OIL-206A Online Water Oil Sensor User Manual

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User Notes

- Please read the instruction carefully before using and save it for reference.
- Please follow the instructions and precautions.
- When receiving the instrument, please open the packaging carefully, inspect equipment's damage level in case of transportation, if you found spoiled equipment, please immediately notify the manufacturer and distributor, and retain the packaging, in order to send back to processing.
- When the instrument is in trouble, please don't repair it by yourself, please directly contact the maintenance department of the manufacturer.

Content

Ⅰ、Working principle

Integrated water Oil sensor is the use of soluble oil absorption peaks in spectra and emission peak of the properties, in the spectrum of soluble oil absorption peak emission monochromatic light exposure to water, soluble oil absorb light energy, releasing another emission peak wavelength of monochromatic light, soluble oil emission intensity is proportional to the content of water soluble oil.The sensor is easy to install and use.

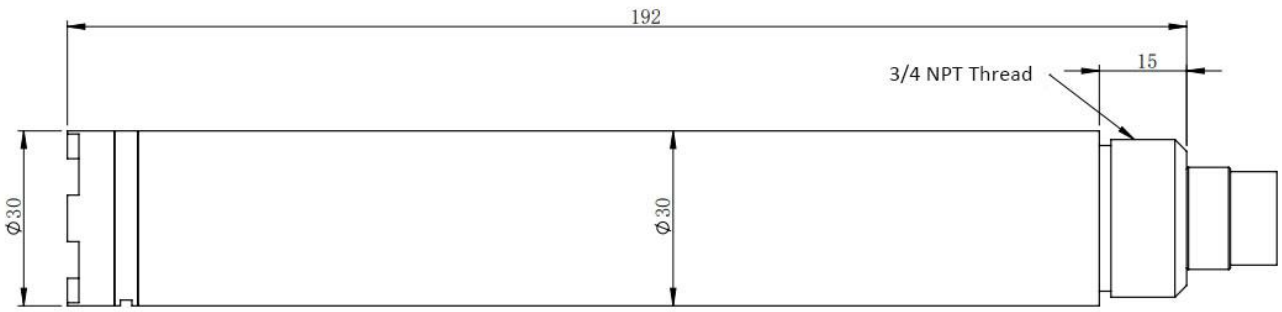
- UV LED light source, high stability, long service life, small drift
- Ac driven, effectively filter natural light interference
- Support RS-485 (Modbus/RTU protocol)
- Convenient, fast, stable and easy to maintain

Ⅱ、Technical performance and specifications

1. Technical parameters

Measuring range	0～40ppm
Resolution	0.01ppm
Accuracy	±3%，±0.5℃
Calibration	Two-point calibration
Protection grade	IP68
Deepest depth	Underwater 20 meters
Storage temperature	-5～65℃
Sensor interface	RS-485(Modbus/RTU)
Power information	12～24VDC ±10%
Power consumption	0.2W@12V
Cable length	5 meters, other lengths can be customized
Shell material	PVC/POM

2. Dimensional drawing



Note: The sensor connector is the male end of m16-5 core waterproof connector.

Ⅲ、Installation and electrical connection

1. Installation

Installation distance requirement: keep more than 2cm with the side wall and 10cm or more with the bottom.

2. Electrical connection

a) Red line - power cord (12 ~ 24VDC)
b) Black line - ground (GND)
c) Blue line - 485A
d) white line - 485B
After wiring is completed, it should be carefully checked to avoid incorrect connections before powering up.
Cable specification: Considering that the cable is immersed in water (including sea water) for a long time or exposed to the air, all the wiring points are required to do waterproof treatment, the user cable should has certain corrosion resistance.

Ⅳ、Maintenance

1. Maintenance procedures and methods

1.1 Maintenance schedule

The cleanliness of the measurement window is very important to maintain accurate readings.

Maintenance task	Recommended maintenance frequency
Calibrate the sensor (if required by the competent authority)	According to the maintenance schedule required by the competent authority

1.2 Maintenance methods

- Sensor outer surface: Clean the outer surface of the sensor with tap water. If there is still debris left, wipe it with a soft, damp cloth. For some stubborn dirt, add some household washing liquid to the tap water to clean it.
- Check the cable of the sensor: the cable should not be tightened during normal operation. Otherwise, the internal cable of the cable may be broken and the sensor may not work normally.
- Check the sensor's measurement window for dirt.

1.3 Precautions

The probe contains sensitive optical and electronic components. Make sure the probe is not subject to severe mechanical shock. There are no parts inside the probe that require user maintenance.

2. Sensor calibration

a) Zero calibration: Take a proper amount of distilled water in a large bucket and place the sensor vertically in the solution. The front end of the sensor is at least 10 cm away from the bottom of the beaker. After 3 to 5 minutes, the value is stabilized and the zero point is calibrated. The instructions refer to the appendix.

b) Slope calibration: Place the sensor probe in the standard solution. The front end of the sensor is at least 10cm away from the bottom of the beaker. After 3 to 5 minutes, the slope is calibrated after the value is stable. The instructions refer to the appendix.

3. Frequently asked questions

Problem	Possible reason	Solution
The operation interface cannot be connected or the measurement result is not displayed.	The measured value is too high, too low or the value is continuously unstable	Reconnect controller and cable
	Cable failure	Please contact us
The measured value is too high, too low or the value is continuously unstable	The sensor window is attached by a foreign object	Cleaning the sensor window surface

Ⅴ、Quality and service

1. Quality assurance

- The quality inspection department has standardized inspection procedures, advanced and perfect testing equipment and means, and strictly in accordance with the regulations, to do 72-hour aging test and stability test on the product, and not to allow one unqualified product to leave the factory.
- The receiving party directly returns the product batch with a failure rate of 2%, and all the costs

incurred are borne by the supplier. The reference standard refers to the product description provided by the supplier.

- Guarantee the quantity of goods and the speed of shipment.

2. Accessories spare and parts

This product includes:

- 1 sensor
- 1 copy of the manual
- 1 certificate

3. After-sales service commitment

The company provides local after-sales service within one year from the date of sale, but does not include damage caused by improper use. If repair or adjustment is required, please return it, but the shipping cost must be conceited. Damaged on the way, the company will repair the damage of the instrument for free.

Appendix data communication

1. Data format

The default data format for Modbus communication is: 9600, n, 8, 1 (baud rate 9600bps, 1 start bit, 8 data bits, no parity, 1 stop bit).

Parameters such as baud rate can be customized.

2. Information frame format

a) read data instruction frame

06	03	xx xx	xx xx	xx xx
Address	Function code	Register address	Number of registers	CRC check code (low byte first)

b) read data response frame

06	03	xx	xx.....xx	xx xx
Address	Function code	Bytes	Answer data	CRC check code (low byte first)

c) write data instruction frame

06	06	xx xx	xx xx	xx xx
Address	Function code	Register address	Write data	CRC check code(low byte first)

d) Write data response frame (same data command frame)

06	06	xx xx	xx xx	xx xx
Address	Function code	Register address	Write data	CRC check code (low byte first)

3. Register address

Register address	Name	Instruction	Number of registers	Access method
40001 (0x0000)	Value	Two double-byte integers, which are measured values and measured decimal places.	2（4 bytes）	Read

44097 (0x1000)	Zero calibration	Calibrated in distillation, the write data is 0; the read data is zero offset. (It can also be calibrated in a standard solution of 0-10ppm. The calibration method is based on the slope calibration)	1（2 bytes）	Write/Read
44101 (0x1004)	Slope calibration	Calibrate in the known standard solution (10ppm -- 40ppm), and write data as the actual value of the standard solution × 100;The read data is the slope value ×1000.	1（2 bytes）	Write/Read
48195 (0x2002)	Device address	Default is 6. Write data range 1-127.	1（2 bytes）	Write/Read
48225 (0x2020)	Factory reset	The calibration value restores the default value and the write data is 0.Note that the sensor must be recalibrated before use after reset.	1（2 bytes）	Write

4. Command example

a) Start measurement instructions
Function: Obtain the oil value in water measured by the sensor; Oil in water is in parts per million
Request frame: 06 03 00 00 00 02 C5 BC
Response frame:06 03 04 01 02 00 01 AD 0E
Example of reading:

Integrated Water Oil
01 02 00 02

For example: Oil value in water 01, 02 represents oil value in hexadecimal reading, 00, 02 represents oil value in water with 2 decimal places, converted to decimal value of 2.58.

b) Calibration instructions
Zero calibration
Function: Set the zero calibration value of the oil in the sensor water;Zero calibration is performed

here in distilled water;
Request frame: 06 06 10 00 00 00 8C BD
Response frame: 06 06 10 00 00 00 8C BD
Slope calibration
Function: Set the calibration value of the slope of the oil in the sensor;The slope value here is based on the actual standard solution value x100. See calibration for example with 30ppm;
Request frame:06 06 10 04 0B B8 CA 3E
Response frame:06 06 10 04 0B B8 CA 3E

c) Set the device ID address:
Function:Set the Modbus device address of the sensor;
Change sensor address 06 to 01, as shown below:
Request frame: 06 06 20 02 00 01 E3 BD
Response frame: 06 06 20 02 00 01 E3 BD

5. Error respond

If the sensor does not correctly execute the host command, it will return the following format information:

Definition	Address	Function code	Code	CRC check
Data	ADDR	COM+80H	xx	CRC 16
Number of bytes	1	1	1	2

a) CODE: 01 –Function code error
03 – Data is wrong
b) COM: The received function code