DFI

KIT Series

Open Frame ARM Based Panel PC

User's Manual

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Table of Contents

About this Manual

This manual can be retrieved from the website.

The manual is subject to change and update without notice, and may be based on editions that do not resemble your actual products. Please visit our website or contact our sales representatives for the latest editions.

Warranty

1. Warranty does not cover damages or failures that arises from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

About this Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- 1 x Single Box
- 1 x 2-pin Terminal Block Connector
- 2 x M2 Screws
- 1 x Terminal block for RS485

Note: The items are subject to change in the developing stage.
The product and accessories in the package may not come similar to the information listed above. This may differ in accordance with the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

Important:
Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Precautions

- Use the correct DC / AC input voltage range.
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging in the power cord.
- There is danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent specifications of batteries recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
- Keep this system away from humid environments.
- Make sure the system is placed or mounted correctly and stably to prevent the chance of dropping or falling may cause damage.
- The openings on the system shall not be blocked and shall be kept in distance from other objects to make sure of proper air ventilation to protect the system from overheating.
- Dress the cables, especially the power cord, so they will not be stepped on, in contact with high temperature surfaces, or cause any tripping hazards.
- Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and is compliant with the voltage and current ranges required by the system's electrical specifications.
- If the system is to be unused or stored for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- If one of the following occurs, consult a service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated the system.
  - The system has been exposed to moisture.
  - The system is not working properly.
  - The system is physically damaged.
- The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace the outlet.
- Disconnect the system from the electricity outlet before cleaning. Use a damp cloth for cleaning the surface. Do not use liquid or spray detergents for cleaning.
- Before connecting, make sure that the power supply voltage is correct. The device is connected to a power outlet which should be grounded connection.

The system may burn fingers while running.

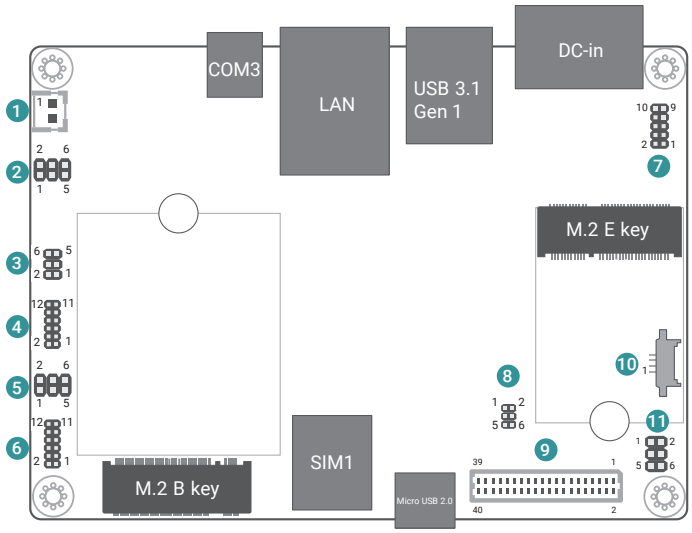
Wait for 30 minutes to handle electronic parts after power off.

Chapter 1 - Introduction

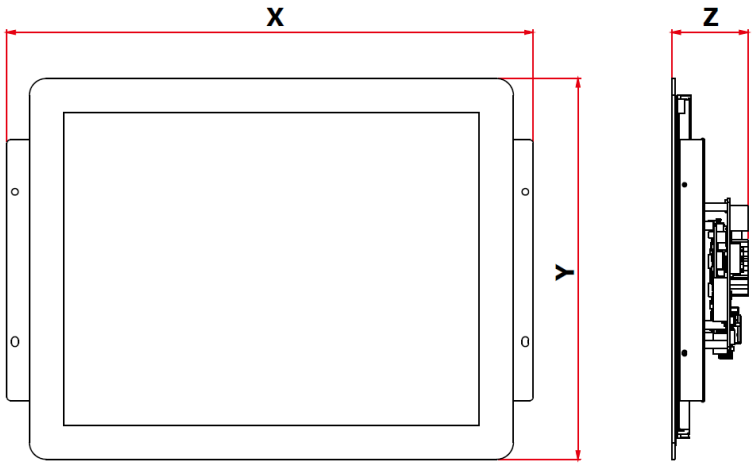
▶ Overview

Front View

Board View



Dimensions



Display Type	System Dimensions (mm)		
	W	H	D
10.1" LCD	203	118	30.09
12.1 LCD	279.1	172.95	43.6
7	312.9	226.25	45.2

Key Features

Touch Screen:
P-Capacitive Touch supports 10 points

LPDDR4:
LPDDR4-3200 2GB plus 16GB eMMC on board

Multiple Expansion:
Expandable via M.2 2230 E Key and 3042/2242 B Key

Easy Integration:
Easy installation and maintenance

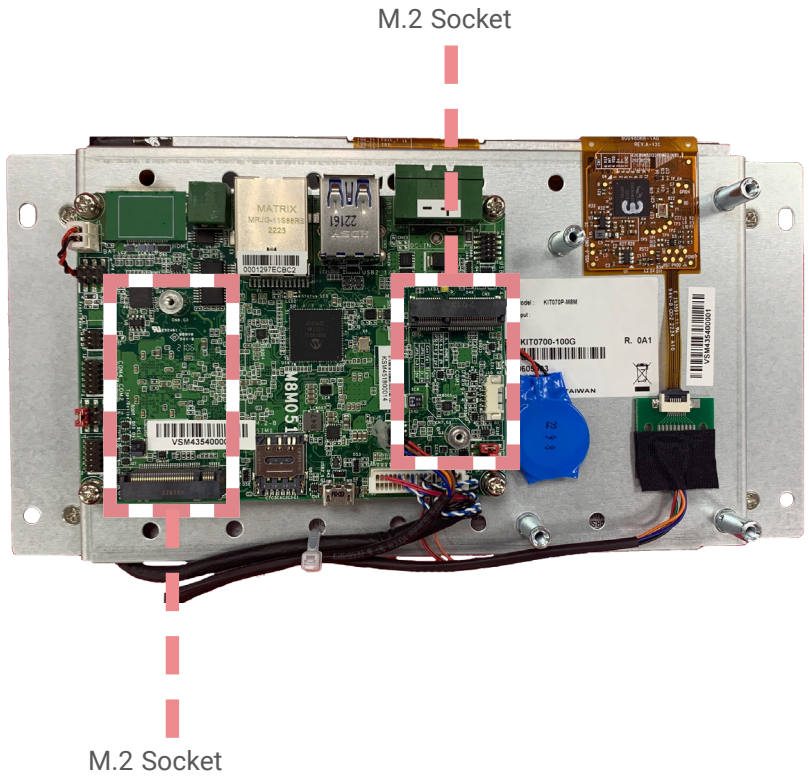
ARM-Based System:
Support Android 9.0 and Linux

▶ Specifications

MODEL NAME		KIT070P-M8M	KIT101P-M8M	KIT121P-M8M
DISPLAY & TOUCH SCREEN	Display Type	7" TFT LCD	10.1 TFT LCD	12.1" TFT LCD
	Aspect Ratio	16:9	16:10	4:3
	Max. Resolution	800 x 480	1280 x 800	1024 x 768
	Brightness(cd/m2)		500	
	Touch Type		Projected Capacitive	
	Backlight Lifetime (hours)	40,000	50,000	30,000
ENVIRONMENT	Operating Temperature		0~50°C with 0.6m/s air flow	
	Storage Temperature		-30~80°C	
	Relative Humidity		5 to 90% RH (non-condensing)	
SYSTEM	Processor		NXP i.MX 8M Dual/Quad Cortex-A53, 1.5GHz	
	Memory		2GB Memory on board, Single channel LPDDR4 up to 3200MHz	
STORAGE	Emmc		16GB eMMC on board	
EXPANSION	Interface		1 x M.2 B key 3042/2242 (USB3.1 Gen1) 1 x M.2 E key 2240 (PCIex1 / USB2.0)	
	Ethernet		1 x GbE RJ45	
	USB		2 x USB3.1 Gen1 Type A 1 x Micro USB2.0	
	Serial		1 x RS485	
POWER	Type		VDC 12V input / VDC 9-48V input (by optional)	
	Connector		2-poles Terminal Block	
OS SUPPORT	Android		Android 9.0	
	Linux		Yocto 4.3	
MECHANISM	Dimension (W x H x D)	203 x 118 x 39.09	279.1 x 172.95 x 43.6	312.9 x 226.25 x 45.2
	Weight	1.1KG	2.0KG	2.5KG
CERTIFICATION	Certification		RoHS	

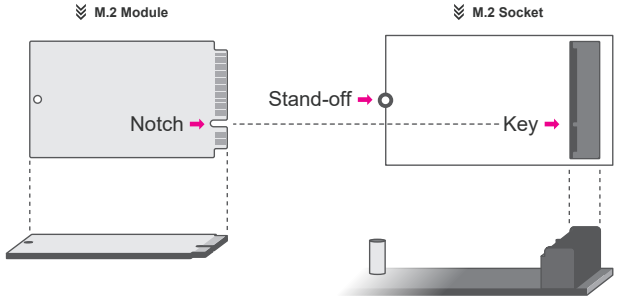
Chapter 2 - Hardware Installations

▶ Installing an M.2 Card

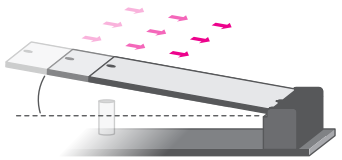


Please follow the steps below to install the card into the socket.

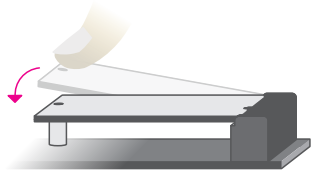
Step 1:
Insert the card into the socket at an angle while making sure the notch and key are perfectly aligned.



Step 2:
Press the end of the card far from the socket down until against the stand-off.

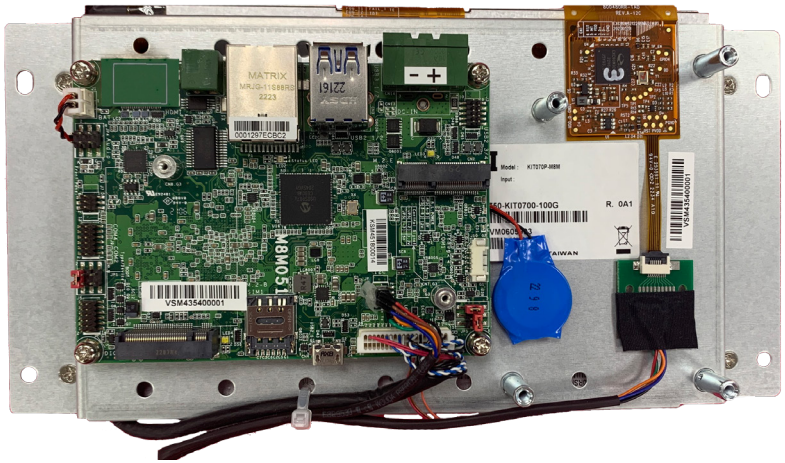


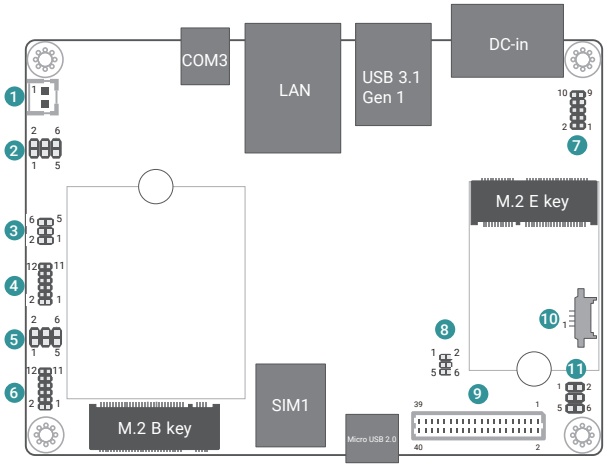
Step 3:
Screw tight the card onto the stand-off with a screw driver and a stand-off screw until the gap between the card and the stand-off closes up. The card should be lying parallel to the board when it's correctly mounted.



Chapter 3 - System Settings

▶ Board Layout



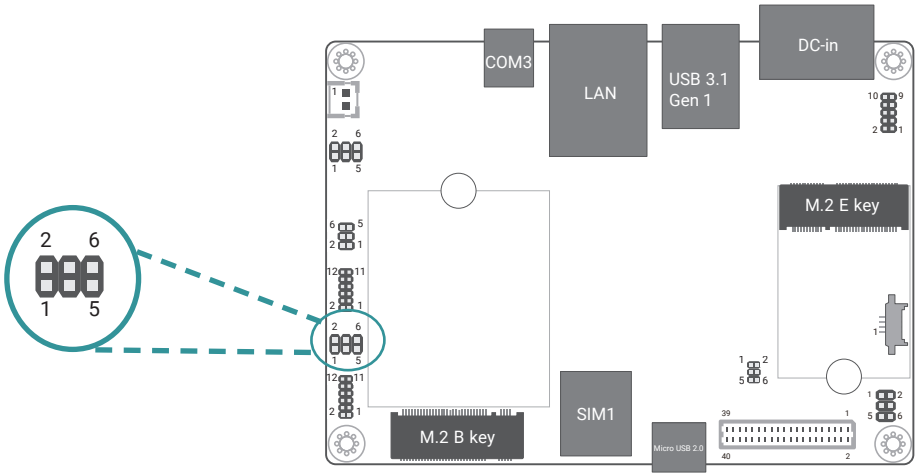


1. Battery
2. Audio
3. Front Panel
4. COM2/COM4
5. Boot-CFG
6. DIO
7. USB2_3/4
8. I²C
9. LVDS
10. Debug
11. LED Backlight

Important:
Electrostatic discharge (ESD) can damage your board, processor, disk drives, add-in boards, and other components. Perform installation procedures at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

▶ Jumper Settings

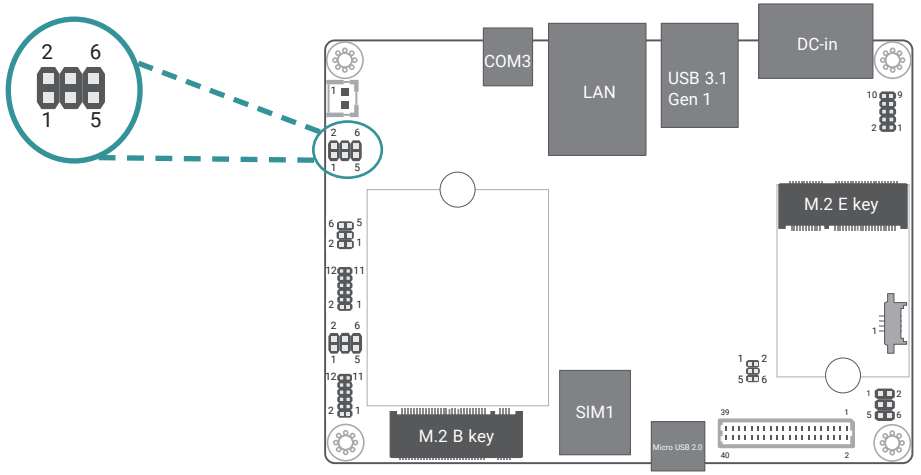
Boot-CFG (JP1)



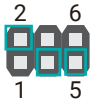
- 1-2 Off: Internal Boot (default)
- 1-2 On: Serial Downloader

- 5-6 Off: EMMC@eSDHC (default)
- 5-6 On: uSD@eSDHC2

Audio (JP4)

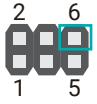


- 1: Mic Input



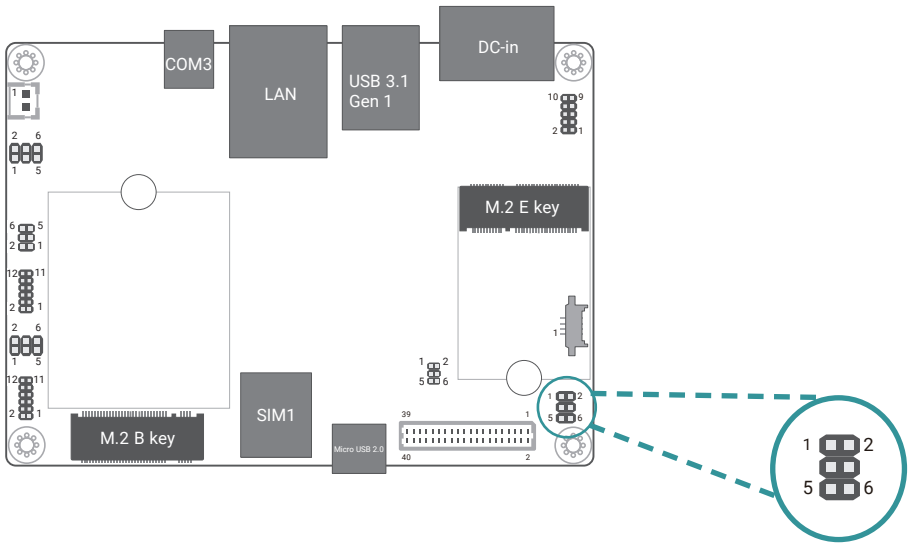
- 2/3/5: GND

- 4: R-CH



- 6: L-CH

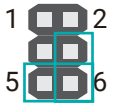
LED Backlight (JP5)



Control Signal Voltage

- 1-3 On: 5V
- 1-2 On: 3.3V

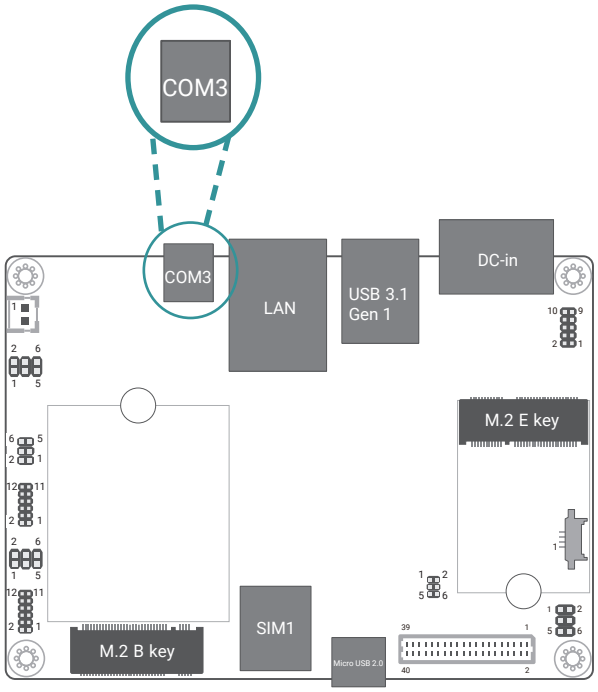
Backlight Power



- 5-6 On: 12V
- 4-6 On: 5V

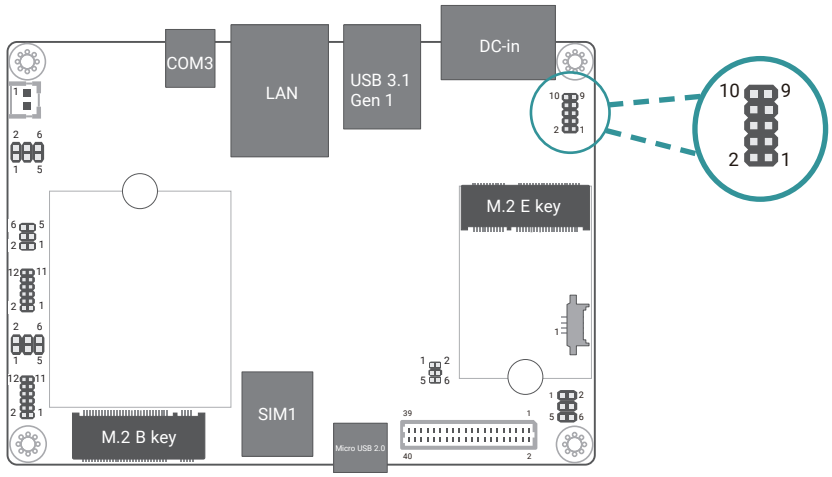
▶ Pin Assignment

COM 3 (CN11)



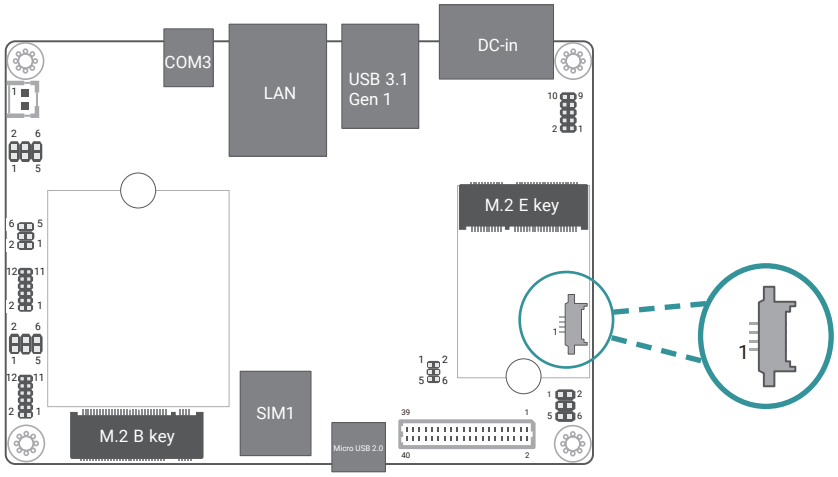
Pin	Assignment
1	DATA-_RS485
2	DATA+_RS485

USB 2.0 Headers (3/4) (J3)



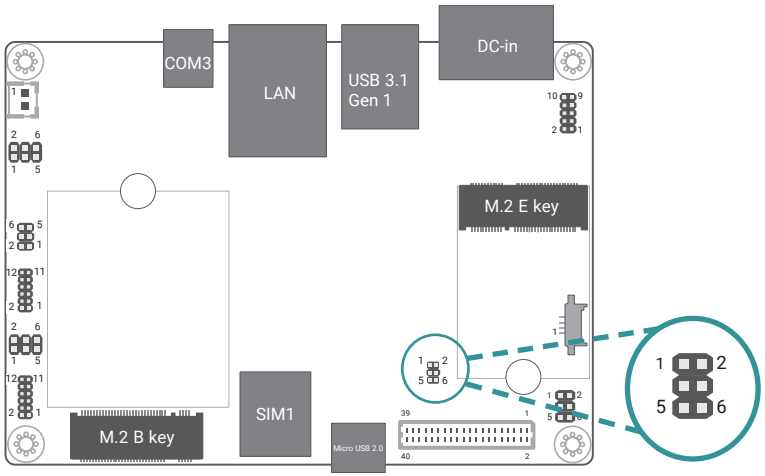
Pin	Assignment	Pin	Assignment
1	+5VUSBHDR	2	+5VUSBHDR
3	USBH_DN_HDR1	4	USBH_DN_HDR2
5	USBH_DP_HDR1	6	USBH_DP_HDR2
7	GND	8	GND
9	---	10	---

Debug (J10)



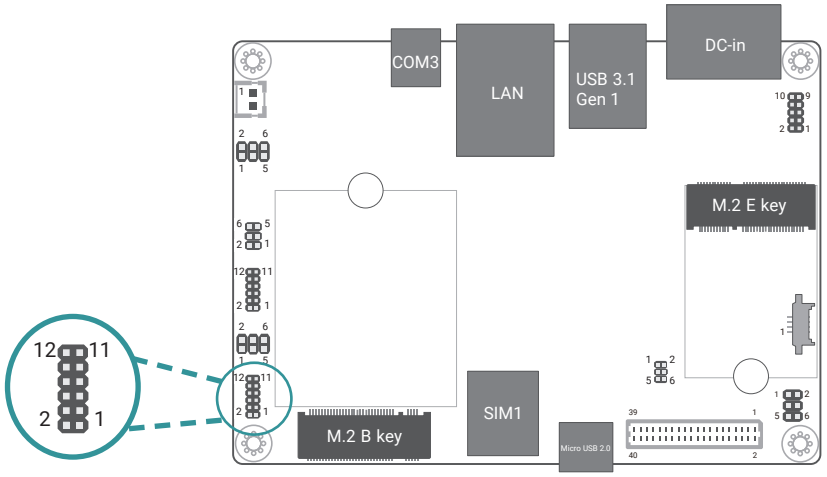
Pin	Assignment
1	VDD_3V3
2	DEBUG_UART1_RXD
3	DEBUG_UART1_TXD
4	GND

I²C (J8)



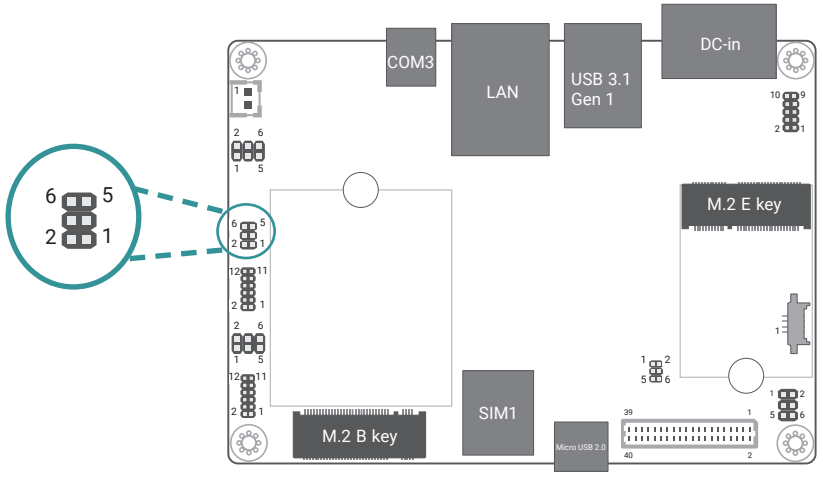
Pin	Assignment	Pin	Assignment
1	VDD_3v3/+VTP_3V3	2	GND
3	TP_SCL	4	TP_ALT#
5	TP_SDA	6	TP_RST#

DIO (J5)



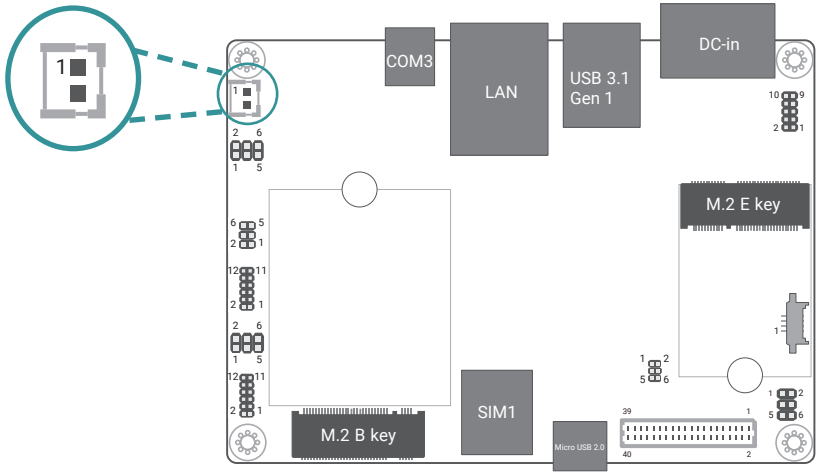
Pin	Assignment	Pin	Assignment
1	GND	2	PWM_OUT
3	GND	4	+5V_DIO
5	DIO0_C	6	DIO1_C
7	DIO2_C	8	DIO3_C
9	DIO4_C	10	DIO5_C
11	DIO6_C	12	DIO7_C

Front Panel (J7)



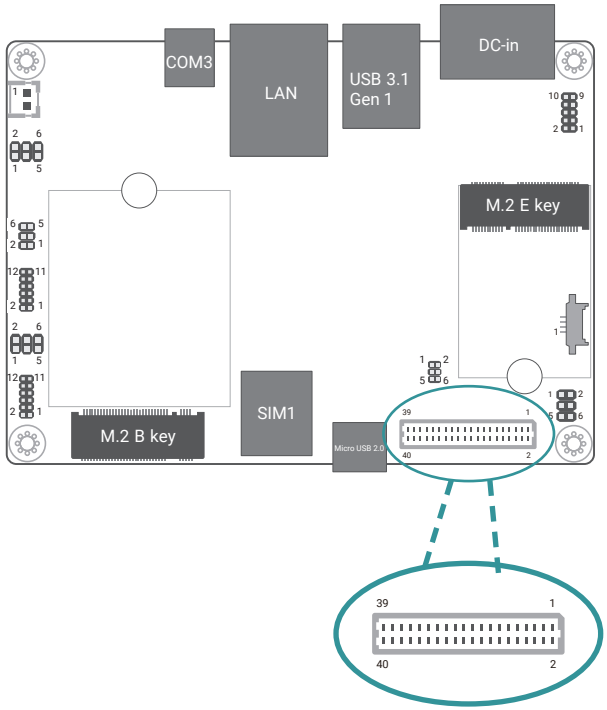
Pin	Assignment	Pin	Assignment
1	ONOFF_BTN#	2	FP_LED_3.3V
3	GND	4	FP_PWM_3.3V
5	SYS_nRST	6	FP_RSV_BTN#

Battery (J1)



Pin	Assignment	Pin	Assignment
1	+VBAT	2	GND

LVDS (J11)



Pin	Assignment	Pin	Assignment
1	GND	2	GND
3	LVDS_A2-	4	LVDS_B3+
5	LVDS_A2+	6	LVDS_B3-
7	GND	8	GND
9	LVDS_A3-	10	LVDS_B2+
11	LVDS_A3+	12	LVDS_B2-
13	GND	14	GND
15	LVDS_A0-	16	LVDS_B1+
17	LVDS_A0+	18	LVDS_B1-
19	GND	20	GND
21	LVDS_A1-	22	LVDS_B0+
23	LVDS_A1+	24	LVDS_B0-
25	GND	26	GND
27	LVDS_A_CLK-	28	LVDS_B_CLK-
29	LVDS_A_CLK+	30	LVDS_B_CLK+
31	GND	32	GND
33	GND	34	GND
35	+VDD_Panel_3V3	36	+VDD_Panel_5V
37	+VDD_Panel_3V3	38	+VDD_Panel_5V
39	+VDD_Panel_3V3	40	+VDD_Panel_5V