

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	1200bit/s 、2400bit/s 、4800bit/s 、9600 bit/s 、19200 bit/s 、38400 bit/s 、57600 bit/s 、115200 bit/s 、Default: 4800bit/s

Data frame format definition

Modbus-RTU communication protocol is adopted, 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

Ending structure ≥ 4 bytes of time

Address code: It is the address of the transmitter, which is unique in the communication network (factory default 0x01).

Function code: The function instruction of the command issued by the host, this transmitter only uses the function code 0x03 (reading register data).0x06, 0x10 (write register data).

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.

Host query frame structure:

Address code	Function code	Register start address	Register length	Check code low	Check code high
1byte	1byte	2byte	2byte	1byte	1byte

Slave machine response frame structure:

Address code	Function code	Effective bytes	Data area	Second data area	Nth data area	Check code
1byte	1byte	1byte	2byte	2byte	2byte	2byte

Register Address

Register address	PLC or configuration address	content	operating	Scope and definition
0000 H	40001	Oxygen concentration value	Read only	0~250 (Value after 10 times)
0002 H	40003			
0038 H	40057	Oxygen calibration value	Read and write	Write after 10 times expansion
07D0 H	42001	Device address	Read and write	1~254 (Factory default 1)
07D1H	42002	Device baud rate	Read and write	0 means 2400 1 means 4800 2 for 9600

Communication protocol example and explanation

Read the address and baud rate of the device with address 0x01

Inquiry frame (for example: address is 0x01 and baud rate is 4800)

Address code	Function code	Starting address	Data length	Check code low	Check code high
0x01	0x03	0x07 0xD0	0x00 0x02	0xC4	0x86

Reply frame

Address code	Function code	Effective bytes	Baud rate	Address	Check code low	Check code high
0x01	0x03	0x04	0x00 0x01	0x00 0x01	0x6A	0x33

Change address

Inquiry frame (assuming the modified address is 0x02 Note: power off and restart the device after modifying the address)

Address code	Function code	Starting address	Modify value	Check code low	Check code high
0x01	0x06	0x07 0xD0	0x00 0x02	0x08	0x86

Reply frame

Address code	Function code	Starting address	Modify value	Check code low	Check code high
0x01	0x06	0x07 0xD0	0x00 0x02	0x08	0x86

Modify the baud rate of address 0x01

Inquiry frame (assuming to modify the baud rate to 9600. Note: power off and restart the device after modifying the address)

Address code	Function code	Starting address	Modify value	Check code low	Check code high
0x01	0x06	0x07 0xD1	0x00 0x02	0x59	0x46

Reply frame

Address code	Function code	Starting address	Modify value	Check code low	Check code high
0x01	0x06	0x07 0xD1	0x00 0x02	0x59	0x46

Read the O2 value of the device address 0x01

Inquiry frame (single oxygen equipment can read 00 register or 02 register, three-in-one equipment can only read 02 register)

Address code	Function code	Starting address	Data length	Check code low	Check code high
0x01	0x03	0x00 0x02	0x00 0x01	0x25	0xCA

Response frame (for example, read oxygen as 10%Vol)

Address code	Function code	Returns the number of valid bytes	O2 value	Check code low	Check code high
0x01	0x03	0x02	0x00 0x64	0xB9	0xAF

O2 :
0064(Hexadecimal) =100=>O2=10%Vol

Conversion relationship between oxygen measurement unit Vol and ppm, mg/m3

The conversion formula is based on 25°C and 1 atmosphere pressure: X ppm = (Y mg/m3)(24.45)/(molecular weight) or Y mg/m3 = (X ppm)(molecular weight)/24.45

Only applicable for calculating oxygen (O2):

1%Vol=10000ppm 1ppm=1.31mg/m3