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Product: Emsis (all versions)
Subject: Internal SD Card Replacment

Revision History

The following table shows the revision history of this document.

Rev.	Date	Description
1.0	July 2022	Initial release

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1 Effectivity

Only when needed – in the case if the Emsis fails to boot or has sporadic problems with the start.

2 Purpose & Background

For rare cases, when Emsis does not want to start anymore a problem is often caused by the internal SD card file failure. Either SD card or a file system on the SD card has been corrupt.

3 Compliance

Only when problem appears.

4 Instructions

Two micro SD cards are used in this procedure. One will replace the faulty internal card. The other is used to copy the new software and firmware. USB-micro SD memory stick adapter is also needed.

This problem is solved in following steps:

- Internal SD card is replaced with a new one.
- Internal SD card is formatted by Emsis.
- Emsis SW is copied from the external SD card to the internal one.
- CAN bus firmware on other devices is updated.
- Proper layout file is installed.
- Other issues to be resolved.

Most probably, you do not have your specific layout file at hand and you will have to contact Kanardia to obtain it. Please contact support@kanardia.eu for more details.

4.1 Micro SD Card Replacement

Emsis is a bit sensitive to a proper micro SD card choice. Most of modern SD cards do not work well. Try to locate an *industrial* quality 4GB SD card.

At the time of writing, the following link from Mouser Electronics <https://www.mouser.com/ProductDetail/467-SDSDQEC-004G> leads to a card, which is working well. Note that these links often expire. In this case try to locate manufacturer number **SDSDQEC-004G** (SanDisk).

We have a small stock of these cards and you can obtain them from us as well.

If you lost your micro SD card used for updates (delivered with the instrument together with an USB memory stick adapter), buy two cards and make sure that you have an USB-micro SD adapter.

4.1.1 Replacement Steps

1. Remove the sides of the housing.
2. Remove the back side of the housing.
3. Remove the PCBs until you reach the processor PCB.
4. Locate the SD card on the PCB and replace it with the new card.
5. Put the PCBs and housing back in the reverse order.

4.2 Formatting The Internal SD Card

The newly installed SD card must be formatted before use. This will create two partitions. File system will be on one partition and the logger will be on the other.

The SD card is formatted with Emsis:

1. Power Emsis on. Emsis will detect that there is no firmware on the SD card and it will go directly into the **Boot options** mode.
Alternatively, turn Emsis on and hold the Up arrow button (Emsis 3.5) or Down arrow button (Emsis 80) to enter the boot menu.
2. Select the **System Reset** option and enter 49046 for the password. This will reformat the internal card and prepare the file system.

4.3 Installing New Software

This section and next section are also covered in a video. Please visit our Youtube video.

For this operation, you will need the second micro SD card. One such card was delivered with the instrument together with USB memory stick adapter.

1. Make sure the external SD card is formatted to FAT 32 or FAT 16. If the card is new, it was already FAT 32 formatted in most cases.
2. Visit our website www.kanardia.eu and select the Emsis page. Locate the **Software** tag and download the latest version. Due to historical reasons the file is always named as **Update.kus**. Copy this file to the SD card's root folder.
3. Make sure to use one of the *safe remove* options before removing the card from your PC.
4. Insert the SD card into Emsis.
5. Select **Upgrade** from the boot menu.
6. Wait for Emsis to finish verifying and copying new software.
7. Once complete, Emsis will restart. Most probably, you will NOT see the proper layout.

4.4 Firmware Update

Previous section only copied new software into Emsis, but other devices connected to CAN bus may still run old firmware. This firmware may be incompatible with the new software and must be updated as well.

1. Open the **Emsis Setup** page,
2. Select **Service** item and enter 314 for the password.
3. Select **Firmware update** option from the list.
4. The automatic update procedure will start.
5. Wait until all devices were updated.

4.5 Layout File

Almost every Emsis comes with a dedicated layout file, which was lost with the SD card replacement and you have to install it. Unless you have one on your existing external SD card, you will have to contact us for the correct file. You will receive it in an email. These files have `cnf` extension. They are XML files. Please do not edit them as a small mistake in the file may cause the instrument to freeze.

1. Copy the file with the `CNF` extension to the external SD card.
2. Make sure to use `safe remove` option.
3. Place the SD card into Emsis.
4. Open the `Emsis Setup` page,
5. Select `Service` item and enter `314` for the password.
6. Select `Import layout` option and search for the proper layout from the list. Select it.
7. After the copy has been complete, close all windows. Emsis will reboot and now you should see the proper layout.

4.6 Other Issues

A side effect of internal SD card replacement is log erasure. If your Emsis was also tracking your total engine time, this time was lost and Emsis will start with zero time. Use the following steps to enter the old engine time back.

1. Open the `Emsis Setup` page,
2. Select `Service` item and enter `1313` for the password.
3. Select `Set engine time` option.
4. Enter correct engine time.
5. Close all windows, wait 10 seconds and then turn Emsis off.
6. Turn Emsis back on and make sure correct engine time is displayed.

5 Additional Instructions

Weight and Balance: Not affected.

Manual: Not affected

Repetitive Inspections: Not required

Continuing Maintenance: Not required.

Appendix

Please refer also to:

- Emsis User Manual.
- Daqu or miniDaqu Manual.

The most recent manuals can be downloaded from our web site: www.kanardia.eu.