WSC2 Main Process Unit For Weather Station

OVERVIEW:

The Dragino WSC2 is the main unit in Dragino Weather Station solution which desianed for measuring atmospheric conditions to provide information for weatherforecasts and to study the weather and climate.

WSC2 can reads values from various sensors and upload these sensor data to IoT server via LoRaWAN, NB-IoT or LTE-M wireless protocol.

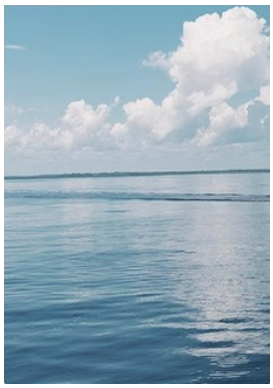
WSC2 supports input and 12V recharge power and build in 1000mAh rechargeable Li-ion battery. If the user needs to connect other sensors, please kindly note the externalpower supply is required.

WSC2 supports connecting 3rd party RS485 multiple sensors. Users can purchase DR-F6C-4M one-to-four cables to connect more sensors according to their needs.

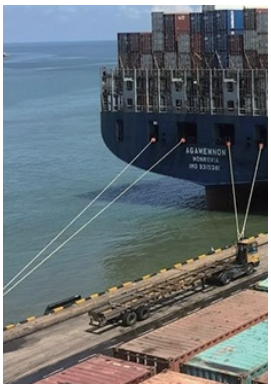
Please note that the WSC2-X series only includes the wireless transmitter, and the WSS-08, WSS-09, WSS-21, WSS-22, WSS-23, WSS-24, WSS-25, WSS-26, WSS-27 sensor need to be purchased separately.

Application:

Airport



Ocean



Port

Meteorological

Laboratory

Agriculture

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Sensor Specifcation

Optical Range Guage -- WSS-08

- Input Power: 9~30V DC
- Sense diameter: 6cm
- Pulse Output, each pulse , 0.1mm
- Max rain: 24mm/min
- Operation Temperature: -40 ~ 60 °C
- Operation Humidify: 0 ~ 99%RH(no dew)

9 in 1 Weather Sensors -- WSS-09

- Input Power: 10 ~ 30V DC
- Max Power Consumption: 1.2W

Wind Speed:

- Range: 0 ~ 60m/s
- Accuracy: ±(0.2m/s±0.02*v)(v : the wind speed)
- Ultrasonic measurement, no start wind strength needed

Wind Direction:

- Range: 0 ~ 3599
- Accuracy: ±3°
- Ultrasonic measurement, no start wind strength needed
- Built-in electronic compass. No need to consider installation direction

Temperature:

- Range: -40°C~+80°C
- Accuracy: ±0.5°C

Humidity:

- Range: 0 ~ 99% RH
- Accuracy Tolerance : Typ ±3% RH

Air Pressure:

- Range: 0-120kPa
- Accuracy: ±0.15kPa@25°C 101kPa

Noise:

- Range: 30dB~120dB
- Accuracy: ±0.5dB

PM2.5:

- Range: 0-1000μg/m3
- Accuracy: ±3%FS
- Resolution: 1ug/m3

PM10:

- Range: 0-1000μg/m3
- Accuracy: ±3%FS
- Resolution: 1ug/m3

Illumination:

- Range: 0-200k Lux
- Accuracy: ±7%(25°C)

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Sensor Specifcation

Rain Gauge -- WSS-21

- Range: 0 ~ 100mm (range is limited to analog signal, RS485 signal is not measured)
- Resolution: 0.2mm
- Accuracy: ±3%
- Rainfall strength: 0mm ~ 4mm/min (max 8mm/min)
- Input Power: DC 5~24v
- Interface: RS485
- Working Temperature: 0 ~ 70°C (incorrect below 0 degree, because water become ICE)
- Working Humidity: <100% (no dewing)
- Power Consumption: 4mA @ 12v

Wind Speed/Direction -- WSS-22

- Wind speed range: 0 ~ 60m/s
- Wind direction range: 0 ~ 360°
- Start wind speed: ≤0.3m/s
- Interface: RS485
- Accuracy: ±(0.3＋0.03V)m/s , ±1°
- Input Power: DC 5~24v
- Working Temperature: -30°C ~ 70°C
- Working Humidity: <100% (no dewing)
- Power Consumption: 13mA @ 12v.
- Cable Length: 2 meters

CO2/PM2.5/PM10 -- WSS-23

- CO2 Range: 0 ~ 5000ppm, accuracy: ±3%F•S (25°C)
- CO2 resolution: 1ppm
- PM2.5/PM10 Range: 0 ~ 1000μg/m3 , accuracy ±3%F•S (25°C)
- PM2.5/PM10 resolution: 1μg/m3
- Input Power: DC 7 ~ 24 v
- Preheat time: 3min
- Interface: RS485
- Working Temperature: CO2: 0 ~ 50°C; PM2.5/PM10: -30 ~ 50°C
- Working Humidity: CO2: 0 ~ 95%RH; PM2.5/PM10: 15 ~ 80%RH (no dewing)
- Power Consumption: 50mA@ 12v.

Rain/Snow Detect -- WSS-24

- Detect if there is rain or snow
- Input Power: DC 12 ~ 24v
- Interface: RS485
- Working Temperature: -30 ~ 70°C
- Working Humidity: 10 ~ 90%RH
- Power Consumption: No heating: 12mA @ 12v; heating: 94ma @ 12v.

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Sensor Specifcation

Temperature, Humidity, Illuminance, Pressure -- WSS-25

Temperature:

- Range: -30°C ~ 70°C
- Resolution: 0.1°C
- Accuracy: ±0.5°C

Humidity:

- Range: 0 ~ 100% RH
- Resolution: 0.1 %RH
- Accuracy : ±3% RH

Pressure:

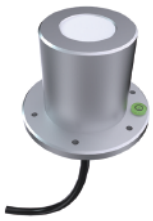
- Range: 10 ~ 1100hPa
- Resolution: 0.1hPa
- Accuracy: ±0.1hPa

Illumination:

- Range: 0 ~ 2/20/200k Lux
- Resolution: 10 Lux
- Accuracy: ±3%FS

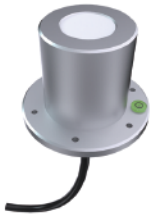
- Input Power: DC 12 ~ 24v
- Interface: RS485
- Working Temperature: -30°C ~ 70°C
- Working Humidity: 10 ~ 90%RH
- Power Consumption: 4mA @ 12v

Total Solar Radiation sensor -- WSS-26



- Input Power: DC 5 ~ 24v
- Interface: RS485
- Detect spectrum: 0.3 ~ 3μm(300 ~ 3000nm)
- Measure strength range: 0 ~ 2000W/m2
- Resolution: 0.1W/m2
- Accuracy: ±3%
- Yearly Stability: ≤±2%
- Cosine response: ≤7% (@Sun angle 10°)
- Temperature Effect: ±2%(-10°C ~ 40°C)
- Working Temperature: -40°C ~ 70°C
- Working Humidity: 10 ~ 90%RH
- Power Consumption: 4mA @ 12v

PAR (Photosynthetically Available Radiation) -- WSS-27



- Input Power: DC 5 ~ 24v
- Interface: RS485
- Response Spectrum: 400 ~ 700nm
- Measure range: 0 ~ 2500μmol/m2•s
- Resolution: 1μmol/m2•s
- Accuracy: ±2%
- Yearly Stability: ≤±2%
- Working Temperature: -30°C ~ 75°C
- Working Humidity: 10 ~ 90%RH
- Power Consumption: 3mA @ 12v

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Model Variants

Variants	WSC2-L	WSC2-N	WSC2-C
Connectivity	LoRaWAN	NB-IoT	NB-IoT, LTE-M, GNSS
Configure Method	TTL, BLE, LoRaWAN	TTL, BLE, NB-IoT	TTL, BLE, NB-IoT, LTE-M
Upgrade Method	TTL, BLE, LoRa	TTL, BLE	TTL, BLE
Features	**Sensor /Probe:** * Support reading the Rain Gauge, Wind Speed/Direction, CO2/PM2.5/PM10, Rain/Snow Detect, Temperature, Humidiity, Iillumiance, Pressure, Total Solar Radiation, PAR * Support external 9 in 1 weather sensor(Wss-09): Wind Speed, Wind Direction,Temperature, Humidity, Air Pressure, Illumination, PM2.5, PM10, Noise * Support tipping bucket Rain Gauge (WSS-08) * RS485 Interface for 3rd Sensors * IP66 Waterproof Enclosure * 1000mAh Rechargeable Li-ion battery * Input and Recharge power : 12v **General Features:** * Ultra-low power consumption * Support Bluetooth v5.1 remote configure and OTA update firmware * Uplink on periodically * GNSS for Location Report (for -CB models only) * Downlink to change configure * Monitor Battery Level		
Battery & Power	* 1000 mAh Li-ion Battery	* 1000 mAh Li-ion Battery	* 1000 mAh Li-ion Battery
Power Consumption	* Sleep Mode: 5uA @ 3.3v * LoRa Transmit Mode: 125mA @ 20dBm, 82mA @ 14dBm	* Sleep mode: 14uA@3.3V * Max Transmit power: 350mA@3.3V	* Sleep mode: 14uA@3.3V * Max Transmit power: 350mA@3.3V
Supply Voltage	2.5v ~ 3.6v	2.5v ~ 3.6v	2.6v ~ 3.6v
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C

Wireless Option:

LoRaWAN

- 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

NB-IoT

- CAT NB2 Bands:
  - For -NB: B1/B2/B3/B4/B5/B8/B12/B13/ B17/B18/B19/B20/B25/B28/B66/B70/B85
  - For -CB: 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

LTE-M

- 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

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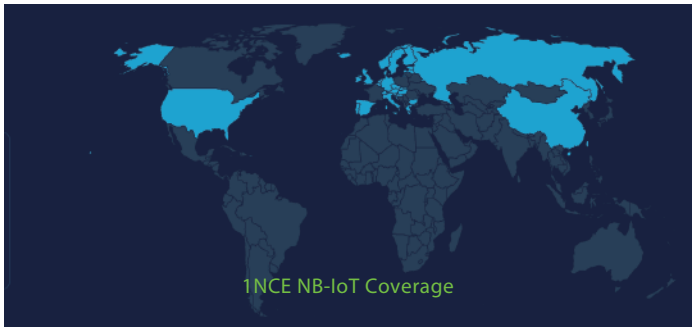
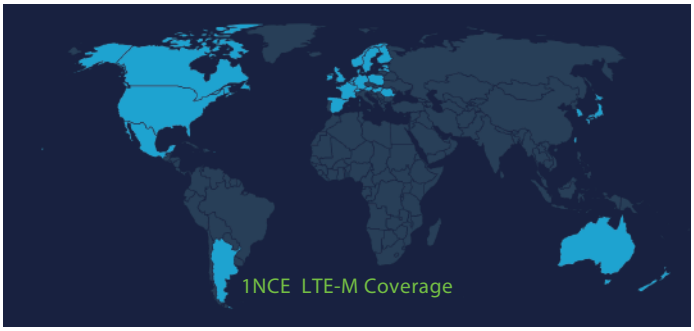
What is 1T version for NB-IoT version?

The 1T version of NB-IoT Weather Station Kit 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, Repiblic 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 confgure IoT server.

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

Order Info:

Please note that the WSC2-X series only includes the wireless transmitter, and the WSS-08, WSS-09, WSS-21, WSS-22, WSS-23, WSS-24, WSS-25, WSS-26, WSS-27 sensor need to be purchased separately. If you need to connect more than 3 sensors, please purchase an additional one to four adapter cable (DR-F6C-4M).

LoRaWAN

Part Number:

Wireless Transmitter : WSC2-L-XX

XX: The default frequency band

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

Sensors : WSS-08, WSS-09, WSS-21, WSS-22, WSS-23, WSS-24, WSS-25, WSS-26, WSS-27

NB-IoT

Part Number:

Wireless Transmitter : WSC2-N-XX

XX:

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

Sensors : WSS-08, WSS-09, WSS-21, WSS-22, WSS-23, WSS-24, WSS-25, WSS-26, WSS-27

NB-IoT LTE-M GNSS

Part Number:

Wireless Transmitter : WSC2-C-XX

XX:

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

Sensors : WSS-08, WSS-09, WSS-21, WSS-22, WSS-23, WSS-24, WSS-25, WSS-26, WSS-27

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