

# AR8MX- Series

Quick Start Guide

Ver 0.1

This Quick Start Guide is for BCM AR8MXMM ARM motherboards based on Freescale i.MX8 Cortex A53 platform.



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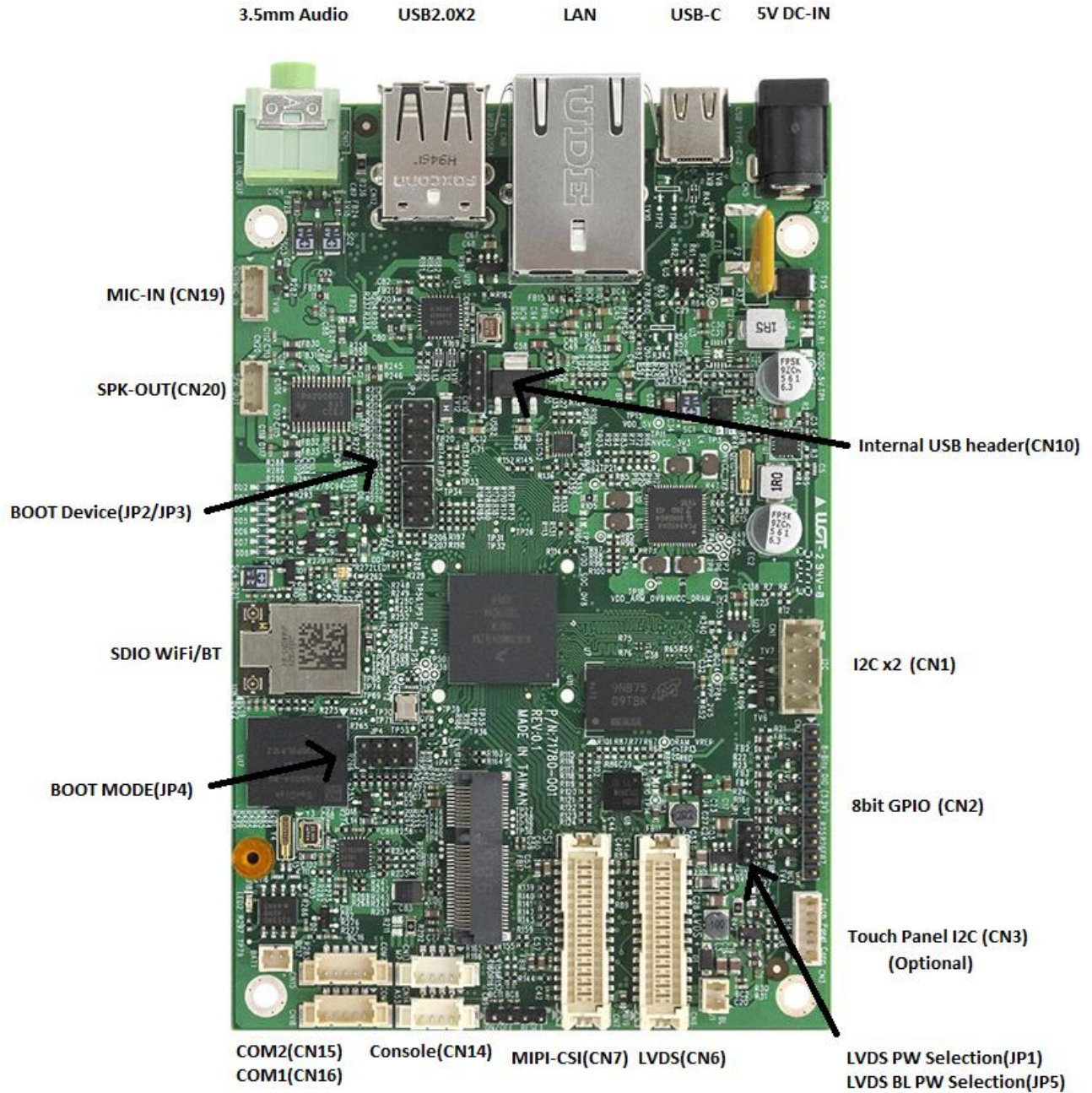
## 1. Overview

### i.MX8M Mini Quad Core SoC Ultra Compact, Ultra Low Power ARM Motherboard

- NXP i.MX8M **Mini** 4x Cortex®-A53 cores and 1x Cortex-M4 processor
- Optional AR8MXMN - i.MX8M Nano Processor (4x Cortex®-A53 cores and 1x Cortex-M7 core)
- 1GB Onboard DDR4 Memory (expandable up to 2GB Max)
- Onboard 8GB eMMC Flash, 1 x MicroSD Card Slot
- GC NanoUltra 3D (1 shader) + GC320 2D, OpenGL ES2.0
- 1 x LVDS and 1 x MIPI-CSI
- Wolfson® WM8960 Ultra Low Power Audio Codec
- TI® TPA2008D2 3-W Stereo Class-D Audio Amplifier
- 1 x Micrel® KSZ9031 Gigabit Ethernet
- Optional AzureWave® AW-CM389NF 802.11 a/b/g/n/ac + Bluetooth 4.0 Through SDIO
- Onboard I/O: MIPI-CSI, LVDS, 2 x RS-232 COM, 1 x 4-pin USB, 2 x I2C, I2C Touch Panel Connector, 1 x 8-bit GPIO, 1 x Front Panel, Mic-in, Line-out
- Back I/O Panel: RJ-45 LAN, USB Type C OTG, Line-out, DC-in, 2 x USB
- 1 x M.2
- 5V DC Input
- Compact size (4.72" x 3.07") (palm size)

## 2. Mainboard illustration: Locations of IO ports & Jumper settings definition


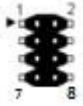
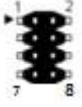
Board Top View :



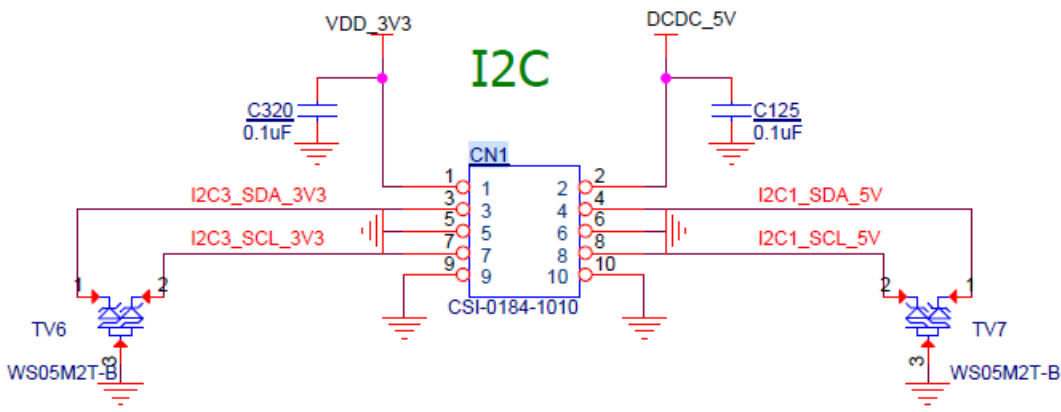


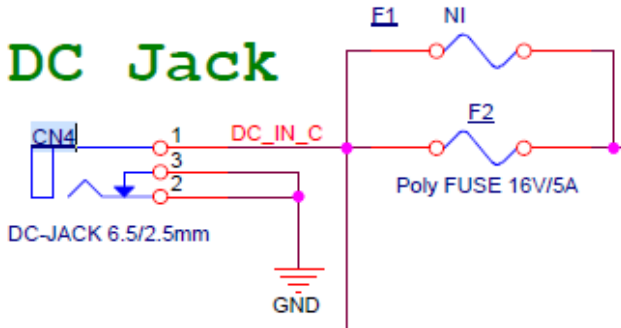
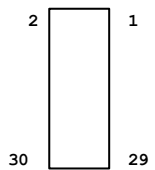
Board Side View :

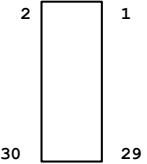



### 3. Jumper Settings and Pin Definition

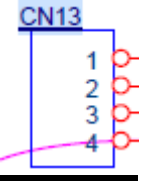
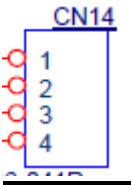
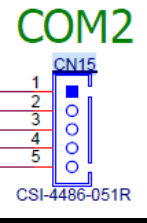
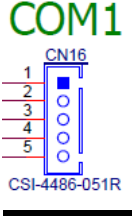

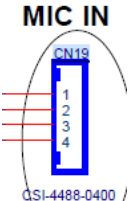
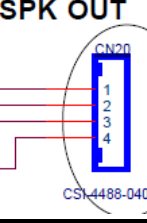
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3	GND	13	CSI_DN3	23	CSI_I2C_SCL																																																																	
4	GND	14	CSI_DN2	24	CSI_DP0																																																																	
5	CSI_PWDN	15	GND	25	CSI_I2C_SDA																																																																	
6	CSI_CLKP	16	GND	26	CSI_DN0																																																																	
7	CSI_PWR3	17	CSI_nRST	27	GND																																																																	
8	CSI_CLKN	18	CSI_DP1	28	GND																																																																	
9	GND	19	CSI_MCLK	29	CSI_PWR2																																																																	
10	GND	20	CSI_Dn1	30	CSI_PWR2																																																																	
12.	<b>CN9 : Front Panel</b>	13.	<b>CN8 : LAN</b>																																																																			
14.	<b>CN12 : USB(TYPE A)</b>	15.	<b>CN10 : USB(Internal)</b>																																																																			
	<p>Connector type : USAF-8D-HNR0SPJ</p> <table border="1" data-bbox="425 1579 771 1822"> <thead> <tr> <th>Pin</th> <th>Definition</th> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr><td>1</td><td>USBV4</td><td>5</td><td>USBV3</td></tr> <tr><td>2</td><td>USB4P-</td><td>6</td><td>USB3P-</td></tr> <tr><td>3</td><td>USB4P+</td><td>7</td><td>USB3P+</td></tr> <tr><td>4</td><td>GND</td><td>8</td><td>GND</td></tr> </tbody> </table>	Pin	Definition	Pin	Definition	1	USBV4	5	USBV3	2	USB4P-	6	USB3P-	3	USB4P+	7	USB3P+	4	GND	8	GND		 <p>Connector Type: Header 1x4 2.0</p> <table border="1" data-bbox="1091 1579 1266 1822"> <thead> <tr> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr><td>1</td><td>USBV2</td></tr> <tr><td>2</td><td>USB2P-</td></tr> <tr><td>3</td><td>USB2P+</td></tr> <tr><td>4</td><td>GND</td></tr> </tbody> </table>	Pin	Definition	1	USBV2	2	USB2P-	3	USB2P+	4	GND	<p>Connector type : RTA-164AAK1A</p> <table border="1" data-bbox="1091 982 1453 1423"> <thead> <tr> <th>Pin</th> <th>Definition</th> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr><td>1</td><td>GE_MDI0+</td><td>9</td><td>GE_MDI3+</td></tr> <tr><td>2</td><td>GE_MDI0-</td><td>10</td><td>GE_MDI3-</td></tr> <tr><td>3</td><td>GE_MDI1+</td><td>11</td><td>LED2</td></tr> <tr><td>4</td><td>GE_MDI1-</td><td>12</td><td>D3V3</td></tr> <tr><td>5</td><td>GND</td><td>13</td><td>D3V3</td></tr> <tr><td>6</td><td>GND</td><td>14</td><td>LED1</td></tr> <tr><td>7</td><td>GE_MDI2+</td><td>15</td><td>GND</td></tr> <tr><td>8</td><td>GE_MDI2-</td><td>16</td><td>GND</td></tr> </tbody> </table>	Pin	Definition	Pin	Definition	1	GE_MDI0+	9	GE_MDI3+	2	GE_MDI0-	10	GE_MDI3-	3	GE_MDI1+	11	LED2	4	GE_MDI1-	12	D3V3	5	GND	13	D3V3	6	GND	14	LED1	7	GE_MDI2+	15	GND	8	GE_MDI2-	16	GND
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16.	<b>CN13 : Console(M7)</b>	17.	<b>CN14 : Console(A53)</b>																								
	<p>Connector type : Header 1X4 1.25</p> <table border="1" data-bbox="425 289 620 535"> <thead> <tr> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>D3V3</td> </tr> <tr> <td>2</td> <td>GND</td> </tr> <tr> <td>3</td> <td>UART4_TXD</td> </tr> <tr> <td>4</td> <td>UART4_RXD</td> </tr> </tbody> </table>	Pin	Definition	1	D3V3	2	GND	3	UART4_TXD	4	UART4_RXD		<p>Connector type : Header 1X4 1.25</p> <table border="1" data-bbox="1094 289 1289 535"> <thead> <tr> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>D3V3</td> </tr> <tr> <td>2</td> <td>GND</td> </tr> <tr> <td>3</td> <td>UART2_TXD</td> </tr> <tr> <td>4</td> <td>UART2_RXD</td> </tr> </tbody> </table>	Pin	Definition	1	D3V3	2	GND	3	UART2_TXD	4	UART2_RXD				
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18.	<b>CN15 : COM2</b>	19.	<b>CN16 : COM1</b>																								
	<p>Connector Type: Header 1X5 1.25</p> <table border="1" data-bbox="425 695 609 989"> <thead> <tr> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>UR3_TXD</td> </tr> <tr> <td>2</td> <td>UR3_RXD</td> </tr> <tr> <td>3</td> <td>UR3_RTSD</td> </tr> <tr> <td>4</td> <td>UR3_CTSB</td> </tr> <tr> <td>5</td> <td>GND</td> </tr> </tbody> </table>	Pin	Definition	1	UR3_TXD	2	UR3_RXD	3	UR3_RTSD	4	UR3_CTSB	5	GND		<p>Connector type : Header 1X5 1.25</p> <table border="1" data-bbox="1094 695 1278 989"> <thead> <tr> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>UR1_TXD</td> </tr> <tr> <td>2</td> <td>UR1_RXD</td> </tr> <tr> <td>3</td> <td>UR1_RTSD</td> </tr> <tr> <td>4</td> <td>UR1_CTSB</td> </tr> <tr> <td>5</td> <td>GND</td> </tr> </tbody> </table>	Pin	Definition	1	UR1_TXD	2	UR1_RXD	3	UR1_RTSD	4	UR1_CTSB	5	GND
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20.	<b>CN17 : HP JACK</b>	21.	<b>CN19 : MIC IN</b>																								
	<p>Connector type : 3.5mm Phone Jack Green</p> <table border="1" data-bbox="425 1129 600 1423"> <thead> <tr> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>AD_AGND</td> </tr> <tr> <td>2</td> <td>LOUT_R</td> </tr> <tr> <td>3</td> <td>SPK-DET</td> </tr> <tr> <td>4</td> <td>AD_AGND</td> </tr> <tr> <td>5</td> <td>LOUT_L</td> </tr> </tbody> </table>	Pin	Definition	1	AD_AGND	2	LOUT_R	3	SPK-DET	4	AD_AGND	5	LOUT_L		<p>Connector type : Header 1X4 1.25</p> <table border="1" data-bbox="1094 1129 1278 1375"> <thead> <tr> <th>Pin</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>AD_AGND</td> </tr> <tr> <td>2</td> <td>MICBIAS_J</td> </tr> <tr> <td>3</td> <td>MIC_J</td> </tr> <tr> <td>4</td> <td>AD_AGND</td> </tr> </tbody> </table>	Pin	Definition	1	AD_AGND	2	MICBIAS_J	3	MIC_J	4	AD_AGND		
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22.	<b>CN20 : SPK OUT</b>		<b>CN11 : M.2 (NGFF)</b>																								
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Pin	Definition																										
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