

# Installation Guide

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*Rev: A2*

*04-10-2019*

***TIXU\_MX7D***

***i.MX 7DUAL PROCESSOR POWER***

***DESIGN WITH TI PMIC***

**Revision History:**

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04-09-2019	A1	Initial Draft	VVDN
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Table of Contents

1 INTRODUCTION ..... 5

2 TOP VIEW ..... 5

3 BOTTOM VIEW..... 6

4 SETTING UP THE SYSTEM..... 7

4.1 FIXING THE SPACERS ..... 7

4.2 CHANGING THE BOOT OPTION..... 8

4.2.1 Boot option for SW3..... 8

4.2.2 Boot option for SW2..... 8

4.3 INSERTING COIN-CELL BATTERY ..... 9

4.4 INSERTING SD CARD..... 9

4.5 CONNECTING DEBUG UART ..... 10

4.6 POWERING THE BOARD ..... 10

4.6.1 Option-1: Powering through 5V DC Adapter ..... 10

4.6.2 Option-2: Powering through OTG ..... 11

4.6.3 Option-3: Powering through Li-ion Battery..... 11

4.7 CONNECTING THE USER INTERFACE DEVICES (OPTIONAL)..... 12

4.7.1 USB2ANY..... 12

4.7.2 Ethernet..... 12

4.7.3 mini-PCle ..... 12

4.7.4 Headphone Jack..... 12

4.7.5 Speaker Header..... 13

4.7.6 USB2 OTG/HOST..... 13

4.7.7 MIPI Camera ..... 13

4.7.8 LCD Module..... 13

4.8 ON-BOARD LED INFORMATION..... 13

4.8.1 Power-ON LED..... 13

4.8.2 Over-Voltage LED..... 13

4.8.3 PMIC ON LED..... 13

4.8.4 Processor Status LED..... 13

4.8.5 PWM LED..... 13

4.8.6 Ethernet Link LED..... 14

4.8.7 Debug UART TX& RX..... 14

4.8.8 mini-PCle LEDs (BOTTOM)..... 14

***List of Figures***

Figure 1: Top view.....	5
Figure 2: Bottom View.....	6
Figure 3: Fixing the Spacers.....	7
Figure 4: SD card Boot option.....	8
Figure 5: Connecting Coin Cell.....	9
Figure 6: Connecting SD card .....	9
Figure 7: Connecting Console cable .....	10
Figure 8: Connecting DC 5V adapter.....	10
Figure 9: Powering through USB2.0 OTG.....	11
Figure 10: Connecting USB2ANY. ....	12

***List of Tables***

Table 1: SW3 Boot option.....	8
Table 2: SW2 Boot option.....	8

# 1 INTRODUCTION

This document contains information about the initial set-up of the board, power-up options and user interfaces of the TPS65218D0RSLT powered i.MX7D Evaluation board (TIXU\_MX7D).

# 2 TOP VIEW

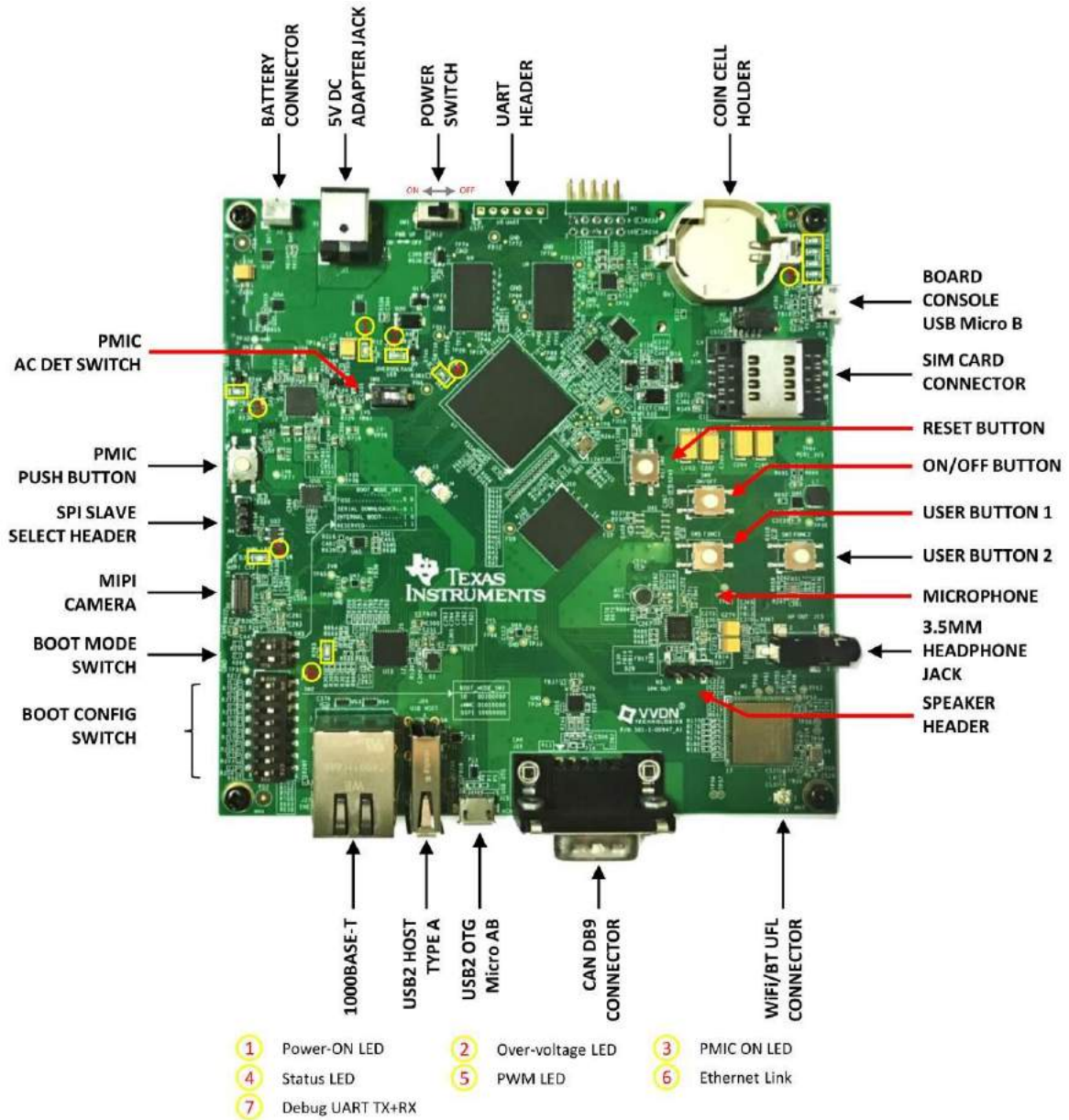


Figure 1: Top view

Note: More information on LEDs can be found in Section.4.8.

### 3 BOTTOM VIEW

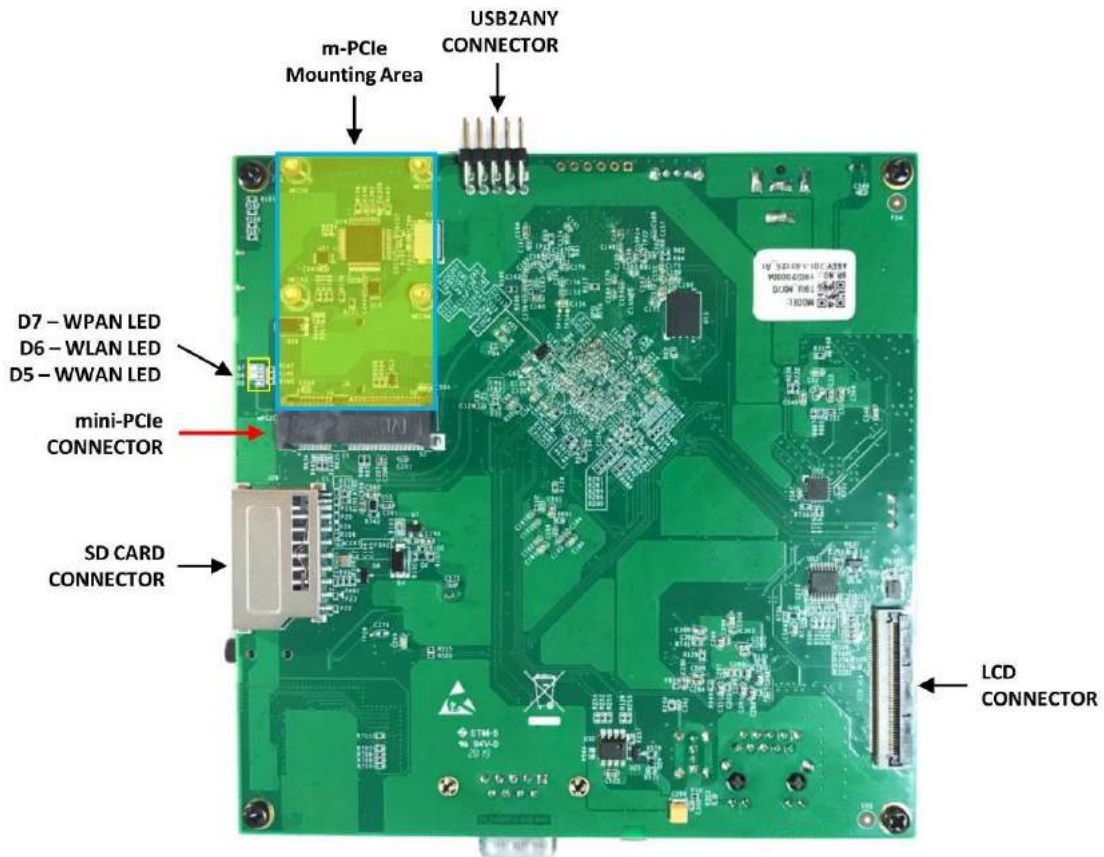


Figure 2: Bottom View

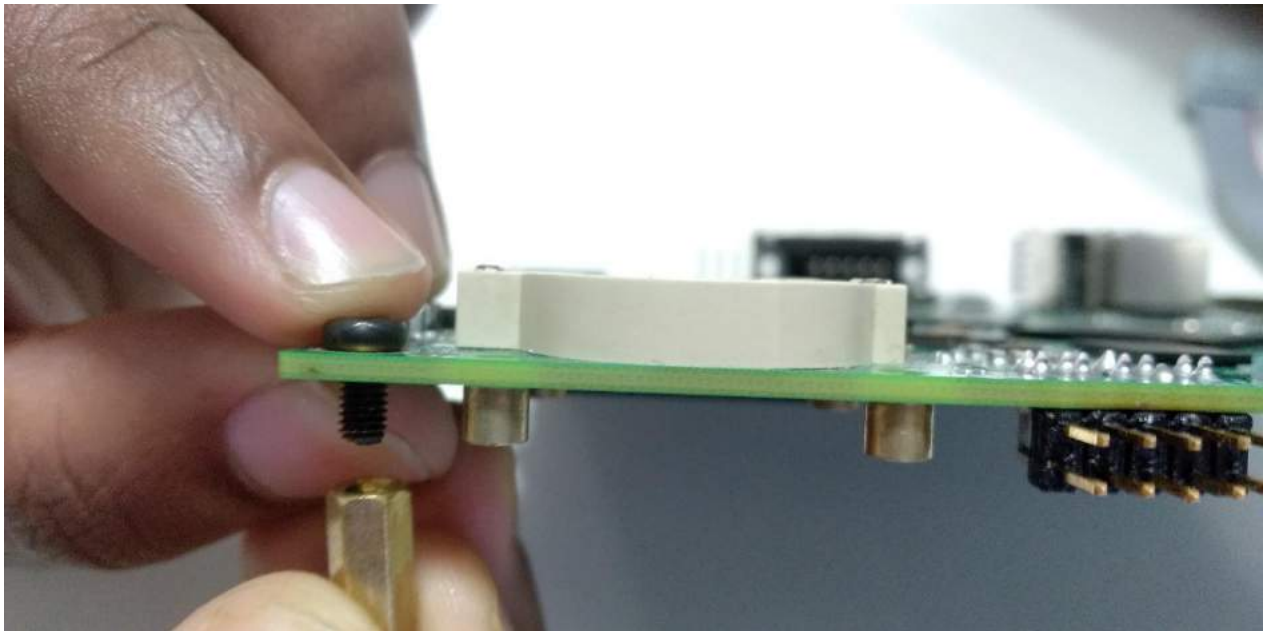
## 4 SETTING UP THE SYSTEM

Below are the steps need to followed for setting up the system

1. Fix the Spacers using the Screws on the board
2. Set the BOOT option
3. Insert the Coin-cell Battery in the socket
4. Insert the SD card
5. Connect the USB micro-B cable for debug UART
6. Connecting the Power
7. Connect the required peripherals

### 4.1 Fixing the spacers

Need to fix all 4 spacers with the help of screws before the use of setup for mechanical stability. Please refer below figure for that.



**Figure 3: Fixing the Spacers**

## 4.2 Changing the BOOT option

User can change the BOOT options with the help of Switch SW2, SW3. Below are the BOOT options for the board.

### 4.2.1 Boot option for SW3

BOOT MODE	POS1	POS2
Boot from Fuse	0	0
Internal boot (Use this for SD, eMMC, QSPI Boot)	0	1
Serial Download	1	0
Reserved	1	1

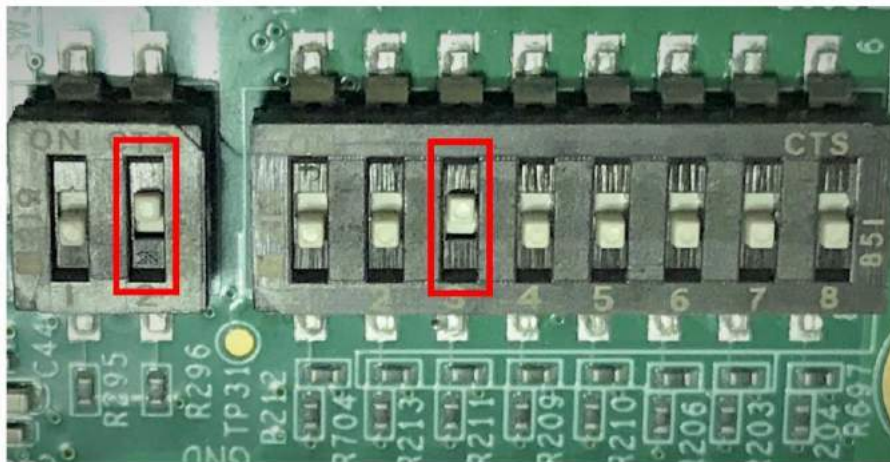
Table 1: SW3 Boot option

### 4.2.2 Boot option for SW2

BOOT MODE	POS1	POS2	POS3	POS4	POS5	POS6	POS7	POS8
SD Boot	0	0	1	0	0	0	0	0
eMMC	0	1	0	1	0	0	0	0
QSPI	1	0	0	0	0	0	0	0

Table 2: SW2 Boot option

Please make sure to set the boot options to SD card as shown in below figure.



 Set these switches to ON state for SD Card boot

Figure 4: SD card Boot option



### 4.3 Inserting Coin-cell Battery

For the board to power-up, the coin-cell battery is necessary. Here, we are using a CR2032 (3V) battery. The coin cell can be inserted to its holder (BH1) as shown in the below figure. Please note, if the coin-cell voltage drops below 2.4V, it needs to be replaced for proper functioning.

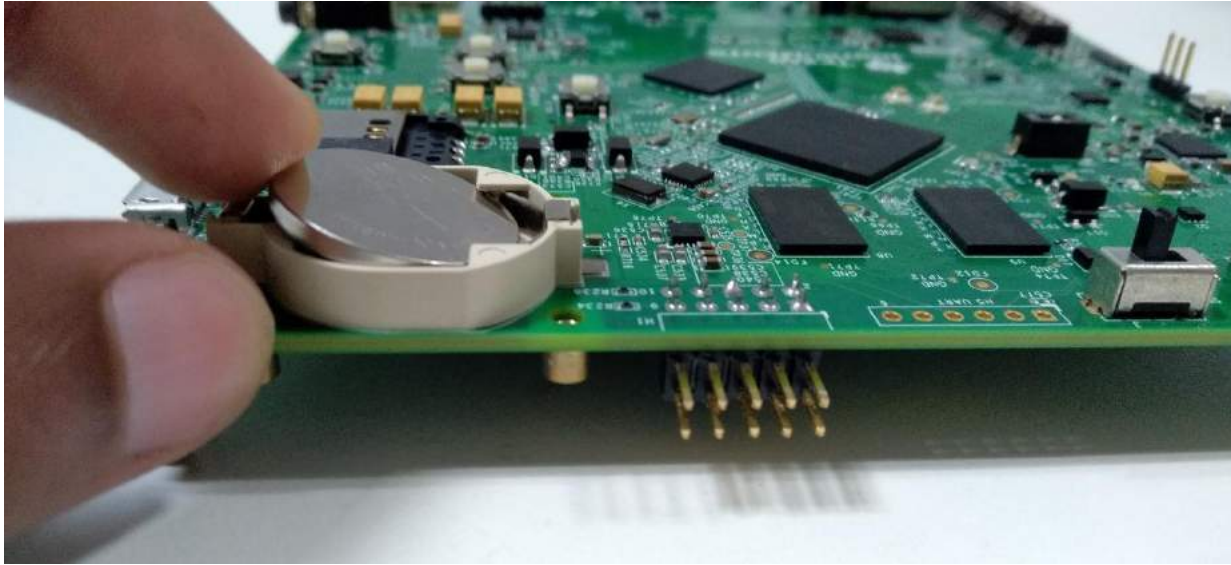


Figure 5: Connecting Coin Cell

### 4.4 Inserting SD card

The SD card can be simply inserted to the card connector (J28) placed in the bottom of the board as shown in the below figure. The card can be removed by pulling it.



Figure 6: Connecting SD card

## 4.5 Connecting Debug UART

For getting console access, a USB micro-B cable needed. Micro-B end need to insert to the Connector (J11) near the Battery Holder. The other end of the cable can be connected to the PC USB port. Please refer below figure.



**Figure 7: Connecting Console cable**

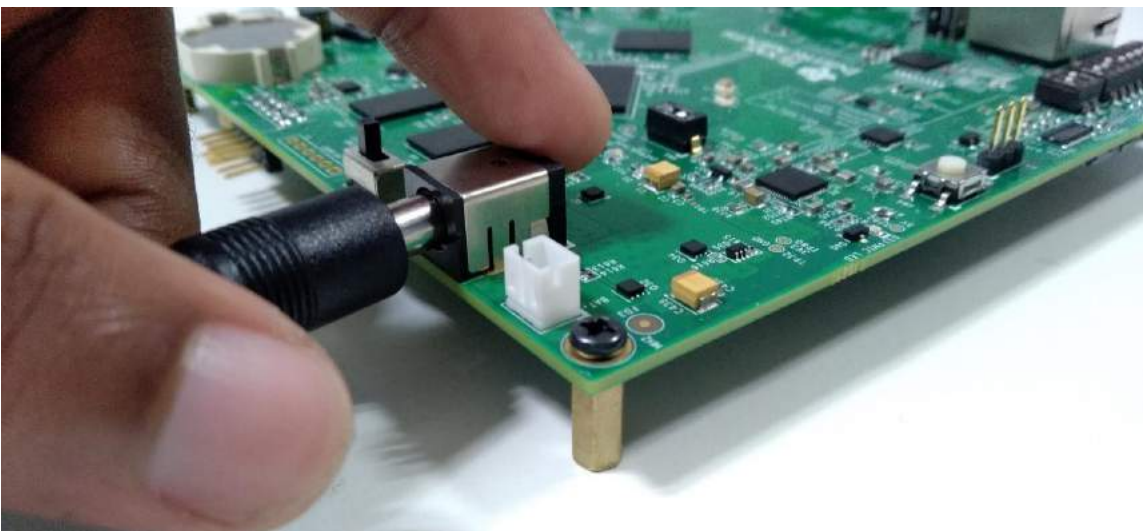
*Note: Refer the user manual for the procedure to access console through Terminal*

## 4.6 Powering the board

For powering the Evaluation Board, either one of the three following methods can be followed. But for full performance of the board Option-1 is recommended. Also note, in all these cases Coin-cell battery is needed.

### 4.6.1 Option-1: Powering through 5V DC Adapter

The primary power of the board is through DC Adapter. In which the system can show its full performance. Connect the 5V DC adapter plug to the jack (J1). Then power ON by switching SW1 to ON state. DC voltage above 5.25V is not Acceptable since over voltage protection circuit will break the power. Please refer below figure for reference.



**Figure 8: Connecting DC 5V adapter**

The adapter information is as below:

**Part No.:** SMI24-5-V-P6

**Manufacturer:** CUI Inc.



**POWER-OFF Procedure:** It is always recommended to Power-OFF by switching SW1 to OFF state before unplugging the DC Adaptor.

#### 4.6.2 Option-2: Powering through OTG

The Evaluation board can also power through USB2.0 OTG. For this Please connect a USB micro-B/micro-AB supported cable from PC to USB OTG connector (J25). Then the board will power from the PC. Since USB2.0 have power delivery of 5V, 500mA, high power activity on the system is not recommended in this option.



**Figure 9:Powering through USB2.0 OTG**

**POWER-OFF Procedure:** Unplug the cable connected to micro-B/AB connector to Power-OFF. Please note, the switch SW1 doesn't control input power ON/OFF.

#### 4.6.3 Option-3: Powering through Li-ion Battery-

In this mode a battery can be used for powering the Evaluation board. For this a Battery (able to deliver min 500mA) needs to be connected to the battery header (J2). Please make sure the polarity of the header before connecting. In this case, the interfaces which use 5V (CAN Transceiver, LCD, Audio codec) won't work because the battery voltage will be 3.7V.

**POWER-OFF Procedure:** It is always recommended to Power-OFF by switching SW1 to OFF state before unplugging the connection from J2.

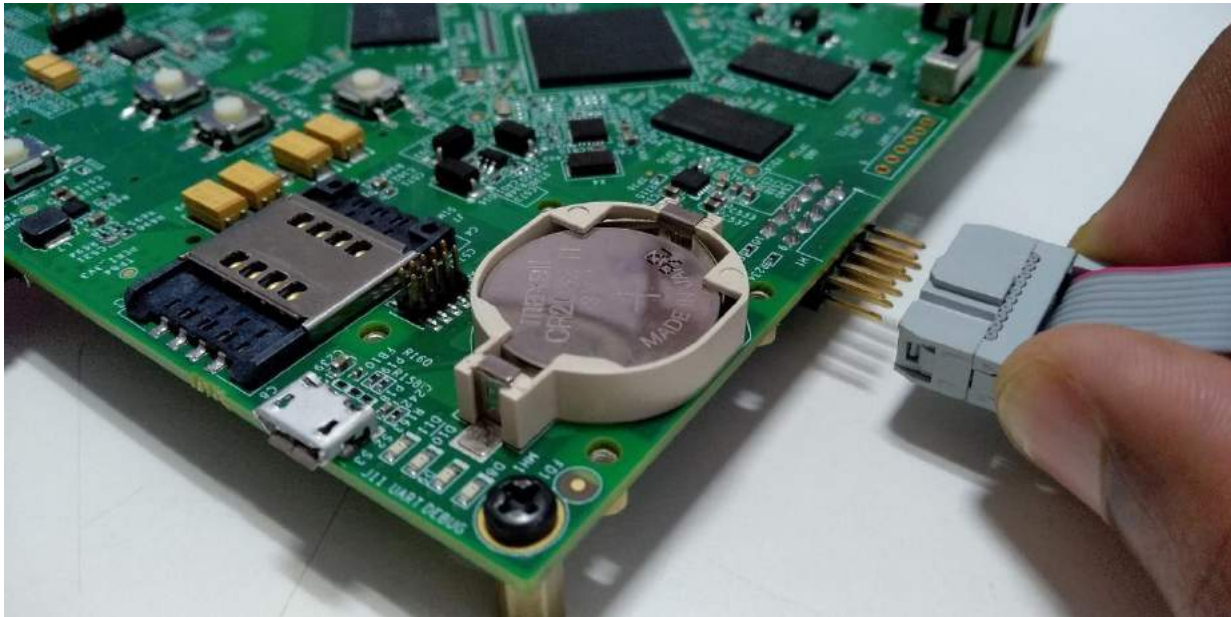
## 4.7 Connecting the User Interface Devices (Optional)

Below are the User Interfaces which can connect to our board. And all these devices are optional

1. USB2ANY
2. Ethernet
3. mini-PCIe
4. CAN Interface
5. SIM Card
6. Headphone Jack
7. Speaker Header
8. USB2 OTG/HOST
9. MIPI Camera
10. Parallel LCD Module

### 4.7.1 USB2ANY

Connect the USB2ANY 10 pin cable as shown below. Please make sure the Key facing Upside.



**Figure 10: Connecting USB2ANY.**

### 4.7.2 Ethernet

1000BASE-T Ethernet communication is supported. An Ethernet cable with RJ-45 mating can connect to the LAN connector (J27).

### 4.7.3 mini-PCIe

A standard mini-PCIe module can be connected to the mini-PCIe connector (J8).

### 4.7.4 Headphone Jack

Connect a 3.5mm Standard Headphone Plug to the headphone jack (J15).

#### 4.7.5 Speaker Header

Two 1W, 8E Speakers can be driven through this. Connect the Speaker 1 to pin H3.1 and H3.2. Connect Speaker 2 to pin H3.3 and H3.4.

#### 4.7.6 USB2 OTG/HOST

A standard USB2.0 device can be connected to the USB HOST connector (J26). OTG device can be connected through the USB OTG Connector (J25).

#### 4.7.7 MIPI Camera

Connect the same MIPI camera module used in NXP i.MX7D SABRE to the Connector (J20).

#### 4.7.8 LCD Module

Connect the same LCD module used in NXP i.MX7D SABRE to the Connector (J14).

### 4.8 On-board LED Information

#### 4.8.1 Power-ON LED 1

**ON:** Power-ON

**OFF:** Power-OFF

#### 4.8.2 Over-Voltage LED 2

**ON:** Input Over-voltage (> 5.25V)

**OFF:** Input Voltage within recommended range

#### 4.8.3 PMIC ON LED 3

**ON:** GPIO3 is pulled-high (PMIC-ON)

**OFF:** GPIO3 is pulled-low (PMIC-OFF).

*Note: In some case this LED can be seen glowing without PMIC power o/p. This state can be ignored.*

#### 4.8.4 Processor Status LED 4

**RED ON:** U-boot running

**LED OFF:** U-boot to Kernel control transition

**RED BLINKING:** Kernel running

**GREEN ON:** File system running

#### 4.8.5 PWM LED 5

The output of this LED is controlled by the Ambient Light Sensor. Based on the luminance value (intensity of light), the LED will dim or glow. There are 5 different steps of changes.

**DIM:** When the light intensity is less

**GLOW:** When the light intensity is more.

#### 4.8.6 Ethernet Link LED 6

**ON:** Ethernet link established

**OFF:** Ethernet link down

#### 4.8.7 Debug UART TX & RX 7

When the data is received or transmitted the below LEDs will blink.

**D9 & D11:** Transmit LED

**D8 & D10:** Receive LED

#### 4.8.8 mini-PCIe LEDs (BOTTOM)

**D5** – WWAN LED

**D6** – WLAN LED

**D7** – WPAN LED