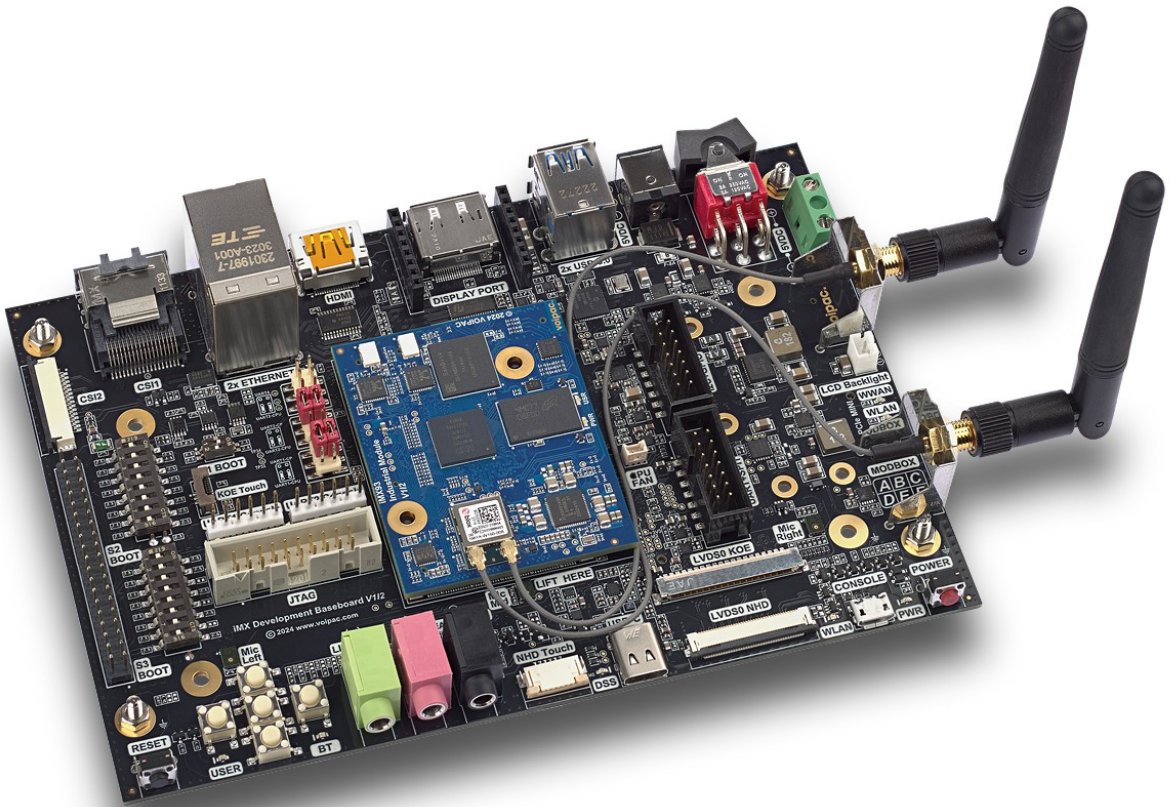


# iMX93 Industrial Development Kit

# QUICK GUIDE



**voipac.**

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# 1. iMX93 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.



**iMX93 Industrial Module  
Max/Pro/Basic/Lite**



**iMX Development  
Baseboard**



**Micro USB Cable**



**Patch Ethernet Cable**



**100-pin Shielded  
Connector**

## 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 website [downloads section](#) helps with any future custom design changes.



**BOE LVDS  
Capacitive Display Set**



**Digilent MIPI-CSI  
Camera Set**



**iMX93 Voice  
Command Demo**



**iMX93 WiFi and Bluetooth  
Antennas Set**



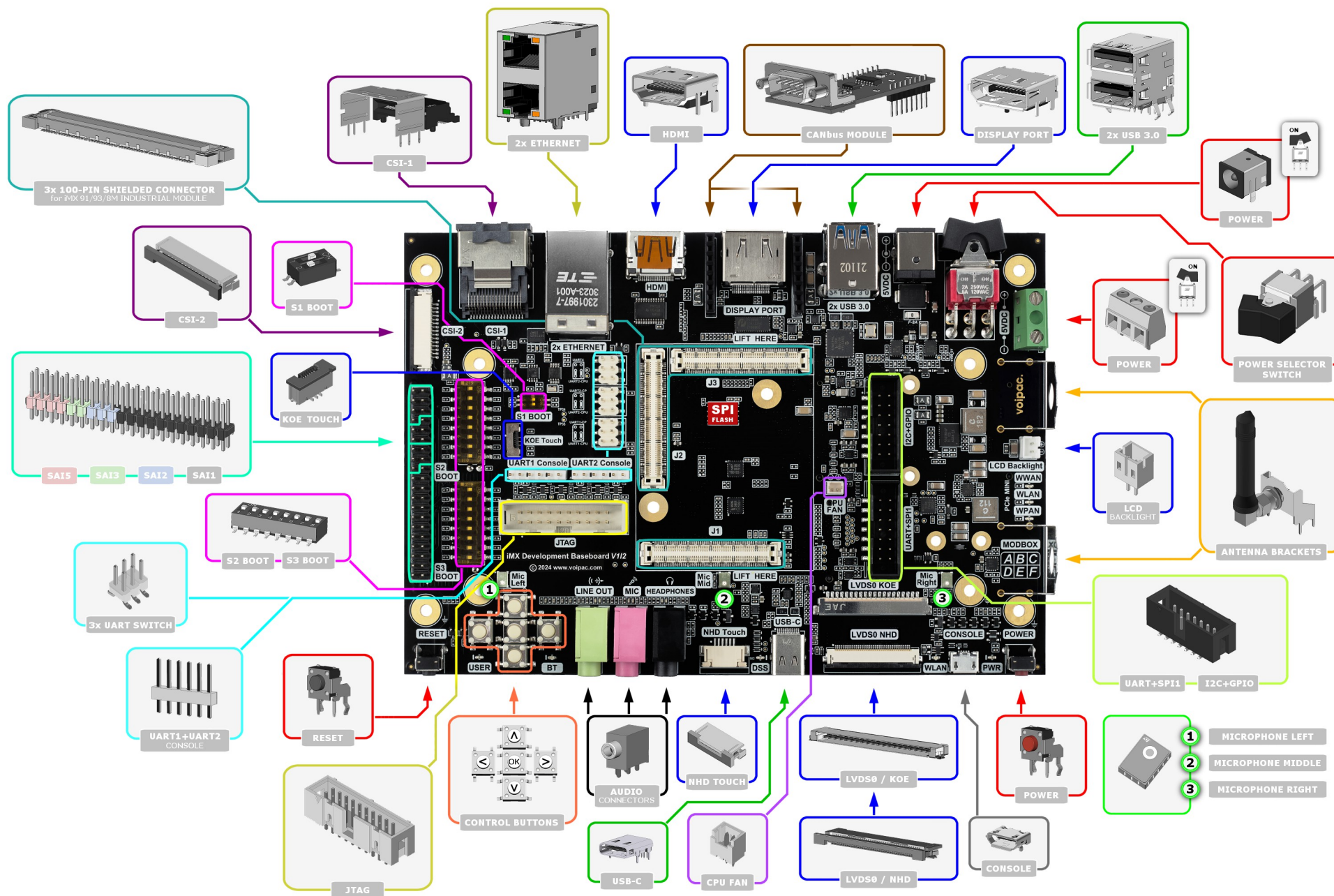
**Power Supply  
5V 20W**



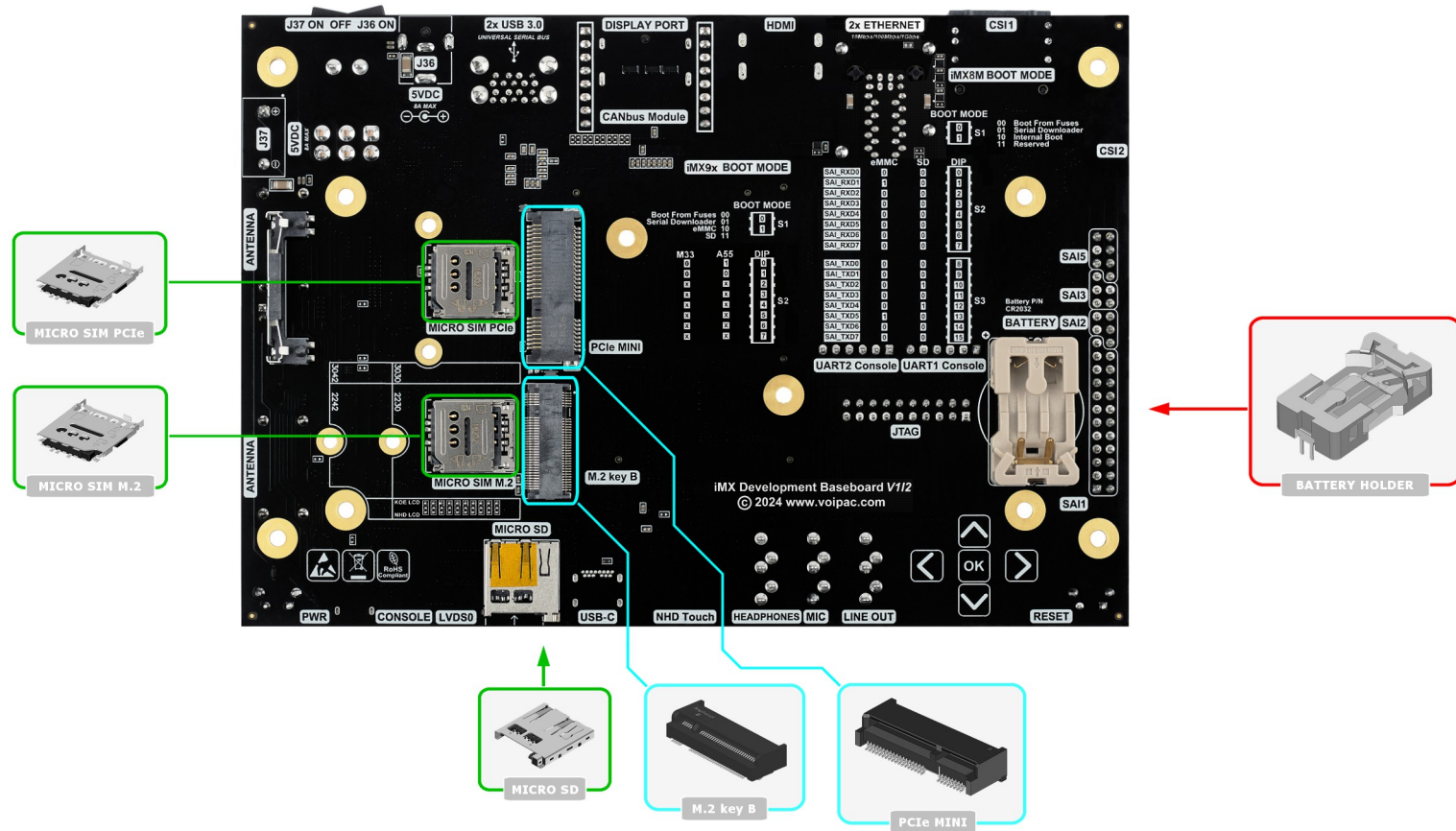
**Hardware and Software  
Development Support**

# 1.3. Baseboard and Module Connectors and Main Components

## BASEBOARD TOP SIDE

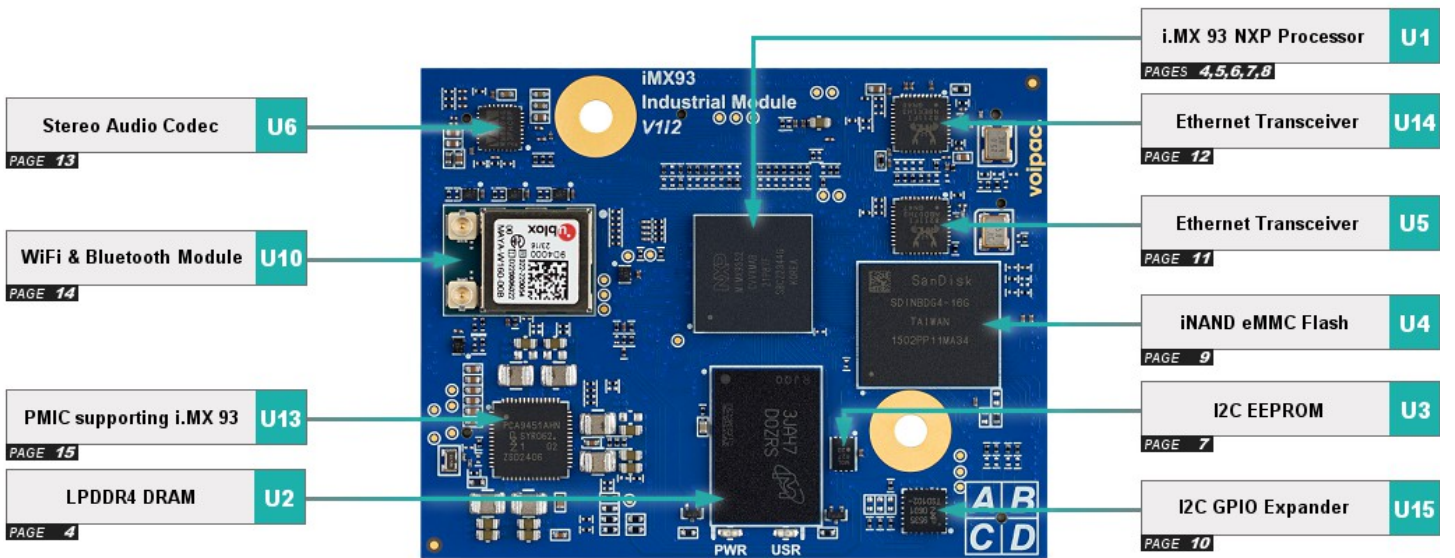




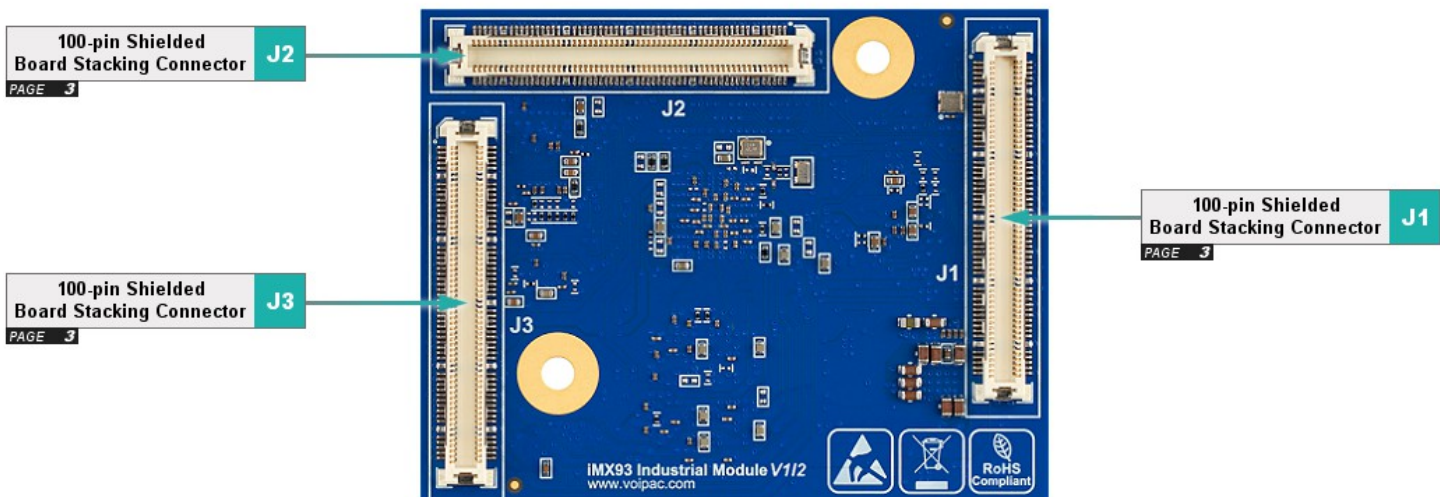


## 1.4 Module Key Components

### 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 iMX93 Industrial Module's eMMC Flash memory, or into SD card that is located on the iMX 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: [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](#).

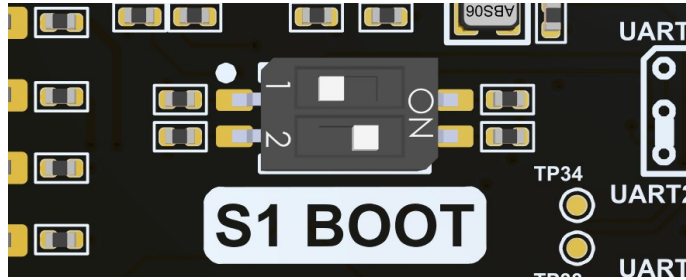
- Download the default bootloader file: [imx-boot](#)
- Download the default WIC filesystem image for specific module configuration:  
[voipac-image-imx93-configuration.rootfs.wic](#)

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

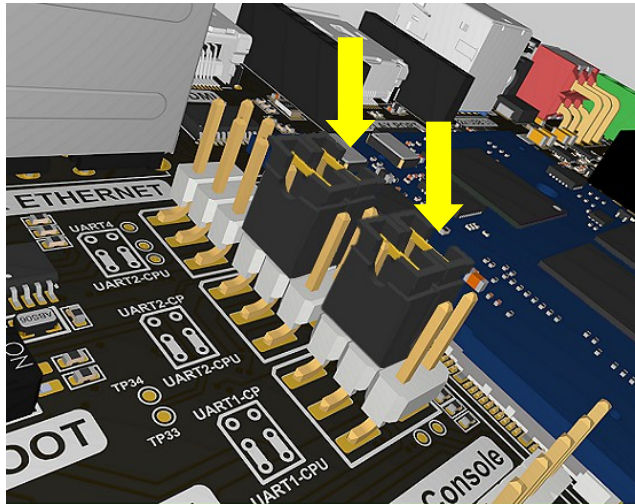


# 5. Flashing Procedure

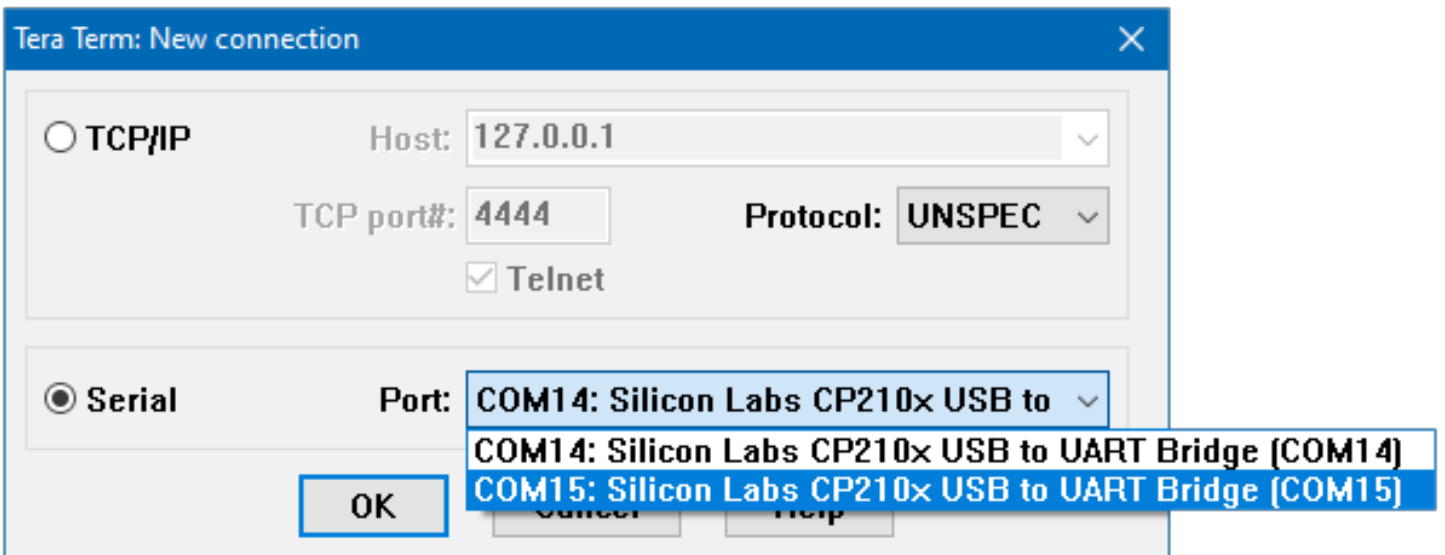
- Set serial downloader mode by sliding DIP switch **S1 BOOT** positions to: **1-OFF, 2-ON**



- 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-imx93-configuration
.rootfs.wic
```

### OS Linux

```
sudo ./uuu -b emmc_all imx-boot voipac-image-imx93-configuration
.rootfs.wic
```

## 5.2. SD Card

### OS Windows

```
uuu.exe -b sd_all imx-boot voipac-image-imx93-configuration
.rootfs.wic
```

### OS Linux

```
sudo ./uuu -b sd_all imx-boot voipac-image-imx93-configuration
.rootfs.wic
```

## Flashing logs

UUU

```

c:\uuu>uuu.exe -b emmc_all voipac-image-imx93-voipac-max.rootfs.wic
uuu (Universal Update Utility) for nxp imx chips -- libuuu_1.4.243-0-ged48c51

Success 1    Failure 0

2:43      8/ 8 [Done]      ] FB: done

c:\uuu>
```

```

COM15:115200baud - Tera Term VT
File Edit Setup Control Window Help
..... wrote 16776192 bytes to 'all'
Starting download of 16776244 bytes
.....
downloading of 16776244 bytes finished
writing to partition 'all'
sparse flash target is mmc:0
writing to partition 'all' for sparse, buffer size 16776244
Flashing sparse image at offset 0
Flashing Sparse Image
..... wrote 16776192 bytes to 'all'
Starting download of 11424820 bytes
.....
downloading of 11424820 bytes finished
writing to partition 'all'
sparse flash target is mmc:0
writing to partition 'all' for sparse, buffer size 11424820
Flashing sparse image at offset 0
Flashing Sparse Image
..... wrote 11424768 bytes to 'all'
Starting download of 2126848 bytes
.....
downloading of 2126848 bytes finished
writing to partition 'bootloader'
Initializing 'bootloader'
switch to partitions #1, OK
mmc0(part 1) is current device
Writing 'bootloader'

MMC write: dev # 0, block # 0, count 4154 ... 4154 blocks written: OK
Writing 'bootloader' DONE!
Detect USB boot. Will enter fastboot mode!
Detect USB boot. Will enter fastboot mode!

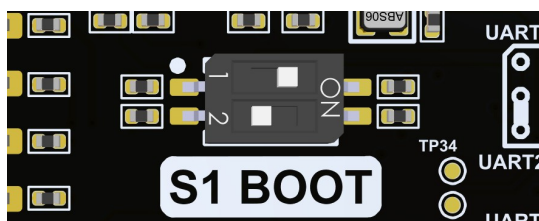
```

## 6. Running the Newly Flashed Binaries

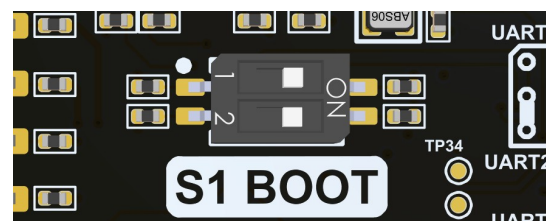
After completing the above steps, eMMC Flash memory or SD Card is flashed and the following steps are to be performed to boot the new image:

- Unplug USB-C cable from PC
- Set Boot mode by sliding DIP switch **S1 BOOT** positions to boot from:

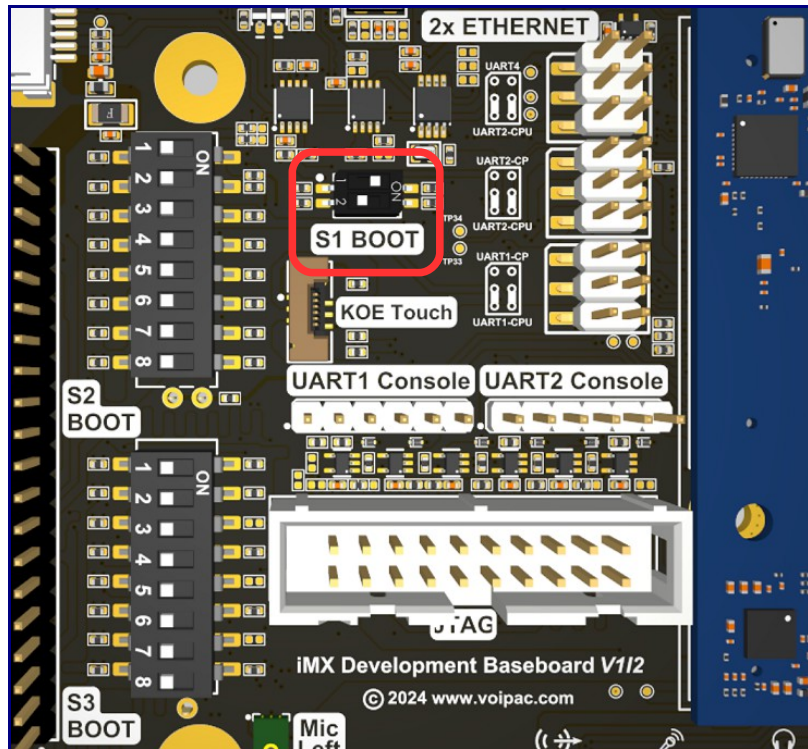
eMMC: 1-ON, 2-OFF



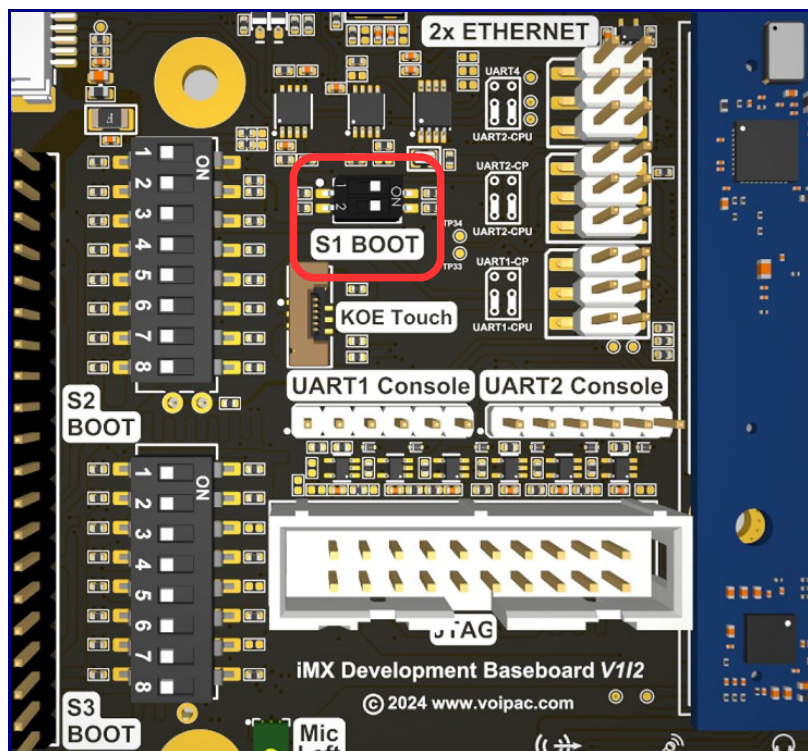
SD Card: 1-ON, 2-ON



## 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
[ 6.272082] audit: type=1334 audit(1709054768.072:12): prog-id=16 op=LOAD
Starting User Login Management...
Starting Permit User Sessions...
[ OK ] Started TEE Supplicant.
[ OK ] Started D-Bus System Message Bus[ 6.416664] imx8_media_dev: module is from the staging dire
ctory, the quality is unknown, you have been warned.
.
[ 6.452438] mx8-img-md: Registered mxc_isi.0.capture as /dev/video0
[ 6.462716] CAN device driver interface
[ 6.467994] unregister ISI channel: mxc_isi.0
[ OK ] Finished Permit User Sessions.
[ OK ] Started Avahi mDNS/DNS-SD Stack.
[ OK ] Started Getty on ttyL.
[ OK ] Started Serial Getty on ttyLP0.
[ 6.574612] wm8904 0-001a: supply DCVDD not found, using dummy regulator
[ OK ] Reached target[ 6.586444] wm8904 0-001a: supply DBVDD not found, using dummy regulator
t Login [ 6.595612] wm8904 0-001a: supply AVDD not found, using dummy regulator
Prompts.
[ 6.605123] wm8904 0-001a: supply CPVDD not found, using dummy regulator
[ 6.605471] at24 0-0050: supply vcc not found, using dummy regulator
[ 6.612446] wm8904 0-001a: supply MICVDD not found, using dummy regulator
[ OK ] Started User Login M[ 6.629904] wm8904 0-001a: revision A
anagement.
[ OK ] Reached target Multi-User System.
[ 6.678842] at24 0-0050: 131072 byte 24c1024 EEPROM, writable, 1 bytes/write
Starting Record Runlevel Change in UTMP...
[ OK ] Finished Record Runlevel Change in UTMP.
[ 6.738841] at24 1-0053: supply vcc not found, using dummy regulator
[ 6.761571] at24 1-0053: 256 byte 24c02 EEPROM, writable, 8 bytes/write
[ 6.806564] fsl_mc_err_probe: No ECC DIMMs discovered

VOIPAC DISTRO 0.0.1 imx93-voipac ttyLP0
imx93-voipac login:

```

## 7. Useful Information

### 7.1. Development Kit Downloads

[iMX93 Industrial Module Flyer](#)

[Voipac Downloads](#)

[iMX93 Industrial Module Datasheet](#)

[Voipac GitHub](#)

[iMX93 Industrial Baseboard Datasheet](#)

[Voipac Wiki](#)

[iMX93 Industrial Module Confidential Schematic](#) is available for download from the kit downloads section of the commercial web site after the development kit purchase.

### 7.2. Additional Information

[COMs and SBCs feature overview](#)

[Voipac Price List](#)



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