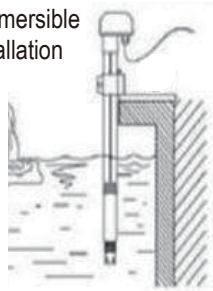
DCRS-LDO DISSOLVED OXYGEN TRANSMITTER MANUAL

INSTALLATION METHOD

Submersible Installation:
The sensor cable passes through a stainless steel tube. The top of the sensor head features a 3/4" threaded connection, which should be securely connected to the stainless steel 3/4" thread using PTFE (Teflon) tape. Ensure that the top of the sensor and the cable entry point remain watertight to prevent water ingress.

Submersible Installation



LETTER of AGREEMENT

Basic communication parameters

Code	8-bit binary
Data bit	8-bit
Parity bit	no
Stop bit	1 person
Error checking	CRC (Redundant Cyclic Code)
Baud rate	Default: 4800bit/s

Data frame format definition

Using Modbus-RTU communication protocol, the format is as follows:
Initial structure ≥ 4 bytes of time
Address code = 1 byte
Function code = 1 byte
Data area = N bytes
Error check = 16-bit CRC code
Time to end structure ≥ 4 bytes
Address code: the address of the transmitter, which is unique in the communication network (factory default 0x01).
Function code: the command function instruction issued by the host.
Data area: The data area is the specific communication data, pay attention to the high byte of 16bits data first!
CRC code: two-byte check code.

WIRING CONNECTION

Comm.	Wire Color	Description
Power	Brown	Power+(10-30Vdc)
	Black	Power-
Comm.	Yellow(Green)	485-A
	Blue	485-B

Analog	Wire Color	Description
Power	Brown	Power+(10-30Vdc)
	Black	Power-
Output	Blue	Signal+
	Yellow(Green)	Signal-

PRECAUTIONS and MAINTENANCE

∗When there is an obvious failure of the equipment, please do not open it and repair it yourself, and contact us as soon as possible!

∗Avoid collision or scratching of the fluorescent film on the front of the equipment. Any damage will cause the measurement accuracy to drop or even be unusable.

∗Avoid using it in organic solvents, and avoid using organic solvents to clean the fluorescent cap.

∗When installing the equipment, try to avoid excessive tension or stress on the cables.

∗Equipment cleaning:
For the outer surface of the equipment; it can be cleaned with tap water and wiped with a moist soft cloth. For some stubborn dirt, you can add some household detergent to the tap water to clean;
For the outer surface of the fluorescent cap; clean the dirt on the light window of the sensor with clean water; if it needs to be wiped, wipe it gently with a soft cloth, do not scrape hard, to prevent damage to the fluorescent film, resulting in inaccurate measurement settings and unable to measure.
It is recommended to wash every 30 days.

∗Before measuring, the black rubber protective cover should be removed.

∗During long-term storage, add water to the sponge in the protective cover and squeeze out excess water to ensure that the fluorescent film is wet, and the temperature should be kept above 0 °C to prevent the fluorescent film from freezing and damage; if stored dry, the temperature can be as low as -10 °C, When in use, the device needs to be soaked in water for 48 hours to restore the response of the fluorescent membrane.

∗It is recommended to replace the fluorescent film once a year.

∗The equipment should be calibrated before each measurement. It is recommended to calibrate it every 3 months for long-term use. The calibration frequency should be adjusted according to different application conditions (the degree of dirt in the application, the deposition of chemical substances, etc.).

Register address

Register address	Support function code	Definition description
0x0000、0x0001	0x03/0x04	Dissolved oxygen saturation (%; floating point number big end)
0x0002、0x0003	0x03/0x04	Dissolved oxygen concentration (mg/L; floating point number big end)
0x0004、0x0005	0x03/0x04	Temperature (℃; floating point number big end)
0x1010	0x06/0x10	Calibration (write 0x0001 calibration zero point, Write 0x0002 to calibrate 100% saturation point)
0x1020	0x03/0x04/0x06 /0x10	Salinity (‰; default 0)
0x1022	0x03/0x04/0x06 /0x10	Atmospheric pressure (kPa; default 101.33, actual value expanded 100 times)
0x07D0	0x03/0x04/0x06 /0x10	1~254（Factory default 1）
0x07D1	0x03/0x04/0x06 /0x10	0 stands for 2400 1 stands for 4800 2 stands for 9600 3 stands for 19200 4 stands for 38400 5 stands for 57600 6 stands for 115200

Communication protocol example and explanation

Example 1: Read the current dissolved oxygen saturation (%), dissolved oxygen concentration (mg/L) and temperature of the device with address 01

Send frame:

Address code	Function code	Register address	Register content	Check code low bit	High bit of check code
0x01	0x03	0x00 0x00	0x00 0x06	0xc5	0xc8

Reply frame:

Address code	Function code	Number of valid bytes	Register content	Check code low bit	High bit of check code
0x01	0x03	0x0c	0x3f 0x6a 0xeb 0x52 0x40 0xe2 0x48 0xb0 0x41 0xe5 0x85 0xc5	0xa7	0x49

The floating point number big endian 3f 6a eb 52 is 0.917653, which means that the dissolved oxygen saturation is 91.8%

The floating point big endian 40 e2 48 b0 is 7.071373 The dissolved oxygen concentration is 7.07mg/L

The floating point number big endian 41 e5 85 c5 is 28.690317, which means the temperature is 28.7℃

Example 2: Write atmospheric pressure

Send frame: write atmospheric pressure 101.35kPa to the device with address code 1

Write 10135 to the 0x1022 register to convert to hexadecimal to 2797

Address code	Function code	Register address	Register content	Check code low bit	High bit of check code
0x01	0x06	0x10 0x22	0x27 0x97	0x77	0x5e

Response frame: (According to the MODBUS standard, the response is a mirrored message of the issued frame)

Address code	Function code	Register address	Register content	Check code low bit	High bit of check code
0x01	0x06	0x10 0x22	0x27 0x97	0x77	0x5e

Example 3: Zero point calibration

After the sensor waits for the value to stabilize in anaerobic water, write 0x0001 to the 1010H register

Address code	Function code	Register address	Register content	Check code low bit	High bit of check code
0x01	0x06	0x10 0x10	0x00 0x01	0x4d	0x0f

Reply frame: (According to the MODBUS standard reply is a mirrored message of the issued frame)

Address code	Function code	Register address	Register content	Check code low bit	High bit of check code
0x01	0x06	0x10 0x10	0x00 0x01	0x4d	0x0f