ITX-Y3399 Mainboard Specification

Version	V1.0
Date	2023-07-01

Changelog

1.0.0	2023-06-19	Chinese and English merged version.
1.0.1	2023-06-30	Added the description of anti-demolition ports.
1.0.2	2023-07-01	Added the front view of the motherboard.

Contents

1   RK3399 Brief

The RK3399 chip has the characteristics of high performance and high scalability, its hardware specifications and cost performance are in a leading position in the industry.

一、Ultra-powerful large and small core CPU architecture + ultra-powerful Mali-T860MP4 GPU

The CPU of RK3399 adopts big.LITTLE large and small core architecture, with dual Cortex-A72 large cores + four Cortex-A53 small cores. It has greatly optimized integers, floating point, memory, etc., and has three major advantages: overall performance, power consumption and core area. It is a revolutionary improvement in all aspects. The GPU of RK3399 adopts the quad-core ARM new generation high-end image processor Mali-T860, which integrates more bandwidth compression technologies: such as intelligent superposition, ASTC, local pixel storage, etc., and also supports more graphics and computing interfaces. The overall performance is higher than One generation increased by 45%.

二、RK3399 Seven powerful performance advantages

Not only is it more advanced in CPU and GPU, Rockchip RK3399 processor also has the following exclusive advantages:

1)   Integrated dual USB3.0 Type-C interfaces, supporting Type-C Display Port audio and video output.

2)   Dual ISP pixel processing capacity is up to 800MPix/s, supports dual camera data input at the same time, and supports high-end processing such as 3D and depth information extraction.

3)   MIPI/eDP interface, supports 2560×1600 screen display and dual-screen display.

4)   HDMI2.0 interface, H.265/H.264/VP9 4K@60fps high-definition video decoding and display.

5)   Built-in PCI-e interface, supporting high-speed Wi-Fi and storage expansion based on PCI-e.

6)   Supports 8-channel digital microphone array input.

7)   Comprehensive system support: compatible with Android, Linux and other operating systems.

三、Super compatibility and scalability can be applied to multiple smart terminals such as VR, game boxes, tablets, etc.

For VR smart devices: RK3399 has 20ms delay, 90Hz refresh rate, 4K UHD decoding, 2K low persistence screen, high-precision positioning tracking system, super HDR camera technology, super 3D processing capabilities and ultra-high definition Hardware advantages of H.265/H.264 video analysis capabilities. For

tablets and game box products: RK3399 relies on a powerful CPU, faster interface standards, transmission speed, 4K@60fps10bit video playback and output capabilities that support H.265/VP9 encoding, better image decoding, and richer The game engine and 3D image processing capabilities provide the terminal with faster computing speed and visual effects. In addition to tablet computers, VR, TV-BOX, notebooks, car machines, and communications fields, RK3399 can be applied to various terminals in the industrial and consumer fields with its rich scalability, including smart home appliances, advertising machines/all-in-one machines, financial POS machines, and vehicle-mounted terminals. Control terminals, thin clients, VOIP video conferencing, security/monitoring/policing and IoT fields.

* The relevant functions are internal features of the CPU. Please refer to the corresponding interface description for whether the motherboard supports it.

2   Product Overview

The ITX-Y3399 motherboard is based on Rockchip's RK3399 high-performance large and small core architecture application processor platform. The RK3399 main chip integrates dual-core Cortex-A72, quad-core Cortex-A53 and quad-core Mali-T860 high-performance GPU,   clocked at up to 1.8GHz , with super computing performance, 2D/3D graphics processing capabilities and full HD video encoding and decoding capabilities, and perfectly supports 4Kx2K@60fps ultra-clear decoding and 4Kx2K HDMI ultra-clear output.

This mainboard is specially designed for **ultra-thin** applications with strict material selection and design. The compact size and rich interface facilitate its integration into the complete machine, bringing a smooth experience and superior performance to the final product. It can be applied to digital signage, touch interactive, consumer electronics, entertainment systems and other industries.

ITX-Y3399 V2.0 mainboard actual interface diagram as shown below.
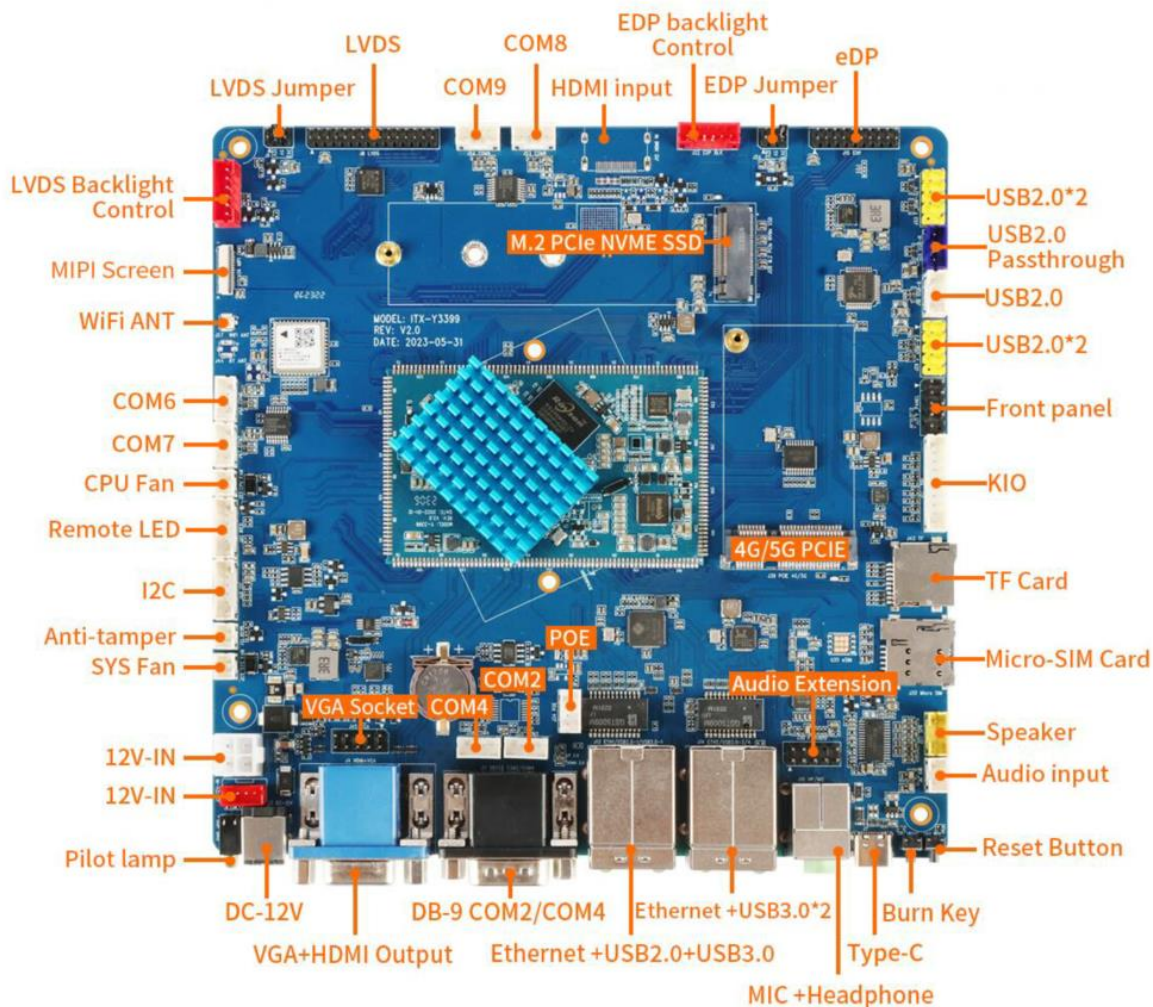
Top view
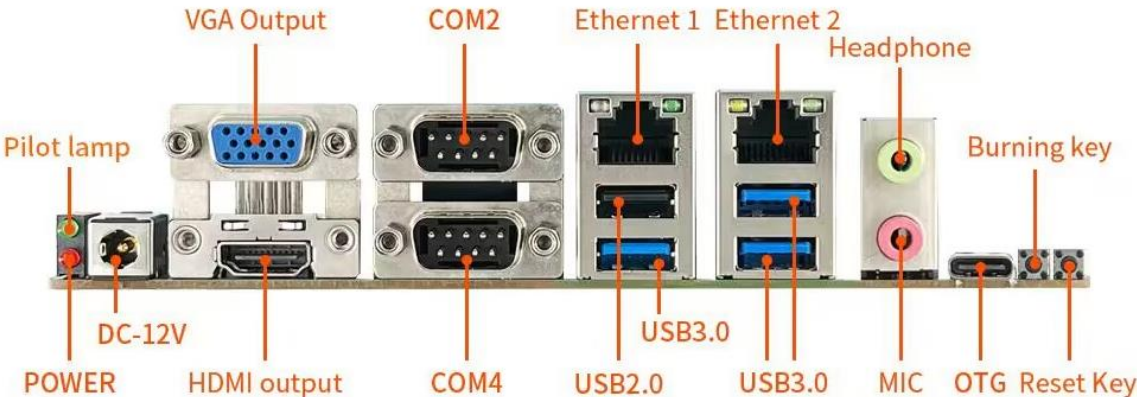
Front view

3   Specification List

ITX-Y3399's system functions and interface features are shown in the following table. It is composed of Y-3399 core board and ITX-Y3399 base board.

Y-3399 核心板的功能和接口如下表所示。Y-3399 core board features are listed below.

Function & Interface	Detailed Description
CPU	RK3399 Cortex-A72 dual-core and Cortex-A53 quad-core, up to 1.8GHz
DDR	LPDDR4 2GB (4GB optional)
Storage	The default comes with an 16GB EMMC NAND chip that can scale up to 128GB
Operating System	Recommended Android 7.1，Android 8.1/9.0 and Linux Buildroot/Debian 9/Ubuntu-18.04 optional

ITX-Y3399's system functions and interface features are shown in the following table.

Function & Interface	Detailed Description
HDMI Output	HDMI 2.0a standard display interface supports up to 4K output
LVDS	30-pin industry-standard dual LVDS supporting VESA/JEITA format up to 1080P output
EDP	20-pin industry-standard EDP supporting 1~4 lanes format up to 1080P output
MIPI-DSI	31-Pin FPC MIPI-DSI display port supporting up to 1920x1200
VGA Output	Industry-standard DB-15 and 9-pin header VGA output up to 1080P
HDMI Input	HDMI 2.0/1.4b standard video input interface supports 720P and 1080P signals
Amplifier output	8 Ohm 6W Dual Audio Amplifier Output
Headphone Output	Stereo Headphone Output (Audio Jack)
MIC Input	Differential MIC input (Audio Jack)
eSIM	Onboard eSIM chip (optional), supports network communication of the PCIE 4G/5G module
PCIE 4G/5G	1 Industry standard m-PCIE 4G/5G module interface with **Micro-SIM** card socket
M.2 PCIE NVME Port	1 Supports M.2 PCIE NVME SSDS, support for M.2 NVME 2242/2260/2280 SSDS
USB Interface	4 horizontal connectors (USB Host 3.0x3 and USB Hub 2.0x1), 6 pin headers (USB Hub 2.0x5 and USB Host 2.0x1 direct)
Serial Port	2 TTL/232/485 DB-9 serial port, with signal & power isolation (**reuse**); 2 TTL/RS-485 compatible, 4 extended TTL/RS-232 compatible
USB Camera	Support USB camera within 8 million pixels
WiFi	Built-in high performance SDIO interface WiFi6 module, support IEEE 802.11 a/b/g/n/ac/ax
Bluetooth	Built-in high performance serial interface BT module (optional) with support for V2.1+EDR/BT v3.0/BT v3.0+HS/BT v4.0/BT v5.0
Ethernet	2-way 10/100/1000M Adaptive Ethernet RJ45 connector **with 4-Pin PoE PD header**
Backlight Control	2 ways Industry standard LCD backlight control header, support for backlight switch and brightness adjustment
Infrared RC	Standard infrared receiver pin header
GPIO Signals	8-way GPIO signals for such as GPIO buttons and/or 3.3V digital input/output

Function & Interface	Detailed Description
Fan Interface	CPU and SYS fan power interface
Tamper Port	1 Tamper control port
Micro SD Card	Self-elastic micro SD card socket, up to 256GB capacity
I2C Bus	I2C pin header for I2C capacitive screen and etc.
Real Time Clock	Ultra-low-power RTC circuit (CR1220 battery) with timer and alarm functionalities
LED Indicator	Red LED indicator for standby and green LED indicator for running
Buttons	Recovery mode button and power switch button
Gravity Induction	Support gravity sensing function to achieve automatic screen rotation
Face Authorization	Support for Megvii face chip, provide algorithm hardware authorization
DC Input	Supports **9~15V** wide voltage DC power input
Ambient Requirement	Working temperature -20℃ ~ 70℃, working humidity 0%~95% (non-condensing)
Physical Size	Length*Width*Height (170mm*170mm*32.2mm), **PCB top side height 30.7mm**

4 Interface definition

➤ J1 DC-12V Input Header

[J1] DC-12V Input Header (SIP 2.54mm-Square pad is pin 1), it is the same to J1/J3 Jack.

Pin#	Definition	Note
1	GND	Power GND
2	GND	Power GND
3	12V	Power Input
4	12V	Power Input

➤ J2 DC-12V Input Header

[J2] DC-12V Input Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	12V	DC Power Input (9~15V)
2	12V	DC Power Input (9~15V)
3	GND	Power Ground
4	GND	Power Ground

➤ J3 DC-12V Jack

[J3] DC-12V power socket, positive outer and negative inner, inner pin diameter 2.0mm, outer ring diameter 5.5mm.

➤ J4 VGA + HDMI Output Socket

[J4] Standard DB-15 VGA and HDMI Output Sockets.

➤ J6 Audio Input Header

[J6] Audio input header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	RIN	Line input right channel
2	GND	Audio Ground

3	LIN	Line input left channel

➢ J7 USB OTG Header

[J7] USB 3.0 Type-C Socket, this port should only be used as system burn or ADB connection.

➢ J8 LVDS Header

[J8] Dual LVDS header (DIP 2.0mm-Triangle tag is pin 1).

Pin#	Definition	Pin#	Definition
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+

➢ J9 LVDS Voltage Header

[J9] LVDS Voltage Header (DIP 2.0mm-Triangle tag is pin 1). If pin 1 and 2 are jumper shorted, the VLCD of J8 is 12V. If pin 3 and 4 are jumper shorted, the VLCD of J8 is 5V. If pin 5 and 6 are jumper shorted, the VLCD of J8 is 3.3V. Please adjust the jumper position according to the actual logic voltage of the LCD screen. Be careful not to jumper to the wrong position or it may damage the LCD screen and the motherboard circuit.

Note: If the external DC input power supply exceeds 12V, be sure to confirm that the logic part of the LCD screen can withstand the corresponding voltage.

➢ **J10 Headphones + MIC IN Jack**

[J10] The upper layer is 3-Pole 3.5mm Headphone Jack (CTIA Standard jack). It supports insert detection for speaker mute. The lower level is **3.5mm Microphone Jack. Support for 2 and 3 segment microphones.**

左声道L   右声道R GND接地

➢ **J11 Double DB-9 Serial Port**

[J11] Double DB-9 male built-in Serial Port COM2/COM4. The upper layer is COM2, the output level is RS-232 by default and it could be setup to TTL/RS-485 if required (RS-232 if U62 mounted, RS-485 if U9867 mounted). **The related software device node name is ttyS2.** The lower level is COM4, the output level is RS-232 by default and it could be setup to TTL/RS-485 if required (RS-232 if U62 mounted, RS-485 if U67 mounted). **The related software device node name is ttyS4.**

Pin#	Definition	Note
1	NC	Not Connected
2	RX	Data receive (RS-232 level)
3	TX	Data transmit (RS-232 level)
4	NC	Not Connected
5	GND	Digital Ground
6	NC	Not Connected
7	NC	Not Connected
8	NC	Not Connected
9	NC	Not Connected

Note: This port is completely isolated from signal and power supply and can be used in industrial environments. DB-9 COM2 and J35 COM2 are multiplexed, and DB-9 COM4 and J38 COM4 are multiplexed. The multiplexed serial ports cannot be used at the same time

➢ **J12 HDMI Input Jack**

[J12] Standard HDMI Input Socket.

➢ J13 RJ45 Ethernet + Double USB Socket

[J13] RJ45 Ethernet + Double USB Socket. Three-layer combination socket. From top to bottom, they are RJ45 Gigabit Ethernet Jack, **USB host 2.0** and USB host 3.0.

➢ J14 RJ45 Ethernet + Double USB Socket

[J13] Extended RJ45 Ethernet + Double USB Socket. Three-layer combination socket. From top to bottom, they are extended RJ45 Gigabit Ethernet Jack, USB host 3.0 and USB host 3.0.

➢ J15EDP Header

[J15] EDP header (DIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Pin#	Definition
1	VLCD	2	VLCD
3	GND	4	GND
5	TX0-	6	TX0+
7	TX1-	8	TX1+
9	TX2-	10	TX2+
11	TX3-	12	TX3+
13	GND	14	GND
15	AUX-	16	AUX+
17	GND	18	GND
19	3.3V	20	NC

➢ J17 KIO Keypad Header

[J17] KIO Keypad Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	3V3	3.3V Supply
2	K1	Keypad/IO [Software number 42]
3	K2	Keypad/IO [Software number 69]
4	K3	Keypad/IO [Software number 155]
5	K4	Keypad/IO [Software number 68]
6	K5	Keypad/IO [Software number 156]
7	K6	Keypad/IO [Software number 69]
8	K7	Keypad/IO [Software number 53]
9	K8	Keypad/IO [Software number 70]
10	GND	Digital Ground

Note: All KIO signals can be adjusted to regular GPIO via a separated software version (level is 3.3V); by default K1 Volume+/K2 Volume-/K3 Standby/K4 Exit/K5 Home, K6 ~ K8 as customized signal.

➢ J18 USB 2.0 Host Header

[J18] USB 2.0 Host Header (SIP 2.0mm-Square pad is pin 1)

Pin#	Definition	Note
1	GND	Digital Ground
2	D+	USB Differential Data+
3	D-	USB Differential Data-
4	5V	Power output 5V

Note: This port is the main chip USB20_HOST1 port Hubx7 expansion port.

➢ J19 Backlight Control Header

[J19] Backlight Control Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	12V	If the current exceeds 2A, external 12V is recommended
2	12V	If the current exceeds 2A, external 12V is recommended
3	EN	The default output is 5V
4	ADJ	3.3V square wave (1KHz Freq.)
5	GND	Power Ground
6	GND	Power Ground

Note: If the external DC input power supply exceeds 12V, be sure to confirm that the backlight of the LCD screen can withstand the corresponding voltage.

➢ J21 Front Panel Header

[J21] Front Panel Header (DIP 2.54mm-Square pad is pin 1).

Pin#	Definition	Note	Pin#	Definition	Note
1	HDD+	Running light +	2	LED+	Power indicator light+
3	HDD-	Running light -	4	LED-	Power indicator light-
5	RES-	Reset-	6	PW-	Power switch-
7	RES+	Reset+	8	PW+	Power switch+
9	GND	Digital Ground	10	null	Null

➢ J22 EDP Backlight Control Header

[J22] Backlight Control Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	12V	If the current exceeds 2A, external 12V is recommended
2	12V	If the current exceeds 2A, external 12V is recommended
3	EN	The default output is 5V
4	ADJ	3.3V square wave (1KHz Freq.)
5	GND	Power Ground
6	GND	Power Ground

➢ J23 CPU Fan Power Header

[J23] CPU fan power header (SIP 1.25mm-Square pad is pin 1). It is controlled by GPIO #134 (Low active)

Pin#	Definition	Note
1	GND	Digital Ground
2	12V	12V output with on/off switch

➢ J24 EDP Voltage Header

[J24] EDP Voltage Header (DIP 2.0mm-Square pad is pin 1). If pin 1 and 2 are jumper shorted, the VLCD of J15 is 12V. If pin 3 and 4 are jumper shorted, the VLCD of J15 is 5V. If pin 5 and 6 are jumper shorted, the VLCD of J15 is 3.3V. Please adjust the jumper position according to the actual logic voltage of the LCD screen. Be careful not to jumper to the wrong position or it may damage the LCD screen and the motherboard circuit.

➢ J25 SYS Fan Power Header

[J25] SYS fan power header (SIP 1.25mm-Square pad is pin 1). It is controlled by GPIO #135 (Low active)

Pin#	Definition	Note
1	GND	Digital Ground
2	12V	12V output with on/off switch

➢ J26 USB 2.0 Host Direct Header

[J26] USB 2.0 Host Direct Header (SIP 2.0mm- Square pad is pin 1).

Pin#	Definition	Note
1	GND	Digital Ground
2	D+	USB Differential Data+
3	D-	USB Differential Data-
4	5V	Power output 5V

➢ J27 Speaker Header

[J27] Speaker Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	OUTP_R+	Speaker right channel +
2	OUTN_R-	Speaker right channel -
3	OUTN_L-	Speaker left channel -
4	OUTP_L+	Speaker left channel +

➢ J28 M.2 PCIE NVME Socket

[J28] M.2 PCIE NVME Socket with supports M.2 PCIE NVME SSDS.

➢ J29 USB 2.0 DIP Header

[J29] USB 2.0 header (DIP 2.54mm-Square pad is pin 1).

Pin#	Definition	Note	Pin#	Definition	Note
1	5V	Power output 5V	2	5V	Power output 5V
3	D-	USB Differential Data+	4	D-	USB Differential Data+
5	D+	USB Differential Data-	6	D+	USB Differential Data-
7	GND	Digital Ground	8	GND	Digital Ground
9	Null	Null	10	GND	Digital Ground

➢ J30 Audio Extension Interface

[J30] Audio Line Output (DIP 2.54mm-Square pad is pin 1).

Pin#	Definition	Note	Pin#	Definition	Note
1	MIC-L	Analog left channel microphone input	2	GND	Audio Ground
3	MIC-R	Analog right channel microphone input	4	SENSE	Front audio induction signal
5	HP-R	Analog stereo output right channel	6	MIC-DEL	Front microphone detect signal
7	GND	Audio Ground	8	nul	null
9	HP-L	Analog stereo output left channel	10	HP-DEL	Front headphone detect signal

➢ J31 Tamper-proof Header

[J31] Tamper-proof header (SIP 2.0mm-Triangle pad is pin 1).

Pin#	Definition	Note
1	Cathode -	Line Cathode
2	Anode +	Input high/low level, read 0 or 1 [Software GPIO number 133]

➢ J32 Micro-SIM Card Socket

[J32] Micro-SIM Card Socket.
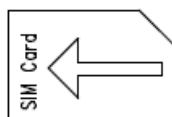
Note: The SIM card holder is a conventional medium card slot. When inserting the card, please make sure that the SIM card is inserted with the notch facing outwards.

➢ J33 USB 2.0 DIP Header

[J33] USB 2.0 header (DIP 2.54mm-Square pad is pin 1).

Pin#	Definition	Note	Pin#	Definition	Note
1	5V	Power output 5V	2	5V	Power output 5V
3	D-	USB Differential Data+	4	D-	USB Differential Data+
5	D+	USB Differential Data-	6	D+	USB Differential Data-
7	GND	Digital Ground	8	GND	Digital Ground
9	Null	Null	10	GND	Digital Ground

➢ J34 POE PD Header

[J34] POE PD Header (SIP 2.0mm-Square pad is pin 1)

Pin#	Definition	Note
1	CT1	Transformer Center1
2	CT2	Transformer Center2
3	CT3	Transformer Center3
4	CT4	Transformer Center4

。**Note: The power supply of the POE powered interface comes from the J13 Ethernet port. This interface is externally connected to the POE powered conversion board for 12V power supply conversion. The current size of the 12V power supply is affected by the power supply capability of the POE switch and**

the conversion capability of the adapter board. The typical current is 2.1 A. This interface supports POE power supply equipment with 1/2 wires of the network cable being positive and 3/6 wires being negative. It can also be connected to POE power supply equipment with 4/5 wires of the network cable being positive and 7/8 wires being negative.

➢ J35 Data Serial Port 2

[J35] Built-in Serial Port 2 (SIP 2.0mm-Square pad is pin 1). The output level is RS-232 by default and it could be setup to TTL/RS-485 if required (RS-232 if U62 mounted, RS-485 if U9867 mounted). **The related software device node name is ttyS2.**

Pin#	Definition	Note
1	GND	Digital Ground
2	RX	Data receive (TTL or RS-232 or RS-485 level)
3	TX	Data transmit (TTL or RS-232 or RS-485 level)
4	VCC	Power output (Default 3.3V, 5V option)

Note: **J35 COM2 and J11 DB-9 COM2 are multiplexed, and they cannot be used at the same time.** If you need to use the debugging serial port as a data serial port, please contact the supplier to obtain the customized software; this serial port will output the startup information in the first 5 seconds of power on (the upper or lower machine should handle this kind of data fault tolerance).

➢ J36 MIPI Panel FPC Connector

[J36] MIPI Panel FPC Connector (FPC-0.3mm 31-Pin Top/Bottom Contact).
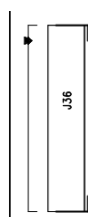
Pin#	Definition	Note
1	LED+	LED Anode
2	LED+	LED Anode
3	LED+	LED Anode
4	NC	Not Connected
5	LED-	LED Cathode
6	LED-	LED Cathode
7	LED-	LED Cathode
8	LED-	LED Cathode

9	GND	Digital Ground
10	GND	Digital Ground
11	MIPI_D2P	+MIPI differential lane2
12	MIPI_D2N	-MIPI differential lane2
13	GND	Digital Ground
14	MIPI_D1P	+MIPI differential lane1
15	MIPI_D1N	-MIPI differential lane1
16	GND	Digital Ground
17	MIPI_CKP	+MIPI differential clock output
18	MIPI_CKN	-MIPI differential clock output
19	GND	Digital Ground
20	MIPI_D0P	+MIPI differential lane0
21	MIPI_D0N	-MIPI differential lane0
22	GND	Digital Ground
23	MIPI_D3P	+MIPI differential lane3
24	MIPI_D3N	-MIPI differential lane3
25	GND	Digital Ground
26	VDD-1V8	Power supply output 1.8V Power Supply 1.8V (not connected by default, need to solder R9232 0R)
27	RESET	Reset Signal in 1.8V
28	GND	Digital Ground
29	VDD-1V8	Power Supply 1.8V
30	VDD-3V3	Power Supply 3.3V
31	VDD-3V3	Power Supply 3.3V

➢ J38 Data Serial Port 4

[J38] Built-in Serial Port 4 (SIP 2.0mm-Square pad is pin 1). The output level is RS-232 by default and it could be setup to TTL/RS-485 if required (RS-232 if U62 mounted, RS-485 if U67 mounted). **The related software device node name is ttyS4.**

Pin#	Definition	Note
1	GND	Digital Ground
2	RX	Data receive (TTL/RS-232/RS-485
3	TX	Data transmit　(TTL/RS-232/RS-485）
4	VCC	Power output (Default 3.3V, 5V option)

Note: J38 COM4 and J11 DB-9 COM4 are reused, and they cannot be used at the same time.

➢ J39 m-PCIE 4G/5G Socket

[J39] Standard m-PCIE 4G/5G Socket.

➢ **J40 Extended Serial Port 6**

[J40] Extended Serial Port 3 (SIP 2.0mm-Square pad is pin 1). The output level is TTL 3.3V by default and it could be setup to RS-232 if required (RS-232 if U36 mounted). **It is mapped to software device node ttyP0**.

Pin#	Definition	Note
1	GND	Digital Ground
2	RX	Data receive (TTL or RS-232 level)
3	TX	Data transmit (TTL or RS-232 level)
4	VCC	Power output (Default 3.3V, 5V option)

➢ **J41 Remote Control & LED Header**

[J41] Remote Control & LED Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	5VS	Power output 5V standby
2	GND	Digital Ground
3	IR	5V level Irda remote control input signal
4	IO	3.3V level GPIO input signal
5	GREEN	Running indicator for external green LED
6	RED	Standby indicator for external red LED

➢ **J43 TF Card Socket**

[J43] Standard TF Card Socket.

➢ **J45 VGA Output Header**

[J45] VGA Output Header (DIP 2.54mm-Square pad is pin 1).

Pin#	Definition	Note	Pin#	Definition	Note
1	RED	Red analog signal	2	GND	Digital Ground
3	GRN	Green analog signal	4	GND	Digital Ground
5	BLUE	Blue analog signal	6	GND	Digital Ground
7	HS	Horizontal synchronization signal	8	DATA	Serial data signal
9	VS	Vertical synchronization signal	10	CLK	Serial clock signal

➢ J47 Extended Serial Port 7

[J47] Extended Serial Port 7 (SIP 2.0mm-Square pad is pin 1). The output level is TTL 3.3V by default and it could be setup to RS-232 if required (RS-232 if U36 mounted). **It is mapped to software device node ttyP1**.

Pin#	Definition	Note
1	GND	Digital Ground
2	RX	Data receive (TTL or RS-232 level)
3	TX	Data transmit (TTL or RS-232 level)
4	VCC	Power output (Default 3.3V, 5V option)

➢ J48 I2C Bus Header

[J48] I2C Bus Header (SIP 2.0mm-Square pad is pin 1).

Pin#	Definition	Note
1	GND	Digital Ground
2	INT	Interrupt input (3.3V level)
3	SDA	I2C Bus data
4	SCL	I2C Bus clock signal
5	RST	Mainboard reset output (3.3V level)
6	3V3	Power output supply 3.3V

➢ J53 Extended Serial Port 8

[J53] Extended Serial Port 8 (SIP 2.0mm-Square pad is pin 1). The output level is TTL 3.3V by default and it could be setup to RS-232 if required (RS-232 if U37 mounted). **It is mapped to software device node ttyP2**.

Pin#	Definition	Note
1	GND	Digital Ground
2	RX	Data receive (TTL or RS-232 level)
3	TX	Data transmit (TTL or RS-232 level)
4	VCC	Power output (Default 3.3V, 5V option)

➢ **J54 Extended Serial Port 9**

[J54] Extended Serial Port 9 (SIP 2.0mm-Square pad is pin 1). The output level is TTL 3.3V by default and it could be setup to RS-232 if required (RS-232 if U37 mounted). **It is mapped to software device node ttyP2**.

Pin#	Definition	Note
1	GND	Digital Ground
2	RX	Data receive (TTL or RS-232 level)
3	TX	Data transmit (TTL or RS-232 level)
4	VCC	Power output (Default 3.3V, 5V option)

➢ **J60 Dual-Tier LED**

[J60] User defined dual-tier LED. Lower power LED light (on the power); Upper level LED lights (flicker controlled by software after turning on).

➢ **ANT WiFi Antenna IPEX**

[ANT] Standard IPEX 3dBi antenna connector (Φ2.0mm).

➢ **SW1 Recovery Mode Button**

[SW1] On-board recovery mode button. First press and then hold for about 3-second while power on will enter the recovery mode.

➢ **SW2 System Reset Button**

[SW2] On-board reset mode button. Click to restart the system.

5　　Physical Size

The PCB size is 170mm*170mm, PCBA height is 30.7mm, fixed hole diameter is 3.3mm. The corresponding physical size parameters are shown in the figure below. For detailed size information, please consult the manufacturer for DXF file.
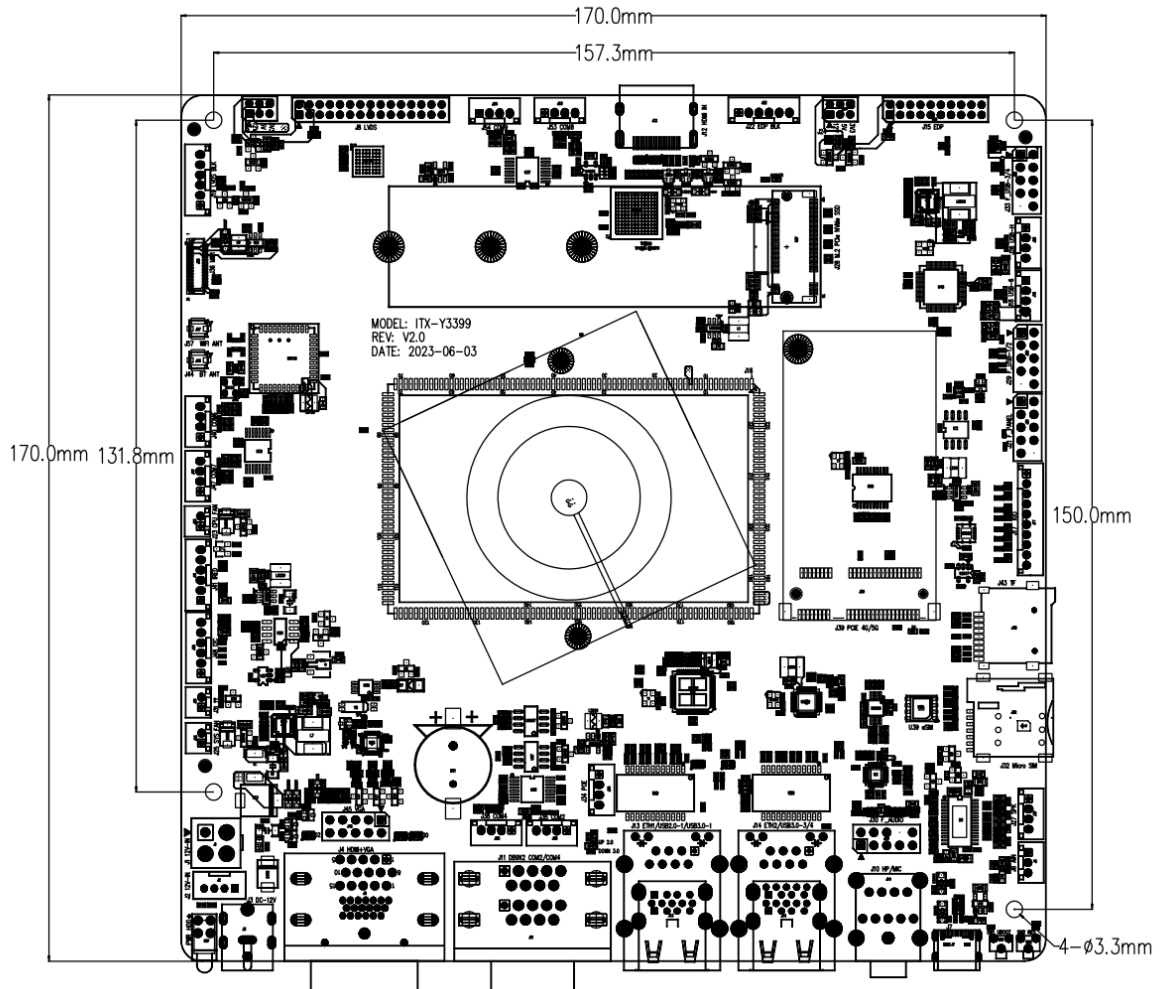
6   Assemble Precautions

：Please note the following key points when using the ITX-Y3399 mainboard:

1. Relative humidity of this product: 10% to 90%, no condensation.

2. The working temperature of this product: -20°C ~ 70°C.

3. This storage temperature of this product: -40°C ~ 70°C.

4. Anti-static treatment is required during assembly and transportation of this product.

5. The board interface connection cable must not be too long. Otherwise, the signal quality may be affected.

6. Never allow the board to be distorted or heavily stressed during assembly.

7. Do not short circuit between mainboard and other peripherals.

8. When connecting to external LVDS or eDP LCD screen, pay attention to whether the screen voltage and current meet the requirements, and pay attention to the screen connector pin-1 direction.

9. When connecting to external LVDS or eDP LCD screen, pay attention to whether the backlight voltage and current meet the requirements. **If the LCD backlight power is above 20W, it is recommended to use a separate power board for backlight power supply.**

10. When connecting to peripherals using USB, GPIO, Serial, I2C, SPI, HDMI, etc., pay attention to whether the IO voltage level and current of the peripheral meet the requirements. **When using the power pin on these connectors to supply power to the external circuit, the regular power pin must not exceed 100mA, and the USB power pin must not exceed 500mA.** When the serial port is connected to peripherals, level matching is also required (3.3V TTL level, RS-232 level and RS-485 level)

11. Please connect the power to the power input socket or connector, and evaluate whether the current of the whole board meets the requirements according to the total peripherals. **It is strictly forbidden to directly supply power from the backlight connector.**

12. The communication module should be mounted at least 5mm away from the metal housing to avoid signal interference.

7   Software Guide

。 The ITX-Y3399 motherboard supports dual-screen differential display combinations of any two outputs of LVDS/EDP/MIPI/HDMI/VGA! For relevant output combinations, please consult the manufacturer to provide corresponding abnormal display patches.

The internal serial port and extended serial port software port numbers of the ITX-Y3399 motherboard are as follows:

Port	Software Device Node
J35	/dev/ttyS2
J38	/dev/ttyS4
J40	/dev/ttyP0 or /dev/ttyS6
J47	/dev/ttyP1 or /dev/ttyS7
J53	/dev/ttyP2 or /dev/ttyS8
J54	/dev/ttyP3 or /dev/ttyS9