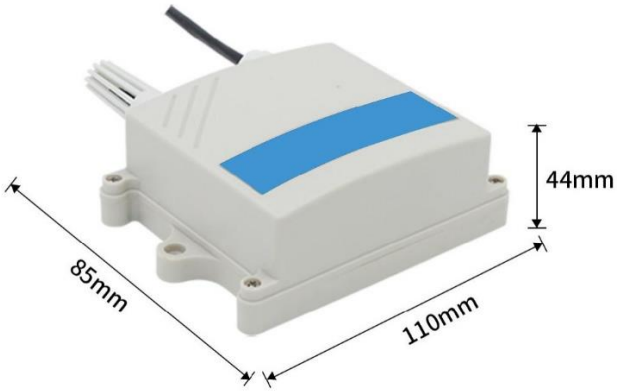
CWT-SLS Light sensor (RS485 type) Manual

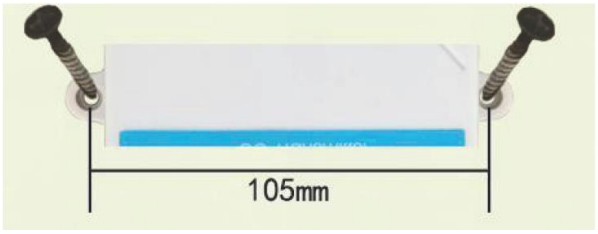
The transmitter is an optical precision photosensitive transmitter, and the output value unit of measurement is Lux, The use of wall-mounted waterproof housing, wall-mounted installation, high level of protection. RS485 output, support standard Modbus RTU protocol, product power supply for 10-30V wide voltage power supply, mainly used in agricultural greenhouses, flower culture greenhouse, Agricultural field, electronic equipment production lines, such as the need for illuminance monitoring occasions.

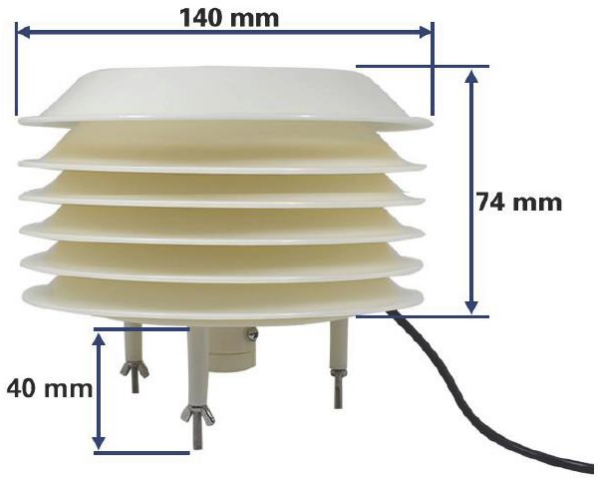
Specification

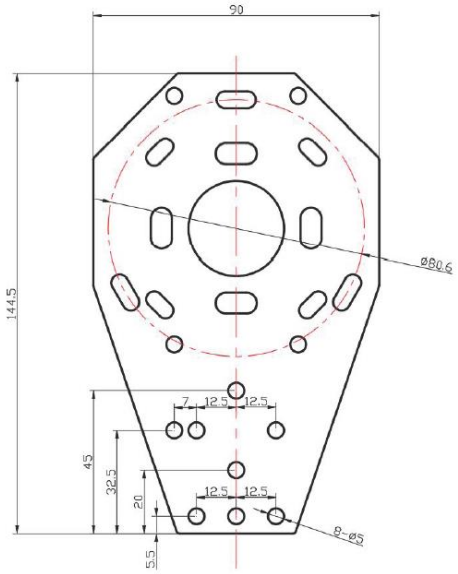
DC power Supply	10-30vdc	
Maximum power consumption	0.4W	
Precision	Humidity	±3%rh (60%rh,25C°)
	Temperature	±0.5 ° (25C°)
	Light intensity	±7% (25C°)
Light intensity Range	0-65535 Lux, 0-20 million Lux	
Temperature and humidity measurement process	-40 ° ~+60 °, 0%RH~80%RH	
Long-term stability	Temperature	≤ 0.1C° /y
	Humidity	≤ 1%/y
	Light intensity	≤ 5%/y
Response time	Temperature	≤ 18s (1m/s wind speed)
	Humidity	≤ 6s (1m/s wind speed)
	Light intensity	0.1s
Output	RS485 (Modbus RTU protocol)	

Size and installation









Wiring

Cable color	description
Brown	Power + (DC10-30V)
black	Power -
yellow	RS485 A+
Blue	RS485 B-

RS485 communication

Default parameters: 4800,n,8,1

Default device address is 1

Modbus RTU protocol

Read status registers, read function code: 0x30					
Register address (Hex)	PLC Address (decimal)	meaning	Number of bytes	content	remark
0000	40001	Humidity	2	0.1%RH	read
0001	40002	Temperature	2	0.1℃	read
0002	40003	Illuminance high 16 byte	2	Works for 0-200000 Lux (1 Lux) sensor	read
0003	40004	Illuminance low 16 byte	2		read
0006	40007	Illuminance	2	Works for 0-65535 Lux (1 Lux) and 0-200000 Lux (0.01 Lux) sensor	read
Parameters registers, read function code: 0x30 (0x40), write function code: 0x60					
07D0	42001	Slave ID	2		1-254
07D1	42002	baud rate	2		0: 2400 1: 4800 2: 9600 Default 4800

E.g., master read temperature humidity:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x00	0x00	0x00	0x02	0xC4	0X0B

Sensor responds:

Address	Function Code	Number of byte	Humidity value	Temperature value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x04	0x01 0xE6	0xFF 0x9F	0x1B	0xA0

Temperature calculates:

When temperature less than 0, value will be responded in complement

Temperature: FF9F H= -97 => temperature= -9.7℃

Humidity: 1E6 H= 486 => humidity= 48.6%

Read Illuminance from 40007 register. Works for measuring range is 0-65535 Lux (1 Lux) or 0-200000 Lux (0.01 Lux) sensor

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x00	0x06	0x00	0x01	0x64	0x0B

Sensor responds:

Address	Function Code	Number of byte	Lux value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x02	0x05 0x30	0xBB	0x00

The senser with 0-65535 measuring range,

Output value=0530 HEX=1328 DEC, so Illuminance=1328 Lux

The senser with 0-200000 measuring range,

Output value=0530 HEX=1328 DEC, so Illuminance=132800 Lux

Read Illuminance from 40003 and 40004 register. Works for measuring range is 0-200000 Lux (1 Lux) sensor

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x00	0x02	0x00	0x02	0x65	0XCB

Sensor responds:

Address	Function Code	Number of byte	LuX (Hi) value	LuX (Lo) value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x04	0x00 0x03	0x0D 0x40	0x0F	0x53

The senser with 0-200000 measuring range,

Output value=30D40 HEX=200000 DEC, so Illuminance=200000 Lux

Set slave ID

E.g., set slave ID=2, Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	ID	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD0	0x00 0x02	0x08	0x86

Sensor responds:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	ID	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD0	0x00 0x02	0x08	0x86

Set baud rate

E.g., set baud rate to 9600, Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	command	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD1	0x00 0x02	0x59	0x46

Sensor responds:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	command	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD1	0x00 0x02	0x59	0x46

Enquiry slave ID

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0xFF	0x03	0x07	0xD0	0x00	0x01	0x91	0x59

Sensor responds:

Address	Function Code	Number of Points	address	Error Check (Lo)	Error Check (Hi)
0xFF	0x03	0x02	0x00 0x01	0x50	0x50