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SPECIFICATION
FOR

AIY-A005M

Ver1.0

Based on **(ROCKCHIP)RK3288**
ARM® Cortex®-A17 quad-core processor

Customer's Approval:

	SIGNATURE	DATE
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Ⅰ、**Product Overview**

AIY-A005M Android motherboard，Use RK3288 quad-core ARM Cortex-A17 CPU，Maximum main frequency 1.6GHz. Integration ARM Mali-764 GPU， Support hardware decoding， Support 4K 10bits H265/H264 ；1080P VC-1, MPEG-1/2/4, VP8。 Support Android 7.1、Linux System，Configure 2GB DDR3and 8GB EMMC (Support TF card extension)

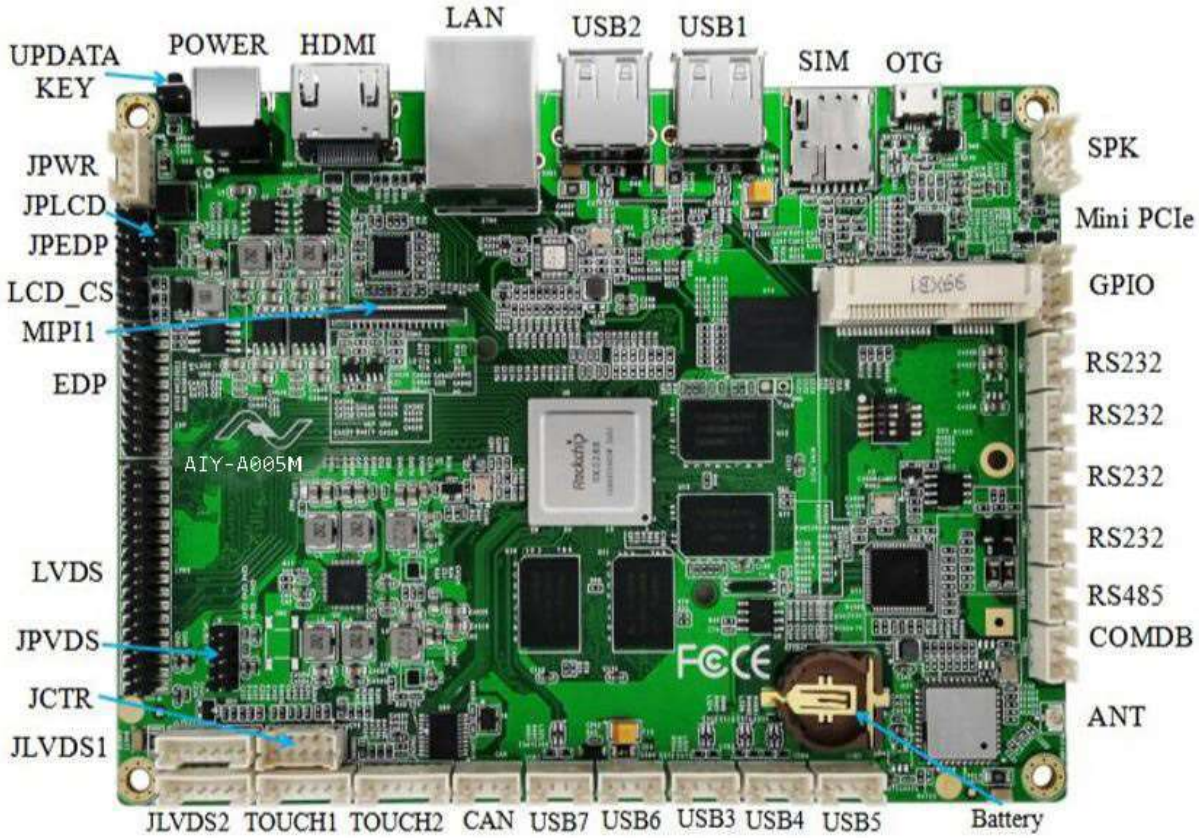
LVDS、MIPI、EDP、HDMI Display output，Support for Asynchronous Dual Display；7*USB Interface、6*GPIO、3*RS232 Serial port、1*RS232/485、2*I2C、1*CAN、1*OTG，To achieve full support USB external expansion devices such as touch screen / fingerprint module / printer / camera / RFID card reader / barcode scanner / coinager / U disk / mobile hard disk, Can meet the needs of different customers； Integrated Gigabit RJ45 network port ,2.4 G/5G WiFi, support 4G modules, can adapt to a variety of network environments.

II、**Hardware parameters**

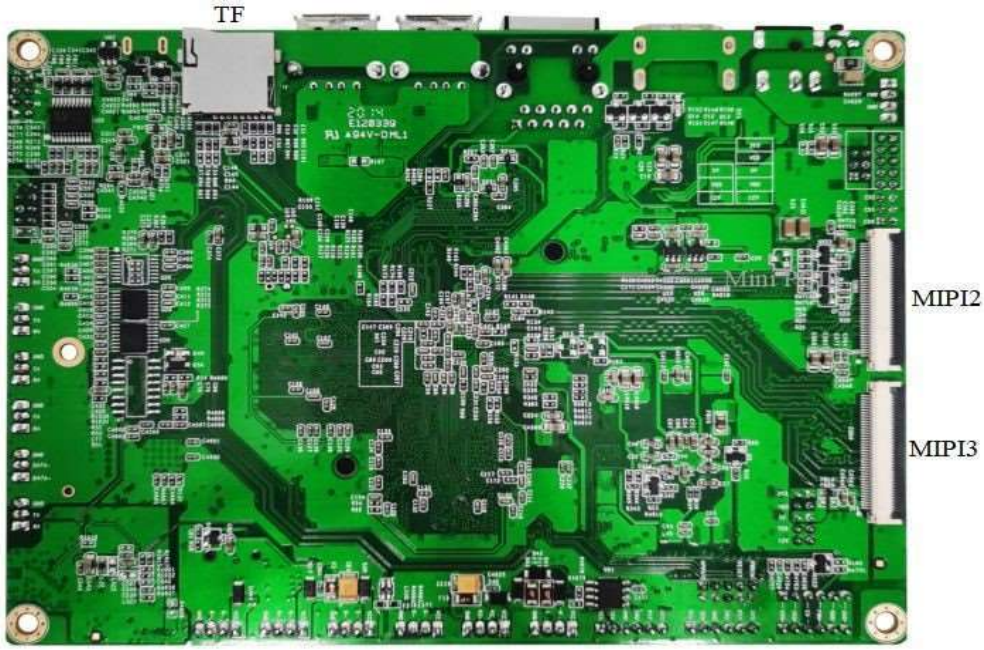
AIY-A005M-00 Specifications		
System		Android 7.1、Linux
CPU		RK3288 ARM quad-core A17， Maximum main frequency 1.6GHz，Integration Mali-T764 GPU
Memory		2G DDR3 + 8G EMMC （16G/32G/64G Optional ）
Display interface	EDP*1	Support 4K@30Hz
	HDMI*1	Support 1080P@120Hz or 4K@60Hz
	MIPI*2	Support 1080@60Hz
	LVDS*1	Support Double 8 bit LVDS
Camera		MIPI
Video Format Support		WMV、AVI、FLV、RM、RMVB、MPRG 、TS、MP4
Image Format Support		BMP、JPEG、PNG、GIF
Communications Interface		Gigabit Ethernet
		Built-in WIFI、BT
		RS232*2
		RS232/RS485*1
		Standard USB interface*2 、 Standard OTG interface*1 、 USB pitch2.0 Socket*5
		CAN*1
		I2C*2
		MiniPCIE 4G Insert slot
		SIM Card(nano) 、TF Card slot
		GPIO*6 （2*5 PIN pitch2.0）
Audio interface		Audio 、MIC、SPK（8Ω，5W）
Power supply		9-24V DC IN
System upgrade		Support for Local USB Upgrade、OTA、OTG
Language		Multilingualism
Working temperature		-20~60℃
Storage temperature		-30~70℃
Dimensions		146*107mm

III、**Interface description**

（1）Interface diagram



Positive



Backside

（2）Pin definition

1) MIPI1（camera）

Definition	PIN		Definition
NC	1	16	MIPI_RX_D3P
AF_28	2	17	MIPI_RX_D3N
DVDD_1V2	3	18	GND
VCC1V8_MIPI	4	19	MIPI_RX_D2P
NC	5	20	MIPI_RX_D2N
GND	6	21	GND
AVDD2V8	7	22	MIPI_RX_D1P
GND	8	23	MIPI_RX_D1N
IIC_SDA_CAM	9	24	GND
IIC_SCL_CAM	10	25	MIPI_RX_CLKP
CAM_RST	11	26	MIPI_RX_CLKN
NC	12	27	GND
GND	13	28	MIPI_RX_D0P
CAM_MCLK	14	29	MIPI_RX_D0N
GND	15	30	GND

2) MIPI2/MIPI3

Definition	PIN		Definition
NC	1	21	MIPI_TX_D3P
VCC3_MIPI	2	22	GND
VCC3_MIPI	3	23	NC
NC	4	24	NC
GND	5	25	GND
NC	6	26	NC
GND	7	27	NC

MIPI_TX_D0N	8	28	NC
MIPI_TX_D0P	9	29	NC
GND	10	30	GND
MIPI_TX_D1N	11	31	NC
MIPI_TX_D1P	12	32	NC
GND	13	33	NC
MIPI_TX_CLKN	14	34	NC
MIPI_TX_CLKP	15	35	NC
GND	16	36	NC
MIPI_TX_D2N	17	37	NC
MIPI_TX_D2P	18	38	NC
GND	19	39	NC
MIPI_TX_D3N	20	40	NC

3) LVDS

Definition	PIN		Definition
VDD	1	2	VDD
VDD	3	4	GND
GND	5	6	GND
LVDS_D0N	7	8	LVDS_D0P
LVDS_D1N	9	10	LVDS_D1P
LVDS_D2N	11	12	LVDS_D2P
GND	13	14	GND
LVDS_CLK0N	15	16	LVDS_CLK0P
LVDS_D3N	17	18	LVDS_D3P
LVDS_D5N	19	20	LVDS_D5P
LVDS_D6N	21	22	LVDS_D6P

LVDS_D7N	23	24	LVDS_D7P
GND	25	26	GND
LVDS_CLK1N	27	28	LVDS_CLK1P
LVDS_D8N	29	30	LVDS_D8P
LVDS_D4N	31	32	LVDS_D4P
LVDS_D9N	33	34	LVDS_D9P

4) JPLVDS（LVDS Power supply）

Definition	PIN		Definition
VCC3	1	2	VCC3
LVDS_VDD	3	4	LVDS_VDD
VCC5	5	6	VCC5
LVDS_VDD	7	8	LVDS_VDD
12VDC_OUT	9	10	12VDC_OUT

5) JLVDS1/JLVDS2（LVDS Backlight Control）

Definition	PIN		Definition
LVDS_PAN	1	4	LCD_PWM
LVDS_PAN	2	5	GND
LCD_BL_EN1	3	6	GND

6) JPLCD（LVDS Backlight Voltage Option）

Definition	PIN		Definition
12VDC_OUT	1	2	12VDC_OUT
LVDS_PAN	3	4	LVDS_PAN
VCC5V	5	6	VCC5V

7) EDP

Definition	PIN		Definition
EDP_VDD	1	2	EDP_VDD

GND	3	4	GND
TX0N	5	6	TX0P
TX1N	7	8	TX1P
TX2N	9	10	TX2P
TX3N	11	12	TX3P
GND	13	14	GND
AUXN	15	16	AUXP
GND	17	18	GND
VDD	19	20	HPD

8) JPEDP（EDP Backlit Power Supply）

Definition	PIN		Definition
VCC3V3	1	2	VCC3V3
EDP_VDD	3	4	EDP_VDD
VCC5V	5	6	VCC5V
EDP_VDD	7	8	EDP_VDD
12VDC_OUT	9	10	12VDC_OUT

9) LCDCS（EDP Resolution selection）

Definition	PIN		Definition
LCD_CS0	1	4	GND
LCD_CS1	2	5	GND
LCD_CS2	3	6	GND

10) TOUCH1

Definition	PIN		Definition
IIC_SCL_HDMI	1	4	TP1_IRQ
IIC_SDA_HDMI	2	5	TP1_RST
GND	3	6	VCC

11) TOUCH2

Definition	PIN		Definition
IIC_SCL	1	4	TP1_IRQ
IIC_SDA	2	5	TP1_RST
GND	3	6	VCC

12) MINI PCIE（4G）

Definition	PIN		Definition
WAKE	1	28	1.5V
+3.3V	2	30	SMB_CLK
+1.5V	6	32	SMB_DATA
CLKREQ#	7	36	USB_D+
UIM_PWR	8	38	USB_D+
UIM_DATA	10	39	3.3V
REFCLK-	11	41	3.3V
UIM_CLK	12	42	LED_WWAN1#
REFCLK+	13	45	TP8
UIM_RESET	14	47	TP7
UIM_VPP	16	48	TP6
W_DISABLE#	20	49	TP5
PERST#	22	51	TP4
24	3.3V	52	3.3V
NC	3, 5, 11, 13, 16, 17, 19, 23, 25, 31, 33, 44,46, 53, 54, 55, 56	4, 9, 15,18, 21, 26, 27, 29, 34, 35, 37, 40,43, 50, 57,59	GND

13) SIM

Definition	PIN		Definition
NC	1	7	CLK
GND	2	8	GND
VCC	3	9	GND
VPP	4	10	GND
RST	5	11	GND

I/O	6		

14) TF Card

Definition	PIN		Definition
DATA2	1	9	SD
CD/DATA3	2	10	GND
CMD	3	11	GND
VDD	4	12	GND
CLK	5	13	GND
VSS	6	14	NC
DATA0	7	15	NC
DATA1	8		

15) LAN

Definition	PIN		Definition
VCC	1	8	MDI2+
MDI0+	2	9	MDI3+
MDI1-	3	10	GND
MDI2-	4	11	LEDY
MDI3-	5	12	LEDR
MDI0+	6	13	LANGND1
MDI1+	7	14	LANGND2

16) OTG

Definition	PIN		Definition
VCC 5V	1	4	ID
D-	2	5	GND
D+	3		

17) USB1/USB2

Definition	PIN		Definition

VCC 5V	1	3	D+
D-	2	4	GND

18) USB3/USB4/USB5/USB6/USB7

Definition	PIN		Definition
VCC 5V	1	3	D+
D-	2	4	GND

19) SPK

Definition	PIN		Definition
OUTPL	1	2	MIC_IN1L
OUTNL	3	4	MIC_IN1R
OUTNR	5	6	MIC_IN2L
OUTPR	7	8	GND_signal

20) GPIO

Definition	PIN		Definition
VCC	1	2	VCC
GPIO5_C0	3	4	GPIO8_A1
GPIO5_C1	5	6	GPIO8_A0
GPIO5_C2	7	8	GPIO5_C3
GND	9	10	GND

21) RS232

Definition	PIN		Definition
RX	1	3	GND
TX	2		

22) RS485

Definition	PIN		Definition
DATA+	1	3	GND
DATA-	2		

23) CAN

Definition	PIN		Definition
VCC	1	3	CAN_L
CAN_H	2	4	GND

24) JCTR

Definition	PIN		Definition
RECOVER（Connect GND to burn mode）	1	2	GND
VCC_18	3	4	GND
PMIC_PWRON	5	6	3.3VSB
RESET	7	8	GND
JFP_PWRSW	9	10	GND

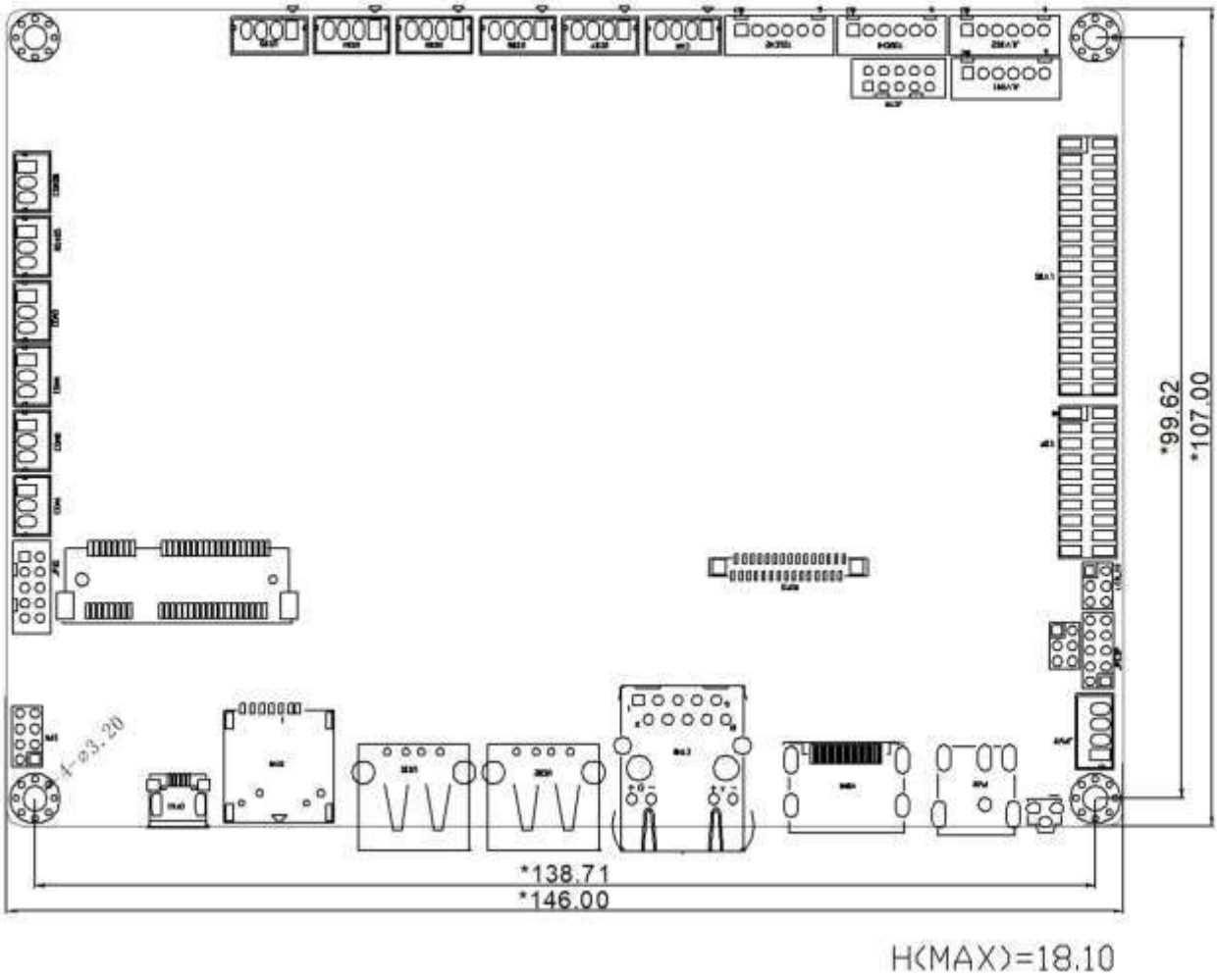
25) JPWR

Definition	PIN		Definition
9-24V DC IN	1	3	GND
9-24V DC IN	2	4	GND

26) PWR

Definition	PIN		Definition
9-24V DC IN	1	4	GND
GND	2	5	GND
GND	3		

Ⅳ、Mechanical structures



Ⅴ、Points for attention

During assembly and use, note the following (and not limited to) problem points.

1) The short circuit problem of bare board and peripheral.

2) In the process of installation and fixing, avoid the deformation problem caused by the fixing of the bare plate.

3) Pay attention to the direction of the first foot when connecting the screen.

4) When the peripheral (UART. etc) is installed, The IO level of the peripheral should match with the motherboard

5) Make sure RX/TX is properly connected when installing serial ports

6) Verify that the input voltage is correct before power is connected.