Saia-Burgess Controls AG
Route Jo-Siffert 4, 1762 Givisiez, Switzerland
T +41 26 580 30 00
www.saia-pcd.com

support@saia-pcd.com

Concern: **How to replace a MicroSD memory card on the PCB of a PCD7.D4 Web-panel**

Date: 27.11.2023   Version 1.0

This document describes the procedure to replace the Micro SD memory card (uSD card) on the PCD.
The replacement consists of the following steps:
- Disassembling of the PCD
- Localisation of the uSD card
- Removing the old uSD card
- Mounting the new uSD card
- Verification if the uSD card was inserted correctly
- Re-assembling of the PCD
- Reload the firmware to the PCD, if needed.
- Calibrate the touch screen and re-configure the settings on the setup menu of the web-panel

Contents

1 Remarks when handling with printed circuit boards (PCB)

ESD (Electrostatic Discharge):
Circuit board components are designed to operate within a specified range of voltage that is carefully calculated for their circuitry. On the other hand, static electricity can be created through a simple and unexpected action such as opening a plastic bag or rubbing articles of clothing together. If a circuit board is exposed to these unintended discharges of static electricity, the tolerance of some of the components can be exceeded, causing damage to those parts.

Physical damage: Although the circuit board is built to be tough in the application it is designed for, it can still be easily damaged if it is treated too roughly. The board can be broken if subjected to enough impact, like falling off a workbench, and soldered parts can snap off if hit with enough force. Metal traces and pads on the board can lift or crack if the board flexes too much.

Contamination: Moisture can cause a circuit board's metal traces and pads to tarnish, and even regular dirt and grime can add to the problem. These contaminants can affect the components' solderability, causing weak connections or disrupting the manufacturing process.

1.1 Rules for handling of printed circuit boards during processing

Based on the problems listed above, here are what we do recommend if you are handling the PCD's for exchanging the uSD memory cards:

ESD: Circuit boards are handled the most during PCB inspection and rework, and therefore all work must be done in properly designated work areas. These areas should be clean and neat with proper ventilation, and technicians should be grounded with a wrist strap connected to the earth-ground.
Physical handling: Workflows should be set up for lean manufacturing and strategically laid out to minimize the board's handling. Technicians should wear protective clothing and gloves, and circuit boards should be handled gingerly by their edges.
Moisture: Don't expose the PCB on moisture to avoid moisture contamination.

The following dos and don'ts will help provide the best handling protection for circuit boards:

- Protect the board from moisture by keeping it on the PCD or cabinet until needed.
- Technicians should be grounded with a wrist strap connected to the earth-ground.
- Keep your workstation clean of any materials or liquids that could contaminate the PCB.
- Make sure your workstation is designed to resist static electricity build-up.
- Handle the circuit board by its edges with a secure grip using as little pressure as possible.
- Don't touch unnecessary the components on the PCB with your hands or with tools.

2   Prerequisite for the new uSD card

The memory space on the new Micro SD card (uSD card) need to be empty and must be formatted as FAT16 to be used on the PCD.
We strongly recommend to use only uSD cards provided by SBC, since they will have an industrial standard and have been tested and approved by SBC to work on our PCD's.

2.1   How to check if the uSD card is empty and formatted as FAT16
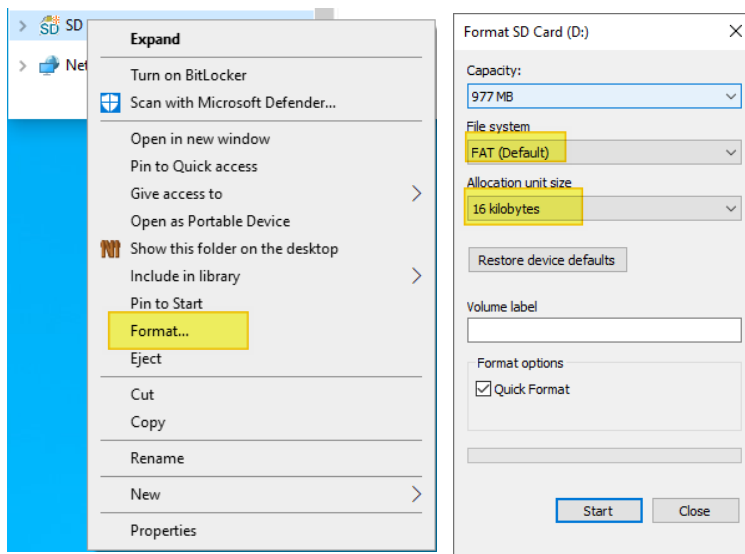
Insert the uSD card in a uSD card holder and insert the uSD card holder into the PC.

Browse with the File Explorer to the uSD card.

2.2   Check if the uSD card was formatted with FAT16

Right mouse click on Format, the properties shows the following.
-    File system: FAT (Default)
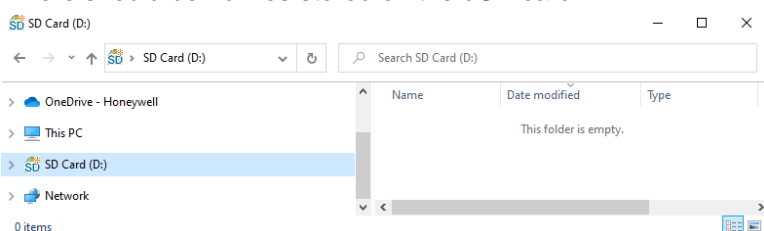-   'Allocation unit size': 16 kilobytes.

If the uSD card does not have:
-    File system: FAT (Default) and
-    'Allocation unit size': 16 kilobytes

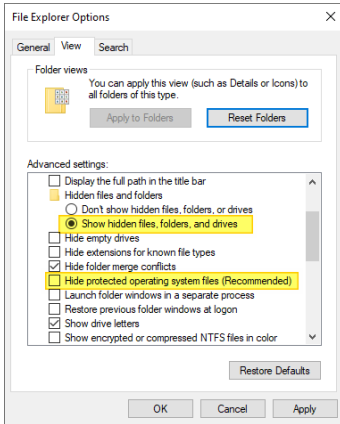then it's needed to format the uSD card.

2.3   Empty uSD card
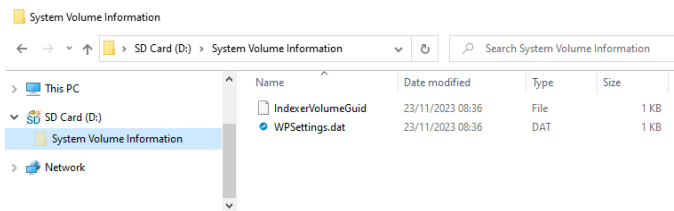
There should be no files stored on the uSD card.

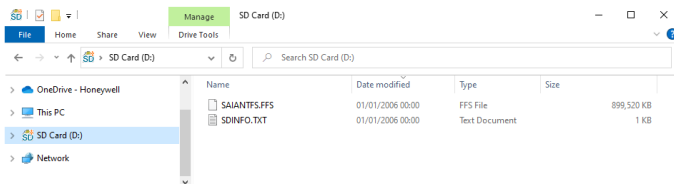Remark: In case that the hidden files are displayed on your PC with these options:

Then a 'System Volume Information' folder will be shown and there are some files on the folder.
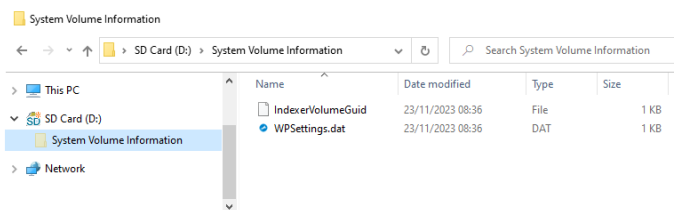

2.4   Not empty uSD card

Not empty uSD cards have some files or folders and could look like this.

If the uSD card is not empty, then it's needed to format the uSD card.
Please note that a formatting of the uSD card is not needed, if the uSD card contains only the 2 hidden files 'IndexerVolumeGuid' and 'WPSettings.dat' on the hidden folder 'System Volume Information'.
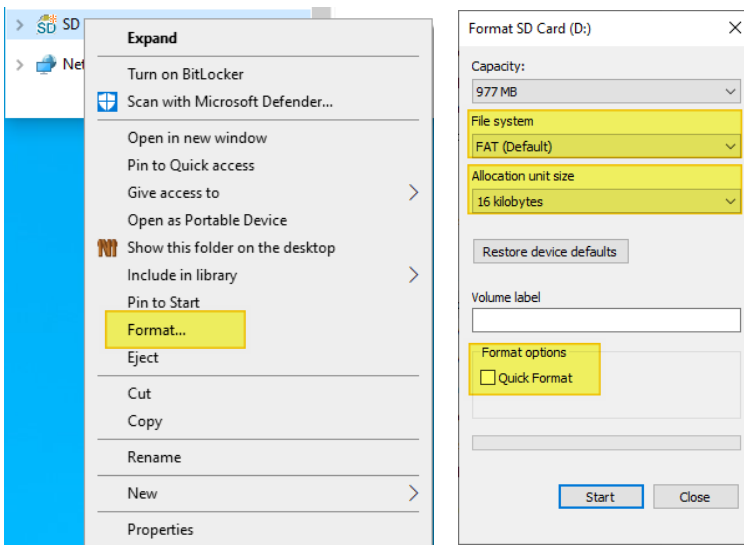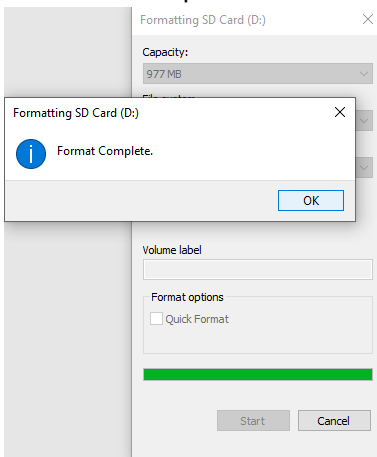
2.5   Formatting the uSD card as FAT16

If the uSD card is not formatted as FAT16 or is not empty, then it's needed to format the uSD card.
The formatting of the uSD card deletes all files stored on the uSD card, like PCD firmware, PG5 device configuration and PG5 application program, web-pages and log files created by the PG5 application program.
To format the uSD card, insert the uSD card in a uSD card holder and insert the uSD card holder in the PC.
Browse with the File Explorer to the uSD card.
Right mouse click on the uSD card and click on Format and select:
- File system: FAT (Default)
- 'Allocation unit size': 16 kilobytes
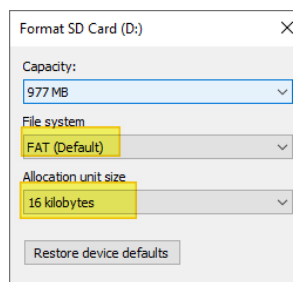- **don't check** the option 'Quick Format'

A 'Format Complete' information is shown at the end of the formatting of the uSD card

After formatting the uSD card, it's click again on the format option and then the information has to look like this:
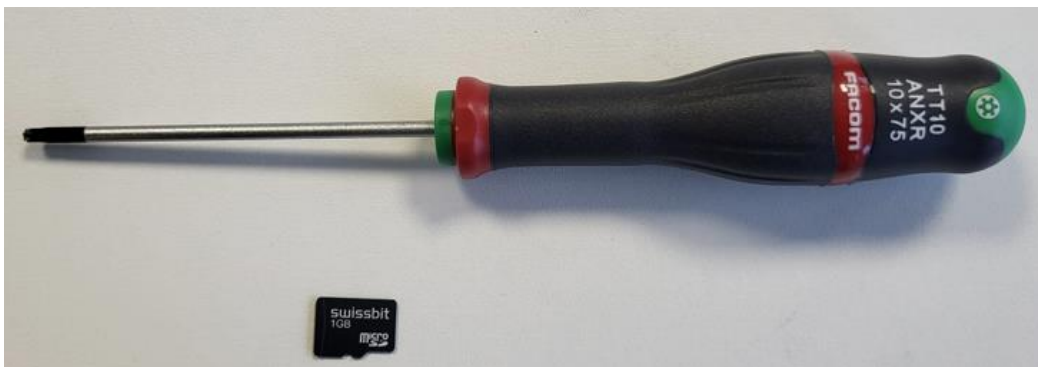- File system: FAT (Default)
- 'Allocation unit size': 16 kilobytes

3 Remove the old uSD card on the PCD7.D4 Web-panel

3.1 Needed tools

- Depending of the PCD7.D4 type either a torx TT10 screwdriver or a Phillips screwdriver
- New uSD card

3.2 Localisation of the uSD card

Depending of the PCD7.D4 web panel, the uSD card is located on different positions on the pcb.
The uSD card is located on the top border of the PCB, marked with the red square on the below picture.

3.3 Disassembling of the PCD7.D4 Web-panel

Power off the PCD.

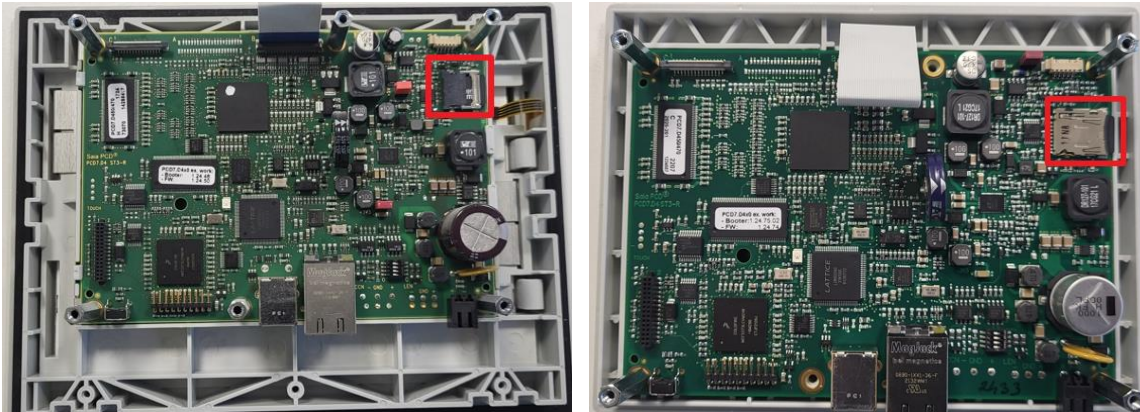Unscrew the Phlipps or torx screws on the back of the Web-panel.

Remove the cover by pulling the cover upwards.

3.4   Removing the uSD card from the PCB of the PCD7.D4 Web-panel

The uSD card is now visible on the PCB of the PCD
PCD7.D470W   PCD7.D450W

We are using 2 different uSD card socket on the different PCD7.D4 Web-panels

- Micro SD card socket of type flip-up
- Micro SD card socket of type push-push

3.5   Micro SD card socket of type flip-up

The micro-SD memory card is plugged in to a micro SD card socket of type flip-up and the micro-SD card is locked with a metallic slider shell on the SD card housing.

The flip-up type micro-SD card socket consists of the following components:
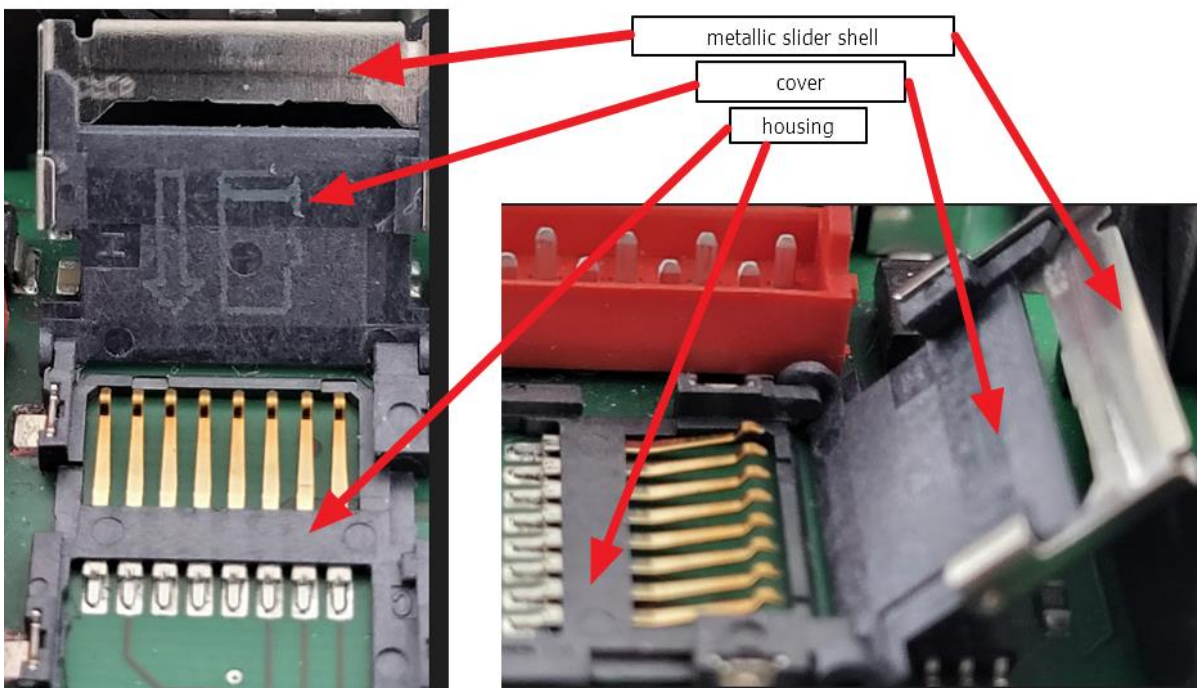
To release the micro-SD card it's necessary to slide the slider shell in direction of the plastic part of the socket, to lock the micro-SD card it's needed to slide the slider shell in the opposite direction.
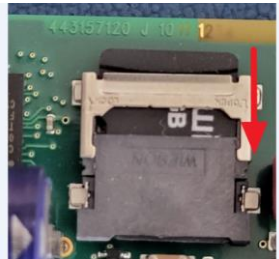
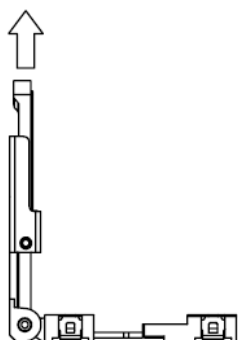Locked micro-SD memory card.
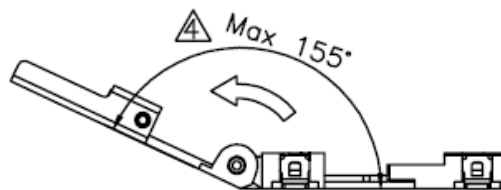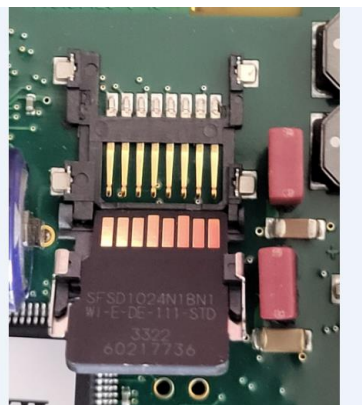
Unlocked micro-SD memory card

To release the uSD card, slide down the metallic slider shell of the socket


It's now possible to folding open the cover, the electronic contacts for the micro-SD card and on the housing will be visible.
Don't touch the contacts on the micro-SD card and on the housing.

Pull out the micro-SD card upwards from the cover.

On the picture below the red arrows indicate two 'noses' on the cover of the socket and it's important that the micro-SD card is placed below these two noses and pushed to the left side so that the left bevelled side of the card fits onto the corresponding bevelled side of the cover.
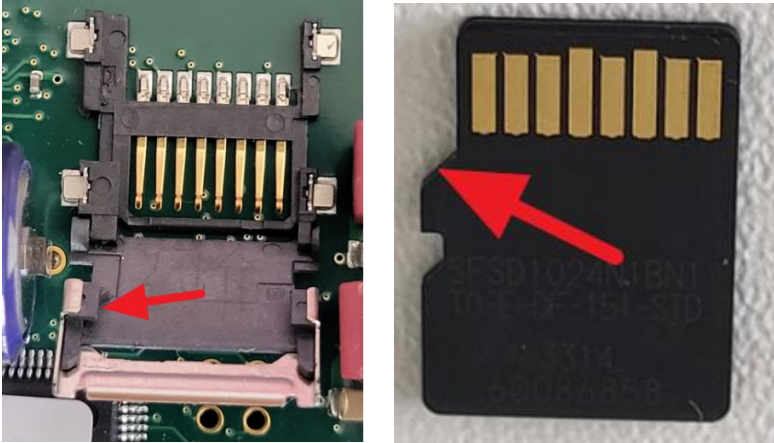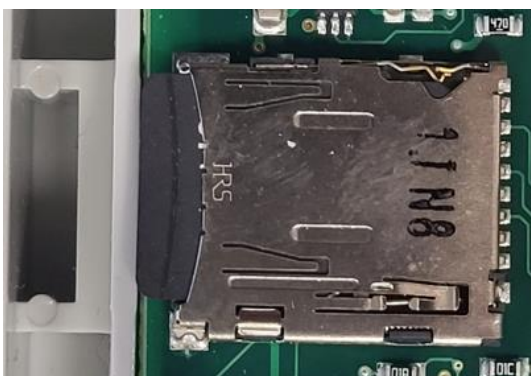

3.6   Micro SD card socket of type push-push

The micro SD card of type push-push is the same used for example on the smart phone where it's just necessary to push the uSD card in to the socket either to release the uSD card from the uSD card holder or to insert the uSD card in to the uSD card holder.
To insert the uSD card in to the uSD socket, push slightly with a finger to the uSD card until the uSD card snaps in the uSD card holder.
To release the uSD card from the uSD socket, push slightly the uSD card with the finger for about 1 mm in to the card holder to release the card from the card holder and release the finger.

Locked uSD card   Released uSD card

# 4 Mount the new uSD card to the PCD7.D4 Web-panel

4.1 Mounting the uSD card on Micro SD card socket of type flip-up

Insert the new micro-SD card into the cover by sliding down the new micro-SD card into the cover.
Insert the micro-SD card in that way, that the electronic contacts located on the micro-SD card and on the housing are visible when the micro-SD card is insert in the housing.
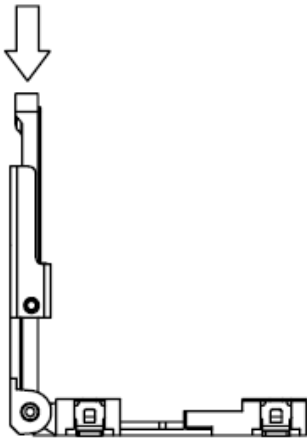
Don't touch the electronic contacts of the micro-SD card and of the housing.
The micro-SD card must be placed below the left and right noses of the cover and the left bevelled side of the card must fit onto the corresponding bevelled side of the cover.
Slide the micro-SD card until the bottom of the cover.

The right picture displays a vertical view on the socket and there it's visible that the micro-SD card is placed directly on the cover
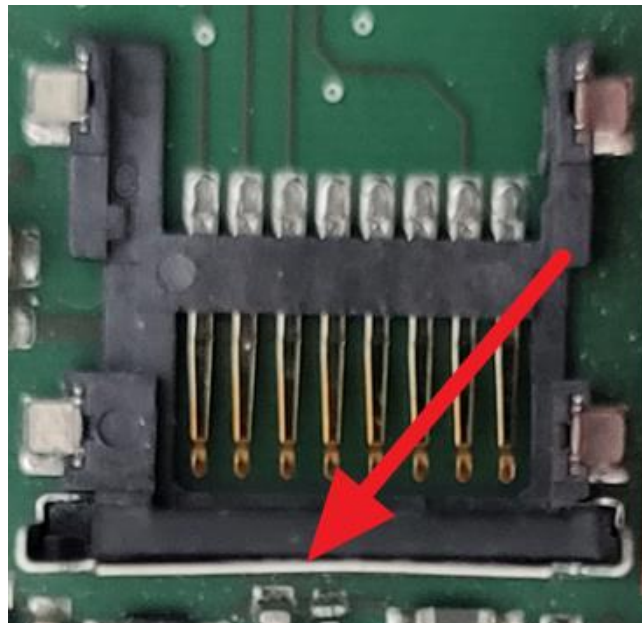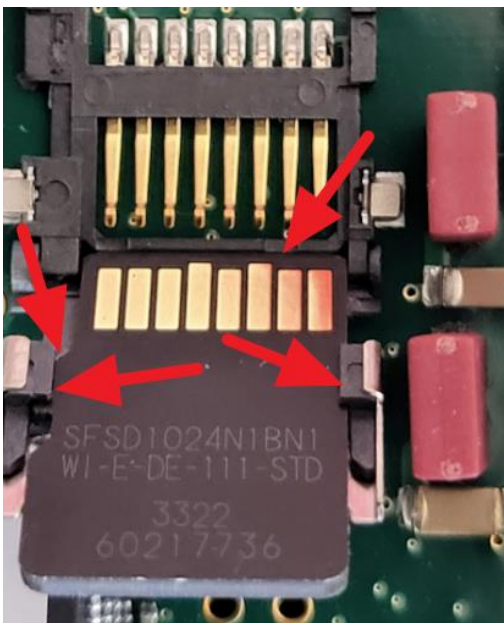
Close the cover and press the micro SD card lightly with a finger onto the housing of the socket.
If the micro-SD card is inserted correctly in to the cover then it's possible to push down finely the micro-SD card to the housing of the socket.
If it's not possible to push down the micro-SD card to the housing of the socket finely, then the micro-SD card is not inserted correctly in to the cover and it's needed to remove and insert again the card in to the cover.
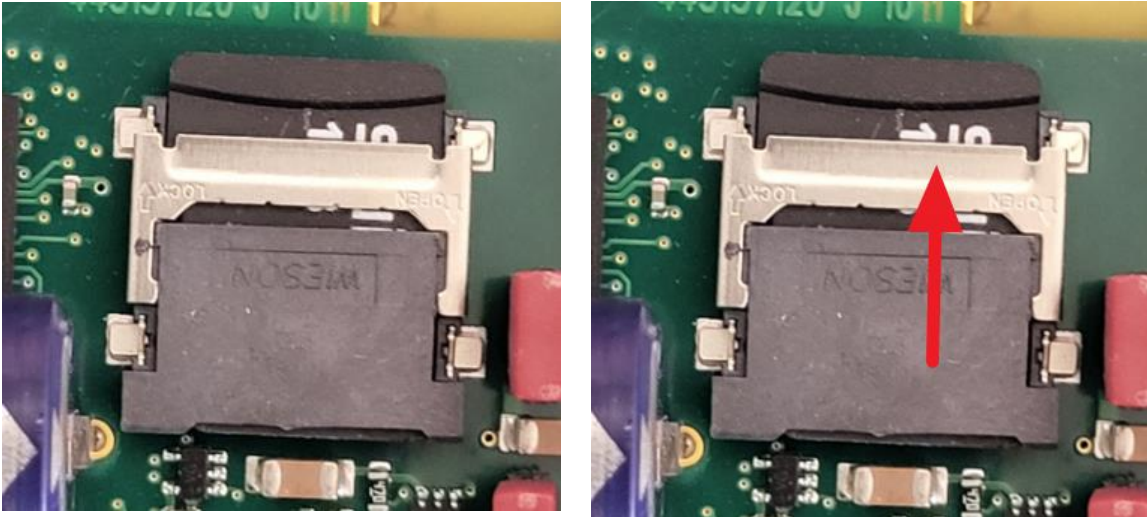
Press down finely the micro-SD card and the cover into the housing with one finger and slide up the metallic slide shell with one finger to lock the micro-SD card on the housing.
The metallic slide shell is locked correctly, if there is no space between the metallic slide shell and the 'elevation' on the micro-SD card, marked with the red arrow on the right picture below.
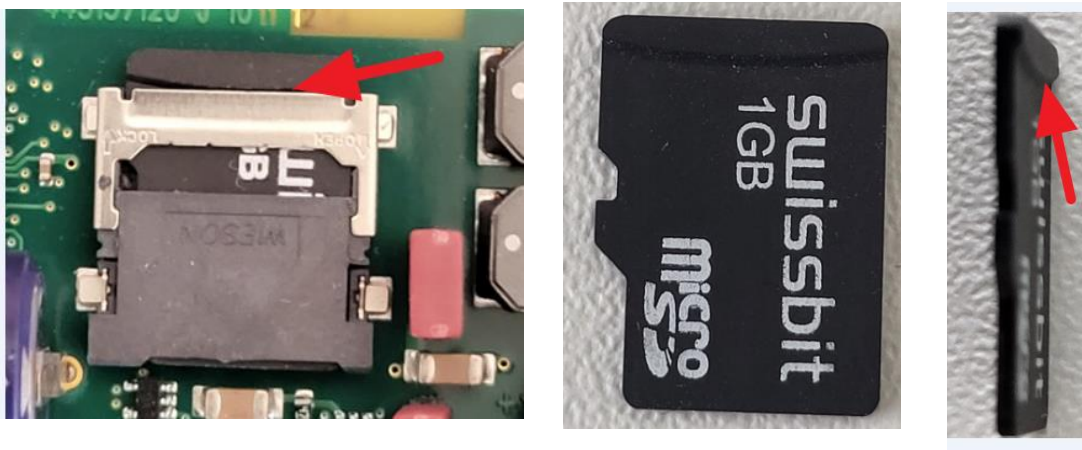
4.2   Mounting the uSD card on Micro SD card socket of type push-push

To insert the uSD card in to the uSD socket, push the uSD card in to the uSD card holder and push slightly with a finger to the uSD card until the uSD card snaps in the uSD card holder.
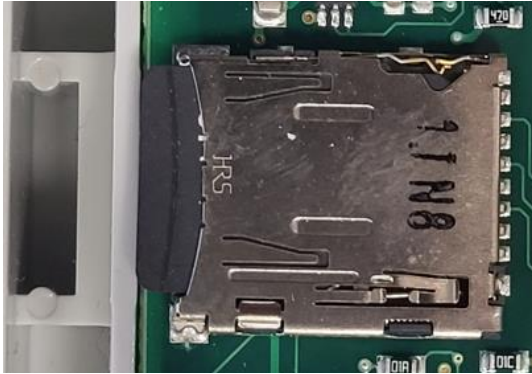
Locked uSD card   Released uSD card

## 4.3   Assembling of the PCD7.D4 Web-panel

Mount the cover to the PCD base unit.

Screw the screws.

5 Verification if the uSD card was inserted correctly in to the PCD

Power on the PCD

If the uSD card **was inserted correctly** in to the uSD card holder **and the uSD card was formatted correctly**, **then** the touch screen shows the information **'Wating for FW…'**
and it's possible to go online over USB with PG5 the online configurator to the PCD.
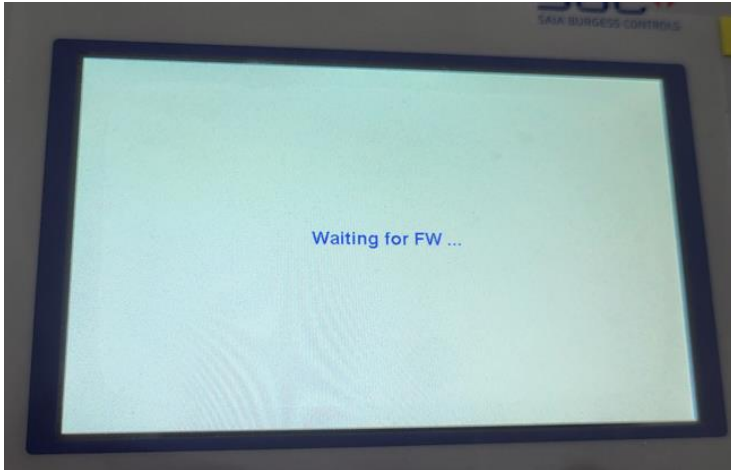
In this case, on the PCD7.D457VT5F, the Led on the PCB, near to the USB bort is flashing like this:

Led	On/off							
Green	On	Off	Off	Off	On	Off	Off	And so on
Red	Off	On	Off	On	Off	On	Off	
Blue	Off	Off	On	Off	Off	Off	On	

If the uSD card was **not inserted correctly** in to the uSD card holder, **or** if the **uSD card was formatted wrongly then it's not possible to go online over USB with the PCD.**

And the touch screen is switched off

In this case, on the PCD7.D457VT5F, the Led on the PCB, near to the USB bort is flashing like this:

| Led color	Run/Halt				
Blue	On	Off	On	Off	And so on
Red	Off	On	Off	On	

6 Reload the firmware to the PCD7.D4 Web-panels

Load the firmware to PCD with the PG5 firmware downloader by connecting over USB to the PCD.
The firmware can be loaded from the support page.

For the PCD7.D443WT5R and PCD7.D443WT5RW see the chapter:

Information for the PCD7.D443WT5R PCD7.D443WT5RW

Power on the PCD.
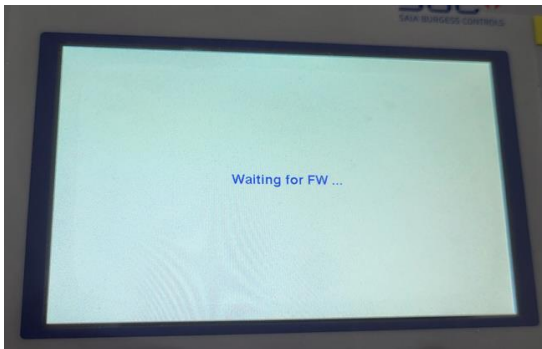
The information 'Waiting for FW' is displayed on the touch screen.

The PCD is now in the 'Firmware download mode'
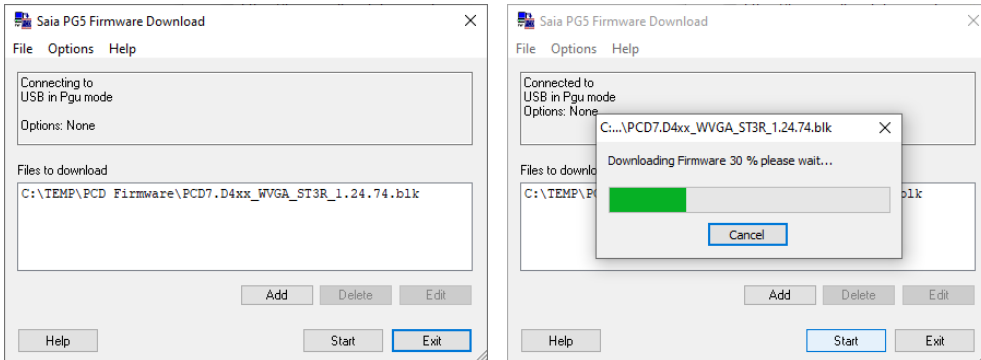This is visible when connecting with the PG5 online configurator over USB to the PCD.
The Status 'FW Boot' will be shown.
The PCD type will be displayed and the booter firmware version will be displayed on the field 'FW'.
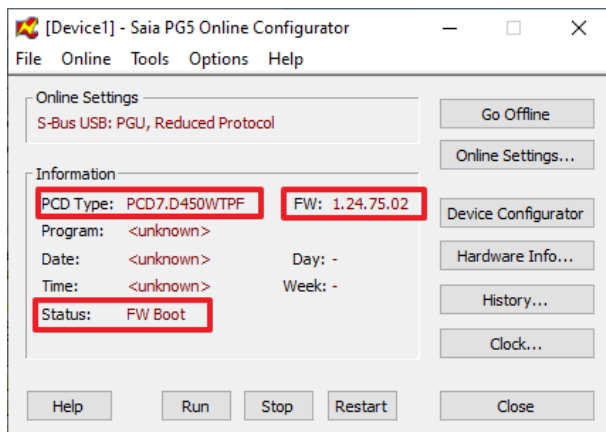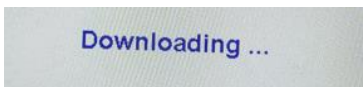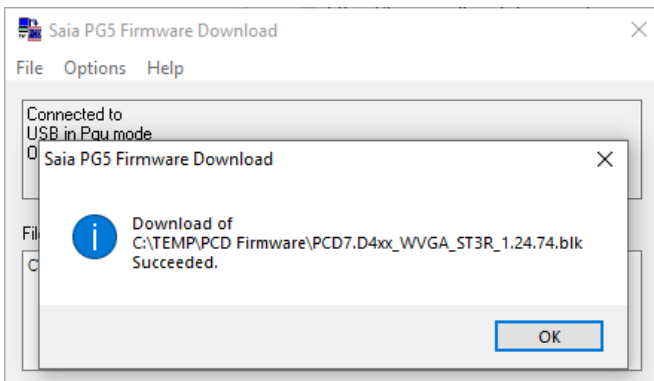

Close the PG5 Online configurator.

To download the firmware, use the PG5 Firmware Download tool and select the correct firmware which fits to the PCD.
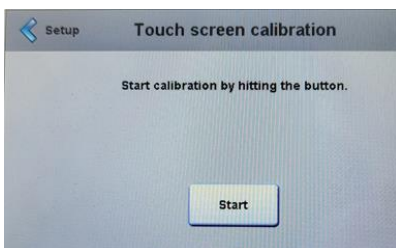

During the download, the information 'Downloading' is displayed on the touch screen.

The successful loading of the firmware will be displayed with an information.
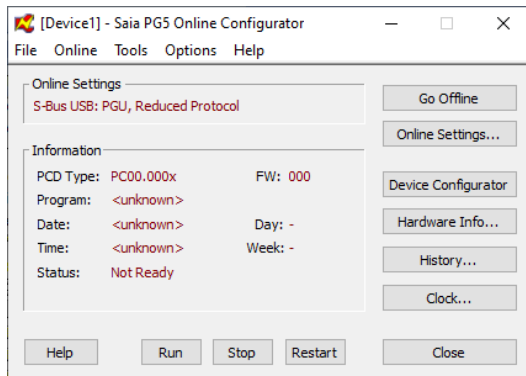

On the touch screen a information 'booting' up and afterwards the calibration screen is displayed.
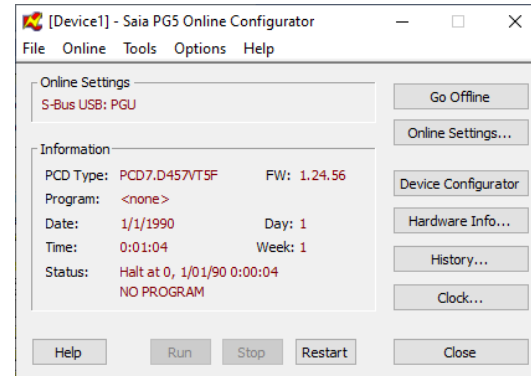
It's possible to go online with the PG5 online configurator, for the not programmable web-panels, the information's are not useful.
For the programmable web-panels the PCD type, FW information is displayed and the Status shows 'Halt'
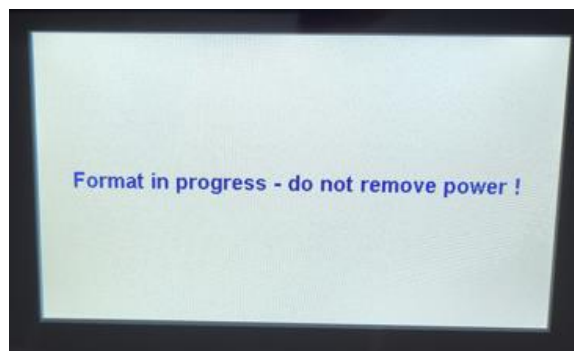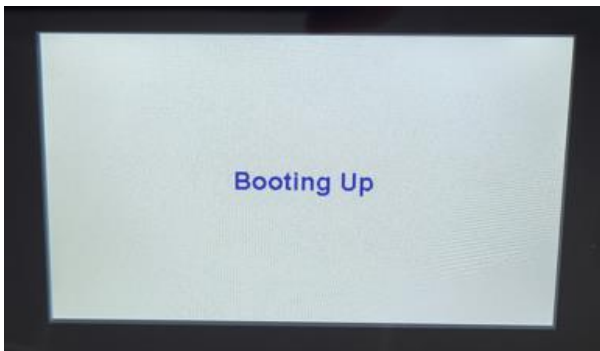
PCD7.D450WTPF   PCD7.D457VT5F

6.1   Information for the PCD7.D443WT5R PCD7.D443WT5RW

On the PCD7.D443WT5R PCD7.D443WT5RW it's not needed to load the FW to the panel, since the FW is stored on an other memory.
After the exchange of the uSD memory card a information 'Booting Up' and
'Format in progress – do not remove the power !' is displayed.
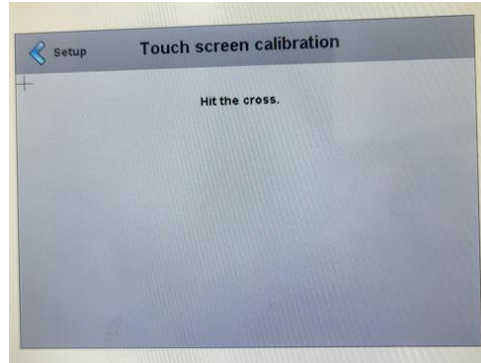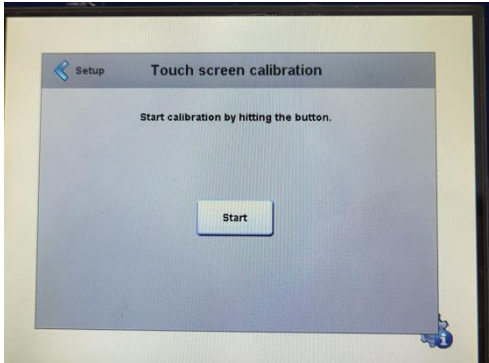

And then the panel will start up.

7 Calibrate the touch screen and configure the settings on the Setup menu

It's needed to calibrate the touch screen and to configure the different settings on the setup menu of the Web-panel.

Exit form Setpu menu and power off and on the Web-Panel