onbon 仰邦科技

BX-3568A Android Motherboard

Specification

Version No.: V1.5 Release Date: 2025.3.6

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Brief

Thank you for purchasing our LCD commercial display motherboard. We hope you will enjoy experiencing the excellent performance of this product. The motherboard is designed to meet international and industry standards, but may still cause personal injury and property damage if not operated properly. In order to avoid possible dangers and to benefit as much as possible from your equipment, please follow the relevant instructions in this manual when installing and operating the product.

About the software

You may not alter, decompile, disassemble, decrypt, or reverse engineer the software installed on this product, and any of the above actions are illegal.

Characterization

- It is capable of playing 2K HD and 4K UHD videos in various formats and can handle complex interactive operations;
- It integrates Ethernet, Wi-Fi, TF expansion card, USB expansion port, IR remote control, HDMI2.0 output, EDP output, LVDS output, V-BY-ONE output, backlight control, microphone, audio output, amplifier, etc. It contains various conventional sensor interfaces and RS485 environmental sensor interfaces, relay switches to simplify the whole machine design;
- Support various sizes and resolutions of cropping screen;
- Supports flexible optional 4G/5G;
- Supports program playback screenshot monitoring function;
- Support SSL/TLS encryption protocol to ensure the security of communication information;
- Supports digital signature authentication technology to ensure correct and secure material transmission;
- Support Yangbang iLEDCloud/iLEDSys information release cloud platform (National Equal Protection Level 3 certification), with strict program audit control system;
- It supports server/stand-alone mode switching and iLEDCloud WeChat applet, which supports mobile devices to conveniently complete the editing and publishing of information, and at the same time protects the security of information;
- Support logging function, including communication log and program playback log;
- Customized development: support database connection function, support connecting to mySQL, SQL server format database, automatically get data and display;
- Customized development: support network data partition function, through the server-side URL to specify the field, dynamic access to JSON file data and JSON field values, support for 32 dynamic regions, support for real-time refresh of information;
- Stable communication without dropping, all communication interfaces and input/output interfaces are strictly anti-static and anti-surge design;
- ℃ ~ -40 70℃ ambient temperature, 7*24 hours without power, ≤0.3% failure rate.

Function

BX-3568A motherboard adopts Rexchip RK3568 program, the chip integrates a quad-core Cortex-A55 CPU and Mali-G52 high-performance GPU, the main frequency is up to 2GHz, equipped with Android 11 has a super video processing capabilities, support 4Kx2K@60fps H.265/H.264/VP9 decoding, 1080P/60fps H.265/H.264 video encoding, has a wealth of expansion interfaces, is widely used in digital signage, touch interaction, security, medical, transportation, financial, industrial control, consumer and industrial control, and is widely used in digital signage, medical, transportation, financial, industrial control, consumer and industrial control, and is widely used in digital signage, security, finance, industrial control and consumer control. 60fps H.265/H.264 video encoding, with a wealth of expansion interfaces, is widely used in digital signage, touch interactive, security, medical, transportation, financial, industrial control, consumer electronics, entertainment systems and other intelligent commercial display control field.

Technical specification

***UART factory default TTL, can be optional 232 or 485 devices**

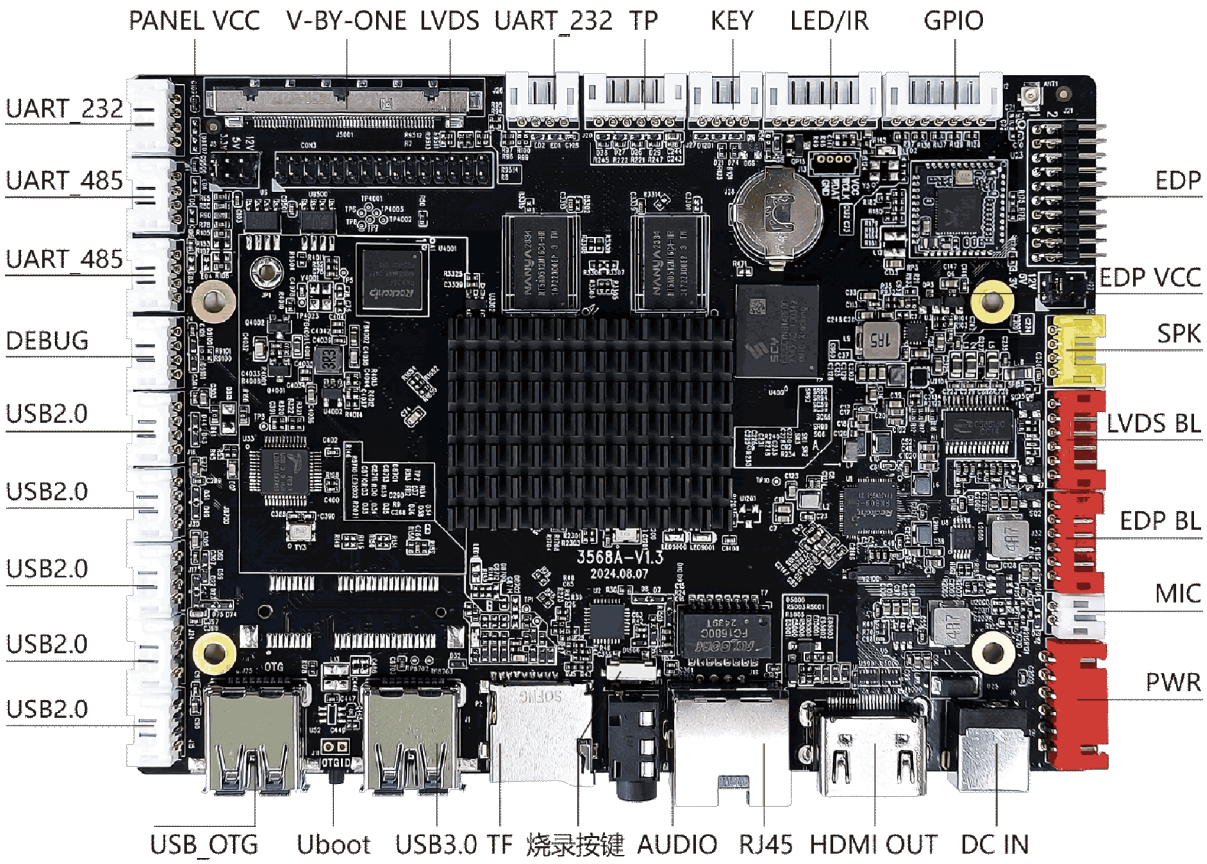
fundamental text	microchip	RK3568	**Serial/GPIO**	serial port (computing)	5 serial ports: 1 TTL Debug 2-way TTL/RS232, 2-way TTL/RS485
	build	Cortex-A55		GPIO port	5-channel IO input/output control Key scanning control
	GPUs	Mali-G52	**audio frequency**	Bluetooth speaker	be in favor of
	core number	quad-core (computing)		MIC input	be in favor of
	CPU frequency	2.0GHz		headphone jack	be in favor of
	NPU	1TOPS			
	systems	Android 11/ Android 14		Amplifier Interface	8Ω6W Dual Audio Amplifier Outputs
	hard disk drive	Support 4K 60fps H.265/H.264/VP9 video decoding.	**Storage**	USB Interface	7-way USB interface: 1-way USB3.0 1 channel USB_OTG, 5 channel USB2.0
	Memory	Standard 2GB, optional 4GB, 8GB			
	Storage	Standard 32GB, optional 64GB, 128GB		Expandable Storage	Self-ejecting TF card socket

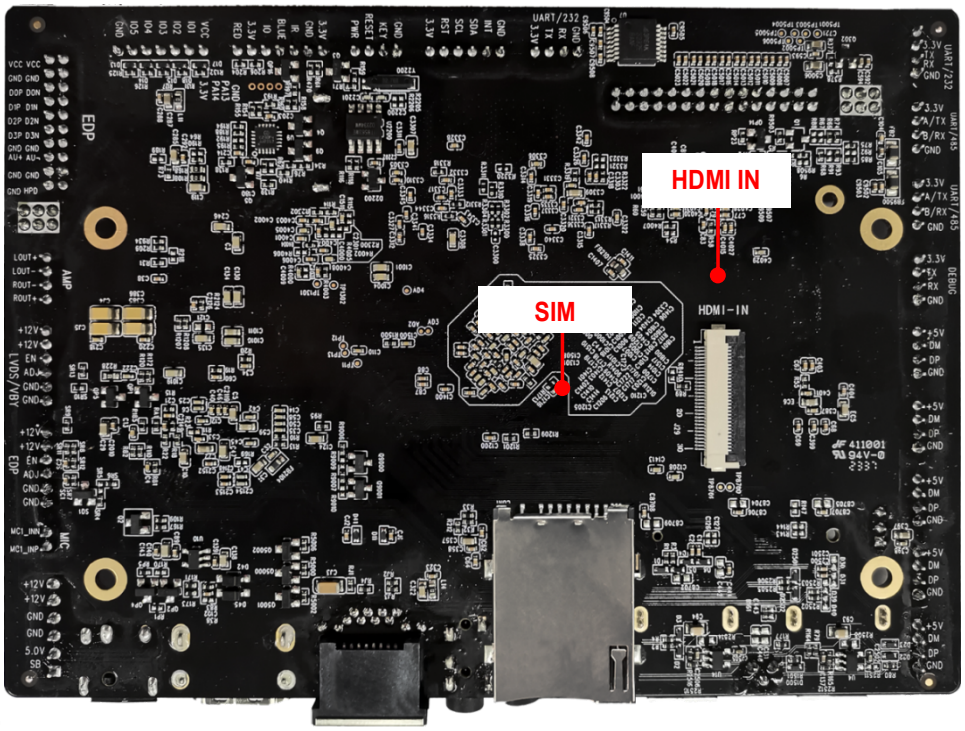
					Support 128GB storage capacity
Display Interface	Heterodyne	Triple Display	**Other**	Watchdog Function	Support hardware watchdog
	LVDS output interface	Support 1080P@60Hz			
	EDP Output Interface	Support 1080P@60Hz			
	HDMI Output	1 channel 4K@60Hz		Infrared remote control	Support
	VBYONE Output	Support 1080P@60Hz			
	HDMI Input	1 channel 1080P@60Hz			
Network Function	Ethernet	1 rj45: 1000m/100m/10m Ethernet Adaptive		Timer on/off	Support
	WIFI	Support		Multi-language	Support
	4G	Built-in PCIE 4G module		Secondary Development	Support: Provide API interface documentation
	Bluetooth	Supported			

- Wet, salt spray environment and outdoor applications can be added with triple-proof coating process

Interface definition

The interfaces on the front and back of the board are shown below:

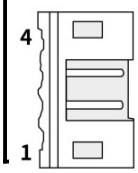




Description:

JP1: USB 2.0 Socket
USB 2.0 horizontal plug standard, TypeA standard socket.

JP2: USB OTG socket
Standard TypeA horizontal socket, this interface instantly power on the default firmware burning port, can be connected to a PC computer for software burning; into the Android can be set through the software for USB ADB debugging port or ordinary USB Host interface

J15: USB 2.0 interface (single row 2.0mm)			
Appearance	Pin	Name	Description
	1	5V	5V Output
	2	DM	USB Differential Data-
	3	DP	USB Differential Data+
	4	GND	Ground

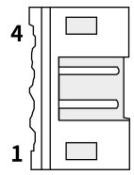
J24: USB 2.0 interface (single row 2.0mm)		
Pin	Name	Description
1	5V	5V Output
2	DM	USB Differential Data-
3	DP	USB Differential Data+
4	GND	Ground

J17: USB 2.0 port (single row 2.0mm)		
Pin	Name	Description

1	5V	5V Output
2	DM	USB Differential Data-
3	DP	USB Differential Data+
4	GND	Ground

J30: USB 2.0 interface (single row 2.0mm)		
Pin	**Name**	**Description**
1	5V	5V Output
2	DM	USB Differential Data-
3	DP	USB Differential Data+
4	GND	Ground

J16: USB 2.0 interface (single row 2.0mm)		
Pin	**Name**	**Description**
1	5V	5V Output
2	DM	USB Differential Data-
3	DP	USB Differential Data+
4	GND	Ground

J4: Data Serial Port DEBUG (Single Row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1 VCC	VCC	3.3V
	2 VCC	TX	Data Transmission
	3	RX	Data Receiving
	4	GND	Ground

J2: Data serial port RS485 (single row 2.0mm)		
Pins	**Name**	**Pin Description**
1	VCC	3.3V
2 VCC	TX	Data Transmission
3	RX	Data Receiving
4	GND	J14: Data Serial RS485 (Single Row 2.0mm)

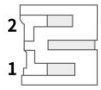
J14: Data Serial RS485 (Single Row 2.0mm)		
Pin	**Name**	**Pin Description**
VCC	VCC	3.3V
2 VCC	TX	Data Transmission
3	RX	Data Receiving
4	GND	J3: Data serial port default RS232 (single row 2.0mm)

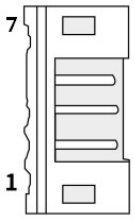
J3: Data serial port default RS232 (single row 2.0mm)		
Pins	**Name**	**Pin Description**
VCC	VCC	3.3V

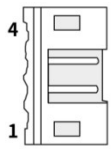
2 VCC	TX	Data Transmission
3	RX	Data Receiving
4	GND	J26: Data serial port default RS232 (single row 2.0mm)

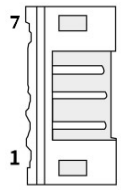
J26: Data serial port default RS232 (single row 2.0mm)		
Pin	**Name**	**Pin Description**
VCC	VCC	3.3V
2 VCC	TX	Data Transmission
3	RX	Data Receiving
4	GND	GND

Note: (1) J3, J26 defaults to RS-232; J2, J14 defaults to RS485.

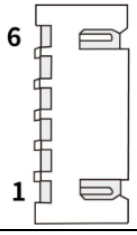
J5: Microphone connector (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	MC1_INP	Microphone Positive
	2	MC1_INN	Microphone Negative

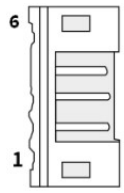
J9: Remote control - IR-LED connector (single row 2.0mm)			
Exterior Viewing	**Pin**	**Name**	**Description**
	1	RED	Standby indicator signal (external red light)
	2	3.3V	3.3V
	3.3V	IO	IR Output Signal
	4	BLUE	Operation indicator signal (external green light)
	5	IR	Remote control IR input
	6	GND	Ground
	7	3.3V	3.3V

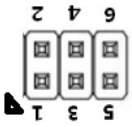
J10: Speaker connector (single row 2.0mm)			
Exterior	**Pin**	**Name**	**Description**
	1	ROUT+	Speaker right channel +
	2	ROUT-	Speaker right channel -
	3	LOUT-	Loudspeaker Left Channel
	4	LOUT+	Speaker Left Channel +

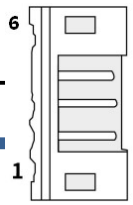
J12: Pushbutton and switch connector (single row 2.0mm)			
Appearance	Tube Pin	Name	Description
	1	GND	GND
	2 GND	A5	Pushbutton 5
	3	A4	Button 4
	4	A3	Key 3
	5	A2	Button 2
	6	A1	Button 1
	7	VCC	3.3V

Note: All KIO signals can be adjusted for regular GPIO use with a separate software version (with an electrical average of 3.3V)By default K1 Volume +, K2 Volume -, K3 Standby, K4 Exit, and K5 Main Screen.

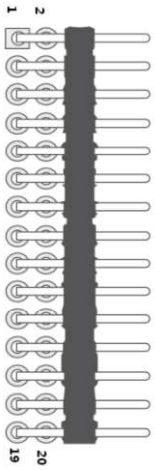
J19: DC-12V input connector (single row 2.54mm)			
Appearance	Pins	Name	Description
	1	SB	Standby control
	2 SB	5.0V	Standby 5V input
	3	GND	Power Supply Ground
	4 GND	GND	Power Ground
	5	12V	12V Input
	6	12V	12V Input

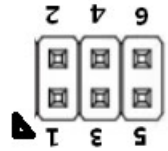
TP J20: I2C bus interface (single row 2.0mm)			
exterior condition	pin	name (of a thing)	descriptive
	1	3V3	3.3V
	2	RST	reset output
	3	SCL	I2C bus clock signal
	4	SDA	I2C bus data signal
	5	INT	interrupt input
	6	GND	ground

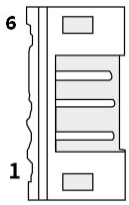
exterior condition	JP22: EDP voltage interface
	EDP drive screen jumper interface (double row 2.0mm). 1 and 2 feet jumper cap shorted for 3.3V; 3 and 4 feet jumper cap shorted for 5V; 5 and 6 feet jumper cap shorted for 12V. Be careful not to jump to the wrong location or it will result in damage to the LCD screen and the motherboard circuitry.

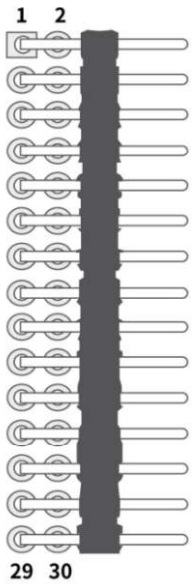
J32: EDP Backlight Control Interface (Single Row 2.0mm)			
exterior condition	pin	name (of a thing)	descriptive
	1	GND	POWER GROUND
	2	GND	POWER GROUND
	3	ADJ	Backlight Brightness Control

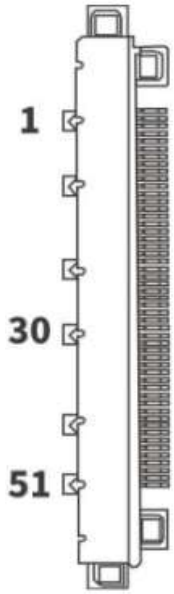
	4	EN	Backlight Enable
	5	12V	12V power supply
	6	12V	12V power supply

J21: EDP connector (double row 2.0mm)				
exterior condition	**pin**	**name (of a thing)**	**pin**	**name (of a thing)**
	1	VLCD	2	VLCD
	3	GND	4	GND
	5	E_TX0N	6	E_TX0P
	7	E_TX1N	8	E_TX1P
	9	E_TX2N	10	E_TX2P
	11	E_TX3N	12	E_TX3P
	13	GND	14	GND
	15	E_AUXN	16	E_AUXP
	17	GND	18	GND
	19	E_HPD	20	GND

exterior condition	J8: LVDS voltage interface
	LVDS/V-BY-ONE screen driver jumper connector (double-row 2.0mm-square hole for 1-pin). 1 and 2-pin jumper caps shorted to 3.3V; 3 and 4-pin jumper caps shorted to 5V; 5 and 6-pin jumper caps shorted to 12V. Be careful not to jump to the wrong position or it will cause damage to the LCD screen and motherboard circuitry.

J7: LVDS Backlight Control Interface (Single Row 2.0mm)			
exterior condition	**pin**	**name (of a thing)**	**descriptive**
	1	GND	POWER GROUND
	2	GND	POWER GROUND
	3	ADJ	Backlight Brightness Control
	4	EN	Backlight Enable
	5	12V	12V power supply
	6	12V	12V power supply

CON3: LVDS connector (double row 2.0mm)				
exterior condition	pin	name (of a thing)	pin	name (of a thing)
	1	VLCD	2	VLCD
	3	VLCD	4	GND
	5	GND	6	GND
	7	RXO0-	8	RXO0+
	9	RXO1-	10	RXO1+
	11	RXO2-	12	RXO2+
	13	GND	14	GND
	15	RXOC-	16	RXOC+
	17	RXO3-	18	RXO3+
	19	RXE0-	20	RXE0+
	21	RXE1-	22	RXE1+
	23	RXE2-	24	RXE2+
	25	GND	26	GND
	27	RXEC-	28	RXEC+
	29	RXE3-	30	RXE3+

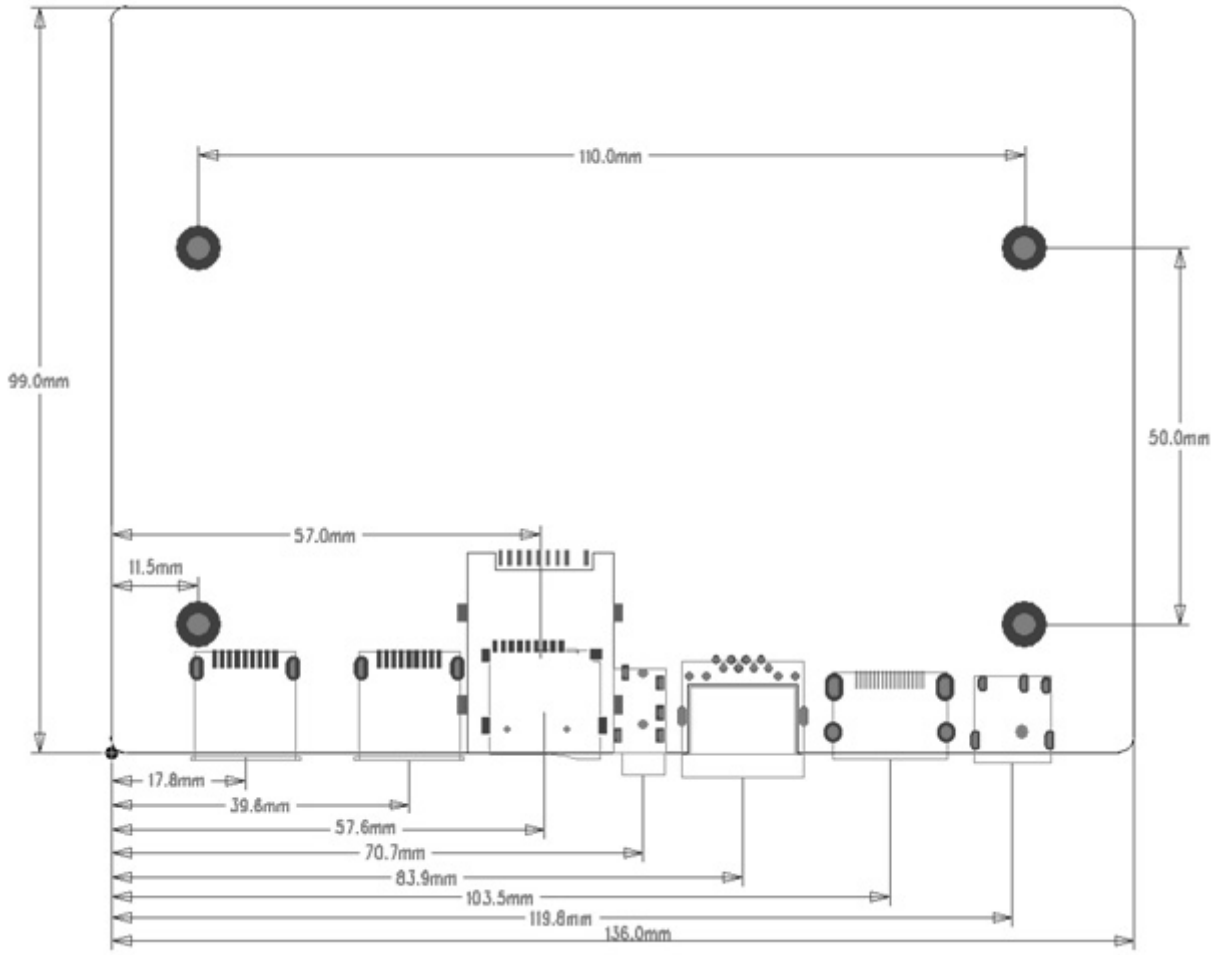
J5001: V-BY-ONE Interface (51P)				
exterior condition	pin	name (of a thing)	pin	name (of a thing)
	1	GND	26	LOCKN-OUT
	2	VBX1_7P	27	HTPDN
	3	VBX1_7N	28	NC
	4	GND	29	NC
	5	VBX1_6P	30	NC
	6	VBX1_6N	31	NC
	7	GND	32	NC
	8	VBX1_5P	33	NC
	9	VBX1_5N	34	NC
	10	GND	35	NC
	11	VBX1_4P	36	NC
	12	VBX1_4N	37	NC
	13	GND	38	NC
	14	VBX1_3P	39	GND
	15	VBX1_3N	40	GND
	16	GND	41	GND

	17	VBX1_2P	42	GND
	18	VBX1_2N	43	NC
	19	GND	45-51	VCC
	20	VBX1_1P		
	21	VBX1_1N		
	22	GND		
	23	VBX1_0P		
	24	VBX1_0N		
	25	GND		

SW1: burn-in key
Directly insert the small burn-in button, first press and hold and then power on for about 3 seconds and then release it to enter the burn-in mode.

Board Size

The PCB size of the board is 136mm*99mm, the diameter of the fixing holes is 3.0mm, and its mounting hole size parameters are shown in the following figure.



Notes

Please note the following key points when assembling and using the motherboard:

- ~ The working temperature of this product: -20°~70°, relative humidity: 10% 90%.
- Storage temperature of this product: -40°~70°.
- Anti-static treatment is required during assembly and transportation of the whole machine.
- The connection cable for the interface of this board must not be too long, otherwise the signal quality may be affected.
- It is strictly forbidden to deform the board by twisting or heavy pressure when the whole machine is assembled.
- Short circuits between the bare board and other peripherals are strictly prohibited.
- When connecting external LVDS or eDP LCD screen, pay attention to whether the voltage and current of the drive screen meet the requirements, and pay attention to the direction of pin 1 of the screen cable socket.
- When connecting an external LVDS or eDP LCD, pay attention to whether the backlight voltage and current meet the requirements. The LCD backlight power is at 20W.

Above that it is recommended to use a separate power board for backlight power.

- USB, GPIO, serial port, I2C, HDMI and other interfaces external devices, pay attention to the peripheral IO level and current to meet the requirements.
- The communication module section is at least 5 mm away from the metal housing to avoid signal interference.

Shanghai ONBON Technology Co.,ltd (Headquarters)

Address: 7 Floor, Tower 88, 1199#, North Qinzhou Road, Xuhui District, Shanghai City, China
Tel（wechat): +86-15921814956 +86-15800379719 +86-15850351852
Email: onbon@onbonbx.com
Website: www.onbonbx.com

iLEDCloud
Website: http://www.iledcloud.com/