

# ED-HMI2320-121C

## 12.1-inch Industrial Panel PC Based on Raspberry Pi CM4

- ◆ 12.1" TFT, resolution 800x600, multi-point capacitive touch screen
- ◆ Broadcom BCM2711, quad core Arm Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
- ◆ Up to 8GB LPDDR4 RAM and 32GB eMMC storage
- ◆ Support Micro SD card and mSATA SSD storage expansion
- ◆ Support HDMI+LVDS touchscreen dual displays, HDMI supports up to 4Kp60
- ◆ 1 x Gigabit Lan (dual Lans are optional)
- ◆ 2 x USB 3.0, 2 x USB 2.0 (optional), up to 3 x RS232 and up to 2 x RS485
- ◆ 2.4GHz and 5GHz dual-band Wi-Fi, Bluetooth and 4G LTE
- ◆ Wide voltage power input range of DC 9V~36V with reverse polarity protection, overvoltage protection and overcurrent protection
- ◆ Integrated RTC, EEPROM and crypto authentication
- ◆ Support VESA 75x75 wall mounting and optional desktop mounting base



### Specifications

System	
CPU	Broadcom BCM2711, quad core Arm Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
VPU	H.265(HEVC), up to 4Kp60 decode H.264, up to 1080p60 decode, 1080p30 encode
GPU	OpenGL ES 3.1 & Vulkan 1.0
Memory	Options for 1GB, 2GB, 4GB, 8GB LPDDR4-3200 SDRAM
Storage	<ul style="list-style-type: none"> <li>• Options for 8GB, 16GB, 32GB eMMC storage</li> <li>• Micro SD card (user storage expansion)</li> <li>• mSATA SSD (optional)</li> </ul>

Software	
Operating System	<ul style="list-style-type: none"> <li>• Raspberry Pi OS(Desktop) 32-bit</li> <li>• Raspberry Pi OS(Lite) 32-bit</li> <li>• Raspberry Pi OS(Desktop) 64-bit</li> <li>• Raspberry Pi OS(Lite) 64-bit</li> </ul>

Side I/O	
Power	1 x DC IN, DC Jack connector, with reverse polarity protection, overvoltage protection and overcurrent protection. It supports 9V~36V input.
HDMI	1 x HDMI port, type A connector, which is compatible with HDMI 2.1 standard and supports 4K 60Hz.
RS232	1 x RS232 port, DB9 male connector, using the 2, 3 and 5 pins, the corresponding signal is defined as RX/TX/GND.
*1RS485/232	2 x RS485/232 port, DB9 male connector, different numbers of RS232 and RS485 ports can be selected according to actual application. We use the 1 and 2 pins for RS485 signal, the corresponding signal is defined as A/B. We use the 2, 3 and 5 pins for RS232 signal, the corresponding signal is defined as RX/TX/GND. <ul style="list-style-type: none"> <li>• Number of RS485 ports: 0~2</li> <li>• Number of RS232 ports: 0~2</li> </ul>
USB 3.0	2 x USB 3.0 ports, type A connector, supporting up to 5Gbps transmission rate.
1000M Ethernet	1 x adaptive 10/100/1000M ethernet port, RJ45 connector. It can be used to access the network. PoE can be supported through optional expansion module. The maximum power of PoE is 60W and it is compatible with IEEE 802.3bt standard.
USB 2.0/1000M Ethernet	Choose one between 2 x USB 2.0 ports and 1 x 1000M Ethernet port. <ul style="list-style-type: none"> <li>• 2 x USB 2.0 ports, type A connector, which support up to 480Mbps transmission rate.</li> <li>• 1 x adaptive 10/100/1000M ethernet port, RJ45 connector. It can be used to access the network.</li> </ul> Different ports can be selected according to actual application. <ul style="list-style-type: none"> <li>• ED-HMI2320: 2 x USB 2.0</li> <li>• ED-HMI2321: 1 x 1000M Ethernet</li> </ul>
MIC IN	1 x MIC Input, 3.5mm audio jack connector(red), which can connect to microphone.
LINE OUT	1 x Audio Output, 3.5mm audio jack connector(green), stereo audio output.
Antenna (optional)	2 x SMA ports, using to connect 4G antenna and Wi-Fi/BT antennas.

## Buttons and Indicators

Power Switch	1 x Power button, including short press and long press operations. When it is not powered on: <ul style="list-style-type: none"> <li>• Short press: Start up the device</li> <li>• Long press: Enter flashing to eMMC mode</li> </ul> After it is powered on: <ul style="list-style-type: none"> <li>• Short press: Null</li> <li>• Long press: Shut down the device forcibly</li> </ul>
--------------	---

## Internal I/O

Speaker	1 x PA output, built-in a 4Ω 3W stereo speaker.
SD Card Slot	1 x Micro SD card slot, which is used to install SD card for storing user data.
SIM Card Slot	1 x Micro SIM card slot, which is used to install SIM card for getting 4G signal.
mSATA	1 x mSATA port, Mini PCIe connector, which is used to connect mSATA*2 SSD.

Expansion Performance	
Auto-boot	It supports automatic power-on function by default.
EEPROM	It supports 4K byte storage and improves the ease of use of device.
Crypto Authentication	It can be matched to realize the required upper layer application and improves the security of device.
RTC	Ensure that the system clock is not affected by device power-off. <b>Note: A CR2032 battery is provided by default in China.</b>
Buzzer	A tip or an abnormality can be configured according to actual application, which realizes the alarm function.

LCD	
LCD Size	12.1" TFT
Resolution	800 x 600
Screen Ratio	4:3
Display Colors	16.7MB
Active Area	246mm(H) x 184.5mm(V)
Backlight	LED
MTBF	50000h
Pixel Pitch	0.3075mm x 0.3075mm
Contrast Ratio	1000:1
Response Time	5ms
Viewing Angle (CR≥10)	70°(L)/70°(R)/50°(U)/60°(D)
Input Type	LVDS

Touch Screen	
Type	Multi-point Capacitive Touch Screen
Multi-touch	10 points
Transmittance	85%±5%
Communication Interface	USB
Touches	More than 50 million times
Resolution	4096 x 4096
Surface Hardness	Not less than 6H

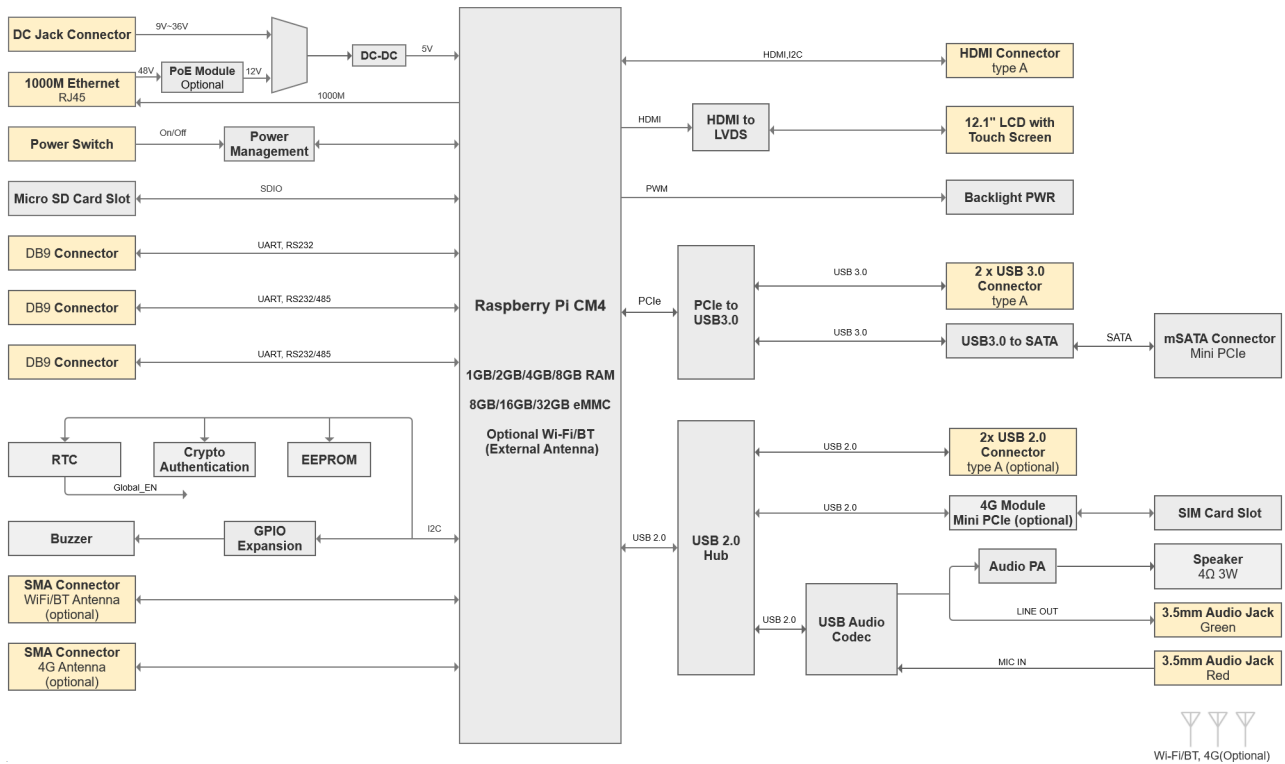
Electrical Characteristics	
Input Voltage	9V ~ 36V DC
Power Consumption	60W(Max)

Mechanical Characteristics	
Dimensions	332mm x 270mm x 69mm (W x H x D, mounting base is not included.)
Weight	3.25Kg
Installation	Wall mounting and desktop mounting

Wireless	
Wi-Fi/Bluetooth (optional)	2.4GHz & 5GHz dual-band Wi-Fi and Bluetooth with antenna. <ul style="list-style-type: none"> <li>• 2.4GHz Wi-Fi: Compatible with IEEE 802.11 b/g/n</li> <li>• 5GHz Wi-Fi: Compatible with IEEE 802.11 a/n/ac</li> <li>• The Bluetooth supports 2402MHz ~ 2480MHz frequency.</li> </ul>
4G (optional)	Connect with various 4G LTE modules through the Mini PCIe interface, with antenna. <ul style="list-style-type: none"> <li>• <b>EC20-CN Module (China/India)</b>                LTE FDD: B1/B3                LTE TDD: B38/B39/B40/B41                TDSCDMA: B34/B39                WCDMA: B1                CDMA 1x/EVDO: BC0                GSM: 900/1800MH</li> <li>• <b>EC25-AFX Module (North America)</b>                LTE-FDD: B2/B4/B5/B12/B13/B14/B66/B71                LTE-TDD                WCDMA: B2/B4/B5                GSM/EDGE</li> <li>• <b>EC25-AUX Module (Latin America/Australia/New Zealand)</b>                LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28                LTE-TDD: B40                WCDMA: B1/B2/B4/B5/B8                GSM/EDGE: B2/B3/B5/B8</li> <li>• <b>EC25-EUX Module (Europe/Middle East/Africa/Thailand)</b>                LTE-FDD: B1/B3/B7/B8/B20/B28A                LTE-TDD: B38/B40/B41                WCDMA: B1/B8                GSM/EDGE: B3/B8</li> </ul>

Environmental & Regulatory	
Operating Temperature	0°C ~ 60°C
Storage Temperature	-25°C ~ 60°C
Ambient Humidity	5% ~ 95%(non-condensing)
Certifications	<ul style="list-style-type: none"> <li>• <b>FCC</b> FCC 47 CFR Part 15 Subpart B</li> <li>• <b>CE</b> EN IEC 62368-1/EN IEC 62311/EN IEC 61000-3-2/EN IEC 61000-3-3 EN 55032/EN 55035 EN 301 489-1/EN 301 489-3/EN 301 489-17/EN 301 489-52 EN 301 328/EN 301 440/EN 301 511/EN 301 908-1/EN 301 908-2</li> </ul>

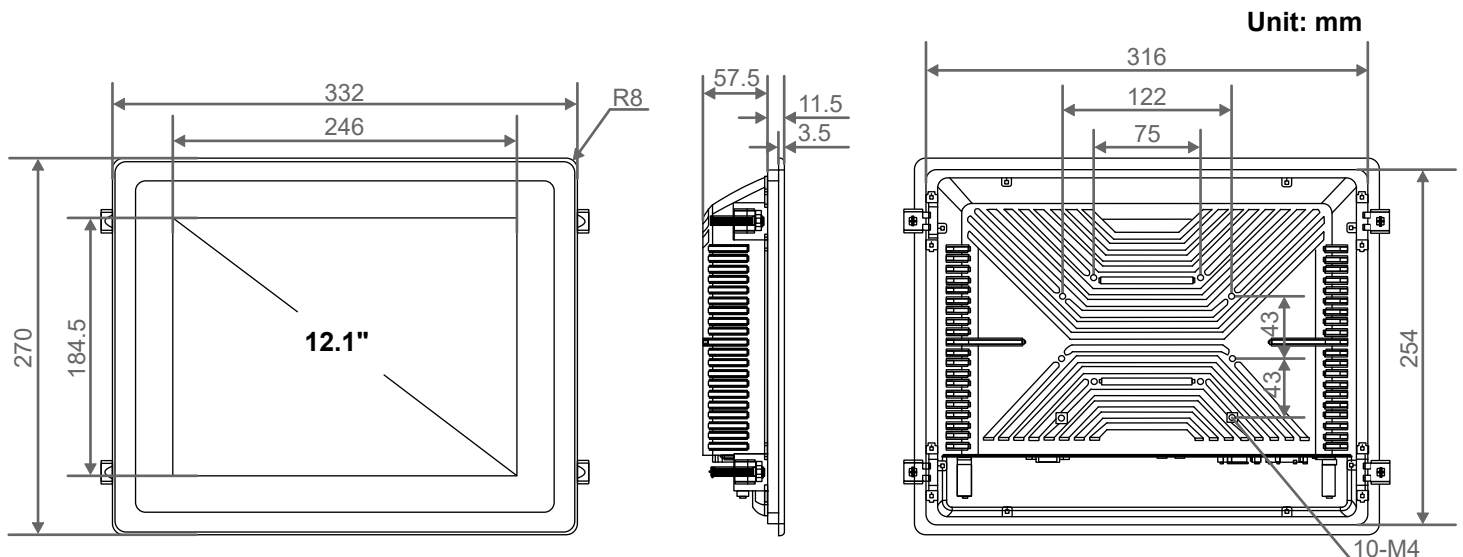
## System Diagram

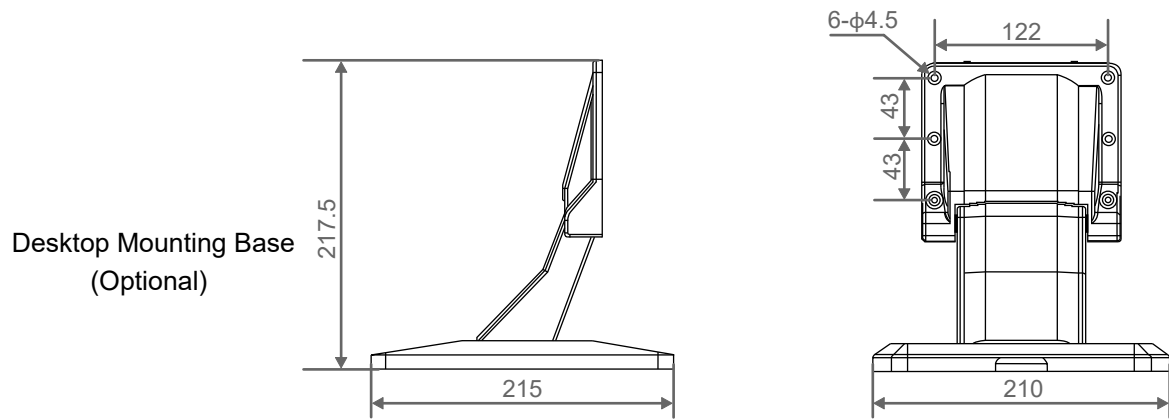


## Known Issues

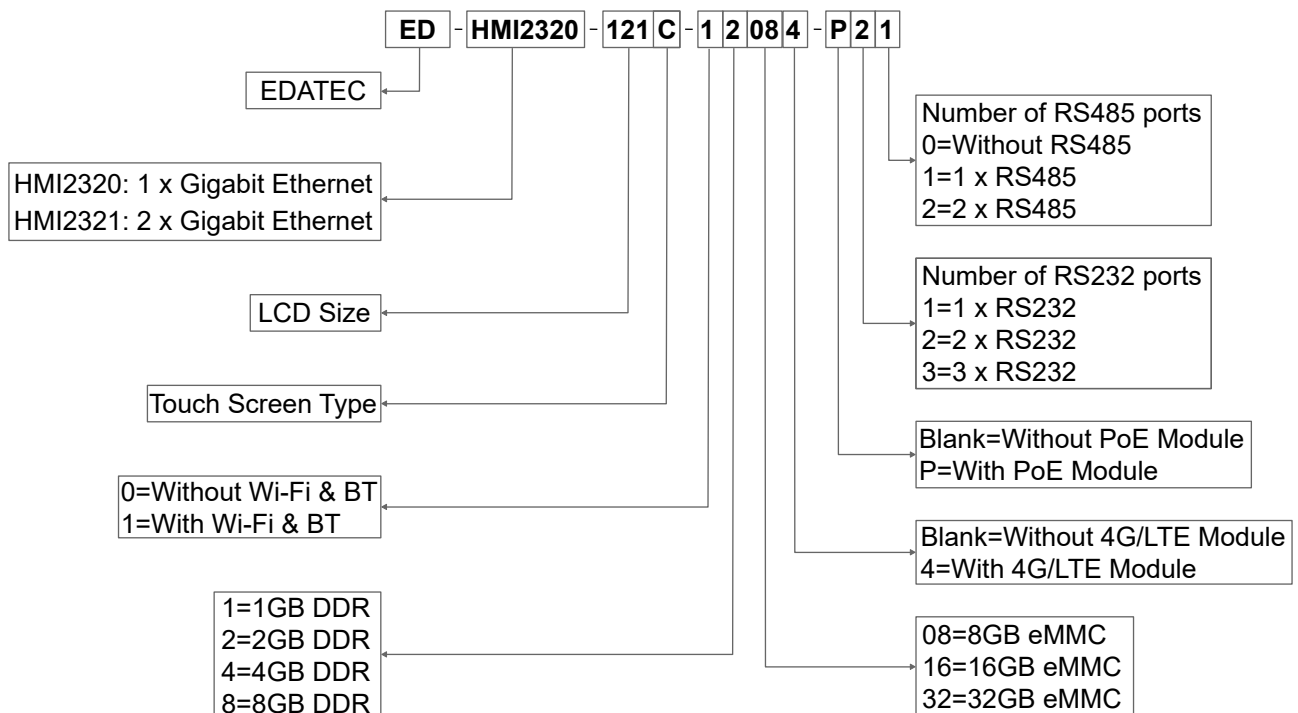
- \*1: The RS485 function is not available at present. If you need to use RS485, we can manually modify it for you.
- \*2: The read rate of some mSATA SSDs is slow.

## Dimensions





## Ordering Code



### Note:

The total number of RS232 and RS485 ports is 3, which the number of RS232 ports is 1~3 and the number of RS485 ports is 0~2.

### Example

P/N: **ED-HMI2320-121C-12084-P21**

Configuration: 12.1-inch Industrial Panel PC Based on Raspberry Pi CM4, with Wi-Fi & Bluetooth, 4G, 2GB DDR, 8GB eMMC, 1 x Gigabit Ethernet, PoE Module, 2 x RS232 and 1 x RS485.

## Packing List

- 1 x ED-HMI2320-121C Unit
- [Optional] 1 x ED-ACC-DMB2320 (Desktop Mounting Base, including 6xM4 screws)
- [Wi-Fi/BT Version - Optional] 1 x 2.4GHz/5GHz Wi-Fi/BT Antenna
- [4G Version - Optional] 1 x 4G/LTE Antenna