



ED-GWL2010

AN INDOOR LIGHT GATEWAY BASED ON RASPBERRY PI 4B

Shanghai EDA Technology Co.,Ltd
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1 Product Overview

ED-GWL2010 is an indoor light gateway designed based on Raspberry Pi 4B. This product uses the LoRa gateway module of the new generation SX1302 and SX1303 baseband chips, which has the characteristics of long transmission distance, large node capacity and high receiving sensitivity. In addition, this gateway has strong performance, light structure and simple deployment, which can greatly simplify and shorten your development threshold and design time.

1.1 Target Application

- LoRa intelligent gateway
- Smart manufacturing
- Smart city
- Smart transportation

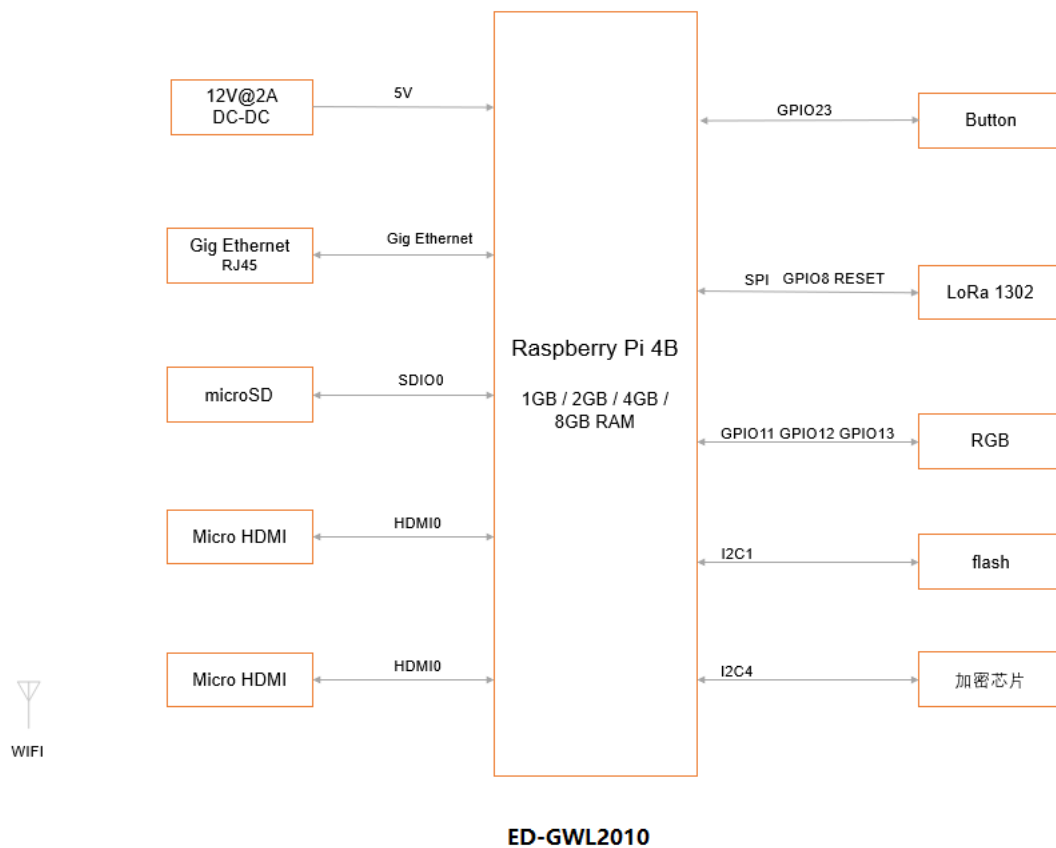
1.2 Specifications and Parameters

Function	Parameters
CPU	Broadcom BCM2711 4 core, ARM Cortex-A72(ARM v8), 1.5GHz, 64bit CPU
Memory	1GB / 2GB / 4GB / 8GB option
SD card	8GB / 16GB / 32GB / 64GB option
Ethernet	1x Gigabit Ethernet
WiFi / Bluetooth	2.4G / 5.8G dual WiFi, bluetooth 5.0
Frequency	Support 868MHz(EU868,RU864)、915MHz(US915,AS923-1/2/3,AU915)、470MHz(CN470)
Button	Support custom function
RGB	RGB, Support a variety of custom displays.
Encryption chip	Support encryption function
HDMI	2x Micro-HDMI
HDMI FPC touch screen	1x FPC HDMI, support USB touch, PWM aiming
DSI	1x DSI, Support Raspberry Pi 7 inch official touch.
USB Host	2x USB 2.0 Type A, 2x USB 2.0
Power input	12V 2A
Case	Full Metal Jacket
Dimensions	95(L) x 95(W) x 24(H) mm

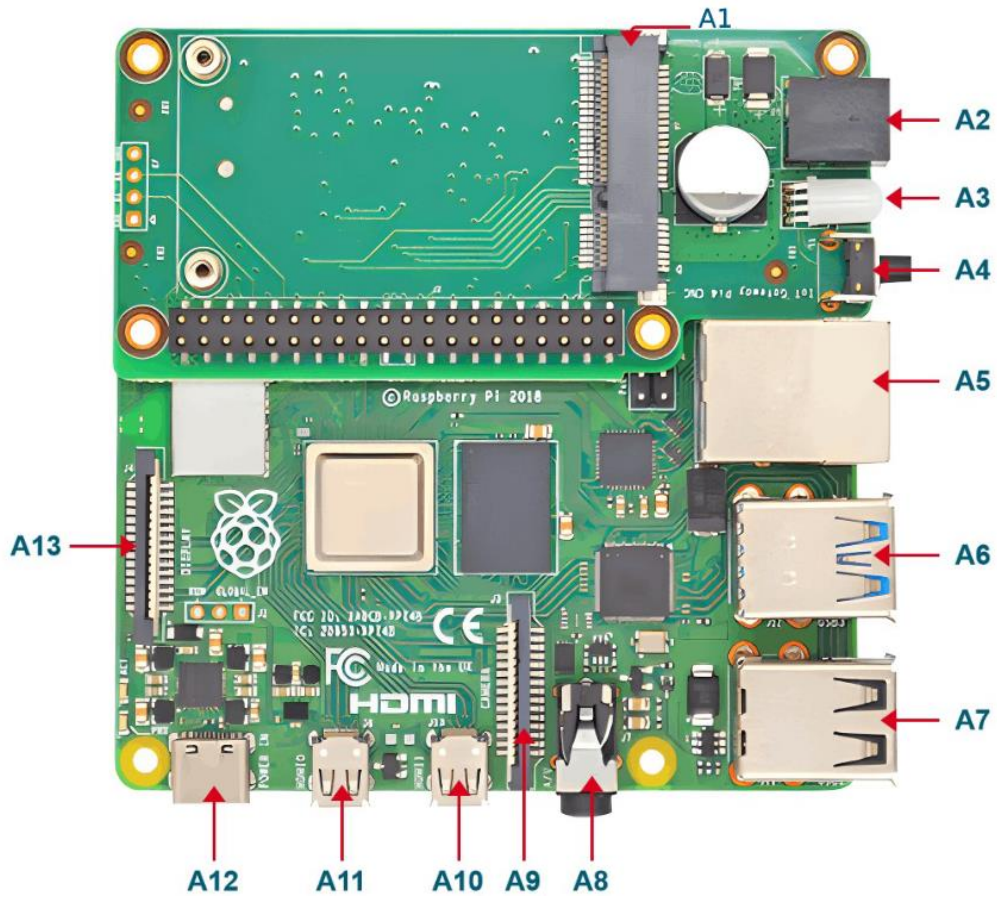
Antenna accessory	Support optional WiFi/BT external antenna, which has passed wireless authentication together with Raspberry Pi CM4, and LoRa external antenna.
Working environment temperature	Running at full speed at ambient temperature of -25 ~ 50 C.
OS	Compatible with official Raspberry Pi OS and Ubuntu.

NOTE: Most of the interfaces are hidden in the case, only the power interface, RGB indicator light and network port are left on the case.

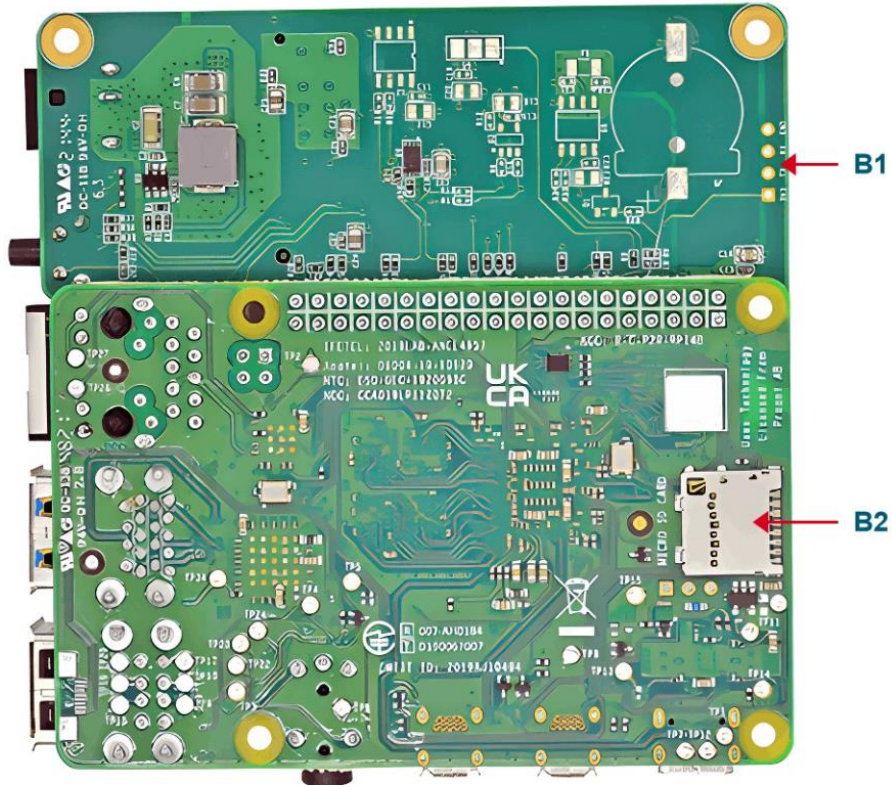
1.3 System Diagram



1.4 Functional Layout



Item	Function Description	Item	Function Description
A1	Mini PCIe	A2	Power interface
A3	Indicator light	A4	User-defined key
A5	RJ45 network port	A6	USB 3.0
A7	USB 2.0	A8	3.5mm earphone port
A9	CSI	A10	Micro HDMI
A11	Micro HDMI	A12	Pi4 power interface(no need to use)
A13	HDMI DSI		

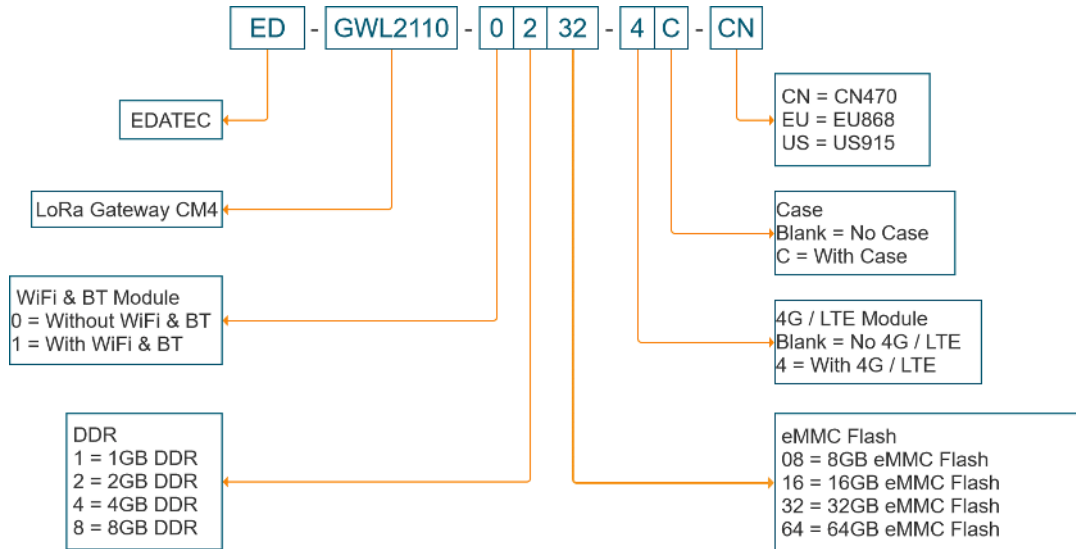


Item	Function Description	Item	Function Description
B1	Debug serial port	B2	SD card slot

1.5 Packing List

- 1x ED-GWL2010 host
- [option]1x LoRa antenna
- [option]1x 2.4GHz/5GHz WiFi/BT antenna

1.6 Order Code



Example

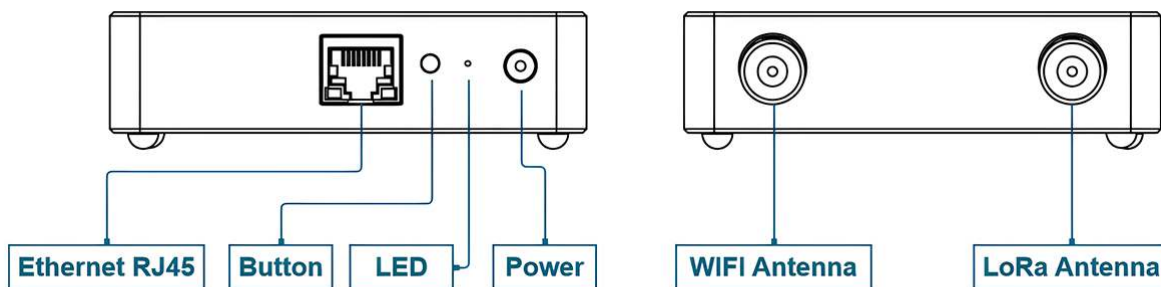
Part# : ED-GWL2110-1232-4C-CN

Configuration : GWL2110 LoRa Gateway

- 1pcs Raspberry Pi certified WiFi/Bluetooth Antenna
- CM4102032 Compute Module with Wireless, 2GB DDR and 32GB eMMC Flash
- 4G Module with 1pcs 4G antenna
- Metal Case
- CN470 LoRa Module

2 Product Appearance and Structure

2.1 Product Appearance

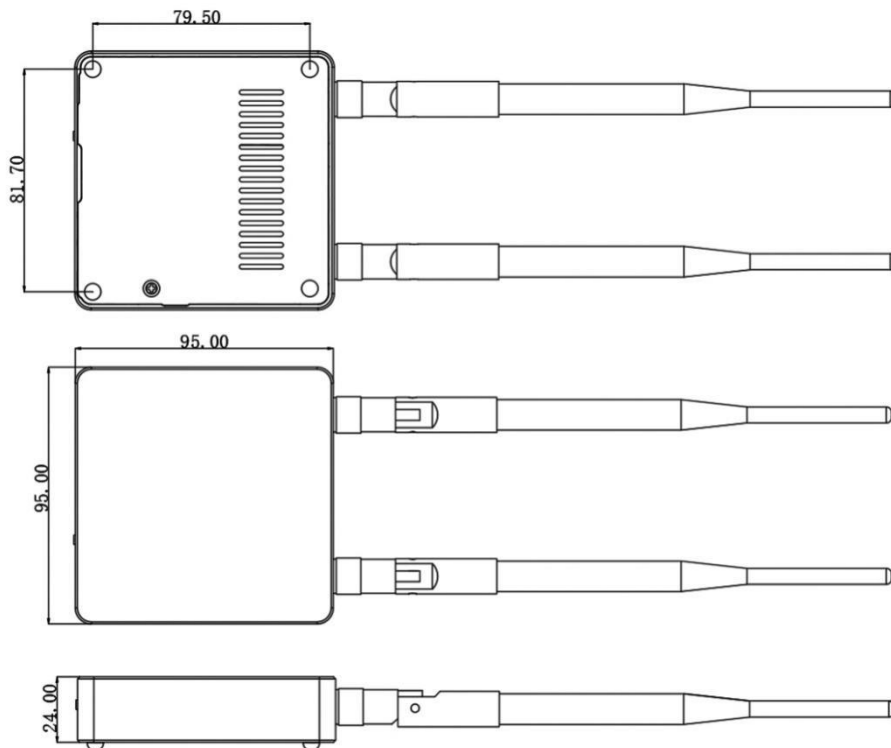


2.2 Product Photo



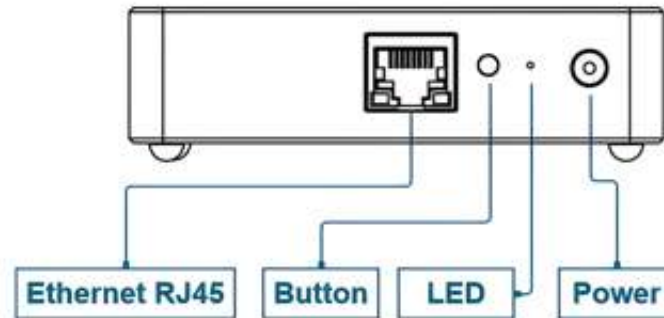
2.3 Dimensions

unit: mm, tolerance: $\pm 0.1\text{mm}$



3 Interfaces and Connectors

3.1 Front Panel



3.1.1 Power Input

The standard input power supply of ED-GWL2010 is 12V@2A.

3.1.2 Indicator Light

ED-GWL2010 has an RGB tricolor LED indicator.

RGB LED Pin	GPIO
Blue	GPIO16
Green	GPIO20
Red	GPIO21

3.1.3 User Button

ED-GWL2010 has a user button, which is connected to GPIO23 of CPU, and is active at low level. Customers can implement some key event (callback) functions by using libgpiod.

3.1.4 Ethernet

ED-GWL2010 has an adaptive 10/100/1000Mbps Ethernet interface.

	Pin ID	Pin Name
	1	TRD0+
	2	TRD0-
	3	TRD1+
	4	TRD2+
	5	TRD2-
	6	TRD1-
	7	TRD3+
8	TRD3-	

4 Internal Interface

4.1 micro SD

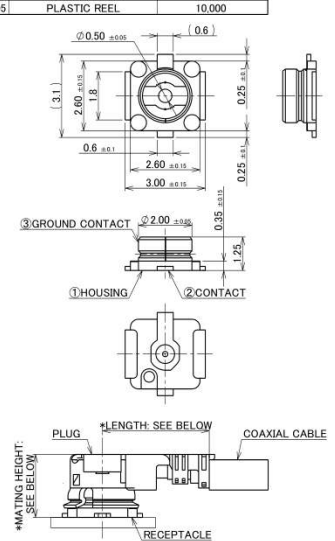
There is a micro SD card slot on ED-GWL2010, and the SD card is used for main file system storage.

4.2 IPEX-1 Connector

Inside the gateway of ED-GWL2010, there is an IPEX-1 connector on the core board of Pi Zero 2 W and the module of LoRa, corresponding to the WiFi/BT antenna and the antenna of LoRa respectively.

The specifications of the connector are as follows:

Recommended P/N 20279-001E-03		
PART NO.	PACKING REEL	QUANTITY IN 1 REEL
20279-001E-01	PLASTIC REEL	2,500
20279-001E-03	CORRUGATED PAPER REEL	2,500
20279-001E-05	PLASTIC REEL	10,000



NOTES

- APPLICABLE CONNECTOR PART NO.
MHF I PLUG
20278-11*R-**-
20351-***R-37
20631-***R-**-
20670-001R-**-
20767-001R-20
MHF II PLUG
20311-011R-**-
20686-001R-08
- COPLANARITY: 0.1mm MAX.
- THIS IS "Pb-FREE" CONNECTOR.

3	GROUND CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 μm MIN. CONTACT PART Au 0.05 μm MIN. SOLDERING PART Au 0.05 μm MIN.
2	CONTACT	BRASS	ALL OVER Ni 1.00 μm MIN. CONTACT PART Au 0.10 μm MIN. SOLDERING PART Au 0.03 μm MIN.
1	HOUSING	LCP	UL94V-0, WHITE
NO.	DISCRIPTION	MATERIAL	FINISH, REMARKS

*LENGTH: 4.0±0.4 AT PLUG PART NO. 20670-001R-08, 20670-001R-13, 20670-001R-32
4.7±0.4 AT PLUG PART NO. 20670-001R-18, 20670-001R-37
5.6 AT PLUG PART NO. 20767-001R-20 (REFERENCE DIMENSION)
3.8±0.3 AT PLUG PART NO. 20686-001R-08, 20311-011R-**-
MATING HEIGHT: 2.5 MAX. AT PLUG PART NO. 20670-001R--
3.0 MAX. AT PLUG PART NO. 20767-001R-20
2.0±0.1 AT PLUG PART NO. 20686-001R-08, 20311-011R-**-
MATING CONDITION

27	Z210232	S.T.	2021/03/08	M.T	ANGLE ±2° 6 OVER 30 MAX. ±0.3	PROJECTION	SERIES NO.	R9	CUSTOMER COPY
26	Z200434	TOI	2020/04/20	Y.H	6 MAX. ±0.2 30 OVER 120 MAX. ±0.5				
25	Z200262	TOI	2020/03/05	Y.H	GENERAL TOLERANCE				
24	Z191405	Y.F	2019/10/23	Y.S.	DATE				
23	Z181523	M.N	2018/11/20	Ken	DRG.	DATE			
22	Z180765	M.N	2018/10/30	Ken	CHK.	DATE			
REV	ECN	BY	DATE	APP.	DATE				
				E.Kawabe	2001/06/07				
				K.Katabuchi	2001/06/07				
REVISION RECORD						DRG. NO.	20279	SIZE	A3

4.3 USB 3.0

There are two USB 3.0 interfaces on ED-GWL2010, which are located inside the device.

	Pin ID	Pin Name
	1	5V
	2	D-
	3	D+
	4	GND
	5	StdA_SSRX-
	6	StdA_SSRX+
	7	GND_DRAIN
	8	StdA_SSTX-
9	StdA_SSTX+	

4.4 USB 2.0

There are two USB 3.0 interfaces on ED-GWL2010, which are located inside the device.

	Pin ID	Pin Name
	1	5V
	2	D-
	3	D+
4	GND	

4.5 Micro HDMI

There are two Micro-HDMI interfaces on ED-GWL2010, which are located inside the device.

4.6 CSI

Camera is a CSI interface, connected to the camera for use, and supports many official models of raspberry pi cameras.

4.7 HDMI DSI

J4 is MIPI DSI interface, which can be used with Raspberry Pi official 7-inch touch screen.

	Pin	Definition	Pin	Definition
	1	GND	9	DSI1_D0_P
	2	DSI1_D1_N	10	GND
	3	DSI1_D1_P	11	SCL0
	4	GND	12	SDA0
	5	DSI1_CLK_N	13	GND
	6	DSI1_CLK_P	14	3V3
	7	GND	15	3V3
8	DSI1_D0_N			

4.8 LoRa

The LoRa reset pin is GPIO18, and the user can reset the LoRa module by pulling this pin low.

5 Wireless Communication

5.1 WiFi

ED-GWL2010 support 2.4 GHz, 5.0 GHz IEEE 802.11 b/g/n/ac dual WiFi.

2.4G frequency band

Parameter	Feature
Frequency range	802.11b/g/n(HT20): 2412-2472MHz 802.11n(HT40): 2422-2462MHz
Modulation system	802.11b:DSSS 802.11g/n:OFDM
Frequency Step	5M

5G frequency band

Parameter	Feature
Frequency range	802.11a/n/ac: 5150-5350MHz 5470-5725MHz

	5725-5850MHz
Modulation system	BPSK
Frequency Step	5M

5.2 Bluetooth

ED-GWL2010 support 5.0.

Parameter	Feature
Frequency range	2402-2480MHz
Modulation system	GFSK,DPSK
Frequency Step	2M

5.3 Antennas

5.3.1 WiFi / BT Antenna

Parameter	Feature
Antenna type	External antenna
Frequency band	2400-2500MHz, 5150-5850 MHz
Antenna gain	2 dBi
Impedance	50 OHM

5.3.2 LoRa Antenna

868MHz Antenna

Parameter	Feature
Antenna type	External antenna
Frequency band	863-870MHz
Bandwidth	125KHz / 250KHz / 500KHz
Antenna gain	2 dBi
Impedance	50 OHM

915MHz Antenna

Parameter	Feature
Antenna type	External antenna
Frequency band	902-928MHz
Bandwidth	125KHz / 250KHz / 500KHz
Antenna gain	2 dBi
Impedance	50 OHM

6 Electrical Characteristics

6.1 Electrical Parameters

Parameters	Minimum	Typical	Max	Unit
System power input	7.5	12	18	V
Working temperature	-25	25	50	°C
Storage temperature	-25	25	50	°C
Working environment humidity	0		90	%

7 About Us

7.1 About EDATEC

EDATEC, located in Shanghai, is one of Raspberry Pi's global design partners. Our vision is to provide hardware solutions for Internet of Things, industrial control, automation, green energy and artificial intelligence based on Raspberry Pi technology platform.

We provide standard hardware solutions, customized design and manufacturing services to speed up the development and time to market of electronic products.

7.2 Contact Us

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