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# User Manual for model IOT-S300LGT Illuminance transmitter

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## ●Description

The illuminance sensor can be widely used for environmental detection and is installed in a standard mounting housing. The device adopts (4~20) mA, (0~5)V, (0~10)V, standard MODBUS-RTU communication protocol, RS485 signal output. . This transmitter is widely used in applications where ambient light levels need to be measured.

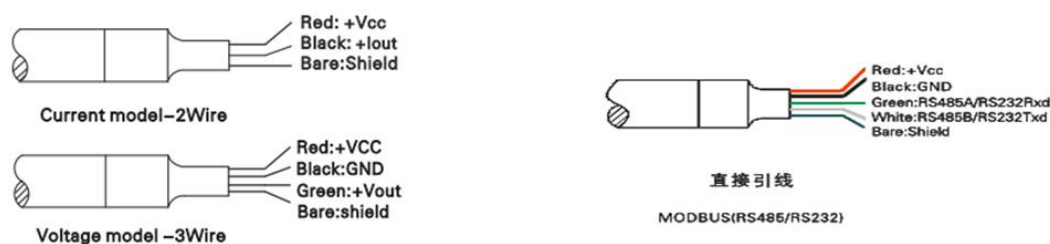
## ●Features

- (10-30)V wide DC voltage supply
- (4~20)mA, (0~5)V, (0~10)V, standard MODBUS-RTU communication protocol
- High sensitivity, low power consumption
- Temperature compensation, excellent linear output

## ●Technical index

Power supply	(10~30)VDC, (0~10) output limit 24VDC
Accuracy	±7%FS(25°C)
Range	0~65535Lux
Long-term stability	< 5%/year
Signal output	(4~20)mA/(0~5)V/(0~10)V/RS485(Modbus RTU communication protocol)
Response time	≤0.1S
Maximum power consumption	Analogsignal: 1.2W, digitalsignal: 0.4W
Operating temperature	-20~60°C 0%RH~80%RH
Storage temperature	-20~80°C

## ● Electrical interface and connection method



## ● Attention

1 After opening the product packaging, please check whether the appearance of the product is intact, verify that the relevant content of the product manual is consistent with the product, and keep the product manual for more than one year;

2 Strictly follow the wiring diagram of the product, and work under the excitation voltage of the product, do not use over voltage;

3 Do not knock the product to avoid damage to the appearance and internal structure;

4 The product has no customer self-repair parts, please contact our company in case of failure;

5 When the product is failure in normal use, the warranty period is one year (from the date of shipment from the company to the 13 months after the return date). The inspection standard is in accordance with our QC 's test result. After the deadline for maintenance, the company charges a cost fee, all products of the company for lifetime maintenance;

6 If you have any question, please check our website or call us.

## ● Important statement

Thank you very much for purchasing the Firstrate brand sensor products, we will serve you forever. Firstrate Sensor pursues outstanding quality and pays more attention to good after-sales service. If you have any questions, please call:

400-607-8500 (7 x 24h).

Operational errors can shorten the life of the product, reduce its performance, and can cause accidents in severe cases. Please read this manual carefully before using it. Submit this manual to the end user. Please keep the instructions in a safe place for your reference. The manual is for reference. The specific design shape is subject to the actual product.

## (RS485) MODBUS communication protocol

### ● The basic settings of the communication protocol

Transmission mode: MODBUS-RTU mode.

Communication parameters: default baud rate 9600bps (optional 2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps, can be configured according to user requirements), 1 start bit, 8 data bits, no parity (optional odd) Check, even parity), 1 stop bit, after changing the

communication parameters, it is recommended that the sensor be powered on again.

Slave address: The factory default is 1, which can be configured according to user requirements.

- keep the register list

parameter	MODBUS holding register address (16 bits)
Illuminance value	Address: 0000H~0001H 0000H stores the two high bytes of the illuminance measurement value, 0001H stores the two low bytes of the illuminance measurement value, for example, the read value of 0000H is 0x0003, and the read value of 0001H is 0x0D40, the illuminance measurement value It is 0x30D40 and is converted to decimal as 200000, that is, the measured value of illuminance is 200000 Lux.
Baud rate	Address: 0014H The setting values are 24, 48, 96, 192, 384, 576, 1152, corresponding to the baud rate, 2400, 4800, 9600, 19200, 38400, 57600, 115200, for example, the default baud rate is 9600, the setting value is 0x0060
Check Digit	Address: 0015H 0x0000 means no parity, 0x0001 means odd parity, 0x0002 means even parity
Slave address	Address: 0017H Default: 0x0001

Note: Access is prohibited for other addresses.

- Modbus RTU instruction

Supported MODBUS function codes: 0x03, 0x06

**Example of 03H function code: Read the illuminance measurement data of the sensor whose slave address is No. 1.**

- ★Host query command:

Slave Address	01H	Slave Address
Function	03H	function code
Starting Address Hi	00H	Start register address is 8 bits high
Starting Address Lo	00H	Start register address is lower 8 bits
No. of Registers Hi	00H	The upper 8 bits of the number of registers
No. of Registers Lo	02H	The lower 8 bits of the number of registers
CRC Check Lo	C4H	CRC check code is lower 8 bits

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CRC Check Hi	0BH	CRC check code is 8 digits high
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★Slave response:

Slave Address	01H	Slave Address
Function	03H	function code
Byte Count	04H	4 bytes in length
Data Hi	00H	The illuminance is: 0x00030D40, which is 200000Lux
Data Lo	03H	
Data Hi	0DH	
Data Lo	40H	
CRC Check Lo	0FH	CRC check code is lower 8 bits
CRC Check Hi	53H	CRC check code is 8 digits high

**Example of 06H function code: modify the baud rate (this example is modified to 57600bps)**

★ Host query command:

Slave Address	01H	Slave Address
Function	06H	function code
Starting Address Hi	00H	The baud rate holding register address is 0014H
Starting Address Lo	14H	The baud rate holding register address is 0014H
Data Hi	02H	When the baud rate is 57600 bps, the value of the register is 576, which is 0x0240.
Data Lo	40H	When the baud rate is 57600 bps, the value of the register is 576, which is 0x0240.

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CRC Check Lo	C9H	CRC check code is lower 8 bits
CRC Check Hi	5EH	CRC check code is 8 digits high

★Slave response:

Slave Address	01H	Slave Address
Function	06H	function code
Starting Address Hi	00H	The baud rate holding register address is 0014H
Starting Address Lo	14H	The baud rate holding register address is 0014H
Data Hi	02H	When the baud rate is 57600 bps, the value of the register is 576, which is 0x0240.
Data Lo	40H	When the baud rate is 57600 bps, the value of the register is 576, which is 0x0240.
CRC Check Lo	C9H	CRC check code is lower 8 bits
CRC Check Hi	5EH	CRC check code is 8 digits high