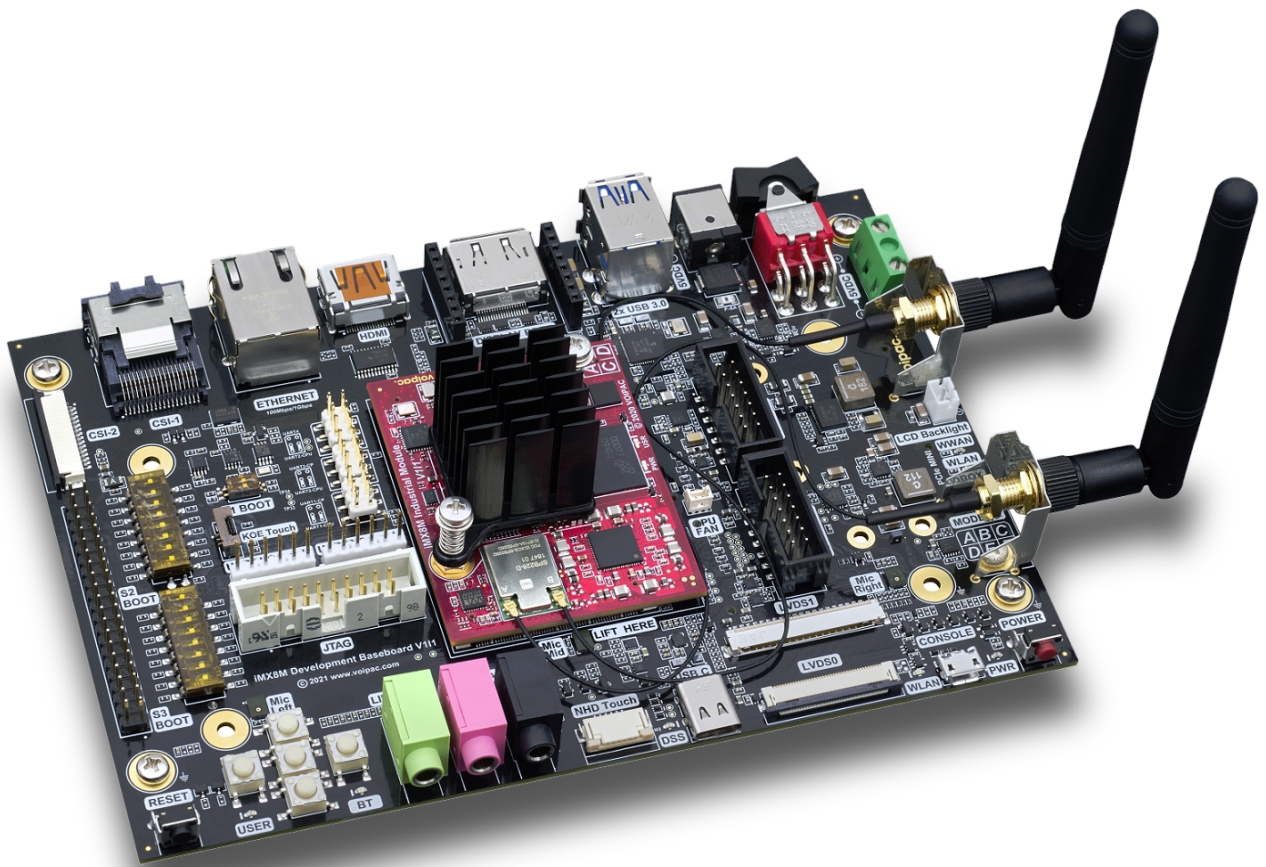


# iMX8M Industrial Development Kit

# QUICK GUIDE



**voipac.**



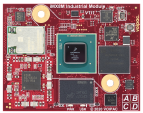
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# 1. iMX8M Industrial Development Kit

## 1.1. Development Kit Parts

These items are part of each standard configuration development kit providing all the necessities required to start the custom design process.



**iMX8M Industrial  
Module Max/Pro/Basic**



**iMX8M Development  
Baseboard**



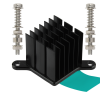
**Micro USB Cable**



**Patch Ethernet Cable**



**100-pin Shielded  
Connector**



**iMX8M Industrial  
Heatsink Set**

## 1.2. Development Kit Accessories

These add-ons have been selected to fast-track the development process, and are available for the purchase directly from Voipac webshop. All of these items are supported by the BSP software and were thoroughly tested. An extensive documentation stored in the **Voipac Downloads Section** of the website helps with any future custom design changes.



**KOE LVDS  
Capacitive Display Set**



**Newhaven LVDS  
Capacitive Display Set**



**NXP MIPI-CSI  
Camera Set**



**Digilent MIPI-CSI  
Camera Set**



**CANbus Module**



**M.2 to 4x SATA Module**



**WiFi and Bluetooth  
Antennas Set**



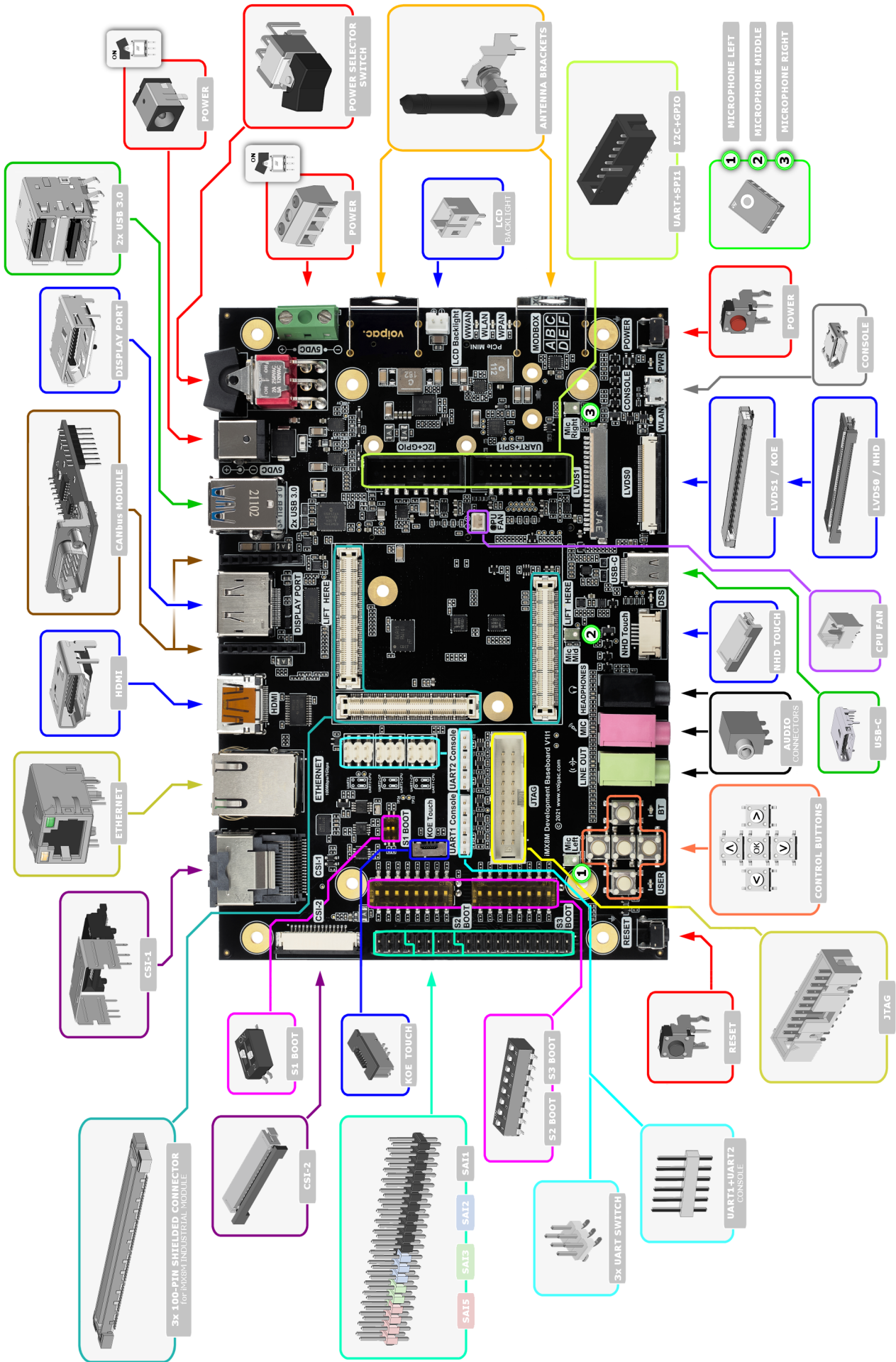
**Power Supply  
5V 40W**



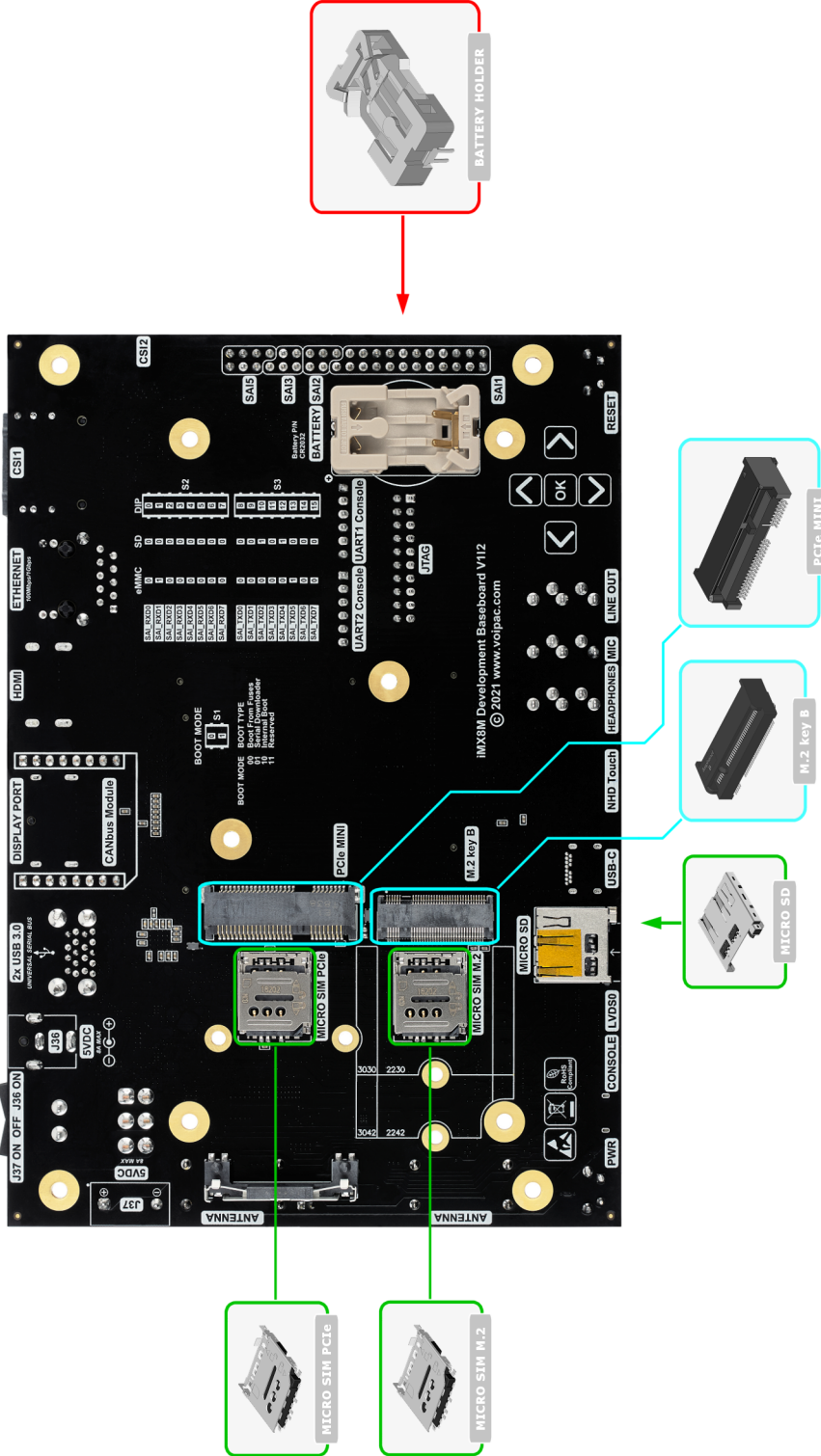
**Hardware and Software  
Development Support**

# 1.3. Baseboard Connectors and Main Components

## BASEBOARD TOP SIDE

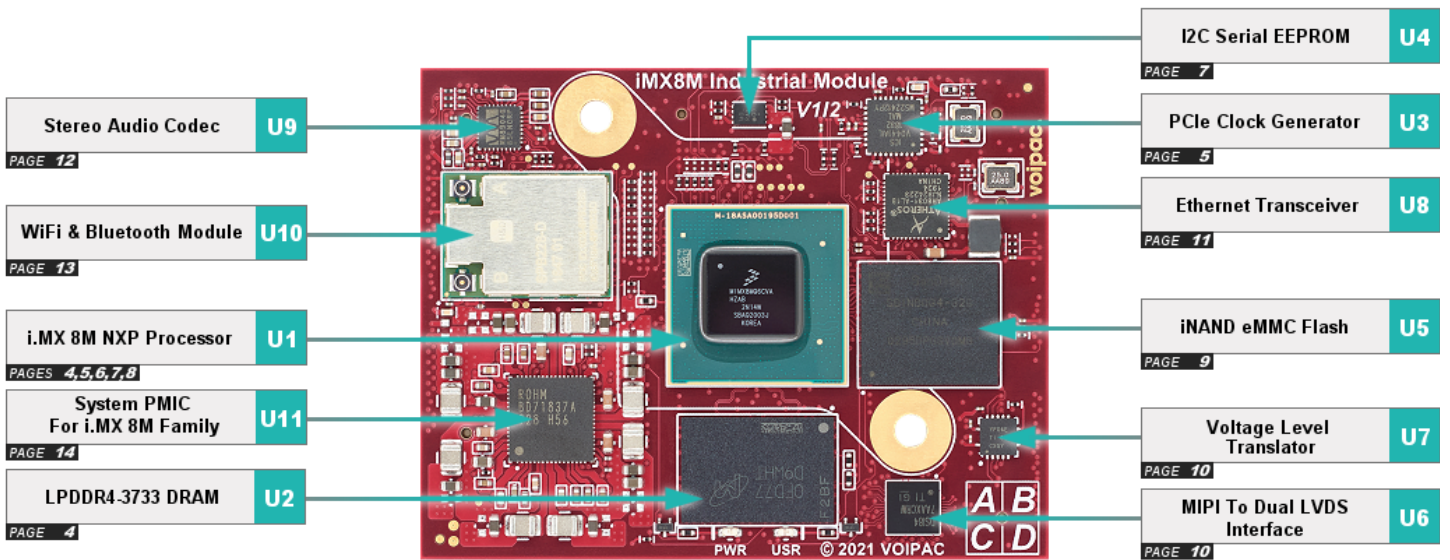


# BASEBOARD BOTTOM SIDE

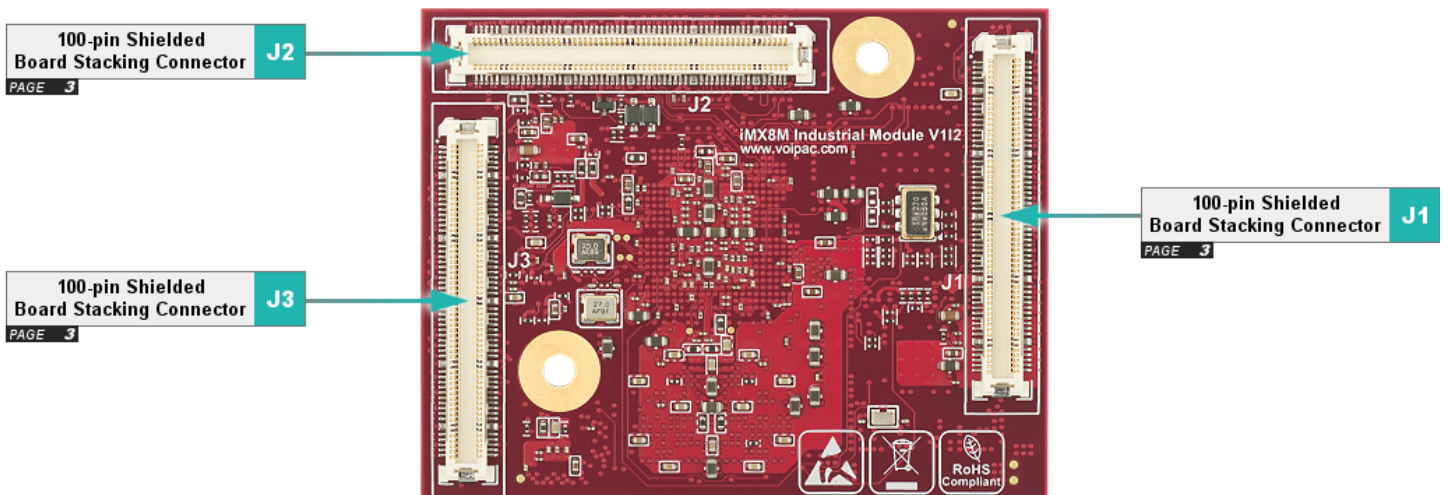


## 1.4 Module Key Components

### MODULE TOP SIDE



### MODULE BOTTOM SIDE



**NOTE:** The page number in **black field** refers to the iMX8M Industrial Module schematics document page.

**NOTE:** The confidential schematics is available for download from the **kit downloads** section of the commercial web site after the development kit purchase.

## 2. Flashing Procedure Info

This section describes how to flash binaries into iMX8M Industrial Module's eMMC Flash memory, or into SD card that is located on the iMX8M Development Baseboard.

**NOTE:** The steps listed below are **NOT REQUIRED** for standard configuration development kits as all of them are preinstalled with software, setup for desired configuration and tested before dispatch. This section is intended to be used as a starting point for software customization or when binaries recovery is needed.



# 3. Installing Universal Upload Utility (UUU)

The **UUU** (Universal Update Utility) is an evolution of MFGTools (aka MFGTools v3). This utility is NXP's i.MX Chip image deployment tool, which has the same usage on both OS Windows and OS Linux. It means the same script works on both OS as command line tool, so users can easily integrate it into their tools with UUU library.

## 3.1. OS Windows

- Go to: <https://github.com/NXPmicro/mfgtools/releases>
- Select the latest stable release. Example: **Releases/uuu\_1.4.243**:  
[https://github.com/NXPmicro/mfgtools/releases/tag/uuu\\_1.4.243](https://github.com/NXPmicro/mfgtools/releases/tag/uuu_1.4.243)
- Download Universal Uptade Utility (UUU):  
[https://github.com/NXPmicro/mfgtools/releases/download/uuu\\_1.4.243/uuu.exe](https://github.com/NXPmicro/mfgtools/releases/download/uuu_1.4.243/uuu.exe)
- Save the file into: **C:\uuu**

## 3.2. OS Linux

```
git clone ssh://git@github.com/NXPmicro/mfgtools.git
cd mfgtools
mkdir .build && cd .build && cmake .. && make -j`nproc`
```

The binary called **uuu**, which is used for flashing, is located in `.build/uuu` directory.

# 4. Preparing the Binaries

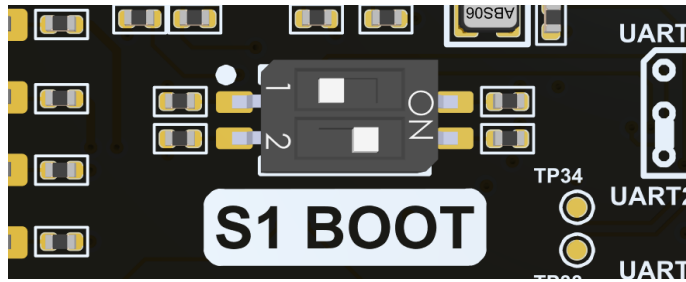
Locate the binary files for flashing the module at **Voipac Downloads Section**.

- Download the default bootloader file (imx-boot):  
[https://downloads.voipac.com/files/iMX8M\\_Industrial\\_Development\\_Kit/module/software/yocto/binaries/imx-boot](https://downloads.voipac.com/files/iMX8M_Industrial_Development_Kit/module/software/yocto/binaries/imx-boot)
- Download the default WIC filesystem image (voipac-image-imx8mq-voipac.wic):  
[https://downloads.voipac.com/files/iMX8M\\_Industrial\\_Development\\_Kit/module/software/filesystem/voipac-image-imx8mq-voipac.wic](https://downloads.voipac.com/files/iMX8M_Industrial_Development_Kit/module/software/filesystem/voipac-image-imx8mq-voipac.wic)

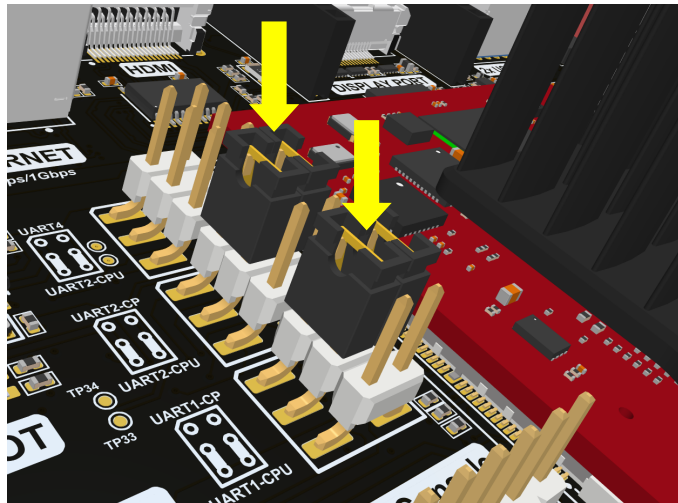
Store released Image + Bootloader to the same folder as uuu mfgtools was saved (**C:\uuu**).

# 5. Flashing Procedure

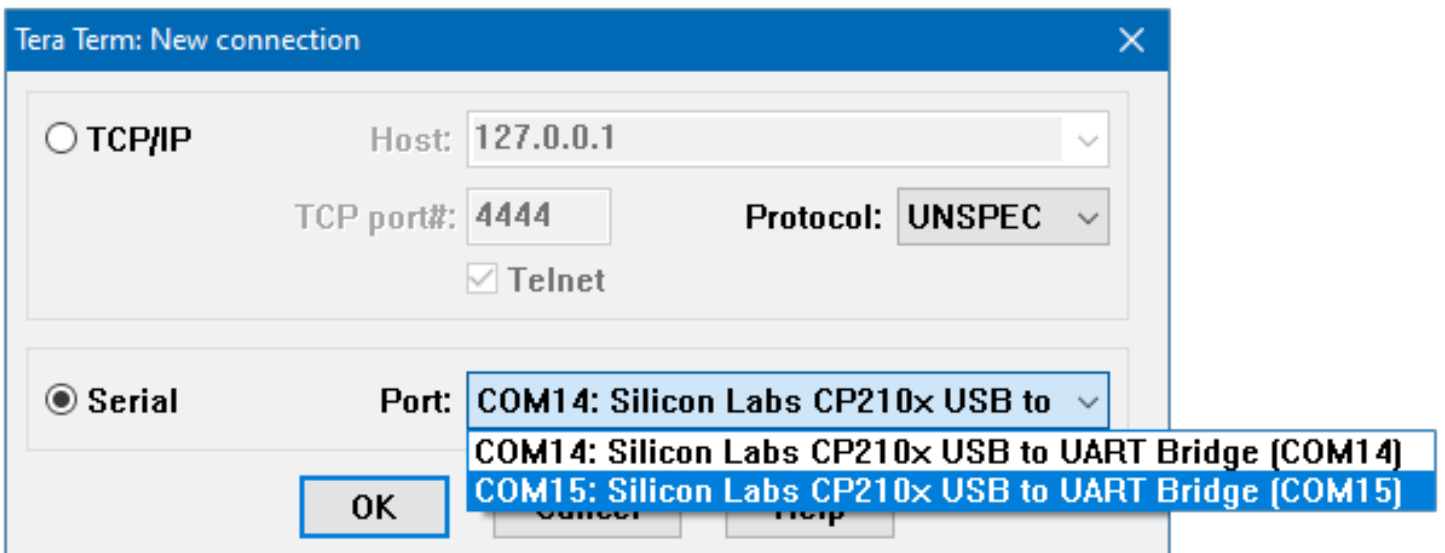
- Set serial downloader mode by sliding DIP switch **S1 BOOT** positions to: **1-OFF, 2-ON**



- Plug USB Micro-B cable to baseboard CONSOLE connector and PC
- Plug USB-C cable to baseboard USB-C connector and PC
- Note:** Powering of the development kit is not required during the flashing procedure.*
- Make sure that UART1 and UART2 jumpers are in CP2105 positions (USB/UART bridge) as shown at the picture below:



***Note:** After connecting 2 development board cables, 2 serial ports named **Silicon Labs Dual CP2105 USB to UART Bridge** should appear in the controlling PC.*



- Make sure that the downloaded imx-boot and \*.wic files are located in the **C:\uuu** directory
- Choose one of the following commands to start the flashing process:

## 5.1. eMMC Flash Memory (DEFAULT)

### OS Windows

```
uuu.exe -b emmc_all imx-boot voipac-image-imx8mq-voipac.wic
```

### OS Linux

```
sudo ./uuu -b emmc_all imx-boot voipac-image-imx8mq-voipac.wic
```

## 5.2. SD Card

### OS Windows

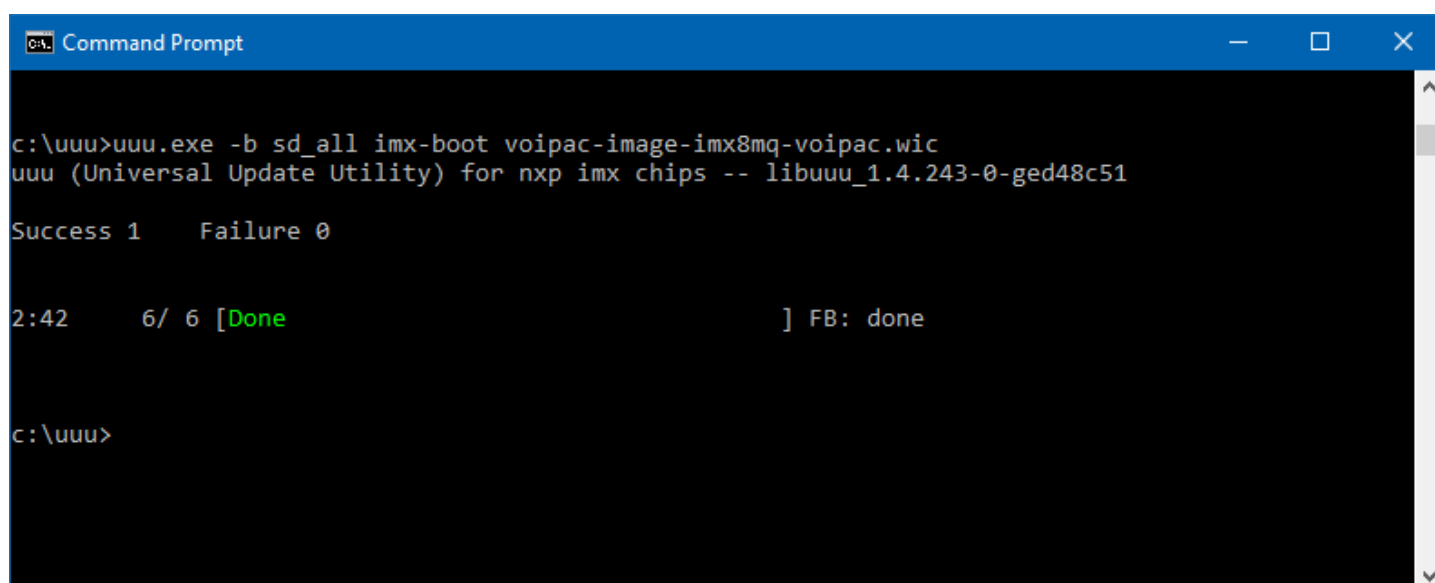
```
uuu.exe -b sd_all imx-boot voipac-image-imx8mq-voipac.wic
```

### OS Linux

```
sudo ./uuu -b sd_all imx-boot voipac-image-imx8mq-voipac.wic
```

## Flashing logs

UUU



```
Command Prompt
c:\uuu>uuu.exe -b sd_all imx-boot voipac-image-imx8mq-voipac.wic
uuu (Universal Update Utility) for nxp imx chips -- libuuu_1.4.243-0-ged48c51

Success 1      Failure 0

2:42      6/ 6 [Done          ] FB: done

c:\uuu>
```

```

COM15:115200baud - Tera Term VT
File Edit Setup Control Window Help
writing to partition 'all' for sparse, buffer size 16776244
Flashing sparse image at offset 0
Flashing Sparse Image
..... wrote 16776192 bytes to 'all'
request 00000000ff142900 was not queued to eplin-bulk
Starting download of 7807028 bytes
request 00000000ff142900 was not queued to eplin-bulk
.....
downloading of 7807028 bytes finished
request 00000000ff142900 was not queued to eplin-bulk
writing to partition 'all'
sparse flash target is mmc:l
writing to partition 'all' for sparse, buffer size 7807028
Flashing sparse image at offset 0
Flashing Sparse Image
..... wrote 7806976 bytes to 'all'
request 00000000ff142900 was not queued to eplin-bulk
request 00000000ff142900 was not queued to eplin-bulk
Starting download of 1168032 bytes
request 00000000ff142900 was not queued to eplin-bulk
.....
downloading of 1168032 bytes finished
request 00000000ff142900 was not queued to eplin-bulk
writing to partition 'bootloader'
Initializing 'bootloader'
Run CMD11 1.8V switch
switch to partitions #0, OK
mmc1 is current device
Writing 'bootloader'

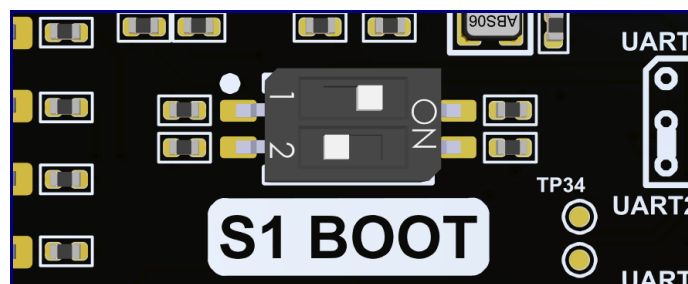
MMC write: dev # 1, block # 66, count 2282 ... 2282 blocks written: OK
Writing 'bootloader' DONE!
request 00000000ff142900 was not queued to eplin-bulk

```

## 6. Running the Newly Flashed Binaries

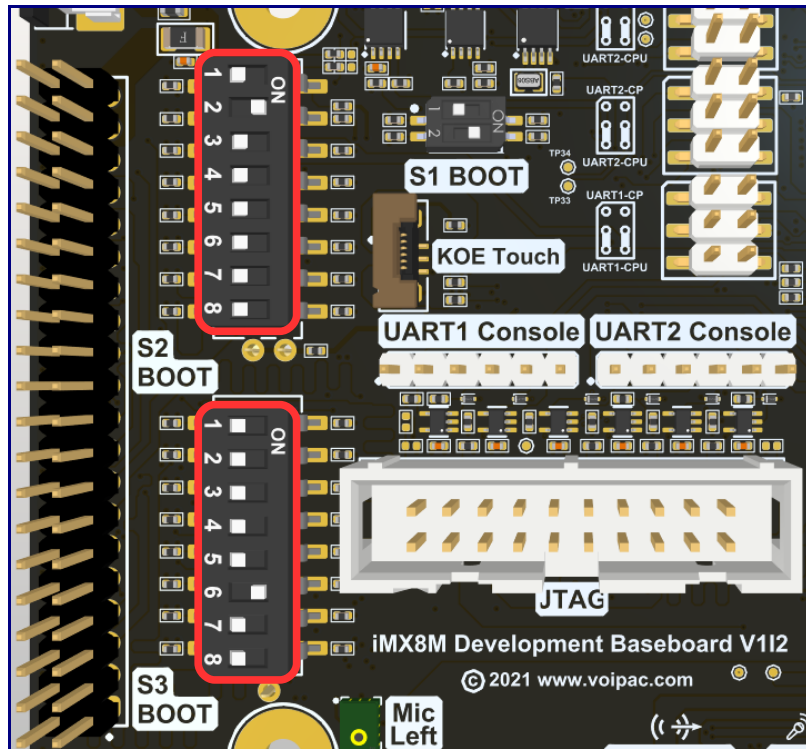
After completing the above steps, eMMC Flash memory or SD Card is flashed and the following steps are to be performed to boot the new image:

- Unplug USB-C cable from PC
- Set Boot mode by sliding DIP switch **S1 BOOT** positions to: **1-ON, 2-OFF**

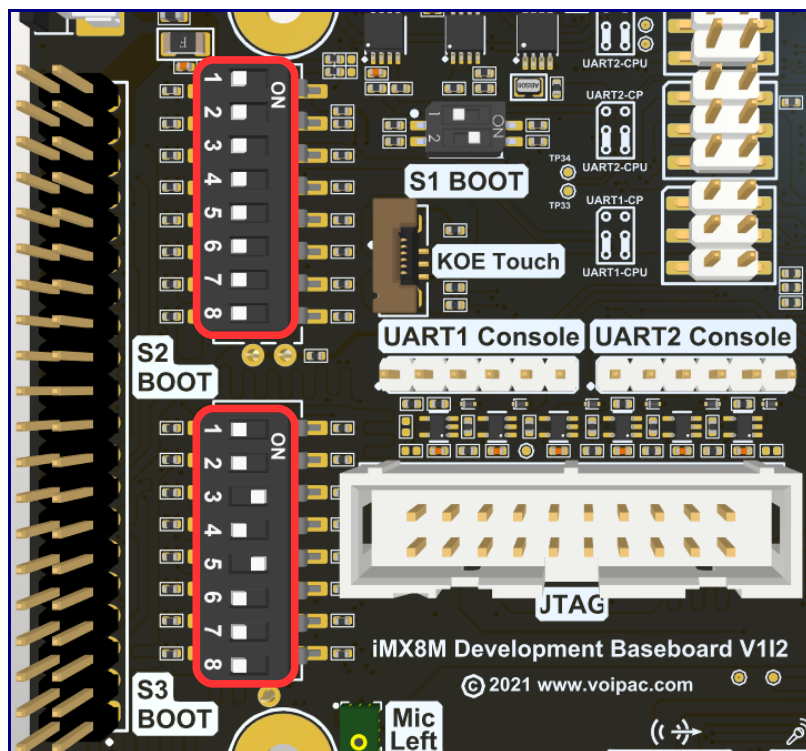


- Make sure that **S2 BOOT** and **S3 BOOT** DIP switches are in correct positions in order to boot from the selected storage media (eMMC Flash memory or SD Card):

## eMMC FLASH MEMORY BOOT (default)



## SD CARD BOOT



- Connect USB Micro-B debug cable, switch on the power and the development kit starts booting with the new binaries:

```

COM15:115200baud - Tera Term VT
File Edit Setup Control Window Help
[ OK ] Started Permit User Sessions.
[ OK ] Reached target Sound Card.
[ OK ] Started Getty on tty1.
[ OK ] Started Serial Getty on ttymxc0.
[ OK ] Reached target Login Prompts.
[ OK ] Started Weston Wayland Compositor.
[ OK ] Started Login Service.
[ OK ] Created slice User Slice of UID 0.
[ OK ] Reached target Multi-User System.
Starting Update UTMP about System Runlevel Changes...
Starting User Runtime Directory /run/user/0...
[ OK ] Started Update UTMP about System Runlevel Changes.
[ OK ] Started User Runtime Directory /run/user/0.
Starting User Manager for UID 0...
[ 6.676393] audit: type=1006 audit(1600598640.871:2): pid=336 uid=0 old-auid=4294967295 auid=0 tty=(
none) old-ses=4294967295 ses=1 res=1
[ 6.820125] mwifiex_pcie 0000:01:00.0: info: FW download over, size 632240 bytes
[ OK ] Started User Manager for UID 0.
[ OK ] Started Session c1 of user root.
[ 7.289425] cdns-mhdp-imx 32c00000.hdmi: 0,ff,ff,ff,ff,ff,ff,0
[ 7.337296] random: crng init done
[ 7.340745] random: 7 urandom warning(s) missed due to ratelimiting
[ OK ] Started Load/Save Random Seed.
[ 7.693264] mwifiex_pcie 0000:01:00.0: WLAN FW is active
[ 7.729053] mwifiex_pcie 0000:01:00.0: Unknown api_id: 3
[ 7.734406] mwifiex_pcie 0000:01:00.0: Unknown api_id: 4
[ 7.739761] mwifiex_pcie 0000:01:00.0: Unknown GET_HW_SPEC TLV type: 0x217
[ 7.755578] mwifiex_pcie 0000:01:00.0: info: MWIFIEX VERSION: mwifiex 1.0 (16.68.1.p179)
[ 7.763292] mwifiex_pcie 0000:01:00.0 wlp1s0: renamed from mlan0
[ 7.763812] mwifiex_pcie 0000:01:00.0: driver_version = mwifiex 1.0 (16.68.1.p179)
FSLC Wayland with XWayland 3.1 imx8mq-voipac ttymxc0
imx8mq-voipac login:

```

## 7. Useful Information

### 7.1. Development Kit Downloads

#### Module Flyer



#### Module Datasheet



**Note:** The *IMX8M Industrial Module Confidential Schematic* is available for download from the kit downloads section of the commercial web site after the development kit purchase.

[Baseboard Datasheet](#)



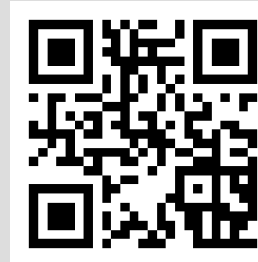
[Voipac Downloads](#)



[Voipac Wiki](#)



[Voipac GitHub](#)



## 7.2. Additional Information

[COMs and SBCs Feature Overview](#)



[Price List](#)



[Latest Version of the Quick Guide](#)



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