

Turbidimeter Sensor

Model: TB-485
Operation Manual

V1.02



JNC technology
銘祥科技實業股份有限公司

Catalogue

PART 1. PRODUCT DESCRIPTION 1

1-1 SPECIFICATION 1

1-2 INSTALL SCENE 1

1-3 DIMENSIONS UNIT :MM 2

PART 2. WIRING METHOD 2

PART 3. MODBUS TABLE 3

PART 4. MODBUS BYTE FORMAT DESCRIPTION 4

4.1 INT16 READS INSTANT VALUE (FUNCTION03) 4

4.2 FLOAT READS INSTANT VALUE (FUNCTION03) 5

PART 5. MODBUS EXAMPLE DESCRIPTION 6

5.1 STATION NUMBER MODIFICATION METHOD 6

5.2 RS485 TRANSMISSION RATE MODIFICATION METHOD 6

5.3 READ TEMPERATURE VALUE 6

5.4 READ TURBIDITY VALUE 7

5.5 TEMPERATURE CALIBRATION 7

5.6 TURBIDITY ZERO POINT CALIBRATION 7

5.7 TURBIDITY SLOPE CALIBRATION 7

PART 6. CLEARING OF FAULT 8

Part 1. Product description

1-1 SPECIFICATION

Measuring range	0-1000 NTU
Resolution	0.1 NTU
Accuracy	±5% of F.S
Temperature range	0~50 °C automatic temperature compensation
Power	12~24VDC
Power consumption	0.3 W
Weathering grade	IP68
Line length	10M
Output signal	RS-485 Modbus RTU
Dimension	Ø30*L180mm
Housing material	POM 、ABS

※The default RS485 transmission rate is 9600 bps, and the default station number is 64

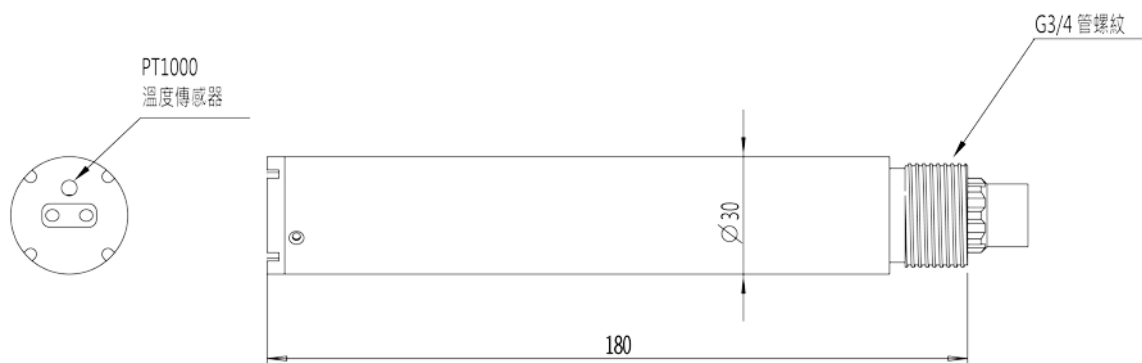
※When the value is inaccurate, use the laboratory value to correct it. (Please refer to P.7 calibration method)

※When installing, keep more than 10 cm from the bottom and more than 5cm from the side wall.

1-2 INSTALL SCENE



1-3 DIMENSIONS UNIT:mm



Part 2. Wiring method

Line Color	Function	Line Color	Function
Red	DC 12~24V	Black	GND
Blue	RS485 : D+(A)	White	RS485 : D-(B)

Part 3. MODBUS table

Function 3 to Read/Function 6 to write

Address	Setting Value	Item	Type	R/W	Remarks
0x0100	400257	Read Temp. Value	INT16	R	Value/10
0x0101	400258	Read Turbidity Value	UINT16	R	Value/10
0x1000	404097	Temp. calibration	INT16	R/W	Value/10
0x1001	404098	Turbidity Zero Point calibration	UINT16	R/W	
0x1003	404500	Turbidity Slope calibration	UINT16	R/W	Value/10
0x2000	408193	Station number modification method	UINT16	R/W	
0x2003	408196	RS485 transmission rate modification method	UINT16	R/W	The default is 9600, writing 0 is 4800; Writing 1 is 9600; writing 2 is 19200

PART 4. MODBUS Byte Format Description

4.1 INT16 reads instant value (Function03)

Protocol format description

	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	Address	0x03	0x00	0x00	0x00	0x01	CRC0	CRC1
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	Address	0x03	Number of data*2		ByteH	ByteL	CRC0	CRC1

Communication Examples

	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	0x40	0x03	0x01	0x00	0x00	0x01	0x8A	0xE7
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	0x40	0x03	0x02		0x00	0xC0	0x84	0x1B

Convert the sensor data bit 0x00C0 (hexadecimal) to decimal format to 192. According to one decimal place, $192/10=19.2$, and the temperature is 19.2.

4.2 Float Reads Instant Value (Function03)

Protocol format description

	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	Address	0x03	0x00	0x00	0x00	0x02	CRC0	CRC1
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	Address	0x03	Number of data*2		WordH	WordL	CRC0	CRC1

Communication Examples

	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	0x40	0x03	0x26	0x02	0x00	0x02	0x61	0x92
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	0x40	0x03	0x04		0x00	0x00	0xF4	0x40
							0xEC	0x07

Please refer to the online conversion tool: <https://gregstoll.com/~gregstoll/floattohex/>

PART 5. MODBUS Example Description

5.1 Station Number Modification Method

Example: The default station number is 64 (0x40), change the station number to 0x01:

Definition	Equipment station number	Function	Starting address		Register value		16 CRC code	
Host command	0x40	0x06	0x20	0x00	0x00	0x01	0x4C	0xDB

5.2 RS485 Transmission Rate Modification Method

Example: The default transmission rate of the device is 9600bps, change the transmission rate to 19200bps

Integer	Transmission rate
0	4800 bps
1	9600 bps
2	19200 bps

Definition	Equipment station number	Function	Starting address		Register value		16 CRC code	
Host command	0x40	0x06	0x20	0x03	0x00	0x02	0xFC	0xDA

5.3 Read Temperature Value

Definition	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	0x40	0x03	0x01	0x00	0x00	0x01	0x8A	0xE7

※For the byte format returned by the sensor, please refer to Chapter 4 "Byte Format Description"

※If the returned value is abnormal, please go to 5.5 on page 7 for calibration.

5.4 Read Turbidity Value

Definition	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	0x40	0x03	0x01	0x01	0x00	0x01	0xDB	0x27

※For the byte format returned by the sensor, please refer to Chapter 4 "Byte Format Description".

※If the returned value is abnormal, please go to 5.6 or 5.7 on page 7 for calibration.

5.5 Temperature calibration

Calibrated at 25.8°C

Definition	Equipment station number	Function	Starting address		Register value		16 CRC code	
Host command	0x40	0x06	0x10	0x00	0x01	0x02	0x02	0x4A

5.6 Turbidity Zero Point calibration

Calibration range: Can be calibrated in 0-10NTU turbidity standard solution

Calibrated at 0 turbidity

Definition	Equipment station number	Function	Starting address		Register value		16 CRC code	
Host command	0x40	0x06	0x10	0x01	0x00	0x00	0xD3	0xDB

5.7 Turbidity Slope Calibration

Calibrated in turbidity 100NTU standard solution

Definition	Equipment station number	Function	Starting address		Register value		16 CRC code	
Host command	0x40	0x06	0x10	0x03	0x03	0xE8	0x72	0xA5

PART 6. Clearing Of Fault

Abnormal Category	Cause Of Fault	Solution
The operation interface cannot be connected or does not display the measurement results	The measurement value is too high or too low or the value remains unstable.	Reconnect the controller and wires
	Wire failure	Please contact our company
The measured value is too high or too low or the value remains unstable.	The sensor is attached by foreign matter	Clean sensor surface



ISO 9001

V1.02 2022/09/16

717 No. 33, Ln. 428, Sec. 3, Wenhua Rd., Rende Dist., Tainan City

Telephone : +886-6-311-0008 <http://www.jnc-tec.com.tw>

Fax : +886-6-311-0522 Email : jnc.jnc@msa.hinet.net

The company reserves the right to modify the content of the copy without prior notice.