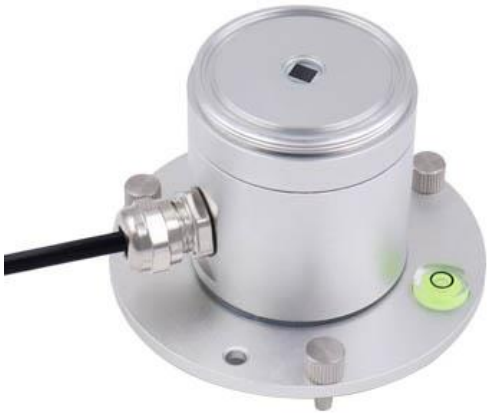
CWT-UR Ultraviolet radiation transmitter manual (RS485 type)

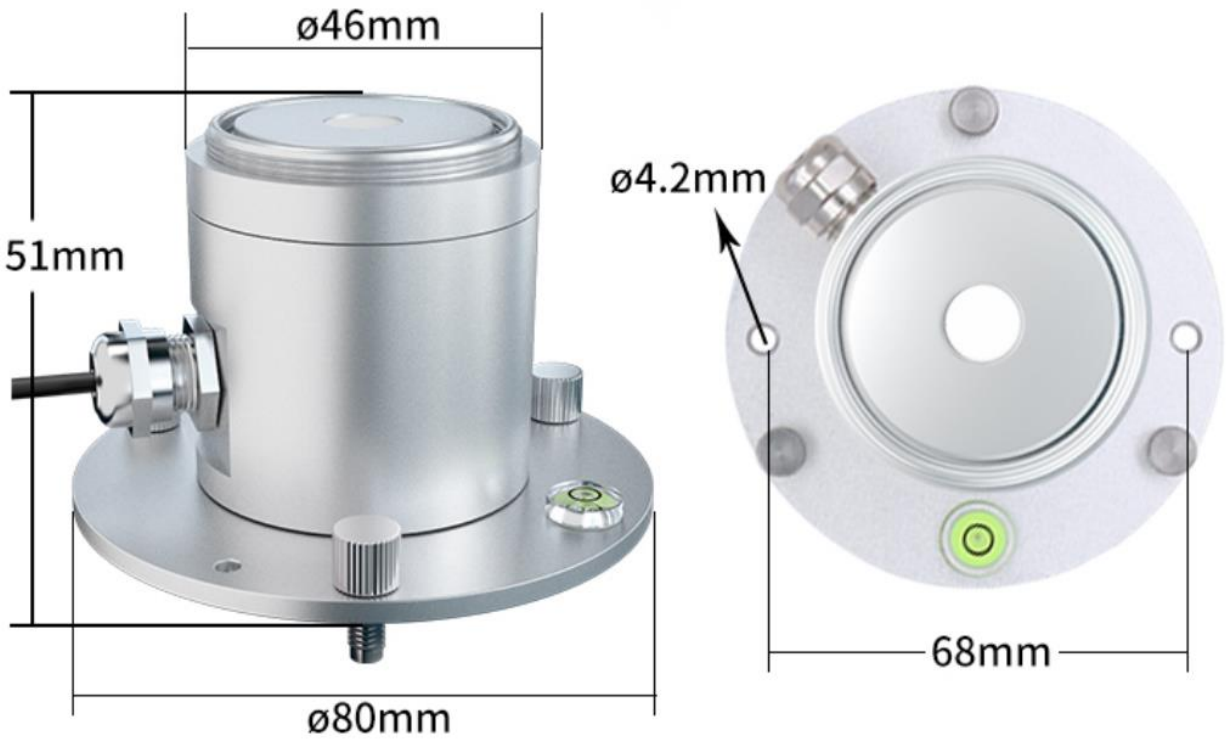


This product is based on the principle that photosensitive elements convert ultraviolet rays into measurable electrical signals to realize online monitoring of ultraviolet rays. This product can be widely used in environmental monitoring, meteorological monitoring, agriculture, forestry and other environments. Measure ultraviolet rays in the atmosphere and in environments such as artificial light sources.

Specification

DC power Supply	10-30vdc
Power consumption	0.06W
Work temperature	-25°C ~+60°C
UV intensity measuring range	0~15 mW/ cm2
Resolution	0.01 mW/ cm2
Precision	±10% FS(60%RH,25℃)
UV index measuring range	0-15
Measurement wavelength range	290-390 nm
Response time	UV intensity: 0.2s
	UV index: 0.2s
Linearity	≤±1%
Long-term stability	≤±3%
Output	RS485 (Modbus RTU protocol)
IP Protect	IP67

Size and installation



Installation method

1. Use screws through the mounting holes on the sensor to fix the sensor on the mounting bracket
2. Make sure the device is parallel to the ground (adjust the hand screw and check the level of the bubble to determine whether it is parallel)
3. After installation, remove the protective cover

Wiring

	Cable color	Description
Power	Brown	Power + (7~30V DC)
	Black	Power-
Communication	green	485+
	Blue	485-

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	unit	remark
0000H	40001	UV intensity	2	0.01 mW/ cm2	Read
0001H	40002	UV index	2	0-15	Read
0052H	40083	UV intensity calibration value	2	0.01 mW/ cm2	Read/Write
Parameters registers, read function code: 0x30, write function code: 0x60					
07D0H	42001	Slave ID	2	1-254	Read/Write
07D1H	42002	baud rate	2	0: 2400 1: 4800 2: 9600 Default 4800	Read/Write

Read UV intensity

Master sends request:

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	0x01	0x84	0X0A

Sensor responds:

Address	Function Code	Number of byte	UV intensity	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x02	0x01 0x43	0x9B	0xAF

UV intensity value:

0143 (hex) =323 (DEC) => UV intensity = 3.23mW/ cm2

Read UV index

Master sends request:

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	0x01	0x00	0x01	0x74	0X0A

Sensor responds:

Address	Function Code	Number of byte	UV index	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x02	0x00 0x03	0xF8	0x45

UV index value:
0003 (hex) =3 (DEC) => UV index = 3

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