Quick Start Guide

# EPD Driver Board

August 2019

About This Manual

This User's Guide describes the characteristics, operation, and use of the EPD-Driver board. This EPD-Driver is designed for driving of electrical panel displays.

Power supply

There are three possibilities for the power supply on the board: over USB only, external power supply 5V DC and from LiPo battery. The LiPO battery capacity should not be less as 300mAh.

Depending on the supply variant there are two different jumper settings:

- Jumper is assembled: the power supply can be realized over USB or external power supply with 5V DC via the battery connector. **Connection of the LiPo battery can lead to the battery damage!**

- Jumper is not assembled: the LiPO battery have to be used. USB connection is used for battery charging only and not for power supply of the board.
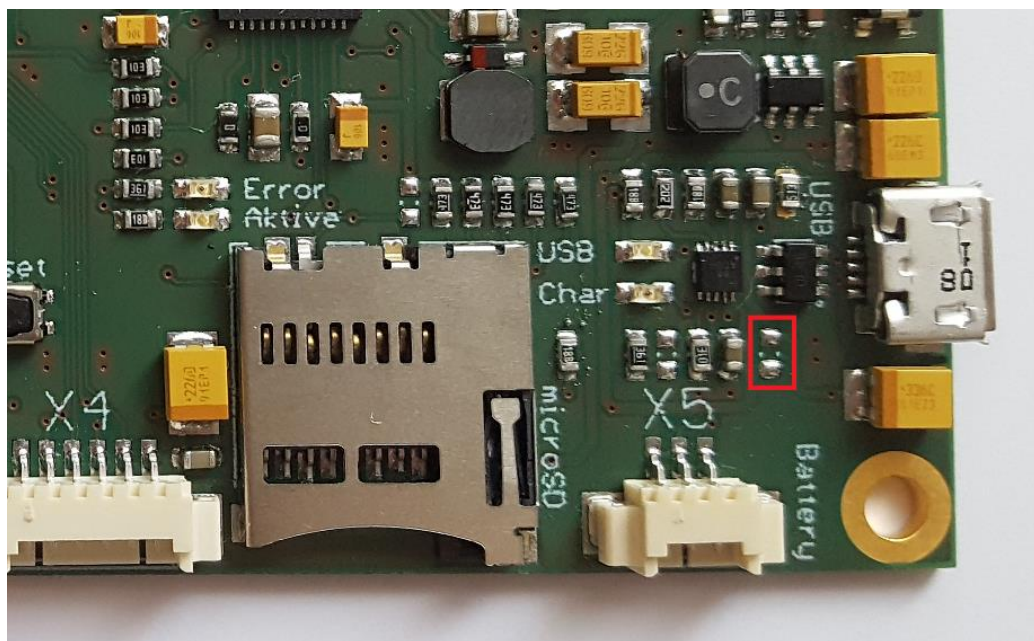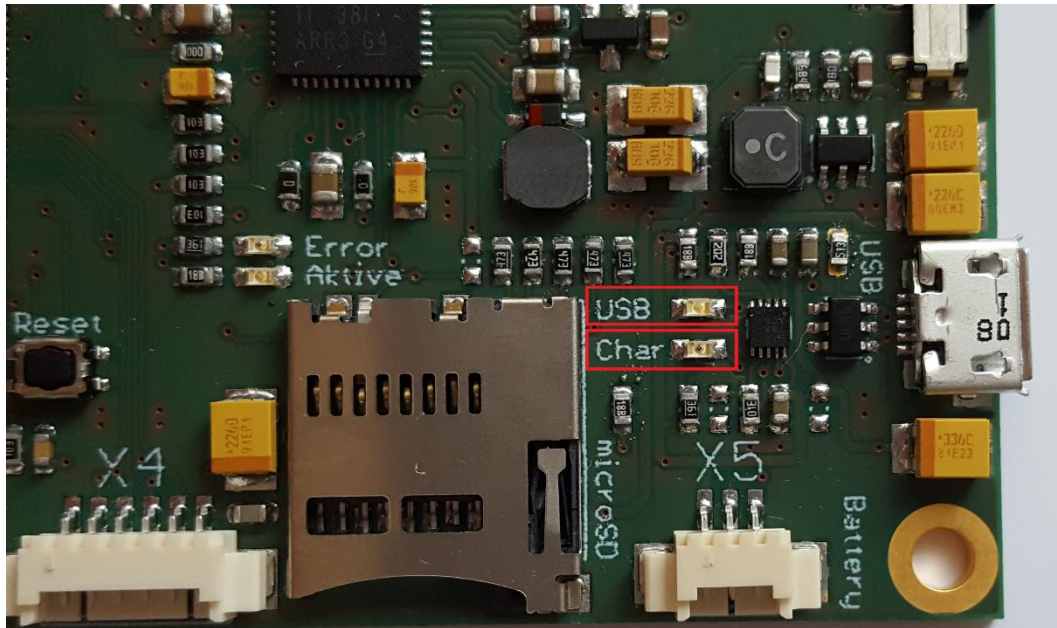

Power LEDs (USB, Char)

There are two power status LEDs on the EPD board.

The USB LED indicates the presence of 5V power on the EPD board.
The Char LED indicates charging of the battery. If the LED is off the charging is complete.
These LEDs do not light, when the jumper for USB power is assembled.

Mounting EPD-Driver and Display

Before connecting the board to a USB or battery, it is necessary to connect the display to the correspondent port and set the basic power settings in accordance with the requirements, specified in the display documentation. Incorrect display's connection or incorrect voltage setting may cause the display's damage.

Note: use the actual displays and driver documentation only!

To connect the EPD there are three connectors on the board (see Figure 1): "ADA" - universal connector, "16 BIT" – connector for the EPDs with 16 data bus and "8 BIT" – connector for EPDs with 8 bit data bus. It is allowed to use only one connector for one display connection.
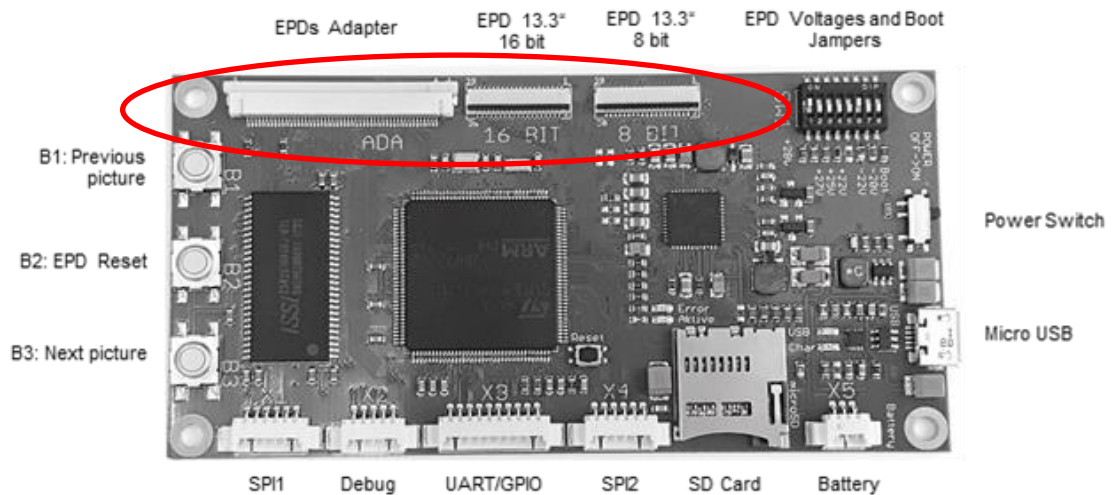

Figure 1: Top View of Typical Board Configuration

Before connecting an EPD to one of the ports on the driver board it is important to check the conformity of the signals, defined in the specification of the EPD driver and the display's documentation.

Note: in case of inconformity of the signals on the EPD driver board, please contact the producer. It is possible to provide a suitable connector.

All EPD connectors are lock types. Please be sure that before display's connection the lock is open. When connecting the display to the connector on the EPD driver board, make sure that the contacts on the display's cable are located at the bottom side. See figure below.
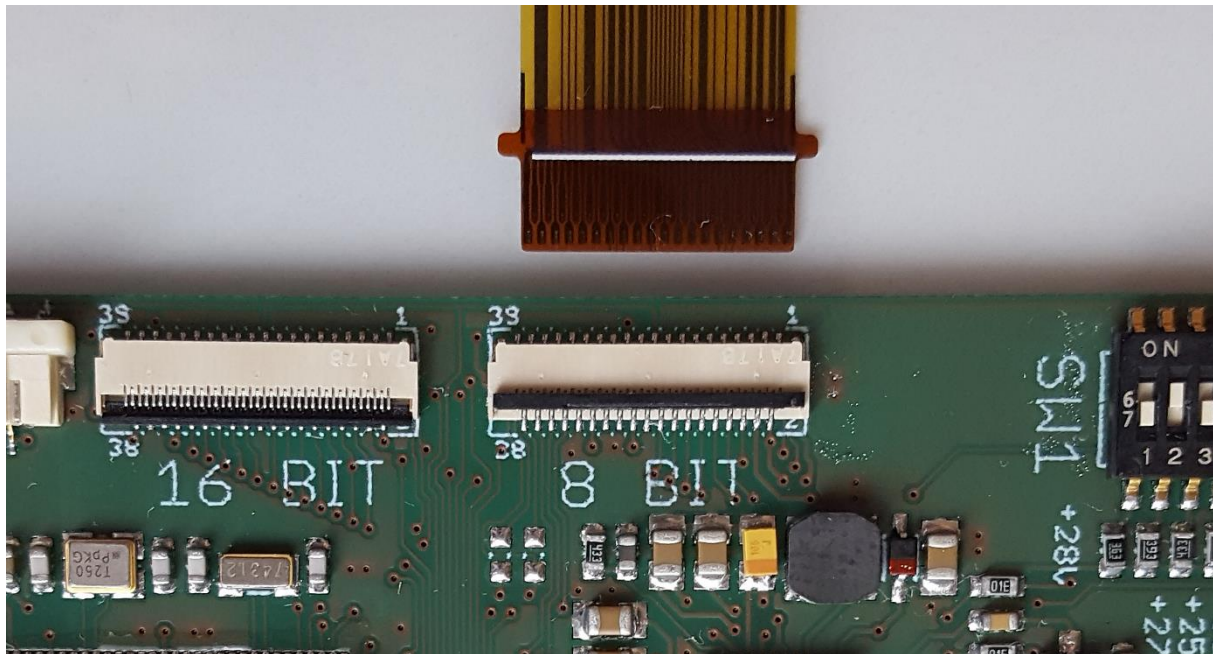
After connecting the display, fix the cable with the lock, pressing it down.

Display Voltige Settings

To install the EPD gate supply voltages, the micro switch block SW1 is used. The necessary parameters for EPD gate supply voltages can be found in the characteristics of the display. Using Table 1, set the Gate negative supply and Gate Positive supply voltage by SW1 according to the display documentation.
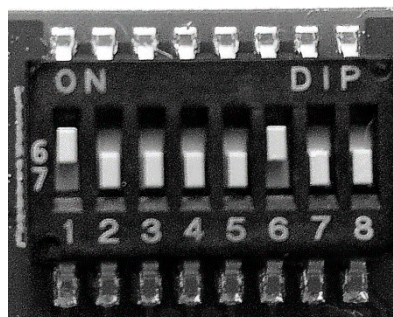

Figure 2: SW1 Jumpers for gate voltage setup

The supported values for the gate supply voltage of EPDs are shown in the table below.

Jumper	Function
1	+28V
2	+27V
3	+25V
4	+22V
5	customized value (optional)
6	-20V
7	-22V
8	Boot

To display a graphic information on the display from a memory card, you must use a card with a size of up to 32 GB. The card must have a 32-bit FAT32 file system. At the same time, the memory card should contain not only graphic information, but also a configuration file, without which the driver does not boot. This file must contain display information and additional driver settings.

Creation of the configuration file

The file of configuration allows to set the board's output parameters according to the driving EPD display. The config.ini file is placed in the main folder of SD card. If there is no any config.ini file or any mistake takes place the board shows an error by LED Error lightning.

There are several main settings, which can be critical for the panel usage. The example below describes the configuration for ED133UT2. The comments (#) explain the command lines.

Config File v1.0

#Display Resolution in Pixel
DISPLAY_RES_X=1600
DISPLAY_RES_Y=1200

#Number of the grades of grey can be defined.
#It influences the update speed and image quality.
#Possible settings:
#2 (black and white)
#4
#8 (e.g. ES133TT3)
#16 (e.g. ED133UT2)
#Default: 2
GRAYSCALE=16

```
#Display bus setting
#According to the datasheet of the panel.
#Possible settings:
#8 (e.g. ED133UT2)
#16 (e.g. ES133TT3)
#Default: 8
BITS_NR=8

#VCOM in Millivolts
#VCOM Value is to find on the label of the display. It varies from unit to unit.
# -2.84V *1000 = -2840
# example on the picture below
#Default: -2000
VCOM=-2840

#Contrast of the image
#Possible settings:
#0-100
#Default: 50
CONTRAST=50

#Timer for slide show. Can be set ON/OFF
#Default: OFF
TIMER=ON

#Delay time for slide show in milliseconds
#min. 20000
TIME=60000

#Sleep mode settings
#ON/OFF
#Default: OFF
SLEEP=OFF


#END of file
```
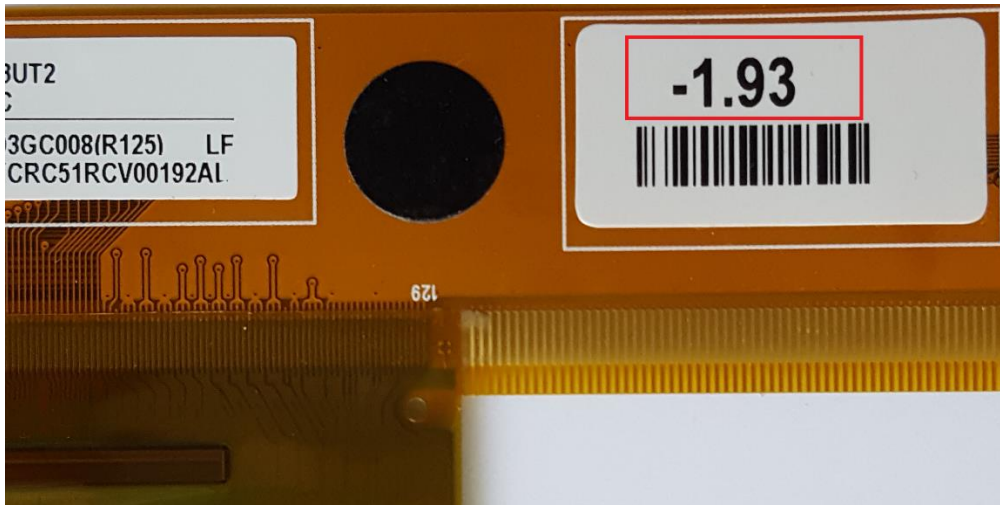
Figure 3:Example of the Vcom voltage on the EPD

The config.ini has to be prepared by means of a PC in advance and saved on the flash memory. If the config.ini is not found in the SD memory, EPD driver does not start and LED Error lights constantly with red. In case of incorrect configuration of the file config.ini the LED Error blinks and EPD driver can show fault information.

Graphic files

The graphic files have to be configured according to the using panel and requirements of the EPD driver. The EPD driver supports BMP-files as 24 bits true color image. The resolution of the picture must not exceed the resolution of the EPD. The smaller images will be centred and displayed in the native resolution without scaling.

Names of the files have to be no longer as 11 signs, e.g. "004Plan.bmp". The number of the files is limited by 65563 and the volume of the using SD memory. The image files are to save as separate files in the main folder on the memory card.

Note: In case of any questions or problems with files configuration, please contact the distributor or EPD driver's producer.

Getting Started

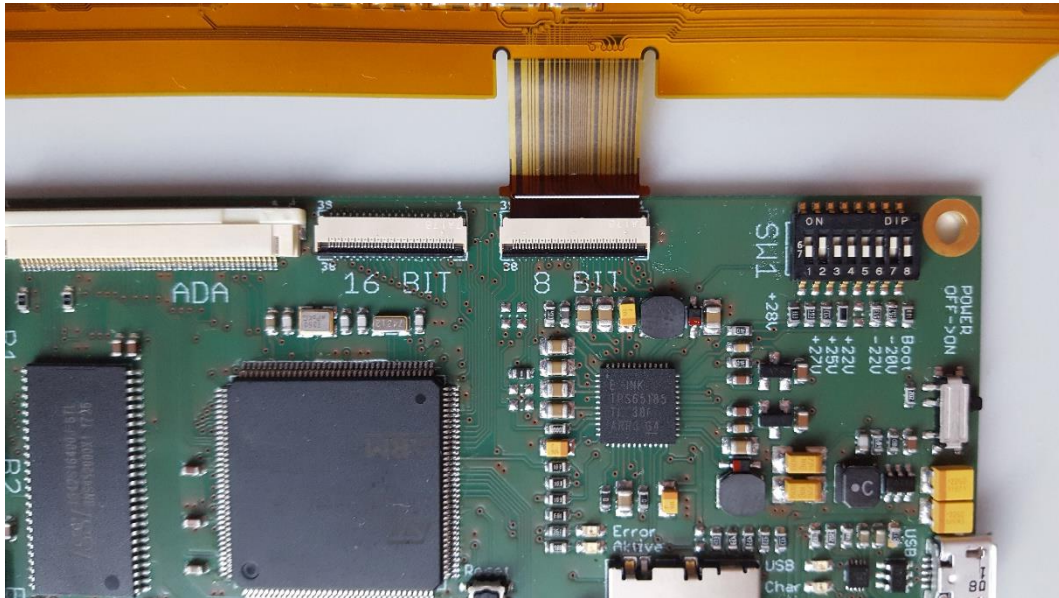1. Connect the EPD ribbon cable to the correspondent connector on the EPD driver board.
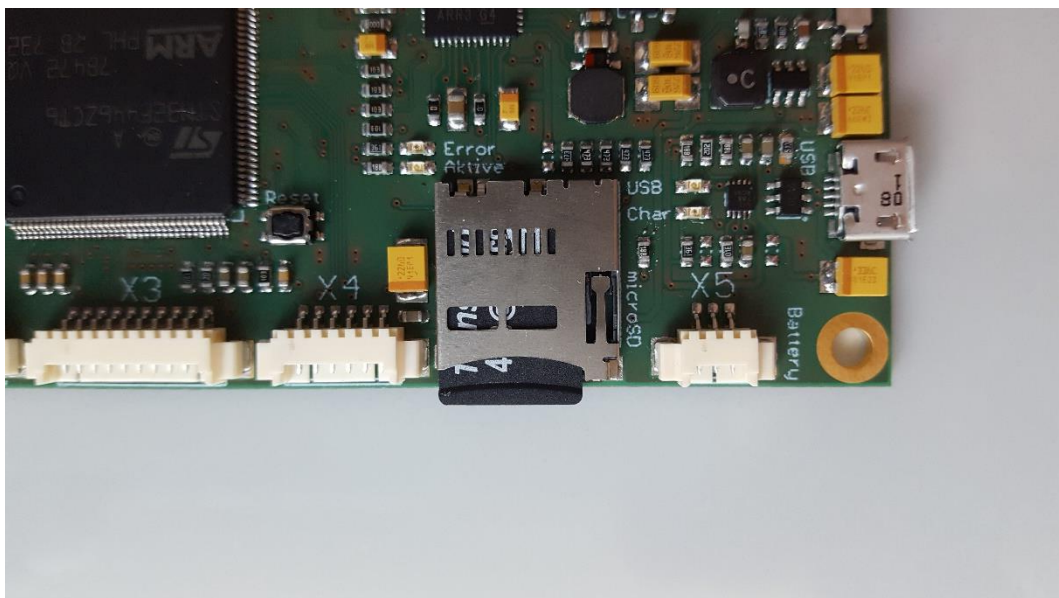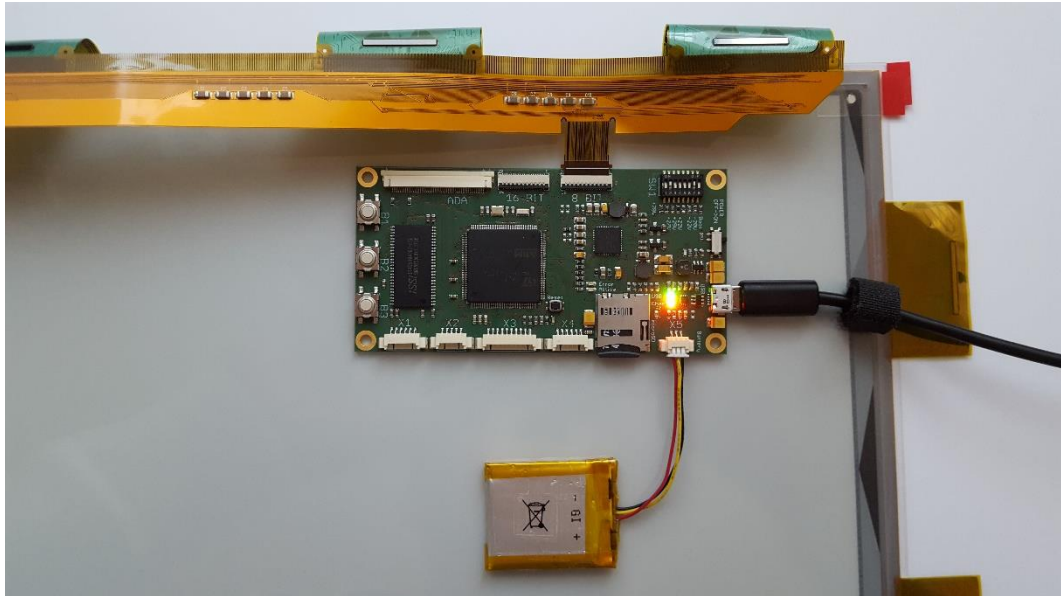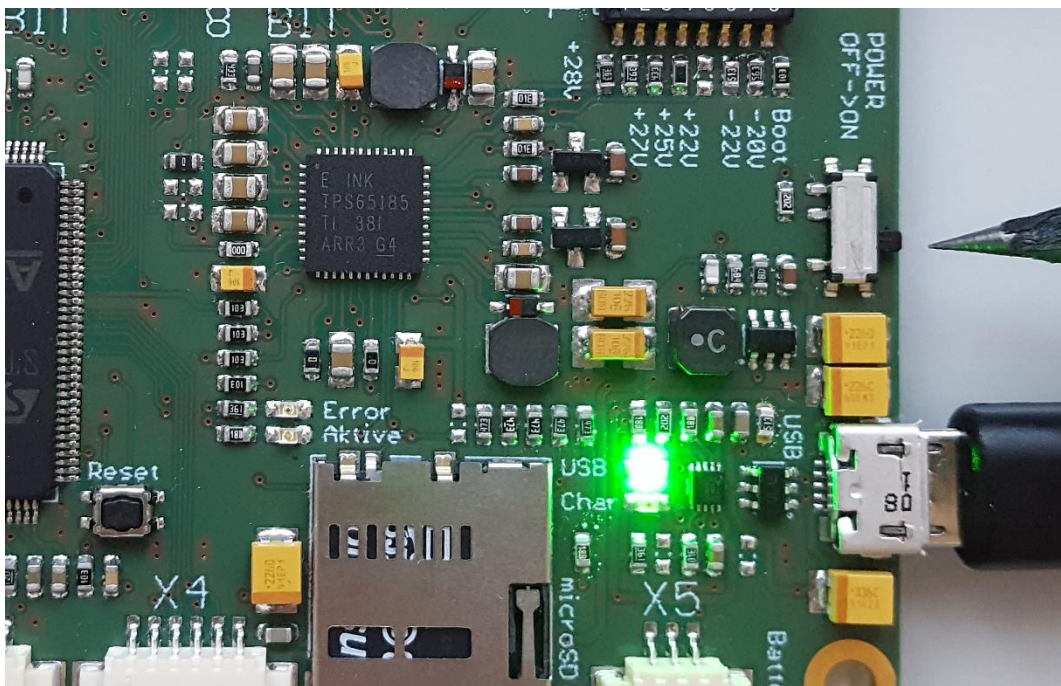

Figure 4:EPD ED133UT2 is connected

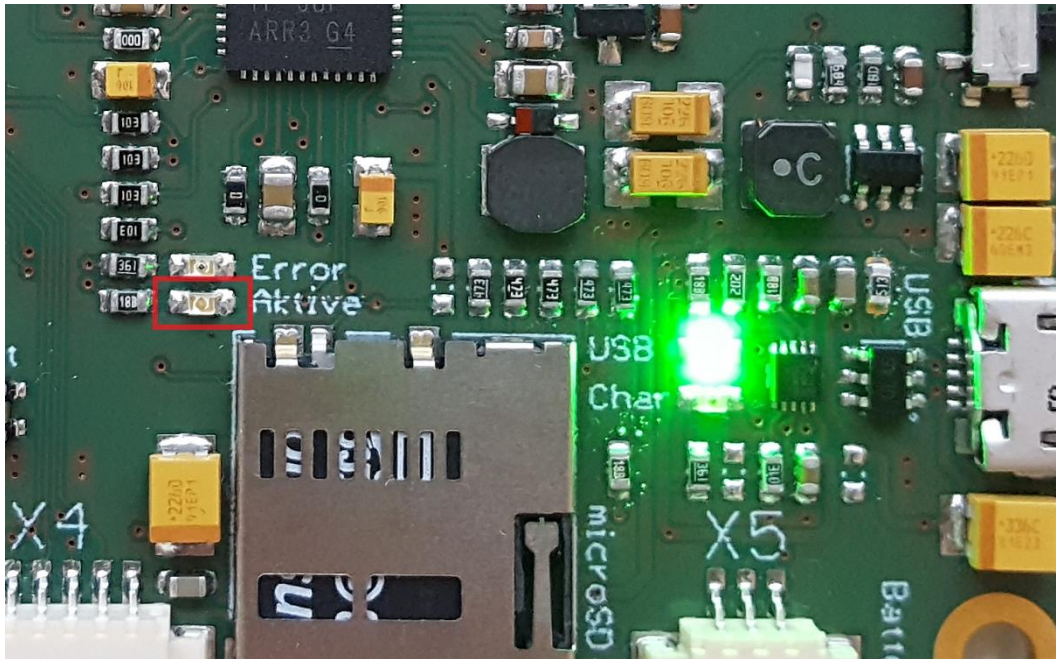2. Put the prepared SD card into the slot as it is shown on the picture.

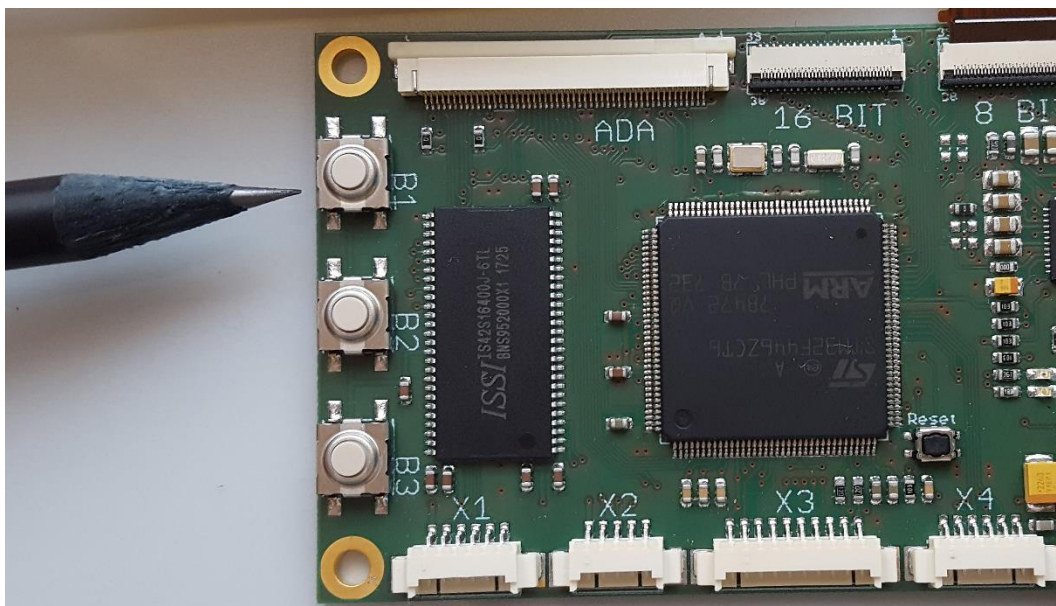3. Connect an external power supply: a battery or USB

4. Power Up. Switch on the main supply. The board should boot up immediately.

5. Check that the green LED "Aktive" blinks. (if not, see the light indication table in the EPD driver board specification)

6. Manage the slideshow by buttons or wait for the display update by timer.

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Preliminary
Product Specification
EPD Driver Board

Page 11 of 12

7. If the settings are correct, the display should show an image.
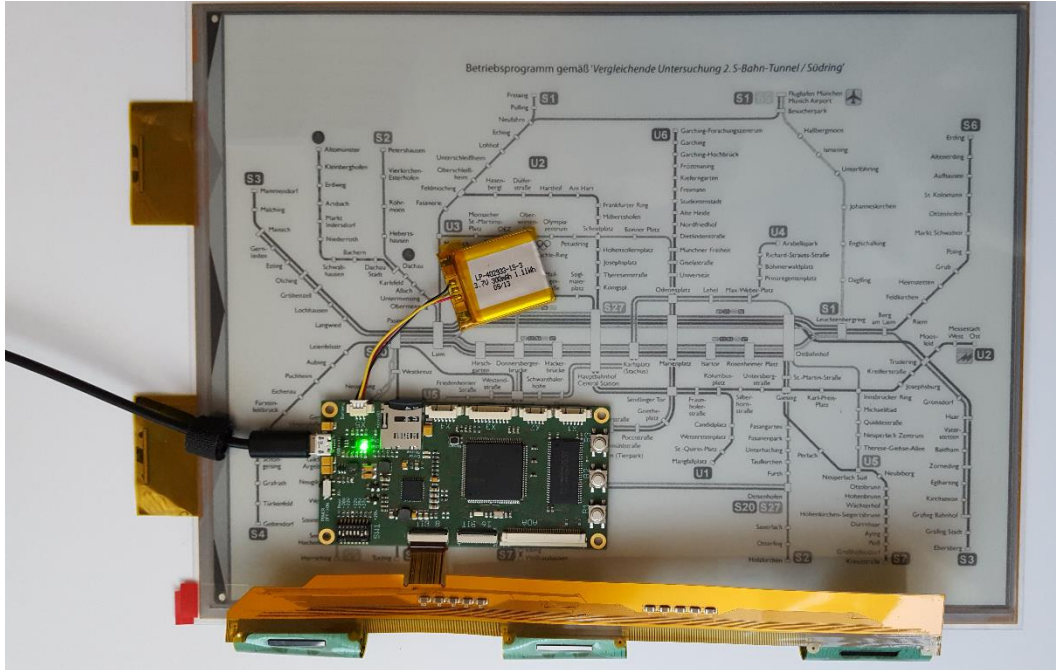
Before turning to the Support Hotline, please make sure that your query is not answered in one of these manuals or "Datasheet" documents.

Beck GmbH & Co. Elektronik   Tel.: +49 – (0)911 – 9 34 08 – 0   Preliminary
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Page 12 of 12