

# Product Specification

Product/Project Name:

MINDMESH GATEWAY-MWG01



## 1.1. Dimensions and mounting dimensions



Height :180\*180\*45, unit MM

## 1.2. Installation requirements

If the ceiling is aluminum square pass or the wall is not smooth, can make suitable auxiliary material, make the installation end of the pre-sieve gateway is flat, the other end can be adjusted according to the actual installation situation

Below is the wiring diagram of MINDMESH GATEWAY-MWG01 series of products:

- Equipment connection - BLEAPP
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- Power (DC12V-24V) adapter connected 220 V power and MWG01( if required)
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- To install a device App the background and configure static IP or select DHCP during the process
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- Install the device to the background through the App and match it in the process
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- Reset key can restore factory settings, all previous parameter configuration will be lost.
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- System composition and hardware structure

# Hardware specifications

## 2.1. Hardware specifications

Component	Detailed specifications
Master CPU	STM32H743 32-bit Arm® Cortex®-M7 core with double- precision FPU and L1 cache: 16 Kbytes of data and 16 Kbytes of instruction cache; frequency up to 480 MHz, MPU, 1027

	DMIPS/ 2.14 DMIPS/MHz (Dhrystone 2.1), and DSP instructions
RAM	1 M Bytes : 192 K Bytes + 864KBytes
Flash	2 M Bytes
Slave CPU	Nordic nRF52840*4 64MHz、32 位 Arm® Cortex™ M4F 256 K Bytes 1024 K Bytes
BLE	<ul style="list-style-type: none"> <li>• -95 dBm sensitivity in Bluetooth® low energy mode</li> <li>• Supported data rates: 1 Mbps, 2 Mbps Bluetooth® low energy mode</li> <li>• -20 to +8 dBm TX power, configurable in 4 dB steps</li> <li>• On-chip balun (single-ended RF)</li> <li>• 5.3 mA peak current in TX (0 dBm)</li> <li>• 5.4 mA peak current in RX</li> <li>• RSSI (1 dB resolution)</li> </ul>
LAN	WIZnet W5500
POWER	TPS23750(POE)+ME3116(DC-DC) IEEE802.3af PoE 48V/12~24V DC

## 2.2. Powerful CPU

The main chip of the MWG01 Gateway is the STM32H743 Microcontroller of Italy Semiconductor Co., Ltd., which is based on the Arm®Cortex®- M7 kernel (with dual precision floating point unit) and operates at a frequency of up to 480 MHz.. When executing a program from the Flash, the STM32H743/753 series can provide performance of 2400 CoreMark /1027DMIPS, thanks to its L1 cache and implementation of zero waiting execution. the digital signal processor (DSP) instruction and the dual-precision floating-point unit (FPU) expand the application of the product. (d) benefits the L1 cache (16 KB I- cache 16 KB D-cache), even using external memory does not cause performance losses.also, it provides BGA and LQFP package models for 100 to 240 pins.STM32H743 has rich and flexible power management mechanism. The multi-source architecture can optimize the power efficiency by configuring different power domains into low-power modes. the device is embedded with a voltage regulator powered by the USB physical interface layer (PHY) and a backup voltage regulator in addition to the main voltage regulator that supplies power to the USB physical interface layer (PHY) and a backup voltage regulator. Typical power consumption values are 275µA/MHz @VDD =3.3 V and 25µA/MHz @VDD =C in kernel mode (off peripherals), typical power consumption current in low power standby mode is 2.95µA.

OTG controller, ethernet MAC,SPDIF-IN,HDMI-CEC, camera interface, single line protocol interface, and MDIO slave devices. So you can have multiple upward communication channels on the MWG01, including but not limited to: Ethernet,Wifi,4G/5G,NB-IoT,LoRa, etc. And has four simultaneously working Bluetooth modules.

## 2.3. Co-processor with MESH Bluetooth Protocol Stack

Four coprocessors with Bluetooth protocol stacks are divided into two groups:

A sending group has one for sending Mesh network data

the receiving group has three full-coverage bluetooth three standard channels.

The Bluetooth chips are nRF52840 by Nordic company.

Nordic Semiconductor release nRF52840™ low power bluetooth (Bluetooth®Low Energy /Bluetooth LE) system level chip (SoC) product, which is the advanced model of the same class leading series of high performance bluetooth 5 authentication system level chips (SoC). nRF52840SoC use a 64-bit Arm®Cortex™M4F processor with sufficient general processing power, floating-point computing and DSP performance to meet the most challenges sexual wireless application requirements.

nRF52840 can also use more than 5 V of power supply, such as rechargeable battery power.

nRF52840™ also has built-in ArmnRF52840™CryptoCell-310 encryption accelerators to achieve Cortex-M SoC-based peer-to-peer optimal security and offers a wide range of encryption password and key generation and storage options.

The high-end nRF52840SoC, based on Nordic mature nRF52 series architecture, is the first single chip solution in the market to fully support all the performance of Bluetooth 5. compared with the previous low-power bluetooth specification, the main advantages of bluetooth 5 include :2 times wireless raw data bandwidth (2 Mbps),4 times long distance communication range ,8 times broadcast expansion performance (increasing broadcast packet payload size to 251 bytes), and improved channel coexistence algorithm.

moreover, nRF52840SoC is the only multi-protocol in the market that supports the coexistence of bluetooth 5 and Thread SoC, with low-power bluetooth and Thread dynamic multi-protocol functions, that is, simultaneously supporting the coexistence of S140 protocol stack and OpenThread RF protocol stack. S140 protocol stack is a widely tested Bluetooth 5 authentication software stack that fully supports all the advantages of Bluetooth 5 concurrent, multi-role operations.

## 2.4. RF parameter testing

Test items	Value
Output power	0dbm
Frequency shift	±15KHz
Receiving sensitivity	-95dbm

## 2.5. Voltage withstand range

Input voltage (V)	Work
11.5-24.5	Work rang
12V	recommend

## 2.6. Temperature range

Work mode	(°C) temperature
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MESH mode	-10~60
BLE ADV mode	-10~60
BLE mode	-10~60
Stock	-40~80

#### FCC Statement:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- 1) Reorient or relocate the receiving antenna.
- 2) Increase the separation between the equipment and receiver.
- 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- 4) Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.