YEX-S2-MPS-A Online Multi-parameter Self-cleaning Sensor User Manual

Changsha Yex Technology Co., Ltd.

Mobile/WhatsApp: +8615111147890

Email: sales@yexsensor.com

Website:www.yexsensor.com

Add: 1303, Building A, Runjia Park Road, Yuelu District, Changsha City, Hunan Province, China

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、Overview

The online multi-parameter self-cleaning digital sensor is integrated and designed to be reliable and easy to use. Up to 8 parameters can be measured simultaneously. The sensor types can be selected such as dissolved oxygen, COD,pH, ORP, conductivity/salinity, ammonia nitrogen, turbidity, etc. Using RS-485 bus (Modbus/RTU) communication protocol, data can be directly transmitted to the acquisition platform.

The online multi-parameter water quality sensor is equipped with an automatic cleaning device, which can set the automatic cleaning interval and the number of automatic cleaning cycles to suit the water quality of different cleaning levels. The automatic cleaning device can effectively clean the sensor surface to prevent microbial adhesion and greatly reduce maintenance costs. Each sensor is equipped with a quick-release waterproof connector for easy assembly and disassembly.

The sensor cover at the front end is used to protect the internal sensor from damage. The cover is covered with a slot to prevent large suspended particles and biological damage to the sensor probe without affecting the accuracy of the measurement.

Features

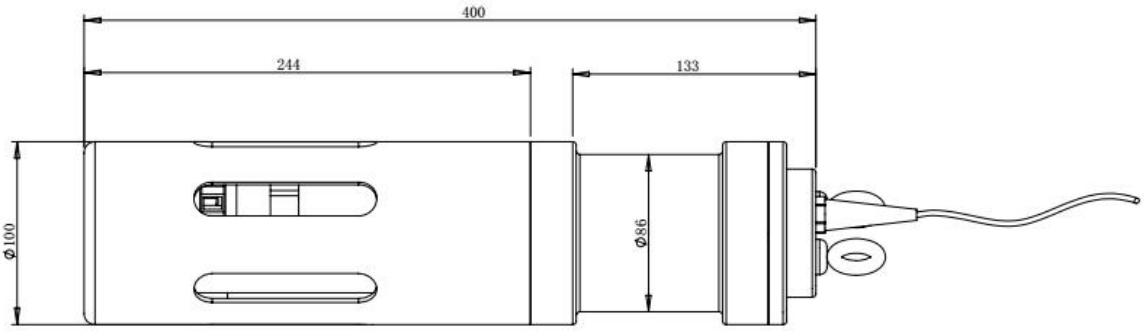
- Digital sensor, RS-485 bus (Modbus/RTU) communication protocol.
- Equipped with automatic cleaning device, it can effectively clean the sensor surface to prevent microbial adhesion, more accurate measurement and lower maintenance cost.
- Optional digital sensors such as dissolved oxygen, COD,conductivity/saltitude, turbidity, ammonia nitrogen, pH, ORP, etc., suitable for long-term online monitoring.
- Integrated design, can measure 8 parameters (including temperature) at the same time.

Ⅱ、The main parameters of optional sensors

Dissolved oxygen sensor		
Measuring range	0～20mg/L	
Accuracy	±2%	
Resolution	0.01mg/L	
Turbidity sensor		
Measuring range and Accuracy	0～100NTU	±3%or±2NTU
	0～1000NTU	±5%or±3NTU
Resolution	0.1NTU	
Conductivity / salinity sensor		
Measuring range and Resolution	0～5000uS/cm	1uS/cm
	0～200mS/cm	0.1mS/cm
	0～70PSU	0.1PSU
Accuracy	±1.5% F.S.	

COD sensor		
Measuring range	COD	Turbidity
	0～200mg/L equiv. KHP	0～100NTU
	0～500mg/L equiv. KHP	0～200NTU
COD accuracy	±5%F.S.	
COD resolution	0.1mg/L	
Turbidity accuracy	±5%F.S.	
Turbidity resolution	0.1NTU	
pH sensor		
Measuring range	0～14pH	
Accuracy	±0.1pH	
Resolution	0.01pH	
ORP sensor		
Measuring range	-1500mV～+1500mV	
Accuracy	±6mV	
Resolution	1mV	
Ammonia nitrogen sensor		
Measuring range	0～100mg/L or 0～1000mg/L	
Accuracy	±10% or ±2mg/L	
Resolution	0.1mg/L	
Temperature		
Measuring range	0～50℃	
Accuracy	±0.3℃	
Resolution	0.1℃	
Other Information of Multi-parameter sensor		
Output	RS-485(Modbus/RTU)	
Cleaning method	Automatic cleaning	
Power consumption	5W@12V	
power supply	12VDC±5%	
Cable length	5 meters, other length can be customized	

Ⅲ、Structure diagram



Email：

Note: The sensor measurement is installed with a lifting ring or 4NPT pipe thread to avoid direct cable stress.The sensor connector is m16-5 core waterproof connector male.

Ⅳ、Electrical connection

The cable is 4-core twisted-pair shielded wire, and the definition of line sequence:

a) Red line - power line (12VDC)
b) Black line - ground line (GND)
c) Blue line - 485A
d) white line - 485B

Check wiring sequence carefully before power-on to avoid unnecessary losses caused by wiring errors.

Wiring instructions: considering that the cables have been immersed in water (including sea water) or exposed to air for a long time, all wiring points are required to be waterproofed, and the user's cables should have certain corrosion resistance.

Ⅴ、Maintenance management

1. Maintenance schedule

The YEX-S2-MPS-A online multi-parameter self-cleaning water sensor is equipped with a cleaning brush to extend the maintenance cycle. Due to the diversity of the environment, it is recommended to check, clean and calibrate the sensor regularly.

Maintenance task	Maintenance frequency
Cleaning sensor	Depending on the Operating environment
Calibrate the sensor (if needed)	Calibrate the sensor regularly

2. Maintenance method

a) Check: Check the sensor head for dirt and microbial adhesion, whether the outer casing and sensor surface are damaged, whether the cable is normal, whether the test data is normal, and whether the consumables are damaged.
b) Cleaning: 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.
c) Calibration: Perform a single or two point calibration on the sensor. Select the appropriate standard solution based on the corresponding sensor. Refer to the respective sensor manual for the calibration method.

3. Frequently asked questions

Error	Possible cause	Solution

No communication information return	Error in integrated circuit	Please contact us
	Cable fault	Please contact us
The measured value is too high, too low or the value is continuously unstable	Dirt and microbes attached to the sensor	Cleaning the sensor surface
	For details, refer to the frequently asked questions in the corresponding sensor manuals.	

Ⅵ、Quality And Service

1. Warranty cycle

Dissolved oxygen sensor	One year
Turbidity sensor	One year
Conductivity / salinity sensor	One year
Ph Sensor	One year
Ammonia nitrogen sensor	Six month
COD sensor	One year
Online multi-parameter probe matrix	Three year
Other consumables	Three month

2. Quality assurance

- The quality inspection department has standardized inspection procedures, advanced and perfect testing equipment and means, and strictly in accordance with the regulations, 72-hour aging test and stability test on the product, and not let a substandard product leave the factory.
- The receiving party will return the product batch with the failure rate of 2% directly, and all the costs incurred will be 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.

3. Accessories and spare parts

This product includes:

- 1 sensor
- 1 copy of the manual
- 1 certificate
- Standard liquid depends on adaptive sensor

4. After-sales service spare parts

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	Illustrate	Number of registers (number of bytes)	Access method (function code)
40001（0x0000）	Temperature measurement	2 double-byte integers, respectively the temperature value and the number of decimal places of the temperature value.	2（4byte）	read(0x03)
40003（0x0002）	COD measurement value	2 double-byte integers, respectively the COD value and the number of decimal places in the COD value.	2（4byte）	read(0x03)

40005（0x0004）	COD built-in turbidity measurement	2 double-byte integers, respectively the turbidity value and the number of decimal places of the turbidity value.	2（4byte）	read(0x03)
40007（0x0006）	Conductivity/salinity measurements	2 double-byte integers, respectively the conductivity/salinity value and the number of decimal places for conductivity/salinity.	2（4byte）	read(0x03)
40009（0x0008）	pH measurement	2 double-byte integers, respectively the pH value and the number of decimal places in the pH value.	2（4byte）	read(0x03)
40011（0x000A）	ORP measurements	2 double-byte integers, respectively the ORP value and the number of decimal places in the ORP value.	2（4byte）	read(0x03)
40013（0x000C）	Dissolved oxygen measurements	2 double-byte integers, respectively the dissolved oxygen value and the number of decimal places of the dissolved oxygen value.	2（4byte）	read(0x03)
40015（0x000E）	NH4+ measured value	2 double-byte integers, respectively the NH4+ value and the number of decimal places of the NH4+ value.	2（4byte）	read(0x03)
40017（0x0010）	Turbidity measurement	2 double-byte integers, respectively the turbidity value and the number of decimal places of the turbidity value.	2（4byte）	read(0x03)
40019 (0x0012)	Colorimetry measurements	2 double-byte integers, respectively the chroma value and the number of decimal places of the chroma value.	2（4byte）	read(0x03)
40021 (0x0014)	Colorimetric built-in turbidity measurement	2 double-byte integers, respectively the built-in turbidity value and the number of decimal places of the built-in turbidity value.	2（4byte）	read(0x03)
40023 (0x0016)	BOD measurement value	2 double-byte integers, respectively the BOD value and the number of decimal places in the BOD value.	2（4byte）	read(0x03)

40025 (0x0018)	Nitrate measurement value	2 double-byte integers, respectively representing the nitrate nitrogen value and the number of decimal places of the nitrate nitrogen value.	2（4byte）	read(0x03)
40027 (0x001A)	Chloride ion measurement	2 double-byte integers, respectively the chloride ion value and the number of decimal places of the chloride ion value.	2（4byte）	read(0x03)
40029 (0x001C)	Fluoride ion measurement	2 double-byte integers, respectively the fluoride ion value and the number of decimal places of the fluoride ion value.	2（4byte）	read(0x03)
40031 (0x001E)	Residual chlorine measurement value	2 double-byte integers, respectively the residual chlorine value and the number of decimal places of the residual chlorine value.	2（4byte）	read(0x03)
40033 (0x0020)	Chlorophyll measurement	2 double-byte integers, respectively the chlorophyll value and the number of decimal places of the chlorophyll value.	2（4byte）	read(0x03)
40035 (0x0022)	Blue-green algae measurements	2 double-byte integers, respectively the blue-green algae value and the number of decimal places of the blue-green algae value.	2（4byte）	read(0x03)
40037 (0x0024)	Suspended matter measurement	2 double-byte integers, respectively the suspended solids value and the number of decimal places of the suspended solids value.	2（4byte）	read(0x03)
40039 (0x0026)	Sludge concentration measurement value	2 double-byte integers, respectively the sludge concentration value and the number of decimal places of the sludge concentration value.	2（4byte）	read(0x03)
40041 (0x0028)	Oil in water measurement	2 double-byte integers, respectively the oil in water value and the number of decimal places of the oil in water value.	2（4byte）	read(0x03)
44097 （0x1000）	temperature calibration	Temperature calibration: The written data is the actual temperature value × 10; the read data is the temperature calibration offset × 10.	1（2byte）	write(0x06)/read(0x03)
44099	COD zero point	Calibration was performed in	1（2byte）	write(0x0

（0x1002）	calibration	deionized water. The calibration value data written during calibration is 0; the data read out is the COD zero point original signal. (The 0~200mg/L range can also be calibrated in the COD standard solution of 0~20mg/L. The calibration value data written during calibration is the value of the concentration of the standard solution x10; the 0~500mg/L range can also be calibrated in 0 Calibration is performed in a COD standard solution of ~50 mg/L. The calibration value data written during calibration is the value of the concentration of the standard solution used x10).		6)/read(0x03)
44100（0x1003）	COD slope calibration	The 0~200mg/L range is calibrated in the standard solution of 20~200mg/L. The calibration value data written during calibration is the value of the concentration of the standard solution used x10; the read data is the original signal of the COD slope; the 0~500mg/L range is calibrated in the standard solution of 50~500mg/L. The calibration value data written during calibration is the value of the standard solution concentration x10 used; the data read out is the COD slope original signal.	1（2byte）	write(0x06)/read(0x03)
44101（0x1004）	COD built-in turbidity zero	Calibration is performed in zero turbidity water. The calibration	1（2byte）	write(0x06)/read(0

	point calibration	value data written during calibration is 0; the data read out is the zero offset.		x03)
44102（0x1005）	COD built-in turbidity slope calibration	Calibrate in 20.0~200.0NTU turbidity standard solution. The written data is the turbidity value of the standard solution × 10; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44103（0x1006）	Conductivity/Salinity Zero Point Calibration	Calibrated in air, the written data is 0; the read data is the zero offset.	1（2byte）	write(0x06)/read(0x03)
44104（0x1007）	Conductivity/Salinity Slope Calibration	Calibrated in the standard solution, the full scale range is 0~5000 μS/cm and the written data is the actual value of the standard solution; the full scale range is 0~200mS/cm and the written data is the actual value of the standard solution × 10; the full scale range is 0~70PSU. The data is the actual value of the standard solution × 10. The readout data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44105（0x1008）	pH zero point calibration	Calibrated in a standard solution with a pH of 6.86, the written data is 0; the read data is the zero offset.	1（2byte）	write(0x06)/read(0x03)
44106（0x1009）	pH slope calibration (4pH/9pH)	When calibrated in a standard solution with a pH of 4.00, the written data is 0; when calibrated in a standard solution with a pH of 9.18, the written data is 1; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44107（0x100A）	ORP zero point calibration	Calibrated in standard solution, the written data is the actual value; the	1（2byte）	write(0x06)/read(0

		read data is the zero offset.		x03)
44108（0x100B）	ORP slope calibration	Calibrate in the standard solution, the written data is the conductivity value of the standard solution; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44109（0x100C）	Dissolved oxygen zero point calibration	Calibrated in oxygen-free water, the written data is 0; the read data is the zero offset.	1（2byte）	write(0x06)/read(0x03)
44110（0x100D）	Dissolved Oxygen Slope Calibration	Calibrated in air-saturated water or water-saturated air, the written data is 0; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44111（0x100E）	NH4+ zero point calibration	Calibration can be performed in 1ppm or 10ppm solution. The calibration value data written during calibration is the concentration of the standard solution used × 100; the read data is the mV value corresponding to the zero point calibration value × 100.	1（2byte）	write(0x06)/read(0x03)
44112（0x100F）	NH4+ slope calibration	Calibration can be performed in a 10ppm or 100ppm solution. The calibration value data written during calibration is the value of the concentration of the standard solution used × 100; the read data is the mV value corresponding to the slope calibration value × 100. Note that the concentration of the slope standard solution should be 10 times the concentration of the zero point standard solution.	1（2byte）	write(0x06)/read(0x03)
44113	Turbidity zero	Calibrate in deionized water or	1（2byte）	write(0x0

（0x1010）	point calibration	0~20.0NTU standard solution. The written data is the turbidity value of the standard solution × 10; the read data is the zero offset.		6)/read(0x03)
44114 （0x1011）	Turbidity Slope Calibration	Calibrate in 200.0~1000.0NTU standard solution. The written data is the turbidity value of the standard solution × 10; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44115 (0x1012)	Chroma Zero Point Calibration	Can be calibrated in 0-100 color standards. The calibration value data written during calibration is the concentration of the standard solution used x10; the data read out is the zero offset x10.	1（2byte）	write(0x06)/read(0x03)
44116 (0x1013)	Chroma Slope Calibration	Can be calibrated in 800-1000 color standard solution. The calibration value data written during calibration is the concentration of the standard solution used x10; the data read out is the slope value x1000.	1（2byte）	write(0x06)/read(0x03)
44117 (0x1014)	Chroma built-in turbidity zero point calibration	Calibration is performed in zero turbidity water. The calibration value data written during calibration is 0; the data read out is the zero offset.	1（2byte）	write(0x06)/read(0x03)
44118 (0x1015)	Chroma built-in turbidity slope calibration	Can be calibrated in standard solutions of 100-400NTU. The calibration value data written during calibration is the concentration of the standard solution used x10; the data read out is the slope value x1000.	1（2byte）	write(0x06)/read(0x03)
44119	BOD zero point	Calibration was performed in	1（2byte）	write(0x0

(0x1016)	calibration	deionized water. The calibration value data written during calibration is 0; the data read out is the BOD zero point original signal. (Calibration can also be performed in 0 to 20 mg/L BOD standard solution. The calibration value data written during calibration is the value of the concentration of the standard solution used x10)		6)/read(0x03)
44120 (0x1017)	BOD slope calibration	Calibrate in a standard solution of 20 to 150 mg/L. The calibration value data written during calibration is the value of the standard solution concentration x10 used; the data read out is the original BOD slope signal.	1（2byte）	write(0x06)/read(0x03)
44121 (0x1018)	Nitrate zero point calibration	Calibrate in 1 mg/L standard solution, and write the data as the value of the concentration of the standard solution used x100. The read data is the mV value x100 corresponding to the zero point calibration value.	1（2byte）	write(0x06)/read(0x03)
44122 (0x1019)	Nitrate slope calibration	Calibrate in 10 mg/L standard solution, and write the data as the value of the concentration of the standard solution used x100. The read data is the mV value x100 corresponding to the slope calibration value.	1（2byte）	write(0x06)/read(0x03)
44123 (0x101A)	Chloride ion zero point calibration	When the measuring range is 0~3500mg/L, it needs to be calibrated in 100mg/L standard solution, and the written data is the value of the concentration of the standard solution used x10. The read data is the mV value x100 corresponding to the zero point calibration value. When the measuring range is 0~35000mg/L, it must be calibrated in 1000mg/L standard solution. The written data is the actual value of the standard solution; the read data is the mV	1（2byte）	write(0x06)/read(0x03)

		value x100 corresponding to the zero point calibration value.		
44124 (0x101B)	Chloride slope calibration	When the measuring range is 0~3500mg/L, it is calibrated in 1000mg/L standard solution. The written data is the actual value of the standard solution x10; the read data is the mV value x100 corresponding to the slope calibration value. When the measuring range is 0~35000mg/l, it must be calibrated in 10000mg/L standard solution. The written data is the actual concentration value of the standard solution and the readout data is the actual slope value (mv) x100.	1（2byte）	write(0x06)/read(0x03)
44125 (0x101C)	Fluoride ion zero point calibration	Calibrate in 1 mg/L standard solution, and write the data as the value of the concentration of the standard solution used x100. The read data is the mV value x100 corresponding to the zero point calibration value.	1（2byte）	write(0x06)/read(0x03)
44126 (0x101D)	Fluoride ion slope calibration	Calibrate in 10 mg/L standard solution, and write the data as the value of the concentration of the standard solution used x100. The read data is the mV value x100 corresponding to the slope calibration value.	1（2byte）	write(0x06)/read(0x03)
44127 (0x101E)	Zero point calibration of residual chlorine	Calibrate in chlorine-free water after the value is stable. The written data is 0 and the read data is the zero offset.	1（2byte）	write(0x06)/read(0x03)
44128 (0x101F)	Residual chlorine slope calibration	The 0-2.000 mg/L range residual chlorine sensor is calibrated in a flow cell flowing with a known concentration HCLO (1~2 mg/L) solution. The written data is the actual concentration value x1000, and the read data is the slope value x1000; 0 -20.00mg/L range residual chlorine sensor is calibrated in a flow cell flowing with a known	1（2byte）	write(0x06)/read(0x03)

		concentration HCLO (10~20mg/L) solution. The written data is the actual concentration value x100, and the read data is the slope value x1000.		
44129 (0x1020)	Chlorophyll zero point calibration	Calibrated in distilled water, written data is 0; read data is zero offset	1（2byte）	write(0x06)/read(0x03)
44130 (0x1021)	Chlorophyll slope calibration	Calibrate in 200.0~400.0ug/L standard solution. The written data is the turbidity value of the standard solution × 10; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44131 (0x1022)	Blue-green algae zero point calibration	Calibrated in distilled water, written data is 0; read data is zero offset	1（2byte）	write(0x06)/read(0x03)
44132 (0x1023)	Blue-green algae slope calibration	Calibrate in a known standard solution (100Kcells/mL-300Kcells/mL). The written data is the actual value of the standard solution × 10; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44133 (0x1024)	Suspended matter zero point calibration	Calibrated in zero suspension, write data is 0; read data is zero offset. (Calibration can also be performed in a suspension of 0 to 200.0 mg/L. The calibration method refers to slope calibration)	1（2byte）	write(0x06)/read(0x03)
44134 (0x1025)	Suspended solids slope calibration	Calibrate the slope in a known suspension (200.0 mg/L ~ 2000.0 mg/L). The written data is the actual value of the standard solution × 10; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44135 (0x1026)	Sludge concentration zero point calibration	Calibrated in 0~2.000g/L sludge concentration standard solution, the written data is the actual value of the standard solution × 1000; the read data is the zero offset.	1（2byte）	write(0x06)/read(0x03)
44136 (0x1027)	Sludge concentration	Calibrate in 2.000~20.000g/L sludge concentration standard solution. The written data is the	1（2byte）	write(0x06)/read(0

	slope calibration	actual value of the standard solution × 1000; the read data is the slope value × 1000.		x03)
44137 (0x1028)	Oil in water zero point calibration	Calibrated in distilled water, written data is 0; read data is zero offset	1（2byte）	write(0x06)/read(0x03)
44138 (0x1029)	Oil in water slope calibration	Calibrate in a known standard solution (10 mg/L-40 mg/L). The written data is the actual value of the standard solution × 100; the read data is the slope value × 1000.	1（2byte）	write(0x06)/read(0x03)
44609 （0x1200）	Specify the register value of the slave computer	Specify the value of the specified register of the slave computer	1（2byte）	write(0x06)/read(0x03)
44610 （0x1201）	Lower computer device address setting	Target device address (see command example c for details)	1（2byte）	write(0x06)/read(0x03)
44611 （0x1202）	Lower computer register address setting	Target register address (see command example c for details)	1（2byte）	write(0x06)/read(0x03)
44865 （0x1300）	Automatic cleaning interval setting	The default is 30 minutes, and the data range is 6 to 6000 minutes.	1（2byte）	write(0x06)/read(0x03)
44866 （0x1301）	Automatic cleaning lap setting	The default is 3 circles, and the data range is 0 to 10 circles.	1（2byte）	write(0x06)/read(0x03)
48195 （0x2002）	sensor address	The default is 6, the data range is 1~255.	1（2byte）	write(0x06)/read(0x03)
48225 （0x2020）	Reset cleaning brush	The written data is 0. Data such as the automatic cleaning interval and the number of automatic cleaning cycles can be restored to factory settings.	1（2byte）	write(0x06)

4.Command example

a）Read data instructions

Function: Get the multi-parameter sensor temperature and each parameter value.

request frame：06 03 00 00 00 12 C4 70

Reply frame：06 03 24 00 A3 00 01 01 28 00 01 00 0A 00 01 01 26 00 00 03 18 00 02 00 D1 00 00 03 6B 00 02 00 36 00 02 00 08 00 01 7E 8D

Reading example：

byte1	byte2	byte3	byte4~7	byte8~11	byte12~15	byte16~19
06	03	24	00 A3 00 01	01 28 00 01	00 0A 00 01	01 26 00 00
address	function code	Valid bytes	Temperature measurement	COD measurement	COD Built-in turbidity value	Conductivity/salinity value

byte20~23	byte24~27	byte28~31	byte32~35	byte36~39	byte40~41	
03 18 00 02	00 D1 00 00	03 6B 00 02	00 36 00 02	00 08 00 01	7E 8D	
pH measurement	ORP measurements	Dissolved oxygen measurements	NH4+ measured value	Turbidity measurement	CRC check	

For example: temperature measurement value 00 A3 00 01, where 00 A3 in hexadecimal is the temperature value, 00 01 means that the temperature measurement value has 1 decimal point, and converted to decimal is 16.3° C. The same applies to the remaining parameters. If the sensor probe is not connected, the corresponding sensor measurement value is 0.

b）Calibration instructions

Take conductivity sensor calibration as an example:

Zero point calibration

Function: Set the conductivity zero-point calibration value of the sensor; here the zero-point calibration is performed in the air;request frame：06 06 10 06 00 00 6C BC

Reply frame：06 06 10 06 00 00 6C BC

Slope calibration

Function: Set the conductivity slope calibration value of the sensor; the slope value here is based on the actual standard solution value. Take 5000uS/cm as an example to refer to the calibration;

request frame：06 06 10 07 13 88 30 2A

Reply frame：06 06 10 07 13 88 30 2A

c）Read or write into any slave computer register

d）When writing the value at 0x1200, the YEX-S2-MPS-A sends an instruction to write the corresponding value to the "target register address" to the lower computer with the address of the "target device address"; when fetching the value at 0x1200read, the YEX-S2-MPS-A sends the instruction to the lower computer with the address of the "target device address".

The machine sends the read instruction to get the value at the "target register address"

e）Example: To send an instruction to the multi-parameter sensor with address 6 to modify the salinity compensation of the connected dissolved oxygen sensor, you should send:

06 06 12 01 00 20 DD 1D //Write target sensor address

06 06 12 02 10 20 20 DD //Write target register address

06 06 12 00 00 0A 0D 02 //Write the value that needs to be written

d）Set device ID address

Function: Set the Modbus device address of the sensor.

Change the sensor address 06 to 01, the example is as follows

request frame：06 06 20 02 00 01 E3 BD

Reply frame：06 06 20 02 00 01 E3 BD