

UW-M133-V1.2 Android Motherboard Technical Specification

Document modification history

	Note	Date
1	Created	2021-04-06

1 Overview

The UW-M133 is an all-in-one multimedia LCD driver board based on the Allwinner A133 main chip. This motherboard is equipped with 1GB LPDDR4 (optional 2GB) + 8GB (optional 16GB/32GB) eMMC and supports MIPI/LVDS/EDP display interfaces.

Its main control IC uses a 28nm manufacturing process, based on the ARM Cortex A53 architecture, with four cores, and a stable production frequency of up to 1.6GHz.

Using Allwinner's new generation SmartColor technology, it helps to display excellent image quality at high resolutions, providing your entire device with a visually pleasing effect.

This model is a cost-effective Android system industry motherboard, suitable for commercial display advertising machines, electronic class schedules, digital signage, self-service vending, and other industry fields.

Main features:

- 4-core 64-bit A53 CPU, with a maximum clock speed of 1.6GHz
- Supports 1 LVDS display, 1 EDP display, or 1 MIPI display
- 3 serial ports, 4 USB ports, TF card slot, SIM card slot, PCIE 4G/5G communication module, and other expansion interface
- 6-layer immersion gold PCB board, industrial-grade components, designed to meet the demands of complex, harsh, and industrial control environments

2 Specifications

Hardware specifications:

CPU	Allwinner A133, Quad-core ARM Cortex-A53 @ 1.6 GHz
GPU	GE8300, supports OpenGL ES 1.1/2.0/3.2, Vulkan 1.1, OpenCL 1.2
Memory	LPDDR4 1GB (2GB optional, max 4GB supported)
Built-in storage	eMMC 8GB/16GB/32GB optional (default 8GB labeled)
Display Interfaces	1x LVDS interface (single-channel, 6- or 8-bit dual-channel), max resolution 1920×1080 1x EDP interface, max resolution 1920×1080 1x MIPI interface, max resolution 1920×1080
Onboard Backlight	Supports 3.3V/5V/12V optional
Network	RJ45 standard port, 10/100M Ethernet
	Onboard PCIe interface for 4G/5G mobile communication module
	Built-in Bluetooth/Wi-Fi module, supports Wi-Fi 802.11b/g/n (default single-band Wi-Fi, Bluetooth optional)
	Supports Bluetooth 4.2 protocol (optional) 。

Image Rotation	Supports rotation 0°, 90°, 180°, 270°
RTC (Real-Time Clock)	Built-in RTC battery, supports scheduled power on/off
Interface device	Supports USB cameras
	2 USB ports, two onboard Type-A interfaces
	3 TTL UARTs (can be configured as 1 TTL or 2 RS232 interfaces) for expanding sensors, barcode/QR scanners, printers, card readers, etc.
	TF card expansion, supports up to 128GB
	external power button, reset button, or expansion keypad/LED panel, with multiple available interrupt GPIOs
	Built-in amplifier (supports 3W × 2.4Ω speaker)
Audio	1 microphone jack (supports headset mic)
Touch screen	capacitive/resistive/infrared touchscreens** via I/O or USB interfaces

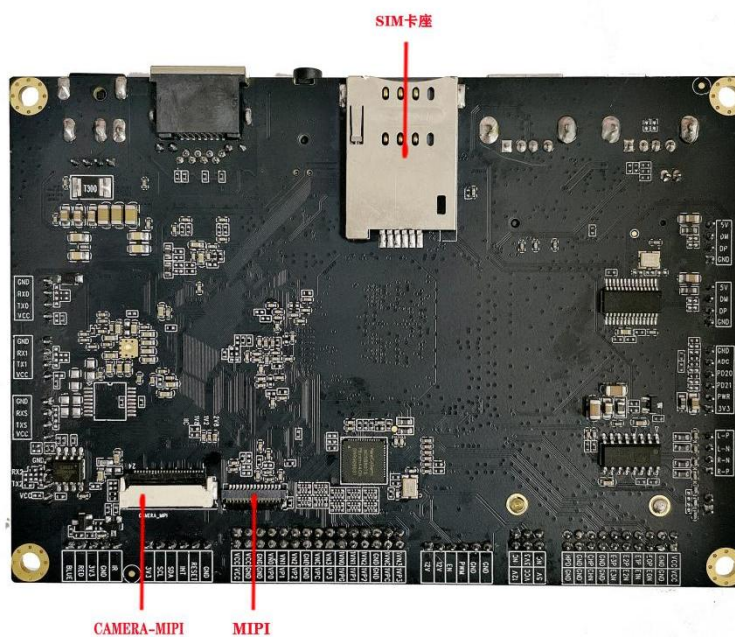
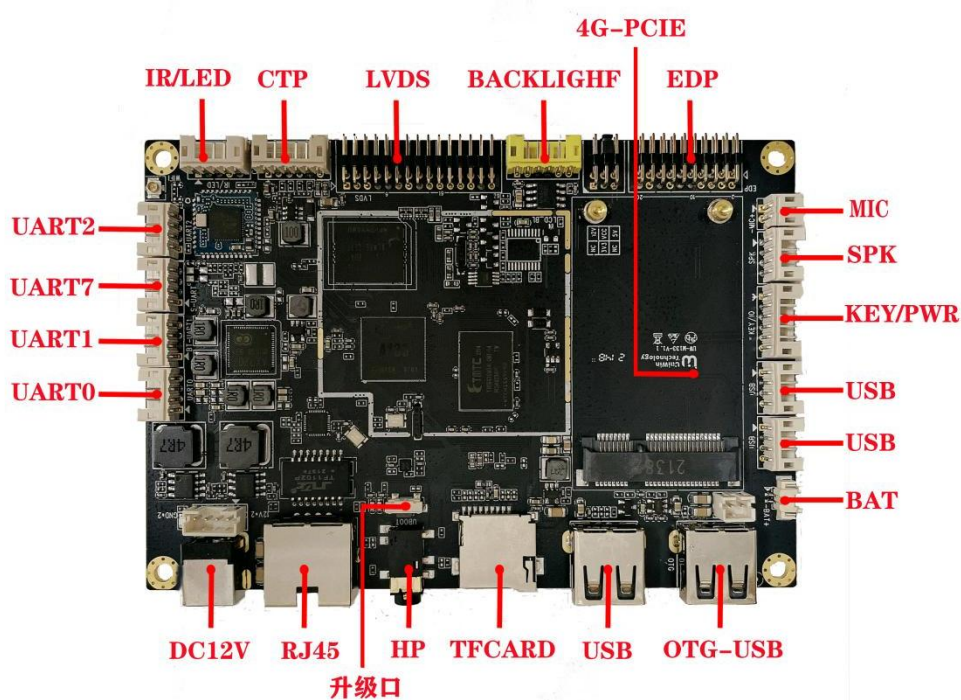
Software specifications :

Operating System	Android 10.0
Language	Multi-language
Video Decoding	• H.265 MP@L5.0 decoder up to 4K@30fps

	• H.264 BL/MP/HP@L5.1 decoder up to 4K@30fps • VP9 decoder 720p@30fps • AVS/AVS+ JiZhun@L6.0 1080p@60fps • Multi-format 1080p@60fps video playback, including VP8, MPEG1/2 MP/HL, MPEG4 SP/ASP, H.263 BP, MJPEG, VC1 SP/MP/AP
Audio Formats	Supports playback of MP3, WMA, MP2, OGG, AAC, M4A, FLAC, APE, 3GP, WAV, and other formats.
Image Viewer	Supports various image formats (JPEG, BMP, PNG, GIF) with rotation/slideshow functionality. Maximum supported resolution 4096×4096
Document	EPUB, WORD, EXCEL, POWERPOINT, PDF, TXT
Input Method	Standard Android keyboard , Optional third-party input methods (supporting Chinese, Korean, Japanese, and other languages)
Software Features	Camera, web browsing, instant messaging, email, e-book reader, file explorer (optional).
Management	File manager
	Android OS with root access for custom development
	Scheduled power on/off
	OTA (Over-the-Air) remote updates

3 main interfaces

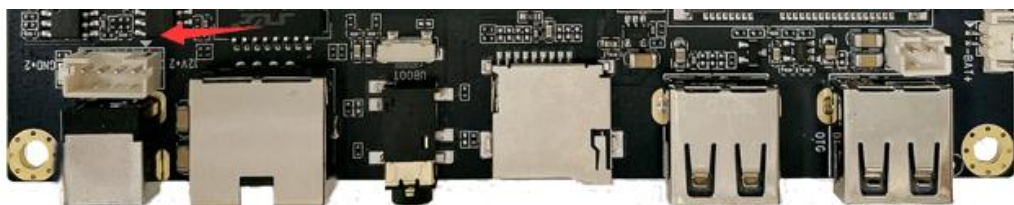
3.1 Interface diagram



3.2 Interface Introduction

- ◆ DC12VDC12V Power Socket (Triangular mark indicates Pin 1, 4-pin/2.0mm)

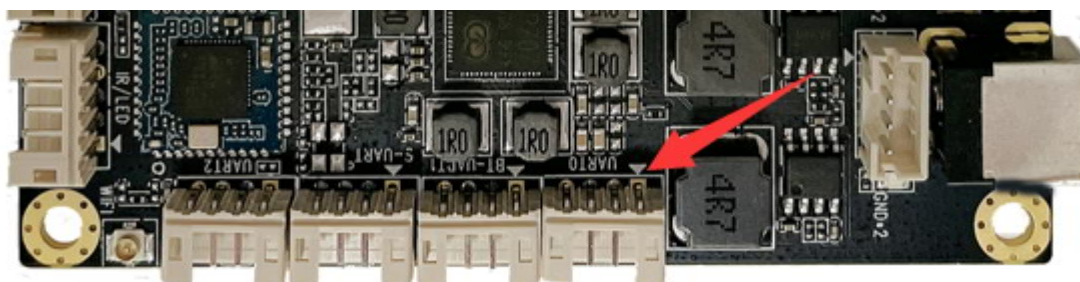
Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	12V	Power input	+12V Power input
2	12V	Power input	+12V Power input
3	GND	Ground	Ground
4	GND	Ground	Ground

- ◆ UART0 Serial Port (TTL) (For system logging, triangular mark indicates Pin 1, 4-pin/2.0mm)

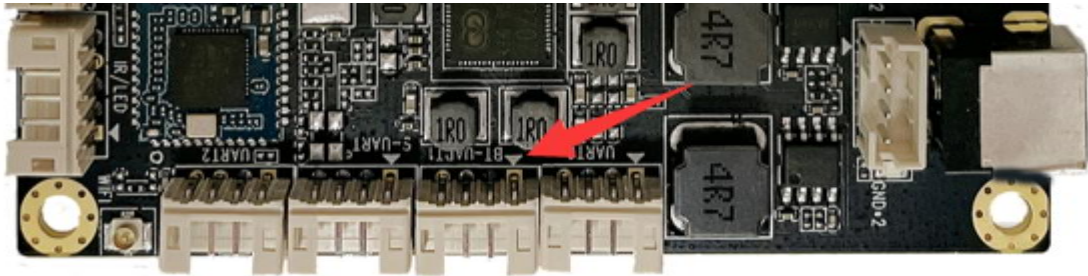
Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	GND	Ground	Ground
2	RX0	input	UART Data input
3	TX0	Output	UART Data output
4	VCC	3.3V	3.3V

- ◆ UART1 Serial Port (TTL) (Triangular mark indicates Pin 1, 4-pin/2.0mm, configurable as RS485)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	GND	Ground	Ground
2	RX1	Input	UART1 Data input 485 B line
3	TX1	Output	UART1 Data Output 485 A line
4	VCC	3.3V Power output	3.3V Power output (5V optional)

- ◆ UART2 Serial Port (TTL)(Triangular mark indicates Pin 1, 4-pin/2.0mm, configurable as RS232)

Pinout (as shown by arrow direction in diagram)

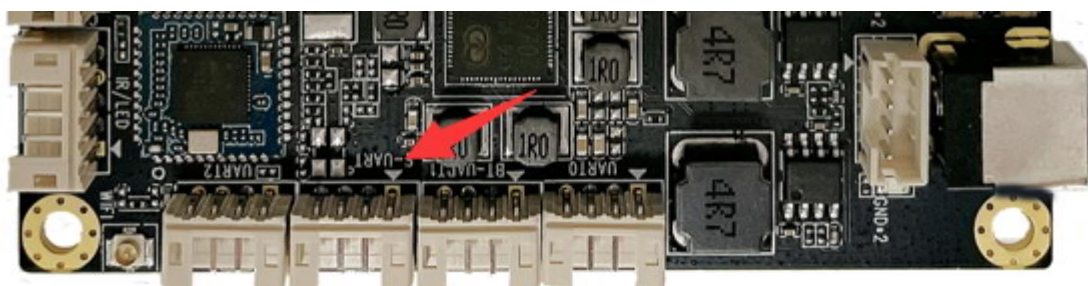


S/N	Definition	Attribute	Description
1	GND	Ground	Ground
2	RX2	Input	UART2 Data input
3	TX2	Output	UART2 Data Output
4	VCC	3.3V Power output	3.3V Power output

		output	
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- ◆ UART7 Serial Port (TTL) (Triangular mark indicates Pin 1, 4-pin/2.0mm, configurable as RS232)

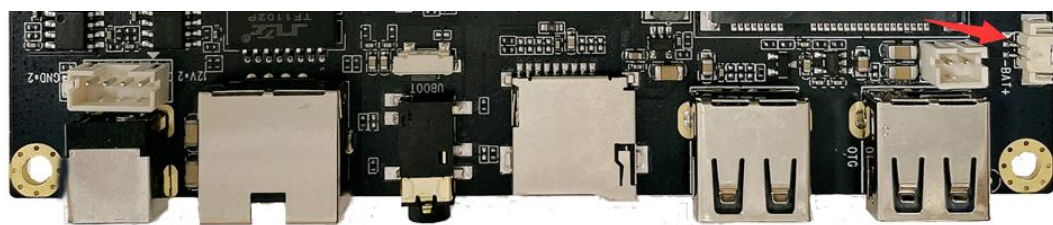
Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	GND	Ground	Ground
2	RX7	Input	UART7 Data input
3	TX7	Output	UART7 Data output
4	VCC	3.3V Power output	3.3V Power output

- ◆ RTC BAT Interface (Triangular mark indicates Pin 1, 2-pin/1.25mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	GND	Ground	Ground
2	3V	Power	3V RTC Power input

◆ Remote Control Receiver & Status Indicator(Triangular mark indicates

Pin 1, 5-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	LED_B	Blue LED	System operational indicator
2	LED_R	RED LED	Standby status indicator
3	VCC_MCU	Power	3.3V power supply (can power IR receiver)
4	GND	Ground	Ground
5	IR	Input	Remote control signal input

◆ CTP (Capacitive Touch Panel) (Triangular mark indicates Pin 1,

6-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	3.3V	Output	3.3V Output
2	SCL	Output	Clock signal
3	SDA	Input/Output	I2C Data line
4	INT	Input	Interrupt signal
5	REST	Output	Reset signal
6	GND	Ground	Ground

- ◆ LVDS LCD Panel Interface (Triangular mark indicates Pin 1, 2×15-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)

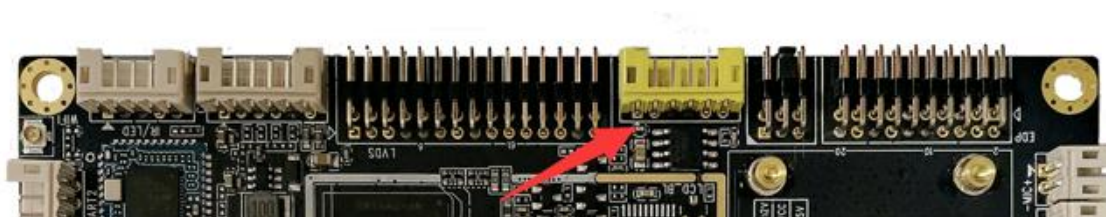


S/N	Definition	Attribute	Description
1-3	VCC_Panel	Power output	LCD power output (3.3V/5V/12V selectable via JP1 jumper)
4	GND	Ground	Power Ground
5			
6			
7	RX00-	Output	Pixel0 Negative Data (Odd)
8	RX00+	Output	Pixel0 Positive Data (Odd)
9	RX01-	Output	Pixel1 Negative Data (Odd)
10	RX01+	Output	Pixel1 Positive Data (Odd)
11	RX02-	Output	Pixel2 Negative Data (Odd)
12	RX02+	Output	Pixel2 Positive Data (Odd)
13	GND	Ground	Power Ground
14			
15	RXOC-	Output	Negative Sampling Clock (Odd)
16	RXOC+	Output	Positive Sampling Clock (Odd)
17	RX03-	Output	Pixel3 Negative Data (Odd)
18	RX03+	Output	Pixel3 Positive Data (Odd)
19	RXE0-	Output	Pixel0 Negative Data (Even)
20	RXE0+	Output	Pixel0 Positive Data (Even)
21	RXE1-	Output	Pixel1 Negative Data (Even)
22	RXE1+	Output	Pixel1 Positive Data (Even)
23	RXE2-	Output	Pixel2 Negative Data (Even)
24	RXE2+	Output	Pixel2 Positive Data(Even)
25	GND	Ground	Power Ground
26			
27	RXEC-	Output	Negative Sampling Clock (Even)

28	RXEC+	Output	Positive Sampling Clock (Even)
29	RXE3-	Output	Pixel3 Negative Data (Even)
30	RXE3+	Output	Pixel3 Positive Data (Even)

- ◆ LVDS/EDP Backlight Power Control (Triangular mark indicates Pin 1, 6-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	12V	Power output	Backlight power output (12V)
2			
3	BL_EN0	Output	Backlight enable control
4	BL_PWM	Output	Backlight brightness PWM control
5	GND	Ground	Ground
6			

- ◆ LVDS/EDP LCD Panel Voltage Selection (Triangular mark indicates Pin 1, 2×3-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	NC	NC	NC
2	LCD_12V	Power input	Power input, +12V
3	LCD_3.3V	Power input	Power input, +3.3V
4	LCD_OUT	Power	Power output to display panel

		output	
5	NC	NC	NC
6	LCD_5V	Power input	Power input, +5V

◆ EDP LCD Panel Interface (Triangular mark indicates Pin 1, 2×10-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)



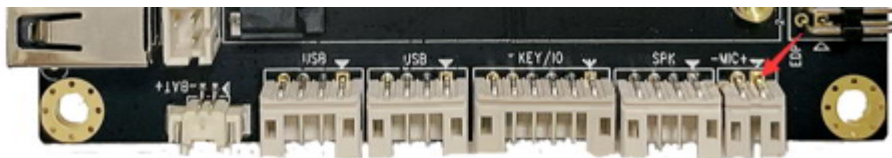
1	Output	12V output (max 1500mA)
2	Output	12V output (max 1500mA)
3	Ground	Ground
4	Ground	Ground
5	Output	EDP 0 Negative Data
6	Output	EDP 0 Positive Data
7	Output	EDP 1 Negative Data
8	Output	EDP 1 Positive Data
9	Output	EDP 2 Negative Data
10	Output	EDP 2 Positive Data
11	Output	EDP 3 Negative Data
12	Output	EDP 3 Positive Data
13	Ground	Ground
14	Ground	Ground
15	Output	Negative Sampling Clock
16	Output	Positive Sampling Clock
17	Ground	Ground
18	Ground	Ground

19	Ground	Ground
20	NC	NC



- ◆ MIC Microphone Interface (Triangular mark indicates Pin 1, 2-pin/2.0mm)

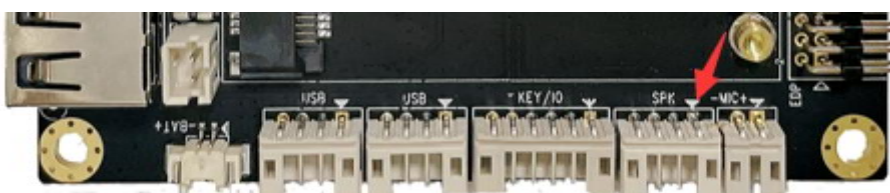
Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	MIC+	Audio Input	Microphone input +
2	MIC-	Audio Input	Microphone input -

- ◆ **Speaker Output Interface** (Triangular mark indicates Pin 1, 4-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	OUTP-R+	Output	Right channel positive (to speaker+)
2	OUTN-R-	Output	Right channel negative (to speaker-)
3	OUTN-L-	Output	Left channel negative (to speaker-)
4	OUTP-L+	Output	Left channel positive (to speaker+)

- ◆ POWER/IO/ADCKEY (Triangular mark indicates Pin 1, 6-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	3.3V	3.3V Output	3.3V
2	PWR	Output	Power on/off button control
3	IO	Input/Output	PD21 (default pull-up)
4	IO	Input/Output	PD20 (default pull-up)
5	ADC/RESET	Input	Key-value matching button input
6	GND	Ground	Ground

- ◆ USB External USB Interface ×2 (Triangular mark indicates Pin 1, 4-pin/2.0mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1	GND	Ground	Ground
2	DP	Input/Output	D+signal line
3	DM	Input/Output	D-signal line
4	5V Power	Power output	Power output +5V

- ◆ MIPI CAMERA (Triangular mark indicates pin 1, 24PIN/0.5mm)
Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
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1	Ground	Ground	
2	c	AVDD 2.8V positive Power supply	
3	Ground	Ground	
4	NC	NC	
5	Output	DVDD 1.2V positive Power supply	
6	Output	DOVDD 1.8V positive Power supply	
7	Output	RESET	
8	Output	I2C_SCL (1.8V)	
9	Output	I2C_SDA (1.8V)	
10	Ground	Ground	
11	Output	PWDN	
12	Output	MCLK main clock	

13	Ground	Ground
14	Output	Positive Sampling Clock
15	Output	Negative Sampling Clock
16	Ground	Ground
17	Output	Pixel1 Positive Data
18	Output	Pixel1 Negative Data
19	Ground	Ground
20	Output	Pixel0 Positive Data
21	Output	Pixel0 Negative Data
22	Ground	Ground
23	NC	NC
24	NC	NC

◆ MIPI (Triangular mark indicates Pin 1, 31-pin/0.5mm)

Pinout (as shown by arrow direction in diagram)



S/N	Definition	Attribute	Description
1-2	AVCC	Power	3.3V power supply
3	DVCC	Power	1.8V power supply
4	GND	Ground	Ground
5	RESET	Signal Input	Reset Pin
6	DVCC	Power	1.8V power supply
7	GND	Ground	Ground
8	DSI-D3N	Output	MIPI DATA
9	DSI-D3P	Signal Input	MIPI DATA
10	GND	Ground	Ground
11	DSI-D0N	Output	MIPI DATA
12	DSI-D0P	Signal Input	MIPI DATA
13	GND	Ground	Ground
14	DSI-CLKN	Output	MIPI CLK
15	DSI-CLKP	Signal Input	MIPI CLK
16	GND	Ground	Ground
17	DSI-D1N	Output	MIPI DATA
18	DSI-D1P	Signal Input	MIPI DATA
19	GND	Ground	Ground
20	DSI-D2N	Output	MIPI DATA
21	DSI-D2P	Signal Input	MIPI DATA
22-23	GND	Ground	Ground
24	LED-	Power supply	Backlight power supply negative terminal
25	LED-	Power supply	Backlight power supply negative terminal
26	LED-	Power supply	Backlight power supply negative terminal
27	LED-	Power supply	Backlight power supply negative terminal
28	NC	NC	NC
29~31	LED+	Power supply	Backlight power supply positive terminal

4 Sizes

4.1 Board Size

PCB Length 126mm, Width 86.8mm, Height 11mm, For more details structural diagrams Please consult our sales representatives.

