Datasheet

MQG748

Wi-Fi 6 + Bluetooth 5.4 + 802.15.4 (Thread and Zigbee-ready) Smart Gateway

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1 Product Overview

The MQG748 Smart Gateway is a multifunctional device based on the high-performance QCC748 main control chip and running the FreeRTOS operating system. It is designed for IoT applications, offering powerful connectivity and flexible protocol support. It can be used as a Matter Gateway, BLE Tag Gateway, or LoRaWAN Gateway, meeting the diverse needs of IoT applications in different scenarios.

As a Matter Gateway, the MQG748 specifically supports Thread Border Router for Matter and Matter Bridge mode, enabling seamless connection and management of Matter-compatible smart devices, providing users with a unified smart home experience. As a BLE Tag Gateway, it efficiently manages and connects low-power Bluetooth devices, making it suitable for asset tracking, indoor positioning, and other scenarios. As a LoRaWAN Gateway, the MQG748 supports long-range, low-power IoT communication, applicable to fields such as smart cities and agricultural monitoring.

In terms of connectivity, the MQG748 provides a wide range of uplink and downlink interface options. The uplink interfaces support Ethernet, 2.4 GHz Wi-Fi, Cellular Module, ensuring flexible access to various network environments. The downlink interface supports Ethernet, 2.4 GHz Wi-Fi, BLE (Bluetooth Low Energy), Thread, and CAN protocols. It can be further extended with PMOD interfaces (e.g., SubGHz, LoRa, and Z-Wave) to enable efficient communication with diverse end-devices, particularly for industrial IoT and vehicle-to-everything (V2X) applications.

Additionally, the MQG748 features a highly flexible power design, supporting PoE (Power over Ethernet) and USB 5V Type-C power input. It also includes a built-in backup lithium battery, ensuring continuous and stable operation in case of power outages or in mobile scenarios.

With its powerful features, flexible connectivity options, and reliable power design, the MQG748 Smart Gateway is an ideal choice for smart home applications, industrial IoT, and other complex deployment scenarios, providing users with efficient, stable, and secure connectivity and control solutions.

Figure 1 MQG748 View

2 Block Diagram

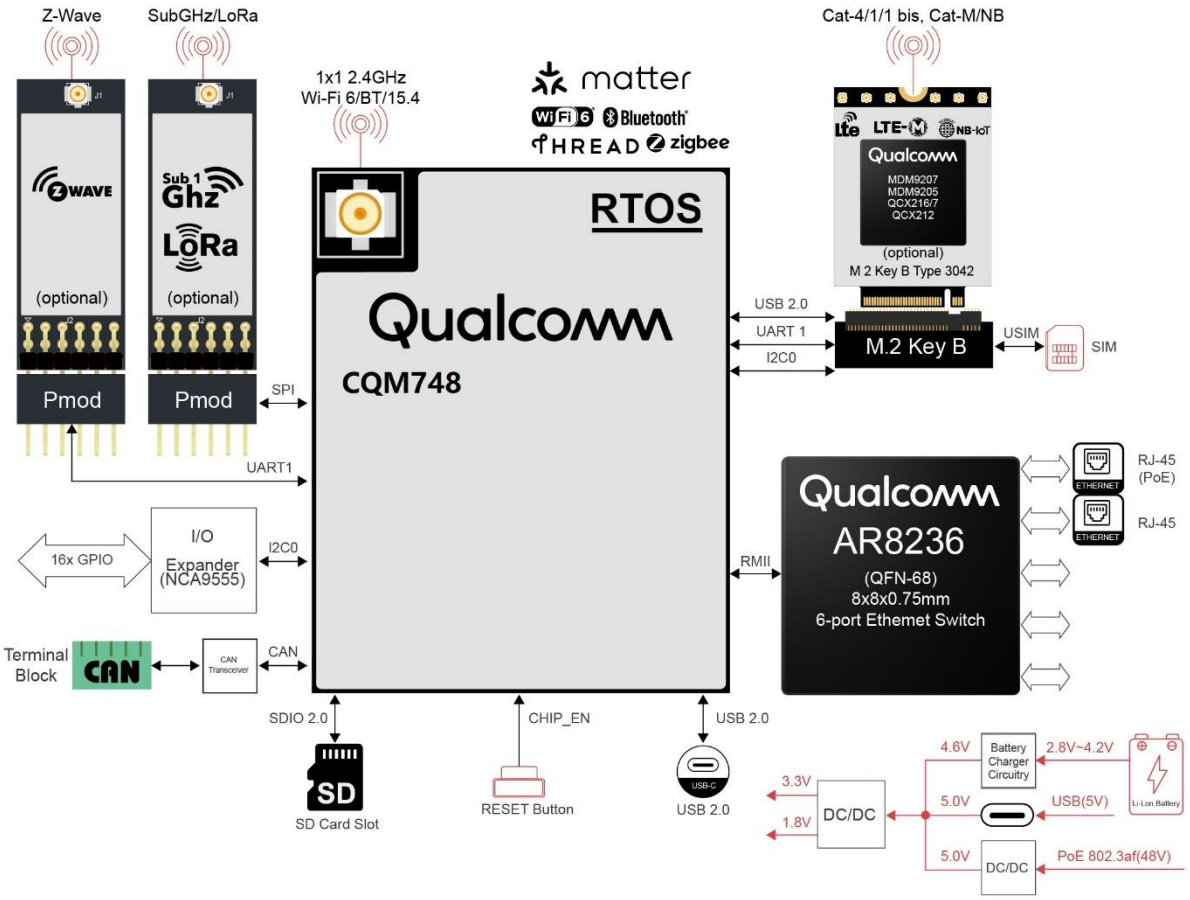


Figure 2 Block Diagram

3 Application Examples

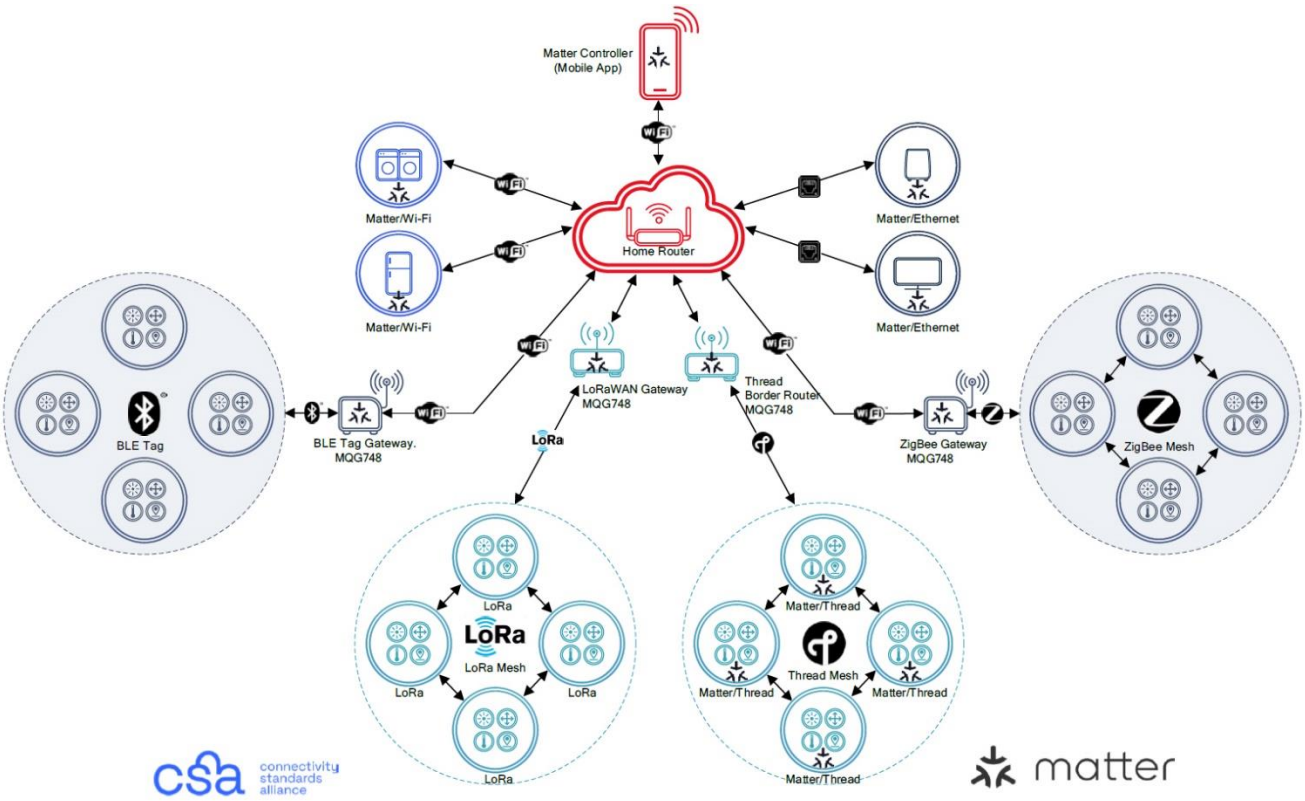


Figure 3 Application Examples

4 Hardware Specifications

Item	Description
CPU	QCC748
Phy	AR8032
Memory	Nor Flash 8MB
Power Supply	PoE/USB 5V Type/Battery-powered
Interface	2 * 10/100Mbps Ethernet Ports
	1 * M.2 Key B slot for cellular modules over USB(Optional) Support cellular Modules: Cat1bis(QCX216)/Cat1(MDM9207)/Cat4(MDM9205)
	2 * Two PMOD sockets for LoRaWAN, Zigbee, Z-Wave, sub-GHz modules (SPI/UART) and sensors (I2C). (Optional)
	1 * Can-bus
	1 * TF Card(Optional)
	1 * SIM Card(Optional)
Wireless Mode	Support 2.4G WIFI6（1*1），Maximum speed 229.4Mbps in HT40 (MCS9)
	Support Bluetooth 5.4
	Support 802.15.4
LED	2 * LED
Size	123*114*33mm
Operating Temperature	-40℃~85℃
Storage Temperature	-40℃~85℃
Operating Humidity	10%~95%RH Non-condensation

5 Software Specifications

Item	Description
Protocols	FreeRTOS V10.6.2 / Matter 1.2.0 / OpenThread 1.3 / Wi-Fi 6 / CAN(Controller Area Network)
Matter Gateway	Supports the access of devices using Matter over Thread, Matter over Wi-Fi, and Matter over Ethernet. Supports Thread Border Router for Matter Supports Matter Bridge
BLE Tag Gateway	Supports connection to BLE tags broadcasting iBeacon, Eddystone (such as URL, UID, TLM), and AltBeacon, and enables reporting of relevant data.
LoRaWAN Gateway	Supports the LoRaWAN standard protocol, enabling communication with terminal devices that comply with the LoRaWAN specification. Supports multi-channel parallel communication, allowing simultaneous processing of data from multiple LoRaWAN terminal devices.
CAN Function	CAN over TCP/IP or CAN over UDP，Enables interconnection between CAN bus devices and Ethernet networks.
Network mode	Router and Bridge
WAN Function	Cellular(LwIP PPPoE), PPPoE、Static IP, Dynamic IP
LAN	Supports access for Matter terminals, BLE tag terminals, LoRa terminals, Thread terminals, and Wi-Fi terminals.
UI	Support Web, Matter App, MQTT Management (coming soon)
Upgrade	Support Web, Matter based OTA upgrades (coming soon)

6 Dimension

Figure 4 Dimension of MQG748

7 Interface Introduction

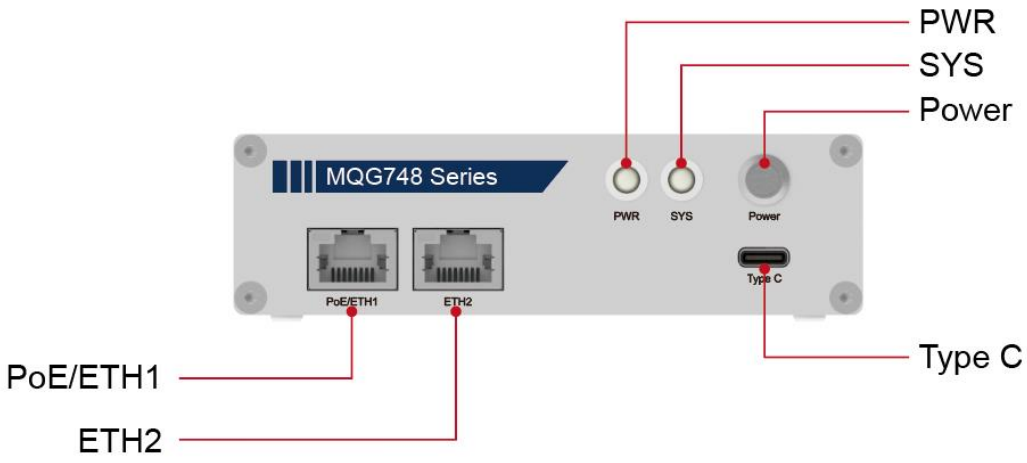
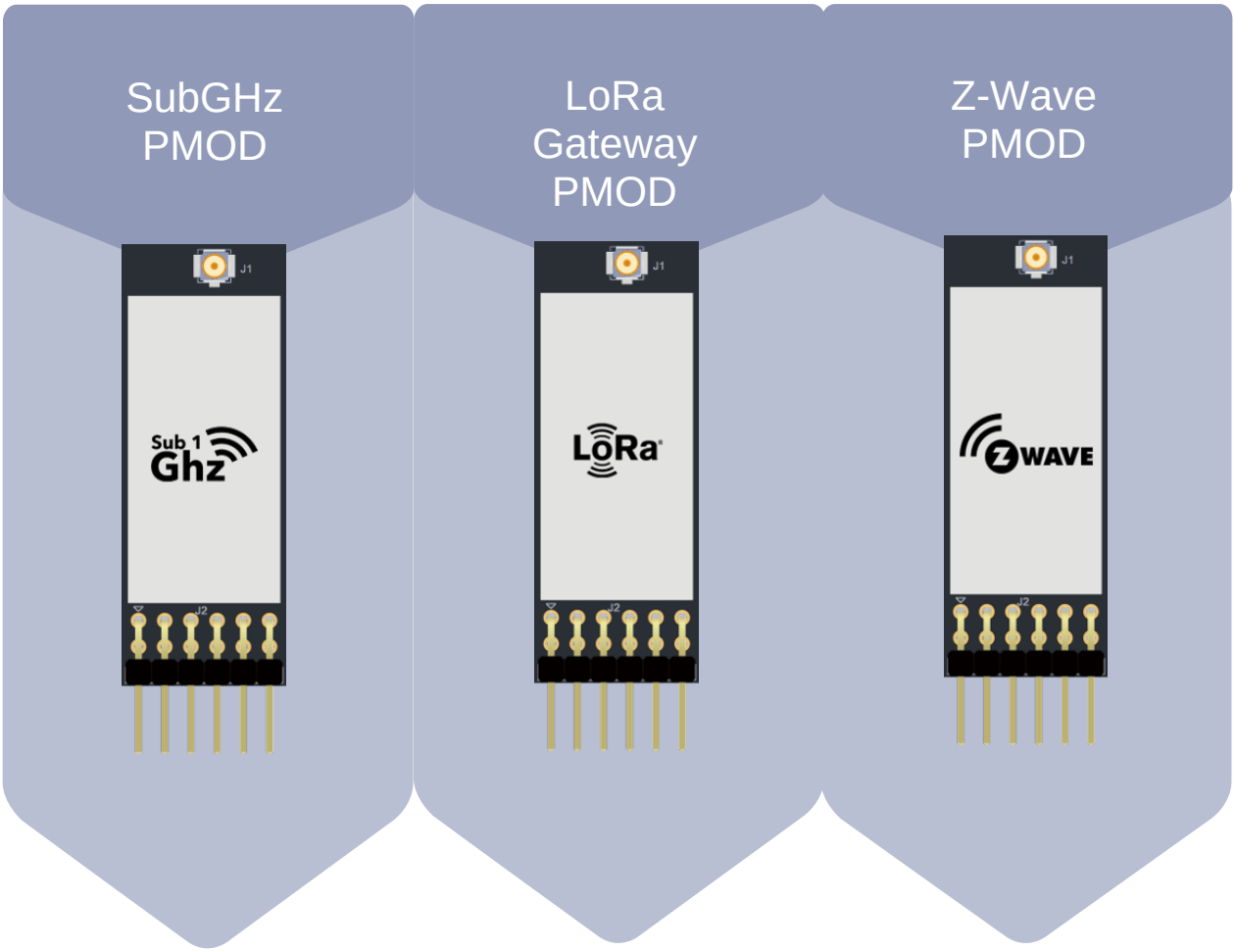
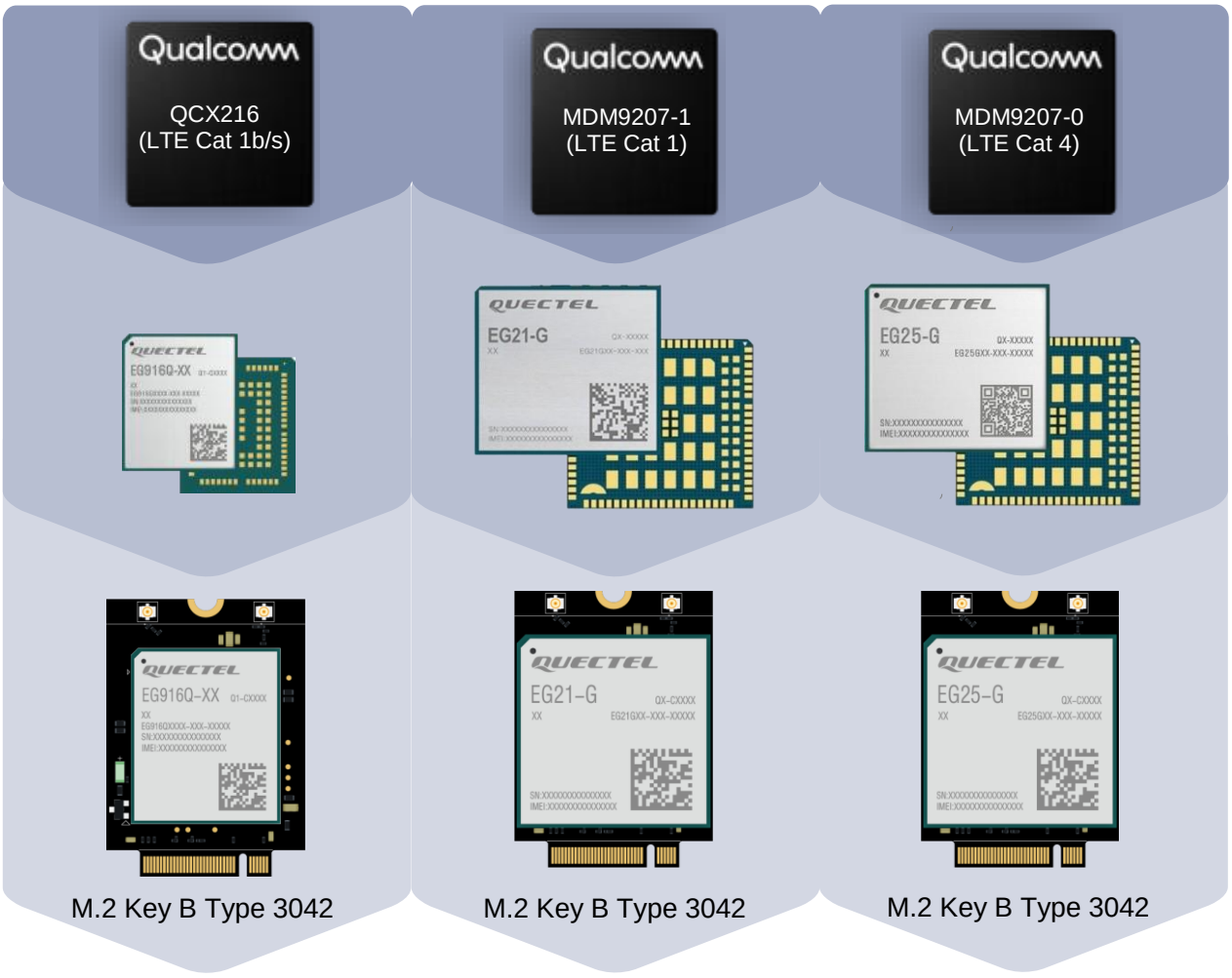


Figure 5 Interfaces of MQG748

8 Accessory Radio PMOD



9 Cellular Module M.2 Carrier Board



10 PCBA Information

10.1. Dimension

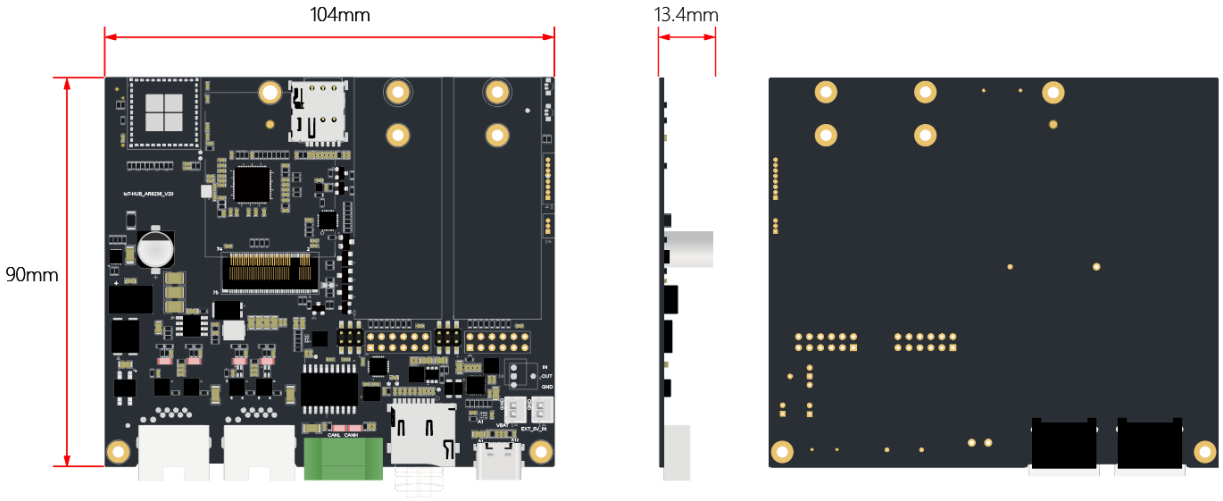


Figure 6 PCBA View

10.2. Interface Introduction

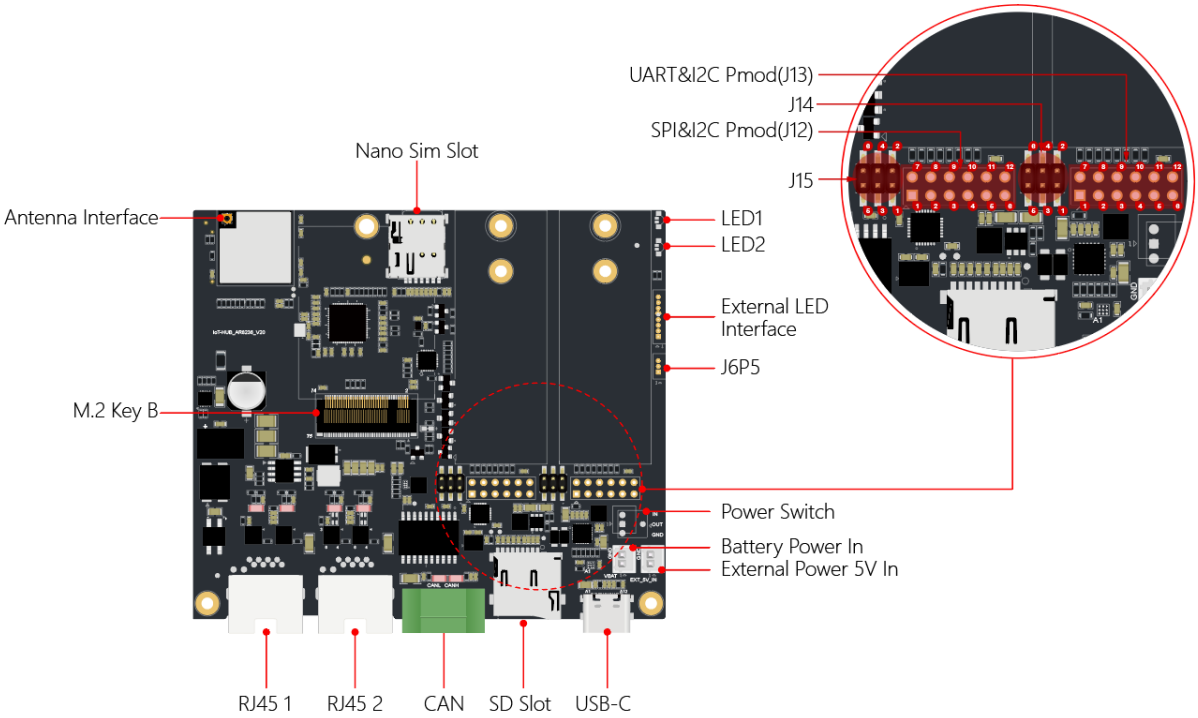


Figure 7 Interfaces of PCBA

Revision History

Revision	Description	Date
1.0	Initial draft	Mar 13, 2025
1.1	Update Model name Update interfaces of PCBA	Apr 15, 2025

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