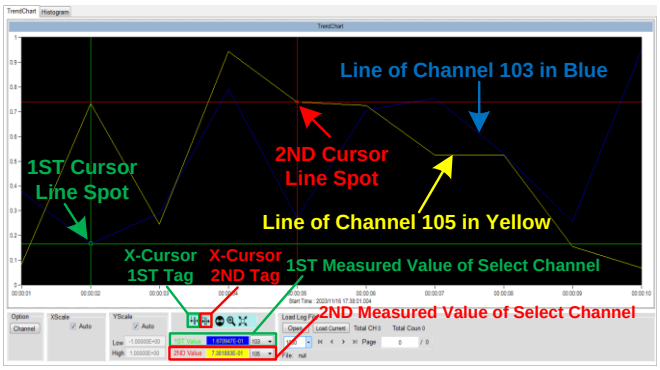
Note

The following functions are only available when scan and measurement are stopped. In short, the functions below are Unavailable when scan is ongoing.

X Cursor Indicator(s)

Click **X-Cursor (1ST)** or **X-Cursor (2ND)** or both tags to activate highlights on selected channel(s), which can be chosen from the dropdown menu, respectively. Press and drag cursor line(s) (green for 1ST, red for 2ND) to any preferable spot(s) on X scale, and measured value(s) of select channel(s) corresponding to 1ST or 2ND cursor lines will be displayed in the lower fields, individually.

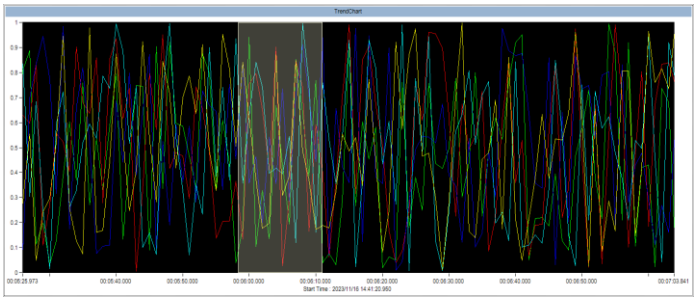




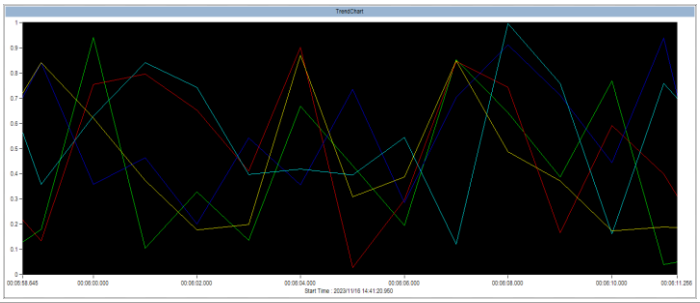
Zoom-X

Click on the **Zoom-X** tag and press and drag on any of a specific region of the trend chart to obtain the zoom-in close-up for detailed observation. Zoom-X can be operated consecutively on the same area for close-ups in more explicit manner.

1. Press and hold on the target region from trend chart.



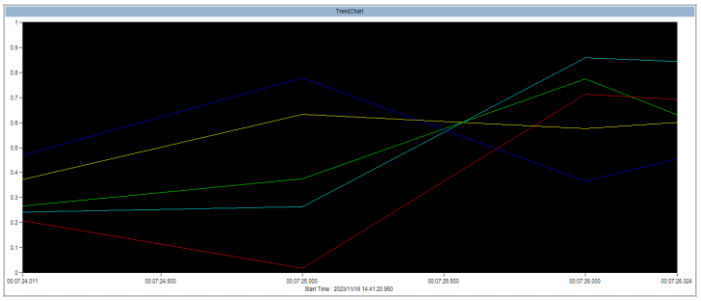
2. The close-up of target region is shown accordingly.



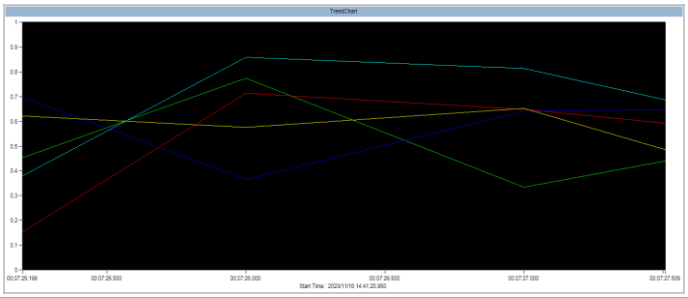
Pan-X

After operating the Zoom-X function, it is feasible to utilize **Pan-X** in order to move trend chart horizontally for observing another target region.

1. Click on the Pan-X tag and press and hold the trend chart to move it rightward or leftward.

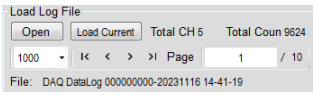
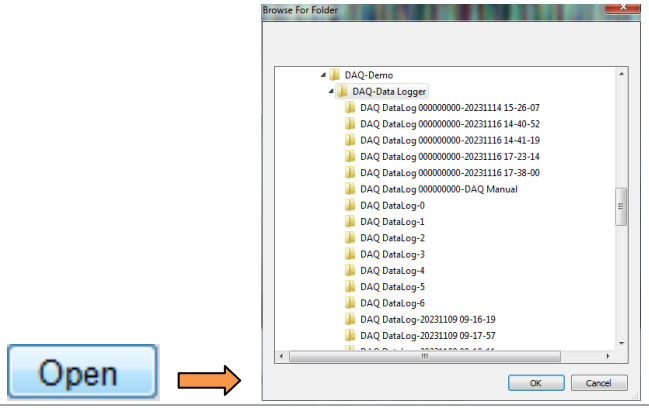
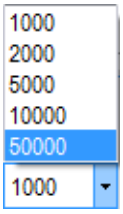
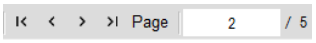


2. The target region after pan action is shown accordingly.



Zoom Out

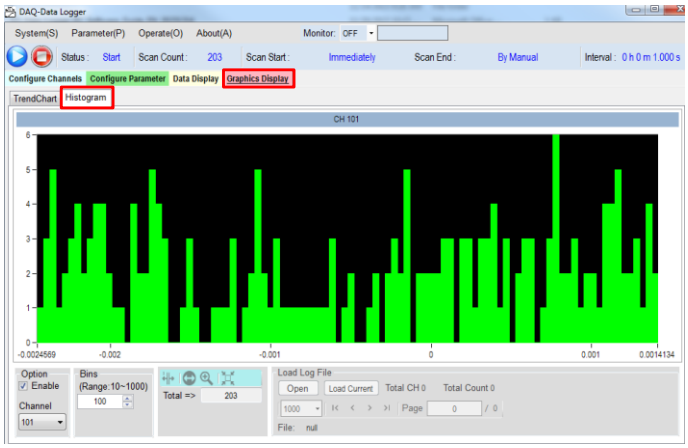
After finishing Zoom-X or Pan-X operation, press the **Zoom Out** tag to return to the original display.

Note	The following functions are only available when scan and measurement are stopped. In short, the functions below are Unavailable when scan is ongoing.
Load Log File	Data log files from the past scan and measurement can be loaded and displayed in the graphic trend chart. 
Open	Click the **Open** button to prompt the folder window in which user can navigate and select a log file to open. 
Load Current	Click the **Load Current** button to rapidly load the latest log file from the previous scan.
Total CH & Total Coun	Both total channels and total counts from the loaded log file are displayed.
Maximum Display Counts	Select a number from the dropdown menu to determine maximum display counts within one page window display, which range from the lowest 1,000 to the highest 50,000. 
Flip Page	When log file is with large data and beyond one page window display, user can press the arrow buttons to move to First/Prev/Next/Last page. The number of current page and the total pages numbers are shown. 
Name of Log File	The name of loaded log file is shown here. There're up to three types of file names. Refer to page 16 for details.

Histogram

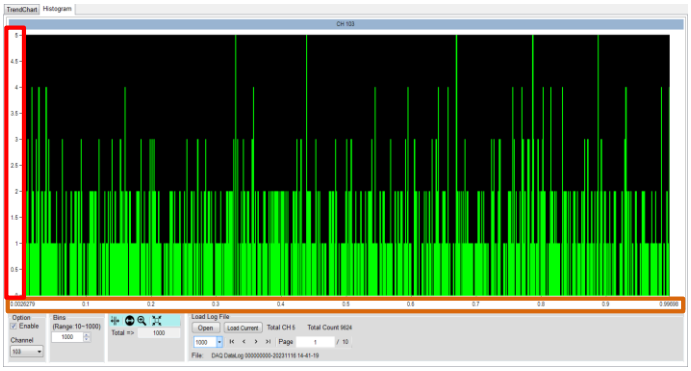
Background

In addition to Trend Chart, the scan result can also be observed in Histogram display. After scan, click on the tab **Histogram** and the screen will be shown below.



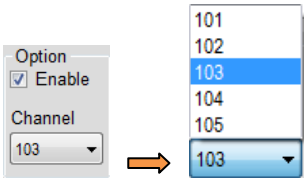
Histogram overview

Of the histogram display, X scale in orange indicates the total range of the measured values for each bin group, whilst Y scale in red represents the accumulated measured counts for each bin group.



Option - Channel

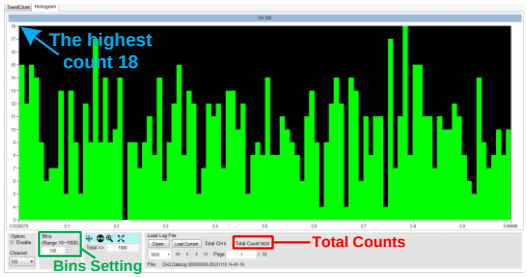
Only single channel can be shown in the histogram display. So user can first check the **Enable** box followed selecting a **Channel** number from dropdown menu.



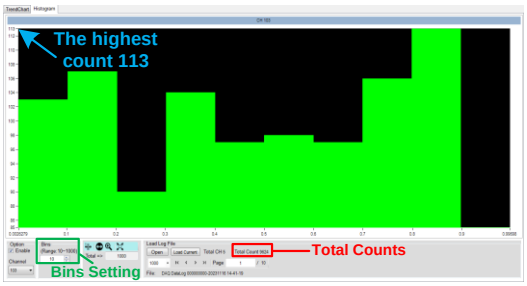
Bins

Since each bin contains different measured counts depending on varied measured conditions, it is viable to determine a maximum number of bins to display. Manually input a number ranging from 10 to 1000 into the field here for an estimated display in histogram.

1. Take the figure below for example, the total measured counts are 9,624, and we set the bins in 100. From the histogram we can clearly tell that the bins number is many and sporadic where the highest measured counts of bins are 18 in Y scale.



2. If we set "10" in the field, the histogram shows us the maximum bins is decreased to 10 and each bin has more measured counts than the previous. Also, the highest measured counts of bin are 113 in Y scale.

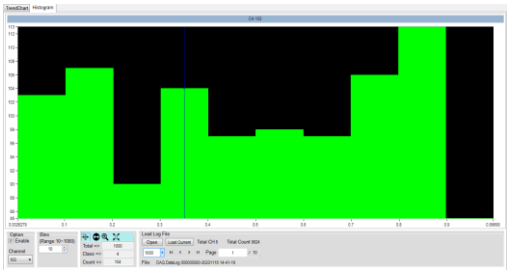


Note

The following functions are only available when scan and measurement are stopped. In short, the functions below are Unavailable when scan is ongoing.

X Cursor Indicator

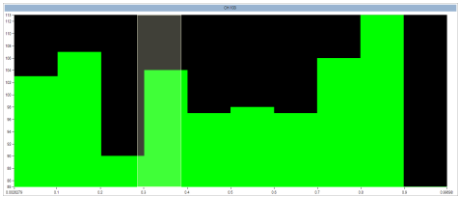
Click **X-Cursor** tag to activate highlight on a specific target bin group. Press and drag the blue cursor line to a preferable bin group on X scale, and the **Class**, which is the selected bin number, with the **Count**, which indicates the measured counts of the selected bin, will be shown in the lower section. The **Total** simply means the maximum measured counts in one page window display.



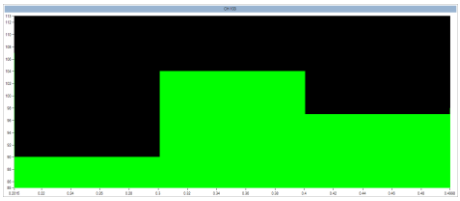
Zoom-X

Click on the **Zoom-X** tag and press and drag on any of a specific area of the histogram to obtain the zoom-in close-up for detailed observation. Zoom-X can be operated consecutively on the same area for close-ups in more explicit manner.

1. Press and hold on the target region of histogram.



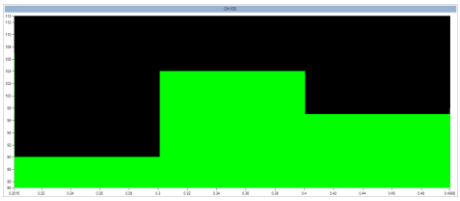
2. The close-up of target region is shown accordingly.



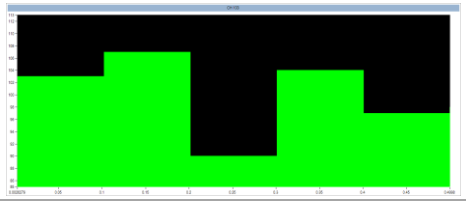
Pan-X

After operating the Zoom-X function, it is feasible to utilize **Pan-X** in order to move histogram horizontally for another target region.

1. Click on the Pan-X tag and press and hold the histogram to move it rightward or leftward.



2. The target area after pan action is shown accordingly.

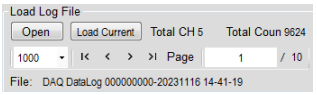
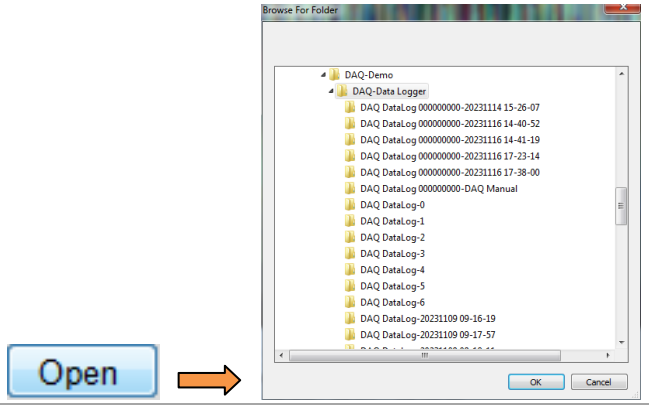
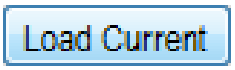
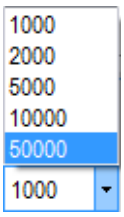
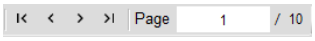
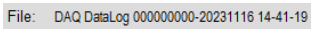


Zoom Out

After finishing Zoom-X or Pan-X operation, press the **Zoom Out** tag to return to the original display.

Note

The following functions are only available when scan and measurement are stopped. In short, the functions below are Unavailable when scan is ongoing.

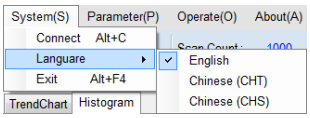
Load Log File	Data log files from the past scan and measurement can be loaded and displayed in the graphic histogram.	
Open	Click the **Open** button to prompt the folder window in which user can navigate and select a log file to open.	
Load Current	Click the **Load Current** button to rapidly load the latest log file from the previous scan.	
Total CH & Total Coun	Both total channels and total counts from the loaded log file are displayed.	
Maximum Display Counts	Select a number from the dropdown menu to determine maximum display counts within one page window display, which range from the lowest 1,000 to the highest 50,000.	
Flip Page	When log file is with large data and beyond one page window display, user can press the arrow buttons to move to First/Prev/Next/Last page. The number of current page and the total pages numbers are shown.	
Name of Log File	The name of loaded log file is shown here. There're up to three types of file names. Refer to page 16 for details.	

MISCELLANEOUS

Language Switch

Language Switch

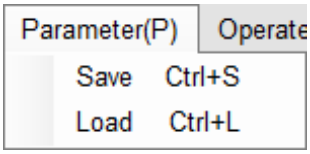
On the main display window click the **System(S)** tab on the top Tool Bar followed by placing cursor on the **Language** to change different languages for user interface display.



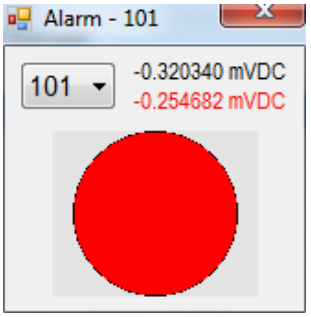
Parameter Save & Load

Parameter Save & Load

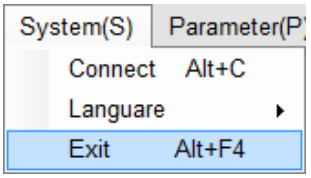
After setting both Configure Channels (page 14) and Configure Parameter (page 16), it is viable to save the configurations as a template for quick test in next time. Click on **Parameter(P)** tab on the top Tool Bar and press **Save** button followed by designating a directory where file will be stored. Press **Load** button and select a saved file to recall the previous settings.



Alarm Window

Alarm Window	When anyone of the select channels is triggered with the set condition of alarm (1 – 4, refer to page 15), click on the **Operate(O)** tab from the top Tool Bar followed by pressing the **Alarm Window** button to prompt the Alarm window where the dropdown menu allows user to select from channels and the value in black signifies the latest readings, whereas the value in red indicates the triggered reading. Also, the circle in red stands for alarm triggered of the select channel.	

Exit DAQ-Data Logger

Exit the DAQ-Data Logger	To quit the software simply click on the **System(S)** tab from the top Tool Bar followed by pressing the **Exit** button to exit the DAQ-Data Logger.	

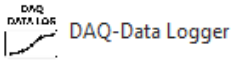
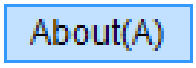
VERSION

This section describes how to view the version number of the DAQ-Data Logger software.

View Software Version

You may need to check the version of the software to see if you have the latest version.

1. Launch the DAQ-Data Logger.



2. On the main display window click the **About(A)** tab on the top Tool Bar to show the version info.