

# MEE200

## Meeting Board



## Specifications

## Change History

Document Version	Release Date	Description
V1.3.1	2021-09-24	Modified the product specifications.
V1.3.0	2021-05-13	<ul style="list-style-type: none"> <li>• Changed the product appearance.</li> <li>• Changed the USB module appearance.</li> </ul>
V1.2.0	2021-01-05	<ul style="list-style-type: none"> <li>• Added the power module.</li> <li>• Added the power on delay function for the relay.</li> <li>• Updated the product packing list.</li> <li>• Optimized the document content.</li> </ul>
V1.1.0	2019-11-30	Changed the product appearance.
V1.0.0	2019-09-26	First release

## Introduction

The MEE200 is a meeting board that is specially designed by NovaStar for the application of LED display in a meeting room and integrates the Android system and sending card functions into one unit. It allows any third-party app to run on it and features powerful interaction and playback capabilities. The MEE200 supports wireless screen mirroring from Windows, macOS, iOS and Android terminals, and allows you to mirror up to 4 terminals simultaneously to the LED display. For different meeting applications, it provides 4 modes to let the document presentation, video playback and remote meetings have the optimal display effect.

The MEE200 supports the image quality improvement technologies of NovaStar. Working with the specified models of NovaStar receiving cards, it can enable the fine-pitch indoor LED display to have outstanding grayscale and color performance.

Thanks to its small size and modular design, the MEE200 can be easily integrated into the LED display. It can be mainly used in various LED display applications for business meetings in governments and companies in many industries, such as design, health care and education.

## Features

- Capable of loading an LED display up to 1920×1080@60Hz (pixel-to-pixel display)
- 4x HDMI 2.0 inputs (one for OPS computer connection)  
Support video sources of up to 3840×2160@30Hz.
- 6x USB ports for multimedia playback and function extension
  - 5x USB 2.0 (2 ports reserved)
  - 1x USB 3.0
- 1x type-C output to connect an Ethernet module  
An Ethernet module supports 8 Gigabit Ethernet outputs.
- 2x 3.5-mm audio output connectors for internal and external sound system connections
- Output image scaling  
Min.: 104×104 pixels; Max.: 2880×1620 pixels
- Android-based desktop UI system, supporting third-party apps
- Wireless screen mirroring from multiple platforms
  - Mirror from Windows, macOS, iOS and Android terminals. Mirror up to 4 terminals simultaneously to the LED display.
  - Working with the terminal app to control the wireless screen mirroring
    - Secondary mirror: The speaker can reversely control the LED display via the terminal.
    - Wireless snapshot: Take snapshots wirelessly via the terminal at any time to record meeting details.
    - Wireless speech: The participants speak directly via the terminal microphone and the voice is transmitted wirelessly to the sound system of the LED display.
  - Playback of local and online high-definition videos  
Support decoding of 4K UHD videos in the HEVC, H.265, H.264 and other industry-standard coding formats.
  - Dual Wi-Fi modes  
Allow for Wi-Fi and wireless hotspot connections at the same time.

- Image quality effect adjustment

Provide the standard, soft, cinema and video modes, and allow you to adjust the brightness, saturation, contrast, etc.

- Eye comfort mode
- Screen drawing and commenting
- Bluetooth 4.0

Can connect to the Bluetooth remote, Bluetooth mouse, Bluetooth keyboard, Bluetooth sound system and other common peripherals.

- 4x relays for convenient power management of LED display
- 1x reserved OPS control port to control power on/off of the OPS computer
- Compatible with the peripherals commonly used in a meeting, such as camera, sound system and laser pointer
- HDR function

Work with the A8s or A10 Plus receiving card to support HDR10-Optima and HLG. The original

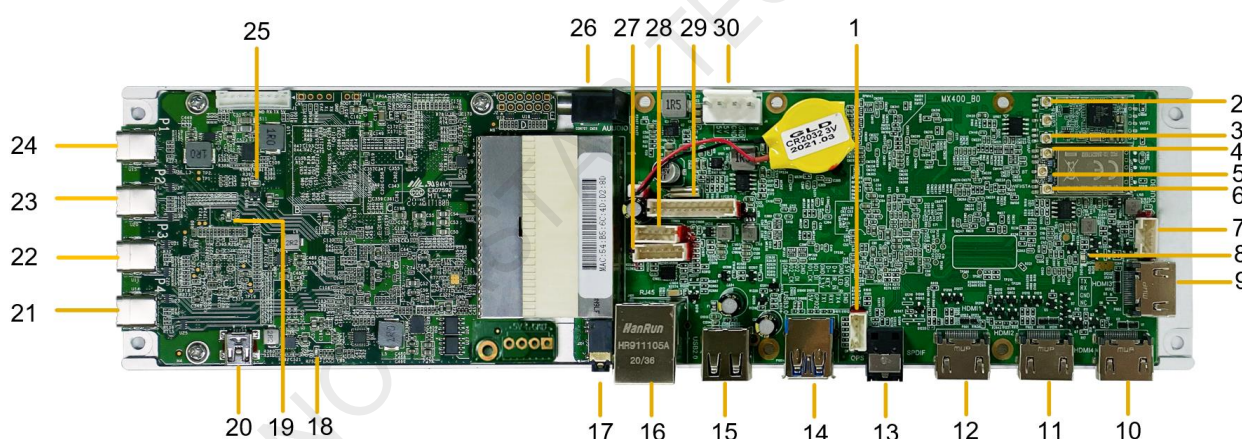
brightness range and color space of the video source can be reproduced, allowing for a more lifelike image.

- Support for the Image Booster Engine

Work with the A8s or A10s Plus receiving card to improve the display effect from the following 3 dimensions (The actual effect depends on the driver IC).

- Color Management: Manage the color gamut of the screen to enable more accurate colors on the screen.
- Precise Grayscale (individual correction of 65,536 levels of grayscale): Individually correct the 65,536 levels of grayscale (16bit) of the driver IC to fix the display problems at low grayscale conditions, such as brightness spikes, brightness dips, color cast and mottling, allowing for a smoother and uniform image.
- 22bit+: Improve the LED display grayscale by 64 times to avoid grayscale loss due to low brightness and allow for more details in bright and dark areas and a smoother image.





## Appearance



All product pictures shown in this document are for illustration purpose only. Actual product may vary.

Table 1-1 Connectors

Type	No.	Connector	Description
Input	9	HDMI 2.0	Connect to the HDMI output of the OPS computer to allow for dual-system functions.
	10/11/12	HDMI 2.0	<ul style="list-style-type: none"> <li>3x HDMI 2.0 inputs</li> <li>Input resolutions up to 3840×2160@30Hz</li> <li>Do NOT support interlaced signal input.</li> <li>HDCP 1.4 and HDCP 2.2 compliant</li> </ul>

Type	No.	Connector	Description
	14/15	USB 3.0/USB 2.0	<p>USB 3.0/USB 2.0 input ports to support a mouse, keyboard, USB flash drive and other common USB devices</p> <ul style="list-style-type: none"> <li>Supported image formats: *.jpg, *.bmp, *.png</li> <li>Supported video formats: *.avi, *.mpg, *.vob, *.mov, *.mkv, *.rmvb, *.mp4, *.ts, *.flv</li> </ul> <p> <b>Note:</b></p> <p>For details on the supported video encoding formats, see <a href="#">Media Specifications</a>.</p>
Output	13	SPDIF	For digital fiber optic audio output
	17	AUDIO	<p>3.5-mm external sound system connector (prior to the internal sound system connector)</p> <p> <b>Note:</b></p> <p>Support the 3-pole headphone plug only. This connector is used to connect the audio equipment.</p>
	21/22/23	Type-C	Reserved ports
	24	Type-C	<p>Connect to an Ethernet module that comes with the MEE200 as standard. For details, see <a href="#">Ethernet Module</a>.</p> <ul style="list-style-type: none"> <li>8x RJ45 (1Gps) outputs</li> <li>Total resolutions of 8 outputs in pixel-to-pixel display mode up to 1920x1080@60Hz</li> </ul> <p>Max. width: 2880 pixels; Max. height: 1620 pixels</p> <ul style="list-style-type: none"> <li>Support backup between Ethernet ports. Do NOT support backup between devices.</li> </ul> <p> <b>Note:</b></p> <ul style="list-style-type: none"> <li>Users must use the Type-C To Type-C cable supplied with this product to connect this connector to the Ethernet module, and the side with a "T" mark must face upwards.</li> <li>The MEE200 comes with one Ethernet module (8 Ethernet outputs) as standard. If you need 16 Ethernet outputs, please place another order to purchase an Ethernet module and connect it to Connector 23.</li> <li>For 16 Ethernet outputs, the loading capacity of the MEE200 remains unchanged.</li> </ul>
	26	AUDIO	<p>3.5-mm internal sound system connector (connect to the internal sound system)</p> <p> <b>Note:</b></p> <p>Support the 3-pole headphone plug only. This connector is used to connect the audio equipment.</p>

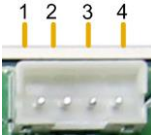
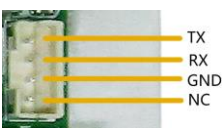
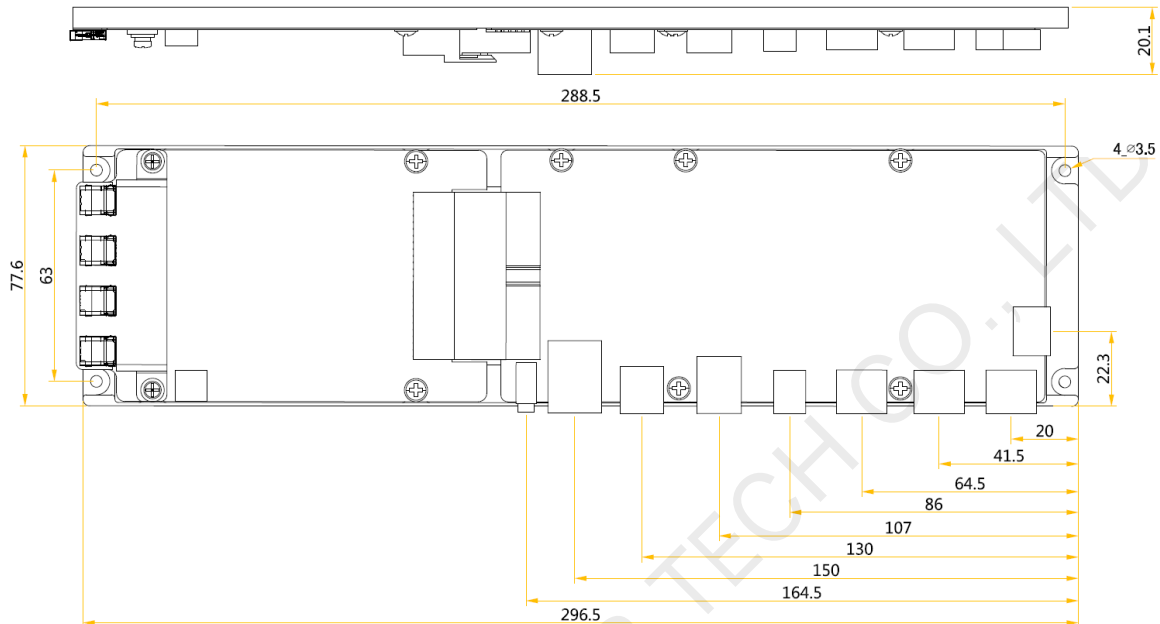
Type	No.	Connector	Description
Control	1	OPS computer connector	Detect and control power on/off of the OPS computer. Pins of this connector are defined as follows: <ul style="list-style-type: none"> <li>• 1: OPS-PWE</li> <li>• 2: OPS-STATE</li> <li>• 3: OPS-DET</li> <li>• 4: GND</li> </ul> 
	7	Android system debugging connector	For online debugging of the Android system. Pins of this connector are defined as follows: 
	16	Fast Ethernet port	Connect to the network or to the NovaLCT software on the control computer. Support switching between the two connections on the Android system.
	20	Mini USB port	Connect to the NovaLCT software on the control computer.
Antenna	2/3	WIFI/AP	Connect to the Wi-Fi antenna.
	5	BT	Connect to the Bluetooth antenna.
	4/6	WIFI/STA	Connect to the Wi-Fi antenna.
Accessory	27	Relay module connector	Connect to the relay module for cabinet power management.
	28	Button module connector	Connect to the button module for volume adjustment, brightness adjustment, input source switching and power on/off.
	29	USB module connector	Connect to the USB module for convenient USB port arrangement.
Power	30	Directly connect to power supply: DC 4.9 V to 5.1 V Connect to a power module: DC 4.4 V to 5.2 V (See the <a href="#">Power Module.</a> )	

Table 1-2 Indicator status

Indicator	No.	Status	Description
Android on-board indicator (Green)	8	Flash once every 1s	The Android system is functioning normally.
Status indicator (Red)	18	Always on	The power supply is normal.
		Off	The power is not supplied, or the power supply is abnormal.
MCU indicator (Green)	19	Flash once every 1s	The MCU is functioning normally.
		Flash 4 times every 1s	The firmware is being updated.

Indicator	No.	Status	Description
FPGA indicator (Green)	25	Flash 4 times every 1s	The video input is available.
		Flash once every 1s	The video input is unavailable.

## Dimensions

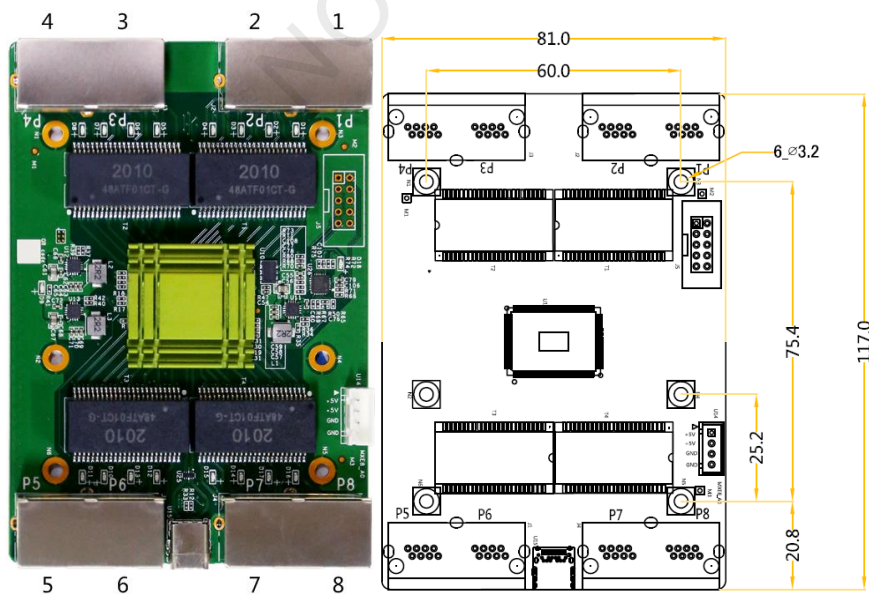


Tolerance:  $\pm 0.3$  Unit: mm

## Accessories

### Ethernet Module

A MEE200 is equipped with an Ethernet module that has 8 Gigabit Ethernet ports. The Ethernet port order is marked in the figure below.



Tolerance:  $\pm 0.3$  Unit: mm



**Note:**

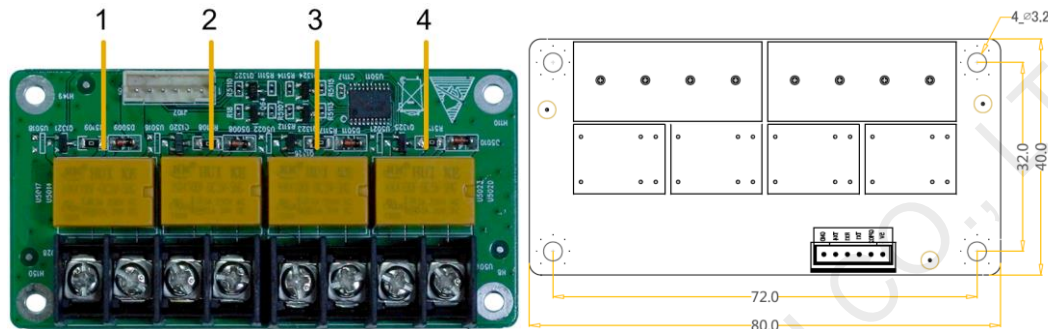
- The power for the Ethernet module is supplied via the Type-C port. No external power supply is required.
- The 4-pin socket on the Ethernet module is reserved.

## Relay Module

A relay module is connected for convenient power management of the LED display.

The relay module supports the power on delay function, which can effectively protect the circuitry.

The delay interval is 250 ms and the delay sequence is 1--->2--->3--->4, as shown in the figure below.



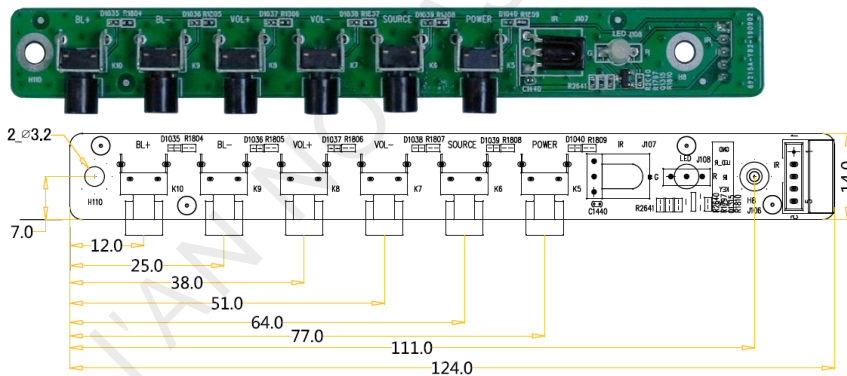
Tolerance:  $\pm 0.3$  Unit: mm

**Note:**

The delay function is enabled by default. You can enable or disable it on the **General** page in the MeetUs system. For details, see [MeetUs Meeting Room Display System User Manual](#).

## Button Module

A button module is used to control the MeetUs system via hardware, such as brightness adjustment, volume adjustment, and power on/off.

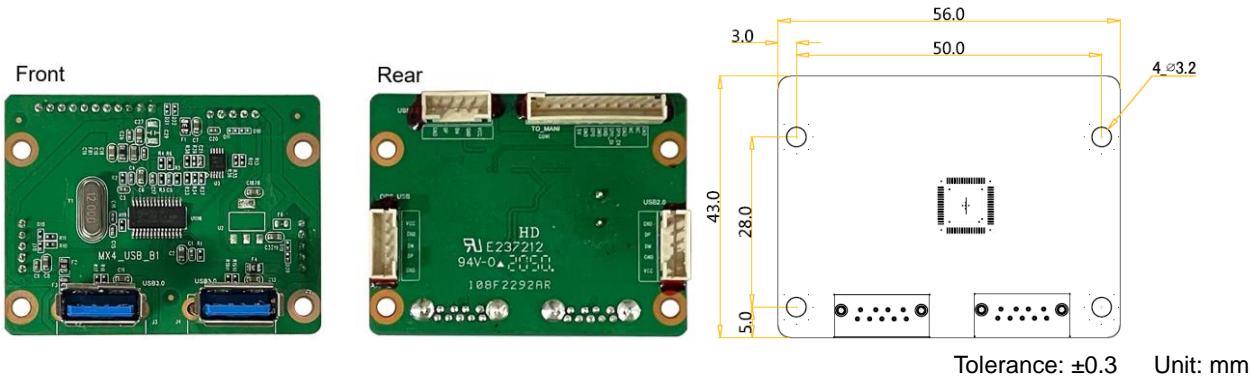


Tolerance:  $\pm 0.3$  Unit: mm

Name	BL+	BL-	VOL+	VOL-	SOURCE	POWER	Status LED	
Description	Brightness up	Brightness down	Volume up	Volume down	Input source switching	Power on/off	Always on in blue after power on	Always on in red in standby mode

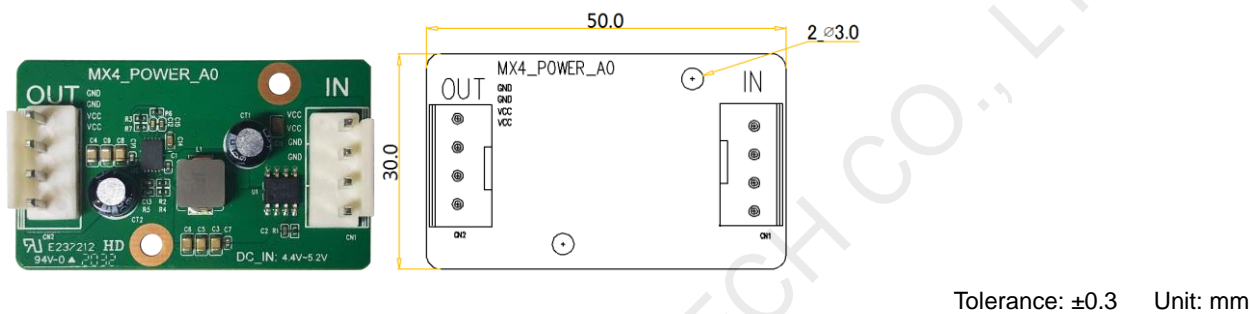
## USB Module

A USB module has four USB 2.0 ports (two of which are reserved in the form of pin). For the USB module connector description, see [Table 1-1](#).



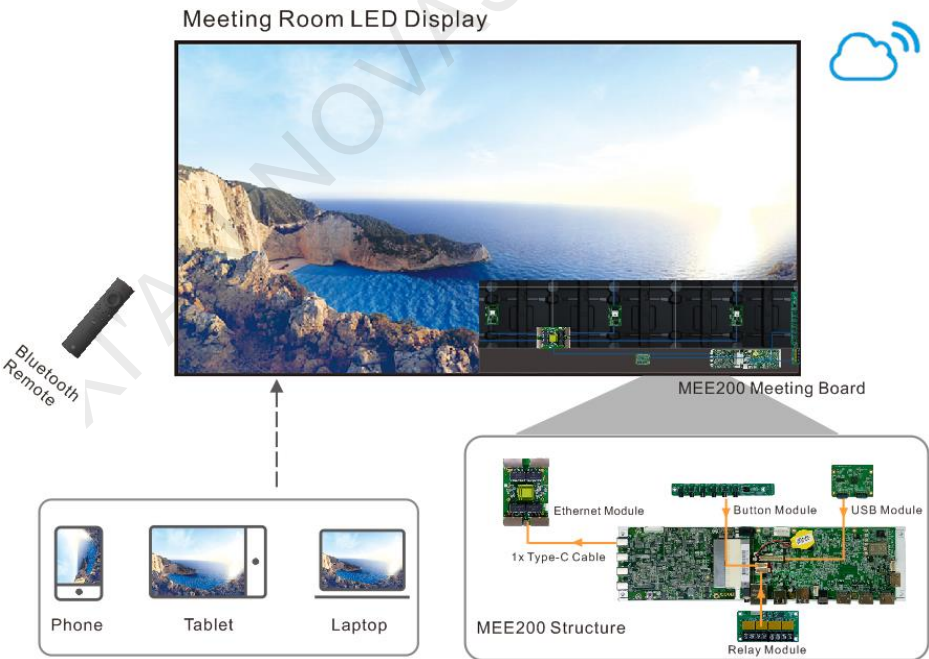
Power Module

A power module can be connected to expand the power supply range of the meeting board. The upgraded power supply range is 4.4 V to 5.2 V.



Name	IN	OUT
Description	Connect to the power supply (4.4 V to 5.2 V).	Connect to the power connector of the meeting board (5.27 V).

Applications




- Note:**
- The MEE200 product package in this diagram is described in the packaging list in the specifications table.



- The Bluetooth remote (MX-BVR) is not included in the MEE200 product package. Customers can place another order to purchase the Bluetooth remote.

## Specifications

Hardware Configuration	CPU	64-bit quad-core 1.7 GHz CPU
	RAM	DDR4-4GB
	GPU	Mali T820
	ROM	16GB eMMC5.1 (Standard)
Electrical Specifications	Input voltage	Directly connect to power supply: DC 4.9 V to 5.1 V Connect to a power module: DC 4.4 V to 5.2 V
	Maximum transient current	10 A
	Peak power consumption	50 W  <b>Note:</b> <ul style="list-style-type: none"><li>A switched-mode power supply of 200 W is recommended.</li><li>The peak power consumption depends on the dynamic load of the Android SoC.</li></ul>
Operating Environment	Temperature	–20°C to +60°C (An aluminum cooling plate must be installed on the chassis housing for long-term high-temperature operations.)
	Humidity	10% RH to 75% RH, non-condensing
Storage Environment	Temperature	–25°C to +125°C
Physical Specifications	Motherboard dimensions (L×W×H)	296.5 mm × 77.6 mm × 20.1 mm
	Motherboard net weight	0.35 kg
Packing Information	Packing box dimensions (L×W×H)	355 mm × 275 mm × 85 mm
	List	<ul style="list-style-type: none"> <li>1x MEE200</li> <li>1x Ethernet module, 1x Relay module, 1x Button module, 1x USB module, 1x Power module</li> <li>1x Type-C To Type-C cable (1 m), 1x Mini USB-A cable (158 cm)</li> <li>3x Glue stick antennas, 3x Antenna feeders (50 cm)</li> <li>1x 4-pin flat cable (30 cm), 1x 5-pin flat cable (30 cm), 1x 6-pin flat cable (30 cm), 1x 11-pin flat cable (30 cm)</li> <li>1x Certificate of Approval</li> </ul>

### Note:

The current and power consumption are measured under the following conditions. The data may vary depending on the product settings, usage environment and measuring status.

- The AC 220V power is output to the 200W (5V/40A) switched-mode power supply first, then to the boost module and at last to the MEE200.
  - An HDMI video source is used (The default Android startup image is used by default and it does not change upon startup).
  - Two Ethernet modules are connected to the MEE200 and the 16 Ethernet ports form a loop via short Ethernet cables. A USB drive containing a video that can be played is connected. Three glue stick antennas are connected and Wi-Fi is connected. The hotspot for screen mirroring is turned on.
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