

General Eletrochemical Software

V1.0

Operating instruction

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1 Introduction

The Rex Electrochemical software is the computer control operation software of REX Electrochemical instrument. It connects with the electrochemical instrument through USB/RS232 interface. The software automatically data acquisition and it can control and operate the electrochemical instrument accordingly.

Benchtop electrochemical instruments

Serie s	Type	Multi-parameter	pH Meter	EC Meter	pH/Ion Meter	DO Meter
500T	Professional -Smart	M500T	PH500T	EC500T	I500T	DO500T
400F	Accurate - Smart		PH400F	EC400F	I400F	DO400F
300F	Accurate - Smart	M300F	PH300F	EC300F	I300F	

Portable electrochemical instruments

Serie s	Type	Multi-param eter	pH Meter	EC Meter	pH/Ion Meter	DO Meter
510T	Professional -Smart	M510T	PH510T	EC510T	I510T	DO510T
310T	Accurate - Smart	M310T	PH310T	EC310T	I310T	
310F	Accurate - Powerful	M310F	PH310F	EC310F		DO310F

This Rex electrochemical software has the following features:

1. It can automatically identify the connected instruments and automated instrumentation.
2. It allows to test the parameters of a sample at the same time, including temperature, pH (mV), ion concentration, conductivity (TDS, salinity) and dissolved oxygen (oxygen saturation).
3. It allows to calibrate the instrument in the software.
4. It has data management,
5. It support record the measurement data manually or automatically.
6. It could display recorded data in the form of graphs and tables.
7. The data could save in sqlite database format, and allows to transfer data to Word documents, Excel spreadsheets, PDF file.
8. It allows to print the data.
9. The software consists of file, measure, data, setting, and help.

1.1 Software Installation

1.1.1 System requirement

CPU: Pentium or above

Operating system: Windows 7 or above

Memory: 512M or above

Hard disk space: 20M

Port: Free RS-232 interface or USB(converted into virtual RS - 232 interface)

Application software: Legitimate versions of Microsoft Word and Microsoft Access have been activated

1.1.2 Installation method

Download the installation package file.

Run the REX Eletrochemical Software

1.2 USB Diver Installation

Diver sheet for Benchtop electrochemical instruments

Series	Model	USB Diver	Note
300F	M300F	CP210x_VCP_Win_XP_S2K3_Vista_7(V6.5)	Version 6.5
	PH300F		
	EC300F		
	I300F		
	M300F		
400F	PH400F	CP210x_VCP_Win_XP_S2K3_Vista_7(V6.5)	Version 6.5
	EC400F		
	I400F		
	DO400F		
500T	M500T	CH375 Driver V2.7	Version 2.7
	PH500T		
	EC500T		
	I500T		
	DO500T		

Diver sheet for Benchtop electrochemical instruments

Series	Model	USB Diver	Note
310F	M310F	CP210x_VCP_Win_XP_S2K3_Vista_7(V6.5)	Version 6.5
	PH310F		
	EC310F		
	DO310F		
310T	M310T	CP210x_VCP_Win_XP_S2K3_Vista_7(V6.5)	Version 6.5
	PH310T		
	EC310T		
	I310T		
510T	M510T	CH375 Driver V2.7	Version 2.7
	PH510T		
	EC510T		
	I510T		
	DO510T		

1.2.1 CP210x USB Diver Installation

1) Decompress the file and run CP210x_VCP_Win_XP_S2K3_Vista_7(V6.5).exe to install the USB driver

2) After the installation, turn on the instrument and connect it to a PC. The PC may prompt you to install a USB driver, which can be used normally later.

3) If necessary, check whether the USB driver is successfully installed. On the Device Manager page, Silicon Labs CP210x USB to UART Bridge (COM3) is displayed in the Port column, indicating that the device is correctly installed and can be used normally. The specific port number varies according to different computers. The communication port should be set correctly when using.

1.2.2 CH375 USB Diver Installation

1) Double-click Setup.exe in the Driver file directory to install the USB driver

2) After the installation, open the instrument, connect the instrument to a PC, and the PC prompts you to install the USB driver

3) Whether the installation is successful, you can view the words "computer \ properties \ management \ device manager \ external interface \CH376"

4) After the installation, you can use the software normally.

2 Running software

Turn on the power of the electrochemical instrument, run the software, and the electrochemical instrument enters the working state.

2.1 Configuration

After the software runs, the configuration of the electrochemical instrument is automatically searched, as shown in the figure below.

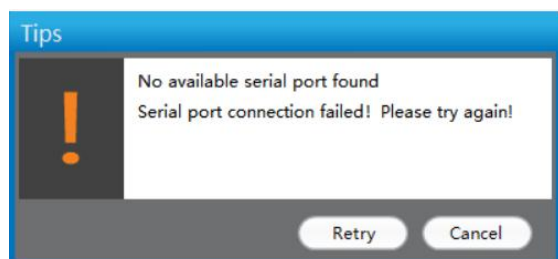


One Channel in the Value display

If no electrochemical instrument is found, the display is shown in the figure below. When offline, it allows to analysis data.



If the device is not found after multiple retries, check whether the connection is correct, whether the device is powered on, and whether the communication interface of the device can be found in the device manager. Then press “Retry” to search for electrochemical instrument and configurations again, or close and run the software again.



3 Main interface

The main interface is composed by four parts: title, status, menu, data, and measurement. The menu consists of file, measure, data, setting and help.

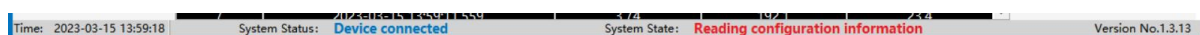
3.1 Title

The title bar displays the software name on the left, and the minimize, maximize, and exit program icon buttons on the right.



3.2 Status

The status bar displays the time, system status, system state and software version.



3.3 Menu

3.3.1 File

Open: Open the data in the file.

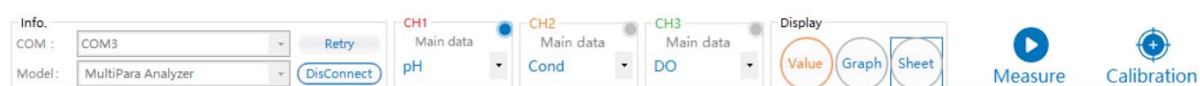
Save: Save the measurement result.

Import: [Import the measurement result.](#)

Exit : Exit the software and disconnect.

3.3.2 Measure

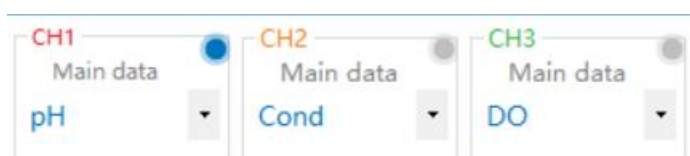
The measurement includes the instrument information, channel information, display format, measure and calibration.



Information: It shows COM serial number. It allows to connect and disconnect the instrument.

Channel information: It shows channels and parameters according to instruments. It allows to turn on or turn off the channel. It could select the parameters to measure or calibrate when the the channel is turned on.

Turn on the CH1 and choose the pH as the parameter.



Turn on the CH1 and Ch2, and choose the pH and Conductivity as the parameter.



Turn on the CH1, CH2 and Ch3, and choose the pH, Conductivity and DO as the parameter.

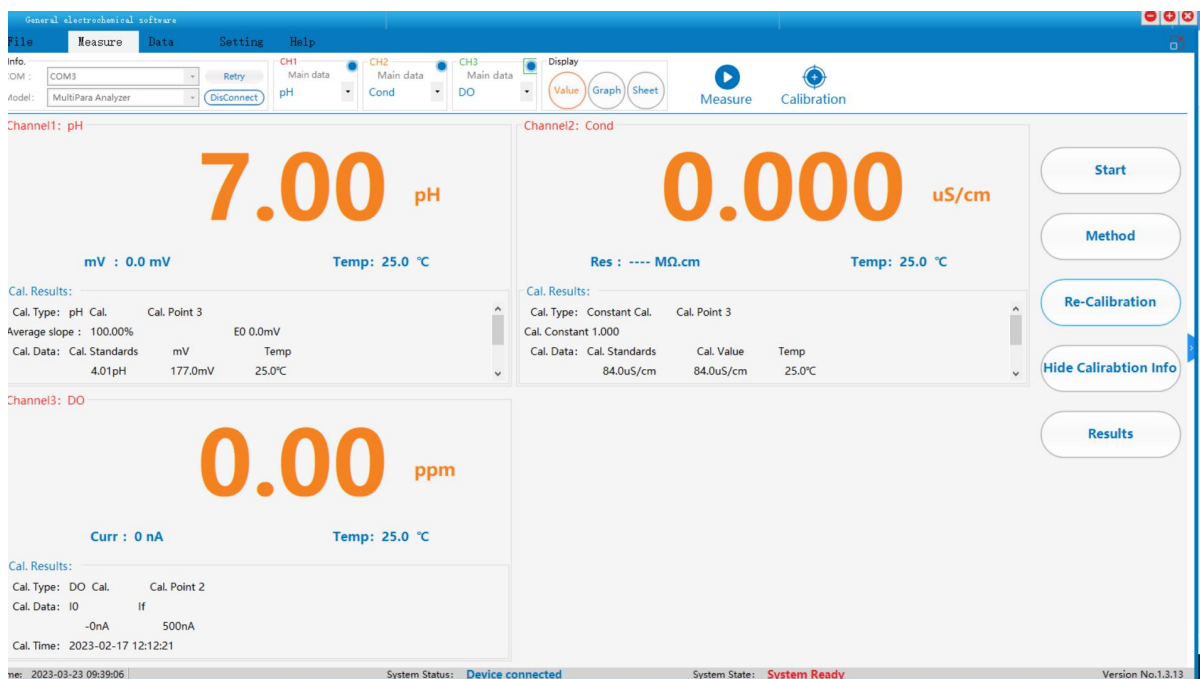


Display mode: “Value”, “Graph”, “Sheet”. It could select one or more formats of the data to be display.

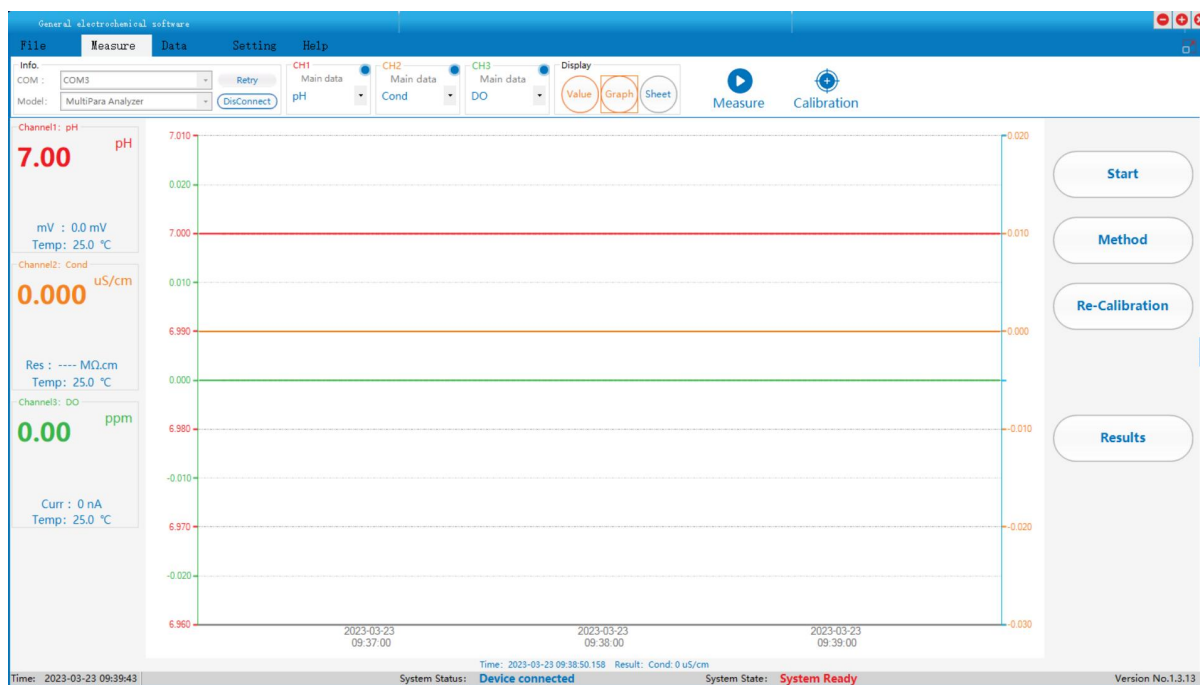
Operation button: It has "measure" and "calibration" button.



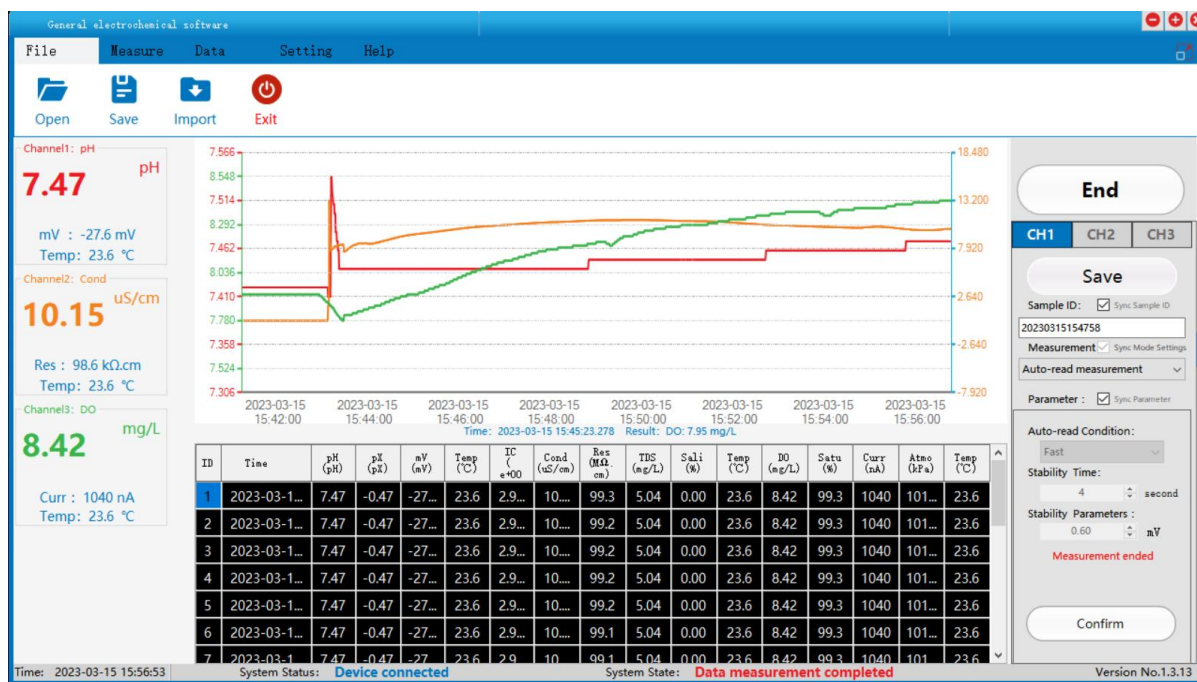
One Channel in the Value display



Three channel in the Value display



Three channel in the value and graph display



Three channel in the value, graph and sheet display

3.3.3 Data

This section shows the 'Parameters' filter and 'Save as/Print' options. The 'Parameters' section includes checkboxes for ALL, pH, pX, ORP, TDS, Ion, Salt, Res., Cond, DO, and DO Sat. The 'Time' section allows selecting a 'Start Mea.' and 'End Mea.' range. The 'Filter' section has 'Latest' and 'Latest' buttons. The 'Save as/Print' section includes buttons for 'Save as Word(.Doc)', 'Save as PDF(.pdf)', 'Save as Excel(.Xls)', 'Print', 'Browse', and 'Delete Selected'.

Filter: It could filter by parameters and period .Or it displays in the time order.

- 1) Parameters: All, pH, pX, ORP, TDS, Ion, Salt, Res., Cond, DO, DO Sat.
- 2) Time: Select the Start time and End time.

Latest: It shows the data in the time order.

Save as/Print

- 1) Save as Word(.Doc): Save the filtered data as Word(.Doc) document.
- 2) Save as PDF(.pdf): Save the filtered data as a PDF(.pdf) document.
- 3) Save as Excel(.Xls): Save the filtered data as Excel(.Xls) document.
- 4) Print: Print the filtered data.

Browser: Open the data file.

Delect Selected: Delete the selected da

General electrochemical software

File Measure Data Setting Help

Parameters

☒ ALL ☒ pH ☒ pX ☒ ORP ☒ TDS ☒ Ion ☒ Salt ☒ Res. ☒ Cond ☒ DO ☒ DO Sat.

Time

Start Mea.: 2023-03-15 15:49:50

End Mea.: 2023-03-15 15:49:50

Filter Latest

Save as/Print

Save as Word(.doc) Save as PDF(.pdf) Save as Excel(.xls) Print

Browse Delete Selected

ID	Instrument	Time	Operator	Single ID	Class	Result	Unit	Result	Temp	
1	MultiPara Analyzer	2023-03-15 15:49:03	3	20230315154758	Cond	11.03uS/cm	Res	90.6kΩ.cm	23.9℃	Delete
2	MultiPara Analyzer	2023-03-15 15:49:03	3	20230315154758	DO	8.20mg/L	Curr	1028nA	23.9℃	Delete
3	MultiPara Analyzer	2023-03-15 15:49:01	3	20230315154758	pH	7.45pH	mV	-26.3mV	23.9℃	Delete
4	MultiPara Analyzer	2023-03-15 15:48:52	3	20230315154758	Cond	11.00uS/cm	Res	90.9kΩ.cm	23.9℃	Delete
5	MultiPara Analyzer	2023-03-15 15:48:52	3	20230315154758	DO	8.19mg/L	Curr	1027nA	23.9℃	Delete
6	MultiPara Analyzer	2023-03-15 15:48:50	3	20230315154758	pH	7.45pH	mV	-26.2mV	23.9℃	Delete
7	MultiPara Analyzer	2023-03-15 15:48:33	3	20230315154758	Cond	10.93uS/cm	Res	91.5kΩ.cm	23.9℃	Delete
8	MultiPara Analyzer	2023-03-15 15:48:33	3	20230315154758	DO	8.18mg/L	Curr	1026nA	23.9℃	Delete
9	MultiPara Analyzer	2023-03-15 15:48:32	3	20230315154758	pH	7.44pH	mV	-26.2mV	23.9℃	Delete
10	MultiPara Analyzer	2023-03-15 15:48:12	3	20230315154758	pH	7.44pH	mV	-26.1mV	23.9℃	Delete
11	MultiPara Analyzer	2023-03-15 15:48:12	3	20230315154758	Cond	10.85uS/cm	Res	92.1kΩ.cm	23.9℃	Delete
12	MultiPara Analyzer	2023-03-15 15:48:12	3	20230315154758	DO	8.17mg/L	Curr	1025nA	23.9℃	Delete
13	MultiPara Analyzer	2023-03-15 15:48:04	3	20230315154758	pH	7.44pH	mV	-26.1mV	23.9℃	Delete
14	MultiPara Analyzer	2023-03-15 15:48:04	3	20230315154758	Cond	10.83uS/cm	Res	92.3kΩ.cm	23.9℃	Delete
15	MultiPara Analyzer	2023-03-15 15:48:04	3	20230315154758	DO	8.16mg/L	Curr	1025nA	23.9℃	Delete
16	MultiPara Analyzer	2023-03-15 15:25:57	3	20230315152427	pH	7.11pH	mV	-6.6mV	24.8℃	Delete
17	MultiPara Analyzer	2023-03-15 15:25:57	3	20230315152427	Cond	0.000uS/cm	Res	—Mohm.cm	24.8℃	Delete
18	MultiPara Analyzer	2023-03-15 15:25:57	3	20230315152427	DO	7.91mg/L	Curr	1034nA	24.8℃	Delete
19	MultiPara Analyzer	2023-03-15 15:24:48	3	20230315152427	pH	7.12pH	mV	-7.4mV	24.7℃	Delete
20	MultiPara Analyzer	2023-03-15 15:24:48	3	20230315152427	Cond	0.000uS/cm	Res	—Mohm.cm	24.7℃	Delete

Time: 2023-03-15 15:50:01 System Status: Device connected System State: Data measurement completed Version No.1.3.13

Data in the time order display

3.3.4 Setting

Data Storage (Contu.)

☒ Auto Save ☐ Manual Save

Data sync

☒ Auto sync ☐ Manual sync

Instrument connect

☒ Auto connect ☐ Manual connect

Timing

☒ Auto time sync ☐ Time sync

User

Operator

OK

Save location:

D:\BaiduNetdiskWorkspace\17.软件\出口——英文版软件\雷磁通用

Change location Browse

Data Storage

- 1) Auto Save: In the Continuous-read measurement, it could
- 2) Manual Save: In the Continuous-read measurement, it need to save the result manually.

Data sync

- 1) Auto Sync: The data is synchronized automatically after connection.
- 2) Manual Sync: The data is synchronized manually after connection.

Instrument connect

- 1) Auto connect: The instruments connect automatically after configuration.
- 2) Manual connect: The instruments connect manually after configuration.

Timing:

- 1) Auto time sync: The time is synchronized automatically after connection.
- 2) Time sync: The time is synchronized manually.

User: Set the current operator name.

Save location: It shows the data location.

Change location: Select a new file location.

Browse: Open the data in the file.

3.3.5 Help

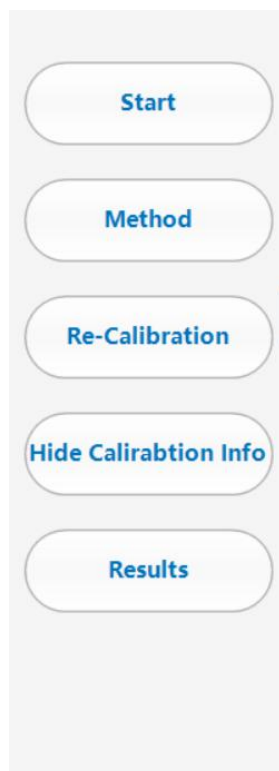
It shows the software version and manual.



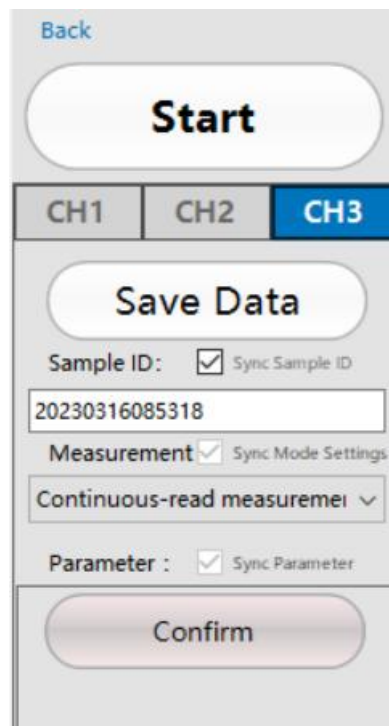
3.4 Measure

The measurement area is divided into two states:

In the idle status, the operation selections include starting measurement, method setting, re-calibrating, hiding calibration information, and viewing data.



The button in the idle status



The button in the measurement status

3.4.1 Start

Start: Start a measurement.

3.4.2 Method

Start: Start a measurement.

Channel: It shows the channel according to the models and it allows to exchange the channel to set the reading mode and Sample ID.

Save data: It allows to save data manually.

Sample ID: It allows to set the sample ID.

Sync Sample ID: when it has two or three channels, it allows to synchronize sample ID for different channels.

Measurement

- 1) Continuous measurement. The instrument displays real-time measurement results. Users can end the measurement at any time and save the last result.
- 2) Interval measurement. Interval "Interval Measurement" provide measurement results at interval time. The interval is recommended to be 1 to 3600 seconds, and the number of measurement points is not more than 10000. When measurement, it displays the remaining unmeasured data points. When completed measurement, it displays the data measurement completed.
- 3) Timed measurement. Timed reading provide measurement result after a set time. The measurement time should be set for timed measurement. It is recommended that the measurement interval not exceed 12 hours. When measuring, the countdown time of distance measurement time is displayed. when the timing measurement time is reached, the data will be automatically measured and saved.
- 4) Auto measurement. The measurement reached the balance, and the data will be automatically measured and saved. The meter offers "Fast", "Medium", "Strict" and "Custom" four options for endpoint detection conditions.

Sync Mode Settings: when it has two or three channels, it allows to synchronize reading mode for different channels.

End

CH1CH2CH3

Save

Sample ID: ☒ Sync Sample ID

20230316092311

Measurement ☒ Sync Mode Settings

Continuous-read measurement ☐

Parameter : ☒ Sync Parameter

* No parameters :

*Press "Save" to Save Data

Confirm

Continuous measurement

End

CH1CH2CH3

Save

Sample ID: ☒ Sync Sample ID

20230316092931

Measurement ☒ Sync Mode Settings

Interval-read measurement ☐

Parameter : ☒ Sync Parameter

Time Interval:

2 s

Measurement Points:

3 Points

2 Point not measured

* Time Interval ∈ [1, 3600]

*Points; ∈ [1, 10000]

*When timed-read synchronize the interval and point in the multi-channel.

Confirm

Interval measurement

Timed measurement

Auto measurement

3.5 Calibrate

3.5.1 Re-Calibrate pH

The software provides various Standards Group including GB, DIN, NIST, USA, MERK, and JIS. And allows the user to prepare the customized Standard groups.

pH Standard solution groups

Groups	Contents
NIST	1.677pH, 4.008pH, 6.864pH, 7.000pH , 7.416pH, 10.014pH, 12.469pH
USA	1.680pH, 4.010pH, 7.000pH, 10.010pH
DIN	1.680pH, 2.000pH, 3.557pH, 3.775pH, 4.008pH, 6.865pH, 7.000pH, 7.416pH , 9.184pH, 10.014pH, 12.454pH
GB	1.680pH, 3.559pH, 4.003pH, 6.864pH, 7.409pH, 9.182pH, 12.460pH
MERK	2.000pH, 4.000pH, 7.000pH, 9.000pH, 12.000pH

Groups	Contents
JIS	1.680pH, 4.008pH, 6.865pH, 7.413pH, 9.180pH, 10.010pH

Cal. Setting

Channel: CH1: pH

Cal. type: pH Electrode

Cal. Mode: ☒ Manual Cal. ☐ Auto Cal.

Standard Value pH

Cancel Cal. Start

Cal. Setting

Channel: CH1: pH

Cal. type: pH Electrode

Cal. Mode: ☐ Manual Cal. ☒ Auto Cal.

Solution group GB

Solution Value: ☐ 1.68pH ☐ 3.56pH
☐ 4.00pH ☐ 6.86pH
☐ 7.40pH ☐ 9.18pH
☐ 12.46pH

Cancel Cal. Start

3.5.2 Re-Calibrate EC

EC Standard solution groups

Standard group	Standard solution
Universal Group	10 μ S/cm, 84 μ S/cm, 500 μ S/cm, 1413 μ S/cm and 12880 μ S/cm.
GB group	146.5 μ S/cm, 1408 μ S/cm, 12852 μ S/cm and 111310 μ S/cm.

Cal. Setting

Channel: CH2: Cond

Cal. type: EC cell constand

Cal. Mode: ☒ Manual Cal. ☐ Auto Cal. ☐ Set EC cell constant

Standard Value μ S/cm

Cancel Cal. Start

Cal. Setting

Channel: CH2: Cond

Cal. type: EC cell constand

Cal. Mode: ☐ Manual Cal. ☒ Auto Cal. ☐ Set EC cell constant

Cancel Cal. Start

Cal. Setting

Channel:

CH2: Cond

Cal. type:

EC cell constand

Cal. Mode:

☐ Manual Cal.
☐ Auto Cal.
☒ Set EC cell constant

Standard Value

Cancel

Cal. Start

3.5.3 Re-Calibrate DO

Cal. Setting

Channel:

CH3: DO

Cal. type:

DO Electrode

Cal. Mode:

☒ Manual Cal.

Standard Value

10 (DO 0%) Saturation

Cancel

Cal. Start

Cal. Setting

Channel:

CH3: DO

Cal. type:

DO Electrode

Cal. Mode:

☒ Manual Cal.

Standard Value

If (DO 100%) Saturation

Cancel

Cal. Start