



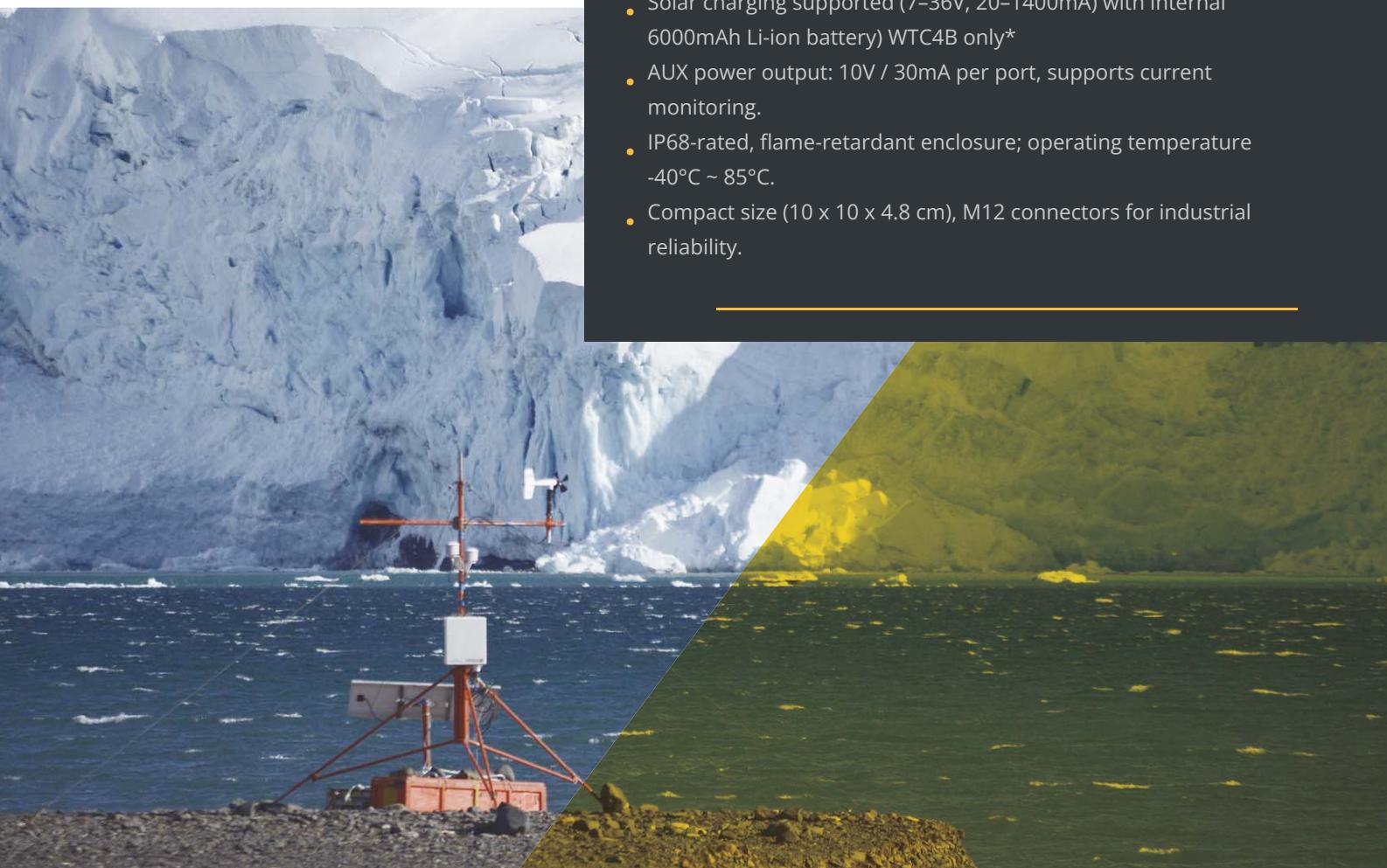
# NB-IOT WIRELESS SENSOR NODE



WTC4 / WTC4B is a rugged NB-IoT wireless sensor node designed for long-term outdoor data collection.

With 4 flexible sensor ports, RS-485 support, GNSS capability, data logging, and built-in solar and battery management, it provides a reliable and secure solution for remote monitoring in industrial and environmental applications.

- NB-IoT connectivity (LTE Cat NB1, 3GPP Release 13) for stable and low-power data transmission.
- Supports LTE Bands 1–5, 8, 12–14, 17–20, 25, 26, 28, 66, 70, and 85.
- Internet protocol: TCP / UDP / MQTT / MQTTS.
- 4 flexible sensor ports: analog or digital I/O, RTD (PT-100), frequency / pulse count.
- RS-485 interface with Modbus RTU, Hex, ASCII, and Transparent protocols.
- GNSS support (u-blox M8, GPS / GLONASS / BeiDou / Galileo, 2.0m accuracy).
- Built-in SD card slot for local data logging (SDHC supported).
- AES 128 / 256 encryption for secure data storage and transmission.
- Solar charging supported (7–36V, 20–1400mA) with internal 6000mAh Li-ion battery) WTC4B only\*
- AUX power output: 10V / 30mA per port, supports current monitoring.
- IP68-rated, flame-retardant enclosure; operating temperature -40°C ~ 85°C.
- Compact size (10 x 10 x 4.8 cm), M12 connectors for industrial reliability.



# SOFTWARE FUNCTION

## Secure Communication

Supports AES encryption (128/256-bit) and secure protocols such as TLS and MQTTs, ensuring data security in transmission and storage.

## Primary and Backup Server Support

Allows configuration of two server destinations to ensure continuous data upload in case of connection failure.

## Multiple MQTT Topics

Supports 3 publish and 3 subscribe topics for flexible cloud integration and device management.

## Scheduled Data Upload

Up to 60 programmable schedules for automated data reporting at defined intervals.

## Flexible Upload Protocols

Sensor data can be forwarded via TCP, UDP, MQTT, or MQTTS over cellular networks.

## Time-Based Operation

Supports both relative and absolute time settings for precise scheduling and control.

## Remote Configuration

Device settings can be modified remotely via the control platform or cloud interface.

## Remote I/O Control

Enables cloud-based control of digital outputs, such as relays or indicators.

## Auto Resend on Reconnection

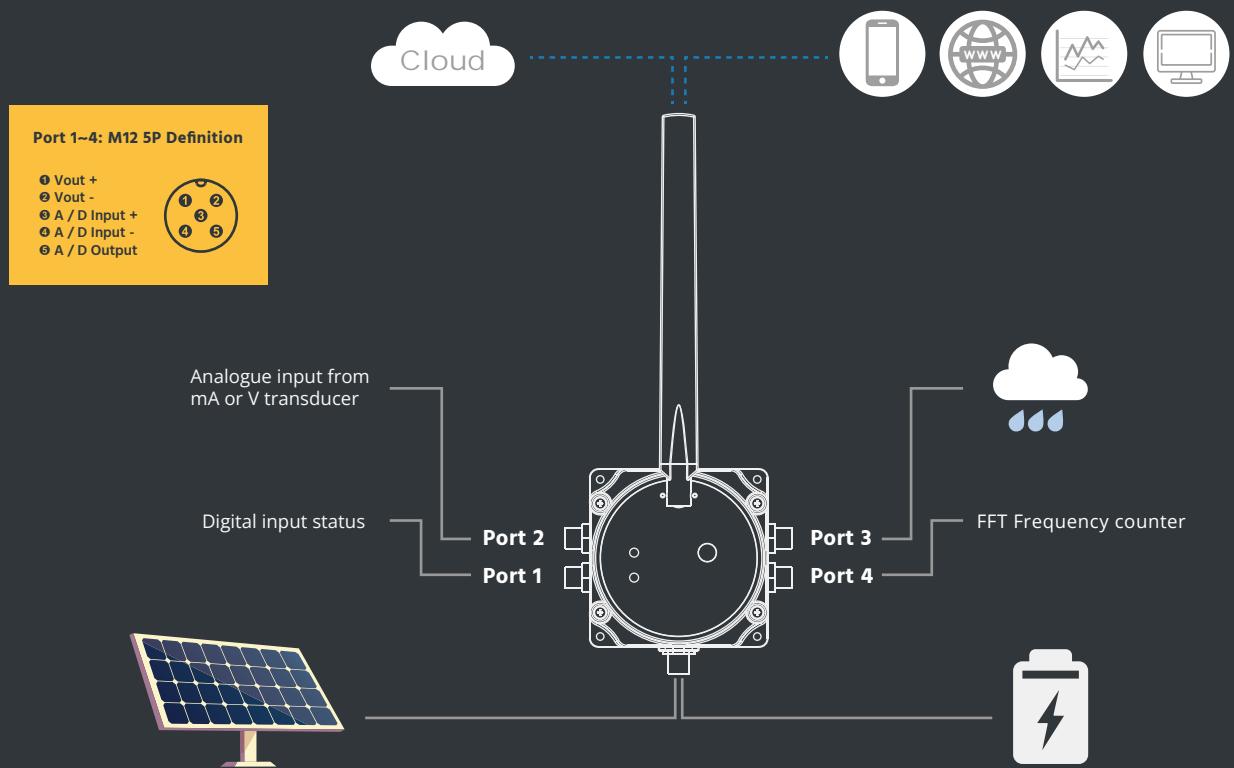
Automatically resends buffered data after reconnecting to the network, ensuring data integrity.

## Power and Battery Monitoring

Monitors main power, battery level, and load status for system diagnostics and energy management.

# ENDLESS APPLICATION SOLUTIONS

## Analog Sensor with External Battery Pack



# SPECIFICATION OVERVIEW

## General

- Product Type: Outdoor
- Main Unit Dimensions: 10 x 10 x 4.8 cm  
(Not include antenna and external connect)
- Weight: 260 g (Without battery)
- Waterproof: IP68
- Special Specification: Flame Retardant

## Cellular & Network

- Cellular Protocol: NB-IoT (LTE Cat NB1 3GPP Release 13)
- Operating LTE Bands:  
Band 1 / Band 2 / Band 3 / Band 4 / Band 5 / Band 8 /  
Band 12 / Band 13 / Band 14 / Band 17 / Band 18 /  
Band 19 / Band 20 / Band 25 / Band 26 / Band 28 /  
Band 66 / Band 70 / Band 85
- SIM Type: nano SIM, e-SIM (Optional)
- Sensitivity: Maximum -116 dBm
- Transmit RF Power: Maximum 23 dBm (Class 3)
- Antenna Connector Type: RP-SMA Jack
- Cellular Data Rate: NB2 (Uplink: 159 kbps / Downlink: 127 kbps)

## Internet Protocol

- Protocols: TCP/UDP/MQTT/MQTT5

## Port Interface

- Main Port Interface: RS-485
- Port1~4 Interfaces:  
Analog or Digital Input  
Analog (1~10V) or Digital Output  
FFT (Frequency Count)  
RTD (PT-100)  
Pulse Count (Port4 only, special connector required)
- Port1~4 Connector Type: M12 5PIN
- Main Port Connector Type: M12 8PIN

## RS-485

- Supported Protocols: Modbus RTU/Hex/ASCII/Transparent
- Baud Rate:  
1200bps/2400bps/4800bps/9600bps/19200bps/38400bps /  
57600bps/115200bps (default)/230400bps / 460800bps

## Sensor Interface

- Digital Input: High / Low Signal Judge
- Analog Input Spec:  
0~±10 V (± 0.1%)  
0~20 mA (± 0.2%)  
4~20 mA (± 0.2%)
- FFT (Frequency Count):  
Frequency Range: 1Hz~3KHz  
Input Level > 100 mVp-p
- RTD (PT-100):  
Recommend Temperature Range: -150°C ~ +300°C  
2-Wire or 3-Wire
- Pulse Count: Support rain gauge function
- Digital Output:  
Support PWM/Latch Mode
- Digital Output Spec:  
PWM Frequency: Max. 2KHz  
Latch: Max Input 36V (Open drain), Max Current 80mA
- Analog Output:  
1~10V (±3.0%)  
Recommended Current: <10mA

## GNSS / GPS

- GNSS / GPS: u-blox GNSS Chipset
- Receiver Type: 72-Channel u-blox M8 Engine
- Supported Systems: GPS/QZSS, GLONASS, BeiDou, Galileo, SBAS (WAAS/EGNOS/MSAS/GAGAN)
- Default Setting: GPS/SBAS/QZSS + GLONASS
- Sensitivity:  
Tracking & Navigation: -167 dBm  
Reacquisition: -160 dBm  
Hot Start: -157 dBm  
Cold Start: -148 dBm
- Antenna Type: Built-in Patch Antenna
- Protocol: NMEA0183
- Accuracy: 2.0m CEP (GPS/SBAS/QZSS + GLONASS)
- Acquisition Time (Average):  
Hot Start: 1 sec  
Cold Start: 26 sec

## Data Logger & Storage

- Data Logger Storage: Micro SD Card (Support SDHC)

## Encryption

- Encryption Function: AES 128/256
- Encryption Method: ECB/CBC/CTR
- Applies To: SD Card/Upload/Publish

## Power & Battery

- Input Power Supply: 7V ~ 36V DC (With OVP), 7V/1A@charging
- Solar Charger Voltage Range: 7V ~ 36V DC
- Solar Charger Current: 20mA~1400mA (±10mA)
- Redundant Battery: 18650/3.7V/6000mAh (1S2P)
- Battery Protection: Temperature (OVP/OCP) @charging
- NTC Specification (Required): 10k ohm (±1%)
- Output Power Supply (Each Port 1~4): 10V DC/30mA (Max.), supports current monitor
- Output Power Monitor:  
12V 6.8mA @receive  
12V 300mA @transmit  
50~400uA @sleep (battery only)  
12V 1.4mA @charge off

## Others

- Button: Wake Up
- LED Status: Power Status/Wireless Status

## Note:

Specifications are subject to change without prior notice.  
Please refer to the actual product for the most accurate and up-to-date information.

