

NJ-iot510 Product Manual

Smart Cloud Box for Smart Light Pole Applications

Updated: 2023-03-09

Translation note: the English body text below is translated from the Chinese original. Embedded product photos are preserved from the source artwork where used.



Revision History

The source manual says this log accumulates a note for each document update.

No.	Document Version	Revised By	Release Date	Revision Note
1	V1.0.0	Zhang Huiliu	2023-03-09	Updated the product model and product images.

1. Product Features

NJ-iot510 is a sixth-generation smart street-light gateway independently developed and manufactured by Xiamen Nengjia New Energy Technology Co., Ltd. It is a new outdoor remote central-control device designed to meet the need for remote intelligent control of smart terminal equipment. Compared with the previous generation smart gateway, it offers a smaller footprint, more stable signals, a 99.9% online rate, high integration, and reserved multifunction interfaces. It can connect to additional sensors and devices, use 2G/3G/4G, Ethernet, and Wi-Fi networks for long-distance data transmission, connect to cloud services, support power-control scenarios, provide strong edge-computing capability, and reserve interfaces for secondary development.

The product integrates a 2.4 GHz IEEE 802.11b/g/n Wi-Fi transceiver, a MediaTek MT7621AT dual-core 880 MHz CPU, 4 GB eMMC flash, four high-speed Ethernet PHY ports, an HNAT accelerator, and multiple general-purpose I/O. With Linux (Ubuntu 14.04) as its software platform, it also provides 2 x RS485, 4 x Ethernet LAN, 1 x Ethernet WAN, 2 x Wi-Fi interfaces, 1 x gigabit fiber port, 1 x AC220V/10A input, and 1 x DC12V/3A output. It can simultaneously connect multiple Ethernet, serial, and Wi-Fi devices to realize transparent data transmission and routing.

NJ-iot510 is designed with both multifunctionality and stability in mind. Based on an IoT technology architecture, it can satisfy smart terminal requirements for data collection and intelligent control while maintaining a degree of expandability that makes it easier to add new devices to an existing hardware deployment.

- Supports Wi-Fi, 4G, gigabit Ethernet, and gigabit fiber as Ethernet access methods.
- Equipped with 2 fiber interfaces and Layer 2 networking capability for ring and interactive chain topologies; port count can be expanded with additional switching components when needed.
- Supports the three major Chinese operators and is compatible with China Telecom, China Mobile, and China Unicom 2G/3G/4G networks.
- Supports Micro SIM cards and uses an anti-drop/disconnection mechanism.
- Wired and wireless links back each other up for stable transmission; the device can switch backup networks automatically, store data locally during outages, and resume transmission after recovery.
- Powerful Wi-Fi functions with AP, STA, and Repeater modes.
- Rich protocol support and easy integration, including transparent transmission, Modbus RTU to TCP/IP, and MQTT.
- Supports active polling of Modbus devices across different address segments for easier operation.
- Uses an industrial-grade high-speed 4G wireless communication module together with a 32-bit high-performance processor for more timely and accurate front-end data collection.
- Industrial aluminum-alloy enclosure for stable 7x24 operation in outdoor, industrial, and high-interference environments.

2. Appearance and Dimensions



Overall dimensions: 150 x 120 x 36 mm.

3. Technical Specifications

General

Item	Specification
Model	NJ-iot510 gateway (smart light pole)
Integrated sensors	Temperature sensor and humidity sensor
WAN interface	1 x WAN, 10/100/1000 auto-negotiation
Cellular	4G/3G/2G all-network support
Fiber interface	1 x fiber port with ring-network support
Power input	12 V / 3 A
Ingress protection	IP65
Dimensions	150 x 120 x 36 mm
Storage temperature	-40 C to 85 C
Operating temperature	-25 C to 70 C

4G Parameters

Item	Specification
Operating bands	FDD LTE: B1/B3; TDD LTE: B38/B39/B40/B41; TD-SCDMA: B34/B39; CDMA2000 1x/EVDO: BC0; GSM: 900/1800 MHz.

Data rate	LTE-FDD: max 100 Mbps downlink / max 50 Mbps uplink; LTE-TDD: max 61 Mbps downlink / max 18 Mbps uplink; TD-SCDMA: max 4.2 Mbps downlink / max 2.2 Mbps uplink; CDMA: max 5.4 Mbps downlink / max 14.7 Mbps uplink; GPRS: max 85.6 kbps downlink / max 85.6 kbps uplink.
Transmit power	FDD LTE: 23 dBm +/- 2 dB; TDD LTE: 23 dBm +/- 2 dB; TD-SCDMA: 24 dBm +1/-3 dB; GSM 900 MHz: 33 dBm +/- 2 dBm; GSM 1800 MHz: 30 dBm +/- 2 dBm.
Receiver sensitivity	FDD B1: -97 dBm (20M); FDD B3: -96 dBm (20M); TDD B38: -94 dBm (20M); TDD B39: -94 dBm (20M); TDD B40: -94 dBm (20M); TDD B41: -93.5 dBm (20M); TD-SCDMA B34: -110 dBm; TD-SCDMA B39: -110 dBm; CDMA BC0: -108 dBm; GSM 900: -110 dBm; GSM 1800: -109 dBm.

Wi-Fi Parameters

Item	Specification
Standard	IEEE 802.11b/g/n
Maximum bandwidth	Up to 300 Mbps
Transmit power	20 dBm

System Parameters

Item	Specification
CPU	Marvell 88F3720, ARM A53 dual-core, 1 GHz
Memory	1 GB
Flash	4 GB eMMC

4. Communication Parameters

Source note: the communication-parameter block in the original Chinese manual includes one model line labeled 'NJ-iot500'. The values below are translated as printed.

Item	Specification
Transmit power	23 dBm +/- 2 dB
Sensitivity	-129 dBm
Antenna gain	3 dB
VSWR	Less than or equal to 2.0
Antenna type	External
Model listed in source block	NJ-iot500

Band	850 MHz (source text shows China Telecom context)
Communication method	Ethernet
Communication protocol	UDP/TCP

5. Applicable Scope

Item	Description
Typical product role	Built-in gateway for smart street lights
Deployment scenarios	Industrial parks, campuses, commercial residential sites, municipal roadways, smart street lighting projects, ports, stadiums, and airports.

6. Transport and Storage Precautions

Item	Requirement
Storage temperature range	-40 to 85 degrees C
Storage environment	Avoid damp or standing-water environments.
Transport precautions	Do not drop from height and do not stack excessively.

7. Technical Support

Guangmang system URL: <https://gm.xmnengjia.com>

Company website: www.xmnengjia.com