



EtherCAN ARM9

Firmware Upgrade

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History

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1 Preamble

This document explains how to update the firmware of the EtherCAN ARM9 with the latest firmware image from port.

2 Requirements

Before a new firmware release can be installed, the following requirements must be fulfilled:

- **An SD Card:** The image is updated via a SD Card. The minimum size is 40MB, the maximum supported card size is 32GB. Please note that contents of the card will be completely overwritten during the update process. The card needs to be reformatted before it can be used again on Windows systems.
- **Tool for writing raw images:** The image must be written as-is to the device via raw access. This can be done for Linux using the `dd` command, on Windows tools like Win32 Disk Imager can be used.
- **Serial connection:** You need a serial terminal to access the boot loader of the device. The serial interface of the device can be found on the front plate. Any serial terminal program may be used e.g. putty for Windows or `picocom` for Linux.

3 Updating the device

3.1 Writing the image to the SD Card

1. Insert the SD Card into your SD Card reader.
2. Determine the device identity of your card reader. On Linux, you can use `dmesg` to find the identity of the device. The output of the following example output shows the card reader as `/dev/sdc`:

```
[357297.734166] usb 2-1.2.1.3: new high-speed USB device number 16 using ehci-pci
[357297.843988] usb 2-1.2.1.3: New USB device found, idVendor=058f, idProduct=6366
[357297.844001] usb 2-1.2.1.3: New USB device strings: Mfr=1, Product=2, SerialNumber=3
[357297.844004] usb 2-1.2.1.3: Product: Flash Card Reader/Writer
[357297.844007] usb 2-1.2.1.3: Manufacturer: Generic
[357297.844009] usb 2-1.2.1.3: SerialNumber: 058F63666438
[357297.844467] usb-storage 2-1.2.1.3:1.0: USB Mass Storage device detected
[357297.844591] scsi host8: usb-storage 2-1.2.1.3:1.0
[357298.842563] scsi 8:0:0:0: Direct-Access Multiple Card Reader 1.00 PQ: 0 ANSI: 0
[357298.843000] sd 8:0:0:0: Attached scsi generic sg3 type 0
[357298.844508] sd 8:0:0:0: [sdc] Attached SCSI removable disk
mt@mt-Waldemar:~/compile/ecan/devices/ecan9/image$
```

3. Write the image to the device. On Linux, you can use `dd` for this task. Please enter the following two commands in a terminal:

```
sudo dd if=<imagefilename> of=<cardreaderdevice> bs=100M
```

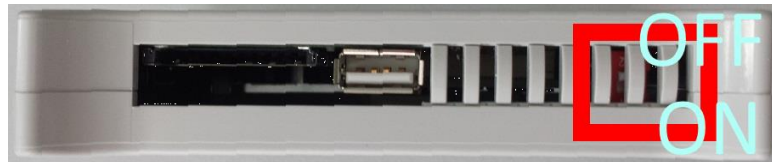
Source: https://portgmbh-my.sharepoint.com/personal/mt_port_de/Documents/projekte/ecan/ecan9_fw_update_manual.docx

sync

3.2 Writing the image from SD Card to the device

The following steps describe, how to update the EtherCAN ARM9 device firmware:

1. Ensure that the power supply is disabled.
2. On the top plate of the device there are two dip switches behind the grid. If you have problems accessing the dip switches, the grid can slightly be moved. The following picture shows how to locate them:



Both dip switches need to be in “ON” position form firmware update (lower side of the image above).

3. Insert the SD Card into the device
4. Connect the serial line to the device and your PC.
5. Open a terminal program. The serial interface uses a speed of 115200.
6. Power on the device. You should now see the bootloader screen. Please hit any key before 3s to prevent the boot loader from booting:

```
U-Boot 2013.04-tq-arm-bsp-0106 (Aug 06 2014 - 08:33:45)

CPU:   Freescale i.MX28 rev1.2 at 454 MHz
BOOT:  SSP SD/MMC #1, 3V3
Reset: ext. & therm.
I2C:   ready
DRAM:  128 MiB
MMC:   MXS MMC: 0, MXS MMC: 1
In:    serial
Out:   serial
Err:   serial

MXS MMC 1 is current device
RTC:   32KHz xtal (persistent0 0x00020121)
Net:   [FEC MXS: Using internal ENET_CLK]
FEC0 [PRIME]
Warning: FEC0 MAC addresses don't match:
Address in SROM is      00:d0:93:35:6c:cd
Address in environment is 00:08:85:03:00:25
, FEC1
Hit any key to stop autoboot:  0
EtherCAN U-Boot > █
```

On some configuration, you can only see garbage on the screen caused by DTR line. When using picocom, you can raise and lower the DTR line by hitting Ctrl+a Ctrl+t to fix this issue. Please consult the manual of your terminal program for further information.

7. Now enter `run install_port` into the terminal and hit enter. The update process will begin:

```
EtherCAN U-Boot > run install_port
Installing device tree blob...
MXS MMC 1 is current device

MMC read: dev # 1, block # 12288, count 4096 ... 4096 blocks read: OK
MMC0: Command 8 timeout (status 0xe0344020)
MMC0: Command 55 timeout (status 0xe0244020)
MXS MMC 0(part 0) is current device

MMC write: dev # 0, block # 12288, count 4096 ... 4096 blocks write: OK
Installing Kernel...
MXS MMC 1 is current device

MMC read: dev # 1, block # 32768, count 16384 ... 16384 blocks read: OK
MXS MMC 0(part 0) is current device

MMC write: dev # 0, block # 32768, count 16384 ... 16384 blocks write: OK
Installing Root FS...
MXS MMC 1 is current device

MMC read: dev # 1, block # 49152, count 131072 ... 131072 blocks read: OK
MXS MMC 0(part 0) is current device

MMC write: dev # 0, block # 49152, count 131072 ... 131072 blocks write: OK
EtherCAN U-Boot > █
```

8. After the update process is finished, power off the device.
9. Bring the dip switches back in "OFF" position.
10. Remove the SD Card.