

# Water Quality Sensor Transmitter

## OVERVIEW:

The Dragino WQS series main unit is advanced instruments designed for comprehensive **water quality monitoring** across various applications. They are ideal for **monitoring tap water, industrial water, environmental water, and wastewater**, etc, which offer precise and reliable measurements to ensure water quality standards are met.

The Dragino WQS series main unit supports 1-3 probes. supports connecting 1 to 3 water quality probes, including EC, pH, DO, ORP, TS and CL probes.

It **detects water quality parameters**, and uploads the value via wireless to LoRaWAN, NB-IoT or CAT-M1 Server.

It supports BLE configure and wireless OTA update which make user easy to use.

The Dragino WQS series is powered by **8500mAh Li-SOCI2 battery** or solar panel with Li-ion battery, it is designed for long-term use up to several years.



Model WQS series doesn't include probes. Probes are purchased separately

## Applications:



Wastewater Monitoring



Environmental Water Monitoring



General Water Treatment



Tap Water



Industrial Production



Chemical Reaction



Industrial Water



Surface Water

# Water Quality Sensor Transmitter -- Probe Option

## DR-ECK1.0 -- Water Electrical Conductivity Sensor:

- ※ Power supply: DC 7~30V
- ※ Power consumption:  $\leq 0.5W$
- ※ Interface: RS485. 9600 Baud Rate
- ※ EC Range:  $K=1: 0 \sim 2000\mu S/cm$
- ※ EC Resolution:  $1 \mu S/cm$
- ※ EC Accuracy:  $\pm 1\%FS$
- ※ Temperature Measure Range:  $-20 \sim 60 \text{ }^\circ C$ , Resolution:  $0.1^\circ C$
- ※ Temperature Accuracy:  $\pm 0.5 \text{ }^\circ C$
- ※ Working environment: Temperature range:  $0 \sim 60 \text{ }^\circ C$
- ※ Equipped with salinity and TDS conversion function
- ※ IP Rated: IP68
- ※ Pressure resistance:  $0.6MPa$



## DR-ECK10.0 -- Water Electrical Conductivity Sensor:

- ※ Power supply: DC 7~30V
- ※ Power consumption:  $\leq 0.5W$
- ※ Interface: RS485. 9600 Baud Rate
- ※ EC Range:  $k=10: 10 \sim 20000 \mu S/cm$
- ※ EC Resolution:  $10 \mu S/cm$
- ※ EC Accuracy:  $\pm 1\%FS$
- ※ Temperature Measure Range:  $-20 \sim 60 \text{ }^\circ C$ , Resolution:  $0.1^\circ C$
- ※ Temperature Accuracy:  $\pm 0.5 \text{ }^\circ C$
- ※ Working environment: Temperature range:  $0 \sim 60 \text{ }^\circ C$
- ※ Equipped with salinity and TDS conversion function
- ※ IP Rated: IP68
- ※ Pressure resistance:  $0.6MPa$



## DR-EC200 -- Four Electrode for high EC such as sea water:

- ※ Power supply: DC 7~30V
- ※ Power consumption:  $< 0.5W$
- ※ Interface: RS485. 9600 Baud Rate
- ※ EC Range:  $1 \sim 200,000\mu S/cm$ , Resolution:  $1 \mu S/cm$
- ※ EC Accuracy:  $\pm 1\%FS$
- ※ Salinity measurement range:  $0 \sim 70PSU$ , Resolution:  $0.1PSU$
- ※ Temperature Measure Range:  $-5 \sim 80 \text{ }^\circ C$ , Resolution:  $0.1^\circ C$
- ※ Temperature Accuracy:  $\pm 0.5 \text{ }^\circ C$
- ※ Temperature compensation range:  $-5 \sim 80 \text{ }^\circ C$  (default compensation temperature  $25^\circ C$ )
- ※ Temperature compensation coefficient: Default 0.2
- ※ Working environment:
  - \* Ambient Temperature:  $0 \sim 60^\circ C$
  - \* Relative Humidity:  $< 85\% RH$  (Specifically refers to the cable male and female)
  - \* EC200 Continuous monitoring of cross-section water quality, aquaculture, sewage treatment, environmental protection, pharmaceuticals, food, tap water, seawater and other high conductivity environments.
- ※ IP Rated: IP68
- ※ Pressure resistance:  $0.6MPa$



# Water Quality Sensor Transmitter -- Probe Option

## DR-ORP1 -- Oxidation-Reduction Potential Sensor:

- ※ Power supply: DC 7~30V
- ※ Power consumption:  $\leq 0.5W$
- ※ Interface: RS485. 9600 Baud Rate
- ※ High purity platinum electrode for ORP
- ※ ORP Range: -1999 ~ 1999 mV; Resolution: 1mV
- ※ ORP Accuracy:  $\pm 3$  mV
- ※ Auto Temperature Compensate
- ※ Working environment: Temperature range: 0~60 °C; Humidity < 85% RH
- ※ IP Rated: IP68
- ※ Pressure resistance: 0.6MPa



## DR-DO1 -- Dissolved Oxygen Sensor:

- ※ Power supply: DC 5~24V
- ※ Power consumption:  $\leq 0.5W$
- ※ Interface: RS485. 9600 Baud Rate
- ※ Optical Dissolved Oxygen Measurement
- ※ DO Range: 0 ~ 20.00 mg/L , Resolution: 0.01 mg/L
- ※ DO Accuracy:  $\pm 3\%$
- ※ Temperature Measure Range: 0 ~ 50 °C, Resolution: 0.01 °C
- ※ Temperature Accuracy:  $\pm 0.5$  °C
- ※ Working environment: Temperature range: 0~60 °C; Humidity < 95% RH
- ※ The electrode adopts high-quality low-noise cable
- ※ IP Rated: IP68
- ※ Pressure resistance: 0.6MPa



## DR-PH01 -- Water PH Sensor:

- ※ Power supply: DC 7~30V
- ※ Power consumption:  $\leq 0.5W$
- ※ Interface: RS485. 9600 Baud Rate
- ※ PH Range: 0 ~ 14.00 PH
- ※ Resolution: 0.01 PH
- ※ PH Accuracy:  $\pm 0.15$  PH
- ※ Auto Temperature Compensate
- ※ Temperature Measure Range: 0 ~ 60 °C, Resolution: 0.1 °C
- ※ Temperature Accuracy:  $\pm 0.5$  °C
- ※ Working environment: Temperature range: 0~60 °C
- ※ The reference electrode adopts a double salt bridge design
- ※ IP Rated: IP68
- ※ Pressure resistance: 0.6MPa



# Water Quality Sensor Transmitter -- Probe Option

## DR-TS200/DR-TS4000 -- Water Turbidity Sensor:

- ※ Power supply: DC 10~30V
- ※ Power consumption: ≤0.2W
- ※ Communication interface: RS485; standard MODBUS-RTU protocol;  
Baud rate: Default: 9600 (configurable to 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200)
- ※ Measurement range: TS200: 0~200 NTU; TS4000: 0~ 4000NTU
- ※ Resolution: Turbidity TS200: 0.1 NTU / TS4000: 1 NTU; Temperature: 0.1°C
- ※ Accuracy: ±5%FS(25°C); ±0.5°C
- ※ Operating temperature: 0~40°C
- ※ Measurement principle: 90° light scattering
- ※ Lifespan: 2 years under normal use
- ※ IP Rated: IP68
- ※ Electrode cable length: 5m by default



## DR-CL-2ML -- Integrated Residual Chlorine Sensor:

- ※ Power supply: DC 7~30V
- ※ Power consumption: 0.19W
- ※ Interface: RS485. 9600 Baud Rate
- ※ CL Range: 0 ~ 2 mg/L , Resolution: 0.01 mg/L
- ※ CL Accuracy: ± 5% FS
- ※ Working environment:
  - \* Temperature range: 0 ~ 50 °C
  - \* pH: 4 ~ 9
  - \* Flow rate: 30 ~ 60L/h (flow channel installation)
- ※ IP Rated: IP68
- ※ Pressure resistance: 0.6MPa















## DR-CL-10ML -- Integrated Residual Chlorine Sensor:

- ※ Power supply: DC 7~30V
- ※ Power consumption: 0.19W
- ※ Interface: RS485. 9600 Baud Rate
- ※ CL Range: 0 ~ 10 mg/L , Resolution: 0.01 mg/L
- ※ CL Accuracy: ± 5% FS
- ※ Working environment:
  - \* Temperature range: 0 ~ 50 °C
  - \* pH: 4 ~ 9
  - \* Flow rate: 30 ~ 60L/h (flow channel installation)
- ※ IP Rated: IP68
- ※ Pressure resistance: 0.6MPa



# Model Variants

Variants	WQS-LB	WQS-LS	WQS-NB	WQS-NS	WQS-CB	WQS-CS
Connectivity						
Configure Method	TTL, BLE, LoRaWAN	TTL, BLE, LoRaWAN	TTL, BLE, NB-IoT	TTL, BLE, NB-IoT	TTL, BLE, NB-IoT, LTE-M	TTL, BLE, NB-IoT, LTE-M
Upgrade Method	TTL, BLE, LoRa	TTL, BLE, LoRa	TTL, BLE	TTL, BLE	TTL, BLE	TTL, BLE
Features	<p><b>General Features:</b></p> <ul style="list-style-type: none"> <li>* Measure water quality and provide information for water quality conditions</li> <li>* Low power consumption</li> <li>* Support EC / PH / DO / ORP / TS / CL Type Water Quality Probe</li> <li>* Support 1 ~ 3 probes</li> <li>* Support Bluetooth v5.1 remote configure and update firmware</li> <li>* Uplink on periodically</li> <li>* GNSS for Location Report ( for -CB &amp; -CS models only)</li> <li>* Downlink to change configure</li> </ul>					
Battery & Power						
Power Consumption	* Sleep Mode: 5uA @ 3.3v * LoRa Transmit Mode: 125mA @ 20dBm, 82mA @ 14dBm	* Sleep mode: 74uA@3.8V * LoRa Transmit Mode: 206mA@14dBm, 236mA@20dBm	* Sleep mode: 14uA@3.3V * Max Transmit power: 350mA@3.3V	* Sleep mode: 74uA@3.4V * Max Transmit power: 350mA@3.4V	* Sleep mode: 14uA@3.3V * Max Transmit power: 350mA@3.3V	* Sleep mode: 74uA@3.4V * Max Transmit power: 350mA@3.4V
Supply Voltage	2.5v ~ 3.6v	3.7v ~ 4.2v	2.5v ~ 3.6v	3.7v ~ 4.2v	2.6v ~ 3.6v	3.7v ~ 4.2v
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C

## Battery & Enclosure Option:

### Li-SOCI2 Battery & Enclosure:



- Li/SOCI2 un-chargeable battery
- Capacity: 8500mAh
- Self-Discharge: <1% / Year @ 25°C
- Max continuously current: 130mA
- Max boost current: 2A, 1 second

### Solar Version & Enclosure:



- 3000mAh Re-chargeable battery
- 0.9W on board solar pannel Suitable to used in the place where sun is sufficient



- This icon means support location feature by: GPS/ GLONASS/BDS/Galileo/QZSS

## Wireless Option:



- LoRaWAN 1.0.3 Class A
- Bands: CN470/EU433/KR920/US915/ EU868/AS923/AU915/IN865
- OTAA or ABP Mode.
- World Wide Unique LoRaWAN Key
- RX sensitivity: down to -139 dBm.
- Max +22 dBm - 100 mW RF output



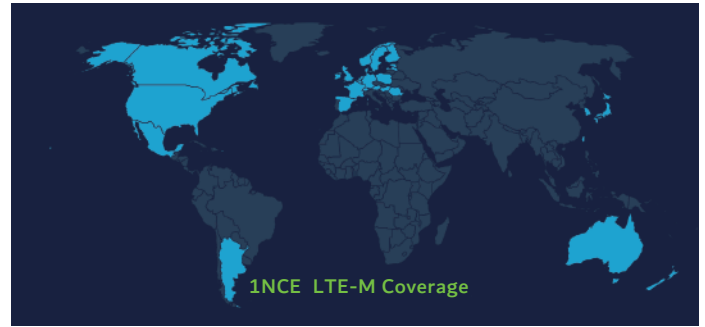
- **CAT NB2 Bands:**
- For -NB & -NS: B1/B2/B3/B4/B5/B8/B12/B13/ B17/B18/B19/B20/B25/B28/B66/B70/B85
- For -CB & -CS: B1/B2/B3/B4/B5/B8/B12/B13/ /B18/B19/B20/B25/B28/B66/B71/B85
- Uplink via MQTT, MQTTs, TCP, UDP or CoAP
- Multiply Sampling and one uplink



- CAT-M1 / LTE-M Bands: B1/B2/B3/B4/B5/ B8/B12/B13/B18/B19/B20/B25/B26/B27/ B28/B66/B85
- Uplink via MQTT, MQTTs, TCP, UDP or CoAP
- Multiply Sampling and one uplink

# What is 1T version for NB-IoT version?

The 1T version of NB-IoT Water Quality Sensor Transmitter is with 1) 1NCE SIM Card & 2) ThingsEye Pre-configured. 1NCE SIM Card (10 Years Cellular service with 500MB Data Traffic, Enough for devices to uplink 10 years at 1hour interval).



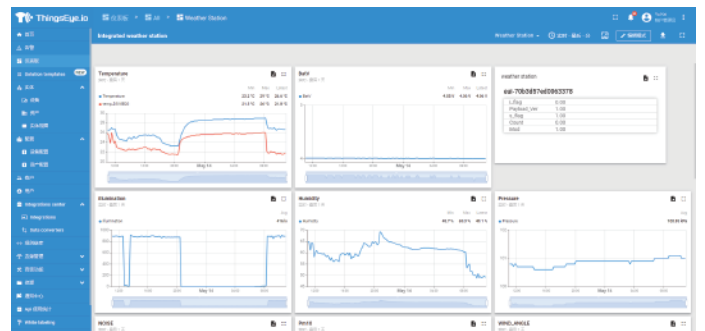
**NB-IoT Network :** Austria, Belgium, Bulgaria, China, Croatia, Czech Republic, Denmark, Estonia, Finland, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Malta, Netherlands, Norway, Portugal, Puerto Rico, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, USA, US Virgin Islands.

**LTE-M Network :** Argentina, Austria, Australia, Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Japan, Jersey, Korea, Republic of, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Puerto Rico, Romania, Spain, Sweden, Switzerland, Taiwan, USA, US Virgin Islands.

## ThingsEye.io platform:

1T version with ThingsEye IoT service pre-installed. This save a lot of work from user side to configure IoT server.

Below is Dash Board is the demo in ThingsEye.io.



## Order Info:



### Part Number: WQS-LB-XX

XX: The default frequency band

- XX: Frequency Bands, options: EU433, CN470, EU868, IN865, KR920, AS923, AU915, US915

**Probe Options:** DR-ECK1.0, DR-ECK10.0, DR-EC200, DR-PH01, DR-ORP1, DR-DO1, DR-TS200, DR-TS4000, DR-CL-2ML, DR-CL-10ML

### Part Number: WQS-LS-XX

XX: The default frequency band

- XX: Frequency Bands, options: EU433, CN470, EU868, IN865, KR920, AS923, AU915, US915

**Probe Options:** DR-ECK1.0, DR-ECK10.0, DR-EC200, DR-PH01, DR-ORP1, DR-DO1, DR-TS200, DR-TS4000, DR-CL-2ML, DR-CL-10ML



### Part Number: WQS-NB-XX

XX:

- **GE:** General version (Exclude SIM card)
- **1T:** with 1NCE\* 10 years 500MB SIM card Pre-configure to ThingsEye server

**Probe Options:** DR-ECK1.0, DR-ECK10.0, DR-EC200, DR-PH01, DR-ORP1, DR-DO1, DR-TS200, DR-TS4000, DR-CL-2ML, DR-CL-10ML

### Part Number: WQS-NS-XX

XX:

- **GE:** General version (Exclude SIM card)
- **1T:** with 1NCE\* 10 years 500MB SIM card Pre-configure to ThingsEye server

**Probe Options:** DR-ECK1.0, DR-ECK10.0, DR-EC200, DR-PH01, DR-ORP1, DR-DO1, DR-TS200, DR-TS4000, DR-CL-2ML, DR-CL-10ML



### Part Number: WQS-CB-XX

XX:

- **GE:** General version (Exclude SIM card)
- **1T:** with 1NCE\* 10 years 500MB SIM card Pre-configure to ThingsEye server

**Probe Options:** DR-ECK1.0, DR-ECK10.0, DR-EC200, DR-PH01, DR-ORP1, DR-DO1, DR-TS200, DR-TS4000, DR-CL-2ML, DR-CL-10ML

### Part Number: WQS-CS-XX

XX:

- **GE:** General version (Exclude SIM card)
- **1T:** with 1NCE\* 10 years 500MB SIM card Pre-configure to ThingsEye server

**Probe Options:** DR-ECK1.0, DR-ECK10.0, DR-EC200, DR-PH01, DR-ORP1, DR-DO1, DR-TS200, DR-TS4000, DR-CL-2ML, DR-CL-10ML

## Dragino Technology Co., Limited

Room 202, Block B, BCT Incubation Bases (BaoChengTai), No.8 CaiYunRoad LongCheng Street, LongGang District ; Shenzhen 518116,China  
Direct: +86 755 86610829 | Fax: +86 755 86647123

[WWW.DRAGINO.COM](http://WWW.DRAGINO.COM)  
sales@dragino.com