

SPS-F Full Spectrum Water Quality Sensor Datasheet

Product description

The SPS-F full spectrum water quality sensor adopts the measurement principle of UV-Vis absorption spectroscopy to monitor the "light pattern" information in the wavelength range of 200-800 nm online in real time, and realize multi-parameter measurement through AI algorithm, including: COD, TOC, DOC, BOD, TUR, TSS, nitrate, color, etc. It is mainly applied to influent feature identification and real-time online monitoring of domestic and industrial wastewater, as well as process parameter optimization and cost reduction and efficiency enhancement of sewage treatment.

It can be matched with the company's MC series meter controller and SPS-Server cloud service to realize remote monitoring of data and remote operation and maintenance of equipment.

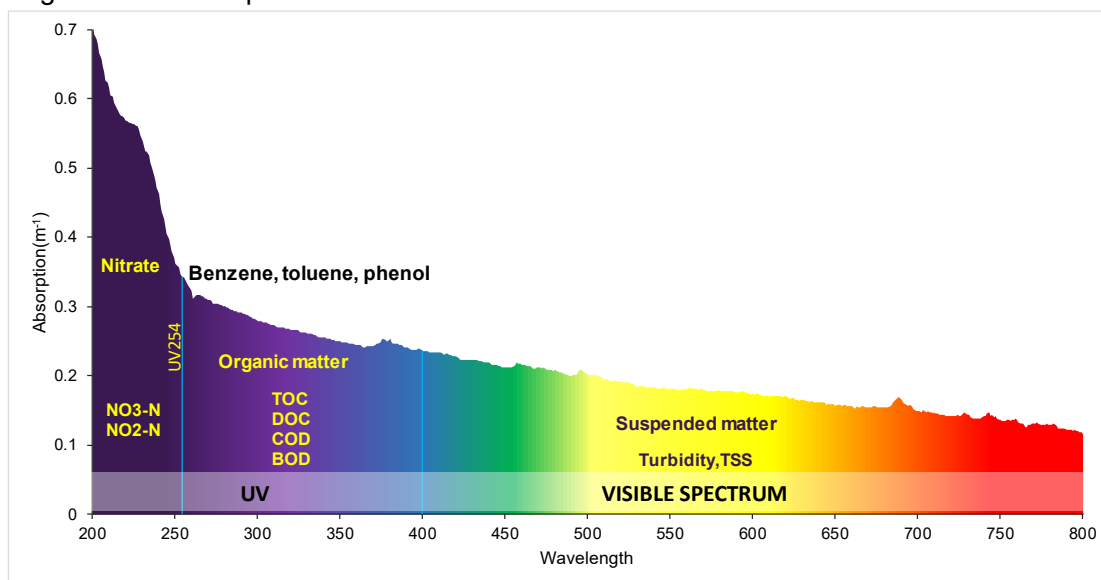


Application scenarios

- Monitoring of water in and out of sewage treatment plant
- Water quality monitoring in the treatment process of the sewage treatment plant
- Water quality monitoring of urban pipe network
- Basin, surface water, groundwater monitoring
- Tap water and pipe network monitoring
- Industrial water monitoring

Principle

Using spectral absorption method, the wavelength range is 200 nm-800 nm. According to the difference in the absorbance curves of different substances, the SPS-F full-spectrum sensor automatically compensates for the influence of organic matter/suspended matter.



Specifications

Sensor information

Model No.	Serial No.	Gap	Dimension /mm (D×L)	Material	Weight /kg
WQS-F-L01	02-0x-xxxxx	1mm	φ66x 513	AISI 316L	4.0
WQS-F-L02	02-1x-xxxxx	2 mm	φ66x 513	AISI 316L	4.0
WQS-F-L05	02-2x-xxxxx	5 mm	φ66x 513	AISI 316L	4.0
WQS-F-L15	02-4x-xxxxx	15 mm	φ66x 513	AISI 316L	4.0

Note: The “x” in the Serial No. represents a number (0~9).

Basical parameters

Principle	UV-Vis spectrum (200 nm ~ 800 nm)
Automatic compensation cross interferences	Organic matter / solid particles/turbidity
Power requirements	DC+12 V to +24 V
Measurement period	10 to 65535 seconds
Light source	Xenon lamp
Light source life time	>10 years
Detector	2048 pixels
Operating temperature	-5 to 50 °C (23 to 122 °F)
Pressure	5 bar (Gauge pressure), 2 to 40 °C (35.6 to 104 °F)
Power consumption	<8 W
Cleaning method	Cleaning brush
IP rating	IP68
Sample flow rate	<3 m/s

Communication interface

Hardware interface	RS485
Protocol	Modbus RTU
Wireless communication	WiFi/Bluetooth

Parameter information

Parameter	Model No.	Range	Resolution	Accuracy (Standard solution)
COD	WQS-F-L01	0-3000 mg/L	0.01 mg/L	±3% or ±6 mg/L
	WQS-F-L02	0-1000 mg/L	0.01 mg/L	±3% or ±3 mg/L
	WQS-F-L05	0-500 mg/L	0.01 mg/L	±3% or ±2.5 mg/L
	WQS-F-L15	0-150 mg/L	0.01 mg/L	±3% or ±1.5 mg/L
TUR	WQS-F-L01	0-2000 NTU	0.01 NTU	±3% or ±20 NTU
	WQS-F-L02	0-1000 NTU	0.01 NTU	±3% or ±10 NTU
	WQS-F-L05	0-500 NTU	0.01 NTU	±3% or ±10 NTU
	WQS-F-L15	0-150 NTU	0.01 NTU	±3% or ±2.5 NTU
NO ₃ -N	WQS-F-L01	0-100 mg/L	0.01 mg/L	±3% or ±1 mg/L
	WQS-F-L02	0-50 mg/L	0.01 mg/L	±3% or ±0.5 mg/L
	WQS-F-L05	0-20 mg/L	0.01 mg/L	±3% or ±0.2 mg/L
	WQS-F-L15	0-8 mg/L	0.01 mg/L	±3% or ±0.1 mg/L
Nitrate (NO ₃ ⁻)	WQS-F-L01	0-400 mg/L	0.01 mg/L	±3% or ±5 mg/L
	WQS-F-L02	0-200 mg/L	0.01 mg/L	±3% or ±2.5 mg/L
	WQS-F-L05	0-100 mg/L	0.01 mg/L	±3% or ±1 mg/L
	WQS-F-L15	0-30 mg/L	0.01 mg/L	±3% or ±0.5 mg/L
TOC	WQS-F-L01	0-1200 mg/L	0.01 mg/L	±3% or ±2.4 mg/L
	WQS-F-L02	0-300 mg/L	0.01 mg/L	±3% or ±1 mg/L
	WQS-F-L05	0-100 mg/L	0.01 mg/L	±3% or ±0.5 mg/L
	WQS-F-L15	0-30 mg/L	0.01 mg/L	±3% or ±0.2 mg/L
BOD	WQS-F-L01	0-1800 mg/L	0.01 mg/L	±3% or ±3.6 mg/L
	WQS-F-L02	0-600 mg/L	0.01 mg/L	±3% or ±3 mg/L
	WQS-F-L05	0-300 mg/L	0.01 mg/L	±3% or ±2.5 mg/L
	WQS-F-L15	0-100 mg/L	0.01 mg/L	±3% or ±1.5 mg/L
NO ₃ -N (High range)	WQS-F-L01	60-4000 mg/L	2 mg/L	±5% or ±20 mg/L
	WQS-F-L02	30-2000 mg/L	2 mg/L	±5% or ±10 mg/L
	WQS-F-L05	15-1000 mg/L	1 mg/L	±5% or ±5 mg/L
	WQS-F-L15	10-300 mg/L	0.5 mg/L	±5% or ±3 mg/L
Color	WQS-F-L01	0-500 PCU	10 PCU	10% F.S.
	WQS-F-L02	0-500 PCU	10 PCU	10% F.S.
	WQS-F-L05	0-500 PCU	10 PCU	10% F.S.
	WQS-F-L15	0-100 PCU	1 PCU	±5% or ±5 PCU.
TSS	WQS-F-L01	0-2000 mg/L	1 mg/L	±10% or ±40 mg/L
	WQS-F-L02	0-1000 mg/L	1 mg/L	±10% or ±20 mg/L
	WQS-F-L05	0-500 mg/L	1 mg/L	±10% or ±20 mg/L
	WQS-F-L15	0-150 mg/L	1 mg/L	±5% or ±10 mg/L
NO ₂ -N	WQS-F-L01	0-100 mg/L	0.01 mg/L	±3% or ±1 mg/L

	WQS-F-L02	0-50 mg/L	0.01 mg/L	±3% or ±0.5 mg/L
	WQS-F-L05	0-25 mg/L	0.01 mg/L	±3% or ±0.3 mg/L
	WQS-F-L15	0-8 mg/L	0.01 mg/L	±3% or ±0.2 mg/L
Nitrite (NO ₂ ⁻)	WQS-F-L01	0-320 mg/L	0.01 mg/L	±3% or ±4 mg/L
	WQS-F-L02	0-160 mg/L	0.01 mg/L	±3% or ±2 mg/L
	WQS-F-L05	0-80 mg/L	0.01 mg/L	±3% or ±1 mg/L
	WQS-F-L15	0-25mg/L	0.01 mg/L	±0.8 mg/L
DOC	WQS-F-L01	0-1200 mg/L	0.01 mg/L	±3% or ±2.4 mg/L
	WQS-F-L02	0-300 mg/L	0.01 mg/L	±3% or ±1 mg/L
	WQS-F-L05	0-100 mg/l	0.01 mg/L	±3% or ±0.5 mg/L
	WQS-F-L15	0-30 mg/L	0.01 mg/L	±3% or ±0.2 mg/L
SAC 254	WQS-F-L01	0-2220 Abs/m	0.01 Abs/m	±3% or ±4.44 Abs/m
	WQS-F-L02	0-800 Abs/m	0.01 Abs/m	±3% or ±3 Abs/m
	WQS-F-L05	0-500 Abs/m	0.01 Abs/m	±3% or ±2.5 Abs/m
	WQS-F-L15	0-130 Abs/m	0.01 Abs/m	±3% or ±1.5 Abs/m
H ₂ S	WQS-F-L15	0-5 mg/L	0.01 mg/L	±3% or ±0.1 mg/L
BTX	WQS-F-L15	0-60 mg/L	0.01 mg/L	±3% or ±1 mg/L
Temperature	WQS-F-Lxx	-5 to 50 °C	0.01 °C	±0.1 °C

Note:

1. The “x” in the serial number represents a number (0~9).
2. You need to tell us your parameters and spectrum configuration requirements first, we will configure the sensor according to your needs and charge you accordingly.



WWTP influent & sewer

		COD_KHP (mg/L)	COD (mg/L)	TUR (NTU)	NO ₃ -N (mg/L)	NO ₃ - (mg/L)	TSS (mg/L)	TOC (mg/L)	NO ₃ -N (High range) (mg/L)	Color (PCU)	NO ₂ -N (mg/L)	SAC254 (Abs/m)
SPS-F-L01	Min	0	0	0	0	0	0	0	60	0	0	0
	Max	4000	10000	2000	100	400	2000	600	4000	500	100	3300
SPS-F-L02	Min	0	0	0	0	0	0	0	30	0	0	0
	Max	2000	5000	1000	50	200	1000	300	2000	500	50	1600
SPS-F-L05	Min	0	0	0	0	0	0	0	15	0	0	0
	Max	500	1500	500	25	100	1000	100	1000	500	25	500

WWTP aeration

		COD_KHP (mg/L)	COD (mg/L)	TUR (NTU)	NO ₃ -N (mg/L)	NO ₃ - (mg/L)	TSS (mg/L)	TOC (mg/L)	NO ₃ -N (High range) (mg/L)	Color (PCU)	NO ₂ -N (mg/L)	SAC254 (Abs/m)
SPS-F-L01	Min	0	0	0	0	0	0	0	60	0	0	0
	Max	4000	10000	2000	100	400	2000	600	4000	500	100	3300
SPS-F-L02	Min	0	0	0	0	0	0	0	30	0	0	0
	Max	2000	5000	1000	50	200	1000	300	2000	500	50	1600
SPS-F-L05	Min	0	0	0	0	0	0	0	15	0	0	0
	Max	500	1500	500	25	100	1000	100	1000	500	25	500

WWTP effluent

		COD_KHP (mg/L)	COD (mg/L)	TUR (NTU)	NO ₃ -N (mg/L)	NO ₃ - (mg/L)	TSS (mg/L)	TOC (mg/L)	NO ₃ -N (High range) (mg/L)	Color (PCU)	NO ₂ -N (mg/L)	SAC254 (Abs/m)
SPS-F-L05	Min	0	0	0	0	0	0	0	15	0	0	0
	Max	500	1500	500	25	100	1000	100	1000	500	25	500
SPS-F-L15	Min	0	0	0	0	0	0	0	10	0	0	0
	Max	150	500	150	8	30	150	30	300	100	8	130

COD_KHP is COD standard solution, the above parameters are all derived from our laboratory, when using, please combine with the actual situation of the site to judge.

Product guarantee

Certification CE/RoHS

Warranty One year

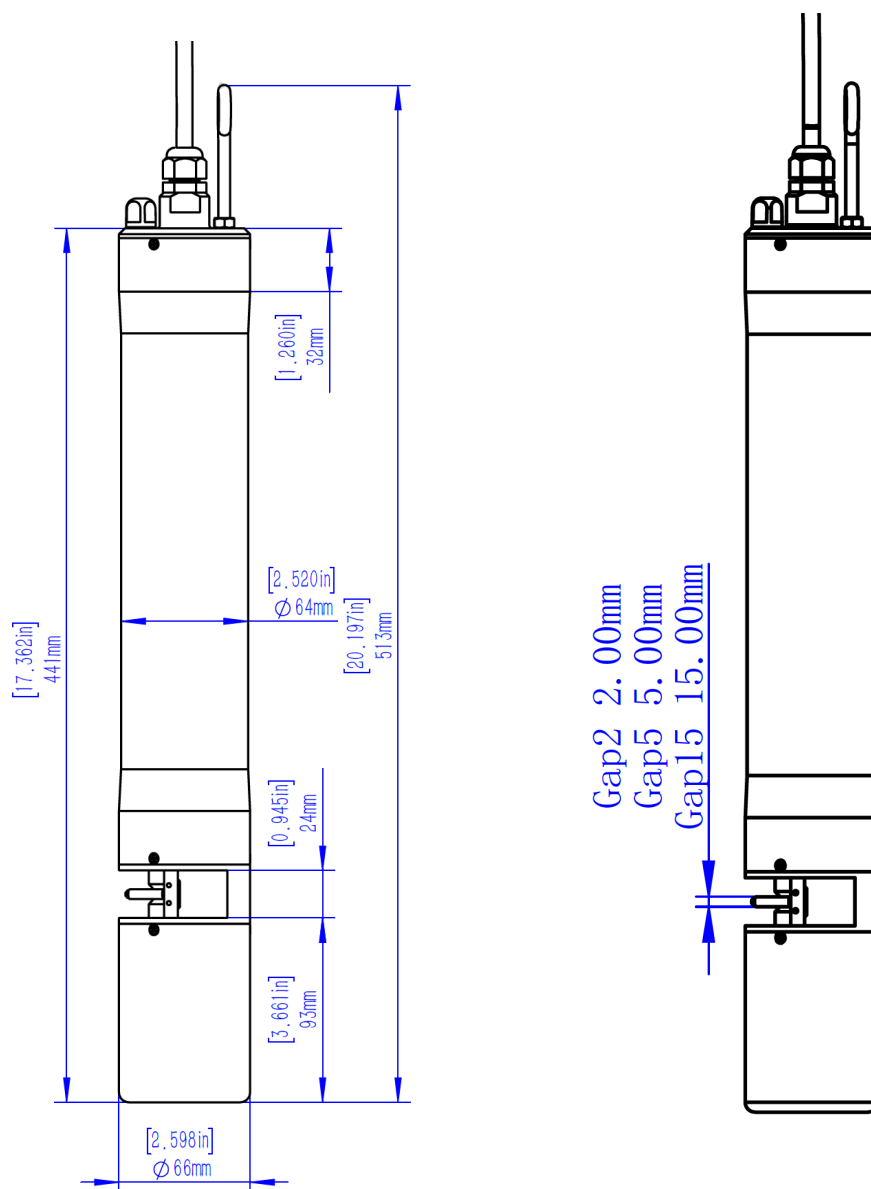
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Interface definition

The electrical connection of SPS-F series sensor adopts 5-wire + shielding interface design, anti-corrosion cable, standard 6m (wire length can be customized).

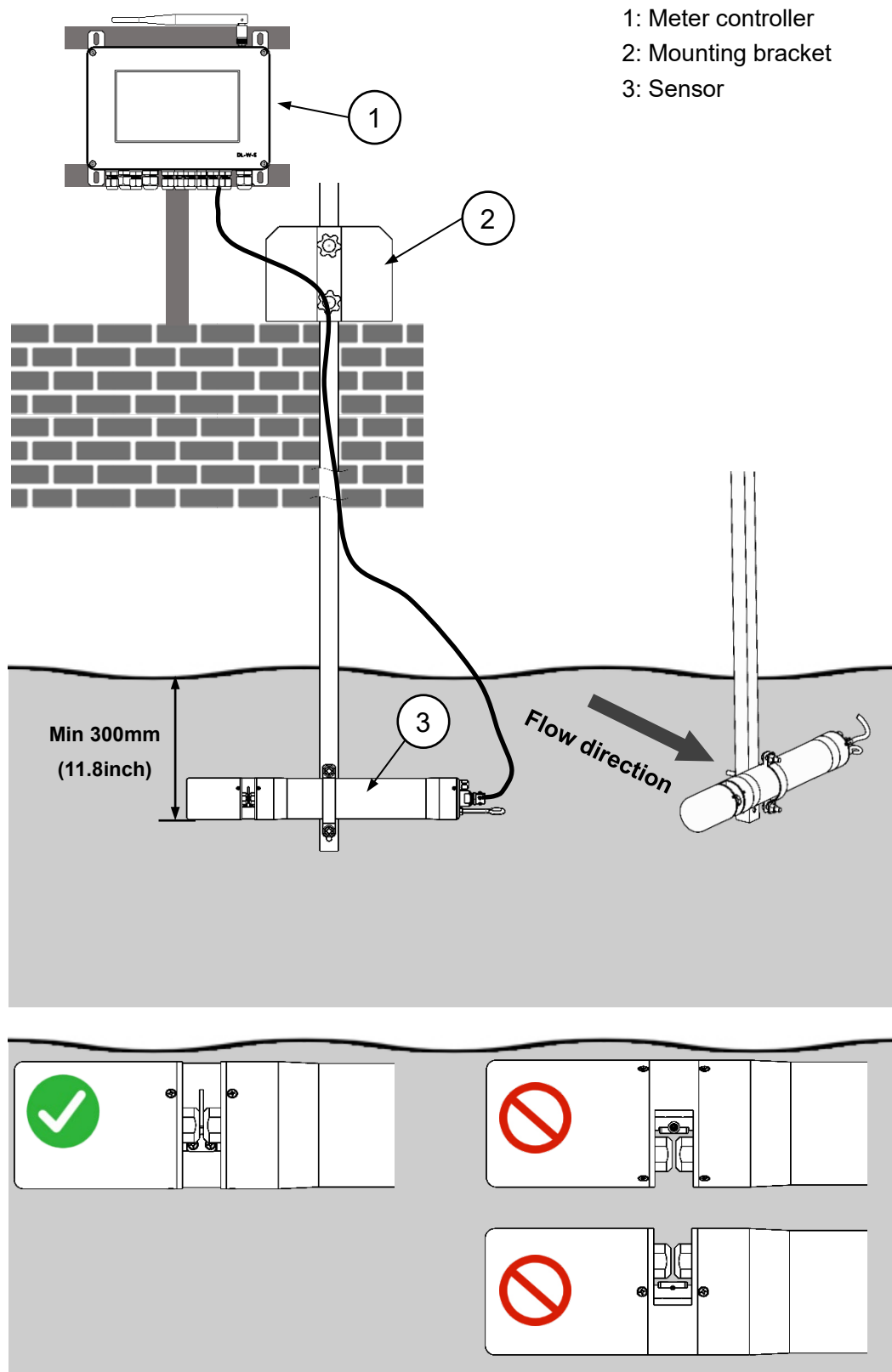


Dimensions



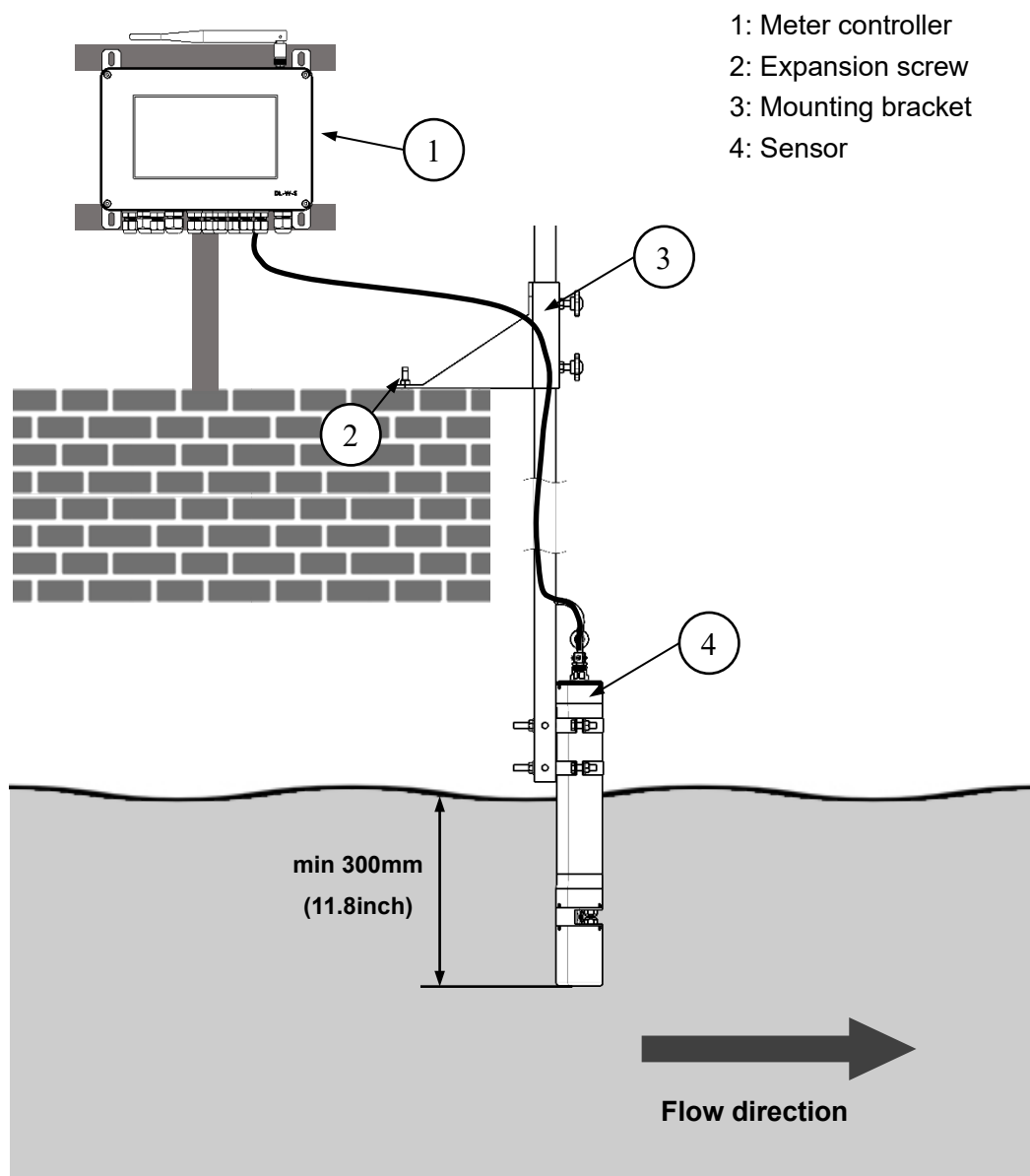
Horizontal installation

The SPS-F series sensor is recommended for submerged horizontal installation, which can effectively prevent suspended solids from depositing on the optical window.



Vertical installation

When the installation space is limited, it can be installed vertically. If there is a large amount of suspended matter in the water sample, the cleaning cycle of the sensor can be changed to 10 minutes (the default is 30 minutes), to reduce the influence of the accumulation of suspended matter on the optical window.



Note: The mounting bracket is not part of the sensor accessories, if necessary, purchase it separately. Please contact us for custom sizes.

Sensor status

LED status (Flashing frequency: flashing for 0.5s, off for 0.5s)			illustrate	Indicator picture
Red LED	Green LED	Blue LED		
×	×	×	Lights off The sensor is not connected or faulty	
×	×	√	Blue light Measurement is normal Network connected	
×	√	×	Green light Measurement is normal The network is not connected	
√	×	×	Red light Measurement abnormal The network is not connected	
√	√	×	Orange light Measurement abnormal Network connected	

APP usage information

SPS-F series full-spectrum water quality sensor supports on-site use of mobile phone SPS-App to connect the sensor through Bluetooth for parameter reading and debugging. Please refer to the "SPS-App User Manual" for specific usage. For more information go to: <http://wqs.googleclj.it.com:510/firmware/wqs-app/bin/wqs-App.apk> to download the mobile client. Or use your browser to scan the QR code below to download.



Applications

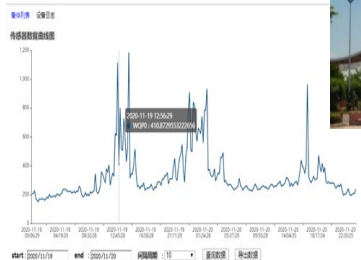
Industrial Wastewater Monitoring

Pain points

- High cost of operation and maintenance of chemical online equipment
- Excessive pollutant discharge
- Processing costs remain high

Solution

- Real-time monitoring of water outlet or water inlet



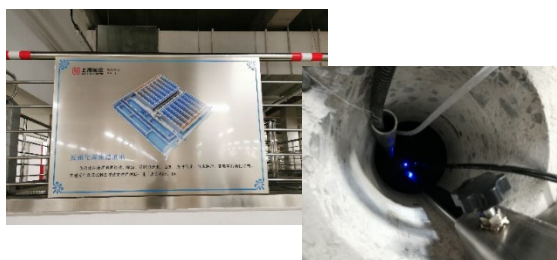
Sewage treatment process monitoring

Pain points

- Unknown status of biochemical operating system
- Abnormalities cannot be handled in time
- High cost of operation and maintenance of chemical online equipment
- Equipment operation energy consumption and chemical consumption cost are high and uncontrollable

Solution

- Real-time monitoring of the whole process
- Optical sensor online monitoring, low operating cost and easy to use
- Add intelligent control system to make aeration and dosing precise and controllable



Sewage network monitoring

Pain points

- High-concentration sewage enters the sewage treatment system and cannot be treated in time, causing impact on the system

Solution

- Real-time monitoring of pipeline network and pre-pumping station

