UW-M352-V-V1.0 Android AI Intelligent Access Control/Door Entry Motherboard Technical Specification

Document modification history

	Remarks	Date
1	Created	2024-03

1 Overview

The UW-M35 2-V utilizes the Rockchip RK356 2 (Cortex-A5 3 x4) quad-core processor and runs on the Android 13 system. With a main frequency of up to 2.0GHz and support for 1 T computing power, it delivers superior performance and features a rich set of interfaces in a simple, ultra-thin design. Its first-class benchmarking and decoding capabilities make it suitable for various applications, including turnstiles, access control devices, time attendance machines, intelligent self-service terminals, industrial control hosts, and robotic equipment.

Main Features:

- Quad-core ARM Cortex-A53 NPU@1.0 Tops
- Supports MIPI display, resolution up to 2048x1080@60Hz
- Supports Ethernet, Wi-Fi, BT, CAT1 4G module
- Dual 2MP cameras with integrated high-performance ISP
- Rich expansion interfaces: TTL x4, RS485 x1, USB x4, relay, Wiegand input, Wiegand output, GPIO, etc.
- 6-layer immersion gold PCB, industrial-grade components selected to meet the requirements of complex, harsh industrial control environments

2 Specifications

Hardware Specifications:

CPU	Quad-core ARM Cortex-A53 NPU@1.0 Tops
GPU	Mali G52 2EE
Memory	LPDDR4 2GB/4GB/8GB (labeled 2GB)
Storage Capacity	EMMC 8GB/16GB/32GB/64GB/128GB optional (labeled as 8GB)
Display Interface	1-channel MIPI interface, supports a maximum resolution of 2048x1080 @60Hz
Camera Interface	Supports MIPI binocular camera
Network	100Mbps Ethernet Interface
	CAT1 4G module (default unpopulated)
	Supports Wi-Fi + Bluetooth module, supports Wi-Fi 802.11b/g/n protocol (compatible with WiFi 6 or 5G WiFi) Supports Bluetooth 4.2 protocol (compatible with Bluetooth 5.0 protocol)

Image Rotation	Supports manual rotation of 0°, 90°, 180°, and 270°
Real-time clock	Built-in real-time clock
Interface devices	4 USB HOST ports: 2 onboard, 2 on the tail cable
	4 serial ports, one configurable as RS485 for expanding temperature measurement modules, ID card modules, scanning modules, card swiping modules, etc.
	Supports 1 relay interface
	Supports 1-channel Wiegand input and 1-channel Wiegand output, supporting Wiegand 26/34 protocols
	Supports multiple GPIOs for expanding functionalities such as door open buttons, door magnetic sensors, and alarm outputs
	Supports individual control of red, green, and white tricolor fill lights and infrared fill lights
	Supports external power on/off button.
	Built-in power amplifier, supports 4Ω 3W Speaker.
	Supports headphone output interface; expandable to external power amplifier output.
Audio input	Supports MIC, one microphone interface.
Touch screen	Supports infrared, resistive, and capacitive touch screens.

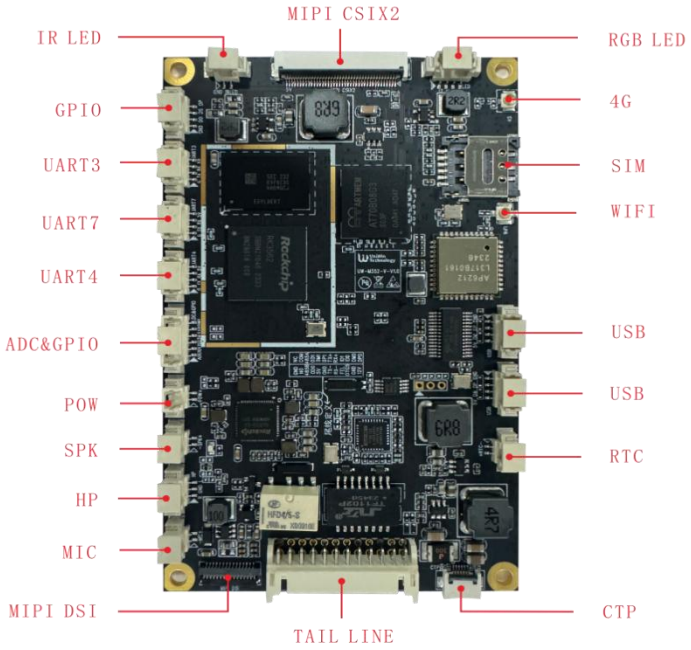
Software Specifications:

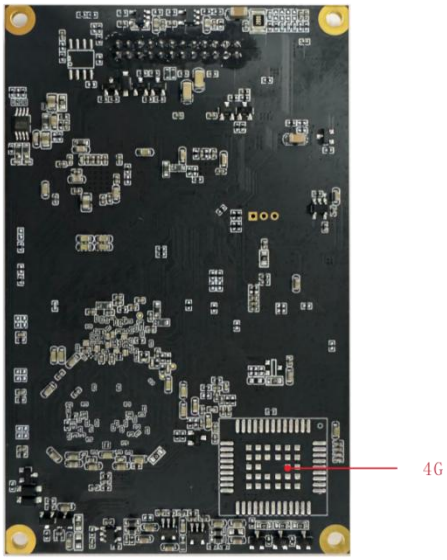
Operating System	Google Android 13 Operating System
Language	Multiple Languages
Video Format	● H.265 HEVC/MVC Main10 Profile yuv420@L5.1 up to 4096x2304@60fps ● H.264 AVC/MVC Main10 Profile yuv400/yuv420/yuv422/@L5.1 up to 4096x2304@60fps ● VP9 Profile0/2 yuv420@L5.1 up to 4096x2304@60fps ● VP8 verision2,up to 1920x1088@60fps ● VC1 Simple Profile@low, medium, high levels, Main Profile@low, medium, high levels, Advanced Profile@level0~3,up to 1920x1088@60fps ● MPEG-4 Simple Profile@L0~6,Advanced Simple Profile@L0~5,up to 1920x1088@60fps ● MPEG-2 Main Profile, low, medium and high levels, up to 1920x1088@60fps ● MPEG-1 Main Profile, low, medium and high levels, up to 1920x1088@60fps ● H.263 Profile0,levels 10-70,up to 720x576@60fps
Audio Format	Supports MP3, WMA, MP2, OGG, AAC, M4A, MA4, FLAC, APE, 3GP, WAV audio playback; supports song list function.
Image Browsing	Supports browsing of various image formats including JPG, BMP, PNG, and GIF, with support for rotation/slideshow playback and a maximum resolution of 8176x8176.
Word Processing	EPUB, WORD, EXCEL, POWERPOINT, PDF, TXT
Input Method	Standard Android keyboard, with optional third-party input methods (e.g., Chinese, Korean, Japanese).

Basic Software	Camera, web browsing, online chat, email, e-books, file explorer
System Management	File Manager
	Native Android system with open root access, enabling product customization and development.
	Supports OTA remote upgrades.

3 Main Interfaces

3.1 Interface Layout Diagram

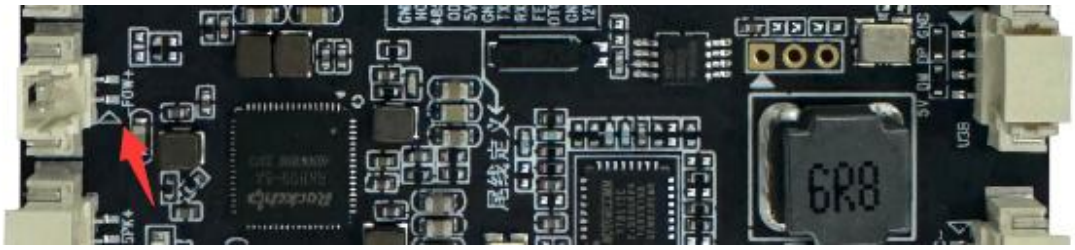




3.2 Overview of Main Interfaces

- PWR KEY **(Triangle direction indicates First pin,** 2PIN/1.25 **)**

  As indicated by the arrow in the figure below



No.	Definition	Attribute	Description
1	GND	Ground	Ground
2	PWR	Output	Power On/Off Button

- GPIOx3 **(Triangle indicates first pin ,** 4PIN/1.25 **) as shown by the arrow in the figure below**

No.	Definition	Attribute	Description
1	GND	Ground	GND
2	GPIO1_D0	Output	Connects to doorbell output, normally open
3	GPIO3_A7	Input	Door magnetic detection, default high level
4	GPIO0_A4	Input	Door open button, default high level

- IR LED (Triangle indicates first pin , 2PIN/1.25 **) as shown by the arrow in the figure below**

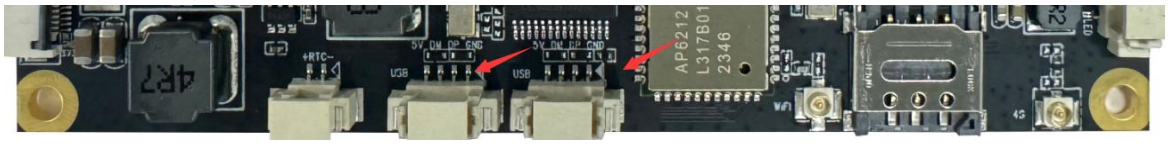
No.	Definition	Attribute	Description
1	GND	Ground	GND
2	LED_5V	Power	Infrared LED power supply, controllable

◆ RGB LED (Triangle indicates first pin , 4PIN/1.25 **) as shown by the arrow in the figure**

No.	Definition	Attribute	Description
1	VCC	Power	12V
2	POWER_LED_G	Power	Green LED Negative
3	POWER_LED_B	Power	Blue LED Negative
4	POWER_LED_R	Power	Red LED Negative

◆ USB interface*2 (Triangle indicates first pin, 4PIN/1.25)

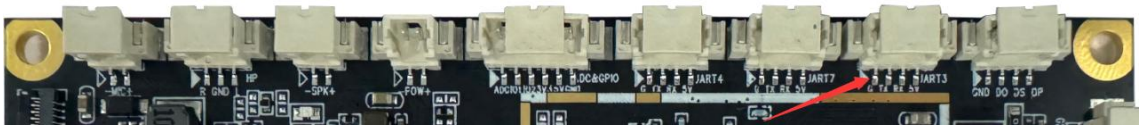
As indicated by the arrow direction in the figure, there are 2 USB ports.



No.	Definition	Attribute	Description
1	GND	Ground	Ground
2	DP	Input/Output	D+ signal line
3	DM	Input/Output	D- signal line
4	5V	Output	Power output

◆ UART3 TTL serial port **(Triangle indicates first pin,** 4PIN/1.25 **)**

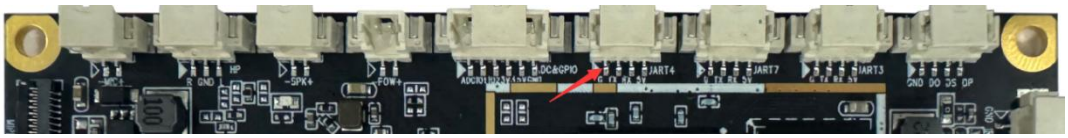
As indicated by the arrow in the figure below



No.	Definition	Attribute	Description
1	GND	Ground	Ground
2	TX3	Output	UART data output
3	RX3	Input	UART data input
4	VCC	Power	5V

◆ UART4 TTL serial port **(Triangle indicates first pin,** 4PIN/1.25 **)**

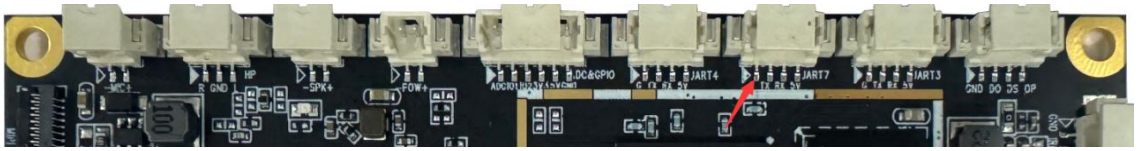
As indicated by the arrow in the figure below



No.	Definition	Attribute	Description
1	GND	Ground	Ground
2	TX4	Output	UART data output
3	RX4	Input	UART data input
4	VCC	Power	5V

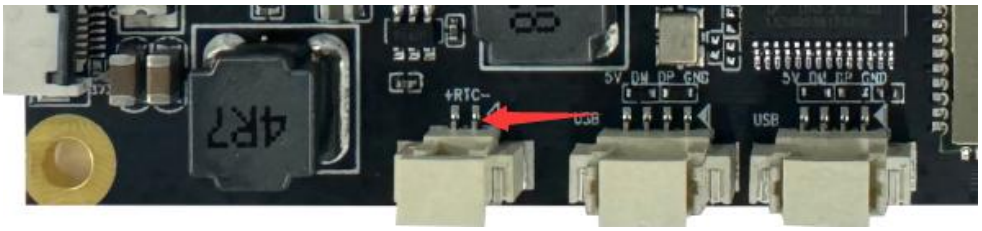
◆ UART7 TTL serial port **(Triangle indicates first pin,** 4PIN/1.25 **)**

As indicated by the arrow in the figure below



No.	Definition	Attribute	Description
1	GND	Ground	Ground
2	TX7	Output	Default TTL data output
3	RX7	Input	Default TTL Data Input
4	VCC	Power	5V

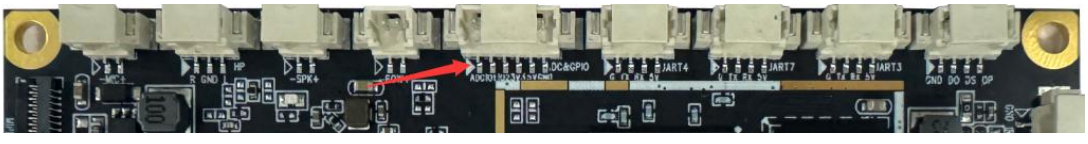
◆ RTC BAT (2PIN/1.25mm)　RTC Battery Interface



No.	Definition	Attribute	Description
1	3V Battery Negative	Power	3V Battery Negative
2	3V Battery Positive	Power	3V Battery Positive

◆ ADC&GPIO Touch Screen Interface (Triangle indicates first pin, 6PIN/1.25)

As indicated by the arrow in the figure below

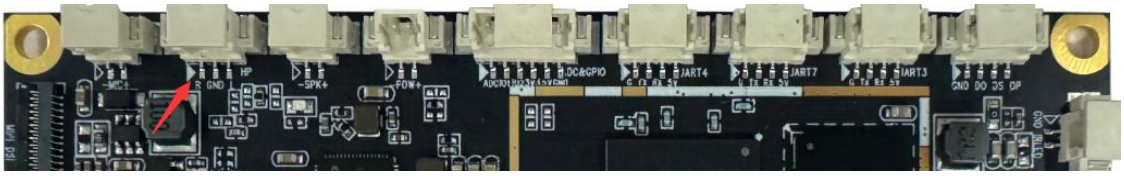


No.	Definition	Attribute	Description

1	ADKEY IN	Input	ADKEY IN Detection
2	UART8-TX-GPIO	Input/Output	GPIO3_D4
3	UART8-RX-GPIO	Input/Output	GPIO3_D5
4	VCC	Power	3.3V
5	VCC	Power	5V
6	GND	Ground	GND

◆ External Headphone Interface (Triangle indicates first pin, 3PIN/1.25)

As indicated by the arrow in the figure below



No.	Definition	Attribute	Description
1	HPR_OUT	Output	Audio R Signal
2	HP_SNS	Ground	Headphone Ground
3	HPL_OUT	Output	Audio L Signal

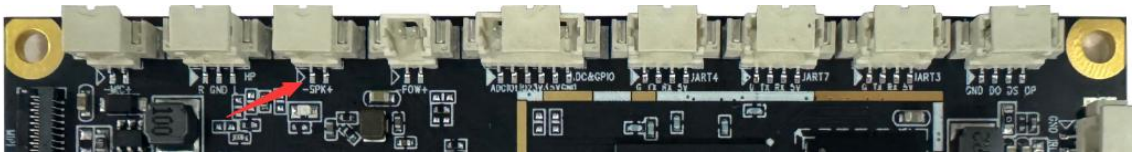
◆ Microphone Interface (Triangle indicates first pin, 2PIN/1.25)

As indicated by the arrow in the figure below

No.	Definition	Attribute	Description
1	MIC-	Audio input	Audio Input-
2	MIC+	Audio input	Audio Input+

◆ Speaker Interface (Triangle indicates first pin, 2PIN/1.25)

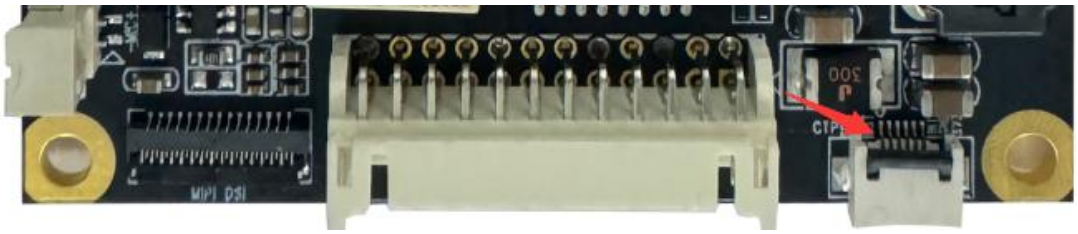
As indicated by the arrow in the figure below



No.	Definition	Attribute	Description
1	OUTN	Output	Audio - Signal (Connects to Speaker -)
2	OUTP	Output	Audio + Signal (Connects to Speaker +)

◆ CTP Touchscreen Interface (Triangle indicates first pin, 6PIN/0.5)

As indicated by the arrow in the figure below



No.	Definition	Attribute	Description
1	SDA	Input/Output	I2C Data
2	SCK	Output	Clock Signal
3	REST	Output	Reset
4	INT	Input	Interrupt
5	GND	Ground	Ground
6	3.3V	Output	3.3V Output

◆ TAIL LINE Interface (Triangle indicates first pin, 30PIN/2.0)

As indicated by the arrow in the figure below

No.	Definition	Attribute	Description
1	VCC	Power	12V
2	DP0	USB Signal Line	OTG USB DP
3	GND	Ground	Ground
4	DM0	USB Signal Line	OTG USB DM
5	VCC	Power	USB OTG 5V Power Supply
6	WEGIN-D0	DATA Line	Wiegand IN D0
7	UBOOT	Signal Input	Upgrade Button
8	WEGIN-D1	DATA Line	Wiegand IN D1
9	RX-	Ethernet Signal Line	Ethernet Signal Line RX-
10	RX+	Ethernet Signal Line	Ethernet Signal Line RX+
11	TX-	Ethernet Signal Line	Ethernet Signal Line TX-
12	TX+	Ethernet Signal Line	Ethernet Signal Line TX+
13	GND	Ground	Ground
14	DP1	USB Signal Line	USB HOST DP
15	VCC-5V	Power	USB Host 5V Power Supply
16	DM1	USB Signal Line	USB HOST DM
17	WEGOUT-D0	DATA Line	Wiegand OUT D0
18	WEGOUT-D1	DATA Line	Wiegand OUT D 1
19	RS485_B	Signal Input/Output	RS485 Signal B
20	RS485_A	Signal Input/Output	RS485 Signal A
21	N0	Relay Normally	Relay Normally Open

		Open	
22	COM	Common Terminal	Common Terminal
23	GND	Ground	Ground
24	NC	Relay Normally Closed	Relay Normally Closed

◆ MIPI DSI Display Interface (Triangle indicates first pin, 31PIN/0.3mm)

As indicated by the arrow in the figure below

No.	Definition	Attribute	Description
1	3.3V	Power	LCD_VCC
2	3.3V	Power	LCD_VCC
3	1.8V	Power	LCD_VDD
4	GND	Ground	Ground
5	RESET	Reset	Display Reset
6	1.8V	Power	LCD_VDD
7	GND	Ground	Ground
8	D3N	Signal Input	MIPI DATA
9	D3P	Signal Input	MIPI DATA
10	GND	Ground	Ground
11	D0N	Signal Input	MIPI DATA
12	D0P	Signal Input	MIPI DATA
13	GND	Ground	Ground
14	CLKN	Signal Input	MIPI DATA
15	CLKP	Signal Input	MIPI DATA

16	GND	Ground	Ground
17	D1N	Signal Input	MIPI DATA
18	D1P	Signal Input	MIPI DATA
19	GND	Ground	Ground
20	D2N	Signal Input	MIPI DATA
21	D2P	Signal Input	MIPI DATA
22	GND	Ground	Ground
23	GND	Ground	Ground
24	LED-	Power	Backlight Power Negative
25	LED-	Power	Backlight Power Negative
26	LED-	Power	Backlight Power Negative
27	LED-	Power	Backlight Power Negative
28	NC	NC	NC
29	LED+	Power	Backlight Power Positive
30	LED+	Power	Backlight Power Positive
31	LED+	Power	Backlight Power Positive

◆ MIPI Camera Display Interface (Triangle indicates first pin, 40PIN/0.5mm)

As indicated by the arrow in the figure below

No.	Definition	Attribute	Description
1	VDD2V8	Power	2.8V Output
2	VDD3V3	Power	3.3V Output
3	IR-PWDN	Output	IR_Camera Power Down Control Signal
4	IR-RST	Output	IR_Camera Reset Signal
5	SCL	Output	SCL Signal
6	SDA	Input/Output	SDA Signal
7	GND	Ground	Ground

8	IR-XCLK	Output	IR_Camera Master Clock
9	GND	Ground	Ground
10	IR-MCP	Input/Output	IR_Camera MIPI Clock Lane Positive
11	IR-MCN	Input/Output	IR_Camera MIPI Clock Lane Negative
12	GND	Ground	Ground
13	IR-D0P	Input/Output	IR_Camera MIPI Data Lane 0 Positive
14	IR-D0N	Input/Output	IR_Camera MIPI Data Lane 0 Negative
15	GND	Ground	Ground
16	IR-D1P	Input/Output	IR_Camera MIPI Data Lane 1 Positive
17	IR-D1N	Input/Output	IR_Camera MIPI Data Lane 1 Negative
18	GND	Ground	Ground
19	DOVDD1V8	Power	1.8V Output
20	FSYC-IN	/	NC
21	LED-GPIO	/	NC
22	IR-DVDD1V2	Power	1.2V Output
23	RGB-DVDD1V2	Power	1.2V Output
24	RGB-PWDN	Output	RGB_Camera Power Down Control Signal
25	RGB-RST	Output	RGB_Camera Reset Signal
26	GND	Ground	Ground
27	RGB-XCLK	Output	RGB_Camera Master Clock
28	GND	Ground	Ground
29	RGB-MCP	Input/Output	RGB_Camera MIPI clock channel positive
30	RGB-MCN	Input/Output	RGB_Camera MIPI clock channel negative
31	GND	Ground	Ground
32	RGB-D0P	Input/Output	RGB_Camera MIPI data channel 0 positive
33	RGB-D0N	Input/Output	RGB_Camera MIPI data channel 0 negative
34	GND	Ground	Ground
35	RGB-D1P	Input/Output	RGB_Camera MIPI data channel 1 positive
36	RGB-D1N	Input/Output	RGB_Camera MIPI data channel 1 negative
37	GND	Ground	Ground
38	5V	Power	5V Output
39	5V	Power	5V Output
40	5V	Power	5V Output

4 Dimensions

4.1 Board Dimensions

PCB Length: 103mm; PCB Width: 64mm; Overall board height approximately 10mm. For more details structural diagrams Please consult our sales representatives.