SPS-F Full Spectrum Water Quality Sensor Datasheet

Product description

The SPS-F multi-parameter 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.



- 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	Material	Weight /kg						
SPS-F-L02	02-1x-xxxxx	2 mm	φ66x 505	AISI 316L	4.0						
SPS-F-L05	02-2x-xxxxx	5 mm	φ66x 505	AISI 316L	4.0						
SPS-F-L15	02-4x-xxxxx	15 mm	φ66x 505	AISI 316L	4.0						

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

Basical parameters							
Measuring principle	Ultraviolet-visible spectrum (200 nm~800 nm)						
Automatic compensation for cross	Organic matter/solid particles/turbidity						
interferences							
Power requirements	DC+12 V to +24 V						
Measurement period	10 to 65535 seconds						
Light source	Xenon lamp						
Operating temperature	0 to 50 °C						
Pressure	5 bar (87 psi) maximum compared to air, 2 to 40 $^{\circ}\text{C}$ (35.6 to 104 $^{\circ}\text{F})$						
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 info	Parameter information									
Parameter	Model No.	Range	Resolution	Accuracy (Standard solution)						
	SPS-F-L02	0-1000 mg/L	0.01 mg/L	±3% or ±3 mg/L						
COD	SPS-F-L05	0-500 mg/L	0.01 mg/L	±3% or ±2.5 mg/L						
	SPS-F-L15	0-150 mg/L	0.01 mg/L	±3% or ±1.5 mg/L						
	SPS-F-L02	0-1000 NTU	0.01 NTU	±3% or ±10 NTU						
TUR	SPS-F-L05	0-500 NTU	0.01 NTU	±3% or ±10 NTU						
	SPS-F-L15	0-150 NTU	0.01 NTU	±3% or ±2.5 NTU						
	SPS-F-L02	0-50 mg/L	0.01 mg/L	±3% or ±0.5 mg/L						
NO ₃ -N	SPS-F-L05	0-20 mg/L	0.01 mg/L	±3% or ±0.2 mg/L						
	SPS-F-L15	0-8 mg/L	0.01 mg/L	±3% or ±0.1 mg/L						
	SPS-F-L02	0-300 mg/L	0.01 mg/L	±3% or ±1 mg/L						
TOC	SPS-F-L05	0-100 mg/l	0.01 mg/L	±3% or ±0.5 mg/L						
	SPS-F-L15	0-30 mg/L	0.01 mg/L	±3% or ±0.2 mg/L						
Nitrato	SPS-F-L02	0-200 mg/L	0.01 mg/L	±3% or ±2.5 mg/L						
	SPS-F-L05	0-100 mg/L	0.01 mg/L	±3% or ±1 mg/L						
(1103)	SPS-F-L15	0-30 mg/L	0.01 mg/L	±3% or ±0.5 mg/L						
	SPS-F-L02	0-600 mg/L	0.01 mg/L	±3% or ±3 mg/L						
BOD	SPS-F-L05	0-300 mg/L	0.01 mg/L	±3% or ±2.5 mg/L						
	SPS-F-L15	0-100 mg/L	0.01 mg/L	±3% or ±1.5 mg/L						
	SPS-F-L02	0-1000 mg/L	1 mg/L	±5% or ±10 mg/L						
TSS	SPS-F-L05	0-500 mg/L	1 mg/L	±10% or ±20 mg/L						
	SPS-F-L15	0-150 mg/L	1 mg/L	±5% or ±10 mg/L						
	SPS-F-L02	0-300 mg/L	0.01 mg/L	±3% or ±1 mg/L						
TOC	SPS-F-L05	0-100 mg/L	0.01 mg/L	±3% or ±0.5 mg/L						
	SPS-F-L15	0-30 mg/L	0.01 mg/L	±3% or ±0.2 mg/L						
NO3-N	SPS-F-L02	30-2000 mg/L	2 mg/L	±5% or ±10 mg/L						
(High range)	SPS-F-L05	15-1000 mg/L	1 mg/L	±5% or ±5 mg/L						
(1.1911)(1.190)	SPS-F-L15	10-300 mg/L	0.5 mg/L	±5% or ±3 mg/L						
	SPS-F-L02	0-500 PCU	10 PCU	10% F.S.						
Color	SPS-F-L05	0-500 PCU	10 PCU	10% F.S.						
	SPS-F-L15	0-100 PCU	1 PCU	±5% or ±5 PCU.						
	SPS-F-L02	0-50 mg/L	0.01 mg/L	±3% or ±0.5 mg/L						
NO ₂ -N	SPS-F-L05	0-25 mg/L	0.01 mg/L	±3% or ±0.3 mg/L						
	SPS-F-L15	0-8 mg/L	0.01 mg/L	±3% or ±0.2 mg/L						
Temperature	SPS-F-Lxx	0-60 °C	0.0625 °C	±1 °C						

Note:

The "x" in the Serial No. represents a number $(0 \sim 9)$. 1.

You need to tell us your parameters and spectrum configuration requirements first, we will configure the sensor 2. according to your needs and charge you accordingly.



WWTP influent & sewer

		COD_KHP (mg/L)	COD (mg/L)	TUR (NTU)	NO3-N (mg/L)	NO₃- (mg/L)	TSS (mg/L)	TOC (mg/L)	NO3-N (High range) (mg/L)	Color (PCU)	NO2-N (mg/L)	UV254 (Abs/m)
	Min	0	0	0	0	0	0	0	60	0	0	0
3F3-F-L01	Max	4000	10000	2000	100	400	2000	600	4000	500	100	3300
	Min	0	0	0	0	0	0	0	30	0	0	0
3F3-F-L02	Max	2000	50000	1000	50	200	1000	300	2000	500	50	1600
	Min	0	0	0	0	0	0	0	15	0	0	0
3F3-F-L03	Max	500	1500	500	25	100	1000	100	1000	500	25	500

WWTP aeration

		COD_KHP (mg/L)	COD (mg/L)	TUR (NTU)	NO₃-N (mg/L)	NO ₃ - (mg/L)	TSS (mg/L)	TOC (mg/L)	NO₃-N (High range) (mg/L)	Color (PCU)	NO2-N (mg/L)	UV254 (Abs/m)
	Min	0	0	0	0	0	0	0	60	0	0	0
5P5-F-L01	Max	4000	10000	2000	100	400	2000	600	4000	500	100	3300
	Min	0	0	0	0	0	0	0	30	0	0	0
3P3-F-L02	Max	2000	50000	1000	50	200	1000	300	2000	500	50	1600
	Min	0	0	0	0	0	0	0	15	0	0	0
3F 3-F-L03	Max	500	1500	500	25	100	1000	100	1000	500	25	500

WWTP effluent

		COD_KHP (mg/L)	COD (mg/L)	TUR (NTU)	NO₃-N (mg/L)	NO₃- (mg/L)	TSS (mg/L)	TOC (mg/L)	NO₃-N (High range) (mg/L)	Color (PCU)	NO2-N (mg/L)	UV254 (Abs/m)
	Min	0	0	0	0	0	0	0	15	0	0	0
3P3-F-L05	Max	500	1500	500	25	100	1000	100	1000	500	25	500
	Min	0	0	0	0	0	0	0	10	0	0	0
3P3-F-L13	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

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual. The manufacturer reserves the right to make changes in this manual and the products it describes at any time, without notice or obligation.



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			
	×	\checkmark	×	Green light Measurement is normal The network is not connected			
	\checkmark	×	×	Red light Measurement abnormal The network is not connected			
	\checkmark		×	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:<u>http://wqs.googolcjit.com:510/firmware/wqs-app/bin/wqs-App.apk</u> 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

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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



