



ORIENT DISPLAY
MAKE THINGS POSSIBLE

**SPECIFICATION
FOR
IoT Module**

**MODULE NO: AMV-MX8MA1
REVISION NO: 0**

Customer's Approval:

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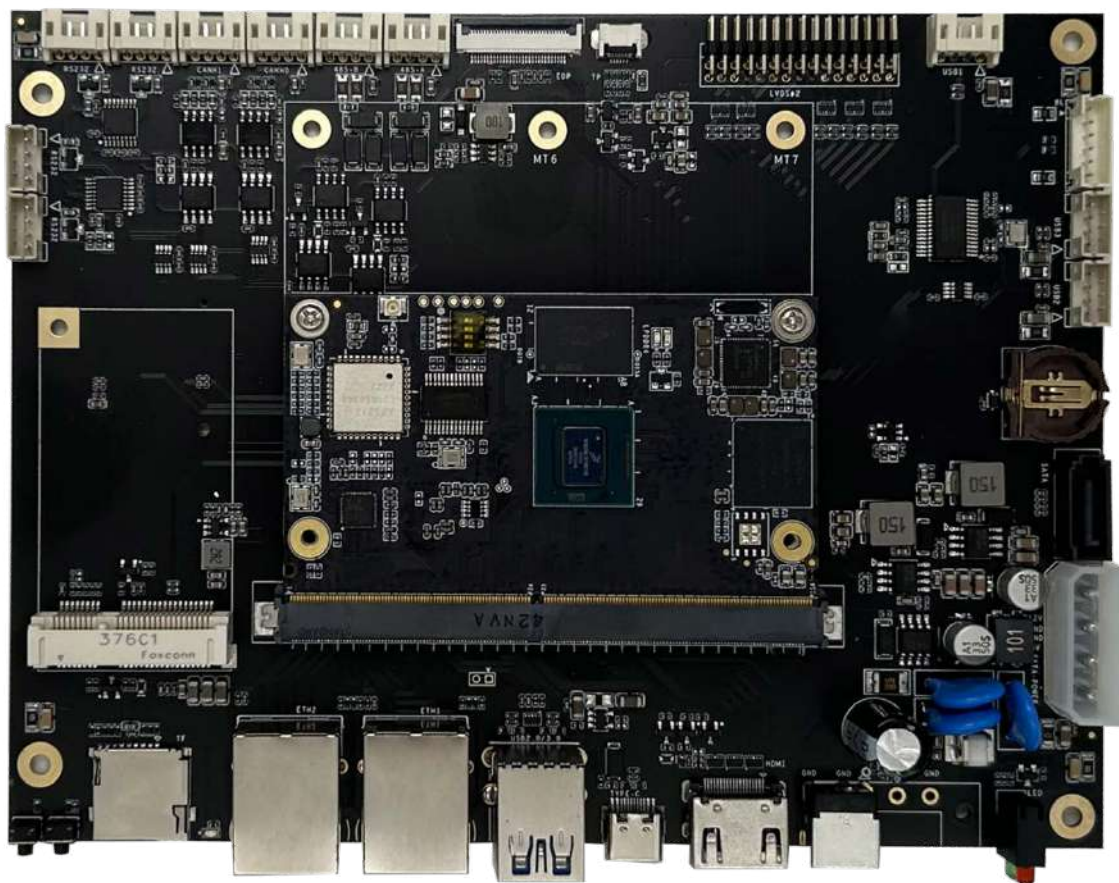
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APPROVED BY		

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1. MODULE DESCRIPTION

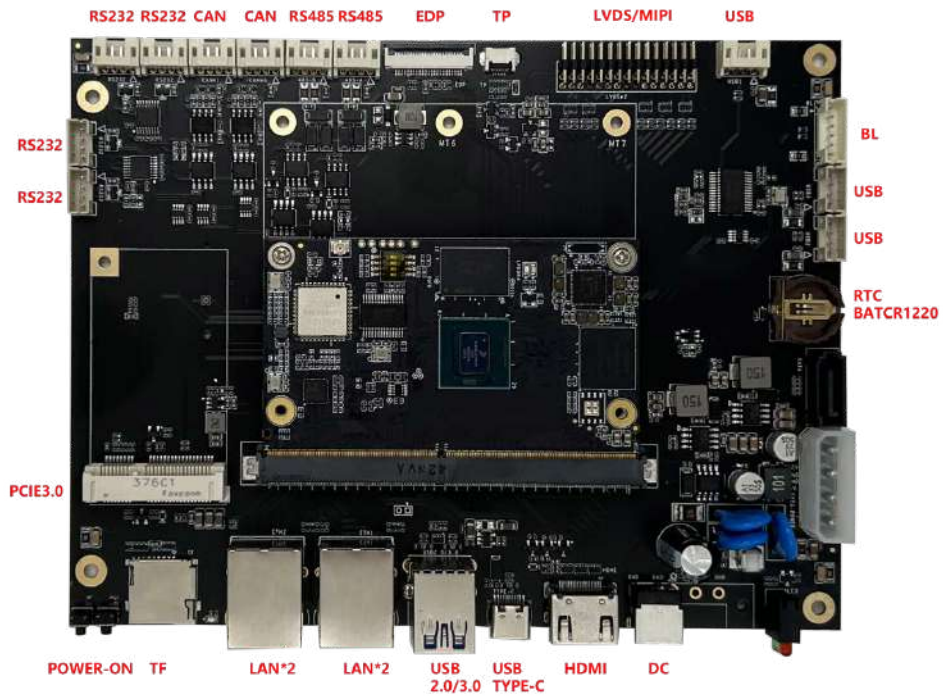
AMV-MX8MA1 motherboard uses the i.MX 8M Plus chip, The i.MX 8M Plus family focuses on neural processing unit (NPU) and vision system, advance multimedia, and industrial automation with high reliability. The i.MX 8M Plus is a powerful quad Arm® Cortex®-A53 processor with speed up to 1.8 GHz integrated with a NPU of 2.3 TOPS that greatly accelerate machine learning inference. The vision engine is composed of two camera inputs and a HDR-capable Image Signal Processor (ISP) capable of 375 MPixels/s. The advanced multimedia capabilities include 1080p60 video encode and decode H.265 and H.264. A 3D and 2D graphic acceleration supporting 1 GPixel/s, OpenVG 1.1, Open GL ES3.1, Vulkan, and Open CL 1.2 FP. Multiple audio and microphone interfaces for Immersive Audio and Voice systems. For industrial applications, real time control is enabled by an integrated 800 MHz Arm® Cortex®-M7. Robust control networks are possible via CAN-FD interfaces. And a dual Gb Ethernet, one supporting Time Sensitive Networking (TSN), drive gateway applications with low latency. High industrial system reliability for safety is leveraged by DRAM Inline ECC as well as ECC support on internal software-accessible SRAMs.



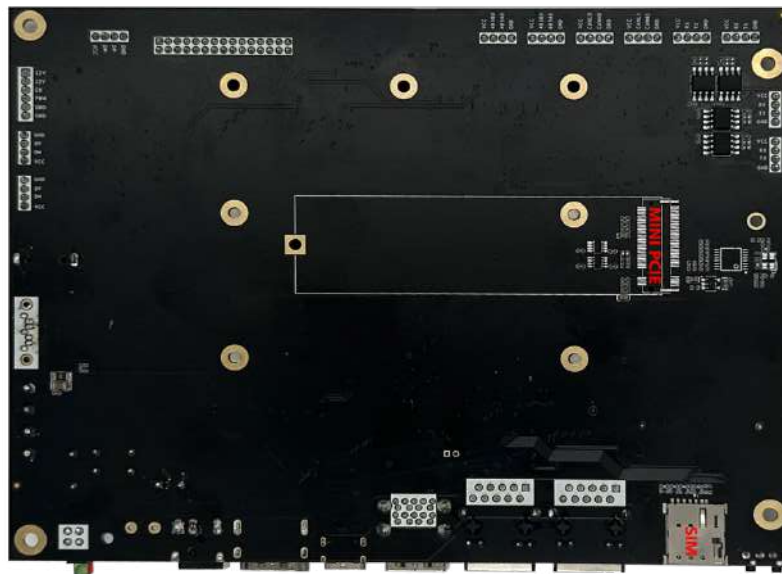
2.GENERAL INFORMATION

Product Introduce	
System	Linux/Android
CPU	Quad Arm® Cortex®-A53 processor with speed up to 1.8 GHz &Single-core general purpose CORTEX-M4 up to 400MHz
Store	2G LPDDR4X (Default) + 16G EMMC (Default) support TF card
Display interface	EDP*1
	HDMI*1
	LVDSI*1(MIPI compatible)
Communication interface	LAN*2、USB2.0/3.0*、USB TYPE-C*1、USB*3、RS485*2、 CAN*2、RS232*4、PCIE3.0*1、4G(Mini PCIE)*1、SIM card*1
Module Power Supply	9-24V DC
Module Power Consumption	TBD
System upgrade	Support local USB upgrade
OSD Language	Multilingualism
Module Size	170.00*120.55mm
Weight	155.7g

3.INTERFACE DESCRIPTION



Positive



Backside

USB*3:

Pin No.	Symbol	Pin No.	Symbol
1	5V	3	D+
2	D-	4	GND

BL:

Pin No.	Symbol	Pin No.	Symbol
1	12V	4	PWM
2	12V	5	GND
3	EN	6	GND

LVDS/MIPI:

Pin No.	Symbol	Pin No.	Symbol
1	MIPI_TX1/LVDS1-D3P	16	MIPI_TX0/LVDS-DCKN
2	MIPI_TX1/LVDS1-D3N	17	GND
3	MIPI_TX1/LVDS1-DCKP	18	GND
4	MIPI_TX1/LVDS1-DCKN	19	MIPI_TX0/LVDS-D2P
5	GND	20	MIPI_TX0/LVDS-D2N
6	GND	21	MIPI_TX0/LVDS-D1P
7	MIPI_TX1/LVDS1-D2P	22	MIPI_TX0/LVDS-D1N
8	MIPI_TX1/LVDS1-D2N	23	MIPI_TX0/LVDS-D0P
9	MIPI_TX1/LVDS1-D1P	24	MIPI_TX0/LVDS-D0N
10	MIPI_TX1/LVDS1-D1N	25	GND
11	MIPI_TX1/LVDS1-D0P	26	GND
12	MIPI_TX1/LVDS1-D0N	27	GND
13	MIPI_TX0/LVDS-D3P	28	VCC_LVDS(5V)
14	MIPI_TX0/LVDS-D3N	29	VCC_LVDS(5V)
15	MIPI_TX0/LVDS-DCKP	30	VCC_LVDS(5V)

TP:

Pin No.	Symbol	Pin No.	Symbol
1	GND	4	TP_INT
2	TP_SCL	5	TP_RST
3	TP_SDA	6	VCC_3.3V

EDP:

Pin No.	Symbol	Pin No.	Symbol
1	/	16	GND
2	GND	17	HPD
3	EDP_D1P	18	BL_GND
4	EDP_D1N	19	BL_GND
5	GND	20	BL_GND
6	EDP_D0P	21	BL_GND
7	EDP_D0N	22	BL_EN
8	GND	23	BL_PWM
9	EDP_CLKP/AUXP	24	/
10	EDP_CLKN/AUXN	25	/
11	GND	26	BL_VCC
12	LCD_VCC_3.3V	27	BL_VCC
13	LCD_VCC_3.3V	28	BL_VCC
14	/	29	BL_VCC
15	GND	30	/

RS485*2:

Pin No.	Symbol	Pin No.	Symbol
1	5V	3	RS485_A
2	RS485_B	4	GND

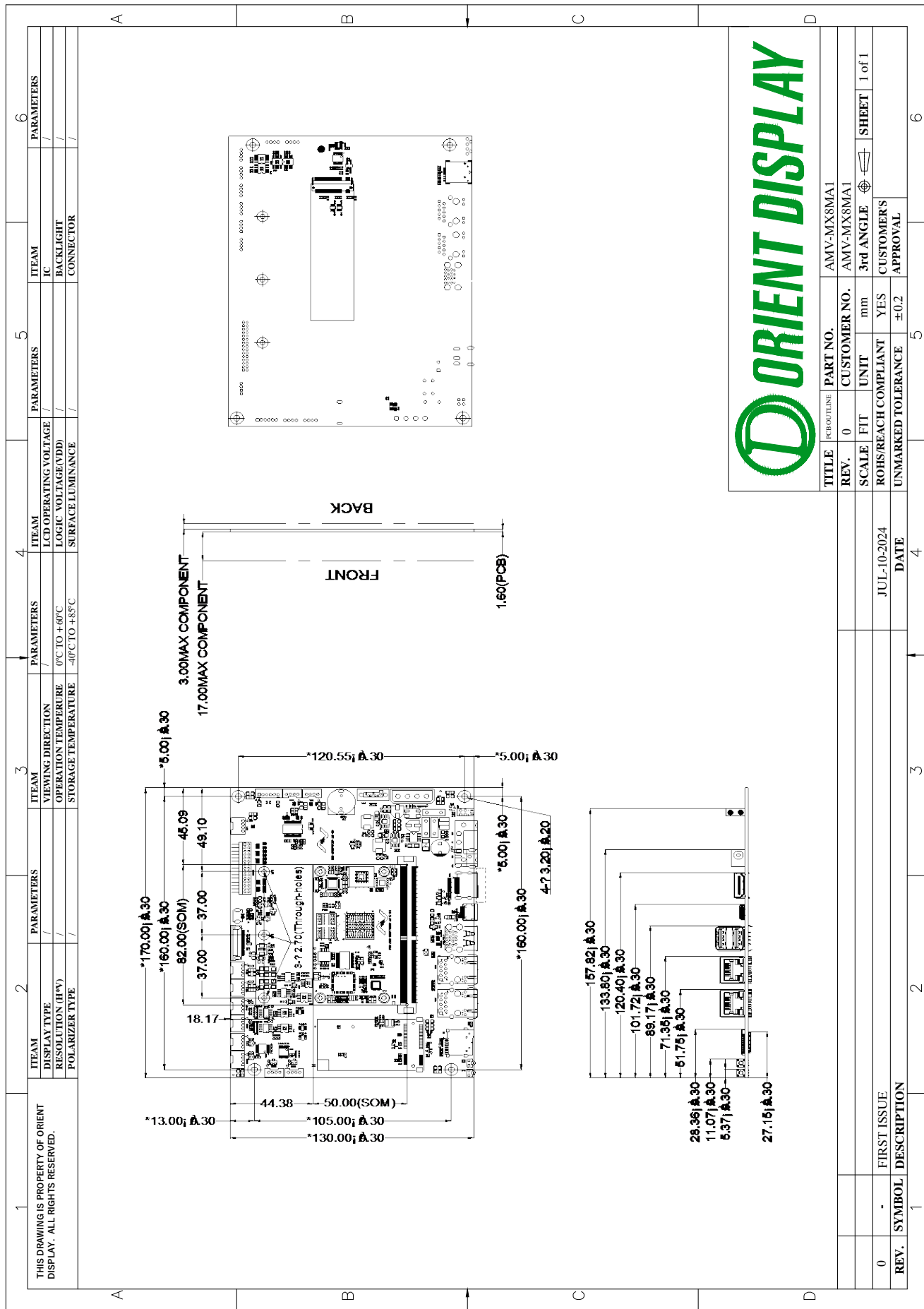
CAN*2:

Pin No.	Symbol	Pin No.	Symbol
1	3.3V	3	CANH
2	CANL	4	GND

RS232*4:

Pin No.	Symbol	Pin No.	Symbol
1	5V	3	RS232_TX
2	RS232_RX	4	GND

4. MOUDLE EXTERNAL DIMENSIONS



5.ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min.	Max.	Unit
Power Supply Input Voltage(Module)	VDD	9	24	V
Operation Temperature	Top	0	+60	°C
Storage Temperature	Tst	-40	+85	°C
Humidity	RH	-	90%	%RH

6.RELIABILITY TEST CONDITIONS

No.	Test Item	Test condition	Inspection after test									
1	High Temperature Storage Test	+85°C/72 hours	Inspection after 2~4 hours storage at room temperature, the sample shall be free from defects : 1.Current changing value before test and after test is 50% larger; 2. Function defect : Non-display, abnormal-display 3.Visual defect : Glass crack.									
2	Low Temperature Storage Test	-40°C/72 hours										
3	High Temperature Operating Test	+60°C/48 hours										
4	Low Temperature Operating Test	0°C/48 hours										
5	Temperature Cycle Storage Test	-20°C ~ 25°C ~ +60°C/10 cycles (30 min.) (10 min.) (30 min.)										
6	High Temperature High Humidity Test	+50°C*90% RH/48 hours										
7	Vibration Test	Frequency : 250 r/min Amplitude : 1 inch Time: 45 min										
8	Drop Test	Drop direction: 1 corner/3 edges/6 sides ,10 times										
		<table border="1"> <thead> <tr> <th>Packing weight(kg)</th> <th>Drop height(cm)</th> </tr> </thead> <tbody> <tr> <td><11</td> <td>80±1.6</td> </tr> <tr> <td>11≤G<21</td> <td>60±1.2</td> </tr> <tr> <td>21≤G<31</td> <td>50±1.0</td> </tr> <tr> <td>31≤G<40</td> <td>40±0.8</td> </tr> </tbody> </table>		Packing weight(kg)	Drop height(cm)	<11	80±1.6	11≤G<21	60±1.2	21≤G<31	50±1.0	31≤G<40
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		<11	80±1.6									
		11≤G<21	60±1.2									
21≤G<31	50±1.0											
31≤G<40	40±0.8											
9	ESD Test	Air discharge: ±8 KV, 10 times Contact discharge: ±6 KV, 10 times										

Remark :

- 1.The tested samples should be applied to only one test item.
- 2.Sample size for each test item is 3~5 pcs.
- 3.For High temperature high humidity test, Pure water(Resistance>10MΩ) should be used.
- 4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.
- 5.Failure judgement criterion: Basic specification, Electrical characteristic, Mechanical characteristic, Optical characteristic.

7.REMARK:

- Avoid any inappropriate external force or strong vibration in the assembly process.
- High temperature, high humidity or rapid temperature changes may affect performance. Store and use the product in an appropriate environment.
- Avoid dust, oil mist, acid, alkali and chloride damage to the product.
- Wear wrist straps, antistatic gloves and clothes during assembly to prevent electrostatic discharge (ESD).
- When assembling, use ionic fan to prevent electrostatic discharge (ESD).
- Follow the correct time sequence when operating.
- Turn off the power when connecting or disconnecting the circuit.