onbon 仰邦科技

BX-3566A Android Motherboard

Specification

Version No.: V1.2 Release Date: 2024.12.2

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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;
- Integrated Ethernet, Wi-Fi, TF expansion card, USB expansion port, IR remote control, HDMI2.0 output, EDP output, LVDS output, backlight control, microphone, audio output, amplifier, etc., including all kinds of 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-3566A motherboard adopts Rexchip RK3566 program, the chip integrates a quad-core Cortex-A55 CPU and Mali-G52 high-performance GPU, the main frequency is up to 1.8GHz, equipped with Android 11 has a superb video processing capabilities, support for 4Kx2K@60fps H.265/H.264/VP9 decoding, 1080P/60fps H.265/H.264 video encoding, with a wealth of expansion interfaces, is widely used in digital signage, touch interaction, security, medical, transportation, financial, and VP9 decoding. It supports 4Kx2K@60fps H.265/H.264/VP9 decoding, 1080P/60fps H.265/H.264 video encoding, and has rich expansion interfaces, and is widely used in digital signage, touch interaction, security, medical, transportation, finance, industrial control, consumer electronics, entertainment systems and other intelligent commercial display control fields.

Technical specification

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

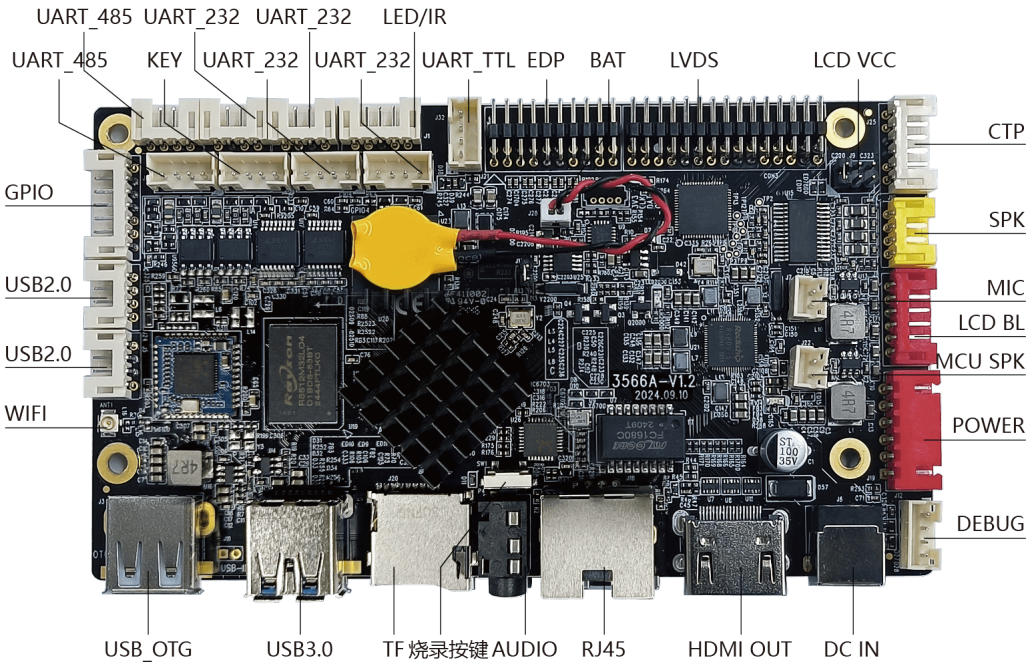
Basic Information	microchip	RK3566	**Serial/GPIO**	serial port (computing)	8 serial ports: 1 TTL Debug, 1 TTL 2-way TTL/RS485, 4-way TTL/RS232
	build	Cortex-A55		GPIO port	5-channel IO input/output control Key scanning control
	GPUs	Mali-G52	**audio frequency**	Bluetooth speaker	be in favor of
	core number	quad-core (computing)		MIC input	be in favor of
	CPU frequency	1.8GHz		headphone jack	be in favor of
	NPU	1TOPS			
	systems	Android 11		Amplifier Interface	8Ω6W Dual Audio Amplifier Outputs
	hard disk drive	Support 4K 60fps H.265/H.264/VP9 video decoding.	**Storage**	USB Interface	4-channel USB interface: 1-channel USB3.0 1 channel USB_OTG, 2 channels 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	Dual Display	Dual display	**Other**	Watchdog	Support hardware

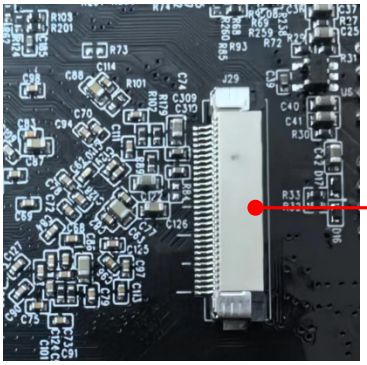
Interface	LVDS output interface	Support 1080P@60Hz		Function	watchdog
	EDP Output Interface	Support 1080P@60Hz			
	HDMI Output	1 channel 4K@60Hz		Infrared remote control	Support
	HDMI Input	1 channel 1080P@60Hz			
Network Function	Ethernet	1 rj45: 1000m/100m/10m Ethernet Adaptive		Timer on/off	Support
	WIFI	Support		Multi-language	Support
	4G	External USB 4G module		Secondary Development	Support: Provide API interface documentation
	Bluetooth	Supported			

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

Interface definition

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

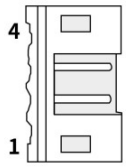




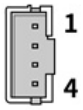
Description:

J4: USB 3.0 socket
USB3.0 horizontal plug standard, TypeA standard socket.

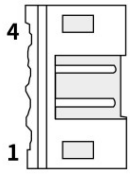
J3: USB OTG socket
Standard TypeA horizontal socket, this interface instantly power on the default firmware burning port, can be connected to a PC computer for software burning; into the Android can be set through the software for USB ADB debugging port or ordinary USB Host interface

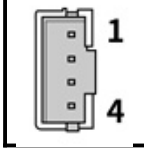
J5: USB 2.0 interface (single row 2.0mm)			
Appearance	Pin	Name	Description
	1	5V	5V Output
	2	DM	USB Differential Data-
	3	DP	USB Differential Data+
	4	GND	Ground

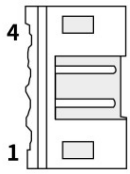
J24: USB 2.0 interface (single row 2.0mm)		
Pin	Name	Description
1	5V	5V Output
2	DM	USB Differential Data-
3	DP	USB Differential Data+
4	GND	Ground

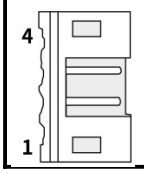
J12: Data Serial Port DEBUG (Single Row 2.0mm)			
Exterior	Pin	Name	Description
	1 VCC	VCC	3.3V
	2 VCC	TX	Data Transmission
	3	RX	Data Receiving

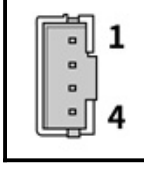
	4	GND	Ground

J17: Data serial port RS485/UART Default 485 (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	VCC	3.3V
	2	A/TX	Data Transmission
	3	B/RX	Data Receiving
	4	GND	Ground

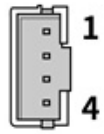
J16: Data serial port RS485/UART Default 485 (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	VCC	3.3V
	2	A/TX	Data Transmission
	3	B/RX	Data Receiving
	4	GND	Ground

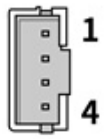
J13: Data serial port RS232/UART Default 232 (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	VCC	3.3V
	2 VCC	TX	Data Transmission
	3	RX	Data Receiving
	4	GND	Ground

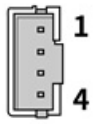
J26: Data Serial Port RS232/UART Default 232 (Single Row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	VCC	3.3V
	2 VCC	TX	Data Transmission
	3	RX	Data Receiving
	4	GND	Ground

J14: Data Serial Port RS232/UART Default 232 (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	VCC	3.3V
	2 VCC	TX	Data Transmission
	3	RX	Data Receiving
	4	GND	Ground

J15: Data serial port RS232/UART Default 232 (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**

	1	VCC	3.3V
	2 VCC	TX	Data Transmission
	3	RX	Data Receiving
	4	GND	Ground

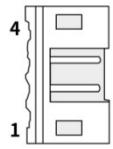
J32: Data serial port UART (single row 2.0mm)			
Exterior	**Pin**	**Name**	**Description**
	1	VCC	3.3V
	2 VCC	TX	Data Transmission
	3	RX	Data Receiving
	4	GND	Ground

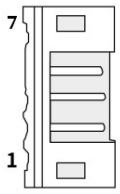
J31: KEY (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	EN	POWER Switch on
	2	REST	Reset
	3	ADC	ADC Reserved
	4	GND	Ground

J7: Microphone connector (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	MC1_INP	Microphone Positive
	2	MC1_INN	Microphone Negative

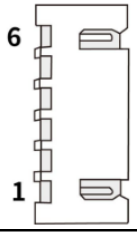
J22: Microphone connector (single row 2.0mm)			
Exterior	**Pin**	**Name**	**Description**
	1	SPKN_OUT	Sound output
	2 SPKP_OUT	SPKP_OUT	Sound Output

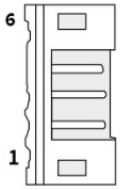
J1: Remote control - IR-LED connector (single row 2.0mm)			
Appearance	**Pin**	**Name**	**Description**
	1	3.3V	3.3V
	2	GND	GND
	3V	IR	Remote control IR input
	4	RED	Standby indicator signal (external red light)
	5	BLUE	Run indicator signal (external green light)

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

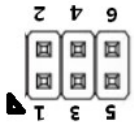
J30: Key IO (Single Row 2.0mm)			
Appearance	Pins	Name	Description
	1	GND	GND
	2 GND	A5	Pushbutton 5
	3	A4	Button 4
	4	A3	Key 3
	5	A2	Button 2
	6	A1	Button 1
	7	VCC	3.3V

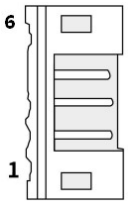
Note: All KIO signals can be adjusted for use as regular GPIOs with a separate software version (with an electrical average of 3.3V). By default K1 Volume +, K2 Volume -, K3 Standby, K4 Exit, and K5 Main Screen.

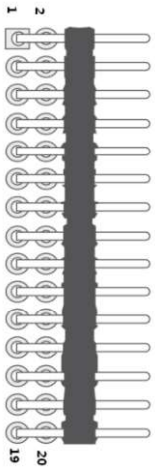
J19: DC-12V input connector (single row 2.54mm)			
Appearance	Pins	Name	Description
	1	SB	Standby control
	2 SB	5.0V	Standby 5V input
	3	GND	Power Supply Ground
	4 GND	GND	Power Ground
	5	12V	12V Input
	6	12V	12V Input

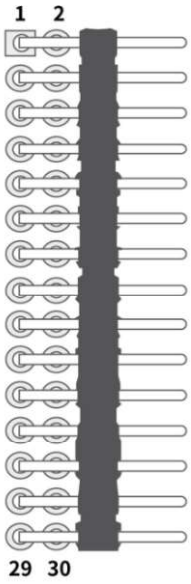
J25: TP bus connector (single row 2.0mm)			
exterior condition	pin	name (of a thing)	descriptive
	1	3V3	3.3V
	2	SCL	I2C bus clock signal
	3	SDA	I2C bus data signal
	4	INT	interrupt input
	5	RST	reset (a dislocated joint, an electronic device etc)

	6	GND	ground

exterior condition	**J9:** LVDS and 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.

J8: LVDS and EDP backlight control connector (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

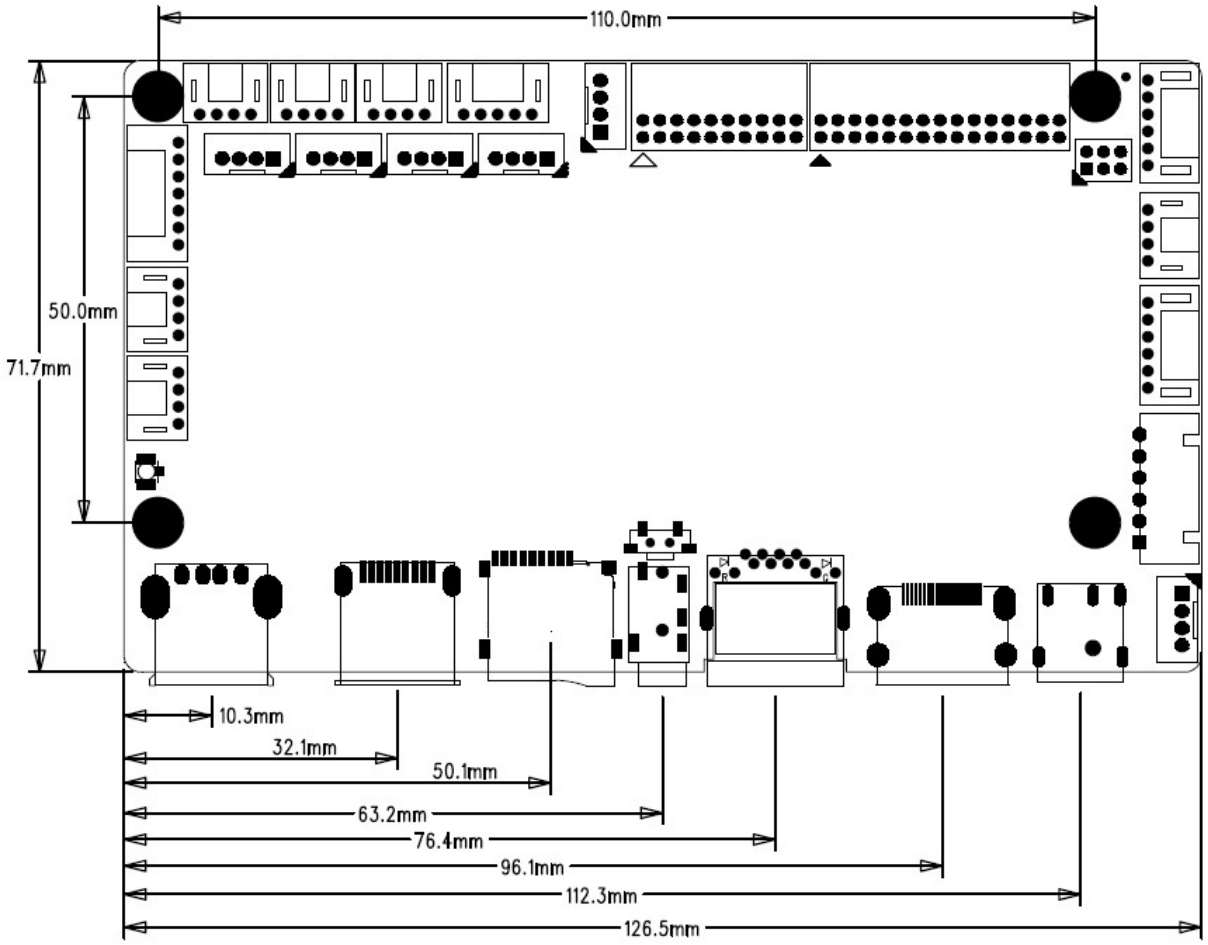
CON3: LVDS connector (double row 2.0mm)				
exterior condition	pin	name (of a thing)	pin	name (of a thing)
	1	VLCD	2	VLCD
	3	VLCD	4	GND
	5	GND	6	GND
	7	RXO0-	8	RXO0+
	9	RXO1-	10	RXO1+
	11	RXO2-	12	RXO2+
	13	GND	14	GND
	15	RXOC-	16	RXOC+
	17	RXO3-	18	RXO3+
	19	RXE0-	20	RXE0+
	21	RXE1-	22	RXE1+
	23	RXE2-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

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.

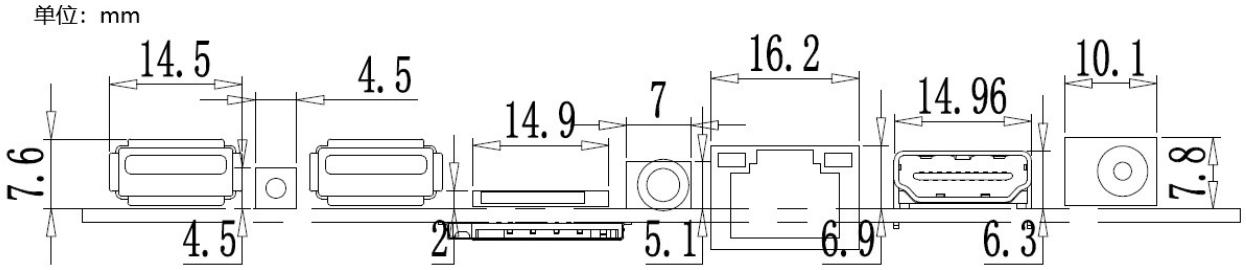
Dimensions Illustrations

The PCB size of the board is 126.5mm*71.7mm, the diameter of the fixing hole is 3.0mm, and its mounting hole size parameter is shown in the following figure.

PCB board diagram:



Side baffle diagram:



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.

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