ACP-3566-PI

Industrial Raspberry Pi with Rockchip 3566

User's Manual

1st Ed – 15 February 2024

ACP-3566-PI User's Manual

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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1. Collect all the information about the problem encountered. (For example, CPU type and speed, Avalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Warning: Battery Notice
Important! To prolong battery life, please avoid adhering the battery to possible source of heat.
重要! 為了延長電池壽命,請避免電池附著在有可能出現高溫的地方
バッテリ寿命を延長するために、高温の付近にバッテリーを付着することを避けてください。

Content

1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x ACP-3566-PI SBC

If any of the above items is damaged or missing, contact your retailer.

1.3 Document Amendment History

| Revision	Date	By	Comment
1st	February 2024	Avalue	Initial Release

1.4 Manual Objectives

This manual describes in details Avalue Technology ACP-3566-PI Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up ACP-3566-PI or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.
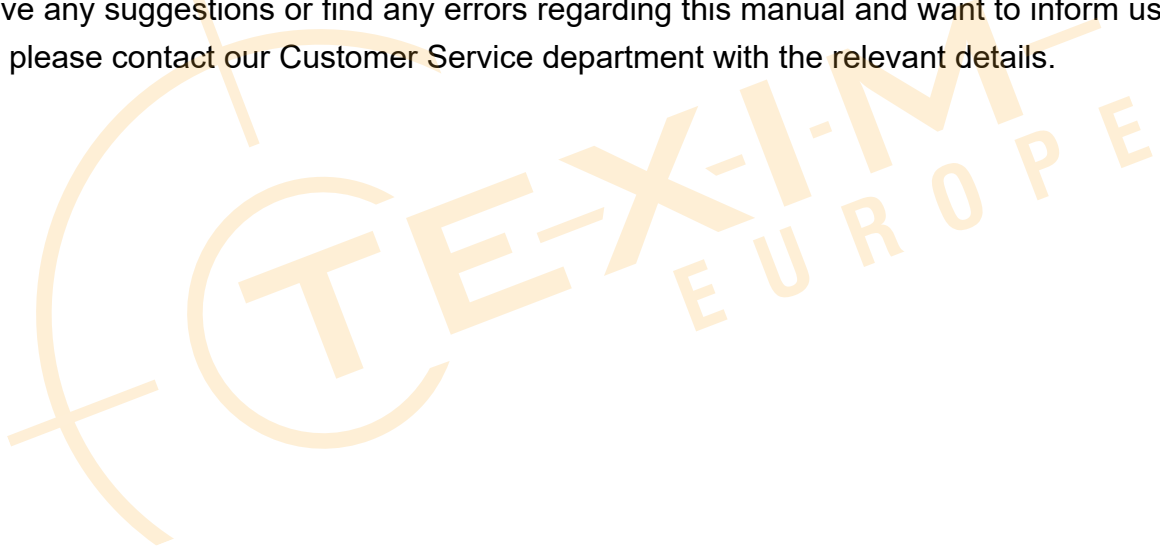
1.5 System Specifications

System	
CPU	Quad-core Cortex-A55 up to 1.8GHz
System Chipset	Rockchip RK3566
Memory	4GB
Storage	
eMMC	on board 32GB eMMC
SD / Micro Card	1x microSD memory card slot (max. 64GB)
I/O	
COM	40 x GPIO pin header, GPIO, UART, I2C, SPI
LAN	1x Ethernet RJ45,1000M
USB	2x USB Host 2.0 1x USB OTG 2.0 1x USB HOST 3.0
DP	1x HDMI, resolution up to 4k 60fps 1x MIPI DSI
DC Input	5.0V/3A via USB-C
Others	1x MIPI CSI
Ethernet	
WI-FI interface, BT	Wifi 2.4G/5G, BT 4.0(optional)
Mechanical & Environmental Specification	
Power Mode	5.0V/3A via USB-C
Operating Temp.	0-60 ℃
Storage Temp.	-40-75℃ Degree
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	85 x 55 x 17 mm
OS Information	Debian10 (First)

.

Note: Specifications are subject to change without notice.

2. Hardware Configuration

2.1 Product Overview

40 Pin GPIO header

PMIC

USB Connector

USB double layer connector

SW2

LPDDR4

USB2.0 double layer connector

RK3566 SOC

A55 Core debug console

RJ45

SW1

HDMI Connector

DC IN

IR

MIPI DSI Connector

MIPI CSI Connector

eMMC Flash

RTC Battery   Micro SD card Slot
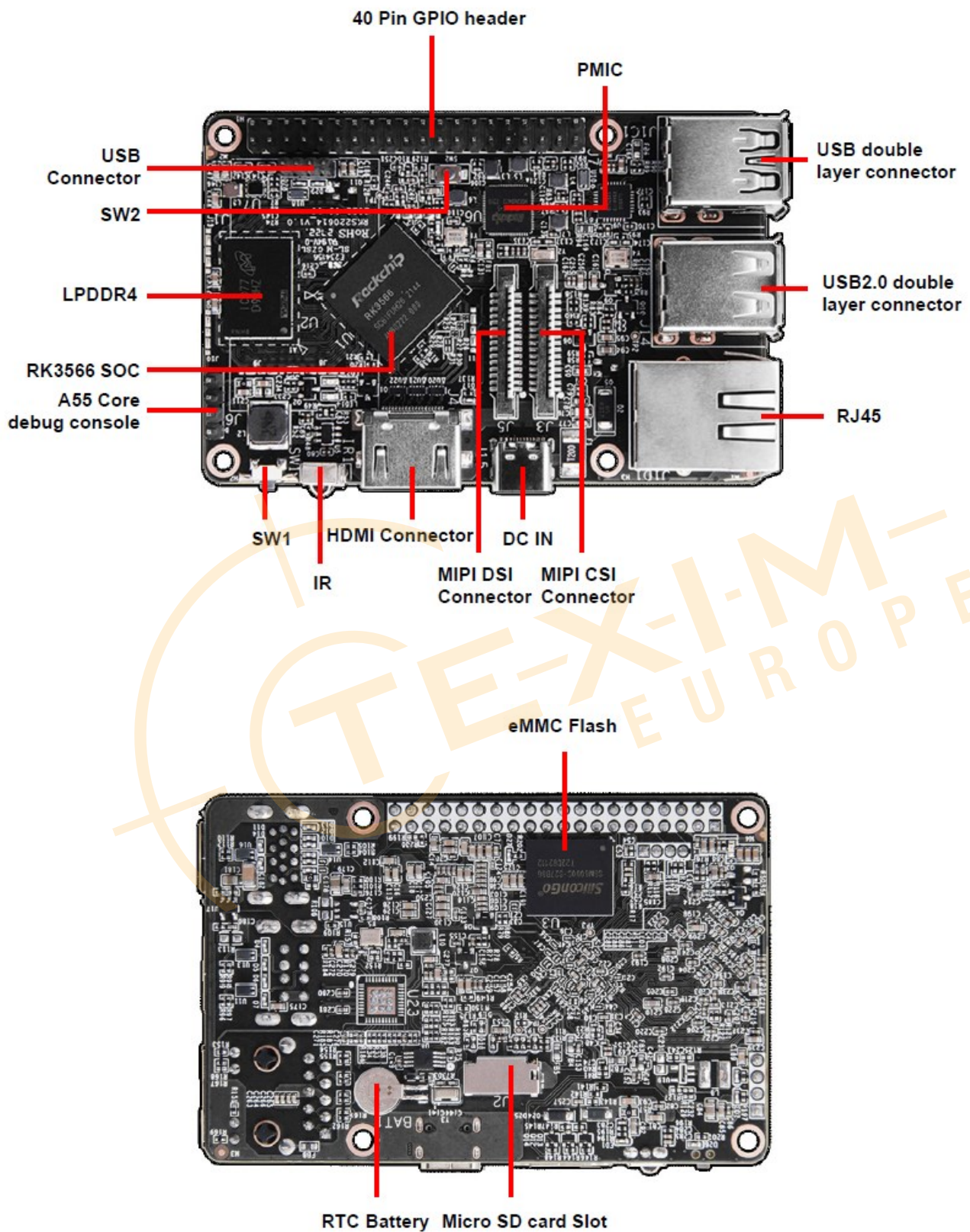
## 2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.
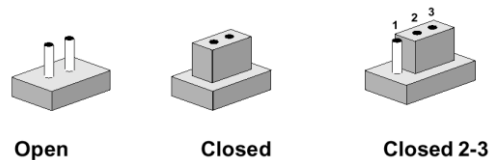
The jumper settings are schematically depicted in this manual as follows:

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.
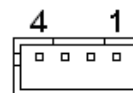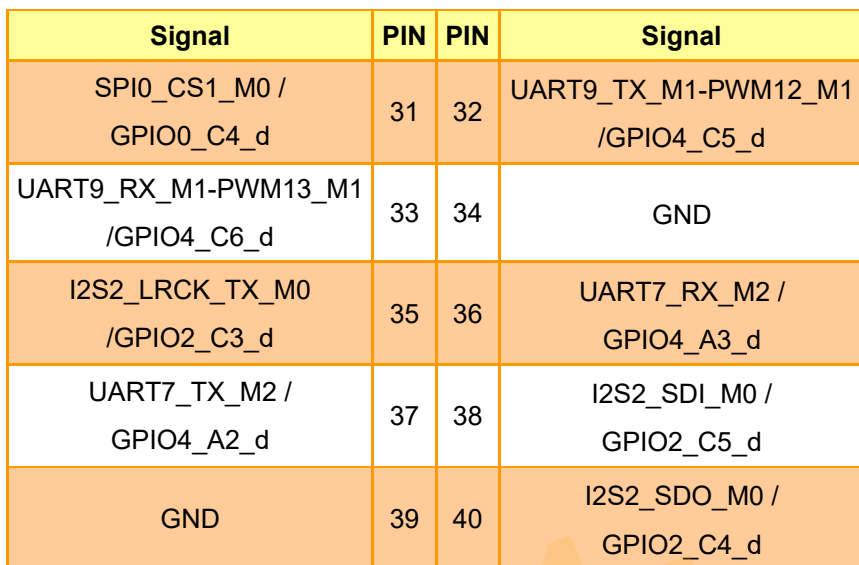
Connectors

Label	Function	Note
Extension GPIO definition	Extension GPIO definition	
MIPI DSI	MIPI DSI Connector	
MIPI CSI	MIPI CSI Connector	
DEBUG	DEBUG Connector	
USB HOST	USB HOST connector	
LAN	RJ-45 Ethernet	
DC IN	USB Type C Connector	
HDMI OUT	HDMI connector	
UART	UART connector	
TF Card	microSD memory card connector	

2.3 Setting Jumpers & Connectors

2.3.1 Extension GPIO definition (J7)
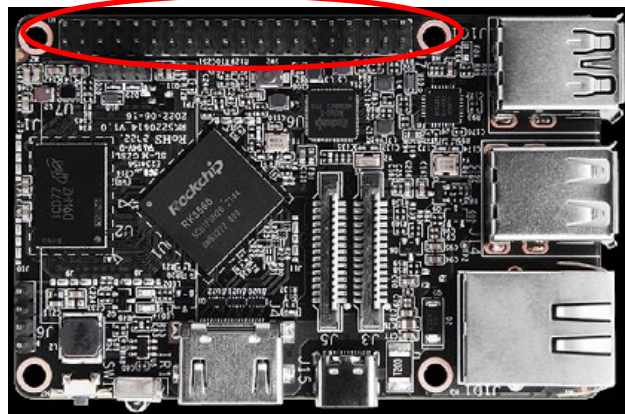
Signal	PIN	PIN	Signal
VCC3V3_IO	1	2	VCC5V0_SYS
I2C4_SDA_M1 / GPIO2_B1_d	3	4	VCC5V0_SYS
I2C4_SCL_M1 / GPIO2_B2_u	5	6	GND
REFCLK_OUT / GPIO0_A0_d	7	8	UART1_TX_M0 / GPIO2_B4_u
GND	9	10	UART1_RX_M0 / GPIO2_B3_u
UART4_CTSn_M0 / GPIO1_A7_d	11	12	I2S2_SCLK_TX_M0 /GPIO2_C2_d
UART4_TX_M0 / GPIO1_A6_d	13	14	GND
UART4_RX_M0 / GPIO1_A4_d	15	16	UART1_CTSn_M0 / GPIO2_B6_u
VCC3V3_IO	17	18	UART1_RTSn_M0 / GPIO2_B5_u
SPI3_MOSI_M0 / GPIO4_B2_d	19	20	GND
SPI3_MISO_M0 / GPIO4_B0_d	21	22	GPIO4_C4 / GPIO4_C4_d
SPI3_CLK_M0 / GPIO4_B3_d	23	24	SPI3_CS0_M0 / GPIO4_A6_d
GND	25	26	SPI3_CS1_M0 / GPIO4_A7_d
I2C3_SDA_M0 / GPIO1_A0_u	27	28	I2C3_SCL_M0 / GPIO1_A1_u
UART4_RTSn_M0 / GPIO1_A5_d	29	30	GND

Signal	PIN	PIN	Signal
SPI0_CS1_M0 / GPIO0_C4_d	31	32	UART9_TX_M1-PWM12_M1 /GPIO4_C5_d
UART9_RX_M1-PWM13_M1 /GPIO4_C6_d	33	34	GND
I2S2_LRCK_TX_M0 /GPIO2_C3_d	35	36	UART7_RX_M2 / GPIO4_A3_d
UART7_TX_M2 / GPIO4_A2_d	37	38	I2S2_SDI_M0 / GPIO2_C5_d
GND	39	40	I2S2_SDO_M0 / GPIO2_C4_d

2.3.2   USB Connector for Wi-Fi (J1)

PIN	Signal
1	5V_WIFI
2	USB2_HOST3_DM
3	USB2_HOST3_DP
4	GND

2.3.3 MIPI DSI Connector (J5)
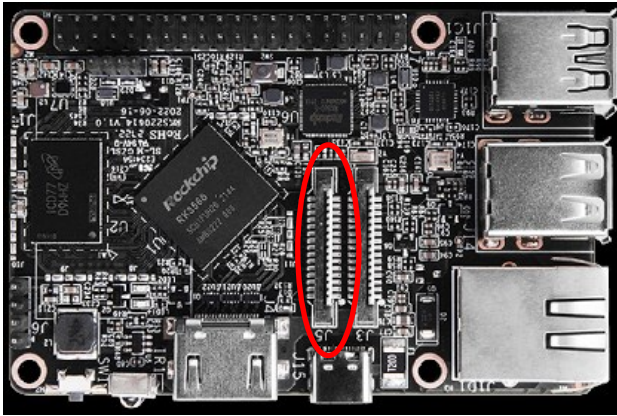
Signal	PIN	PIN	Signal
NC	16	15	VCC_LCD
NC	17	14	VCC_LCD
NC	18	13	GND
NC	19	12	I2C2_SDA_LCD
NC	20	11	I2C2_SCL_LCD
NC	21	10	GND
NC	22	9	MIPI_DSI_TX0_D0P/ LVDS_TX0_D0P
NC	23	8	MIPI_DSI_TX0_D0N/ LVDS_TX0_D0N
NC	24	7	GND
NC	25	6	MIPI_DSI_TX0_CLKP/ LVDS_TX0_CLKP
NC	26	5	MIPI_DSI_TX0_CLKN/ LVDS_TX0_CLKN
NC	27	4	GND
NC	28	3	MIPI_DSI_TX0_D1P/ LVDS_TX0_D1P
NC	29	2	MIPI_DSI_TX0_D1N/ LVDS_TX0_D1N
NC	30	1	GND

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2.3.4   MIPI CSI Connector (J3)
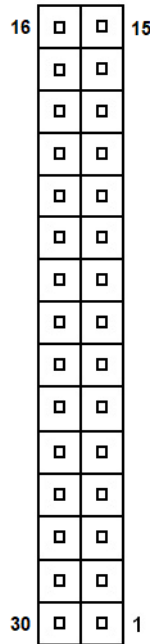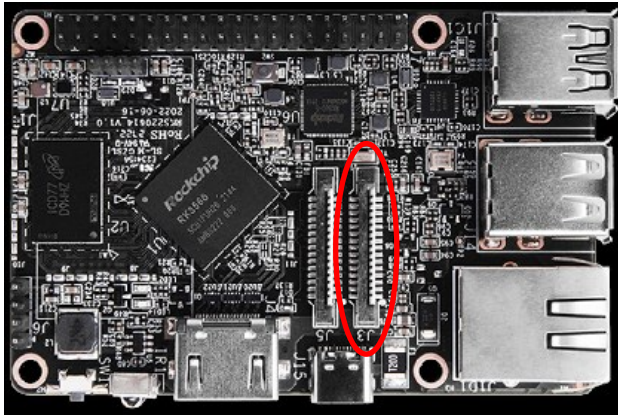
Signal	PIN	PIN	Signal
NC	16	15	VCC3V3_CAMERA
NC	17	14	I2C2_SDA_CAMERA
NC	18	13	I2C2_SCL_CAMERA
NC	19	12	NC
NC	20	11	TS_CLK/GPIO
NC	21	10	GND
NC	22	9	MIPI_CSI_RX_CLK0P
NC	23	8	MIPI_CSI_RX_CLK0N
NC	24	7	GND
NC	25	6	MIPI_CSI_RX_D1P
NC	26	5	MIPI_CSI_RX_D1N
NC	27	4	GND
NC	28	3	MIPI_CSI_RX_D0P
NC	29	2	MIPI_CSI_RX_D0N
NC	30	1	GND

2.3.5   Cortex Debug UART Connector (J6)
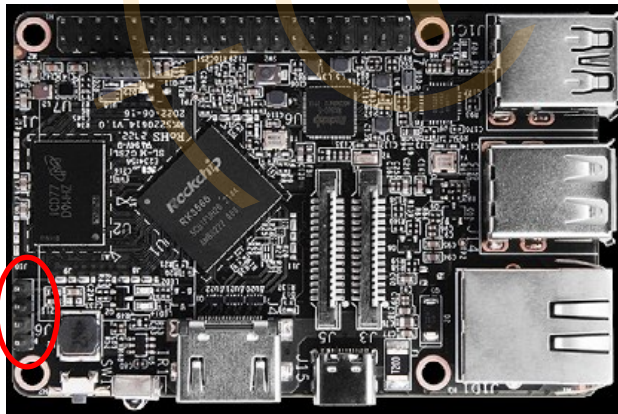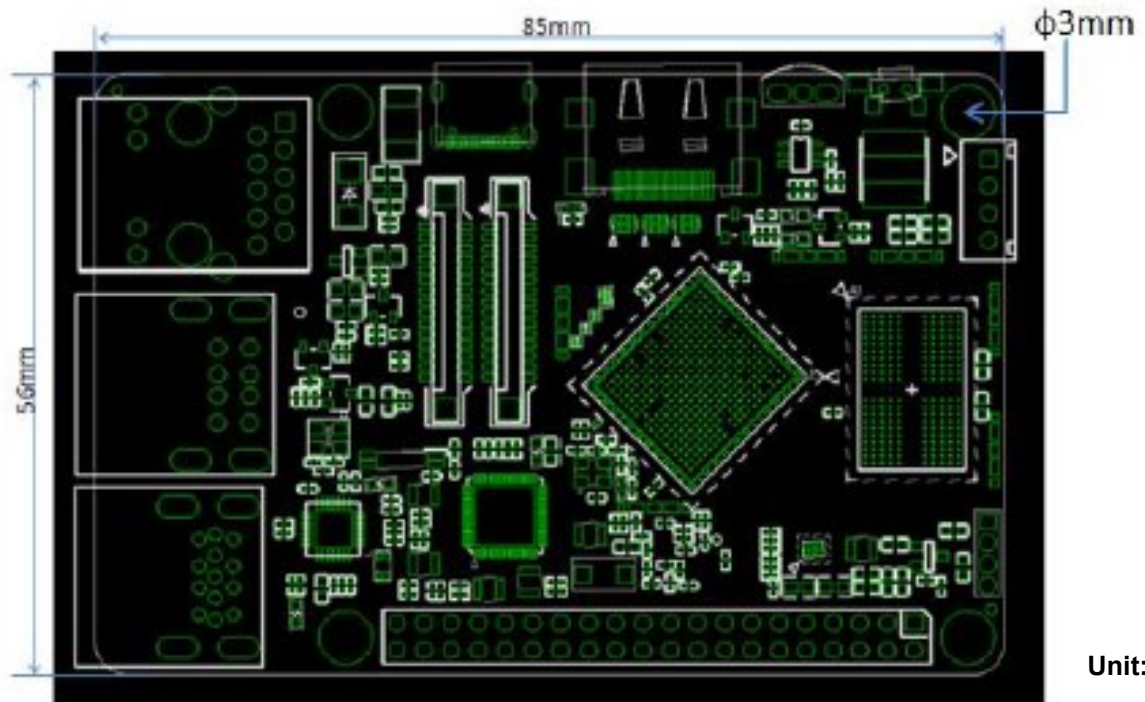

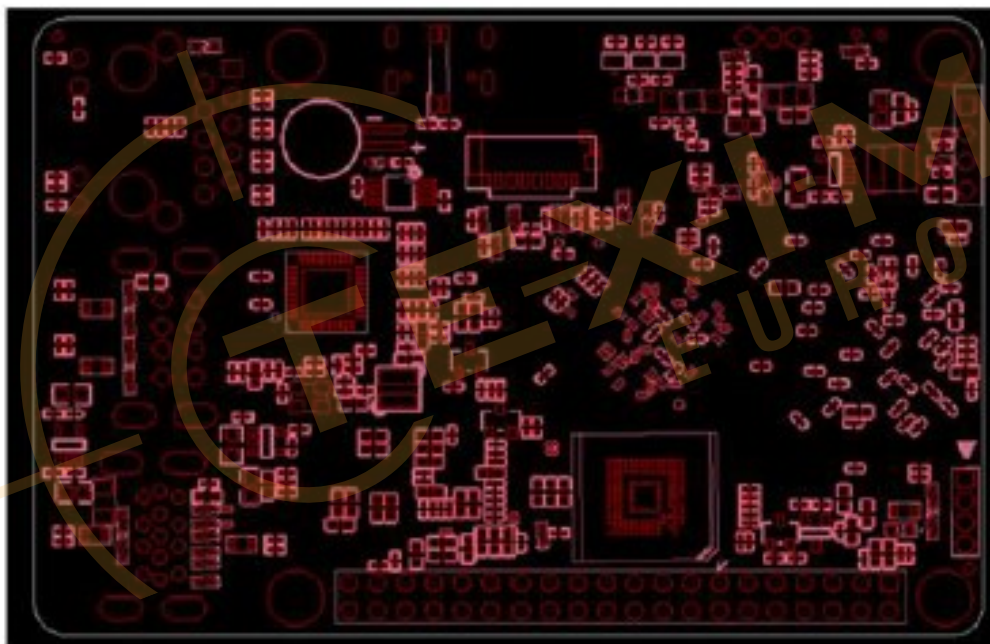| PIN	Signal
4	GND
3	UART2_RX_M0_DEBUG/ GPIO0_D0_u
2	UART2_TX_M0_DEBUG /GPIO0_D1_u
1	VCC3V3_IO

3. Mechanical Drawing

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Unit: mm

Unit: mm

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Please contact us if you have any questions about the contents of the datasheet.

This may not be the latest version of the datasheet. Please check with us if a later version is available.

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