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本体ファームウェアでの起動

DIPSW をすべて OFF にした状態で、本体の標準ファームウェアで起動してみます。

コンソール接続

USB TypeA - microB ケーブル¹⁾を接続し、putty などのターミナルソフトを使用して接続します。 シリアルポートの設定は下記の通り設定します。

項目	設定値
ビットレート	115.2Kbps
データビット	8
ストップビット	1
パリティビット	なし
フロー制御	なし

MA-X3xx に電源を入れると、下のようにブートローダーが起動してきます。
1秒のタイムアウト待ちがあり、その間に `Enter` を入力することでブートローダーのシェルへと移行します。

```
/dev/ttyUSB2 - PuTTY

U-Boot SPL 2021.01-00097-g2a739f27e7 (Nov 25 2022 - 19:06:29 +0900)
SYSFW ABI: 3.1 (firmware rev 0x0015 '21.9.1--v2021.09a (Terrific Lla')
SPL initial stack usage: 13424 bytes
Trying to boot from SPI
Starting ATF on ARM64 core...

U-Boot SPL 2021.01-00097-g2a739f27e7 (Nov 25 2022 - 19:07:45 +0900)
SYSFW ABI: 3.1 (firmware rev 0x0015 '21.9.1--v2021.09a (Terrific Lla')
Trying to boot from SPI

U-Boot 2021.01-00097-g2a739f27e7 (Nov 25 2022 - 19:07:45 +0900)

SoC: AM64X SR1.0 GP
Model: Century Systems Metis
DRAM: 2 GiB
WDT: Not found!
MMC: mmc@fa10000: 0, mmc@fa00000: 1
In: serial@2810000
Out: serial@2810000
Err: serial@2810000
PMIC: fixup registers
Net: eth0: ethernet@80000000port@1
Hit any key to stop autoboot: 0
=> boot
SF: Detected xt25q64 with page size 256 Bytes, erase size 4 KiB, total 8 MiB
Reading 65536 byte(s) at offset 0x00000000
## Executing script at 80000000
* DIPSW: 00
* Alarm: 0
* Wakeup source:
SF: Detected xt25q64 with page size 256 Bytes, erase size 4 KiB, total 8 MiB
* firmhist_offset: SPI flash: 8 MiB
SF: Detected xt25q64 with page size 256 Bytes, erase size 4 KiB, total 8 MiB
* boothist_offset: SPI flash: 8 MiB
selected to boot: 0
* Board Option Code: 00
* Module code: 02
* XIO ID: 01
* SIM: 0
* Firmware Area to boot: 0
* Mobile device: EG25
16896008 bytes read in 178 ms (90.5 MiB/s)
57305 bytes read in 2 ms (27.3 MiB/s)
* Load and Apply device-tree overlay: module_code:02
603 bytes read in 2 ms (293.9 KiB/s)
* Load and Apply device-tree overlay: xio:01
7168 bytes read in 2 ms (3.4 MiB/s)
```

boot と入力することで、起動処理が行われます。
タイムアウト待ちの間にも何も入力しない場合も同様に起動処理が行われます。

```
/dev/ttyUSB2 - PuTTY
[ OK ] Started Rule-based Manager for Device Events and Files.
[ OK ] Reached target System Initialization.
[ OK ] Started mobile_watch.path.
[ OK ] Started ppp.path.
[ OK ] Started Daily Cleanup of Temporary Directories.
[ OK ] Reached target Path Units.
[ OK ] Reached target Basic System.
[ OK ] Listening on D-Bus System Message Bus Socket.
        Starting Check Mobile(LTE/5G) Device...
[ OK ] Started Regular background program processing daemon.
[ OK ] Started D-Bus System Message Bus.
[ OK ] Started Save initial kernel messages after boot.
        Starting Remove Stale Onli...t4 Metadata Check Snapshots...
        Starting Restore Firewall...
[ OK ] Started InitSwitch monitor.
        Starting Mosquitto MQTT Broker for Internal Use...
        Starting System Logging Service...
[ OK ] Finished Save Overlay contents..
        Starting User Login Management...
[ OK ] Finished Check Mobile(LTE/5G) Device.
[ OK ] Finished Load/Save Random Seed.
[ OK ] Started System Logging Service.
[ OK ] Finished Remove Stale Onli...ext4 Metadata Check Snapshots.
[ OK ] Found device /dev/ttyS3.
[ OK ] Started User Login Management.
[ OK ] Started Mosquitto MQTT Broker for Internal Use.
[ OK ] Finished Restore Firewall.
[ OK ] Reached target Preparation for Network.
[ OK ] Found device /sys/subsystem/net/devices/eth0.
[ OK ] Found device /sys/subsystem/net/devices/eth1.
[ OK ] Started ifup for eth0.
[ OK ] Started ifup for eth1.
[ OK ] Finished Helper to synchronize boot up for ifupdown.
        Starting Raise network interfaces...
[ OK ] Finished Raise network interfaces.
[ OK ] Reached target Network.
[ OK ] Reached target Network is Online.
[ OK ] Started WebUI Application Server.
        Starting chrony, an NTP client/server...
        Starting A high performanc... and a reverse proxy server...
        Starting LSB: Start pdnsd...
        Starting /etc/rc.local Compatibility...
        Starting OpenBSD Secure Shell server...
        Starting Permit User Sessions...
[ OK ] Started WireGuard VPN(wg) Key Generation.
[ OK ] Finished Permit User Sessions.

Ubuntu 22.04.1 LTS metis ttyS3

metis login: █
```

MA-X3xxへのログイン

標準で、下記の2アカウントが登録済みとなっています。

アカウント	パスワード	備考
user1	user1	一般ユーザ
root	root	管理者

“user1” でログインした場合の例です。

```
/dev/ttyUSB2 - PuTTY
Starting Check Mobile(LTE/5G) Device...
[ OK ] Started Regular background program processing daemon.
[ OK ] Started D-Bus System Message Bus.
[ OK ] Started Save initial kernel messages after boot.
Starting Remove Stale Onli...t4 Metadata Check Snapshots...
Starting Restore Firewall...
[ OK ] Started InitSwitch monitor.
Starting Mosquitto MQTT Broker for Internal Use...
Starting System Logging Service...
[ OK ] Finished Save Overlay contents...
Starting User Login Management...
[ OK ] Finished Check Mobile(LTE/5G) Device.
[ OK ] Finished Load/Save Random Seed.
[ OK ] Started System Logging Service.
[ OK ] Finished Remove Stale Onli...ext4 Metadata Check Snapshots.
[ OK ] Found device /dev/ttyS3.
[ OK ] Started User Login Management.
[ OK ] Started Mosquitto MQTT Broker for Internal Use.
[ OK ] Finished Restore Firewall.
[ OK ] Reached target Preparation for Network.
[ OK ] Found device /sys/subsystem/net/devices/eth0.
[ OK ] Found device /sys/subsystem/net/devices/eth1.
[ OK ] Started ifup for eth0.
[ OK ] Started ifup for eth1.
[ OK ] Finished Helper to synchronize boot up for ifupdown.
Starting Raise network interfaces...
[ OK ] Finished Raise network interfaces.
[ OK ] Reached target Network.
[ OK ] Reached target Network is Online.
[ OK ] Started WebUI Application Server.
Starting chrony, an NTP client/server...
Starting A high performanc... and a reverse proxy server...
Starting LSB: Start pdnsd...
Starting /etc/rc.local Compatibility...
Starting OpenBSD Secure Shell server...
Starting Permit User Sessions...
[ OK ] Started WireGuard VPN(wg) Key Generation.
[ OK ] Finished Permit User Sessions.

Ubuntu 22.04.1 LTS metis ttyS3

metis login: user1
Password:
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.10.153 aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage
Last login: Mon Dec 12 10:23:03 JST 2022 from 172.16.1.61 on pts/1
user1@metis:~$
```

1)

Androidスマートフォンの接続に使用されるものと同じです

From:

<https://ma-tech.centurysys.jp/> - MA-X/MA-S/MA-E/IP-K Developers' Wiki

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