

UV Digital Probe

Code: 86129
User Manual V4.43

Please read this manual carefully before using and reserve it for reference.

I. Product Introduction

UV Digital Probe is an ultra-small intelligent UV digital probe which can be used for all situations that need UV power and temperature values. The probe has standard RS485 communication interface and MODBUS communication protocol. It is convenient to communicate with PLC, human-computer interface, computer and other equipment and collect and monitor real-time data. According to the tested UV spectrum range, application industry, etc., three different UV digital probes have been developed:

No.	Probe Model	Spectral Response	Application
1	UVALED	340nm-420nm	For UV LED area light intensity and energy measurement in UV curing
2	UVA	315nm-400nm	For high pressure mercury lamp light intensity and energy measurement in UV curing
3	UVC	230nm-280nm	254nm UV germicidal lamp light intensity and energy measurement

Standards for the product

JJG 879-2015 Verification Regulation of Ultraviolet Radiometers

WST 367-2012 Regulation of disinfection technique in healthcare settings

QB/T 2826-2017 Ultraviolet curing offset ink

II. Parameters

Probe Model	UVALED	UVA	UVC
Spectral response	340nm-420nm, calibrated at 395nm	315nm-400nm, $\lambda_p = 365\text{nm}$	230nm-280nm, $\lambda_p = 254\text{nm}$
Power measurement range	0-20000mW/cm ²	0-2000mW/cm ²	0-200000μW/cm ²
Energy measurement range	0 - 4 × 10 ⁹ mJ/cm ²		0 - 4 × 10 ⁹ μJ/cm ²
Resolution	1mW/cm ²	0.1mW/cm ²	0.1μW/cm ²
Measurement accuracy (H is the standard	H<50mW/cm ² : ±5 mW/cm ²	H<5mW/cm ² : ±0.5mW/cm ²	H<50μW/cm ² : ±5μW/cm ² H>=50μW/cm ² : ±10%H

value)	$H \geq 50 \text{mW/cm}^2: \pm 10\% H$	$H \geq 5 \text{mW/cm}^2: \pm 10\% H$	
Sampling speed	2048times/s		6 times/s
Data fresh cycle	200ms		500ms
Test light hole diameter	$\Phi 10 \text{mm}$		
Communication line length	1m, resistant to high temperature of 80°C		
Detector line length	0.5m, resistant to high temperature of 200°C		Integrated
Communication interface	RS485		
Communication protocol	MODBUS		
Supply Voltage	DC 5V ~ 24V		
Operating Current	20mA		
Operating Power Consumption	100mW		
Operation temperature	$-25^\circ \text{C} - 85^\circ \text{C}$ (Humidity less than 85%, no condensation)		
Controller size	72.5*32*15.1(mm)		
Probe size	35*15*14.5(mm)		35*23*16.7(mm)

The following figure shows the appearance of each model:

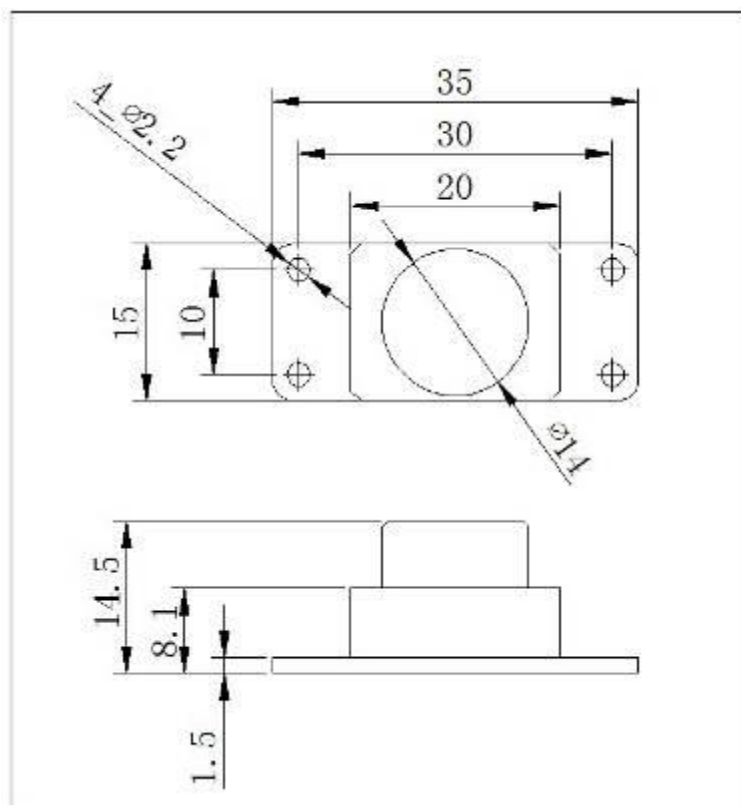


UVALED/UVA Digital Probe

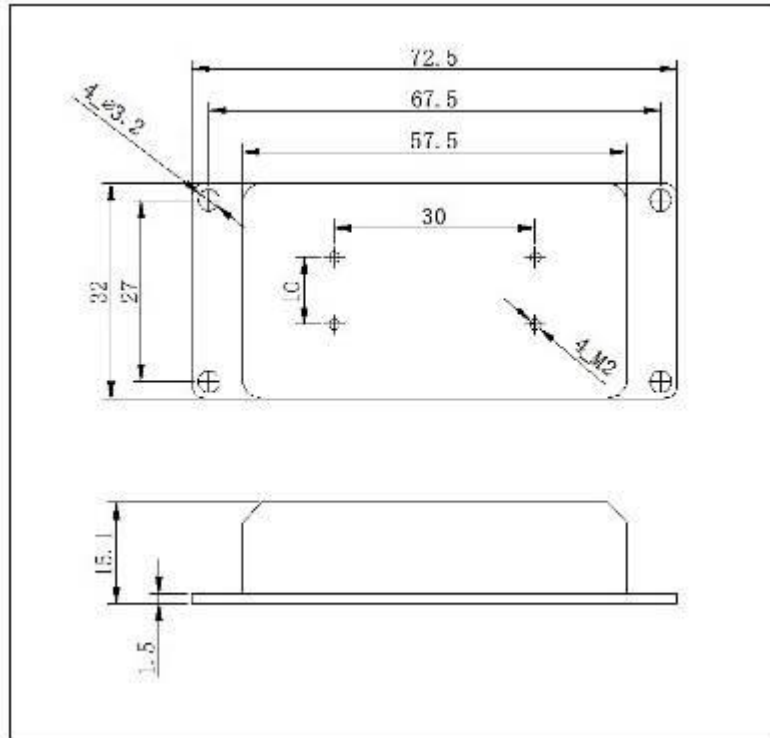


UVC Digital Probe

III. Dimensional drawing

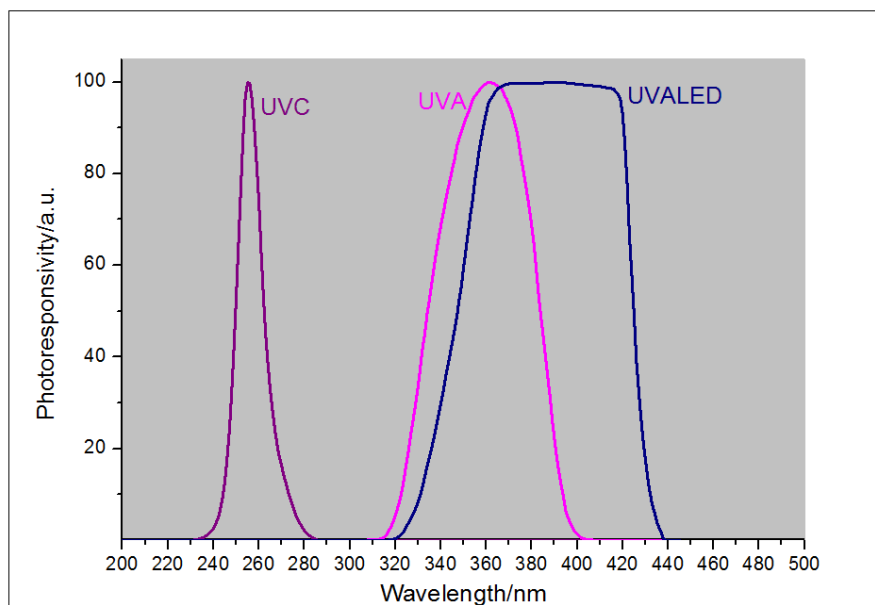


Probe dimensional drawing



Controller dimensional drawing

IV. Spectral response curve



V. Communication parameters

1. Station number

The digital probe supports standard MODBUS protocol. The default communication address is “1”. The communication address can be adjusted through “human-computer interface debugging tool” or

communication protocol. The address setting range is 1-247.

2. Baud rate

The default Baud rate of UV digital probe is 9600bps. The Baud rate can be changed through “human-computer interface debugging tool” or communication protocol. Optional Baud rates include 4800, 9600, 19200 and 38400.

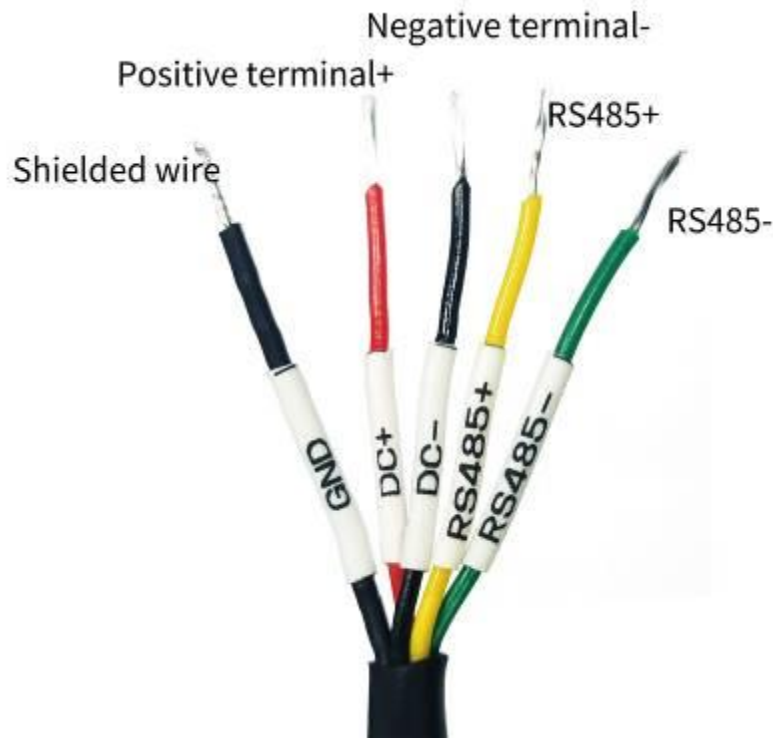
3. Communication protocol

It supports standard MODBUS protocol, and the communication protocol can be used to read probe measurement and set communication address and Baud rate. Detailed communication commands can be found in UV Digital Probe Communication Protocol.

4. Probe wiring

Electric wire	Function declaration
Black (GND)	Shielded ground
Red (DC+)	Positive power source (DC 5-24V)
Black (DC-)	Negative power source
Green/Blue	RS485-
White/Yellow	RS485+

Note: If computer connection is required, it is necessary to connect RS485 and switch RS232 or connect RS 485 and switch USB adapter.



VI. Measurement and matters needing attention

1. Face the receiving window of the probe to the UV light source and the UV radiation power density and temperature values can be obtained.
2. Avoid contact with corrosive items and keep away from high humidity environment.
3. Proposed calibration cycle is one year.
4. As the UV probe is sensitive to humidity changes, the preservation environment is very important. If the instrument will not be used for a long time, be sure to keep the probe in a low humidity environment. For example, the probe can be stored in a dry plastic bag.

VII. Instrument features

1. The UV digital probe has a very small size, and the detector and controller adopt a split design, which is very convenient for installation where measurement is needed. It is also possible to combine the detector and controller with screws for measurement.
2. The probe is powered by a 5-24V ultra-wide DC power supply range, which is very convenient for use in different industries on spot.
3. It adopts standard RS485 communication interface and MODBUS communication protocol. This UV intensity meter is equipped with high temperature wire capable of withstanding temperature of 200 °C, which can realize online monitoring in real time for a long time.

VIII. Human-computer interface debugging tool

“Human-computer interface debugging tool” is used for probe station number setting, Baud rate setting and data monitoring. This tool is not a must (optional), and the purpose is to enable customers to quickly evaluate probe and parameter settings. The setting of Baud rate and station number can also be realized by means of communication protocol. Please refer to *UV Digital Probe Human-machine Interface Manual*.

IX. Service

1. The meter has one-year warranty. If the instrument works abnormally, please send the whole instrument to our company for maintenance
2. Provide users with spare parts and lifelong maintenance services
3. Provide the users with the meter inspection service
4. Free technical support for long term