Multi-parameters Water Quality Analyzer

Model: MPG-6099 User Manual



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1. Instruction

1.1 Instruction

Multi-parameter water quality on-line analysis system integration platform, can directly integrate a variety of water quality online analysis parameters in a whole machine, in the touch screen panel display focused on and management; the system set on-line water quality analysis, remote data transmission, database and analysis Software, system calibration functions in one, the modernization of water quality data collection and analysis provides a great convenience.

Flexible configuration of the combination, the cabinet inside the sample and analysis of the part can be flexible matching (Note: the specific parameters to the actual ordering parameters prevail): pH, ORP,dissolved oxygen,conductivity, temperature,ammonia(NH4+) and other conventional parameters, the actual needs of customers should be combined or extended ; Water part of the use of the company's latest application research results - tandem flow analysis device, the water required little, real-time strong, a small water flow through a variety of sensors in accordance with the different technical characteristics and response order , Water samples through the flow of all parameters when the real-time capture, but also to achieve the external large-scale continuous expansion of the unit.

1.2 Main Features

- 1) Flexible configuration of intelligent instrument platform software and combination parameter analysis module, to meet intelligent online monitoring applications.
- 2) Drainage integrated system integration, constant flow circulation device, using a small number of water samples to complete a variety of real-time data analysis;
- With automatic online sensor and pipeline maintenance, low human maintenance, creating a suitable operating environment for parameter measurement, integrating and simplifying complex field problems, eliminating uncertain factors in the application process;
- 4) Inserted pressure reducing device and constant flow rate patent technology, not affected by pipeline pressure changes, ensuring constant flow rate and stable analysis data;
- 5) Wireless module, data checking remotely. (Optional)

1.3.Technical Parameters.

Mod	lel	MPG-6099
Parame	eters	PH/DO/Temp/TSS (Note: the specific parameters to the actual ordering parameters)
	Temp	0-60°C
	PH	0-14PH
	Residual Chlorine	0-20mg/L
Measure	TDS	0-1000mg/L
Range	Turbidity	0-500NTU
	TSS	0-1000mg/L
	NO3-N	0.1-40mg/L
	NH3-N	0.1-1000mg/L
	Temp	resolution:0.1°C Accuracy:±0.5°C
	PH	resolution:0.01PH Accuracy:±1%FS
	Residual Chlorine	resolution:0.01mg/L Accuracy:5%FS
Desclution	TDS	resolution:0.01mg/L Accuracy:2%FS
Resolution	Turbidity	resolution:0.01NTU Accuracy:3%FS
	TSS	resolution:0.01mg/L Accuracy:3%FS
	NO3-N	resolution:0.01mg/L Accuracy:3%FS
	NH3-N	resolution:0.01mg/L Accuracy:3%FS
Comm		RS485 Modbus RTU
Power		AC 220V±10%
Ambient		Temperature:(0-50)°C;
Storage environment		Relative humidity:≤85% RH(No condensation)
Dimension		600mm×400mm×220mm(Height×width×depth)

2. Appearance and Structure

2.1 Appearance

Touch screen: Display monitoring parameters in real time and can be operated by touch. Front door: It can be opened for equipment maintenance. Open the front door of the instrument. On the upper part of the inside of the door, you can see the plug-in interface on the touch screen. See the following figure

when using the data guide:



The instrument is equipped with: pH sensor, dissolved oxygen sensor, TSS sensor (Note: the number of sensors is subject to the actual order of the customer, and the shape is subject to the actual receipt of the goods)

2.2 Diagram of Electrode wire connection:





Please note:

1) "12V+" for positive sensor power, "12V-"for negative sensor power; A is the RS485 A terminal, and B is the RS485 B terminal.

2) There are corresponding labels on all electrode wire. The labels correspond to the labels under the terminal one by one. When connecting wire, just connect the wire by same label.

3. Operation instruction of Software Interface

3.1.Instruction

Overview: The software interface operating system includes: main page, real-time data, historical data, range setting, calibration and calibration operation items. After the device is powered on, it automatically enters the measurement main interface--real-time data interface. The real-time data interface displays real-time measurement data, which can clearly and intuitively reflect the current water quality indicators, so that customers can timely and accurately understand the current water quality parameters and conduct scientific management. as the picture shows:

BOOL	Shang	td Date 2021-02-07			
Home pag	e History Data	Calibrate S	System		
	Temp	pH		TDS	Turbidity
	0.0	0.00		0.0	0.00
	°C	рН		mg/L	NTU
	CL	NH3-N		NO3-N	Spare
	0.02	0.00		0.00	2.00
	mg/L	mg/L		mg/L	
					Next

Click on "History Data" to view the data record:

The history data is a record of the measurement data for a period of time before the current measurement data of the device. This data provides a reliable guarantee for the user to grasp the data measured by the device in the unmanned operation and the care state, and also facilitates the customer to query the water quality change in the specified time period. Strong guarantee.

me pag	e History Data Ca	librate	Syste	n				_
]	Histo	ory da	ata			Page
lumber	Times	Temp	pH	TDS	Turbidity	CL	NH3-N	NO3-N
1	2021-02-07 09:23:34	0.00	0.00	0.00	0.00	0.02	0.00	0.00
2	2021-02-07 09:23:24	0.00	0.00	0.00	0.00	0.02	0.00	0.00

Click "Data Backup" on the "History Data" interface to pop up the data export interface. You can insert the USB flash drive, select the start time of the data to be exported, and click the corresponding export button to export the data to the USB flash drive.

Button function description:

Export data: Export all data to a USB stick.

Yesterday's report: Export yesterday's data to the USB flash drive.

Same day report: Export the current day data to the USB flash drive.

Last month's report: Export last month's data to a USB flash drive.

Monthly report: Export this month's data to the USB flash drive.

Export re	eport			X
Filter	ring			
Start	ing Time:	2015-01-	-01 12:00:0	00
End	l Time :	<mark>2020-0</mark> 1-	-01 12:00:0	00
Expor	rt data 0	item		
Export data	Yesterday report	Daily report	Lastmonth report	Monthly report

Click "Settings" on the "History Data" interface, and the setting time range interface appears. You can select the viewing time period of the data list in the interface. See below

All stored data	ata	-				ОК
C Recent	10	minu	ites		-	Canaal
○ Fixed time	today	/	•		Ļ	Caller
Time slice	0				▼	Year 🔽 Min
Appoint the	time o	f the o	data s	stored	$\overline{\mathbf{v}}$	Mon 🔽 Sec
2019 Year	12	Mon	25	Day	☑	Day
16 Hour	9	Min	5	Sec	5	Hour

Click on the "History Curve" on the main toolbar to view the historical data curve:

DO	NI I	[*]	Salat Doc	мт т		0		Date	2021-02-07
C to a	仪器	Sha	anghai BUG	10 In	strument	Co.,	Ltd	Time	09:24:03
Home pa	age	History D	ata Calibrate	Syst	tem				
100.0		Content	Coordinate Range	Value	Unit		1		
		Absolute clock	1Hour	09:06:38		_			
75.01	Ļ	1emp nH	0.0100.0						
	H	TDS	0.00~1000.00	1	mg/L				
		Turbidity	0.00~1000.00		NTU				
50.0		CL	0.00~20.00		mg/L				
		NH3-N	0.00~1000.00		mg/L				
		NUJ-N	0.00 1000.00		mg/L				
25.01	-≺								
0.0	L	94.09	08.20.02		00.54.00			02	00.94.09
1	08:	24.02	08.39:02		06.34:02		09:09:	02	09.24:02
	144	• •	► * *		Ba	ckup			Page dn

Yellow list area on the left: shows the specific parameter data and recording time of the current cursor position, see the following figure:

Content	Coordinate Range	Value	Unit
Absolute clock	1Hour	08:58:51	
Тетр	0.0~100.0		C
pН	0.00~14.00		PH
TDS	0.00~1000.00		mg/L
Turbidity	0.00~1000.00		NTU
CL	0.00~20.00		mg/L
NH3-N	0.00~1000.00		mg/L
NO3-N	0.00~1000.00		mg/L

Historical curve button function description:



figure:

Instrument calibration Click the "Calibration" button on the main toolbar of the touch screen to display the calibration selection interface:

4. Calibration and Set

Calibration:

Instrument calibration Click the "Calibration" button on the main toolbar of the touch screen, input password "7320" which will display the calibration selection interface:

ROOU	Sh	angh	nail	BOOL	IIn	stru	ment	t co		td	Date	2021-	02-05
	On			borte				000	., .	200	Tin	12-15:2	4 <mark>Week</mark> 5
60.0	Usern Passw	ame: ord:	ad	lmin							•		
45.0 2 Ter			1										
30. 0	1	2	3	4	5	6	7	8	9	0	<-		
15.0	A	в	c	D	E	F	G	н	I	J	Del	-	
0.0	к	L	м	N	0	Р	Q	R	S	т	Cap		
07:15	U	v	w	×	Y	z		ок		Can	cel	1	3:15:18
Home page H	Sl	1ang Data	hai Calib	BOQU rate	Ins Syst	strun em	nent	Co. ,	Lt	d	Date Time	2021-02-(09: 26: 20 Ne)7 } xt
			pH	Calibr	rate		TDS	5 Calib:	rate				
			T C	urbidi alibra	ty te		CL	Calibr	ate				
			NH3-	N Calil	brate		N03-	-N Cali	brate				

4.1Calibration of pH Sensor

Click on "pH calibrate" to enter the pH calibration interface as below.



When enter calibration interface, set "standard solution type" as 0

Standard liquid type description:

0: represents 4.00, 7.00, 10.00 standard solution (International standard).

1: represents 4.00, 6.86, 9.18 standard solution (Chinese standard).

Zero calibration: Put the pH electrode into the 7.00 or 6.86 standard solution. After the data is stable, click the "zero qualified" button.

Slope calibration: Put the electrode into the 4.00 or 9.18/10.00 standard solution, After the data is stable, click the "slope qualified" button.

Note: The standard solution for this equipment is: 4.00, 7.00, 10.00

4.2 Calibration of Residual Chlorine Sensor

BOQU Shan	ghai BOQU	J <mark>Instrum</mark> e	nt Co., Lto	Date 2021-0 Time 09:42	2 -07 : 37
Home page History Data	Calibrate	System			
	Communi	cation	2.00	Bac	k
CL	0.02	Cur	rent 0.00		
Zero Cali	ibration		Zero Pass		
Slope Cal	ibration	0.00	Slope Pass	Save	

Zero calibration: Clean the sensor first, put it in distilled water or boiled cold water, wait at least 3 minutes, when the current value is stable, click "zero Pass".

Slope calibration: Then clean the sensor, put it in the standard solution or water sample of known concentration, enter the standard solution value, wait at least 3 minutes, when the current value is stable, click "Slope Pass", and then save the result to complete the calibration.

Note: The zero point and standard solution have been calibrated before leaving the factory. Generally, customers do not need to calibrate by themselves.

4.3. Calibration of TDS Sensor

Click on "TDS calibrate" to enter the TDS calibration interface as below.

ROOH	* Shana	hai BOO	II Instr	ument Co	I ±d	Date	2021-02-07
一個取仪器	Shane		U INSCI	ument co.,	Ltu	Time	09:35:40
Home page	History Data	Calibrate	System				
			TDS Ca	alibrate			Back
	Cond	0.00	us/cm	Тетр	0.0	°C	
	TDS	0.00	mg/L	Constant	0.000		
		Com	munacat	ion 2.0			
			Calibration	n qualified			

In the calibration interface, put the conductivity sensor in standard buffer 1413us/cm and vertically state, After the measurement value is stable, click to clear the data first, and then press the calibration

qualified to complete the calibration.

Please Note:

- 1) The conductivity can only be calibrated with 1413us / cm standard solution.
- 2) TDS,Salinity calibration method is the same as conductivity.

4.4 Calibration of Turbidity Sensor

Click on "Turbidity calibrate" to enter the Turbidity calibration interface as below.

BOQU	* Sha	anghai BO	QU Instrum	ent Co., Ltd	Date 2020-11-25
·····································	Curve	History Data	Calibrate S	ystem	
			Turbidity	Calibrate	Back
т	' <mark>urbidi</mark> t	y 0.00	mg/L	Turbidity factor	0.000
		Com	munacation	2	
			START		
	Ca	alibration	Â	Sauc	
	fa	ctor input	t j	Jave	

Turbidity calibration: In the calibration interface, put the Turbidity sensor in standard buffer, ensure that the lens of the probe is no less than 15cm away from the bottom of the container, then click "start", waiting for Turbidity value to stable, input standard solution value in calibration factor input, click "save" to complete the calibration.

4.5 Calibration of TSS Sensor

Click on "TSS calibrate" to enter the TSS calibration interface as below.



1) TSS calibration: In the calibration interface, put the TSS sensor in standard buffer, click "start", input standard solution value, waiting for 30 seconds, when TSS value is stable, click "save" to complete the calibration.

2) Setting brush hanging time: suggest brush per 30 minutes or 60 minutes.60 minutes is default time,

setting min brush time with 15 minutes, max brush time with 1440 minutes (1 day). Input required time, click "save" to complete setting. Manual brushing is for every click of the button, the sensor brushing starts one time.

Please note: When measuring and calibrating, ensure that the lens of the probe is no less than 15cm away from the bottom of the container, and it is recommended to take light-proof treatment.

4.6 Calibration of Nitrate Nitrogen sensor:

BUYU Shang Nome page History Data	hai BOQI Calibrate	J Instr System	ument Co]	., Ltd	Tine	09: 43: 40
N03-N	0.00 m	ommunac g/L S	ation Signal	2.0 0.00		Back
6-1:hi	NO3-N	factor	0.000			
factor inpu	t s	START	0		Save	

Nitrate Nitrogen calibration: In the calibration interface, put the Nitrate Nitrogen sensor in standard buffer, then click "start", waiting for NO3-N value to stable, input standard solution value in calibration factor input, click "save" to complete the calibration.

4.7 Calibration of Ammonia Nitrogen Sensor

Click on "Ammonia calibrate" to enter the ammonia nitrogen calibration interface as below.



Firstly Put the sensor in the standard solution of 7.00 after the pH value is stable, click the "zero qualified" to pass, take out the electrode, use distilled water to clean it, and put it in the standard solution of 4.00, the electrode slope is qualified. Complete the PH calibration.

Secondly put the sensor into the standard solution with low ammonia nitrogen concentration, enter the standard solution value in the standard solution input box at the first point, and after the mV is stable, click the "first point qualified "to pass.

Take out the electrode and clean it with distilled water, then put it into the standard solution with high ammonia nitrogen concentration. Enter the standard solution value in the standard solution input box at the second point. After the mV is stable, click the "second point qualified" to pass and complete the calibration.

Please note:

The concentration of the two standard ammonia nitrogen solutions should be 10 times different. For example, the low standard solution is 1 mg / L, and the high standard solution is 10 mg / L.

5. Fault and Handling

Number	Fault	Handling
1	No display on touch screen	Check power supply. Check wires of power Check power switch. Check nine-pin connector.
2	Large difference in measurement data	Please take the corresponding electrode and recalibrate it.

6.Attention

When using for the first time, place the instrument securely, connect the electrode to the instrument, and then turn on the power. The electrode power supply is 12V, and please pay attention the corresponding wiring mark on the instrument when connect wire. All electrodes are consumables and need to be cleaned regularly.

Second, if the electrode is not in contact with the water sample for a long time, the instrument should be powered off.clean all sensors, and put pH sensor in 3.3 mol potassium chloride saturated solution to prevent damage to the electrode.

7.Communication of RS485 MODBUS

- 7.1 Set of communication parameters
- 1.Common baud rate:19200, 9600, 4800, 2400.Default use 9600
- 2.Data bit:8 Stop bit:1
- 3.Parity:No parity, odd parity, even parity. Default is no parity
- 4.Instrument address:default of multi-parameters equipment is 5.

7.2 Communication instruction format

Multi-parameters as an example

Data read instruction:

Address + function code + register start address + register read number + CRC check code (hexadecimal) Sample:05 03 00 00 00 04 45 8d (Read six data)

Address	function code	register start address	register read number	CRC check code
05	03	0000	001A	c5 85

Data return instruction:

```
Address+ function code+Data length+Data 1+ Data 12+ CRC check code(hexadecimal)
Sample:05 03 0A 41 24 CC CD 40 E3 33 33 b4 b6
```

Address	Function code	Data length	Data 1	Data 12	CRC check code
05	03	44	4124CCCD	40 E3 33 33	CRC

The multi-parameter data is a floating-point number, and the decoding order is 1234. The decoding is sequential, and the high and low bytes are not reversed.

For example, the calculation using software is as follows:



Attached:

1,10Base to Hex, use this software to calculate:

处理	功能 其他 帮助			处理	里功能」其他報助		
16	ASCII速查 ✓ 进制转换	*	+	11	ASCII速查 ✓ 进制转换	*	+
4		٠		4		-	
10		*	<u></u>	В		*	Ż

The upper part is decimal and the lower part is hexadecimal. A hexadecimal number with only one digit needs to be preceded by 0.

2.After any one of the read instructions is modified, the CRC check code needs to be recalculated.



The register address is as follows:

Register1: Temp	Register3: pH	Register5: TDS	Register7: Turbidity
Register9: Residua	l Chlorine	Register11: NH3-N	Register13: NO3-N
Register15: TSS 1	Register17: TSS 2	Register19: TSS 3	
Register21: TSS 4	Register23: TSS 5	Register25: TSS 6	

8.Set of Wireless

1.It must be power off when put SIM card or take it out.

2.Login website: http://www.lfemcp.com/login.jsp

3.User can download mobile APP by first QR code.

4. The user name and password is different for all customers, we will send it to user in privately.

5.SIM Frequency:GSM850,EGSM900,DCS1800,PCS1900,automatically search.

6.Below is diagram to input SIM card.

