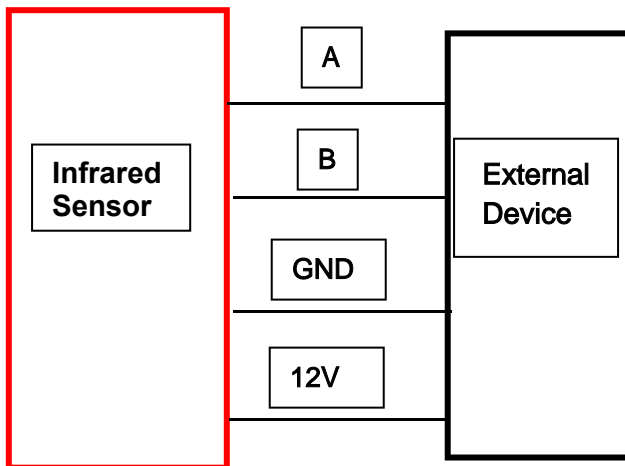


# RS485 infrared communication protocol V5.0 (modbus)

## Schematic diagram of communication protocol



Shanghai GASIM intelligent network type intelligent infrared can read and modify internal registers through 485 communication to achieve remote monitoring and output control. Communication protocol refer to MODBUS RTU communication format. Serial port setting: baud rate "9600", parity bit "none", data bit "8", stop bit "1", data is accessed by master-slave query mode, sensor is slave there is only one node on the bus sending data.

Note

: The interval between two instructions should be at least 100ms.

## (1 ) Data format:

1.Wired RS485 communication mode: baud rate 9600 , 8 data bits, 1 start bit, one stop bit, 10 bits without parity bit.

### 2.Data Format

IR ID	command code	data address	communication data	CRC check
1Byte	1Byte	2Byte	nByte	2Byte

Illustrate:

2.1 IR ID:1byte

2.2 Command code:

command code	Operation content
03H	Read sensor data
06H	Write sensor single address data

### 2.2 Infrared microwave data address (HEX)

Serial No.	Register Address HEX	Attribute	Register Name	Register Content Description	Operation Command	Mark
1	0001	R/W	Sensor ID	00 01 stands for ID=1	03 06	1-255
2	0002	R/W	Sensing holding time	Default 00 03 seconds	03 06	1-255 s
3	0003	R/W	Induction Mode	0000 OR; 0001 AND	03 06	
4	0004	R/W	LED On-off Setting	0000: LED Off 0001 LED On	03 06	The default led on / off setting must be set at the position where the LED jumper is set to on
5	0005	R/W	Sending data mode	0000: query; 0001 active	03 06	Default 0000
6	0006	R	Infrared sensing state	0000: No one; 0001 someone	03	
7	0007	R	Radar sensing state	0000: No one; 0001 someone	03	

## 2.3 Please refer to the specific agreement for communication data

Example

### **Host read sensor data:**

The host sends to the sensor: 02 03 00 01 00 01 D5 F9 Read the sensor ID a WORD

Sensor return data: 02 03 02 00 02 7D 85 Sensor ID 00 02

The host sends to the sensor: 02 03 00 01 00 06 94 3B , read the 6 sender data starting from the 0001 address of the sensor

Sensor return data: 02 03 0C 00 02 00 03 00 00 00 00 00 00 00 00 CF 39,

### **The host modifies the sensor data :**

The host modifies the sensor ID of ID 2 to 5: 02 06 00 01 00 05 18 3A

After the sensor ID is set correctly, the data will be returned: 02 06 00 01 00 05 18 3A After the ID is set successfully, the LED will flash for 5 seconds

## 2.4 CRC check (the status is in the former CHL and the high position is in the latter CLH)

Check algorithm: MODBUS/CRC-16  $x^{16}+x^{15}+x^2+1$

## (2 ) Infrared sensor simple ID to modify the communication protocol

DATA0: B4 frame header

DATA1: C4 frame header

DATA2: Number of data 05

DATA3: Set infrared ID High

DATA4: Set infrared ID Low

DATA5: Set infrared ID High

DATA6: Set infrared ID Low

DATA7: 0X55

**Note:** To modify the ID in this way , the sensor needs to enter the ID setting mode. The way to enter is to press and hold the ID setting button S1 for more than 5 seconds, you will see the LED light of the sensor flashing rapidly, and the flashing frequency is 5HZ/ sec. At this time, you can set the ID by sending (2) data . After the setting is successful, the LED blinks and stops to exit the ID setting mode.

## (3 ) Light perception data format:

1. Wired RS485 communication mode: baud rate 9600 , 8 data bits, 1 start bit, one stop bit, 10 bits without parity bit.

2. Data Format

IR ID	command code	data address	communication data	CRC check
1Byte	1Byte	2Byte	nByte	2Byte

Illustrate:

2.1 Light sensor ID:1byte

2.2 Command code:

command code	Operation content
03H	Read sensor data
06H	Write sensor single address data

2.2 Light sensor data address(HEX)

Serial no	Register address HEX	Attributes	register name	Description of register contents	Operation command	Remark
1	0001	R/W	Light ID	00 01 means ID=1	03 06	1-255
2	0002	R/W	Read ambient brightness time interval	Default 00 03 seconds	03 06	1-255 seconds
3	0003	R/W	Illumination change value	Default 10	03 06	In active sending data mode, only the brightness change exceeds this setting value before sending data
4	0004	R/W	LED on and off setting	0000: LED off; 0001 on	03 06	Default 0001 LED on and off setting The LED jumper must be set to the ON position
5	0005	R/W	How to send data	0000: query; 0001 active	03 06	Default 0000
6	0006	R/W	Timing send time	Default 60 seconds	03 06	In active sending data mode, only the brightness change exceeds this setting value before sending data
7	0007	R	Illumination value		03	

### 2.3 Please refer to the specific agreement for communication data

Example

#### The host reads the light sensing data:

host sends to the light sensor : 02 03 00 01 00 01 D5 F9 read sensorID a WORD

Light sensor return data: 02 03 02 00 02 7D 85 Sensor ID 00 02

hostsends to the light sensor:02 03 00 01 00 06 94 3B, read sensor from 0001 address starts 6 sender data

Light sensor return data:02 03 0C 00 02 00 03 00 00 00 00 00 00 00 00 CF 39,

#### The host modifies the light perception data :

The host modifies the light perception of ID 2 to ID 5: 02 06 00 01 00 05 18 3A

After the light sensor ID is set correctly, the data will be returned: 02 06 00 01 00 05 18 3A After the ID is set successfully, the LED will flash for 5 seconds

2.4 CRC check (the status is in the former CHL high position in the latter CLH)

Check algorithm: MODBUS/CRC-16x16+x15+x2+1

### (4) Light sensor simple ID to modify the communication protocol

DATA0: B4 frame header

DATA1: C4 frame header

DATA2: Number of data 05

DATA3: Set infrared ID High

DATA4: Set infrared ID Low

DATA5: Set infrared ID High

DATA6: Set infrared ID Low

DATA7: 0X55

**Note: To modify the ID in this way , the sensor needs to enter the ID setting mode. The way to enter is to press and hold the ID setting button S1 for more than 5 seconds, you will see the LED light of the sensor flashing rapidly, and the flashing frequency is 5HZ/ sec. At this time, you can set the ID by sending (2) data . After the setting is successful, the LED blinks and stops to exit the ID setting mode.**

## **(5) Infrared light sensing data format**

5.1 Wired RS485 communication mode: baud rate 9600, 8 data bits, 1 start bit, one stop bit, 10 bits without parity bit

## 5.2 Data Format

ID	command code	data address	communication data	CRC check
1Byte	1Byte	2Byte	nByte	2Byte

Illustrate:

5.2.1 Infrared light sensor ID: 1 byte

5.2.2 Command code:

command code	Operation content
03H	Read sensor data
06H	Write sensor single address data

### 5.2.3 Infrared light sensor data address description (HEX)

NO	Register add HEX	Attributes	register name	Description of register	Operation command	Remark
1	0001	R/W	Sensor ID	00 01 means ID=1	03 06	1-255
2	0002	R/W	Induction holding time	Default 00 03 seconds	03 06	1-255 s
3	0003	R/W	Light sensitivity setting mode	0001: Shield light sense 0002: Infrared sensing is valid when ambient brightness is less than 10LUX, 003 Infrared sensing is effective when ambient brightness is less than 100LUX	03 06	0001 0002 0003
4	0004	R/W	LED on and off setting	0000: LED off; 0001 on	03 06	Default 0001 LED on and off setting The LED jumper must be set to the ON position
5	0005	R/W	How to send data	0000: query; 0001 active	03 06	Default 0000
6	0006	R	Infrared sensing status	0000: no one; 0001 someone	03	

### (6) Infrared light-sensing simple ID to modify the communication protocol

DATA0: B4 frame header

DATA1: C4 frame header

DATA2: Number of data 05

DATA3: Set infrared ID High

DATA4: Set infrared ID Low

DATA5: Set infrared ID High

DATA6: Set infrared ID Low

DATA7: 0X55

Note: To modify the ID in this way, the sensor needs to enter the ID setting mode. The way to enter is to long press the ID setting button S1 for more than 5 seconds, you will see the LED light of the sensor flashing rapidly, the flashing frequency is 5HZ/sec, at this time you can set the ID by sending (2) Data, ID setting After the success, the LED blinks and stops to exit the ID setting mode.

### (7) Infrared light sensor to easily modify the light sensor sensitivity communication protocol

DATA0: B6 frame header

DATA1: C6 frame header

DATA2: Number of data 05

DATA3: 0x00

DATA4: Sensitivity 01: Shield light sense, 02: Infrared induction works when <10LUX, 03 Infrared induction works when <100LUX

DATA5: 0x00

DATA6: Sensitivity

DATA7: 0X55

Note: To modify the light sensitivity in this way, the sensor needs to enter the light sensitivity setting mode. The way to enter is to long press the ID setting button S1 for more than 5 seconds, you will see the LED light of the sensor flashing rapidly, the flashing frequency is 5HZ/sec, at this time you can set the light sensitivity by sending (2) data. After the sensitivity setting is successful, the LED will stop flashing and exit the light sensitivity setting mode.