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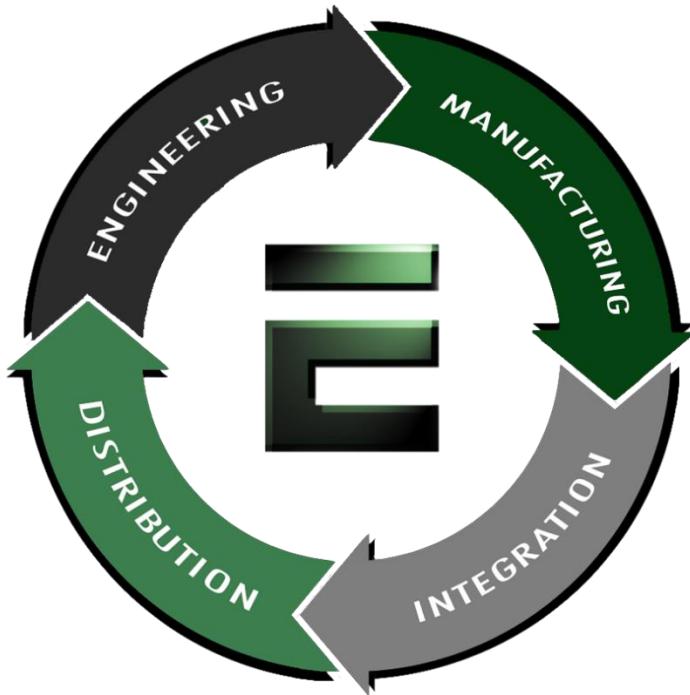
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IEI Integration Corp.

MODEL:

WAFER-IMX8MP

3.5" SBC with NXP i.MX 8M Plus Processor, 4GB LPDDR4, 16GB eMMC Flash, Dual Display via HDMI & MIPI DSI, MIPI CSI, GPIO, Dual GbE, USB Type-C, RS-232/422/485, Android 12 / Yocto 3.2 / Ubuntu 22.04, 0°C ~70°C and RoHS

User Manual

Rev. 1.00 - September 8, 2023

RoHS Lead Free

Revision

Date	Version	Changes
September 8, 2023	1.00	Initial release

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Manual Conventions

WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.

CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.

NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

Table of Contents

List of Figures

List of Tables

Chapter

1

Introduction

1.1 Introduction
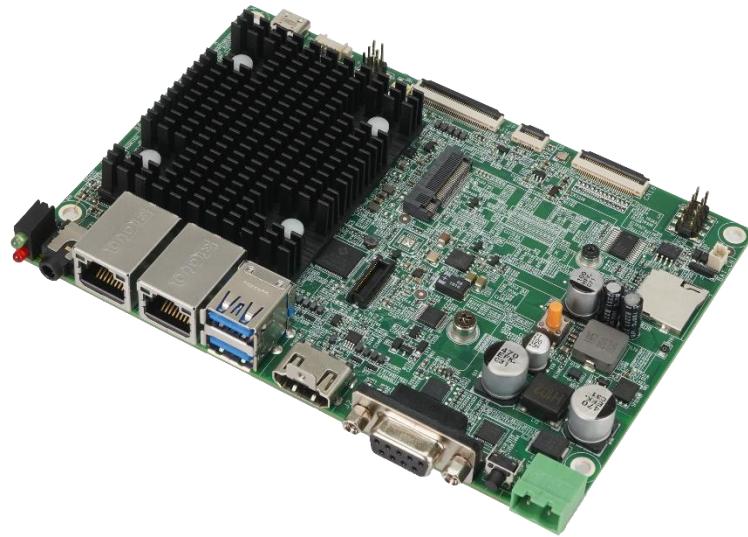
Figure 1-1: WAFER-IMX8MP

The WAFER-IMX8MP series is a 3.5" form factor single bard computer. It has an on-board NXP i.MX 8M Plus which is an Arm® Cortex®-A53 quad-core processor with a Neural Processing Unit (NPU) operating at up to 2.3 TOPS. It is also pre-installed with 4 GB 3200 MHz LPDDR4 memory, and 16 GB eMMC NAND flash.

The WAFER-IMX8MP series includes one HDMI connector and a MIPI DSI connector for dual independent display. 4-lane MIPI CSI interface is equipped for camera connection.

Expansion and I/O include one M.2 B-key slot supporting 4G LTE modules, one slot for optional Wi-Fi/Bluetooth module, two USB 5Gb/s connectors, one USB Type-C connector and one microSD slot for additional storage requirement. Serial device connectivity is provided by one internal RS-232/485 connector and one external RS-232/422/485 connector. Two RJ-45 2.5GbE connectors provide the system with smooth connections to an external LAN.

1.2 Model Variations

The model variations of the WAFER-IMX8MP series are listed below.

Model No.	Processor	OS
WAFER-IMX8MP-A/BD	NXP i.MX 8M Plus	Android 12
WAFER-IMX8MP-Y/BD	NXP i.MX 8M Plus	Yocto 3.2
WAFER-IMX8MP-U/BD	NXP i.MX 8M Plus	Ubuntu 22.04

Table 1-1: WAFER-IMX8MP Model Variations

1.3 Features

Some of the WAFER-IMX8MP motherboard features are listed below:

- 3.5" SBC with NXP i.MX 8M Plus quad processor on-board SoC
- 4GB LPDDR4 memory (up to 8GB)
- 16GB eMMC NAND flash (up to 128GB)
- Dual displays with HDMI, MIPI DSI and camera MIPI CSI input
- Rich I/O: GbE RJ45, USB 5Gb/s Type-A, full RS-232/422/485, microSD slot
- M.2 B key slot (optional for 3G/LTE/5G module)
- Optional Wi-Fi5 / Wi-Fi 6 / Bluetooth 5.0
- Supported OS: Android 12 / Yocto 3.2 (Linux Kernel 5.10) / Ubuntu 22.04

1.4 Connectors

The connectors on the WAFER-IMX8MP are shown in the figure below.
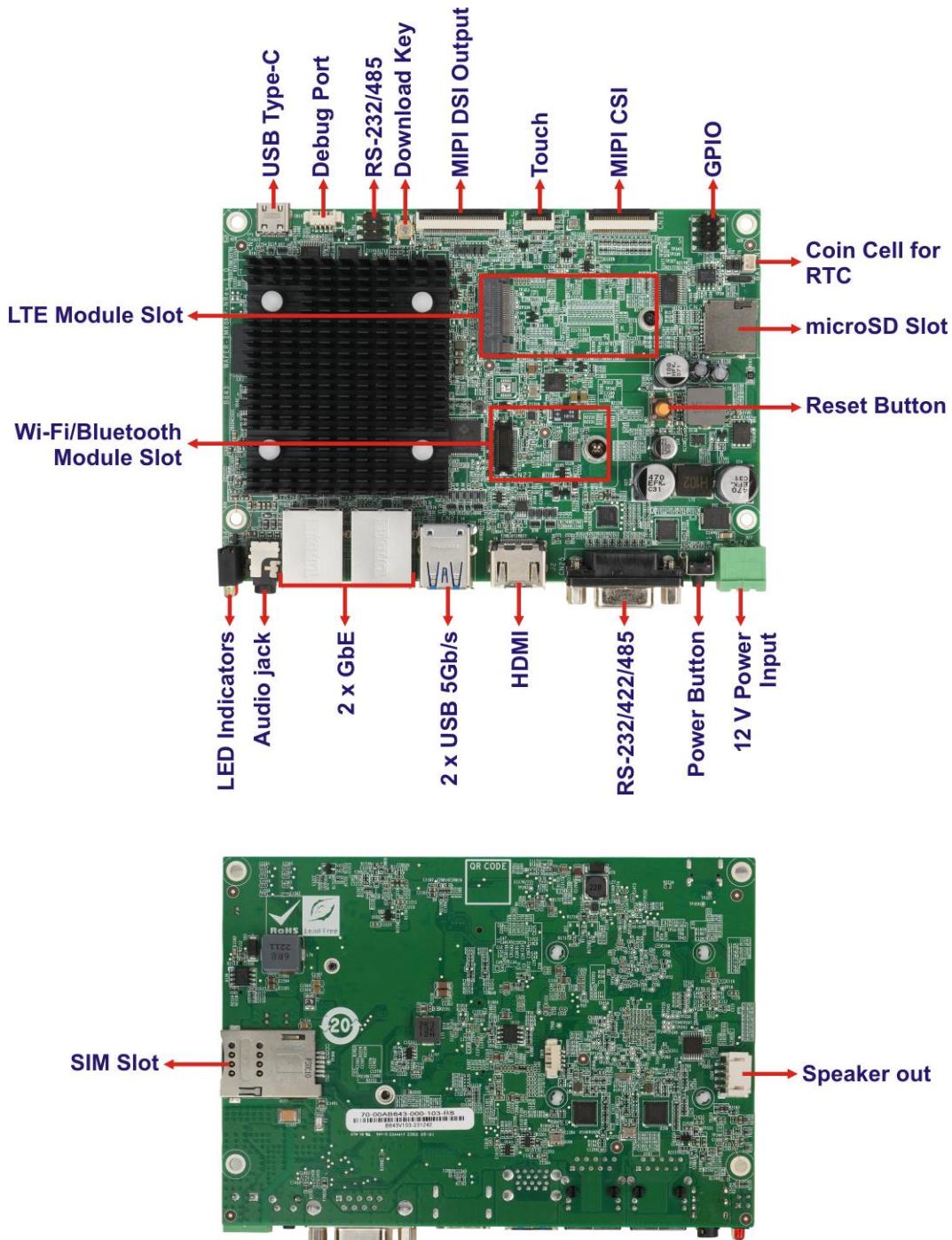
Figure 1-2: Connectors

1.5 Dimensions

The dimensions of the board are listed below:
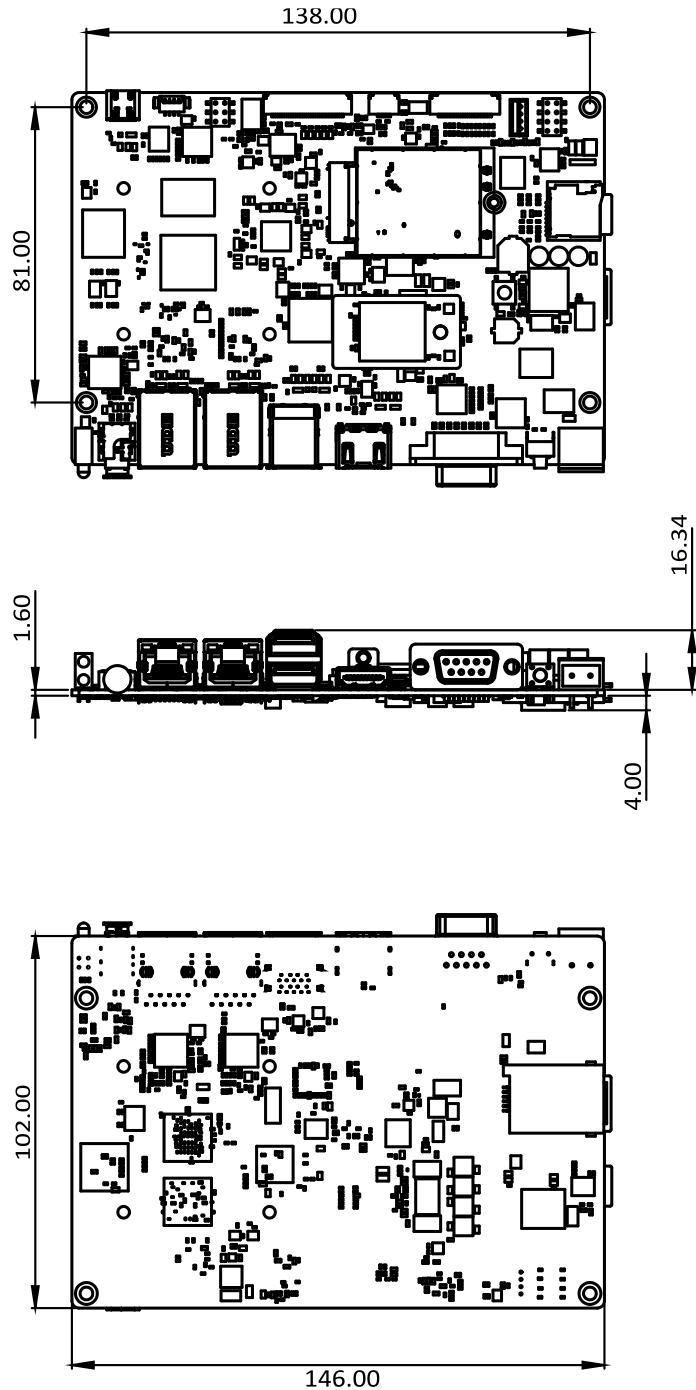
Figure 1-3: Dimensions (mm)

1.6 Data Flow

Figure 1-4 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.
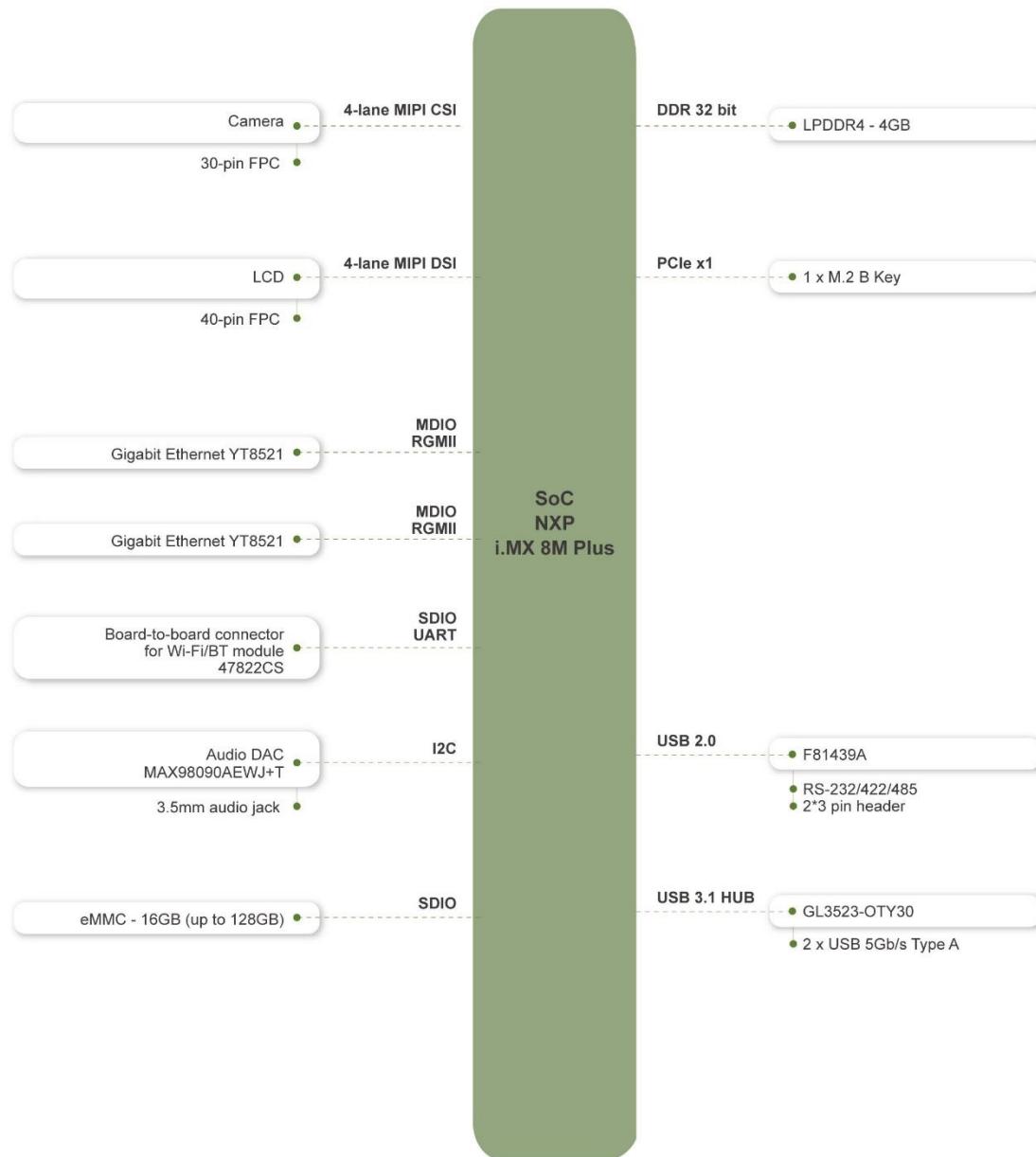
Figure 1-4: Data Flow Diagram

1.7 Technical Specifications

WAFER-IMX8MP technical specifications are listed below.

Specification	WAFER-IMX8MP
Processor	NXP i.MX 8M Plus Quad (quad-core Cortex®-A53 up to 1.8 GHz)
GPU	GC7000UL 3D (2 shaders), GC520L
NPU	Up to 2.3 TOPS
RAM	4 GB LPDDR4-3200, up to 8GB
Flash	16 GB eMMC NAND flash, up to 128GB 1 x microSD slot
Audio	1 x 3.5mm audio jack (Mic-in & Line out)
Speaker	2 x Speaker output (3W/8Ω)
Display	1 x MIPI DSI 4-lane (40-pin 0.5mm FPC 90°)
Camera	1 x MIPI CSI 4-lane (30-pin 0.5mm FPC)
HDMI	1 x HDMI output 2.0a Type A, up to 4K
Wi-Fi	Wi-Fi 5/6 (optional board-to-board IEI module)
Bluetooth	Support Bluetooth v5.0
LTE	M.2 B key connector for 4G LTE
I/O Interface	2 x GbE RJ-45 2 x USB 5Gb/s Type-A 1 x USB Type-C 1 x Full RS-232/422/485 (DB-9 port) 1 x RS-232/RS-485 (2x3 pin header) 1 x I²C (for touch panel, 8-pin 2.0mm FPC) GPIO 8-bit (4 in / 4 out, pin header)
Button	Power key
LED Indicator	1 x Power LED 1 x Reserved (programmable)
Dimensions (LxW)	146 mm x 102 mm

Specification	WAFER-IMX8MP
Power Input	12 V DC
Operating Temperature	0°C – 70°C (with air flow)
Storage Temperature	-20°C – 80°C
Humidity	10% – 99%, non-condensing
EMC & Safety	EMC Class B
Supported OS	Android 12 / Yocto 3.2 (Linux Kernel 5.10) / Ubuntu 22.04

Table 1-2: Technical Specifications

Chapter

2

Unpacking

2.1 Anti-static Precautions

⚠️ **WARNING!**

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- *Wear an anti-static wristband*: Wearing an anti-static wristband can prevent electrostatic discharge.
- *Self-grounding*: Touch a grounded conductor every few minutes to discharge any excess static buildup.
- *Use an anti-static pad*: When configuring any circuit board, place it on an anti-static mat.
- *Only handle the edges of the PCB*: Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

2.2 Unpacking Precautions

When the WAFER-IMX8MP is unpacked, please do the following:

- Follow the antistatic guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

2.3 Packing List

![NOTE icon] **NOTE:**

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the WAFER-IMX8MP was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The WAFER-IMX8MP is shipped with the following components:

Quantity	Item and Part Number	Image
1	WAFER-IMX8MP single board computer	
1	Quick installation guide	

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
10.1" color TFT-LCD with projected capacitive touch (800x1280, 340 cd/m^2, LED, RoHS) (**P/N** : 23T00-01010AW01-RS)	
Camera module (2592x1944, 1/4", 8.5x14.5x5.45mm, sensor type: OV5640, RoHS) (**P/N**: 7I001-COD631A5SFE-RS)	
Speakers with cables (Speakers: 36.6x14x10.4mm, 8Ω, 2W*2; cable: 150mm + 350mm; RoHS) (**P/N**: 19800-026300-100-RS)	
Power cable (100mm, DC jack 5.5*2.5+nut, RoHS) (**P/N**: 32102-045100-100-RS)	
Wi-Fi & Bluetooth module (AP6275S, 2T2R, 802.11 a/b/g/n/ac/ax Wi-Fi + BT 5.0, RoHS) (**P/N**: iWB-BCM43752-R10)	
Wi-Fi & Bluetooth module (2-stream 802.11ac, 2T2R, Bluetooth 5.0, RoHS) (**P/N**: iWB-RTL8822-R10)	

Chapter

3

Connectors

3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

3.1.1 WAFER-IMX8MP Layout

The figures below show all the connectors and jumpers.
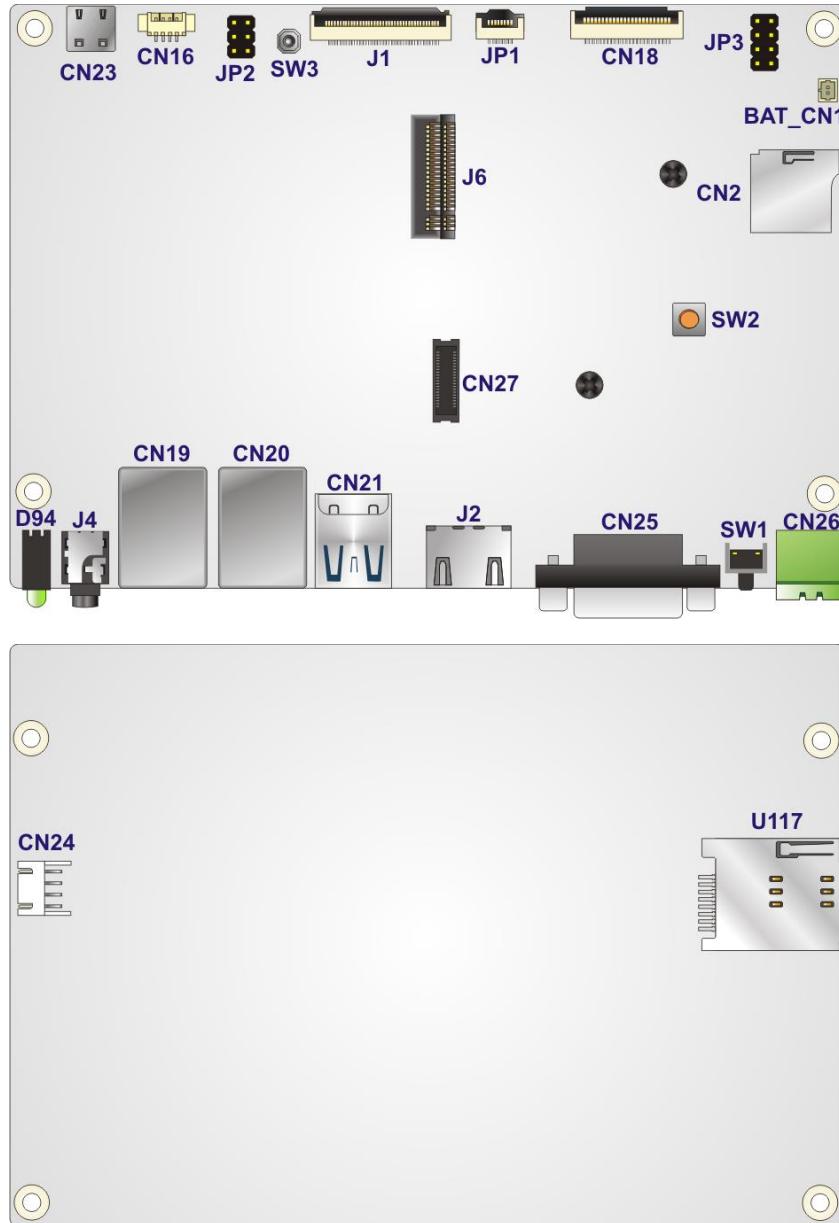
Figure 3-1: Connector and Jumper Locations

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
RTC battery connector	2-pin wafer	BAT_CN1
Debug port connector	4-pin wafer	CN16
Download key	Onboard tact button	SW3
GPIO connector	8-pin header	JP3
LTE module slot	M.2 B key 2242	J6
microSD slot	microSD slot	CN2
MIPI DSI output connector	40-pin FPC	J1
MIPI CSI connector	30-pin FPC	CN18
SIM slot	Mini SIM slot	U117
Speaker connector	4-pin wafer	CN24
RS-232/485 connector	6-pin header	JP2
Reset button	Onboard tact button	SW2
Touch connector	8-pin FPC	JP1
USB Type-C connector	USB Type-C	CN23
Wi-Fi/Bluetooth module slot	40-pin connector	CN27

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
Audio earphone jack	Audio jack	J4
DC power input connector	2-pin terminal block	CN26
HDMI output connector	HDMI	J2
LAN connectors	RJ-45	CN19, CN20
LED indicators	LED	D94
Power button	Push button	SW1
RS-232/422/485 connector	DB-9	CN25
Dual USB 5Gb/s connector	USB Type-A	CN21

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the WAFER-IMX8MP.

3.2.1 Debug Port Connector

CN Label:	**CN16**
CN Type:	4-pin wafer, p=1.25mm
CN Location:	See **Figure 3-2**
CN Pinouts:	See **Table 3-3**

The connector is used to debug.
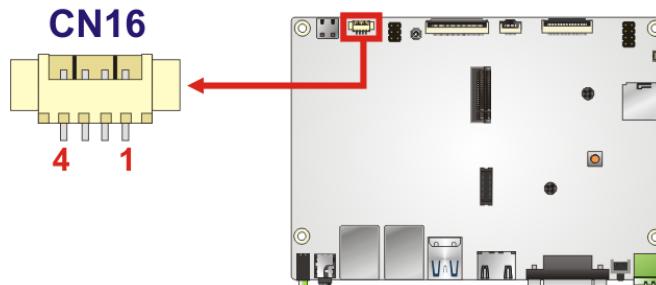
Figure 3-2: Debug Port Connector Location

Pin	Description
1	GND
2	DEBUG_TX
3	DEBUG_RX
4	GND

Table 3-3: Debug Port Connector Pinouts

3.2.2 Download Key

CN Label: **SW3**

CN Type: On-board tact button

CN Location: See **Figure 3-3**

The download key allows users to access the service mode for software update. Long-press the download key to boot the system into the service mode.
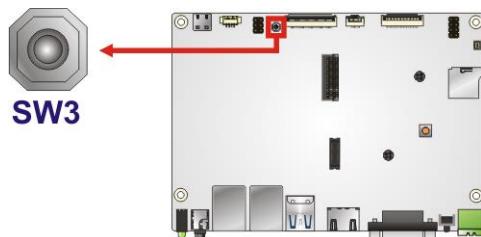
Figure 3-3: Download Key Location

3.2.3 External GPIO Connector

CN Label: **JP3**

CN Type: 8-pin header, p=2.54 mm

CN Location: See **Figure 3-4**

CN Pinouts: See **Table 3-4**

The 8-bit GPIO connector provides programmable input and output for external devices.
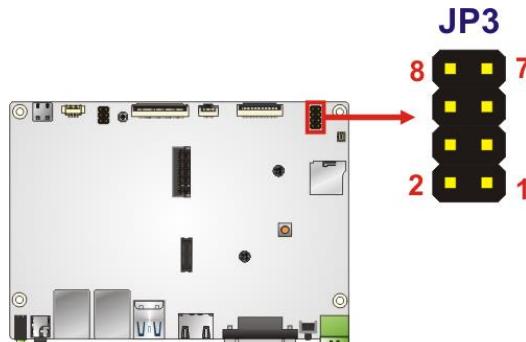
Figure 3-4: GPIO Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EXT_GPIO1	2	EXT_GPIO2
3	EXT_GPIO3	4	EXT_GPIO4
5	EXT_GPIO5	6	EXT_GPIO6
7	EXT_GPIO7	8	EXT_GPIO8

Table 3-4: GPIO Connector Pinouts

3.2.4 LTE Module Slot

CN Label: J6

CN Type: M.2 B-key 2242 slot

CN Location: See **Figure 3-5**

CN Pinouts: See **Table 3-5**

The M.2 LTE module slot is keyed in the B position and accepts 2242 size of LTE modules.
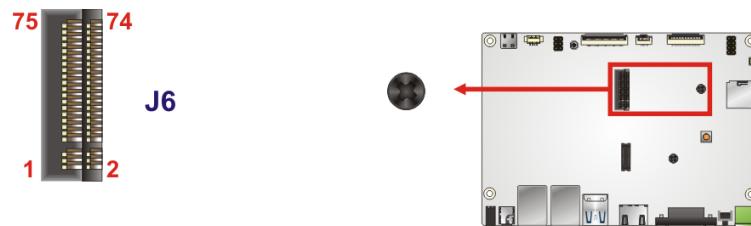
Figure 3-5: LTE Module Slot Location

Pin	Description	Pin	Description
1	N/C	2	+3.3V
3	GND	4	+3.3V
5	GND	6	M2_OFF
7	LTE_DP	8	M2_DIS
9	LTE_DM	10	N/C
11	GND	12	N/C
13	N/C	14	N/C

Pin	Description	Pin	Description
15	N/C	16	N/C
17	N/C	18	N/C
19	N/C	20	N/C
21	N/C	22	N/C
23	N/C	24	N/C
25	N/C	26	M2_DIS1
27	GND	28	N/C
29	LTE_RXN	30	LTE_UIM1_RESET
31	LTE_RXP	32	LTE_UIM1_CLK
33	GND	34	LTE_UIM1_DATA
35	LTE_TXN	36	LTE_UIM1_PWR
37	LTE_TXP	38	N/C
39	GND	40	SIM2_SW
41	PCIE_RXN	42	LTE_UIM2_DATA
43	PCIE_RXP	44	LTE_UIM2_CLK
45	GND	46	LTE_UIM2_RESET
47	PCIE_TXN	48	LTE_UIM2_PWR
49	PCIE_TXP	50	N/C
51	GND	52	PCIe_nCLKREQ_3V3
53	REF_CLKN	54	PCIe_nWAKE_3V3
55	REF_CLKP	56	N/C
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	SIM1_SW
67	M2_PERST	68	N/C
69	N/C	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	N/C		

Table 3-5: LTE Module Slot Pinouts

3.2.5 microSD Card Slot

CN Label: CN2

CN Type: microSD slot

CN Location: See **Figure 3-6**

The slot accepts microSD cards for data storage.
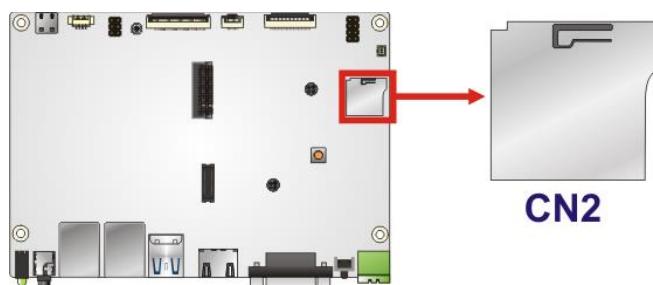
Figure 3-6: MicroSD Card Location

3.2.6 MIPI DSI Output Connector

CN Label: J1

CN Type: 40-pin FPC, p=0.5 mm

CN Location: See **Figure 3-7**

CN Pinouts: See **Table 3-6**

The MIPI DSI connector is for an LCD panel to connect to the board for display output.
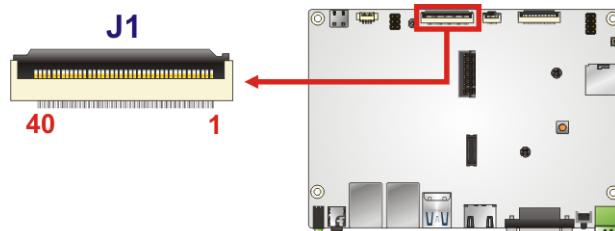
Figure 3-7: MIPI DSI Output Connector Location

Pin	Description	Pin	Description
1	LCD_NC1	21	MIPI_D3P
2	LCD_VDD	22	GND
3	LCD_VDD	23	N/C
4	LCD_NC2	24	N/C
5	LCD_RESET	25	GND
6	LCD_NC3	26	N/C
7	GND	27	LED_PWM
8	MIPI_D0N	28	LCD_NC4
9	MIPI_D0P	29	LCD_NC5
10	GND	30	GND
11	MIPI_D1N	31	LCD_LED-
12	MIPI_D1P	32	LCD_LED-
13	GND	33	LCD_NC6
14	MIPI_CKN	34	LCD_NC7
15	MIPI_CKP	35	LCD_VSN
16	GND	36	LCD_NC8
17	MIPI_D2N	37	LCD_NC9
18	MIPI_D2P	38	LCD_VSP
19	GND	39	LCD_LED+
20	MIPI_D3N	40	LCD_LED+

Table 3-6: MIPI DSI Output Connector Pinouts

3.2.7 MIPI CSI Connector

CN Label:	**CN18**
CN Type:	30-pin FPC, p=0.5 mm
CN Location:	See **Figure 3-8**
CN Pinouts:	See **Table 3-7**

The MIPI CSI connector is used to connect to a camera module.
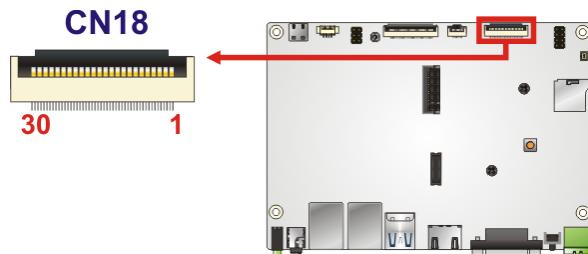
Figure 3-8: MIPI CSI Connector Location

Pin	Description	Pin	Description
1	CAM_LED-	16	CAM_D3
2	CAM_LED+	17	CAM_D2
3	N/C	18	CAM_RST
4	CAM_FREX	19	CAM_HSYNC
5	CAM_STROBE	20	CAM_VSYNC
6	GND	21	N/C
7	CAM_D1P	22	CAM_I2C_SDA
8	CAM_D1N	23	CAM_I2C_SCL
9	GND	24	CAM_PWD_N
10	CAM_MCP	25	CAM_MCLK
11	CAM_MCN	26	CAM_DVDD1V5
12	GND	27	CAM_DOVDD
13	CAM_MDP1	28	CAM_AGND
14	CAM_MDN1	29	CAM_AVDD_2V8
15	GND	30	GND

Table 3-7: MIPI CSI Connector Pinouts

3.2.8 SIM Slot

CN Label:	U117
CN Type:	Mini SIM slot, push-to-push
CN Location:	See **Figure 3-9**
CN Pinouts:	See **Table 3-8**

The SIM card slot accepts a SIM card for LTE network communication.

NOTE:

A LTE module must be installed in the LTE module slot (J6) to provide WWAN communication.
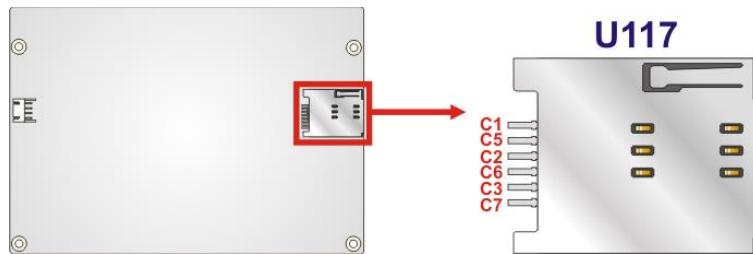
Figure 3-9: SIM Slot Location

Pin	Description
C1	LTE_UIM_PWR
C5	GND
C2	LTE_UIM_RESET
C6	SIM_VPP_1
C3	LTE_UIM_CLK
C7	LTE_UIM_DATA

Table 3-8: SIM Slot Pinouts

3.2.9 Speaker Connector

CN Label: CN24

CN Type: 4-pin wafer

CN Location: See **Figure 3-10**

CN Pinouts: See **Table 3-9**

This connector provides audio output to speakers.
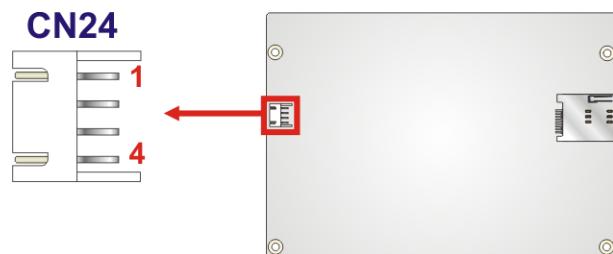
Figure 3-10: Speaker Connector Location

Pin	Description
1	SPK_LP
2	SPK_LN
3	SPK_RN
4	SPK_RP

Table 3-9: Speaker Connector Pinouts

3.2.10 RS-232/485 Serial Port Connector

CN Label: JP2

CN Type: 6-pin wafer, p=2.54 mm

CN Location: See **Figure 3-11**

CN Pinouts: See **Table 3-10**

This connector provides RS-232 or RS-485 communications. The default mode is set to RS-232. Users can use software or app to configure the connector as RS-485.
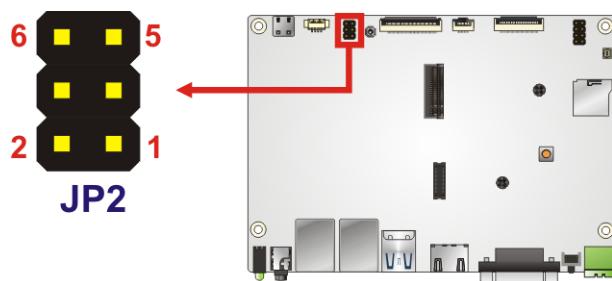
Figure 3-11: RS-232/485 Connector Location

Pin	RS-232	RS-485
1	-	DATA-
2	RXD	DATA+
3	RTS	-
4	TXD	-
5	CTS	-
6	GND	-

Table 3-10: RS-232/485 Serial Port Connector Pinouts

3.2.11 Reset Button

CN Label: **SW2**

CN Type: On-board tact button

CN Location: See **Figure 3-12**

Use the reset button to reset the system.
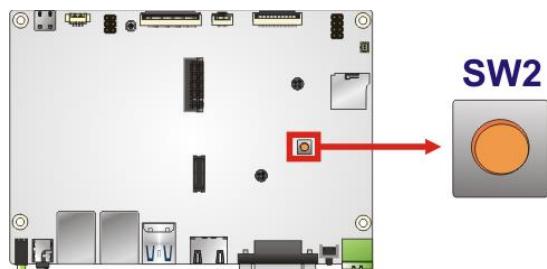
Figure 3-12: Reset Button Location

3.2.12 Touch Connector

CN Label:	**JP1**
CN Type:	8-pin FPC, p=0.5 mm
CN Location:	See **Figure 3-13**
CN Pinouts:	See **Table 3-11**

The touch connector is used to connect a touch panel.
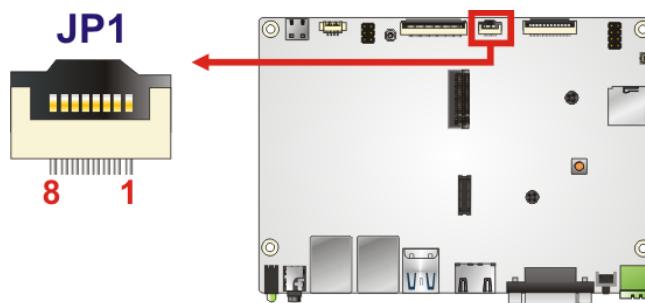
Figure 3-13: Touch Location

Pin	Description
1	GND
2	NC
3	TOUCH_VCC
4	A_CPT_I2C_SCL
5	A_CPT_I2C_SDA
6	A_CPT_INT
7	A_CPT_RST
8	GND

Table 3-11: Touch Connector Pinouts

3.2.13 USB Type-C Connector

CN Label:	**CN23**
CN Type:	USB Type-C
CN Location:	See **Figure 3-14**
CN Pinouts:	See **Table 3-12**

The WAFER-IMX8MP has one USB Type-C port. The pinouts are shown below.
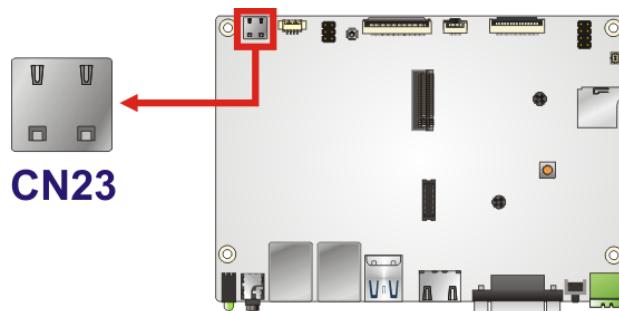
Figure 3-14: USB Type-C Port Location

Pin	Description	Pin	Description
A1	GND	B12	GND
A2	USB_C_TXP	B11	USB_C_RXP
A3	USB_C_TXN	B10	USB_C_RXN
A4	USB_C_5V	B9	USB_C_5V
A5	USB_CC1	B8	N/C
A6	USB_C_DP	B7	USB_C_DN
A7	USB_C_DN	B6	USB_C_DP
A8	N/C	B5	USB_CC2
A9	USB_C_5V	B4	USB_C_5V
A10	USB_C_RXN	B3	USB_C_TXN
A11	USB_C_RXP	B2	USB_C_TXP
A12	GND	B1	GND

Table 3-12: USB Type-C Port Pinouts

3.2.14 Wi-Fi/Bluetooth Module Slot

CN Label:	**CN27**
CN Type:	40-pin connector
CN Location:	See **Figure 3-15**
CN Pinouts:	See **Table 3-13**

The slot supports Wi-Fi/Bluetooth modules.
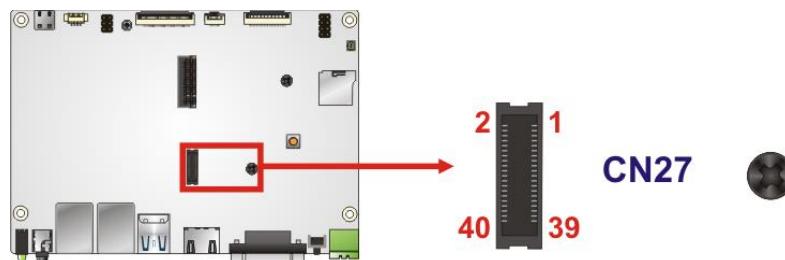
Figure 3-15: Wi-Fi/Bluetooth Module Slot Location

Pin	Description	Pin	Description
1	GND	2	GND
3	BT_CTS	4	WIFI_DATA0
5	BT_TXD	6	WIFI_DATA1
7	BT_RXD	8	WIFI_DATA2
9	BT_RTS	10	WIFI_DATA3
11	GND	12	WIFI_CMD
13	PCM_SYNC	14	WIFI_CLK
15	PCM_IN	16	GND
17	PCM_OUT	18	WIFI_REG_ON_H
19	PCM_CLK	20	WIFI_HOST_WAKE
21	GND	22	BT_HOST_WAKE
23	PCM_32K_OUT	24	BT_WAKE
25	GND	26	BT_REG_ON_H
27	GND	28	WLAN_PEN
29	N/C	30	GND

Pin	Description	Pin	Description
31	WIFI_3V3	32	WIFI_INT_W
33	WIFI_3V3	34	SD_RESET_W
35	WIFI_3V3	36	GND
37	WIFI_3V3	38	GND
39	N/C	40	GND

Table 3-13: Wi-Fi/Bluetooth Module Slot Pinouts

3.3 External Peripheral Interface Connector Panel

Figure 3-16 shows the WAFER-IMX8MP external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

- 1 x 12V DC power input connector
- 1 x Audio earphone jack
- 1 x HDMI connector
- 2 x GbE RJ-45 connector
- 1 x RS-232/422/485 connector
- 2 x USB 3.2 Gen 1 (5Gb/s) connector
- 1 x Power button
- 1 x LED indicators
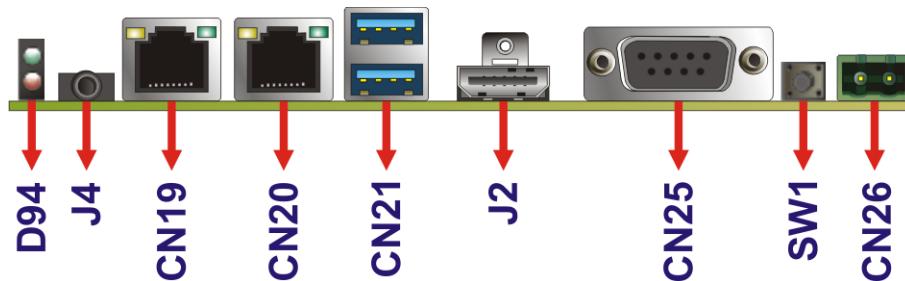
Figure 3-16: External Peripheral Interface Connector

3.3.1 Audio Earphone Connector

CN Label: J4

CN Type: Audio jack

CN Location: See **Figure 3-16**

The audio earphone jack supports mic-in and line-out.

Figure 3-17: Audio Earphone Connector

3.3.2 DC Power Input Connector

CN Label: **CN26**

CN Type: 2-pin terminal block

CN Location: See **Figure 3-16**

CN Pinouts: See **Table 3-14** and **Figure 3-18**

The connector supports 12V power DC input.

Pin	Description
1	DC_12V
2	GND

Table 3-14: Power Input Connector Pinouts
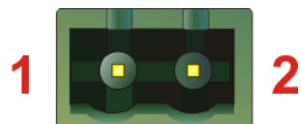
Figure 3-18: Power Input Connector

3.3.3 HDMI Output Connector

CN Label:	J2	
CN Type:	HDMI connector	
CN Location:	See **Figure 3-16**	
CN Pinouts:	See **Table 3-15** and **Figure 3-19**	

The HDMI connectors can connect to HDMI devices.

Pin	Description	Pin	Description
1	HDMI_DATA2	2	GND
3	HDMI_DATA2#	4	HDMI_DATA1
5	GND	6	HDMI_DATA1#
7	HDMI_DATA0	8	GND
9	HDMI_DATA0#	10	HDMI_CLK
11	GND	12	HDMI_ CLK#
13	N/C	14	N/C
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	+5V
19	HDMI_HPD		

Table 3-15: HDMI Connector Pinouts
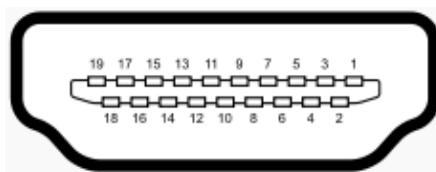
Figure 3-19: HDMI Connector Pinout Locations

3.3.4 LAN Connectors

CN Label: **CN19, CN20**

CN Type: RJ-45

CN Location: See **Figure 3-16**

CN Pinouts: See **Figure 3-20** and **Table 3-16**

The GbE LAN connector connects to a local network.

Pin	Description	Pin	Description
1	MDIA0+	5	MDIA2-
2	MDIA0-	6	MDIA1-
3	MDIA1+	7	MDIA3+
4	MDIA2+	8	MDIA3-

Table 3-16: LAN Pinouts
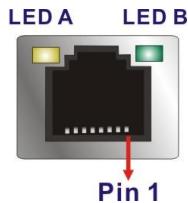
Figure 3-20: LAN Connector

LED	Description	LED	Description
A	on: linked blinking: data is being sent/received	B	off: 10 Mb/s green: 100 Mb/s orange: 1000 Mb/s

Table 3-17: LAN Connector LEDs

3.3.5 LED Indicators

CN Label: **D94**

CN Type: LED

CN Location: See **Figure 3-16**

The behaviors of the LED indicators are shown below.

LED	Status	Description
Green	On	Power connected
	Off	No power connected
Red	On	Turned on and boot into OS
	Off	Not turned on / Failed to boot into OS

Figure 3-21: LED Indicators

3.3.6 RS-232/422/485 Serial Port Connector

CN Label:	CN25
CN Type:	DB-9 connector
CN Location:	See **Figure 3-16**
CN Pinouts:	See **Table 3-18** and **Figure 3-22**

The pinouts for RS-232, RS-422 and RS-485 communication are shown below. The default mode is set to RS-232. Users can use software or app to configure the connector as RS-422 or RS-485.

Pin	RS-232	RS-422	RS-485
1	DCD	TX-	D-
2	RX	TX+	D+
3	TX	RX+	
4	DTR	RX-	
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		

Table 3-18: RS-232/422/485 Serial Port Pinouts
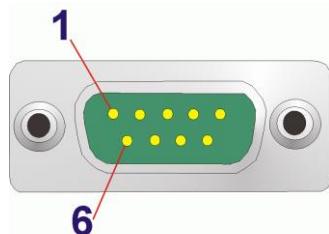

Figure 3-22: RS-232/422/485 Serial Port Pinout Locations

3.3.7 USB 5Gb/s Connectors

CN Label: **CN21**

CN Type: USB Type-A

CN Location: See **Figure 3-16**

CN Pinouts: See **Table 3-19** and **Figure 3-23**

The WAFER-IMX8MP has two external USB 5Gb/s ports. The USB connector can be connected to a USB 2.0 or USB 5Gb/s device. The pinouts of USB 5Gb/s connectors are shown below.

| Pin	Description	Pin	Description
1	USB_VCC	10	USB_VCC
2	USB2_D0-	11	USB2_D0-
3	USB2_D0+	12	USB2P0_D0+
4	GND	13	GND
5	USB3P0_RXDN1	14	USB3P0_RXDN2
6	USB3P0_RXDP1	15	USB3P0_RXDP2
7	GND	16	GND
8	USB3P0_TXDN1	17	USB3P0_TXDN2
9	USB3P0_TXDP1	18	USB3P0_TXDP2

Table 3-19: USB 5Gb/s Port Pinouts
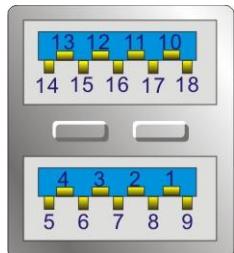
Figure 3-23: USB 5Gb/s Port Pinout Locations

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the WAFER-IMX8MP may result in permanent damage to the WAFER-IMX8MP and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the WAFER-IMX8MP. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the WAFER-IMX8MP or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- *Self-grounding* Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring the WAFER-IMX8MP, place it on an anti-static pad. This reduces the possibility of ESD damaging the WAFER-IMX8MP.
- *Only handle the edges of the PCB*: When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before installation. All installation notices must be strictly adhered to. Failing to adhere to these precautions may lead to severe damage and injury to the person performing the installation.

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the WAFER-IMX8MP, WAFER-IMX8MP components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
  - ○ The user manual provides a complete description of the WAFER-IMX8MP installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - ○ Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the WAFER-IMX8MP on an antistatic pad:
  - ○ When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the WAFER-IMX8MP off:
  - ○ When working with the WAFER-IMX8MP, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the WAFER-IMX8MP **DO NOT:**

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.3 M.2 Module Installation

To install an M.2 module, please follow the steps below.

Step 1: Locate the M.2 module slot. See **Chapter 3**.

Step 2: Remove the retention screw secured on the motherboard.

Step 3: Line up the notch on the module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20º (Figure 4-1).
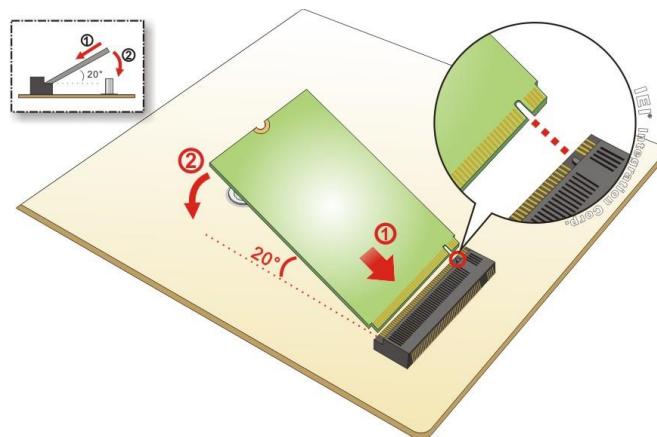

Figure 4-1: Inserting the M.2 Module into the Slot at an Angle

**Step 4:** Secure the M.2 module with the previously removed retention screw (Figure 4-2).
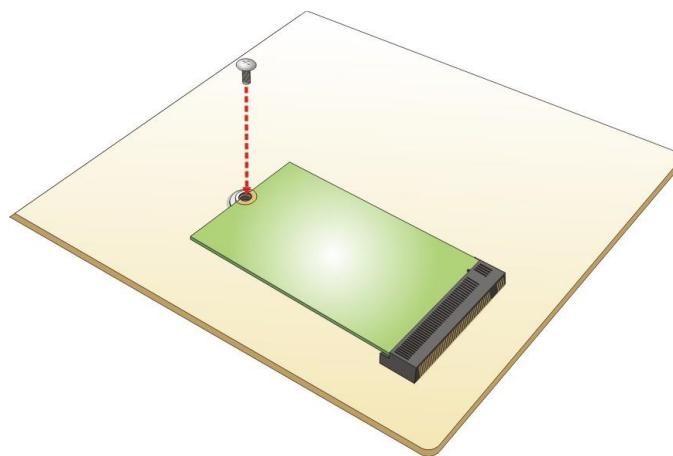
Figure 4-2: Securing the M.2 Module

4.4 Chassis Installation

4.4.1 Airflow

![WARNING icon] **WARNING:**

Airflow is critical for keeping components within recommended operating temperatures. The chassis should have fans and vents as necessary to keep things cool.

The WAFER-IMX8MP must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

4.4.2 Motherboard Installation

To install the WAFER-IMX8MP motherboard into the chassis please refer to the reference material that came with the chassis.

Chapter

5

Software Drivers

5.1 Available Drivers

All the drivers for the WAFER-IMX8MP are available on IEI Resource Download Center (https://download.ieiworld.com). Type WAFER-IMX8MP and press Enter to find all the relevant software, utilities, and documentation.
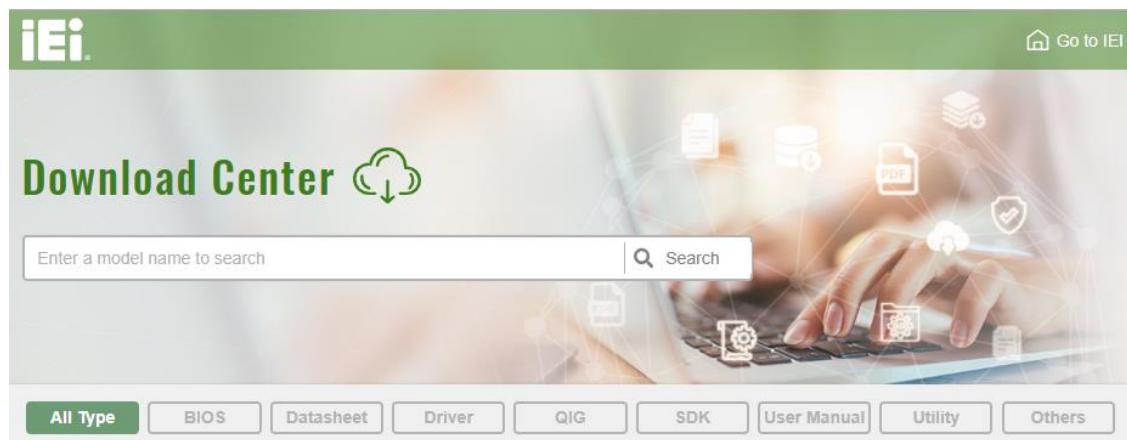

Figure 5-1: IEI Resource Download Center

5.2 Driver Download

To download drivers from IEI Resource Download Center, follow the steps below.

Step 1: Go to https://download.ieiworld.com. Type WAFER-IMX8MP and press Enter.
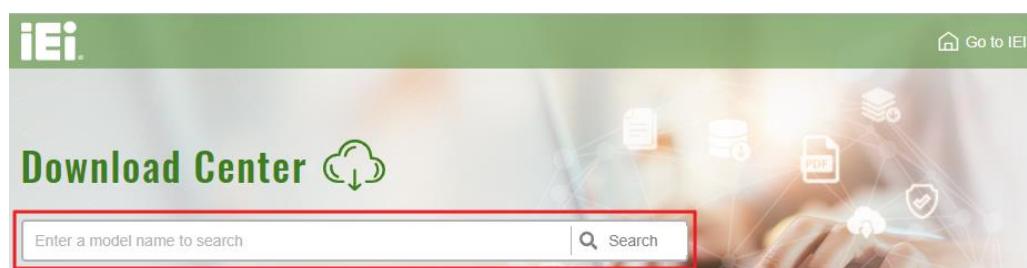
Step 2: All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.

Step 3: Click the driver file name on the page and you will be prompted with the following window. You can download the entire ISO file (❶), or click the small arrow to find an individual driver and click the file name to download (❷).
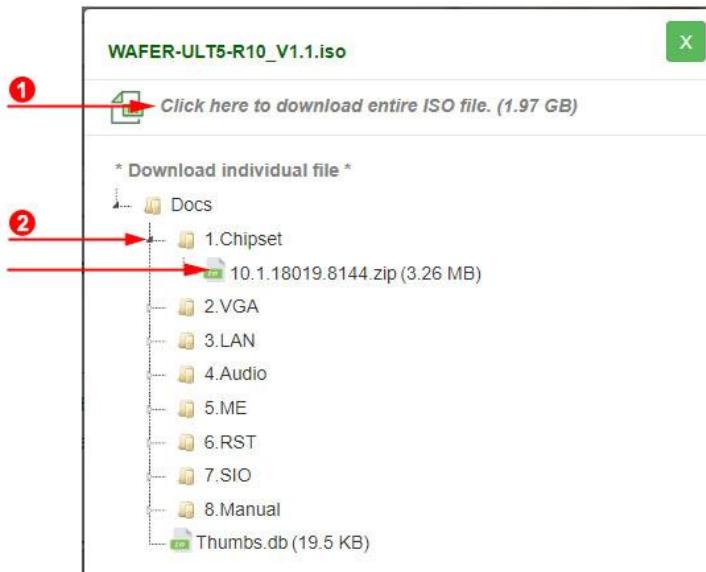
 NOTE:

To install software from the downloaded ISO image file in Windows 8, 8.1 or 10, double-click the ISO file to mount it as a virtual drive to view its content.

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

FCC WARNING

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

■ This device may not cause harmful interference, and
■ 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.

Appendix

B

Product Disposal

![Caution icon] **CAUTION:**

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union–If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union–The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.
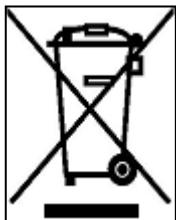
EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your device, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

Appendix

C

Hazardous Materials Disclosure

C.1 RoHS II Directive (2015/863/EU)

The details provided in this appendix are to ensure that the product is compliant with the RoHS II Directive (2015/863/EU). The table below acknowledges the presences of small quantities of certain substances in the product, and is applicable to RoHS II Directive (2015/863/EU).

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements									
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)	Bis(2-ethylhexyl) phthalate (DEHP)	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O	O	O	O	O
Battery	O	O	O	O	O	O	O	O	O	O
O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in Directive (EU) 2015/863.										
X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in Directive (EU) 2015/863.										

C.2 China RoHS

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O：表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求以下。 X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求。						