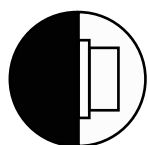
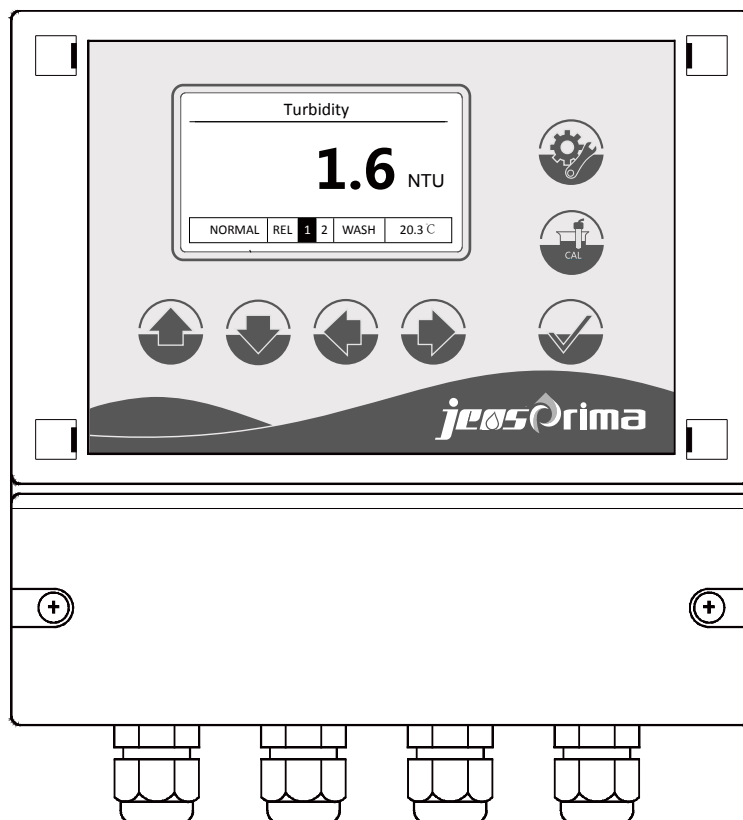


innoCon 6800T (High-range)
Online High-range Turbidity / Suspended Solids Analyzer
Operation Manual



WALL MOUNTING



JENSPRIMA INSTRUMENTS

Contents

- Safety 2
- Product Introduction 3
- Installation 5
 - Controller Installation 5
 - Sensor Installation 6
- Electrical connections 7
- Display 8
- Configuration Mode 9
 - General Setting 9
 - System Analysis 11
 - Output 12
 - Interface 13
 - Diagnosis 13
- Calibration Mode 14
- Maintenance & troubleshooting 15
 - Electrode Cleaning 15
 - Fuse Replacement 15
 - Troubleshooting 15
 - Communications Protocol 16

Safety



- ✓ This manual introduces all the risks that may arise during the use of this equipment, and provides safety instructions.
- ✓ Please strictly follow the safety instructions during operation. Any operation in violation of the rules may endanger the operator.
- ✓ Please read the entire manual carefully before using the instrument.
- ✓ Please make sure this manual is available for all users at any time.
- ✓ Please make sure this manual is delivered to the third party along with innoCon 6800.

Qualifications of operator

A basic knowledge of electrical engineering is required for the installation and commissioning of this instrument, which means its installation and commissioning must be carried out or supervised by personnel with relevant expertise.

Legal requirements

- ✓ During the installation and operation of this instrument, please strictly follow the governing laws and regulations on safety, procedures and environmental protection of corresponding regions and countries.
- ✓ During the installation and commissioning of this instrument, please strictly follow all the laws and regulations of corresponding regions and countries.

Sensor

Please use sensors manufactured by JENSPRIMA; Damages to the instruments caused by the use of sensors not manufactured by JENSPRIMA within the warranty period will not be covered by the warranty.

Modification and updating

Only technicians authorized by jensprima can modify and update the instrument. JENSPRIMA is exempt from any damage to the instrument arising from modification or updating by unauthorized personnel.

Signs



This sign is used to caution the operator against any possible danger.



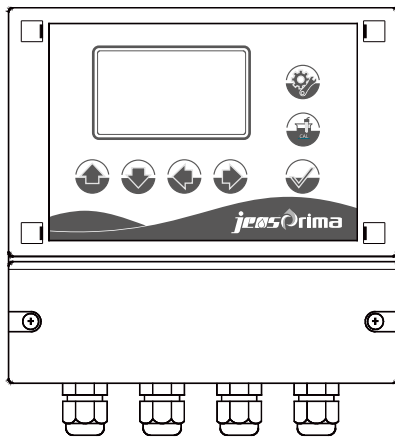
This sign is used to instruct the operator.

Product Introduction

General Information

InnoCon 6800S turbidity controller with innoSens 810T electrode can measure turbidity / suspended solids concentration, measurement range is 0-1000.0NTU, 0-2000.0mg / L, specifically designed for turbidity / SS monitoring of the water treatment industry. The controller housing conforms to the NEMA4X / IP65, which displays measurement readings and relay status.

Applications: Sewage treatment plants, water plants, rivers and lakes.



Supply

Turbidity /SS Analyzer

1. innoCon 6800T Controller
2. innoSens 810T Probe (0-1000.0NTU, 0-2000.0mg/L)

Operation Principle

The innoCon 6800T turbidity / SS analyzer is based on the 90 ° light scattering principle and is EN ISO 7027 compliant. When the light passes through the solution, a portion is absorbed and scattered, and the other part passes through the solution, so that the turbidity and the suspended solids in the water sample can be measured by measuring the intensity of the scattered light of the particles in the water. Equipped with innoSens 810T sensor ,it can measure the turbidity up to 1000NTU or suspended solids of 2000mg / L.

Features

- Innovative optical technology ensures reliable concentration measurements
- 90°light scattering technology
- Using ARM system, stable and reliable
- Lattice display, Chinese and English menu
- 2 routes of 4-20mA current/ RS485 output
- Stainless steel electrodes are rugged and reliable

Technical Data

Parameters for innoSens 810T Probe

Measuring Range	0~1000.0 NTU, 0~2000.0 mg/L
Measuring Principle	90° scattering light technology
Accuracy	±2%f.s.
Repeatability	98%
Resolution	0.1 NTU, 0.1 mg/L
Caliration	Calibration factor
React time (90%)	< 60 s
Working temperature	0~60°C
Working Pressure	0~4bar
Sensor Interface	RS485 Modubus
Cable	10m
Material	316 Stainless steel, special optical glass, PVC
Protection Grade	IP68
Connection	1"GAS
Dimension	Φ42x210mm

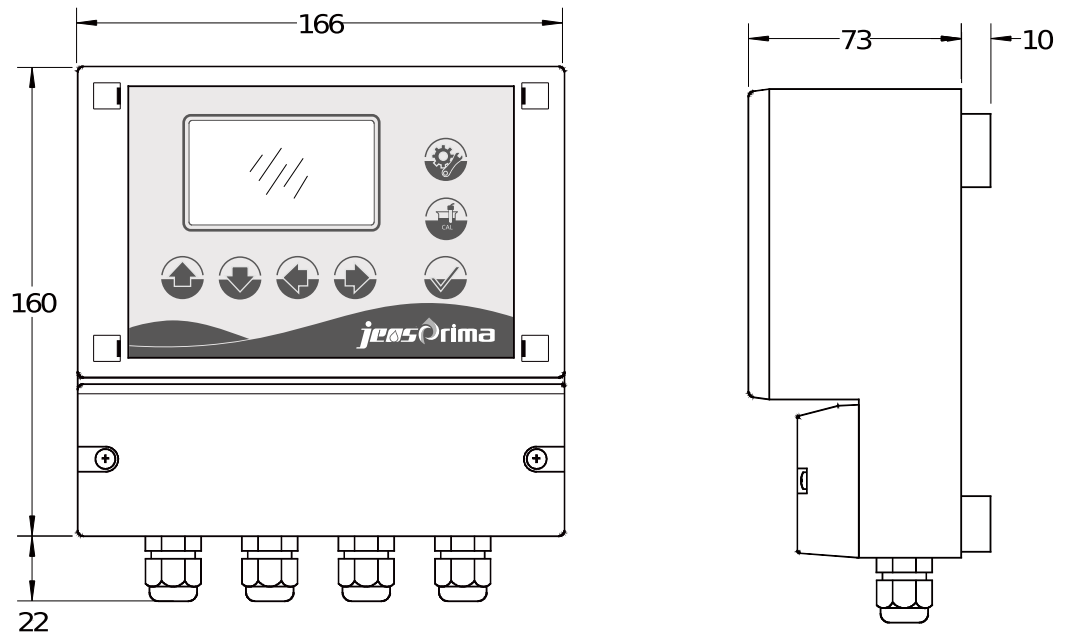
Parameters for innoCon 6800T Controller

Working Temperture	-10~60°C , 90% Relative humidity, no condensation
Protection Grade	NEMA4X/IP65
Power	90~260VAC, 50/60Hz
Display	Lattice display, Chinese and English menu
Analog Output	2 routes of 4-20mA output, can also set, max.600 Ω
Digital Output	RS485 Modbus RTU
Relay	2 sets of ON / OFF contacts, a set of wash contacts, independent set of High / Low alarm point, with hysteresis setting, 5A/250 VAC, 5A/30VDC
Dimension	160x166x75mm
Installation Method	Wall Mounting
Weight	1Kg

Installation

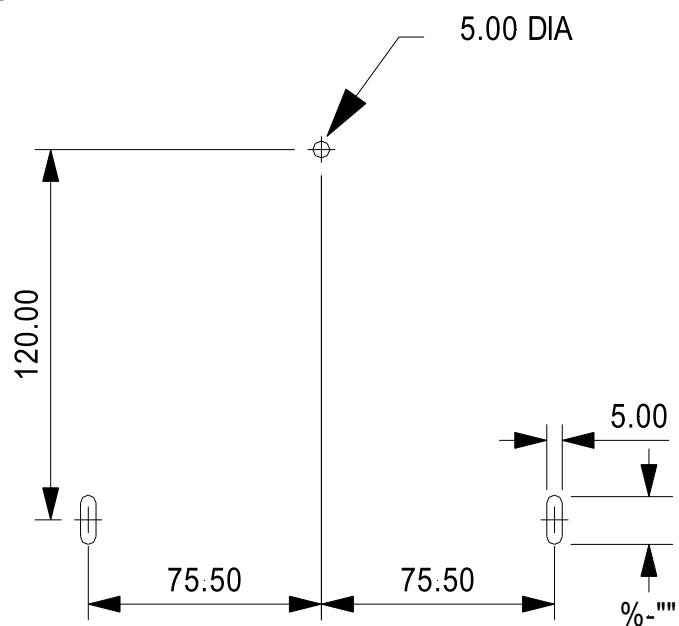
Please install the instrument in an environment with no corrosive liquid. Install the sensor in the proper position of the process to ensure a representative measurement result and easy to maintain.

Size



Installation of Controller

The housing of innoCon 6800 is designed for wall-mounted installation and the location of the mounting holes is shown as below.

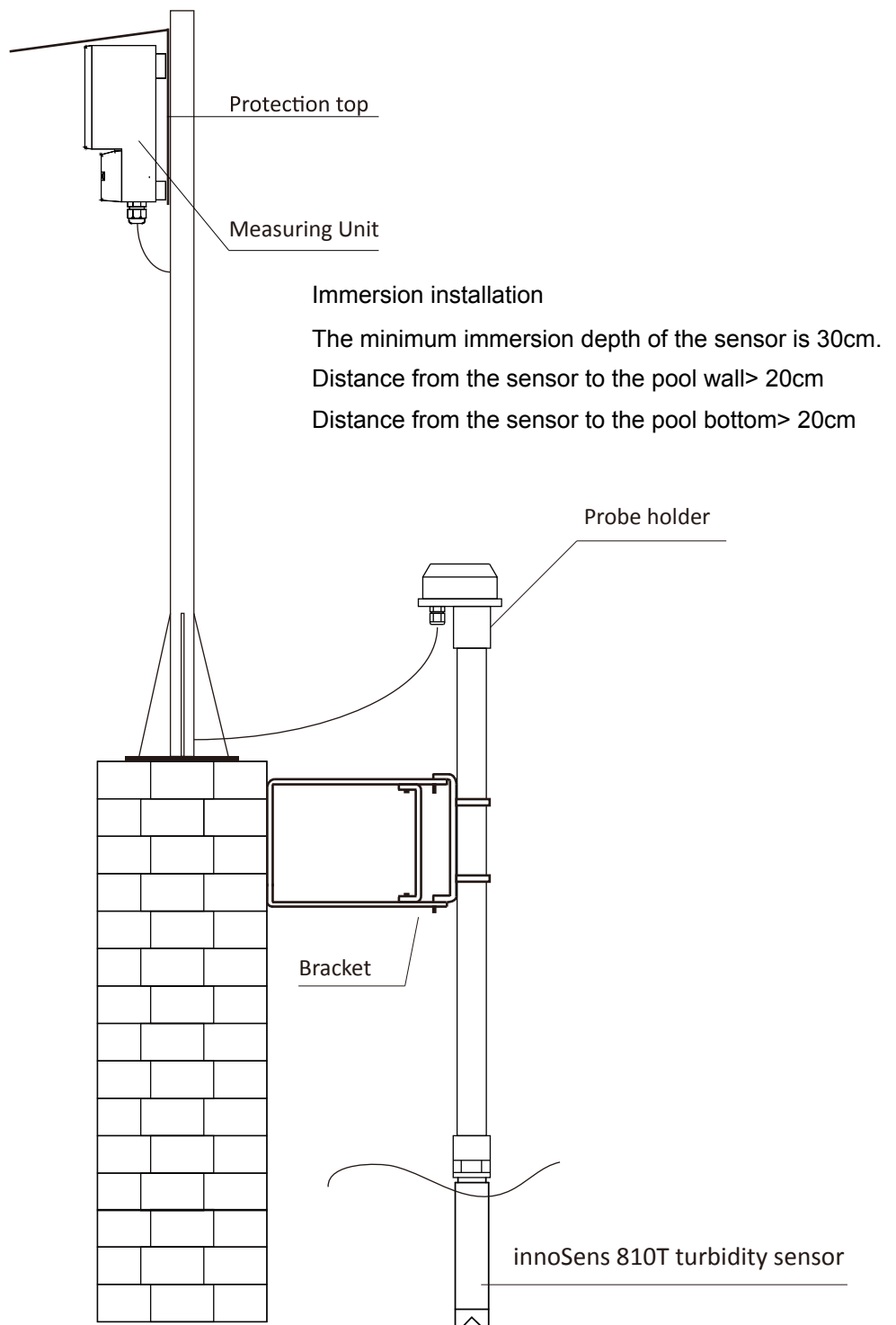


Hole position of field mounting for innoCon 6800

Installation of Sensor

When selecting a sensor mounting position, please follow the criteria as follows:

- The sensor should be installed in the appropriate location of the process to ensure that the representative measurement results.
- It is recommended that the sensor should be installed in the position easy to maintain, convenient for periodic cleaning and maintenance.
- Do not install the sensor in the location where bubbles are gathering to avoid interfering signals. In some application where it is difficult to avoid bubbles (such as aeration tank), adjust the sensor groove consistent with flow direction, or install the sensor horizontally (L-type installation).



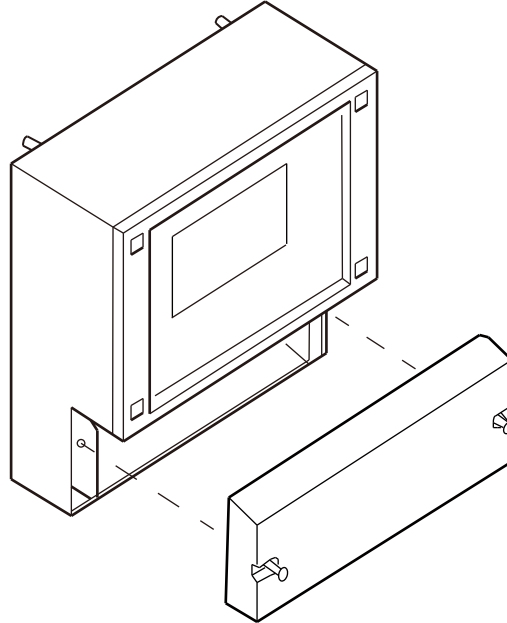
Electrical Connections



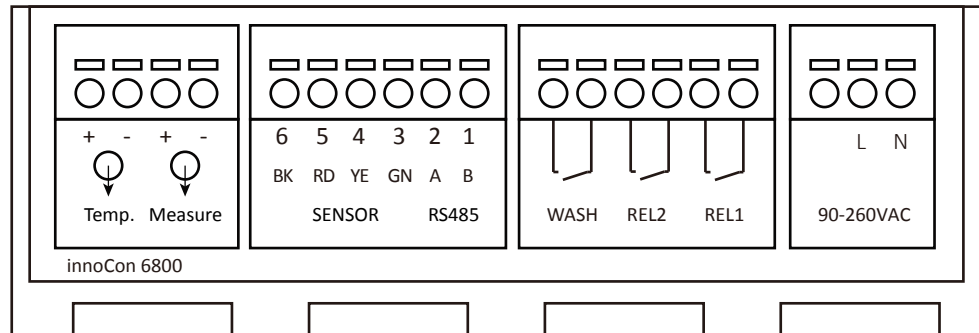
Danger:
Electrical connections must be carried out by technicians with special training.

Notes:
Power supply must be cut off prior to any connection, otherwise the instrument and the sensor are likely to be damaged.

The connectors of the controller are located behind the instrument cover, and only Technicians with special training can open the cover to perform connections for power supply, relay and signal output.



Terminals



Descriptions of Terminals:

Power out 90-260VAC

L -- Power supply of live wire

N-- Power supply of neutral wire

Sensor connections

BK -- Black wire (Black)

RD -- Red wire (Red)

YE -- Yellow wire (Yellow)

GN -- Green wire (Green)

RS485 output (ModbusRTUProtocol)

A --RS485 A

B --RS485 B

Relay output

REL1 -- Relay 1

REL2 -- Relay 2

WASH -- Wash relay

Current Output

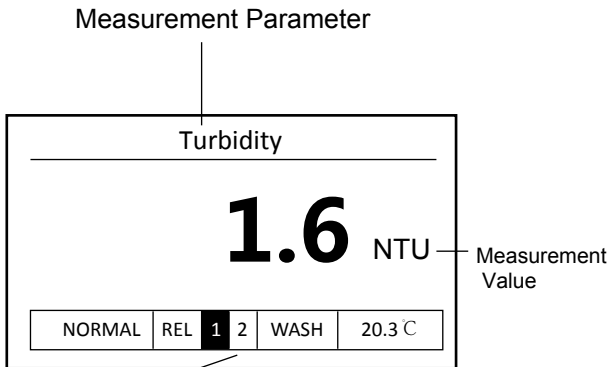
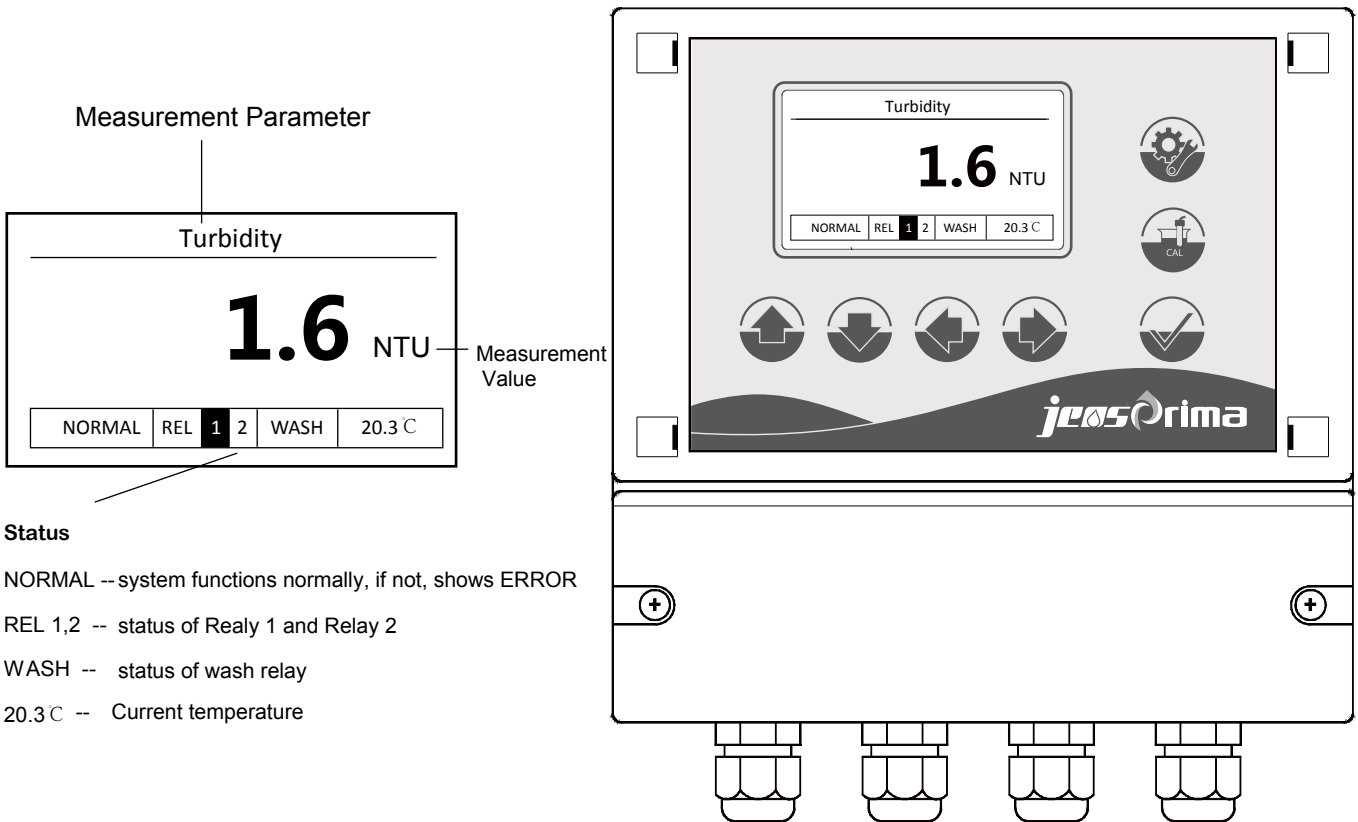
Temp. -- Blank

Measure -- Current output of sludge concentration

Note the difference between the output +/- terminals

Display

Front view of the controller



Status

NORMAL -- system functions normally, if not, shows ERROR

REL 1,2 -- status of Realy 1 and Relay 2

WASH -- status of wash relay

20.3 C -- Current temperature

Functions of buttons:

	Menu key Back key	In measurement mode, press and hold this button for 3 seconds to enter the configuration menu. Return to previous menu.
	Calibration key	In the measurement interface, press and hold the key for 3 seconds to enter the calibration menu
	Enter key	Accept the figure input or menu chosen. In measurement mode, press this button to turn on or off the backlight of the display.
	Arrows key	


Entry into the setup mode is protected by password. The default password is 0022



Whenever you press , the control panel will exit the calibration mode or return to the previous menu. You can return to the measurement mode by pressing this button.

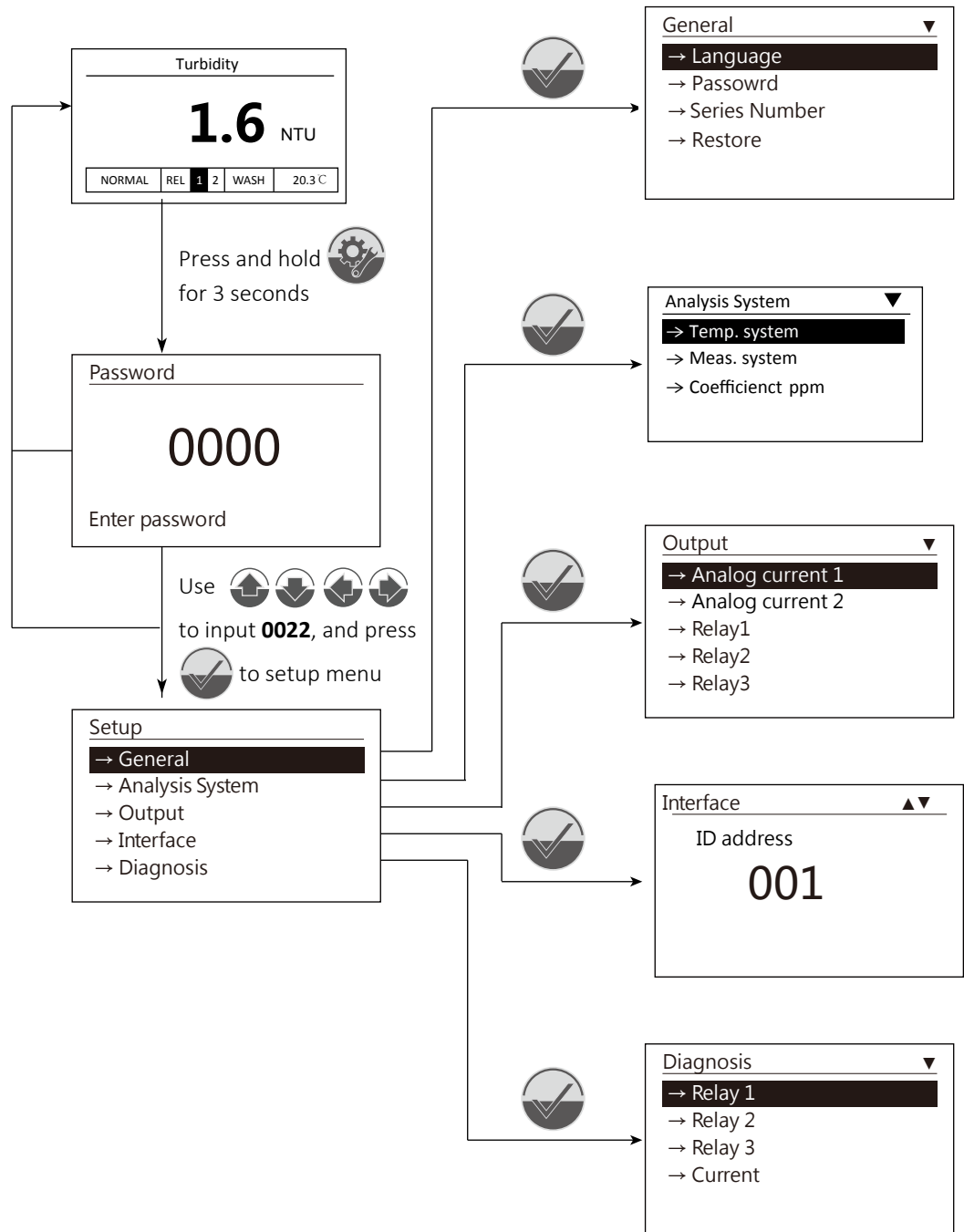
Configuration Mode


Enter configuration mode

In measurement mode, press and hold  (menu button) for 3 seconds to enter the password interface, and input the correct password to enter the configuration menu. The code is **0022**.



Make sure that the sensor is connected so that you can enter the setup menu for parameter setting

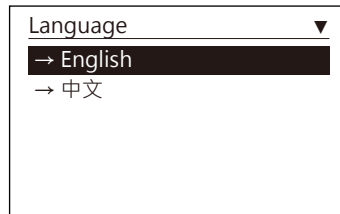


Entry into the setup mode is protected by password. The default password is **0022**. Whenever you press , the control panel will exit the calibration mode or return to the previous menu. You can return to the measurement mode by pressing this button.

General Setting

Language

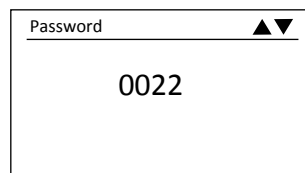
1. Enter the configuration menu, select "General", and press "Enter".
2. Select "Language", press "Enter" and you will get a list of available languages.



3. Select a language, press "Enter", and then all the menus will be in this language.

Password

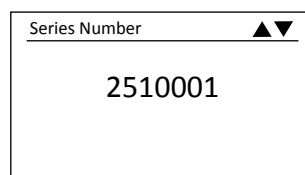
1. Enter the configuration menu, select "General", and press "Enter"
2. Select "Password", press "Enter" and you will get a list of available languages.



3. The screen displays the current password, use the up and down left and right keys to enter the password you want, the input range is 0000~9999, then press "Enter".

Serial Number

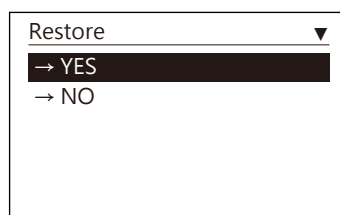
1. Enter the configuration menu, select "General", and press "Enter".
2. Select "Series Number", press "Enter" and you will see the series number of this instrument.



3. Press "Menu" to return to previous menu.

Restore

1. Enter the configuration menu, select "General" and press "Enter".
2. Select "Restore" and press "Enter".



3. Press upward and downward arrows to select YES or NO, and press "Enter".

Analysis System

Temp. System

1. Enter the configuration menu, select “Analysis System” and press “Enter”.
2. Select “Temp. System”, and press “Enter”.

Temp. system	▲▼
Temp. unit : °C	
Temp. offset : +00.0	

Temperature unit, optional: °C, °F

Temperature offset, selectable range: -10.0-10.0 °C, 14.0-50.0 °F

3. Press “Enter” and return to previous menu.

Measurement System

1. Enter the configuration menu, select “Analysis System” and press “Enter”.
2. Select “Measurement system “ and press “Enter “.

Meas.System	▲▼
Meas. unit: NTU	
Meas.offset: + 0.00	

Measurement unit is NTU, mg/L, ppm

Setting range: -9.99-9.99NTU, mg/L

3. After completion of setting, press “Enter” to save the settings, and then return to previous menu.

Coefficient



Notes:

By modifying the coefficient value, you can set the coefficient between the suspended matter and the turbidity. This value can be obtained by laboratory methods.

1. Enter the configuration menu, select “Analysis System”, and press “Enter”.
2. Select “Coefficient” and press “Enter”.

Coefficient	▲▼
<u>1.00</u>	

Setting range: 0.01-2.99

3. Use the up and down keys to select the ppm factor (0.01-2.99), press “OK” to save and return to the previous menu.

Output



Suggestion:

It is recommended to set 4.00mA as 0 and 20.00mA as max value.

Analog current 1 (for Turbidity/ SS current output)

1. Enter the configuration menu, select “Output”, and press “Enter”.
2. Select “Analog curent1” and press “Enter”.

Analog current 2 ▲▼		
4.00mA =	0.0 NTU	Optional ranges: 0-3900.0 NTU, 0-1900.0 mg/L
20.00mA=	100.0 NTU	Optional ranges: 100.0-4000.00 NTU, 0-2000.0 mg/L

3. After completion of setting, press “Enter” to save the settings, and then return to previous menu.

Analog current 2(for Temperature current output)

1. Enter the configuration menu, select “Output”, and press “Enter”.
2. Select “Analog curent2” and press “Enter”.

Analog current 2 ▲▼		
4.00mA =	0.0 °C	Optional ranges:
20.00mA=	60.0 °C	Optional ranges:

3. After completion of setting, press “Enter” to save the settings, and then return to previous menu.

Relay 1

1. Enter the configuration menu, select “Output”, and press “Enter”.
2. Select “Relay1” and press “Enter”.

Relay1 ▲▼		
Switch	ON	Options : ON/OFF
Action	Hi	Options : HI/LO
Set Point	80.0 NTU	Optional ranges : 0-3900.0 NTU, 0-2000.0 mg/L
Hysteresis	1.0 NTU	Optional ranges : 0-9.9 NTU, 0-30.0 mg/L

3. After completion of setting, press “Enter” to save the settings, and then return to previous menu.

Relay 2

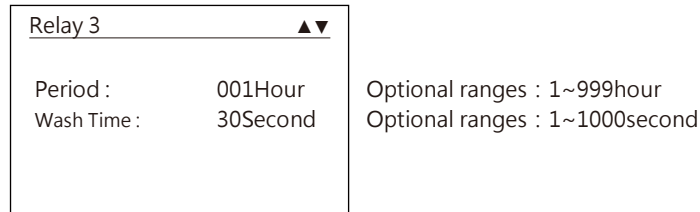
1. Enter the configuration menu, select “Output”, and press “Enter”.
2. Select “Relay2” and press “Enter”.

Relay 2 ▲▼		
ON/OFF :	ON	Options : ON/OFF
Action :	LO	Options : HI/LO
Set point :	20.0 NTU	Optional ranges : 0-3900.0NTU, 0-2000.0 mg/L
Hysteresis:	1.0 NTU	Optional ranges : 0~9.9NTU, 0-30.0 mg/L

3. After completion of setting, press “Enter” to save the settings, and then return to previous menu.

Relay 3 (washing relay)

1. Enter the configuration menu, select "Output", and press "Enter".
2. Select "Relay3" and press "Enter".



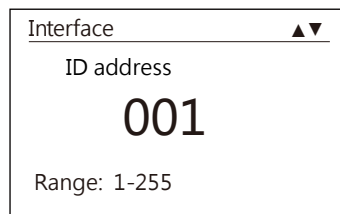
3. After completion of setting, press "Enter" to save the settings, and then return to previous menu.

Interface



RS485 Modbus

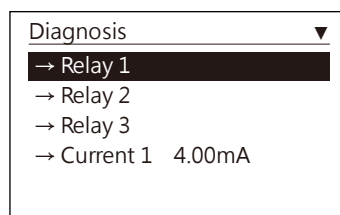
1. Enter the configuration menu, select "Interface", and press "Enter".



2. Input the ID address (1~25), press "Enter" to save the settings, and then return to previous menu.

Diagnosis

1. Enter the configuration menu, select "Diagnosis", and press "Enter".



- Press "Enter" to test whether Relay1 is closed or open.
- Press "Enter" to test whether Relay2 is closed or open.
- Press "Enter" to test whether Relay3 is closed or open.
- Press "Enter" to output 4mA and 20mA compulsorily.

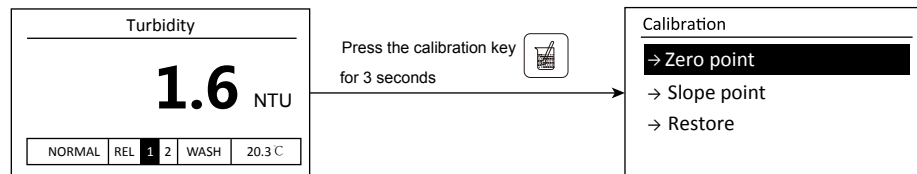
2. Press "Configuration key" to return to previous menu.

Calibration Mode

The 810T sensor has been calibrated at the factory. Innovative digital optics technology ensures the reliability of the measurement stability, generally calibration is unnecessary. The customer can modify the measured value of set or single point calibration (calibration factor calibration) according to the field requirements. We recommend users to regularly clean the sensor according to the field conditions to ensure long-term accuracy and repeatability.

Enter calibration menu

In the measurement interface, long press the calibration key for 3 seconds to enter the calibration menu.



Zero Calibration

1. Clean the sensor to remove surface dirt.
2. Place the sensor in a container with zero turbidity. Use a dark-colored container (black) and avoid direct sunlight.
3. After the instrument works for a period of time, when the reading value is stable, press OK to perform the zero point calibration.

Slope calibration

1. Clean the sensor, wipe it dry and put it into a turbidity standard solution with known turbidity concentration value (such as 1000NTU). Use a dark-colored container (black) to avoid direct sunlight.
2. After the instrument works for a period of time, when the reading value is stable, press OK to perform the slope calibration.

Restore factory calibration

To restore the instrument to the factory reset calibration. It is recommended to perform the factory reset calibration before each calibration.

Maintenance & Troubleshooting

Users need to regularly clean the sensor according to the specific application, so as not to pollute the optical window.

Clean sensor

Clean the surface of the sensor with water. Please wipe off any remaining stain with a damp cloth.

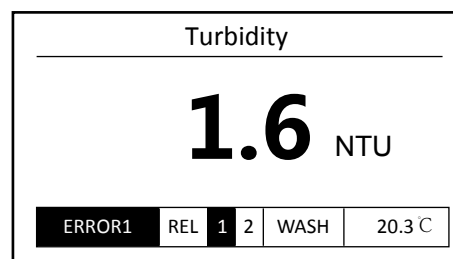
Change a fuse

If the instrument malfunctions, it is possible that a fuse has melted. The solution is to change the fuse by a trained technician.

1. Cut off the power supply of the controller.
2. Loosen the four screws on the cover of the controller, and replace the melted fuse with a new one of the same type and specifications (250V 1A).

Troubleshooting

When the sensor is malfunctioning, the instrument will alarm the user with ERROR displayed on the screen and flashing lights and also all the relays and current output connections linked to the sensor will be suspended.



Causes for malfunctions may include:

- Malfunctions of the sensor
- Improper connections of the sensor, which requires a check of the connectors

The instrument shows the maximum value or the value does not change.

The solution is to check the sensor glass window for dirt and clean the surface of the sensor.

When the user forgets the password

The default password of the instrument is 0022. If the user forgets the new password, please call our technical support department for supervisor password.

Communications Protocol (RS485)

The instrument is compliant with standard Modbus-RTU, with a fixed serial communication rate of 9600. All double-byte parameters fall into (-32767 ~ 32767), represented by hexadecimal numbers, with the highest order digit indicating the sign.

The host computer sends orders in the following format:

	Instrument ID address	Order	Starting point of data	Quantity of data	CRC16
Length	1 byte	1 byte	2 byte	2 byte	2 byte
Example	0x01	0x03	0x0001	0x0001	0xD5CA

This is the first data being accessed. Please refer to the following table.

The client computer responds in the following format:

	Instrument ID address	Order	Starting point of data	Quantity of data	CRC16
Length	1 byte	1 byte	1 byte	N byte	2 byte
Example	0x01	0x03	0x02	0x00 0x64	0xB9AF

0x0064 = 100, so the measurement is 100%.

After accessing the data, please refer to the following table to decide whether the measurement value should be divided by 100 or 10 or not.

Response in the event of erroneous data:

- 01: non-operational function codes: response of client computer: ID + (01H | 80H) + erroneous code +CRC
- 02: illegal data address: response of client computer: ID + (02H | 80H) +erroneous code +CRC
- 03: illegal length operation: response of client computer: ID + (03H | 80H) + erroneous code +CRC

Data addresses:

Address	Content	Range	Factory setting	Data processing
0000	Status	0000 0000 0000 1000	0008H	
0001	NTU/ppm/ g/L measurement	0 - 200 / 0.00 - 20.00		Data*0.01
0002	NTU/ppm/ g/L output current	4.00 - 20.00mA		Data * 0.01
0003	Measurement unit signal MLSS doesn't have this function	0, 1, 2		0 = ppm 1 = mg/L 2 = NTU

00H: definition of status

B0:	0-NTU mode	1-g/L mode
B1:	-----	
B2:	0-RELY1 release	1-RELAY1 closed
B3:	0-RELAY1 low-capacity activation	1-RELAY1 high-capacity activation
B4:	0-RELAY2 release	1-RELAY2 closed
B5:	0-RELY2 low-capacity activation	1-RELAY2 high-capacity activation
B6:	0-Relay3 release	1-RELAY3 closed
B7:	-----	
B8:	0-RELAY1 on	1-RELAY1 off
B9:	0-RELAY2 on	1-RELAY2 off
B10:	0-RELAY3 on	1-RELAY3 off

A total of 3 parts in this manual

Jensprima Instruments (Shanghai) Co., Ltd

Web: www.jensprima.com

Email: info@jensprima.com

© 2013 JENSPRIMA INSTRUMENTS, all rights reserved

Information in this operation manual is subject to change without notification.