MSMP1 on OSMEVK QuickStartGuide

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ONE

ABOUT THIS MANUAL

1.1 Imprint

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1.5 Care and Maintenance

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, allow it to dry completely.

- Do not use or store the device in dusty, dirty areas. Its moving parts and electronic components can be damaged.

- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.

- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.

- Do not attempt to open the device.

- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.

- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.

- Do not paint the device. Paint can clog the moving parts and prevent proper operation.

- Unauthorized modifications or attachments could damage the device and may violate regulations governing radio devices.

1.6 Change Log

Revision	Date	Revised	Comment
1.0	15.04.2025	fn	Initial creation

CHAPTER

TWO

INITIAL OPERATION

Note: The following steps guide you to the correct settings of your MSMP1 on OSMEVK.

2.1 Requirements

Before commissioning, please ensure that you have the following components and the correct operating system installed on your computer:

Components

- MSMP1 module on OSMEVK_ADAP_MSMP1 adapterboard
- OSMEVK baseboard
- Micro SD card
- USB type-C cable
- Micro USB cable

Operating systems

This QuickStartGuide was designed for Linux Ubuntu, which is why this operating system is recommended for use.

2.2 Installation of MSMP1 on OSMEVK baseboard.

! CAUTION !

To avoid mechanical damage to the components populated on MSMP1 it is strongly recommended not to apply mechanical force on the Ball Grid Array (BGA) components. The BGA components are marked as shaded in the figure below:
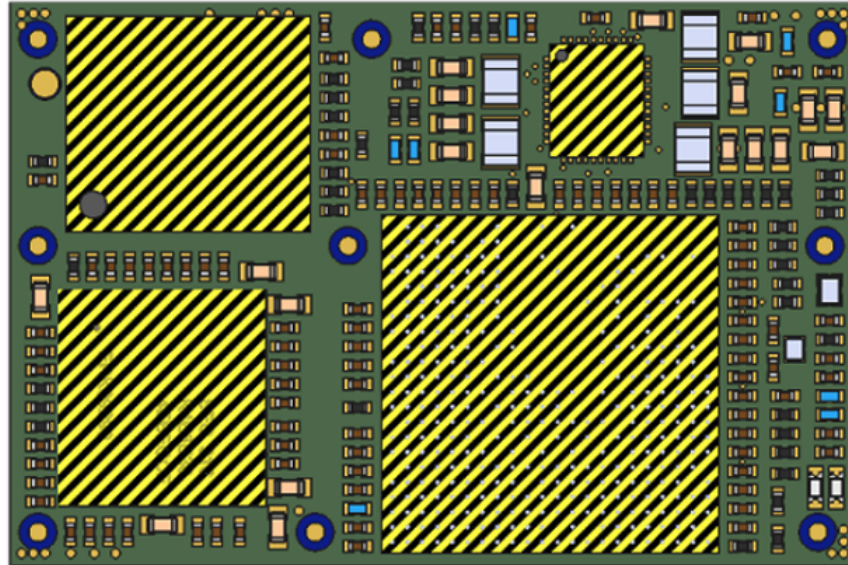
The MSMP1 module is available on the OSMEVK_ADAP_MSMP1 adapterboard. Before attaching the adapter board, make sure that the mounting holes match the intended positions on the baseboard.
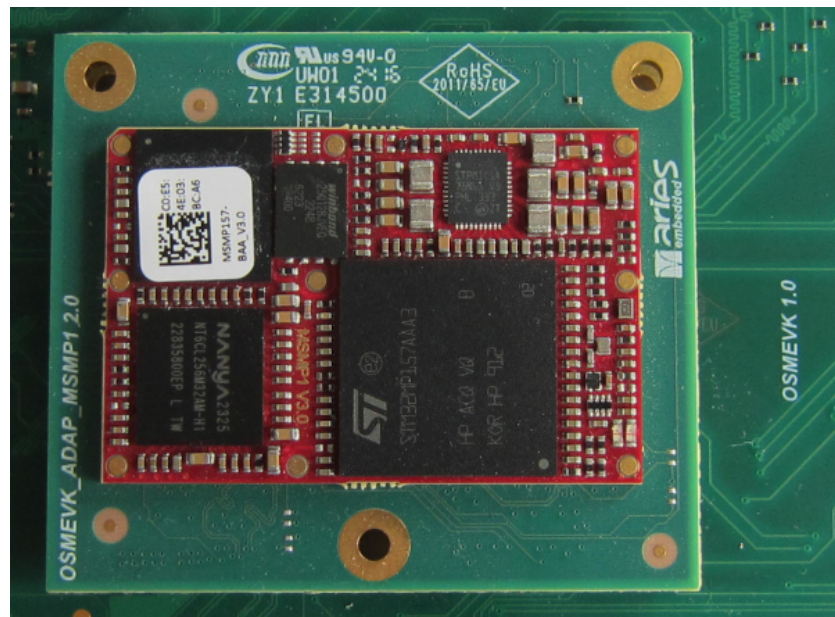
2.3 Start Linux Computer and install Picocom

You can install **Picocom** on Linux and add the user to the dialout-group using the following commands on the terminal:

```
sudo apt install picocom
sudo usermod -a -G dialout $USER
```

Note: Changes of the user's groups may require a relog or reboot

The UART on the CPU uses a baudrate of 115200. Connect to the serial port with the following command. **ttyUSB0** refers to the default device name, it may be different per user.

```
picocom -b 115200 /dev/ttyUSB0
```

2.4 Create a bootable microSD card

To create a bootable microSD card, the intended SD card images must be downloaded via the following link: SD card images.

1. Begin by extracting the contents of the downloaded file to get the image file ("sdcard.img")

2. Transfer the image to your SD card using the following command (Make sure to replace mmcblk0 with the actual device name, which is explained in the steps below):

```
sudo dd if=<path>/sdcard.img of=/dev/mmcblk0 bs=512 status=progress
```

To determine the actual name of your device, commands such as "lsblk" or "dmesg" can be used. The following code block shows an example for the determination of the actual name by using the command "dmesg" after inserting the SD card:

```
dmesg

[ 5997.466856] mmc0: new ultra high speed SDR50 SDHC card at address aaaa
[ 5997.467417] mmcblk0: mmc0:aaaa SL08G 7.40 GiB
[ 5997.478761]  mmcblk0: p1
```

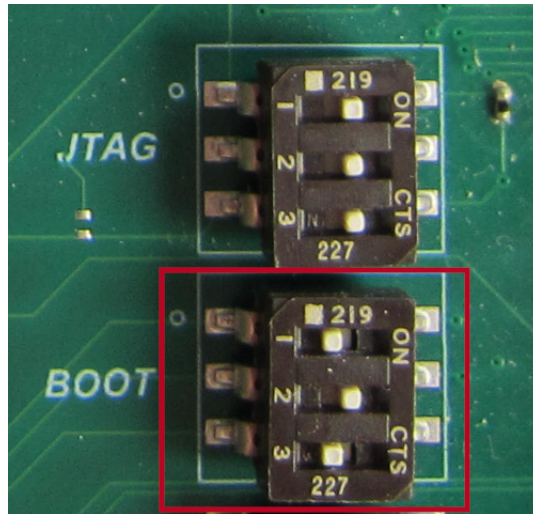=> The displayed name "mmcblk0" is the actual device name.

After transferring the files, the SD card can be inserted into the designated slot on the baseboard:
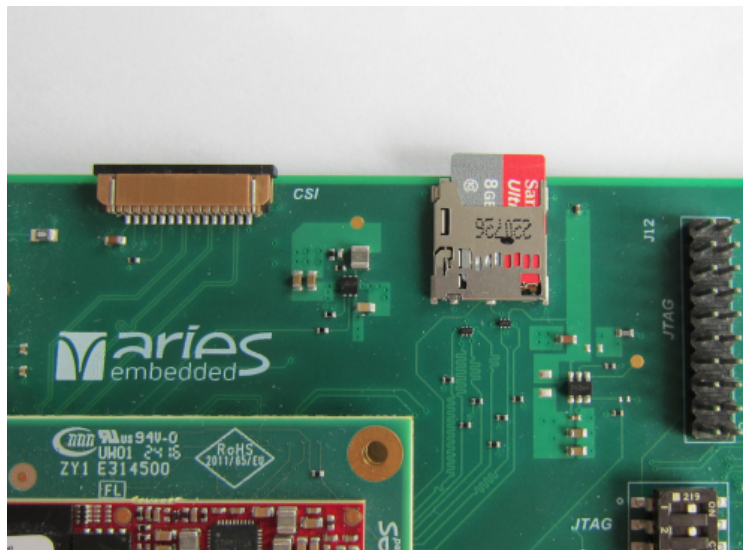
2.5 Adjust boot switches

To boot from the SD card with the default setting, the switches must be set as follows:

In addition, the following table shows the setting of the boot switches for selecting further boot modes:

- **Switch Orientation**: Left = OFF, Right = ON

| Switch 1	Switch 2	Switch 3	Initial boot mode	Comments
on	on	on	UART and USB	Wait incoming connection on: - USART2/3/6 and UART4/5/7/8 on default pins - USB high-speed device
off	on	on	Serial NOR Flash	Serial NOR Flash on QUADSPI
on	off	on	eMMC	eMMC on SDMMC2
off	on	off	SD card	SD card on SDMMC1

2.6 Connect the console cable

Connect the Micro USB cable to the console port on your OSMEVK baseboard and to the serial port of your computer.

Note: The console will only function when a power supply is connected.
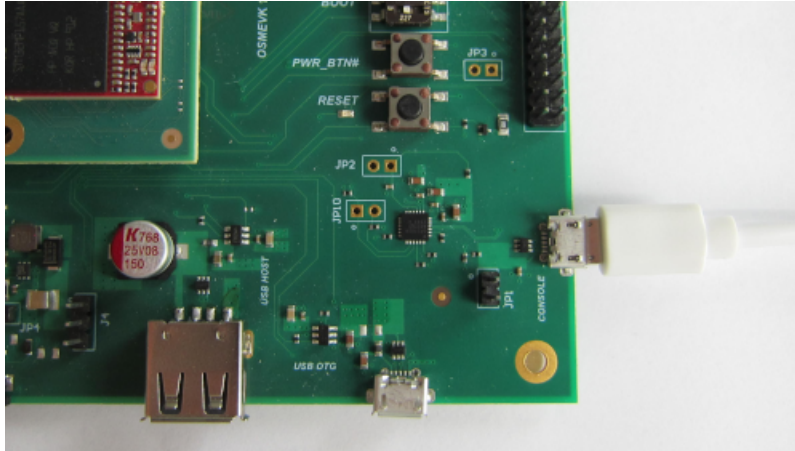
2.7 Connect power to your kit

Connect the USB type-C cable to the power port of your OSMEVK baseboard.

2.8 Booting process

Note: As soon as the OSMEVK is supplied with power, the booting process begins as shown below. Press the reset button to restart the booting process from the beginning, if necessary.

```
U-Boot 2023.04 (Oct 14 2024 - 13:22:32 +0200)

CPU: STM32MP157AAA Rev.B
Model: ARIES Embedded STM32MP157a MSMP1 module on EVK
Board: stm32mp1 in trusted mode (st,stm32mp157a-msmp1evk)
DRAM:  1 GiB
Clocks:
- MPU : 650 MHz
- MCU : 208.878 MHz
- AXI : 266.500 MHz
- PER : 24 MHz
- DDR : 533 MHz
Core:  281 devices, 35 uclasses, devicetree: board
WDT:   Started watchdog@5a002000 with servicing every 1000ms (32s timeout)
NAND:  0 MiB
MMC:   STM32 SD/MMC: 0, STM32 SD/MMC: 1
Loading Environment from MMC... OK
In:    serial
Out:   serial
Err:   serial
Net:   eth0: ethernet@5800a000
Hit any key to stop autoboot:  0
Boot over mmc0!
switch to partitions #0, OK
mmc0 is current device
Scanning mmc 0:4...
Found /boot/extlinux/extlinux.conf
Retrieving file: /boot/extlinux/extlinux.conf
1:      stm32mp157a-msmp1evk-buildroot
Retrieving file: /boot/zImage
append: root=/dev/mmcblk0p4 rootwait
Retrieving file: /boot/stm32mp157a-msmp1evk.dtb
Kernel image @ 0xc2000000 [ 0x000000 - 0x4fce30 ]
## Flattened Device Tree blob at c4000000
   Booting using the fdt blob at 0xc4000000
Working FDT set to c4000000
   Loading Device Tree to cffed000, end cffff1d1 ... OK
Working FDT set to cffed000

Starting kernel ...

[    0.000000] Booting Linux on physical CPU 0x0
[    0.000000] Linux version 6.1.102 (js@c3po) (arm-buildroot-linux-gnueabihf-gcc.br_
→real (Buildroot 2023.02.11-4-g84c47fb554) 11.4.0, GNU ld (GNU Binutils) 2.38) #1 SMP␣
→PREEMPT Mon Oct 14 13:26:36 CEST 2024
[    0.000000] CPU: ARMv7 Processor [410fc075] revision 5 (ARMv7), cr=10c5387d
```

(continues on next page)

```
[    0.000000] CPU: div instructions available: patching division code
[    0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT aliasing instruction cache
[    0.000000] OF: fdt: Machine model: Aries Embedded STM32MP157A MSMP1 SoM on EVK
[    0.000000] Memory policy: Data cache writealloc
[    0.000000] Reserved memory: created DMA memory pool at 0x10000000, size 0 MiB
```

...

```
[    1.944530] ohci-platform 5800c000.usb: Generic Platform OHCI controller
[    1.947244] ehci-platform 5800d000.usb: new USB bus registered, assigned bus number 2
[    1.953500] ohci-platform 5800c000.usb: new USB bus registered, assigned bus number 3
[    1.970164] ohci-platform 5800c000.usb: irq 75, io mem 0x5800c000
[    1.970334] clk: Disabling unused clocks
[    1.979669] ALSA device list:
[    1.979690] ehci-platform 5800d000.usb: irq 74, io mem 0x5800d000
[    1.982224]    No soundcards found.
[    2.013599] ehci-platform 5800d000.usb: USB 2.0 started, EHCI 1.00
[    2.019507] hub 2-0:1.0: USB hub found
[    2.022246] hub 2-0:1.0: 2 ports detected
[    2.048581] hub 3-0:1.0: USB hub found
[    2.051021] hub 3-0:1.0: 2 ports detected
[    2.061612] EXT4-fs (mmcblk0p4): INFO: recovery required on readonly filesystem
[    2.067599] EXT4-fs (mmcblk0p4): write access will be enabled during recovery
[    2.936523] EXT4-fs (mmcblk0p4): recovery complete
[    3.136827] EXT4-fs (mmcblk0p4): mounted filesystem with ordered data mode. Quota␣
→mode: disabled.
[    3.144528] VFS: Mounted root (ext4 filesystem) readonly on device 179:4.
[    3.152146] devtmpfs: mounted
[    3.156284] Freeing unused kernel image (initmem) memory: 1024K
[    3.161176] Run /sbin/init as init process
[    3.295540] EXT4-fs (mmcblk0p4): re-mounted. Quota mode: disabled.
Seeding 256 bits without crediting
Saving 256 bits of creditable seed for next boot
Starting syslogd: OK
Starting klogd: OK
Running sysctl: OK
Starting network: OK
Starting dropbear sshd: OK

Welcome to Buildroot
buildroot login: root
```

2.9 Use of the MSMP1

The module can now be used freely for your applications.