Application Note
How to install Xserver
on AZ-Touch Pi0

Rev.	Date	Description
A	2021-01-31	First release

1. Introduction

This application note will show you how to use Xserver on the AZ-Touch Pi0.

2. Preparation of SD card

- Download the latest release of Raspberry Pi OS with desktop
- Unzip the downloaded file
- Write the image to your SD card. See here for details.
- Copy an empty file SSH to the root directory of the SD card

3. Driver installation

- Download the AZ-Touch overlay aztouch-display.dtbo driver for Raspbian OS
- Unzip the downloaded file
- Copy the file az-touch-display.dtbo to the **/overlays** directory of the SD card
- Insert the SD card and boot your Raspberry Pi Zero

4. Wifi settings

- You can follow this tutorial to setting the Wifi headless.
- or you can use a Raspberry Pi (2/3/4) connected to Ethernet via Putty and SSH:

```
sudo raspi-config
--> 1 System Options
--> S1 Wireless LAN
```

- Reboot your Raspberry Pi

5. Localisation

- Connect via Putty and SSH:

```
sudo raspi-config
--> 5 Localisation Options
--> L1 Locale
--> L2 Timezone
```

- Reboot your Raspberry Pi

6. Enable SPI

- Connect via Putty and SSH:

```
sudo raspi-config
--> 3 Interface Option
--> P4 SPI
--> YES
```

- Reboot your Raspberry Pi

7. Enable the display driver

- Connect via Putty and SSH:
- We have to edit the file */boot/config.txt*

```
sudo nano /boot/config.txt
```

- Insert the following lines at the end of the file:

```
dtoverlay=aztouch-display
dtparam=swapxy=1
dtparam=speed=16000000
dtparam=rotate=90
```

- Save the file CTRL+X and YES
- We have to edit the file */boot/cmdline.txt* now:

```
sudo nano /boot/cmdline.txt
```

- Insert the following text at the **end of the first line:**

```
fbcon=map:10
```

- Save the file CTRL+X and YES
- We have to edit the file */usr/share/X11/xorg.conf.d/99fbturbo.conf* now:

```
sudo nano /usr/share/X11/xorg.conf.d/99-fbturbo.conf
```

- Change the following line:

```
Option"fbdev""/dev/fb0"
```

- change **fb0** to **fb1**:

```
Option"fbdev""/dev/fb1"
```

- Save the file CTRL+X and YES
- Reboot the PiZero

```
sudo reboot
```

- After 2-3 minutes you should see now the Xserver GUI on the screen

8. Calibrate the touchscreen

- Connect via Putty and SSH:
- We have to install some additional drivers first:

```
sudo apt-get install xserver-xorg-input-evdev
sudo cp -rf /usr/share/X11/xorg.conf.d/10-evdev.conf
/usr/share/X11/xorg.conf.d/45-evdev.conf
```

```
sudo apt-get install -y xinput-calibrator
```

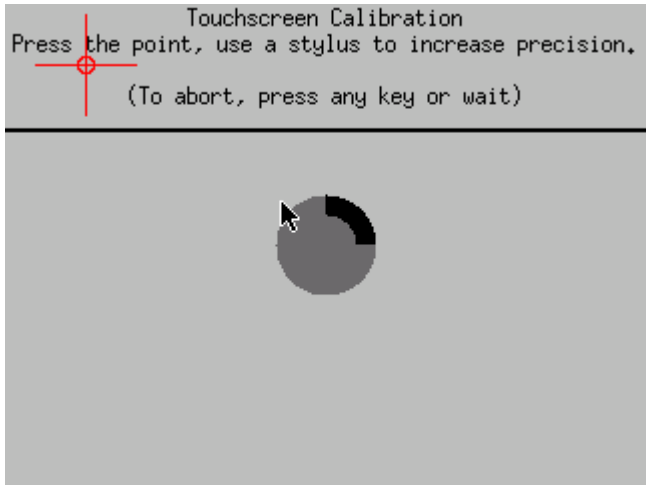
- Reboot the PiZero now

```
sudo reboot
```

- Reconnect via Putty and SSH again:
- Now you can calibrate the touch screen:

```
DISPLAY=:0.0 xinput_calibrator
```

- You will see a special calibration screen on the touchscreen. Please touch the displayed red crosshairs with the white pen from the kit:



- You will get an text output of the calibration value in the terminal window like this:

```
Section "InputClass"
        Identifier      "calibration"
        MatchProduct    "ADS7846 Touchscreen"
        Option  "Calibration"   "298 3906 273 3822"
        Option  "SwapAxes"      "0"
EndSection
```

- It's necessary to save this text in a file to make the calibration permanent. We have to create the directory */etc/X11/xorg.conf.d* first:

```
sudo mkdir /etc/X11/xorg.conf.d
```

- Now we can create a new file and save the calibration text above in this file:

```
sudo nano /etc/X11/xorg.conf.d/99-calibration.conf
```

- Save the file CTRL+X and YES
- Reboot the PiZero now

```
sudo reboot
```

Finish!