

AVC-010 Oxygen Transmitter Instruction Manual

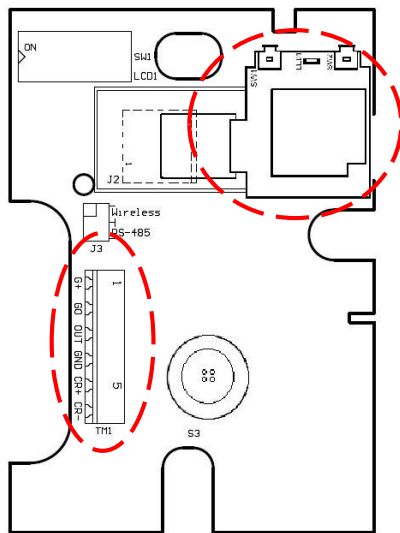
Thanks for choosing our product! Please read carefully and follow this instruction before using!

Introductions

The oxygen level is a very important indication of indoor air quality. It exists generally, in gaseous state at room temperature. When people stays in some places with low oxygen level, such as office, commercial building or basement, it might cause hypoxemia. Chronic fatigue is a major sign that people isn't getting enough oxygen. Without enough oxygen in the lungs, the organs cannot function properly. As a result, toxins accumulate in the bloodstream.

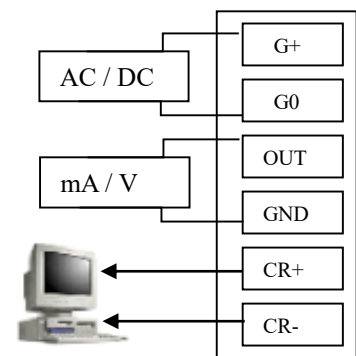
AVC-010 Oxygen transmitter can monitor oxygen level and send the data to monitoring center for analysis or for ventilation control. Air quality can be, therefore, efficiently monitored and managed. It is perfect for household application, offices, indoor parking, library, hospital, shopping mall and etc. °

Wiring



1	G+	DC 12 ~ 36V AC 24V(50/60Hz)
2	G0	System GND
3	OUT	4~20mA / 2~10V
4	GND	Signal GND
5	CR+	RS-485(+)
6	CR-	RS-485(-)
7	J2	Wireless module

Connection

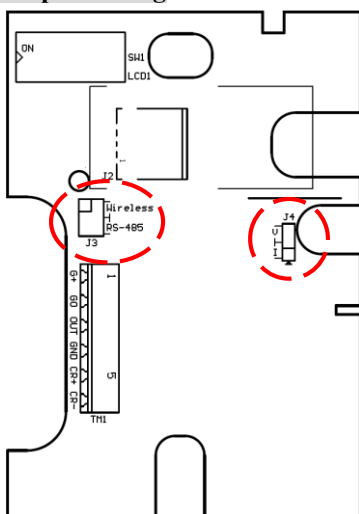


【Figure 1】

Notice: Please remove power from the unit before wiring, in order to avoid any damage or hazard.

Remark: For those who use 4~20mA / 2~10V for system connection, the wiring connection has to be changed to RS485 when performing O2 reading calibration.

Jumper Setting



Transmission Mode setting :

Use jumper in J3 to set Transmission Mode as Wireless or RS485 :

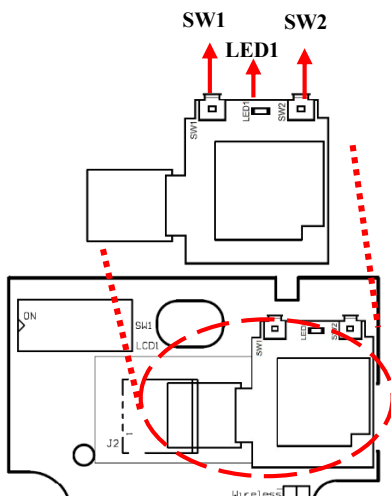
Transmission Mode	J3
Wireless	
RS485	

4~20mA / 2~10V Output setting :

Use jumper in J4 to set output as 4~20mA or 2~10V

4~20mA / 2~10V Output setting	J4
4~20mA (Default)	
2~10V	

Join a wireless network (Only available for wireless version)



If the transmission mode is set as “Wireless”, please follow the steps as below to establish the connection between transmitter and receiver.

1. Please make sure the wireless receiver has been connected with PLC or with computer. (Please refer the manual of wireless receiver for the detail operation.)
2. Please press and hold the SW2 on wireless module until the LED1 (Green) is ON. And it will activate the pairing procedure and complete the connection within 60 sec.
3. When the LED1 switches off, the connection between the transmitter and receiver has been done. If the LED1 blinks every 5 sec., the connection fails. Then please press SW1 (Reset) and repeat the above-mentioned steps.

Notes: 15.19(a) (3) Regulations:

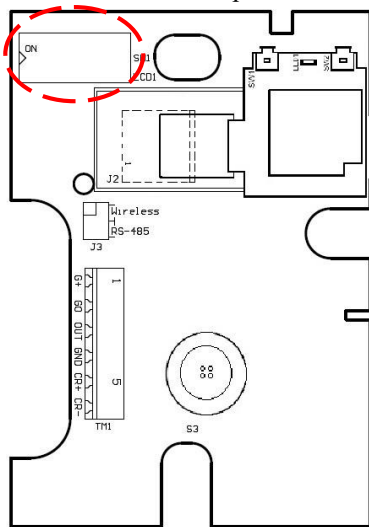
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

RS485 Setting

When using RS485 to perform O2 calibration, many terminal emulator programs can be used, such as TeraTerm, RealTerm, HTerm and etc.

1. Device ID : Setup device ID with dip switch, ON↑ : 1, OFF↓ : 0



Device ID (ON : 1,OFF : 0)							
1	0000 0001						
2	0000 0010						
⋮		⋮	⋮	⋮	⋮	⋮	⋮
64	0100 0000						
65	0100 0001						

2. Protocol :

- 2.1. Baud Rate = 9600 (Default); Word Length = 8; Parity = none; Stop Bits = 1
- 2.2. Checksum is the error detection codes for CRC-16/MODBUS.

Command 0x03 : Read Holding register

Data Reading Type

Device ID	Function	Address (High byte)	Address (Low byte)	Data Length (High byte)	Data Length (Low byte)	Checksum (High byte)	Checksum (Low byte)
By setting	0x03	0x00	0x00	0x00	0x01	0xXX	0xXX

Responding Data Type

Device ID	Function	Data Byte	Data (High byte)	Data (Low byte)	Checksum (High byte)	Checksum (Low byte)
By setting	0x03	0x02	0x08	0x2F	0xXX	0xXX

**** Remark :**

The unit of Oxygen data obtained is %.

The data obtained is hexadecimal. To get Oxygen value, convert hexadecimal to decimal and divide it by 100, we will get the measurement value of Oxygen. For example, the data obtained is 0x082F, convert it to decimal is 2095 and divide it by 100. We will get the Oxygen value 20.95%.

Command 0x06 : Write single register

To calibrate 20.95% to 19.95%, the value is $(19.95-20.95) * 100 = -100$. And convert the calibration value into 0xFF9C (hexadecimal).

Writing data type

Device ID	Function	Address (High byte)	Address (Low byte)	Data Length (High byte)	Data Length (Low byte)	Checksum (High byte)	Checksum (Low byte)
By setting	0x06	0x00	0x01	0xFF	0x9C	0XX	0XX

Responding data type

Device ID	Function	Address (High byte)	Address (Low byte)	Data Length (High byte)	Data Length (Low byte)	Checksum (High byte)	Checksum (Low byte)
By setting	0x06	0x00	0x01	0xFF	0x9C	0XX	0XX

Modifying data register

Address (High byte)	Address (Low byte)	Description	Range
0x00	0x01	O2 manual calibration	-1500 ~ 1500 (±15.00%)
0x00	0x02	Baud rate	Please refer to “Baud rate and connection setting”

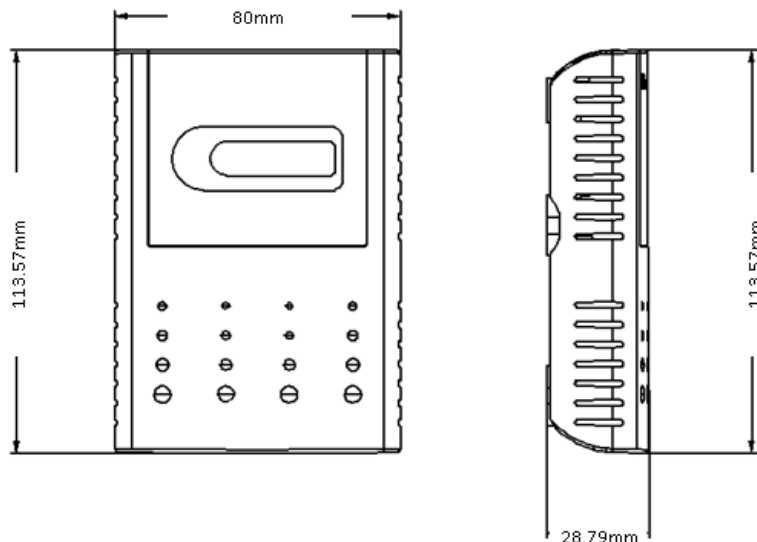
Baud rate and connection setting

To change baud rate from 9600 to 19200, the command would be “0x0010”.

Settings	Device ID	Function	Address (High byte)	Address (Low byte)	Data Length (High byte)	Data Length (Low byte)	Checksum
9600	By setting	0x06	0x00	0x02	0x00	0x00	XXXX
19200	By setting	0x06	0x00	0x02	0x00	0x10	XXXX
38400	By setting	0x06	0x00	0x02	0x00	0x20	XXXX
57600	By setting	0x06	0x00	0x02	0x00	0x30	XXXX
115200	By setting	0x06	0x00	0x02	0x00	0x40	XXXX

*** Notice : If the transmission mode is set as “Wireless” , please set the baud rate as 9600**

Dimensions

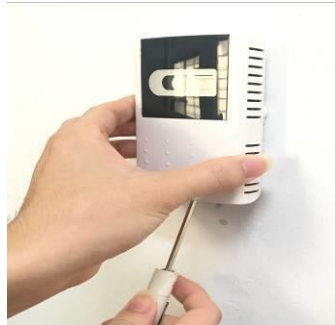


Installation

1. Please check if the transmitter, accessory pack and instruction manual are included in the package.
 2. Please decide right position for installation.
 3. Press tenon on bottom of housing with a screw driver to remove the upper cover. (Please refer to the Figure 2 to Figure 4)
 4. Fix the base with screws on the wall.
 5. Please refer Figure 1 for wiring.
- Notice: Please remove power from the unit before wiring, in order to avoid any damage or hazard.**
6. Replace and fix the upper cover back to the unit.



【Figure 2】



【Figure 3】



【Figure 4】

Notice for installation

1. Please install the transmitter around 1~2m above floor level for better detection.
2. Please avoid the location near fans, exhaust fan, air conditioner vent or elevator entrance.
3. Please avoid the waterish area or direct sunlight.
4. Do not install the transmitter on an unstable or shaking surface.
5. Do not install the transmitter in areas with rapid temperature changes or with extreme ambient conditions.
6. Please avoid heat source or the device exhausting gas.

Trouble shooting

Problem	Possible cause	Recommended solution
No response after wiring power supply.	<ol style="list-style-type: none"> 1. Insufficient power supply. 2. The power wiring is disconnected. 	<ol style="list-style-type: none"> 1. Please make sure the capacity of power supply should be more than the power consumption of transmitter. (RS485:0.2W, LoRa:1.2W, Current/voltage output:0.4W) 2. Check power wiring.
The reading is lower than actual level.	<ol style="list-style-type: none"> 1. Sensing element is aging. 2. Zero point drift. 	<ol style="list-style-type: none"> 1. Please contact the manufacturer
RS485 connection fails.	<ol style="list-style-type: none"> 1. Incorrect device ID setting or incorrect connection settings. 2. RS485 wiring is disconnected. 	<ol style="list-style-type: none"> 1. Please verify the device ID and connection settings. 2. Check RS485 wiring.
High loss rate of packet for RS485	<ol style="list-style-type: none"> 1. Signal interference. 2. RS485 wiring is disconnected. 	<ol style="list-style-type: none"> 1. It is recommended to use 2 pair twisted shielded cable. 2. Check RS485 wiring.
Fail to pair with LoRa devices	<ol style="list-style-type: none"> 1. The antenna is not fixed. 2. There is some interference around. 	<ol style="list-style-type: none"> 1. Please check if antenna is fixed. 2. Please relocate the LoRa devices to avoid the interference.
No response after wiring power supply.	<ol style="list-style-type: none"> 3. Use signal test software to choose a better location to install the LoRa devices. 	