UV254 Multi-wave COD Sensor V2.0

UV254 correlated parameters $_1$: COD TOC BOD SS Turbidity

Connector
IP68

Safe cover
#2

¾ NPT

Cuvette

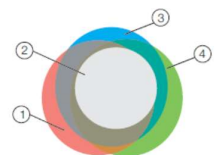Wiper
Sub-system

Safe cover
#1
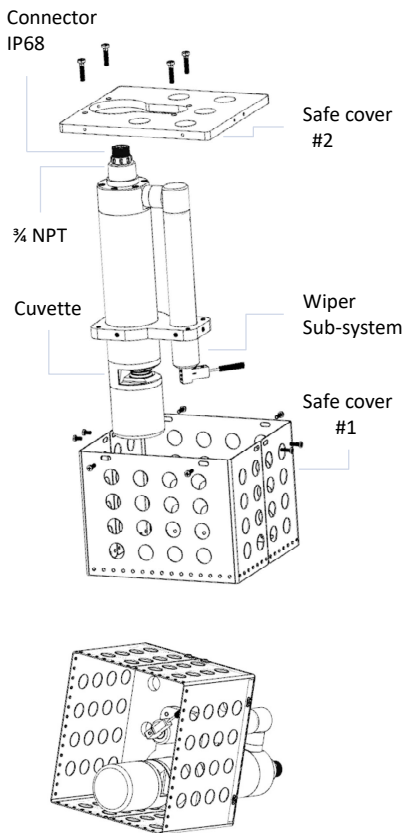
The Broadsensor UV254 sensor is an optical-based absorption and transmittance with UV LED and PD technology sensor. The sensor measures the absorption at 254nm and 550nm at the same time to compensate the SAC measurement for interferences from turbidity and color.

Key Advantages:

- 2 wavelength absorption measurement: 254nm and 550nm for turbidity and color compensation.
- SAC measurement used to determine organic loading without reagents.
- Measurement directly in the process, no sample processing or reagent required.
- Fast response, minimum 10 second.
- Cold light source (UV LED) and rugged PD, long life time and low drift.
- Support leakage alarm
- Build in auto wiper sub-system prevents biofouling from taking place.

Note：
1，TOC and BOD are calculated from COD, SS and turbidity is from SAC of 550nm.
2，The relationship between COD BOC SAC and TOC(from Hach)

Substance groups measured

1.	COD	3.	SAC
2.	BOD	4.	TOC

Technical Specifications

Measurement Method	Absorption measurement at 254 nm, DIN 38402 C2, DIN 38404, HJ/T191 standard
Range	6mm cuvette gap 0.15~300mg/L equiv. KHP(COD solution) 2mm cuvette gap 0.5~1000mg/L equiv. KHP(COD solution) 2mm cuvette gap 1.5~1500mg/L equiv. KHP(COD solution)
Resolution	0.1mg/L or 0.01mg/L COD
Repeatability	±1% FS equiv. KHP
Operating temperature	0~45℃
Storage Temperature	-10~50℃
Clean system	Auto wiper system(default)
Warranty	1 year
Depth	IP68, 10m Max
Power	12V 20mA (normal), 200mA (Max)
Output	RS485 and Modbus protocol
Materials	Titanium, SS316, POM, Nylon, PUR, quartz glass
Dimensions	Length 280mm, diameter 142x157mm
Flow rate	< 3 m/s
Response time	Minimum 10s T90
Field life*	Sensor 3 years or greater, wiper sub-system 1.5 years or greater
Recommended Calibration maintain Frequency*	Sensor 3 months, wiper sub-system inspection 6 months.

Note:
*Field life and calibration frequency dependent on site conditions.

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Default: Baud rate: 9600 8N1, 32-bit IEEE 754 floating-point value(little-endian)
Modbus address is 0x01

Address	Length	Type	Access	Description
0x0009	4	Char	R	SN number. e.g. V2103021
0x000E	1	UShort	R/W	MODBUS address, default 0x01
0x0012	1	UShort	R/W	Baud rate 0-1200，1-4800，2-9600(default)，3-19200 4-38400，5-115200
0x0014	1	UShort	R	Sensor alarm, reset to be 0x00(no alarm) after reading. 0x01-temperature alarm(out of 0-50℃) 0x02-Leakage alarm(inside humidity is over 50%) 0x04-user calibration data alarm （out of 0.5<K<2, -100<B<100） 0x40-wiper alarm 0x80-Power supply voltage alarm(out of 9-26V)
0x0605	1	UShort	R/W	Float data format 0-DCBA，1-BADC，2-CDAB，3-ABCD（Default, little-endian)
0x001A	1	UShort	R/W	Wiper interval, Unit: minute, Default is 60
0x0030	2	Float	R	Temperature, ℃
0x0040	2	Float	R	Temperature, it is a mirror of 0x0030, it is as same as 0x0030
0x0042	2	Float	R	COD data, mg/L
0x0044	2	Float	R	TOC data, mg/L, calculated from COD
0x0046	2	Float	R	SAC data Abs/m
0x0048	2	Float	R	BOD data, mg/L, calculated from COD
0x004A	2	Float	R	T(Transmittance), %, e.g. 0.77 is 77%
0x004C	2	Float	R	Turbidity data, NTU
0x0056	2	Float	R	Inside humidity data, e.g. 77.8 is 77.8%
0x0060	2	Float	R/W	COD user calibration slope, K, default K=1.0
0x0062	2	Float	R/W	COD user calibration offset, B, default B=0
0x00B0	2	Float	R/W	TOC user calibration slope, K, default K=1.0
0x00B2	2	Float	R/W	TOC user calibration offset, B, default B=0
0x00B4	2	Float	R/W	SAC user calibration slope, K, default K=1.0
0x00B6	2	Float	R/W	SAC user calibration offset, B, default B=0
0x00B8	2	Float	R/W	BOD user calibration slope, K, default K=1.0
0x00BA	2	Float	R/W	BOD user calibration offset, B, default B=0
0x00BC	2	Float	R/W	T(Transmittance), user calibration slope, K, default K=1.0
0x00BE	2	Float	R/W	T(Transmittance), user calibration offset, B, default B=0
0x00C0	2	Float	R/W	Turbidity user calibration slope, K, default K=1.0
0x00C2	2	Float	R/W	Turbidity user calibration offset, B, default B=0

| Address	Length	Type	Access	Description
0x0087	1	UShort	R/W	Color compensation mode option 0-COD solution mode, 1- normal water mode(default), 2- yellow water mode, 3- blue water mode, 4- orange water mode,5- red water mode Note: Be careful to change mode, contact us if you want to change it from default to other mode.

Note:

1, Do not access the register which is not in this document.

2, Normal flow: Power on->delay 50mS->read SN(optional)->delay 2S or longer->read sensor data(DO NOT use one frame to get data if they are in discontinuous address)-> delay 2s or longer-> read sensor data.

3, Read and write user calibration data must be in ONE frame.

   e.g. Read frame: 01 03 00 60 00 04 44 17 , write/set frame: 01 10 00 60 00 04 08 9A 99 99 3F CD CC 4C BF 34 CF, set K=1.2 B=-0.8.
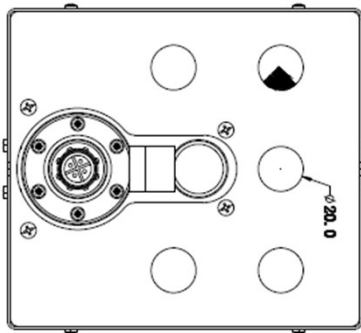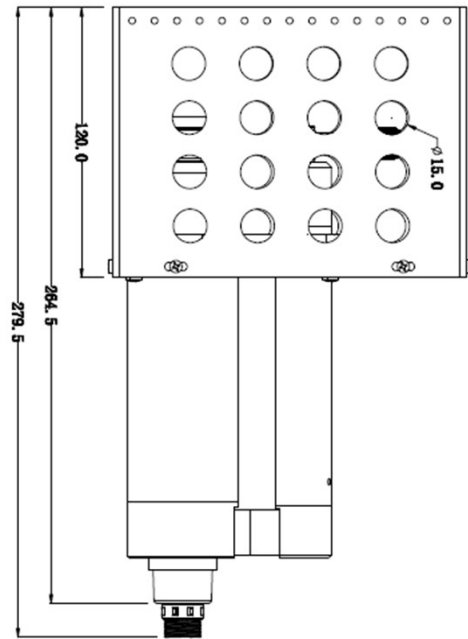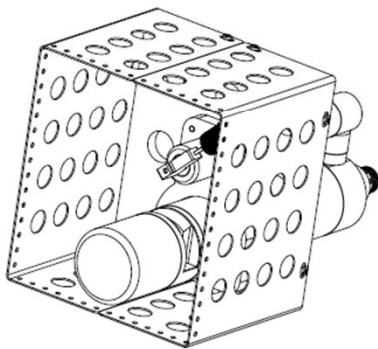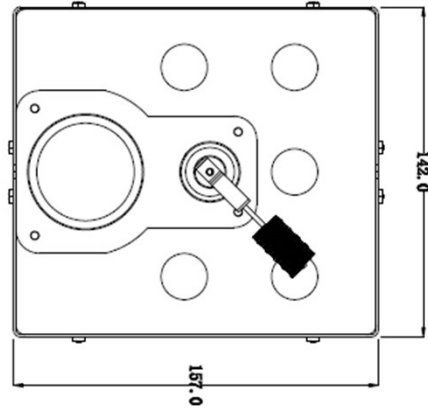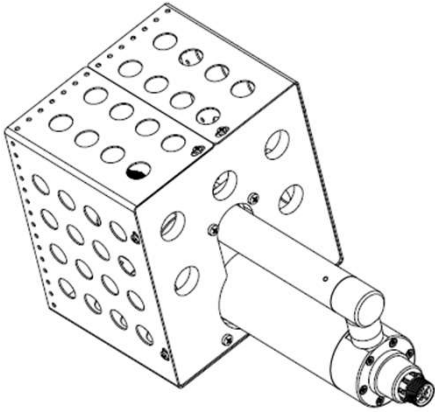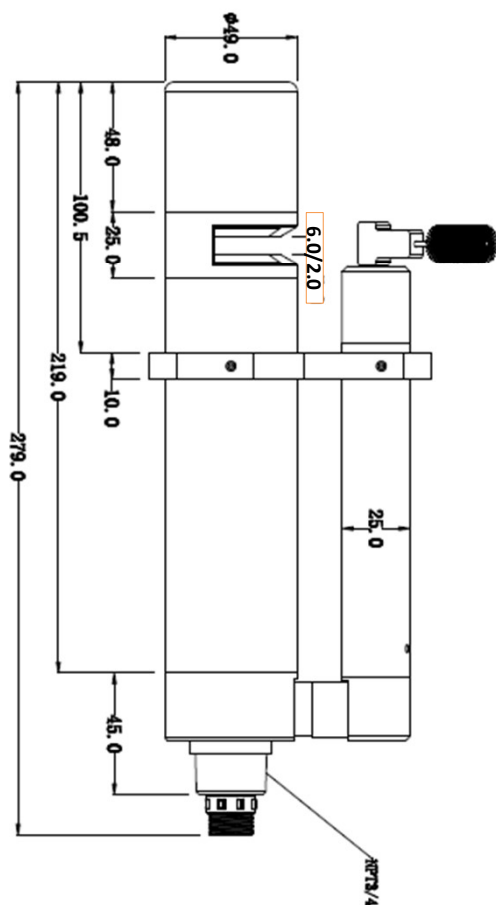
Note：
1, Unit: mm
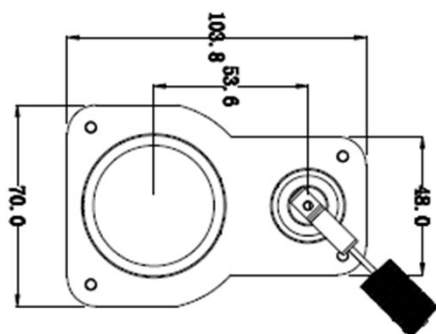2, Tolerance: ±0.5mm

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Note：
1, Unit: mm
2, Tolerance: ±0.5mm
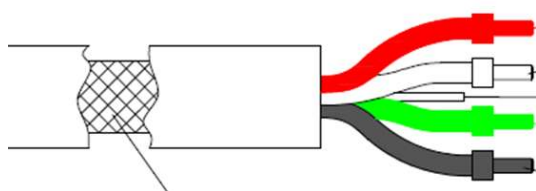
Red--VCC

White--RS485-B

Bare—Shielding

Green--RS485-A

Black--GND

Maintenance and ordering information

Sensor	Clean frequency*	Clean frequency**	Check inside humidity	Replace O-ring	Calibration frequency	Replace consumable part
Optical DO	1-4 days	4-8 weeks	6 months	12-24 months	6 months	24-36 months
Conductivity	4-8 weeks	4-8 weeks	6 months	12-24 months	6 months	No consumable part
Turbidity	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
Chlorophyll a	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
BGA	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
NH4-N	0.5-3 days	4-8 weeks	6 months	12-24 months	2-3 weeks	3-6 months
pH	0.5-3 days	4-8 weeks	6 months	12-24 months	4-8 weeks	6-12 months
UV254 COD	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
Oil in water	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
CDOM/fDOM	0.5-3 days	4-8 weeks	6 months	12-24 months	3 months	No consumable part
Wiper	4-8 weeks	4-8 weeks	NA	18 months	NA	18 months***

Note:
1, * is without wiper system
2, ** is with wiper system.
3, *** are dynamic sealing parts
4, The O-ring between sensor and wiper is required to replace every 12 months.
5, Field life and calibration frequency dependent on site conditions.

BroadSensor Technologies Co.,Ltd

Addr：3rd Floor, Building F, Yeeda Science& Technology Park,
       No.11 Jinpu Road, Suzhou Industrial Park, China, 215123
Tel：+86-512-88960831
Fax: +86-512-62988329
Email: sales@broadsensor.com
Web: www.broadesnsor.com

Order info:
PN: 912120 Max range 300mg/L
PN: 912121 Max range 1000mg/L
PN: 912122 Max range 1500mg/L
PN: 820001 Safe cover
PN: 810001-xx PUR cable
xx is cable length, unit is meter