

E088

User's Manual



Version 1.0

Disclaimer

The content of this manual is the intellectual property of the Company, and the copyright belongs to the Company. The ownership of all parts of this product, including accessories and software, is vested in the Company. Without the written permission of the Company, this manual and its any content shall not be imitated, copied, extracted or translated into other languages in any form.

We have carefully prepared this manual with an attitude of being responsible for users, but we do not guarantee that the contents of this manual are completely accurate. This manual is a purely technical document, without any hint or innuendo of third-party content, and does not bear any ambiguity in user understanding caused by typographical errors. In case of any direct or indirect information loss or business termination caused by this manual or all the information about the product mentioned in this manual, the Company and its employees shall not shoulder any responsibility.

Since our products are continuously being improved and updated, the Company reserves the right to amend the contents of this manual without prior notice.

Copyright statement

The trademarks mentioned in this manual belong to their legally registered companies.

The product names involved in this manual are for identification purposes only, and their ownership belongs to their manufacturers or brand owners.

Contents

Chapter 1 General	1
1.1 Packing list.....	1
1.2 Motherboard specifications.....	2
1.3 Appearance Drawing.....	3
1.4 Interface Function Description.....	4
1.5 Overall Dimension Drawing of Motherboard.....	5
1.6 Motherboard layout.....	7
Chapter 2 Installation and setup of jumpers & connectors	9
2.1 Setup description of each jumper.....	9
2.2 Jumper setup.....	9
2.3 JGPIO1 PHOENIX terminal.....	10
2.4 JCOM2_3 PHOENIX terminal.....	10
2.5 JCOM4 pin interface.....	11
2.6 MICE1 pin interface.....	11
2.7 USB 2/3 pin interface.....	12
2.8 JLED2 pin interface.....	12
2.9 JLED1 pin interface.....	13
2.10DEBUG1 pin interface.....	13
2.11POWER1 pin interface.....	14
2.12JCOM1 pin interface (external DB9 for back-end IO interface).....	14
2.13JFAN1/2 pin interface.....	15
Marking for toxic and harmful substances or elements in this product:	16

Chapter 1 General

1.1 Packing list

Thank you for choosing our products.

Please kindly confirm the integrity of the packaging of the motherboard you purchased. If there is any packaging damage or any shortage of accessories, please contact your dealer as soon as possible.

- ★ Machine X1
- ★ Manual X1 (optional)



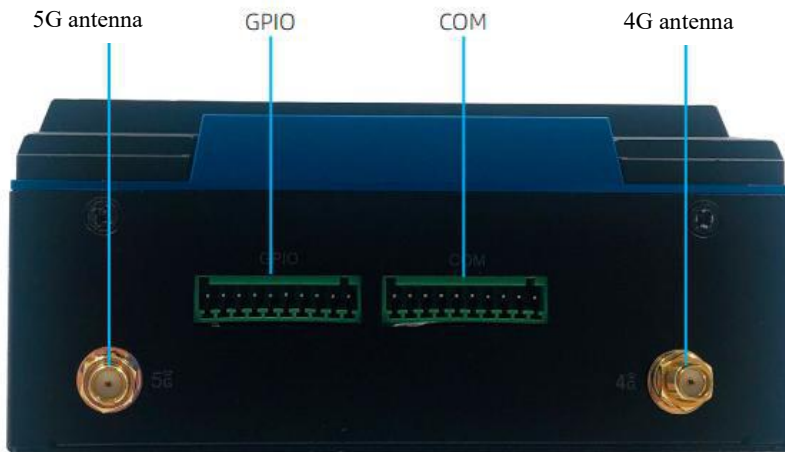
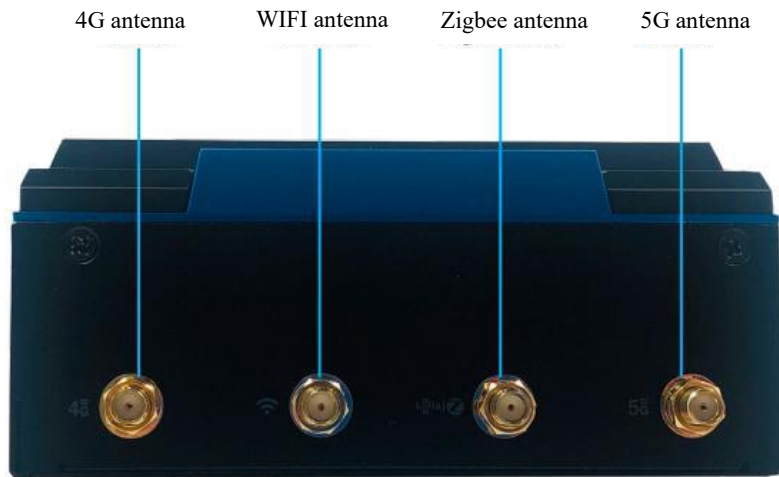
The specifications of the accompanying accessories above are provided for reference only, the actual specifications are subject to the actual product, and the Company reserves the right to modify.

1.2 Motherboard specifications

Processor	- Rockchip RK 3588
GPU	- Integrated graphics
Memory	- Onboard LPDDR4/4X chip, dual-channel, 4GB/8GB optional
Storage	- Onboard EMMC chip, 32GB/64GB optional - 1 * M.2 2280, supports NVME SSD (and AI Accelerator Card multiplex interface) - 1 * TF card, extensible storage capacity
Display	- 1 * HDMI Type-A, 1* DP
Audio	- 1 * 3.5 mm Line out (with mic), Apple standard
Ethernet	- 2 * RJ45, 10/100/1000Mbps
Wireless network	- Onboard WIFI+BT (AW_NM372SM/AW_CM256SM optional) - 1 * M.2 extensible 4G (QUECTEL EM05-CE)/5G (QUECTEL RM500Q) - 1 * Zigbee (optional, reserved interface)
AI Accelerator Card	- With 6Tops hash rate - 1 * M.2 2280, extensible Cambricon AI accelerator card MLU220, and 8Tops hash rate
TPM/TCM	- Built-in Nationz TCM module (Z32H330TC); - Built-in USB2.0 pin (extensible encryption module)
USB	- 1 * USB3.0+1 * USB2.0 (back-end IO), 2 * USB2.0 Front-end IO), 2 * JUSB2.0 pin
COM	- 1 * 10pin PHOENIX terminal (1* RS232, 1* RS485), - 1 * JCOM pin (9pin, connects DB9 connector, RS232/485 optional, and full function) - 1 (4pin, RS232/TTL, and connects 4G module for power private network)
GPIO	- 1 * 10pin PHOENIX terminal (four-channel input and four-channel output), 3.3V
Expansion interface	- 1 * SIM slot, 1 * J_POWER_ON, 1 * J_LED
Buzzer	- 1 * buzzer, alarm and fault diagnosis
Reset key	- 1 * Recover touch switch
Power button	- 1 * power button
Power input	- DC 12V 4pin aviation plug
Overall dimensions	- 148mm x 108mm x 44.3mm
Machine materials	- Aluminum alloy + metal plate
Watch Dog	- Support
Operating System	- Android12, Debian 11
Storage / Working temperature	- -20 ~ 70°C/0 ~ 50°C
Humidity requirement	- 10%RH-90%RH no condensation

1.3 Appearance Drawing





Note: This image is for reference only, please prevail in kind.

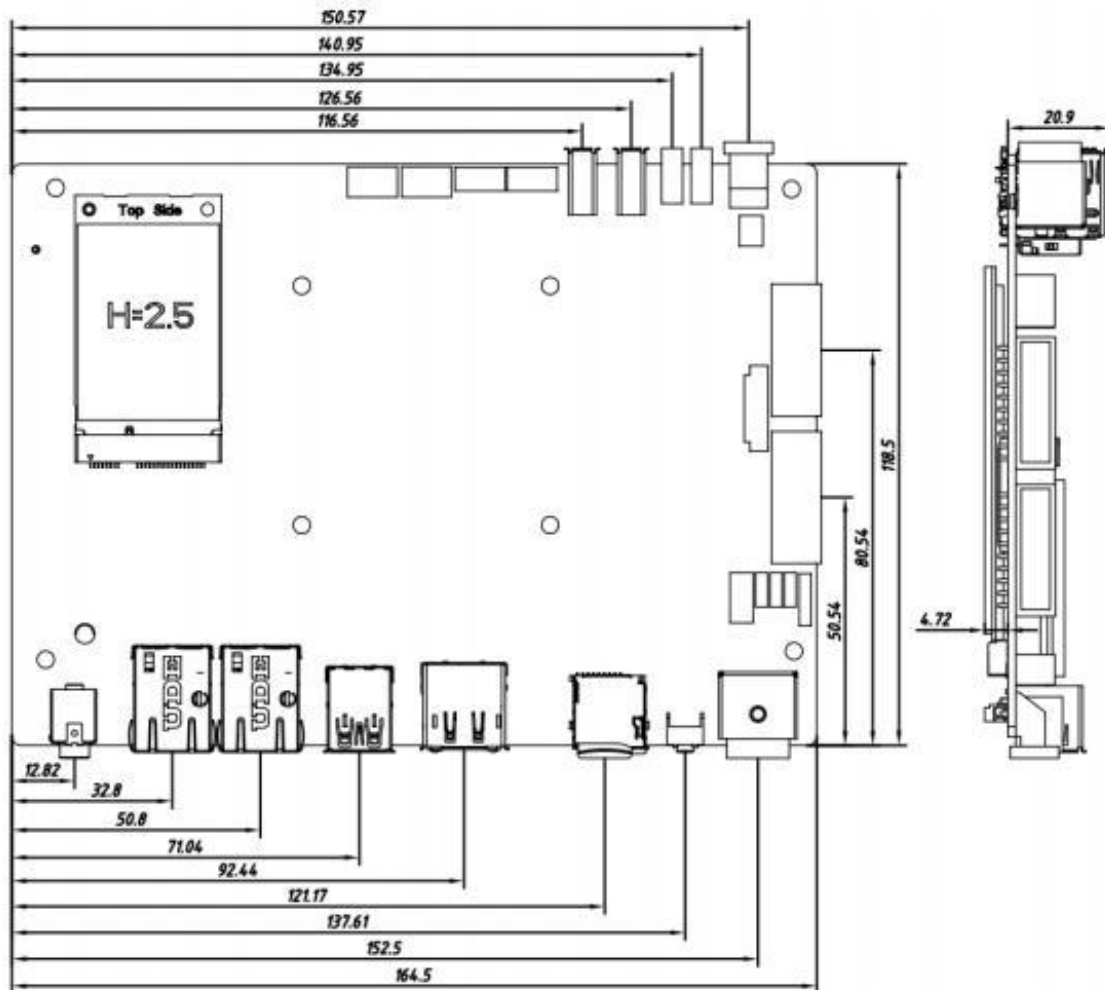
Please refer to the “Interface Function Description” section for the jumpers or sockets indicated in the above figure.

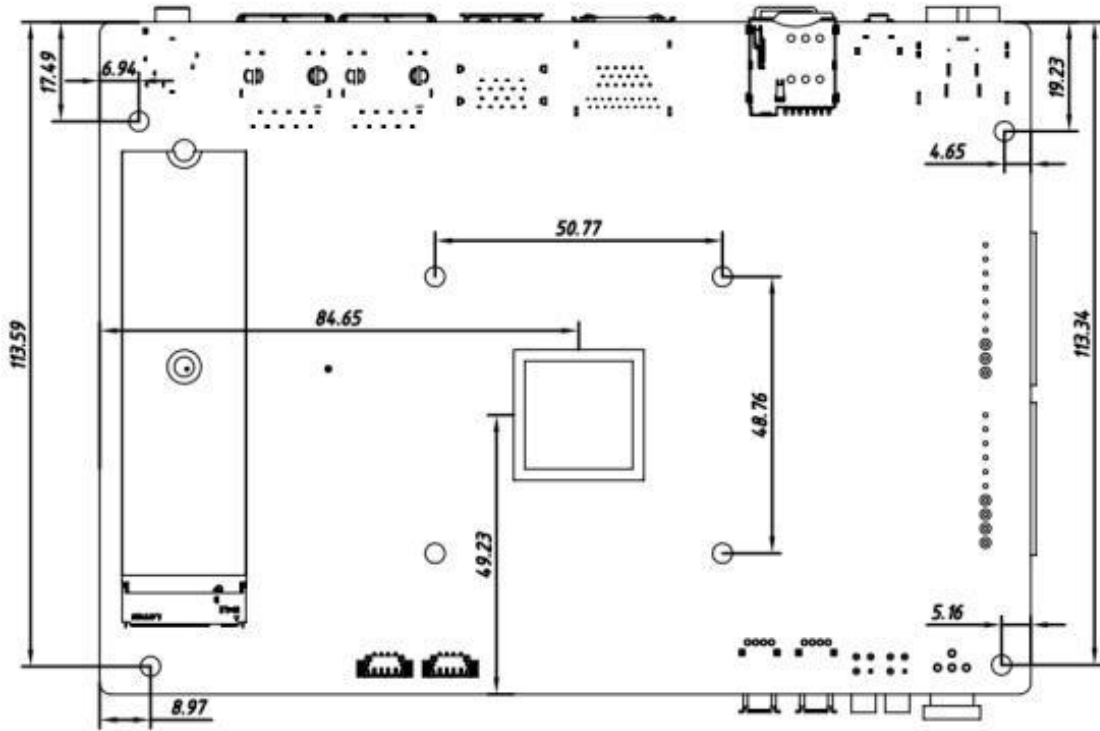
1.4 Interface Function Description (Please refer to the “Appearance Drawing” to browse this section):

- DC_IN: DC power input interface.
- RECOVER: Reset button.
- POWER ON: Power button.
- SIM: SIM slot.
- TF: TF slot.
- HDMI: HD multimedia display interface.
- DP: DP display interface.
- USB3.0: USB 3.0 connection port (compatible with USB 2.0 devices).
- USB2.0: USB 2.0 connection port (compatible with USB 1.1 devices).
- COM: Serial port.
- LAN1/2: RJ45 Ethernet interface.
- LINE OUT (audio output): Jack socket for connecting external audio devices.

- LED: 1 DC power indicator light, red when powered on. 1 4G/5G indicator light, blinking green during operation.
- 1 WIFI indicator light, blinking red during operation. 1 Zigbee indicator light, blinking green during operation.
- Antennas: 4G, WIFI, Zigbee, and 5G antennas.
- GPIO: 3 GPI + 3 GPO (PHOENIX terminals).
- COM: 1 RS232 + 1 RS485 (PHOENIX terminals).

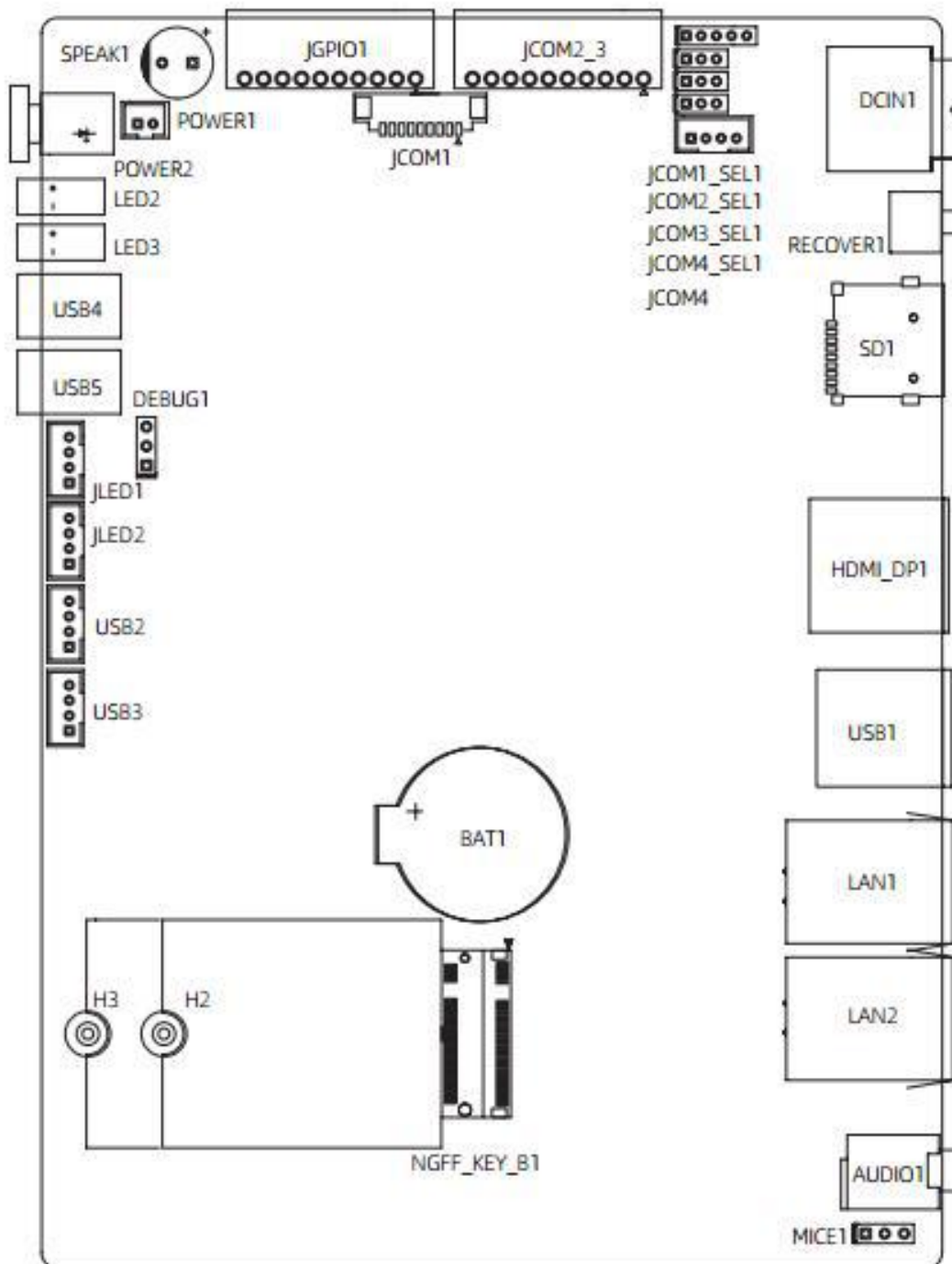
1.5 Overall Dimension Drawing of Motherboard

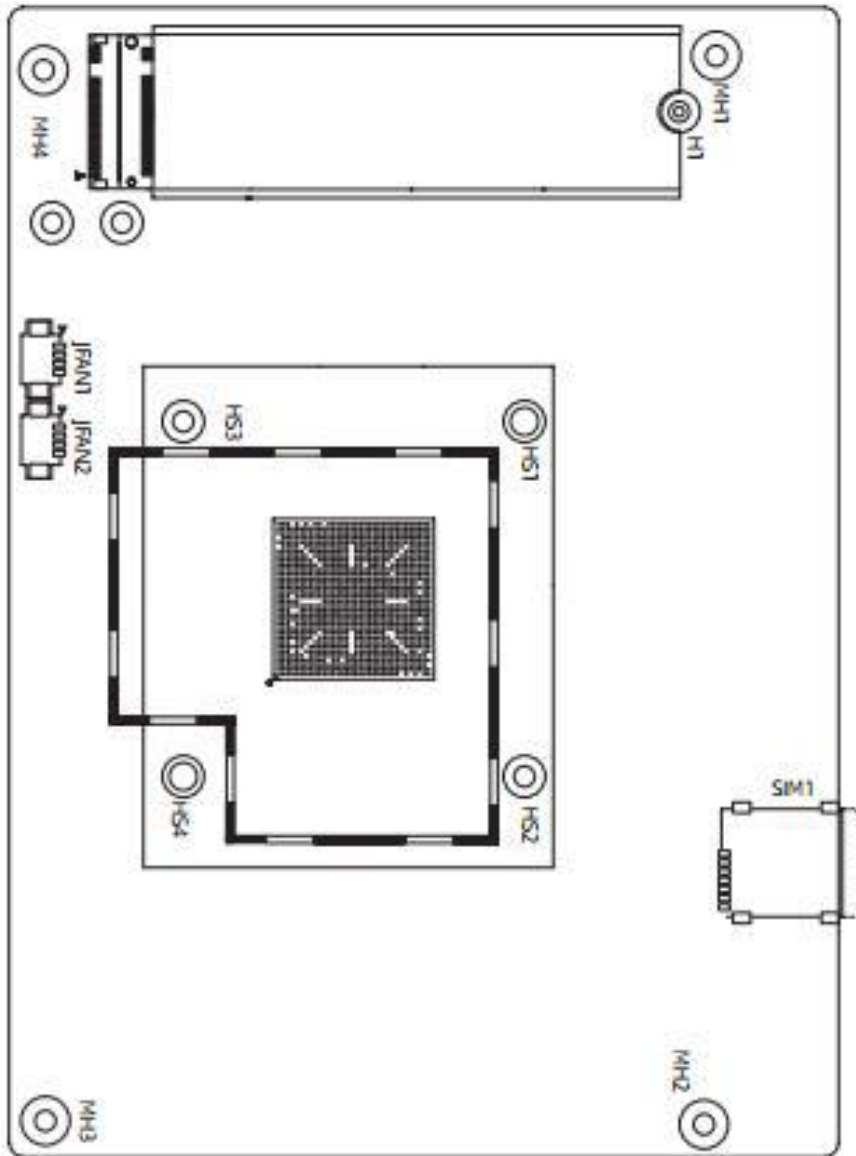




(This image is for reference only, please prevail in kind)

1.6 Motherboard layout





(This image is for reference only, please prevail in kind)

Chapter 2 Installation and setup of jumpers & connectors

2.1 Setup description of each jumper

2-pin connector: Inserting the jumper cap into two pins will close (short) the connection. Removing the jumper cap or inserting it into other pins (reserved for future expansion) will open the connection.

3-pin connector: The jumper cap can be inserted into pins 1-2 or 2-3 to close (short) the connection.



How to identify the first pin position of a jumper?

1. Please carefully examine the motherboard. Any pin marked with “1” or with white bold line is the first pin position.
2. Examine the solder pads on the back panel. Usually, the square-shaped pad is the first pin.

2.2 Jumper setup

JCOM4_SEL1 jumper setup

Pin	Definition
1	12V
2	VCC
3	3.3V

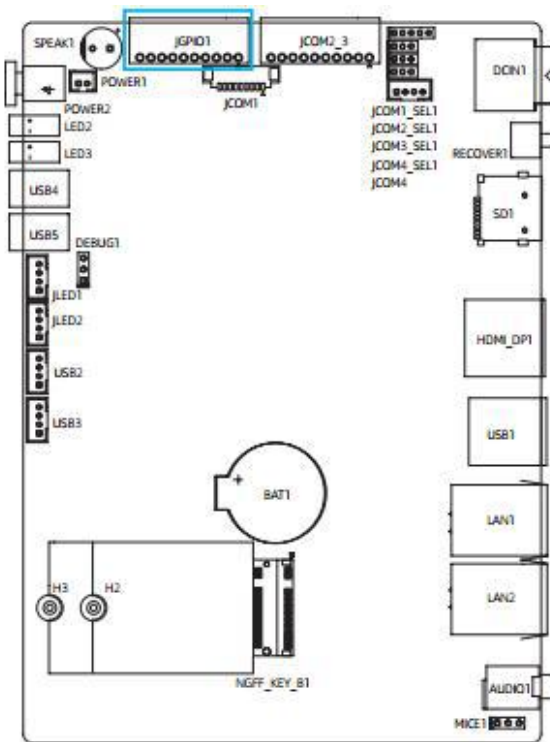
JCOM2/3_SEL1 jumper setup

Pin	Definition
1	12V
2	VCC
3	5V

JCOM1_SEL1 jumper setup

Pin	Definition
1	12V
2	VCC
3	5V
4	VCC
5	RI

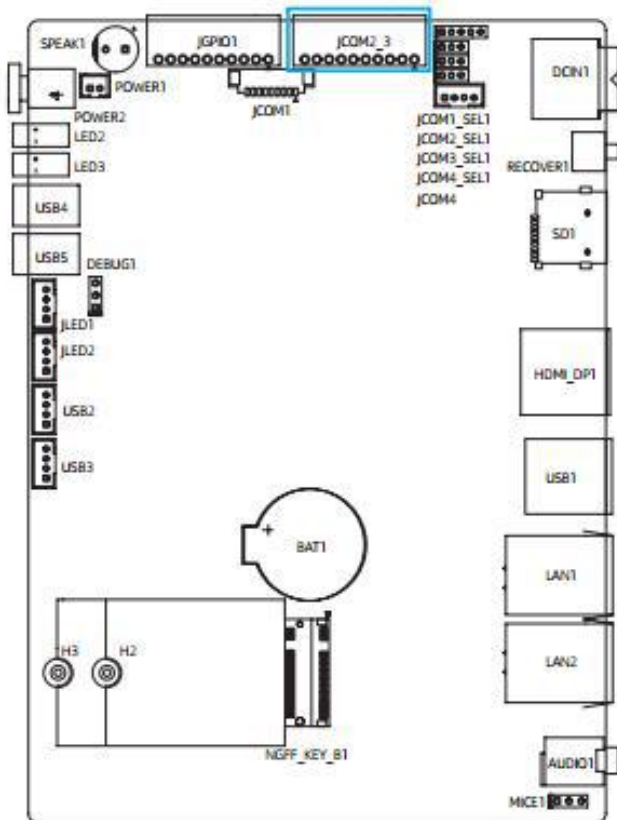
2.3 JGPIO1 PHOENIX terminal



Pin	Definition of pin
1	3.3V
2	GPI_0
3	GPO_0
4	GPI_1
5	GPO_1
6	GPI_2
7	GPO_2
8	GPI_3
9	GPO_3
10	GND

Note: The rightmost pin on PHOENIX terminal of machine is PIN1.

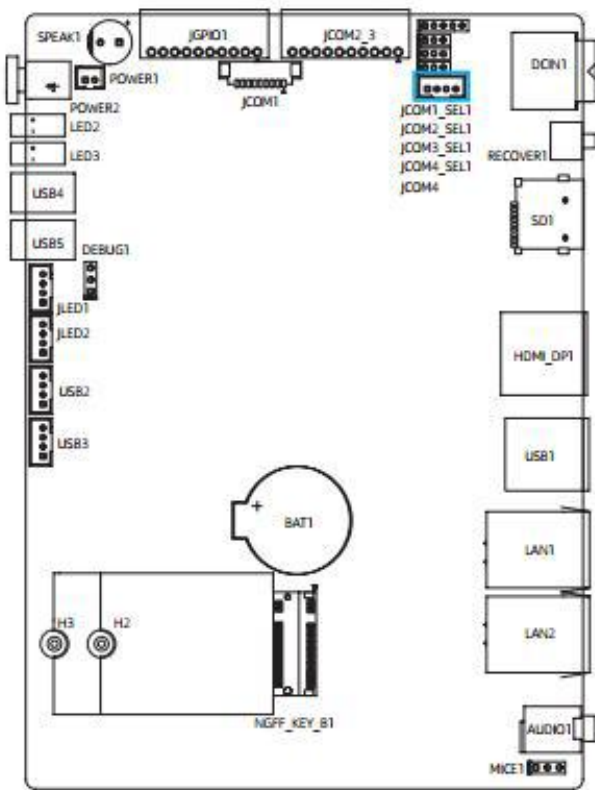
2.4 JCOM2_3 PHOENIX terminal



Pin	Definition of pin
1	VCC (5V/12V)
2	TX (RS232)
3	RX (RS232)
4	GND
5	NC
6	VCC (5V/12)
7	D+ (RS485 A)
8	D- (RS485 B)
9	GND
10	NC

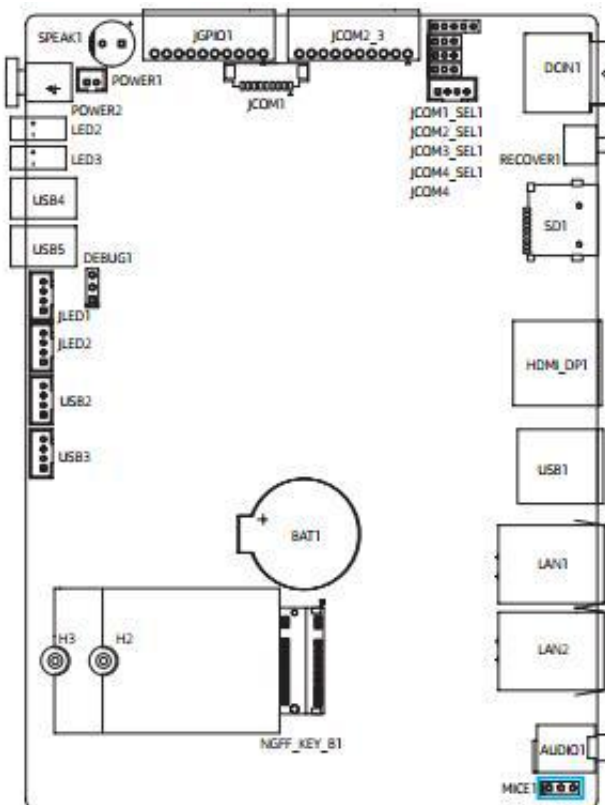
Note: The rightmost pin on PHOENIX terminal of machine is PIN1.

2.5 JCOM4 pin interface



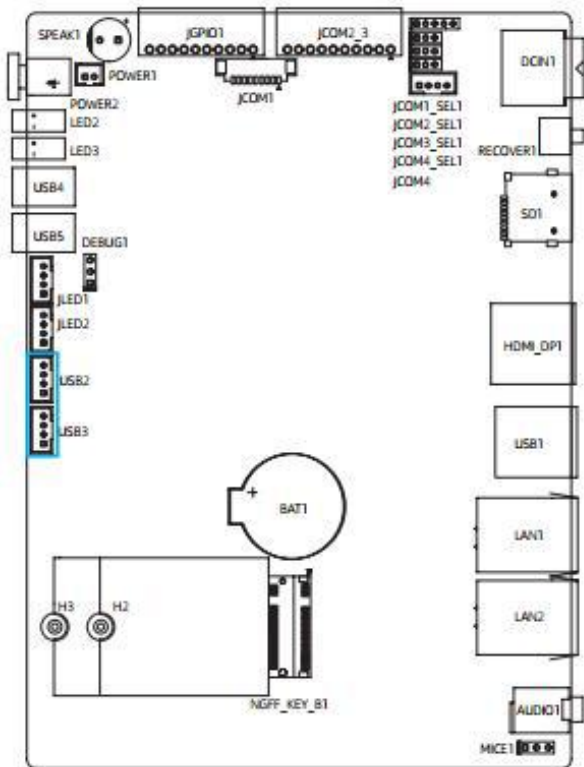
Pin	Definition of pin
1	VCC
2	TX
3	RX
4	GND

2.6 MICE1 pin interface



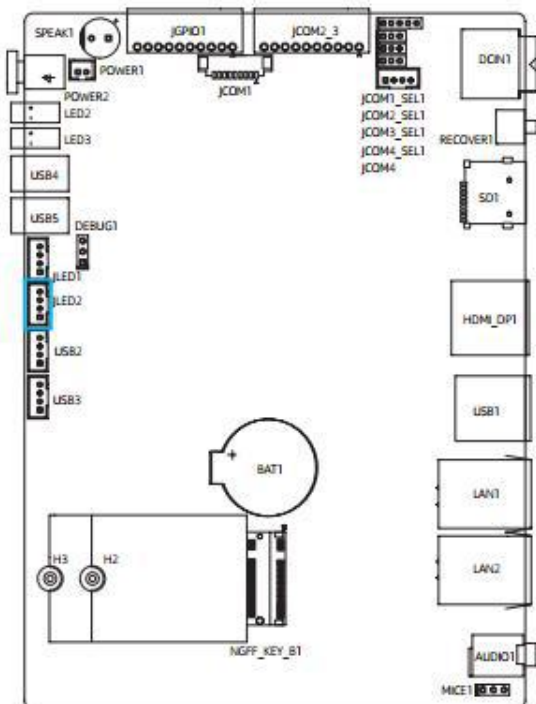
Pin	Definition of pin
1	RX
2	GND
3	TX

2.7 USB 2/3 pin interface



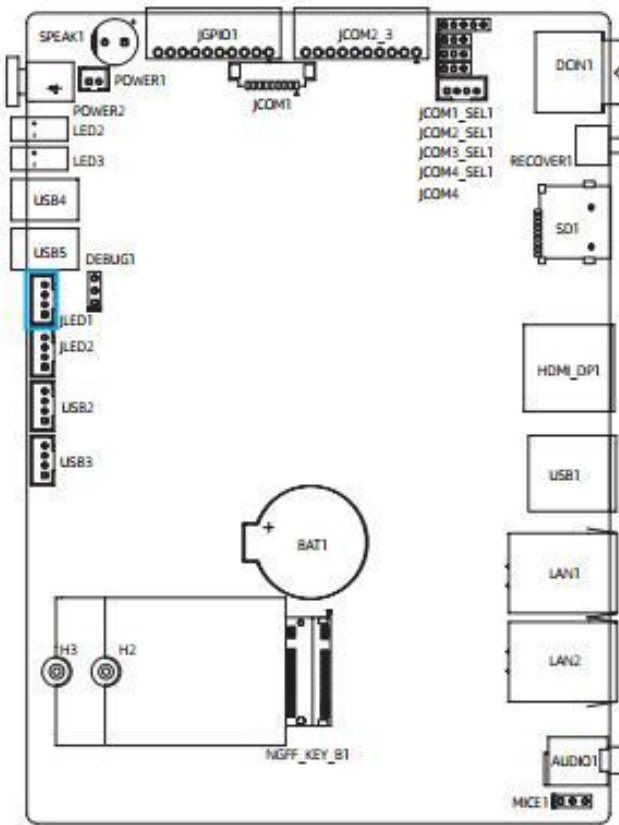
Pin	Definition of pin
1	5V
2	D-
3	D+
4	GND

2.8 JLED2 pin interface



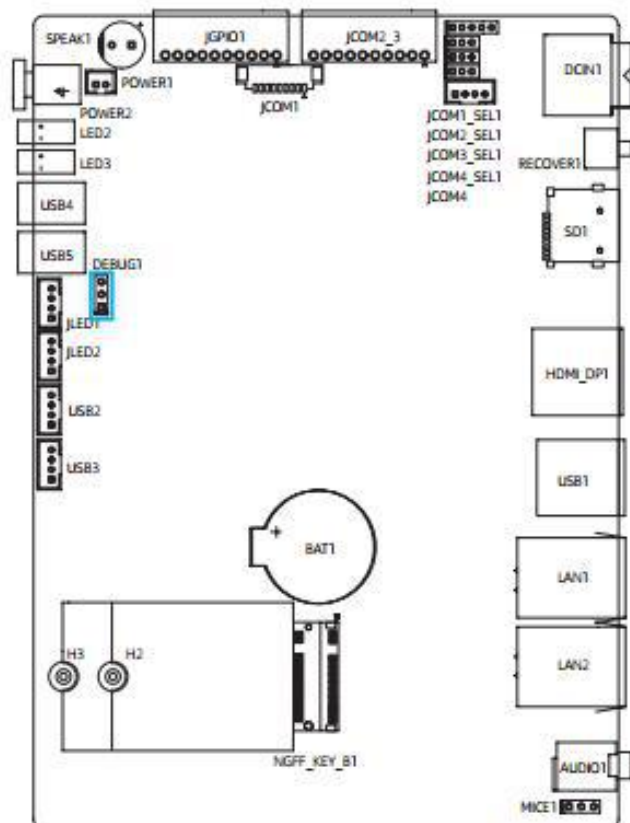
Pin	Definition of pin
1	PWR+
2	PWR-
3	4G-
4	4G+

2.9 JLED1 pin interface



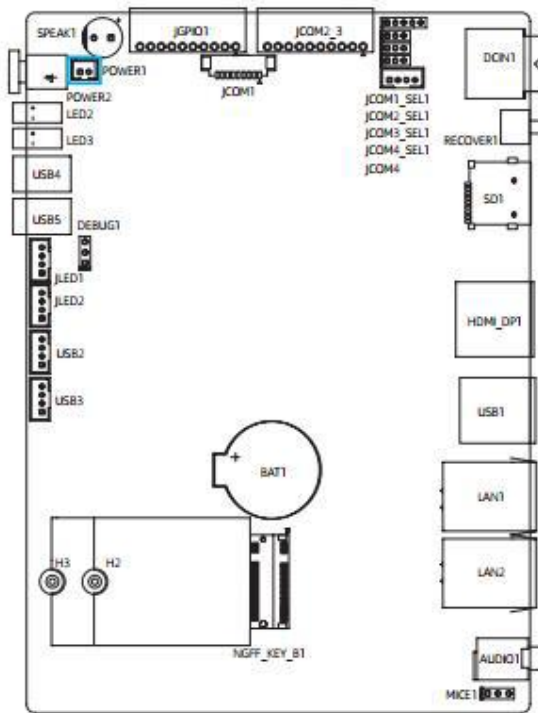
Pin	Definition of pin
1	WIFI+
2	WIFI-
3	ZIGB-
4	ZIGB+

2.10 DEBUG1 pin interface



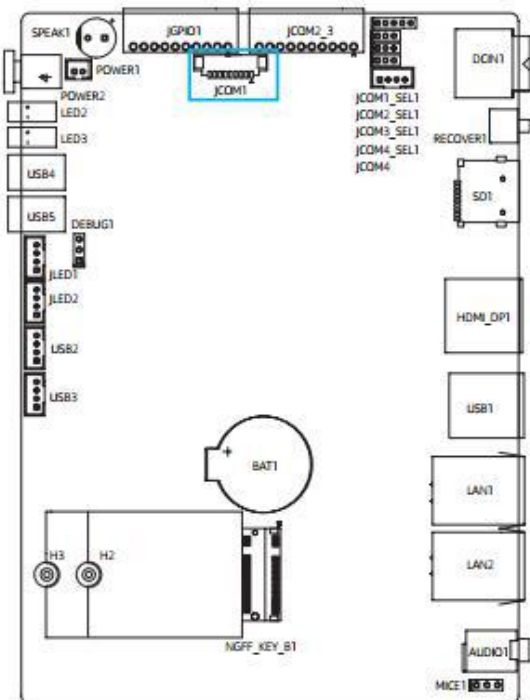
Pin	Definition of pin
1	RX
2	TX
3	GND

2.11 POWER1 pin interface



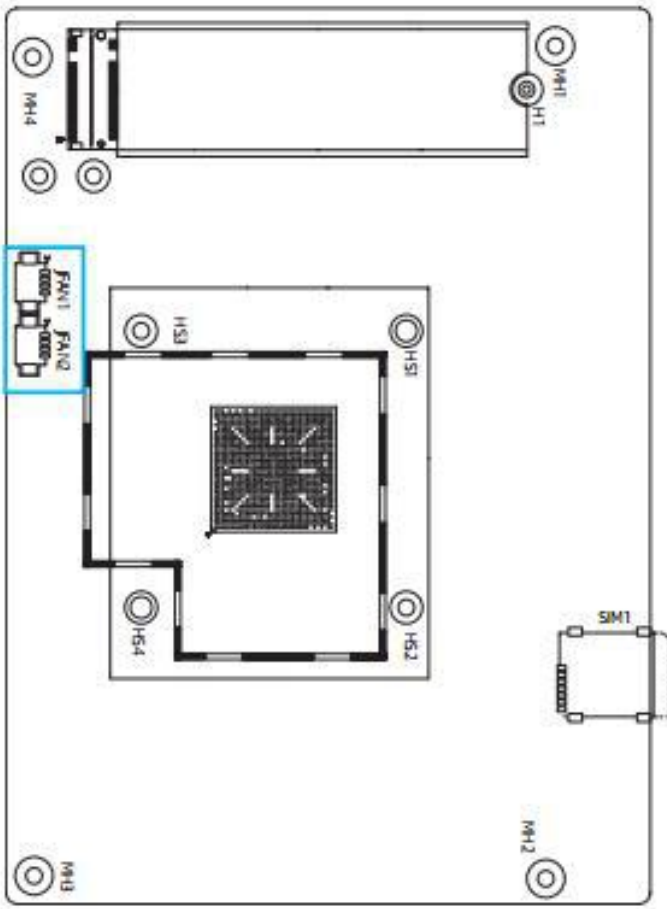
Pin	Definition of pin
1	ON
2	GND

2.12 JCOM1 pin interface (external DB9 for back-end IO interface).



Pin	Definition of pin
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

2.13 JFAN1/2 pin interface



Pin	Definition of pin
1	GND
2	5V
3	PWM_I
4	PWM_O



According to the requirements of SJ/T11364-2014 *Measures for the Control of Pollution from Electronic Information Products* issued by the Ministry of Information Industry of the People's Republic of China, the marking for the pollution control of this product and the marking for toxic and harmful substances or elements in this product are as follows:

Marking for toxic and harmful substances or elements in this product:

Name and content of toxic and harmful substances or elements in this product

Part Name	Toxic and harmful substances or elements					
	Pb	Hg	Cd	Cr (VI)	PBB	PBDE
PCB board	X	○	○	○	○	○
Structural part	○	○	○	○	○	○
Chip	○	○	○	○	○	○
Connector	○	○	○	○	○	○
Passive electronic parts and components	X	○	○	○	○	○
Welded metal	X	○	○	○	○	○
Wire rod	○	○	○	○	○	○
Other consumables	○	○	○	○	○	○

○: It means that the content of this toxic and harmful substance in all homogeneous materials of this part is below the limit requirement specified in GB/T 26572.

X: It means that the content of this toxic and harmful substance in all homogeneous materials of this part exceeds the limit requirement specified in GB/T 26572.

Note: The lead content at position X exceeds the limit specified by GB/T 26572, but complies with the exemption clause of the EU RoHS directive.