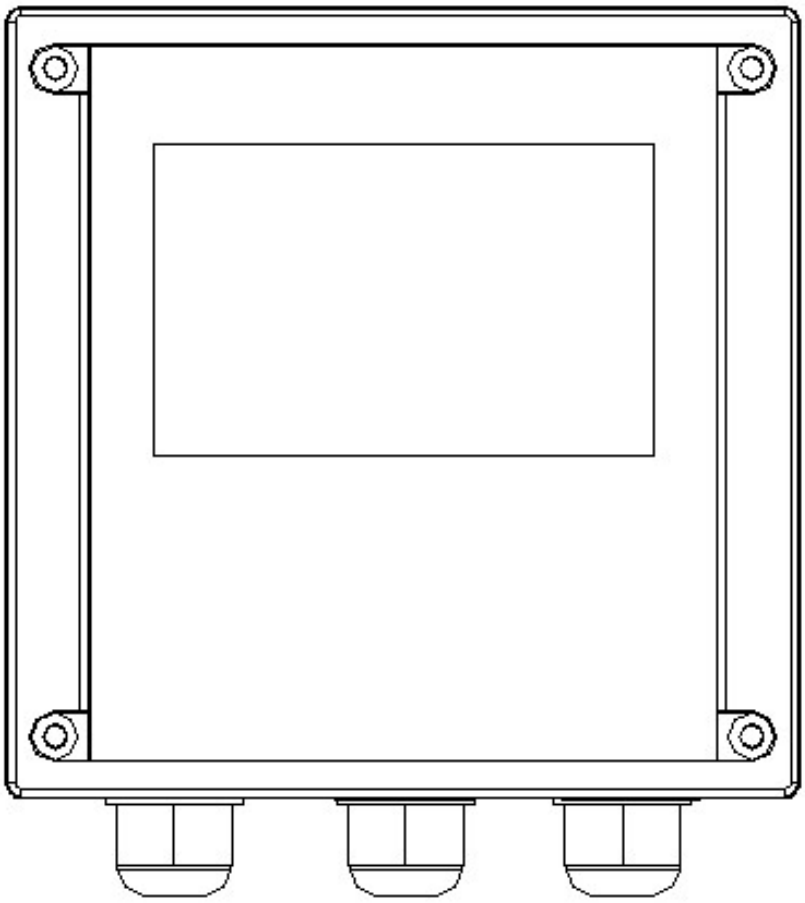
Dissolved Oxygen / Trace Oxygen Controller



Contents

Safe Operation 2
Instrument Use 2
Package Contents and Warranty 2
Specifications 3
Instrument Installation 4
Terminal Labels 7
Electrode Wiring Diagram 7
Relay Contact Protection 9
Display Description 10
Key Description 11
Hold Mode 11
Settings 12
Current Output 1 Settings 13
Current Output 2 Settings 13
Relay 1 Settings 14
Relay 2 Settings 14
Relay 3 Settings 15
Measurement Settings 15
Temperature Settings 16
Communication Settings 16
Date and Time Settings 17
Data Logging Settings 17
Output Test 17
Language Settings 18
Restore Factory Settings 18
Record Search 19
Calibration 20
Factory Default Values 23
Password 24
Error Codes 24
RS485 Communication 25

Safe Operation

Please read the following safety instructions carefully before use.

1. Before use, inspect the instrument to see if there is any damage caused by transportation compression.
2. The instrument must be operated by trained professional technicians.
3. Read the operation manual thoroughly before use to avoid safety issues and instrument damage due to incorrect wiring.
4. After all wiring is completed, carefully check for any errors before powering on, and ensure that the connected equipment is correct.
5. Please avoid installing the instrument in high temperature, high humidity, and corrosive environments, and avoid direct sunlight.
6. Avoid using power sources that may generate surge interference. If there is surge interference, please separate the instrument's power supply from other interfering equipment.

Instrument Use

Industrial DO (%/ppm/mgL/ugL/ppb) and temperature measurement: fermentation, drinking water, boiler water, seawater, aquaculture, aquariums, surface water, industrial and municipal wastewater, environmental monitoring, food processing, etc.
The instrument can be installed on a panel, wall-mounted, or pipeline-mounted
Two current outputs; maximum load 500 Ω.
Three control relays, rated 5 A at 250 VAC or 5 A at 30 VDC.

Package Contents and Warranty

144 Series: Product package includes 1 instrument, 1 manual, and 4 sets of brackets (screws, fixing blocks, fixing rods)
96 Series: Product package includes 1 instrument, 1 manual, and 2 brackets

Specifications

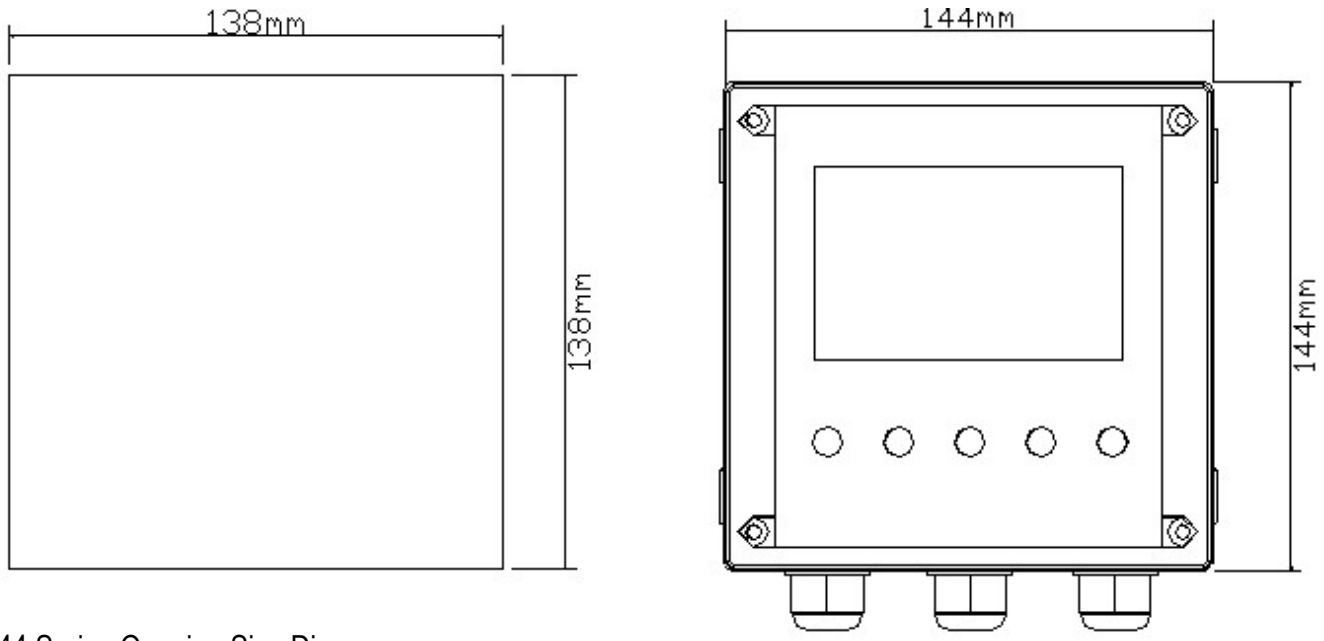
Function	%sat	ppm mg/L ug/L ppb
Measurement range	0.0 to 400.0	0.00 to 40.00, 0.0 to 200.0 ug/L
Resolution	0.1	0.01 / 0.1
Accuracy	±0.2	±0.02
Temperature compensation	Pt-1000/NTC22K	
Temperature range	-10.0 to +130.0 °C	
Temperature compensation range	-10.0 to +130.0 °C	
Temperature resolution	0.1℃	
Temperature accuracy	±0.2℃	
Electrode current range	-2.0 to +400 nA	
Electrode current accuracy	±0.005nA	
Polarization Voltage	-0.675V	
Pressure adjustment range	500 to 9999 mBar	
Salinity compensation range	0.00 to 50.00 ppt	
Operating temperature	0 to +70 °C	
Storage temperature	-20 to +70 °C	
Display	Large backlit dot-matrix LCD	
DO current output 1	Isolated 4 to 20mA output, maximum load 500Ω	
Temperature output 2	Isolated 4 to 20mA output, maximum load 500Ω	
Current output accuracy	±0.05 mA	
RS485	Modbus RTU standard protocol	
Communication rate	9600/19200/38400	
Relay contact rating	5A/250VAC、5A/30VDC	
Cleaning settings	ON: 1 to 1000 seconds, OFF: 0.1 to 1000.0 hours	
Multifunction relay	Cleaning / Periodic Alarm / Error Alarm	
Relay Delayed Operation	0-120 Seconds	
Data logging	500,000 records	
Languages	English / Traditional Chinese / Simplified Chinese	
Protection rating	IP65	
Power Supply	90 to 260VAC, power consumption <5 watts	
Installation	Panel Mount / Wall Mount / Pipe Mount	
Weight	144 Series 0.85Kg, 96 Series 0.55Kg	

Instrument Installation

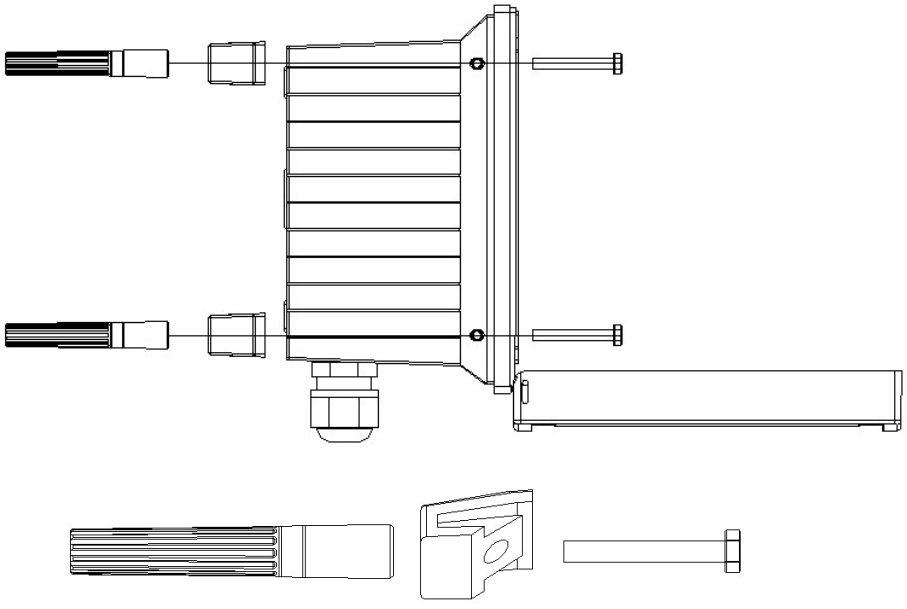
144 Series: The instrument can be panel mounted, pipe mounted, or wall mounted

Panel Mount: Open a 138mm X 138mm square hole on the distribution box panel, insert the instrument from the front of the distribution box panel

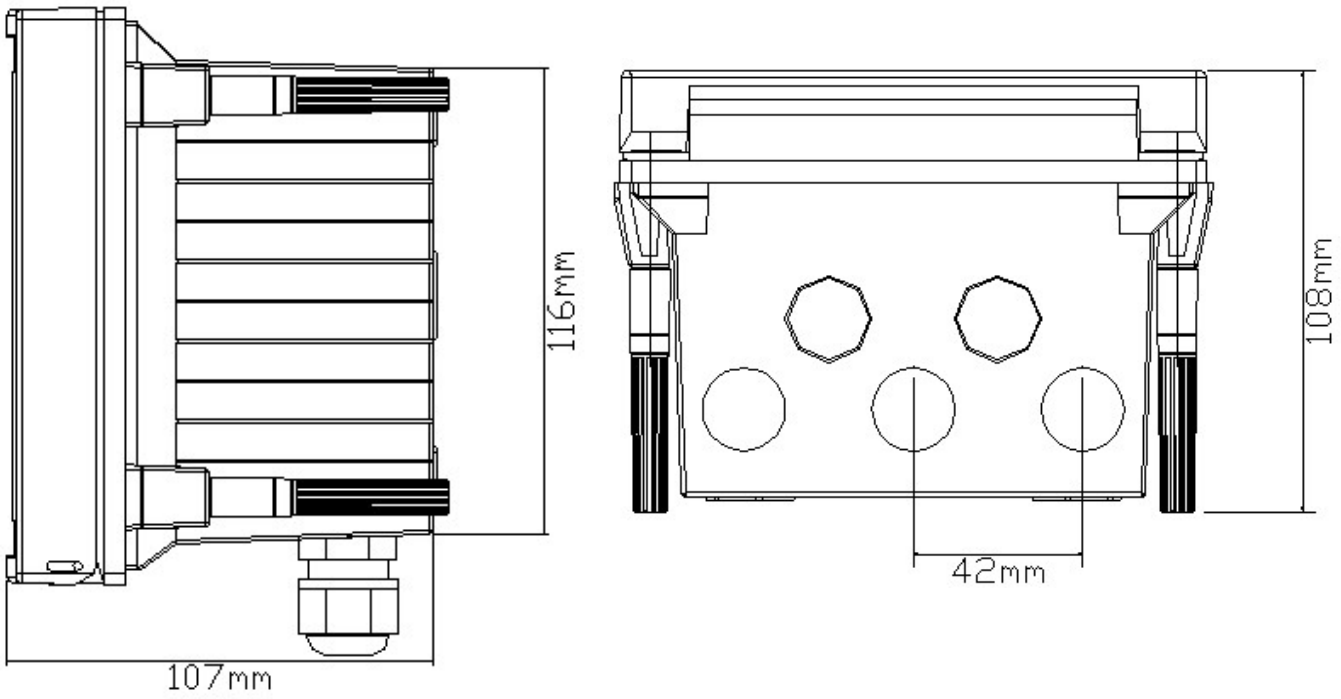
Push the screws through the back cover, and secure the fixing block and fixing rod from the back of the distribution box panel



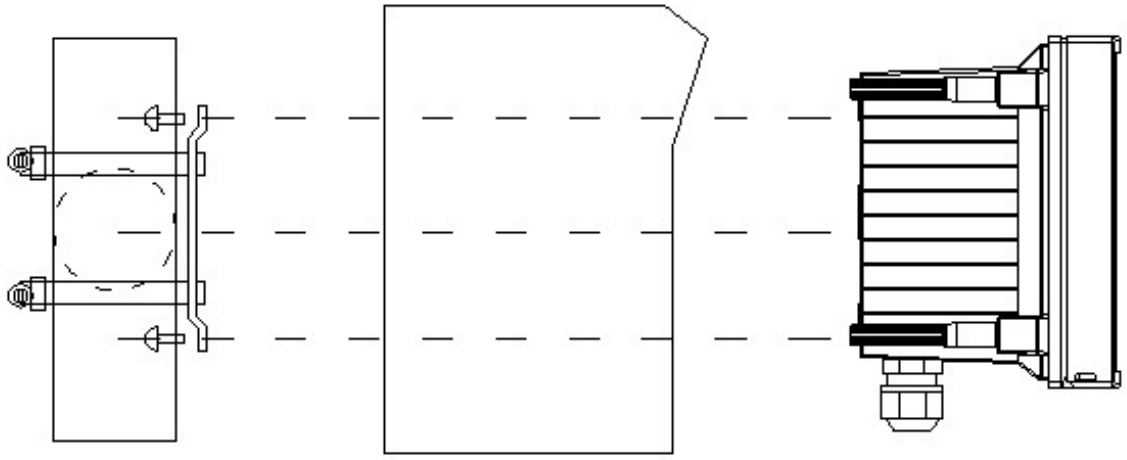
144 Series Opening Size Diagram



144 Series Bracket Installation Diagram



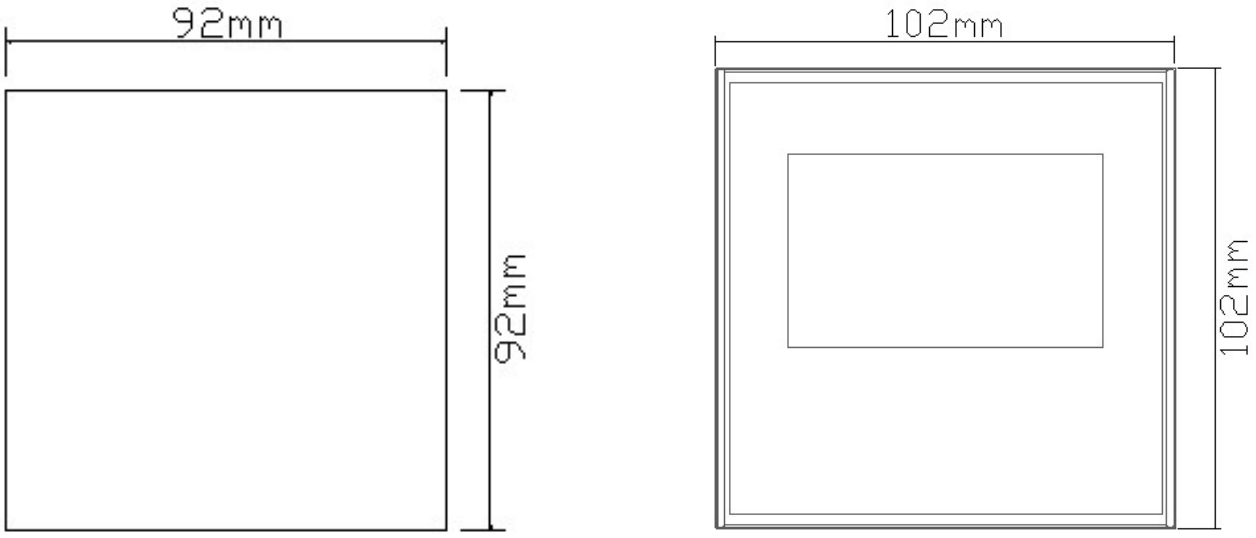
144 Series Dimensional Drawing



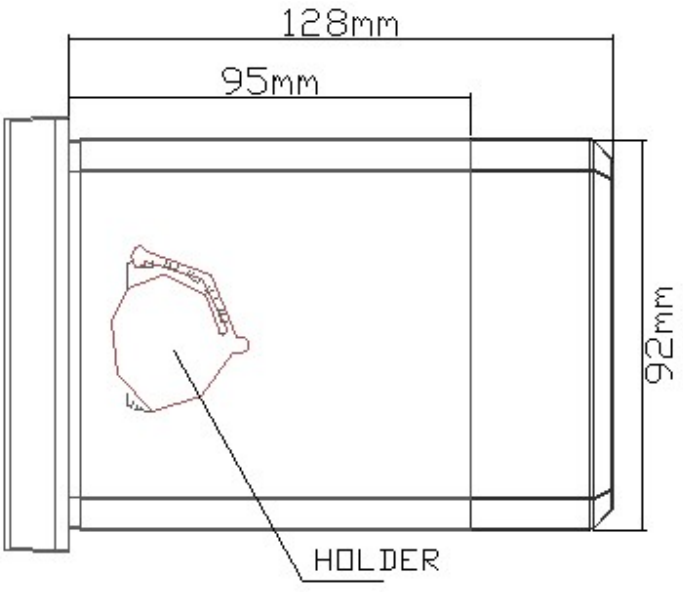
144 Series Wall Mounting and Pipeline Installation

96 Series: The instrument can be panel-mounted, pipe-mounted, or wall-mounted

Panel-mounted installation: Cut a 92mm X 92mm square hole in the distribution box panel, and insert the instrument from the front of the distribution box panel, and install the fasteners on both sides of the machine.



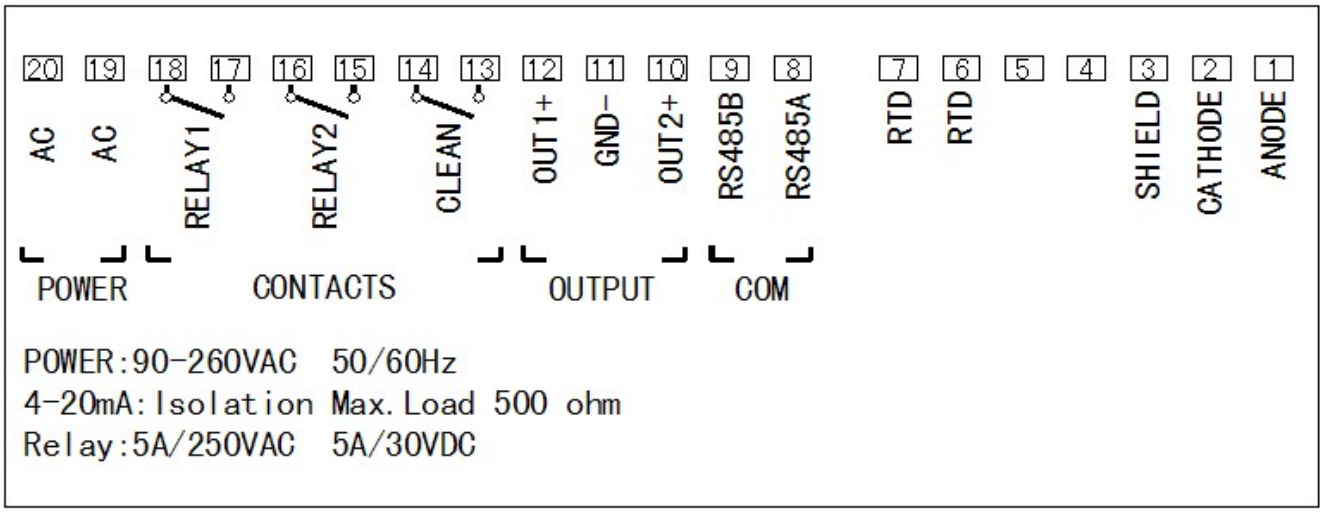
96 Series Hole Size Drawing



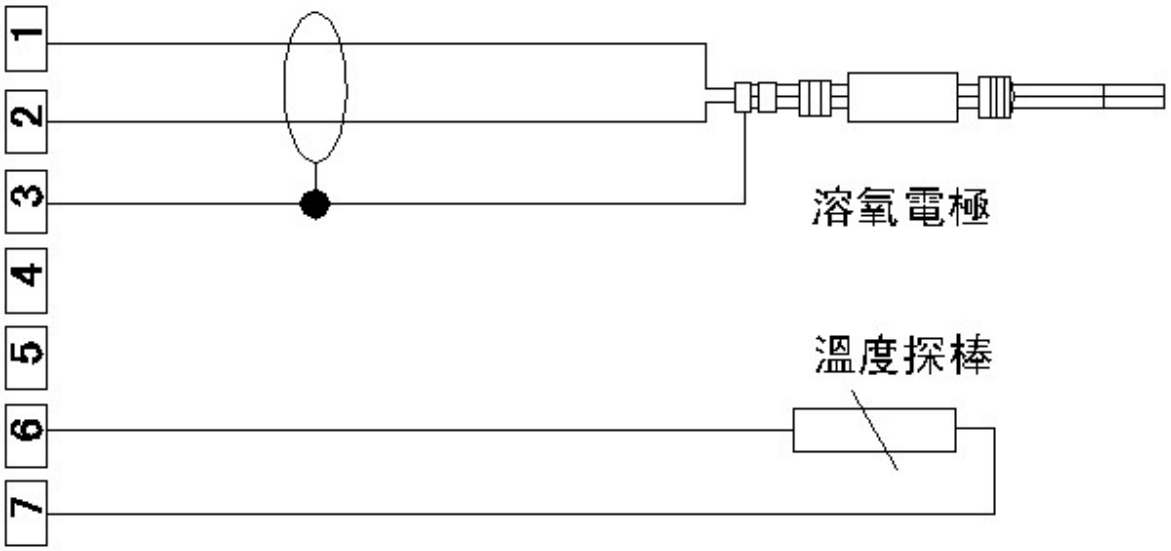
96 Series Dimensional Drawing

Terminal Labels

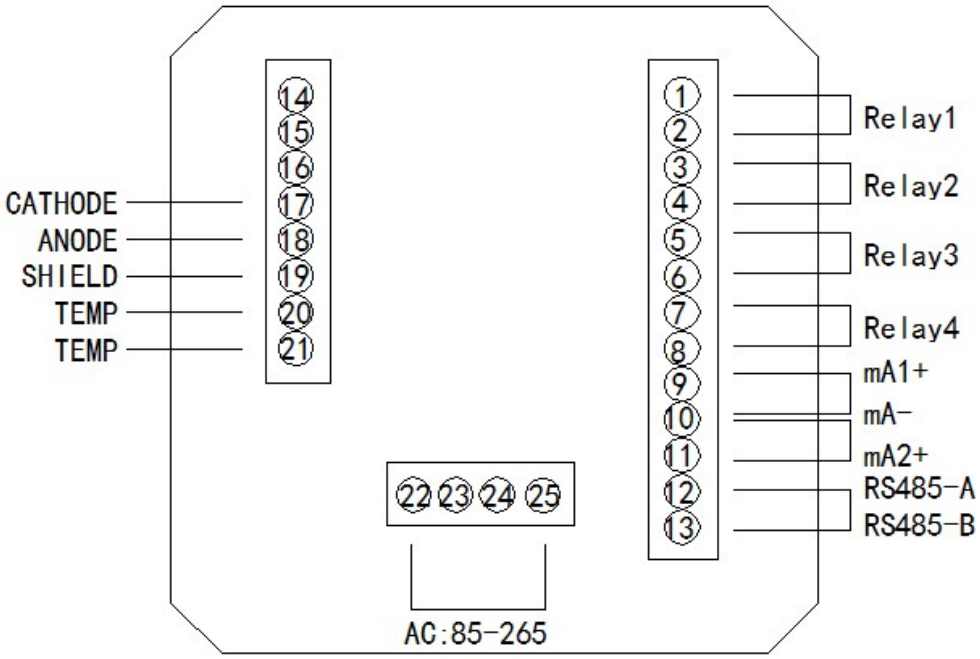
144 Series



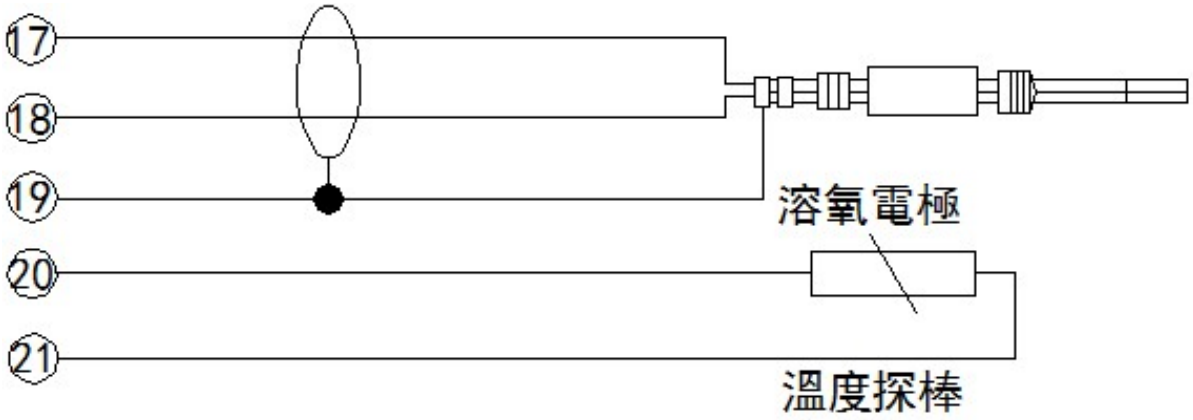
144 Series Electrode Wiring Diagram



96 Series



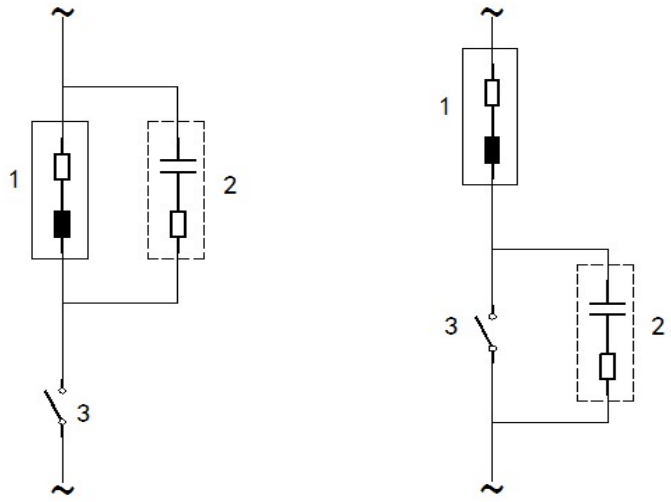
96 Series Electrode Wiring Diagram



Relay Contact Protection

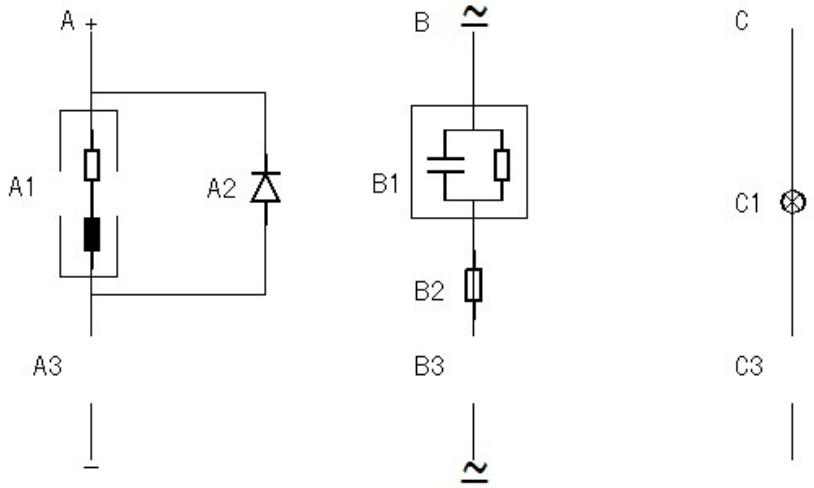
Relay contacts are affected by electrical sparks, which can impact their lifespan, especially with inductive and capacitive loads. In order to suppress sparks and electricity

Arc operation, an RC circuit should be used to extend the relay life



AC protection, used for inductive loads

1. Load
2. RC snubber for 220 VAC: R = 100 Ω, 1 W; C = 0.1 μF, 630 V.
3. Relay contacts



A. DC protection, A1: inductive load, A2: 1N4007, A3: relay contacts

B. AC/DC protection, B1: capacitive load, B2: 0.8 ohms / 1 watt (for DC 24V), B3: relay contacts

C. Resistive load, C1: light bulb, C3: relay contacts

Display Description



1. Date and Time
2. Main Display
3. Unit
4. Temperature and Unit
5. First Channel Current
6. Second Channel Current
7. Measurement Status and Error Indication, not displayed in Hold Mode
8. Countdown Timer: Cycle Time / Wash Time, Delay is displayed when Relay 3 has delay
9. Temperature Compensation: Automatic Temperature Compensation / Manual Temperature Compensation
10. Relay Status Indicator

Description: If the DO measurement exceeds the positive or negative range, it will display 0.0/999.9
If the ppm or mg/L measurement exceeds the positive or negative range, it will display 0.00/99.99
If the temperature exceeds the positive or negative range, it will display -99.9/999.9

Key Description



Button	Measurement status	Setting status	Calibration status	Recording status
MODE	Enter password screen	Exit	Exit	Exit
SHIFT	None	Move digital position	Move digital position	Move digital position
UP	Enter record	Increase number	Increase number	Increase number
DOWN	None	Decrease number	Decrease number	Decrease number
ENTER	Turn backlight on/off	Confirm	Confirm	Confirm

Hold Mode

Hold mode is a safety mode, mainly used for calibration mode, setting mode, record viewing mode, and relay cleaning Mode, in hold mode, the relay is open (not working), current according to setting (fixed current / last current), measurement Display value remains fixed

When entering the four modes mentioned above, it will enter hold mode

When leaving the four modes above and returning to measurement mode, it will take about 10 seconds to exit hold mode

After the instrument is powered on, it will enter hold mode, and it will take about 10 seconds to exit hold mode and enter measurement mode

Output current in hold mode: there are two modes to choose from: fixed current output and last current output

Fixed current: the user can set 4.00–20.00 mA as the hold mode output current

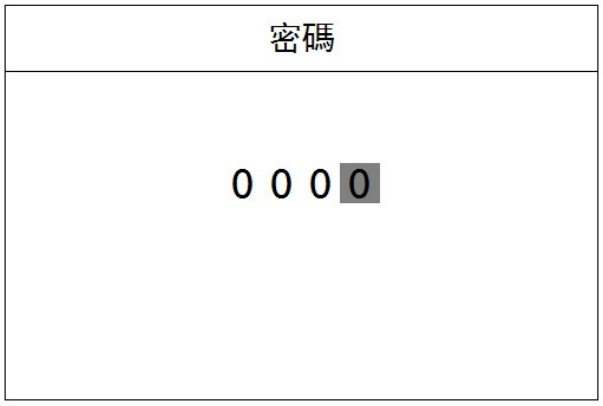
Last current: when entering hold mode, the current will stop at the last measured output current

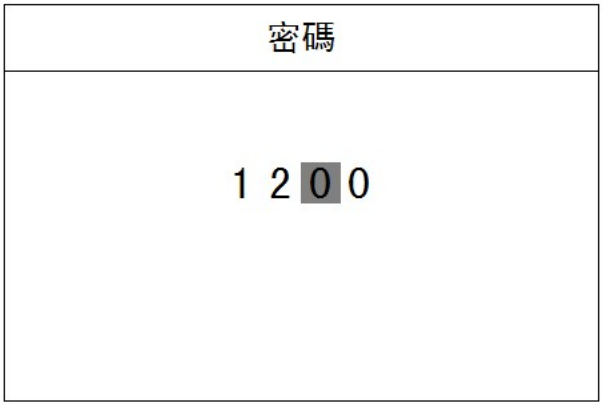
Relay in hold mode: All relays open (inactive).

Settings

Press the MODE key, use the UP/DOWN keys and the SHIFT key, enter the password 1200, then press the ENTER key to enter settings.

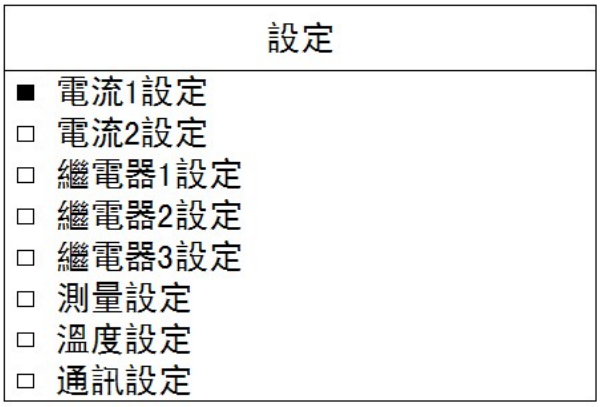
You can also press the MODE key to exit. If no key is pressed for more than 10 minutes, it will automatically return to measurement mode.

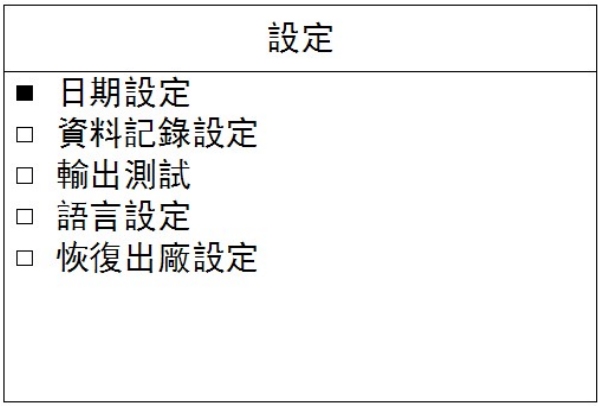




Main screen

Use the UP/DOWN keys to select a function, press the ENTER key to enter the function settings.





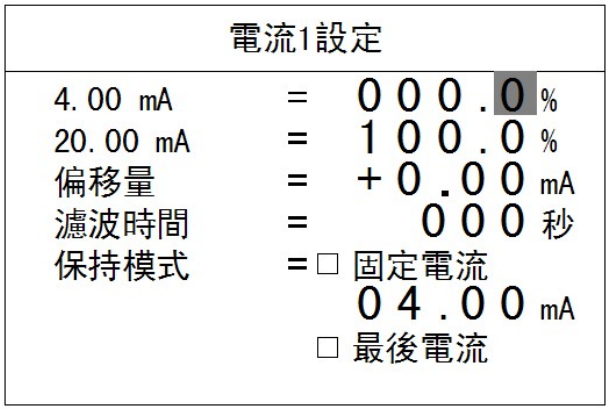
First page

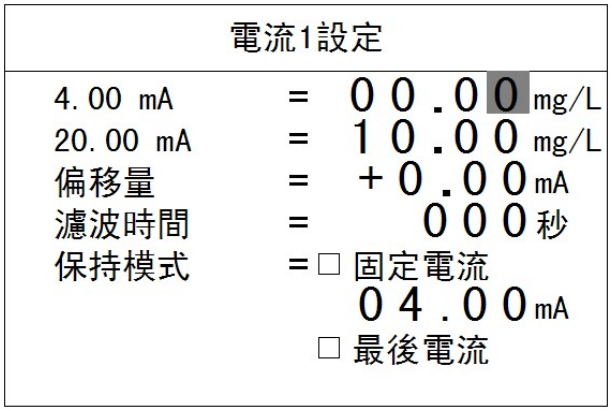
Second page

Instructions:

1. When setting, if the entered value is not within the specified range, the top of the display will show "Error"
2. After entering a value, the ENTER key must be pressed to save it
3. During settings, you can press the MODE key at any time to exit
4. In setting mode, if no button is pressed for more than 10 minutes, it will automatically return to measurement mode.

Current Output 1 Settings





1. Set the corresponding values in %, ppm, mg/L, ug/L, ppb for a 4.00mA output.

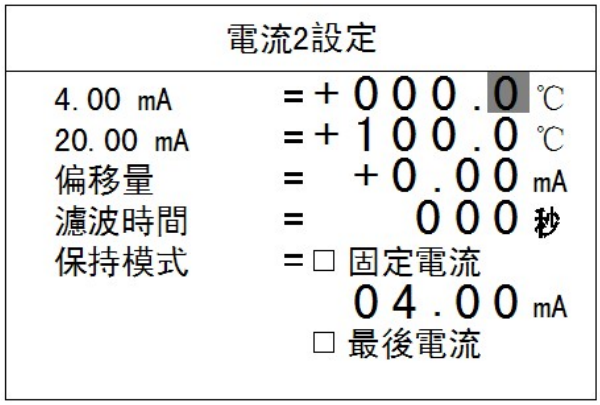
2. Set the corresponding values in %, ppm, mg/L, ug/L, ppb for a 20.00mA output, and the % value between 4.00mA and 20.00mA.
Minimum difference: 10.0% for %, 1.00 ppm/mg/L for ppm/mg/L, and 10.0 ugL for ug/L and ppb.

3. Set the current offset for %, ppm, mg/L, ug/L, ppb, in the range of ±1.00mA.

4. Set the current filter time from 0 to 120 seconds. When the current changes from one point to another, the software low-pass filter intervenes.
This makes the current output smoother. The larger the filter time, the slower the current changes.

5. Set the current hold mode. Use the UP/DOWN keys to select fixed current or the last current. If fixed current is selected, after pressing the ENTER key, you can input the fixed current.

Current Output 2 Settings



1. Set the temperature corresponding to 4.00mA output

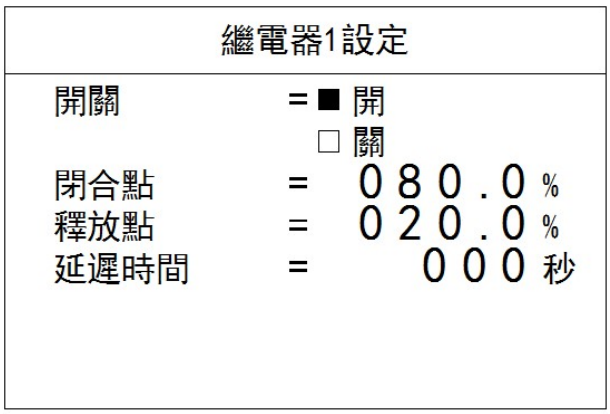
2. Set the temperature corresponding to 20.00mA output. The temperature value between 4.00mA and 20.00mA must have at least a 10.0 °C difference

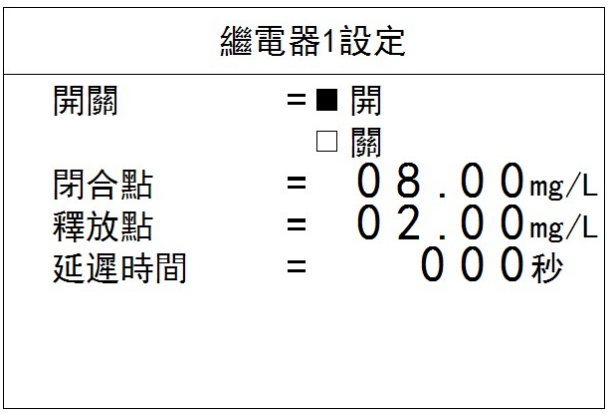
3. Set the current offset for temperature, range ±1.00mA

4. Set the current filtering time 0-120 seconds. When the current changes from one point to another, it goes through a software low-pass filter, making the current output smoother. The larger the filter time, the slower the current changes

5. Set the current hold mode. Use the UP/DOWN keys to select fixed current or the last current. If fixed current is selected, after pressing the ENTER key, you can input the fixed current.

Relay 1 Settings

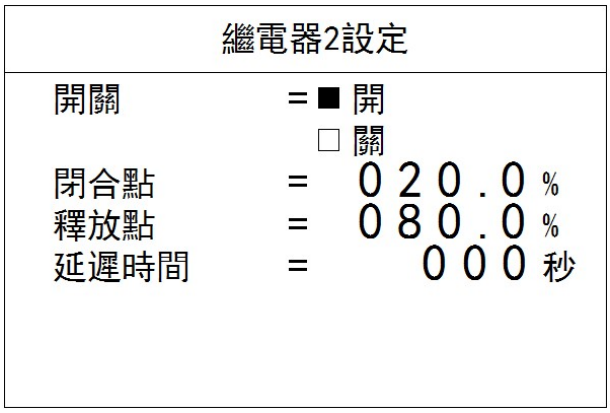


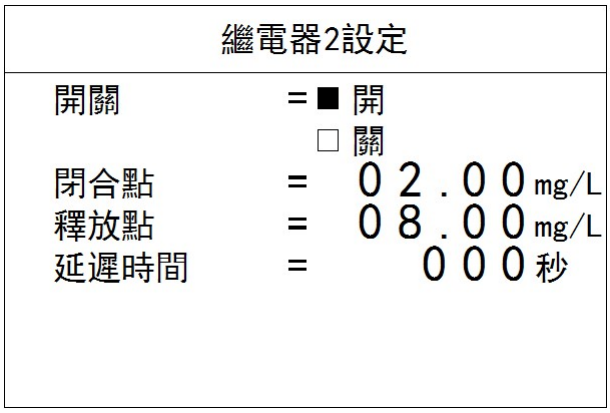


1. Switch: Press the UP/DOWN key to select ON or OFF. If it is OFF, the relay will not operate
2. Closing point: The relay closing point in %, ppm, mg/L, ug/L, ppb (activation)
3. Release point: The relay release point in %, ppm, mg/L, ug/L, ppb (deactivation)
4. Delay time: 0-120 seconds, after the relay reaches the closing value, there will be a delay before it activates

Note: If you want to dose at 80.0% and release at 20.0% (no dosing), set the closing point to 80.0, release point set to 20.0

Relay 2 Settings

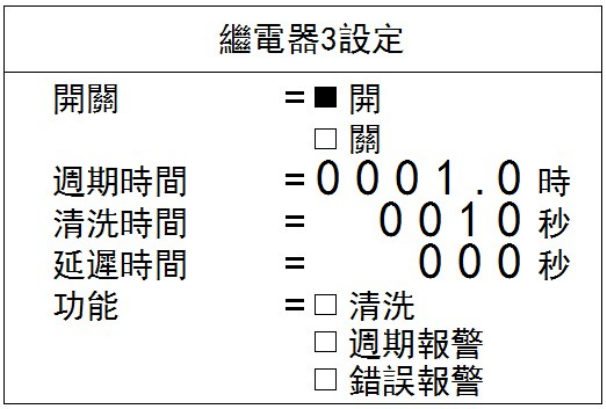




1. Switch: Press the UP/DOWN key to select ON or OFF. If it is OFF, the relay will not operate
2. Closing point: The relay closing point in %, ppm, mg/L, ug/L, ppb (activation)
3. Release point: The relay release point in %, ppm, mg/L, ug/L, ppb (deactivation)
4. Delay time: 0-120 seconds, after the relay reaches the closing value, there will be a delay before it activates

Note: If you want to dose at 20.0% and release at 80.0% (no dosing), set the closing point to 20.0, release point set to 80.0

Relay 3 Settings

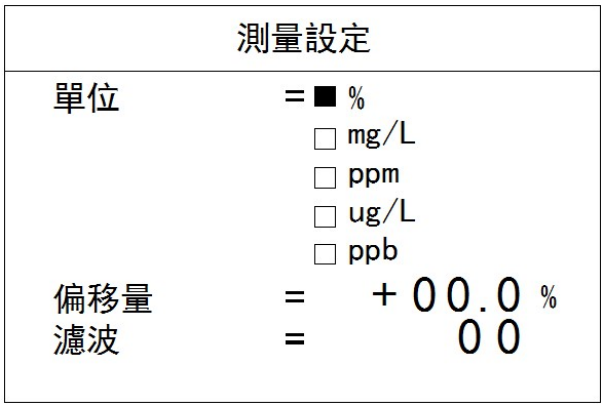


1. Switch: Press the UP/DOWN key to select ON or OFF, if OFF, the relay will not operate
2. Cycle time: Cleaning cycle or periodic alarm time
3. Cleaning Time: When the cleaning cycle arrives, start the cleaning time
4. Delay Time: When the relay reaches the closing value, it should act only after a delay
5. Function: Press the UP/DOWN keys to select cleaning, cycle report alarm, or error alarm.

Instructions:

1. Cleaning: When the cycle time is reached, the relay closes to start cleaning. When the cleaning time is over, it repeats and starts the cycle again.
2. Cycle alarm: When the cycle time is reached, the relay closes (alarm) until the user re-enters and selects the cycle alarm again. Then the relay will release and restart the timing.
3. Error alarm: During measurement, any error will cause the relay to close (alarm) until the error is resolved. Error alarm has no delay function

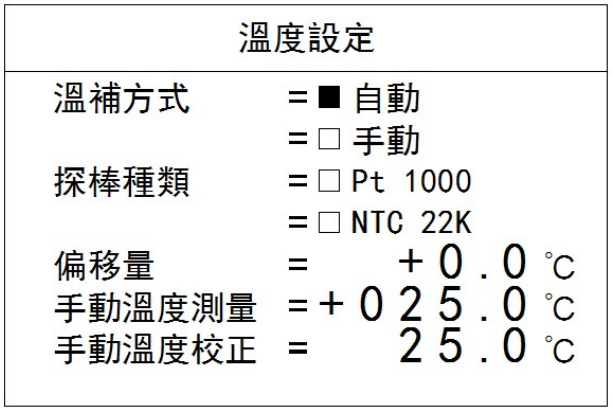
Measurement Settings

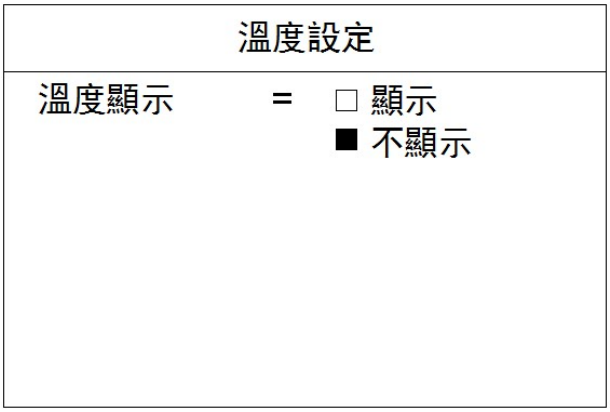


1. Measurement unit selection, press UP/DOWN keys to select, if the customer selects ug/L or ppb, the instrument will automatically shift range during measurement
2. Offset input, range ±10.0% or ±1.00mg/L or ±10.0ug/L
3. Filter setting: range 0-10

Explanation: When the reading is found to be unstable, try appropriately increasing the filter value, but this will also make the reading change more slowly

Temperature Settings



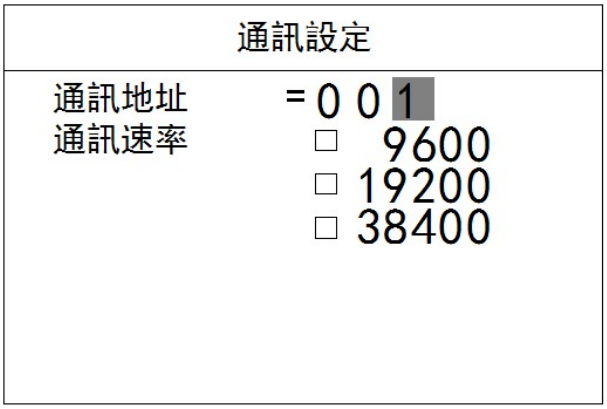


1. Automatic/manual temperature compensation selection, press UP/DOWN keys to select
2. Type of temperature probe, use UP/DOWN keys to select
3. Temperature offset, range ±5.00 °C (only used for auto)
4. Manual temperature measurement
5. Manual temperature calibration
6. Temperature display: whether temperature is displayed on the measurement screen

Instructions:

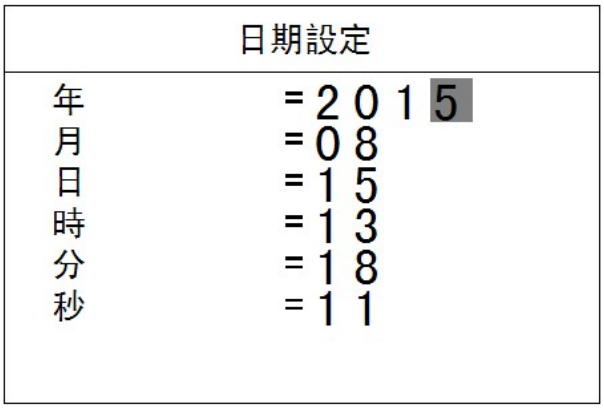
1. If Auto is selected without a temperature probe, the temperature output may be incorrect. With Auto, connect a temperature probe.
2. When selecting automatic temperature compensation, ensure that the connected temperature probe is consistent with the type of probe selected
3. Manual Temperature Measurement: When manual temperature compensation is selected, the measured temperature compensation uses this temperature value
4. Manual Temperature Calibration: When manual temperature compensation is selected, the calibrated temperature compensation uses this temperature value

Communication Settings



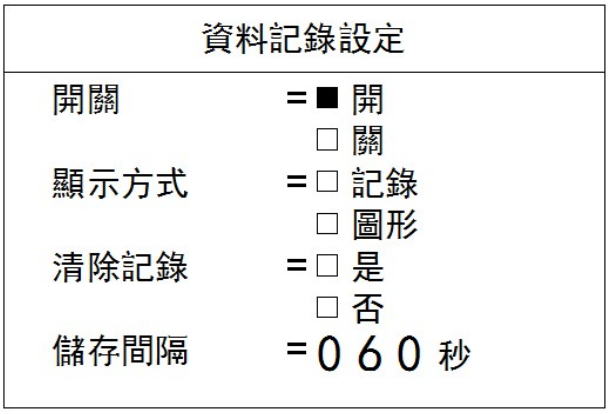
1. Communication Address Selection: 1-255
2. Communication Rate, use UP/DOWN keys to select

Date and Time Settings



Use UP/DOWN keys to set the date and time; after power is off, the time will be maintained for about two days

Data Logging Settings

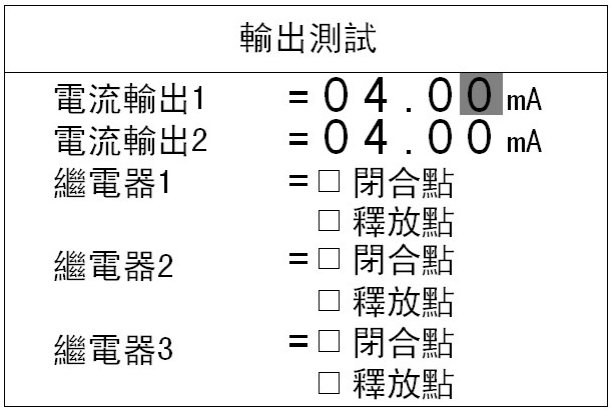


1. Record Data On/Off, select with UP/DOWN keys
2. Display Mode, select with UP/DOWN keys
3. Clear all records? Use UP/DOWN keys to select
4. Save interval 5-120 seconds

Instructions:

1. When data recording is turned on, in measurement mode data will be stored according to the save interval
2. Recording mode: choose record display (5 data entries per page) or graphic display (150 data entries per page)
3. When clearing records, wait about 10 seconds to clear all records

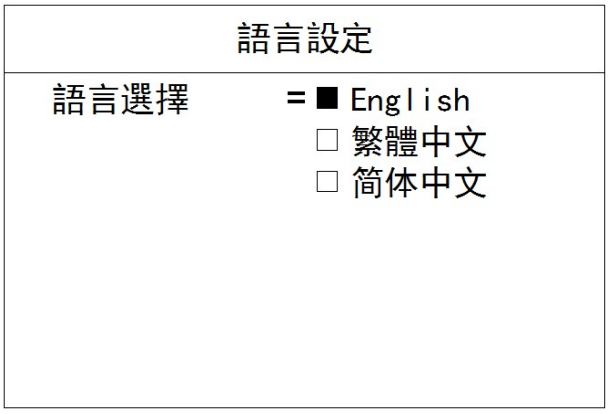
Output Test



1. Current 1 output test: 4.00-20.00mA
2. Current 2 output test: 4.00-20.00mA
3. Relay 1 test, use UP/DOWN keys to select
4. Relay 2 test, use UP/DOWN keys to select
5. Relay 3 test, use UP/DOWN keys to select

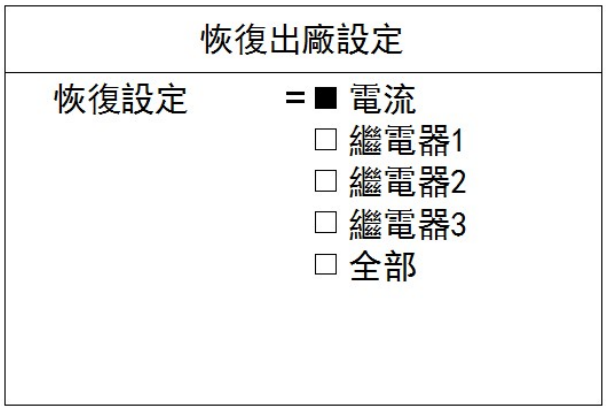
Description: This function is used to test whether the current output and relay operation are normal

Language Settings



Press the UP/DOWN keys to select English, Traditional Chinese, or Simplified Chinese display Display

Restore Factory Settings



Press the UP/DOWN keys to select to restore current only or relay Device or all

Note: The recovery here will not affect the calibration values of %/ppm/mgL/ppb

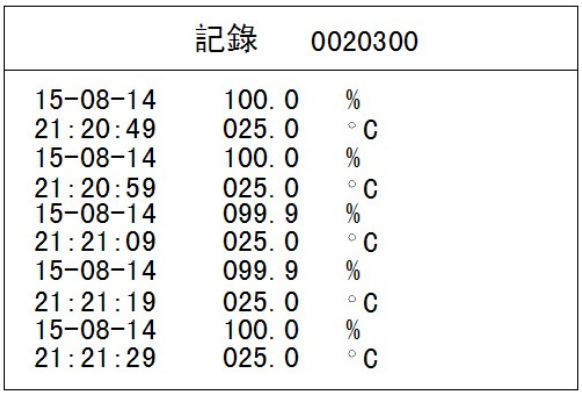
Record Search

On the measurement screen, press the UP key to enter record inquiry

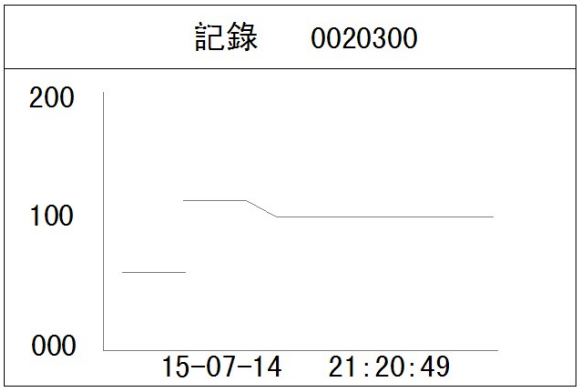


Press the UP/DOWN and SHIFT keys to enter the data number to be queried Code, press ENTER to enter, press MODE to exit

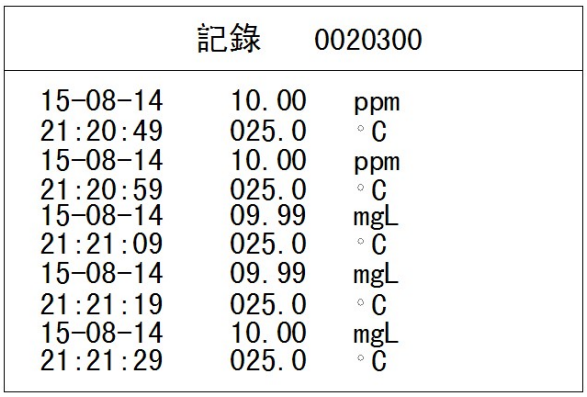
DO mode record display, 5 entries each time



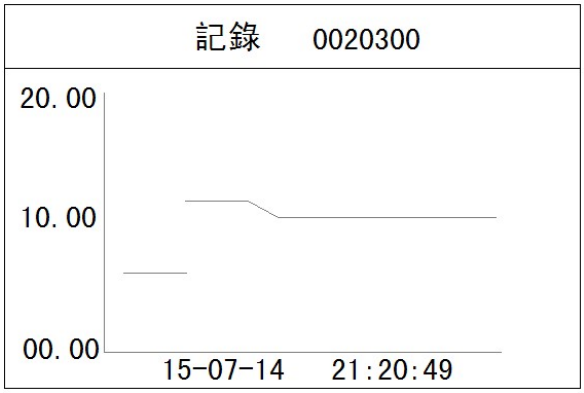
DO mode graphical display, 150 entries each time



ppm/mgL mode record display, 5 entries each time



ppm/mgL mode graphical display, 150 entries each time



Calibration

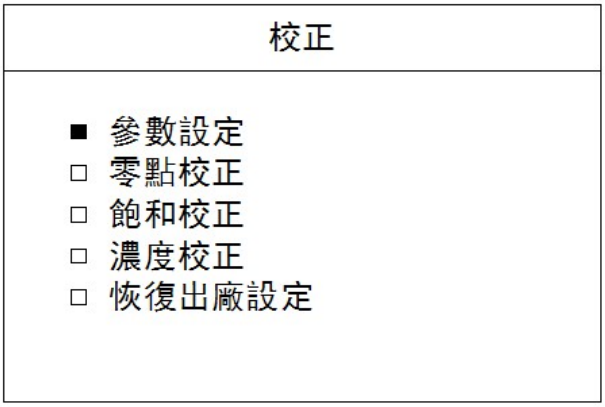
Press the MODE key, use the UP/DOWN keys and SHIFT key, enter the password 1100, then press the confirm key to enter, you can also exit by pressing the MODE key. If no key is pressed for more than 10 minutes, it will automatically return to measurement mode





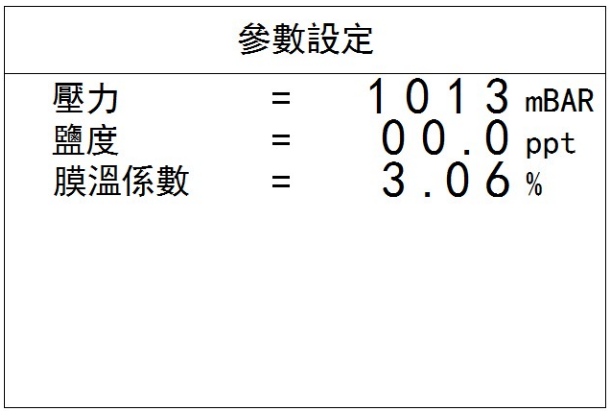
Main screen

Press the UP/DOWN keys to select a function, press the ENTER key to enter calibration



1. Parameter Setting: enter calibration-related parameters
2. Zero Calibration: calibrate the zero value
3. Saturation Calibration: calibrate 100% saturation
4. Concentration Calibration: Calibrate concentration in ppm/mgL
5. Restore Factory Settings: Restore calibration values to factory settings

Dissolved Oxygen Parameter Settings



1. Pressure Input Range: 500 to 9999 mBAR, e.g.
   For example: during fermentation, if calibrating under 1KG pressure, the pressure can be set to 2026 mBAR
2. Salinity Input Range: 0.0 to 50.0 ppt
3. Membrane Temperature Coefficient Input Range: 0.01 to 9.99%

Note: Membrane Temperature Coefficient: depends on the membrane temperature coefficient provided by electrodes produced by different manufacturers

Dissolved Oxygen Zero Point Calibration



1. Place the electrode into saturated anhydrous sodium sulfite or pure nitrogen

2. After the reading stabilizes, press the ENTER key to confirm, or press the MODE key to cancel the calibration

Instructions:

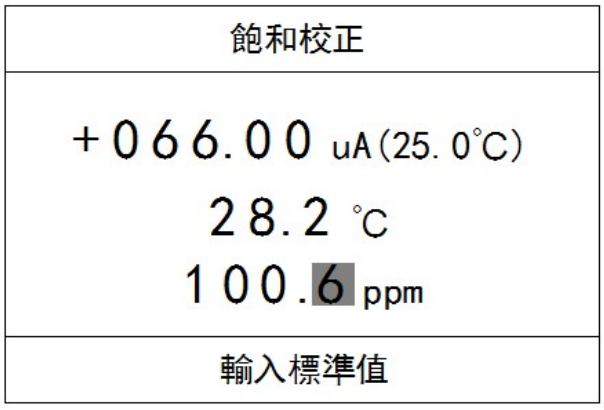
1. The range of zero-point current is -2nA to +10nA. If it exceeds this range, please check whether the electrode is malfunctioning.

2. The displayed current is the electrode current after temperature compensation back to 25 °C and 1013 mBAR

Dissolved oxygen saturation calibration



1. Place the electrode in a humidity-saturated calibration bottle or in humidity-saturated air.
2. When stable, press ENTER to continue to saturation input, or MODE to cancel calibration.



1. Enter the desired saturation value, range: 50.0% to 400.0%
2. Press the ENTER key to confirm, or press the MODE key to cancel

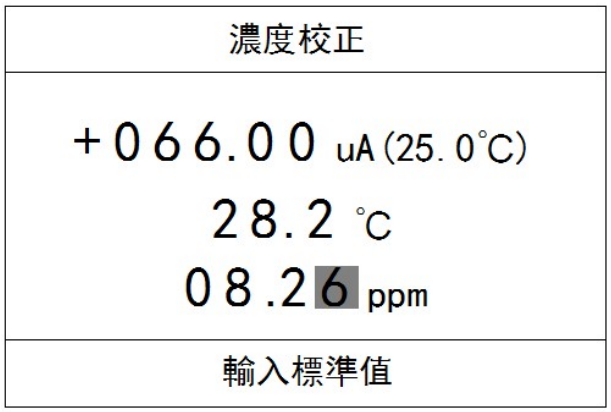
Instructions:

1. The range of the saturation current is +25nA to +400nA. If it exceeds this range, please check if the electrode is malfunctioning
2. The displayed current is the electrode current after temperature compensation to 25°C and 1013 mBAR

DO Concentration Calibration



1. Place the electrode in a humidity-saturated calibration bottle or in humidity-saturated air.
2. When stable, press ENTER to continue to saturation input, or MODE to cancel calibration.



1. Enter the ideal saturation value, range: 4.00 to 40.00 ppm
2. Press the ENTER key to confirm, or press the MODE key to cancel

Instructions:

1. The range of concentration calibration current is +25nA to +400nA. If it exceeds this range, please check if the electrode has a malfunction.
2. The displayed current is the electrode current compensated to 25 °C

Dissolved oxygen restores factory settings



This function will restore the calibration values to factory settings, including salinity, pressure, membrane temperature, etc.

Factory Default Values

DO 20.00mA corresponding value	100.0	%	Range: 10.0 - 400.0%
DO 4.00mA corresponding value	0.0	%	Range: 0.0 - 390.0%
			Difference between high and low at least 10.0%
ppm 20.00mA corresponding value	10.00	ppm	Range: 1.00-40.00ppm
ppm 4.00mA corresponding value	0.00	ppm	Range: 0.00-39.00ppm
			Difference between high and low at least 1.00ppm
ppb 20.00mA corresponding value	100.0	ppb	Range: 10.0-200.0 ppb
ppb 4.00mA corresponding value	0.0	ppb	Range: 0.0-190.0 ppb
			Difference between high and low at least 10.0 ppb
Temperature corresponding value at 20.00mA	100.0	℃	Range: 0.0 - 130 °C
Temperature corresponding value at 4.00mA	0.0	℃	Range: -10.0 - 120.0 °C
			Difference between high and low at least 10.0 °C
Current 1 output offset	0.00	mA	Range: +/- 1.00mA
Current 2 output offset	0.00	mA	Range: +/- 1.00mA
Current 1 Filter Time	0	Seconds	Range: 0-120 seconds
Current 2 Filter Time	0	Seconds	Range: 0-120 seconds
Current 1 Fixed Output Current	4.00	mA	Range: 4.00-20.00mA
Current 2 Fixed Output Current	4.00	mA	Range: 4.00-20.00mA
Current 1 Hold Mode	Last		Range: Fixed / Last
Current 2 Hold Mode	Last		Range: Fixed / Last
Relay 1 DO Closing Point	80.0	%	Range: 0.0-400.0%
Relay 1 DO Release Point	20.0	%	Range: 0.0-400.0%
			Minimum Difference Between the Two: 0.1%
Relay 1 ppm Closing Point	8.00	ppm	Range: 0.00-40.00ppm
Relay 1 ppm Release Point	2.00	ppm	Range: 0.00-40.00ppm
			Minimum Difference Between the Two: 0.01ppm
Relay 1 ppb Closing Point	80.0	ppb	Range: 0.0-200.0 ppb
Relay 1 release point ppb	20.0	ppb	Range: 0.0-200.0 ppb
			Minimum difference between the two 0.1 ppb
Relay 1 delay time	0	Seconds	Range: 0-120 seconds
Relay 2 DO closing point	20.0	%	Range: 0.0-400.0%
Relay 2 DO release point	80.0	%	Range: 0.0-400.0%
			Minimum Difference Between the Two: 0.1%
Relay 2 ppm closing point	2.00	ppm	Range: 0.00-40.00ppm
Relay 2 ppm release point	8.00	ppm	Range: 0.00-40.00ppm
			Minimum Difference Between the Two: 0.01ppm

Relay 2 ppb closing point	20.0	ppb	Range: 0.0-200.0 ppb
Relay 2 ppb release point	80.0	ppb	Range: 0.0-200.0 ppb
			Minimum difference between the two 0.1 ppb
Relay 2 delay time	0	Seconds	Range: 0-120 seconds
Relay 3 cycle time	1.0	Hour	Range: 0-1000.0 hours
Relay 3 cleaning time	10	Seconds	Range: 0-1000 seconds
Relay 3 delay time	0	Seconds	Range: 0-120 seconds
Relay 3 function	Error alarm		Range: Cleaning, Periodic Alarm, Error Alarm
Storage Interval	60	Seconds	Range: 5-120 seconds
Communication ID Address	1		Range: 1-255
Communication Transmission Rate	9600		Range: 9600, 19200, 38400
DO Offset	0.0	%	Range: +/- 10.0%
ppm Offset	0.00	ppm	Range: +/- 1.00ppm
ppb Offset	0.00	ppb	Range: +/- 10.0ppb
Measurement Unit	%		Range: %, ppm, mg/L, ug/L
Temperature Offset	0.0	℃	Range: +/- 5.0 °C
Manual Temperature Measurement	25.0	℃	Range: -10.0 - 130.0 °C
Manual Temperature Calibration	25.0	℃	Range: 0.0 - 60.0 °C
Display Language	Traditional Chinese		Options: English, Traditional Chinese, Simplified Chinese
Filtering	1		Range: 0-10
Temperature compensation	Automatic		Options: Automatic / Manual
Temperature Probe	NTC22K		Options: Pt1000, NTC22K
Record Display Mode	Record		Range: Record, Graph
Atmospheric Pressure	1013	mBAR	Range: 500 - 9999 mBAR
Salinity	0.0	ppt	Range: 0.0 - 50.0
Membrane Temperature Coefficient	0.0306		Range: 0.0001 to 3.0000
Polarization Voltage	-675	mV	Range: -675mV

Password

Press the MODE button

1100: User electrode calibration

1200: Function setting: If no button is pressed within 10 minutes, it will automatically exit. Any changes will be saved before exiting.

Error Codes

Error 01	Memory error
Error 02	Measured value is greater than the maximum value
Error 03	Measured value is less than the minimum value

Error 04	Temperature is greater than the maximum value
Error 05	Temperature is less than the minimum value
Error 06	Current output of channel 1 is higher than 20.5 mA, maximum current limit = 22.00 mA
Error 07	The output current of channel 1 is below 3.8 mA, minimum current limit = 3.5 mA
Error 08	The output current of channel 2 is above 20.5 mA, maximum current limit = 22.00 mA
Error 09	The output current of channel 2 is below 3.8 mA, minimum current limit = 3.5 mA
Error 10	Recorder malfunction
Error 11	ADC malfunction
Error 99	Factory data lost

RS485 Communication

The instrument uses standard Modbus-RTU protocol, all data are two-byte parameters ranging from (-32767 to 32767), 16 numeral system representation, the highest bit is the sign

Command format sent by the host computer:

	Instrument ID Address	Command	Start address	Data quantity	CRC16
Length	1 byte	1byte	2 byte	2 byte	2 byte
Example	0x01	0x03	0x0001	0x0001	0xD5CA

This is to read the first piece of data, please refer to the table below

Slave device response format:

	Instrument ID Address	Command	Number of data	Data content	CRC16
Length	1 byte	1 byte	1byte	N byte	2 byte
Example	0x01	0x03	0x02	0x02 0xBC	0xB895

When the machine replies 01, the function code cannot be recognized
When the machine replies 02, the address is incorrect
When the machine replies 03, the number of data is incorrect

Function 03: Read settings
Function 04: Read measurements

04: Definition

Address			
(00)	0x00	Measure %/ppm/ppb values	Reading: % X0.1, ppm X0.01, ppb X0.1
(01)	0x01	%/ppm/ppb current	Reading: X 0.01
(02)	0x02	Temperature value	Reading: X 0.1
(03)	0x03	Temperature current	Reading: X 0.01
(04)	0x04	Error Codes	Reading: X 1
(05)	0x05		
(06)	0x06		
(07)	0x07		
(08)	0x08		
(09)	0x09	Model	Reading: fixed 7

03: Definition

Address			
(00)	0x00	DO @ 20.00 mA (I1)	Reading: X 0.1
(01)	0x01	DO @ 4.00 mA (I1)	Reading: X 0.1
(02)	0x02	ppm @ 20.00 mA (I1)	Reading: X0.01
(03)	0x03	ppm @ 4.00 mA (I1)	Reading: X 0.01
(04)	0x04	ppb @ 20.00 mA (I1)	Reading: X0.1
(05)	0x05	ppb @ 4.00 mA (I1)	Reading: X 0.1
(06)	0x06	Temp @ 20.00 mA (I2)	Reading: X 0.1
(07)	0x07	Temp @ 4.00 mA (I2)	Reading: X 0.1
(08)	0x08	Current 1 Offset	Reading: X0.01
(09)	0x09	Current 2 Offset	Reading: X0.01
(10)	0x0A	Current 1 Filter Time	Reading: X1
(11)	0x0B	Current 2 Filter Time	Reading: X1
(12)	0x0C	Current 1 Fixed Current	Reading: X0.01
(13)	0x0D	Current 2 Fixed Current	Reading: X0.01
(14)	0x0E	Current 1 Hold Mode	Reading: X1 0= Fixed Current, 1= Last Current
(15)	0x0F	Current 2 Hold Mode	Reading: X1 0= Fixed Current, 1= Last Current
(16)	0x10	Relay 1 DO Closing Point	Reading: X0.1
(17)	0x11	Relay 1 DO Release Point	Reading: X0.1
(18)	0x12	Relay 1 ppm Closing Point	Reading: X0.01
(19)	0x13	Relay 1 ppm Release Point	Reading: X0.01
(20)	0x14	Relay 1 ppb Closing Point	Reading: X0.1
(21)	0x15	Relay 1 release point ppb	Reading: X0.1
(22)	0x16	Relay 1 delay time	Reading: X1
(23)	0x17	Relay 2 DO closing point	Reading: X0.1

(24)	0x18	Relay 2 DO release point	Reading: X0.1
(25)	0x19	Relay 2 ppm closing point	Reading: X0.01
(26)	0x1A	Relay 2 ppm Release Point	Reading: X0.01
(27)	0x1B	Relay 2 ppb Closing Point	Reading: X0.1
(28)	0x1C	Relay 2 ppb Release Point	Reading: X0.1
(29)	0x1D	Relay 2 Delay Time	Reading: X1
(30)	0x1E	Relay 3 Cycle Period	Reading: X0.1
(31)	0x1F	Relay 3 cleaning time	Reading: X1
(32)	0x20	Relay 3 delay time	Reading: X1
(33)	0x21	Relay 3 function	Read Value: X1 0= Clean, 1= Cycle Alarm, 2= Error alarm
(34)	0x22	Record Storage Interval	Reading: X1
(35)	0x23	Measurement Unit	Value: x1; 0=%, 1=ppm, 2=mgL, 3=ug/L
(36)	0x24	DO Offset	Reading: X0.1
(37)	0x25	ppm Offset	Reading: X0.01
(38)	0x26	ppb Offset	Reading: X0.1
(39)	0x27	Temperature Offset	Reading: X0.1
(40)	0x28	Manual Temperature Measurement	Reading: X0.1
(41)	0x29	Manual Temperature Calibration	Reading: X0.1
(42)	0x2A	Temperature Compensation Method	Reading: X1 0= Automatic, 1= Manual
(43)	0x2B	Probe Type	Reading: X1 0=Pt1000,1=NTC22K
(44)	0x2C	Language Selection	Reading: X1 0= English, 1= Traditional, 2= Simplified
(45)	0x2D	Filtering	Reading: X1
(46)	0x2E	Atmospheric Pressure	Reading: X1
(47)	0x2F	Salinity	Reading: X0.1
(48)	0x30	Membrane Temperature Coefficient	Read Value: X0.01 %