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Demo Board 3

(Redirected from Demoboard 3)

Front side



Right side



Back side



General

On this page you will find the process of the **installation** & the **configuration** of 1 of our **Demo Boards**. I will refer to this board as the **3-channel current board**.

There are currently 3 **Demo Boards** being tested in our **affiliate** in **Turnhout**.

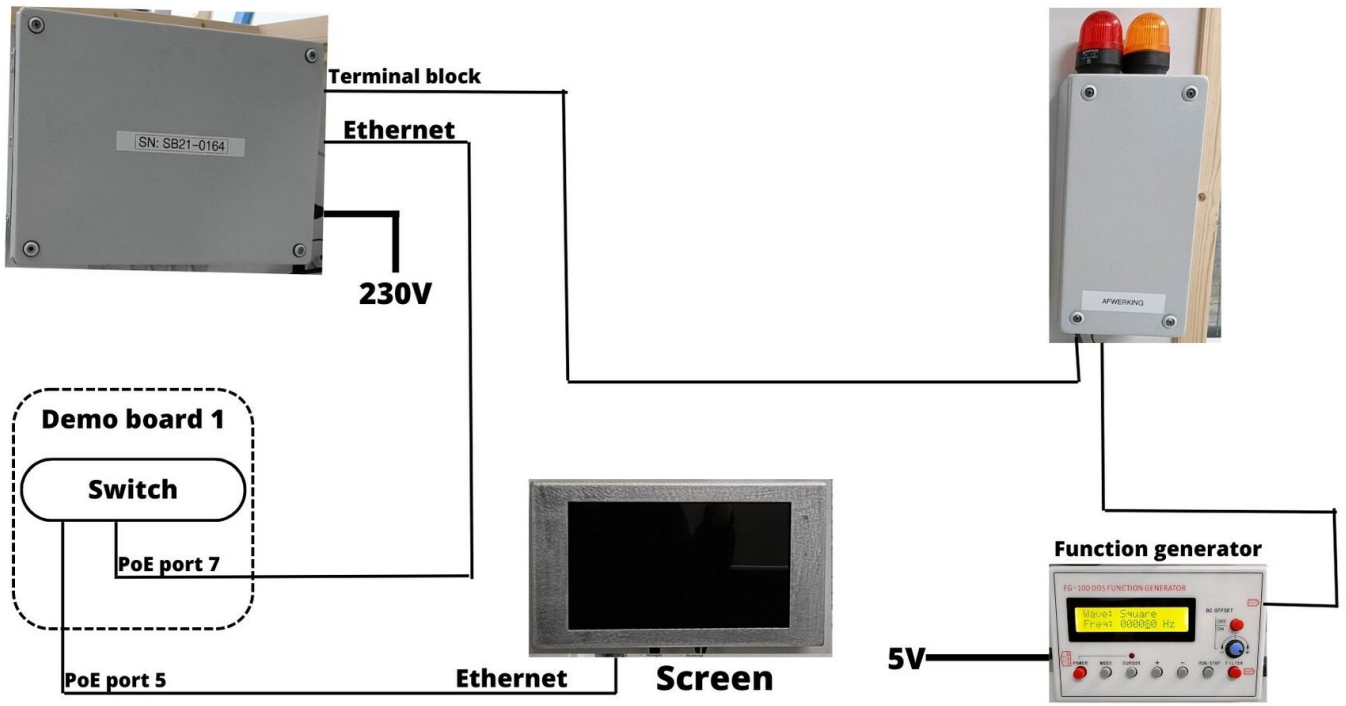
Description

In this scope I will be describing the third demo board. This board is able to **measure the speeds of 3 different lanes**. The speeds are **simulated by a function generator** connected to the smartbox.

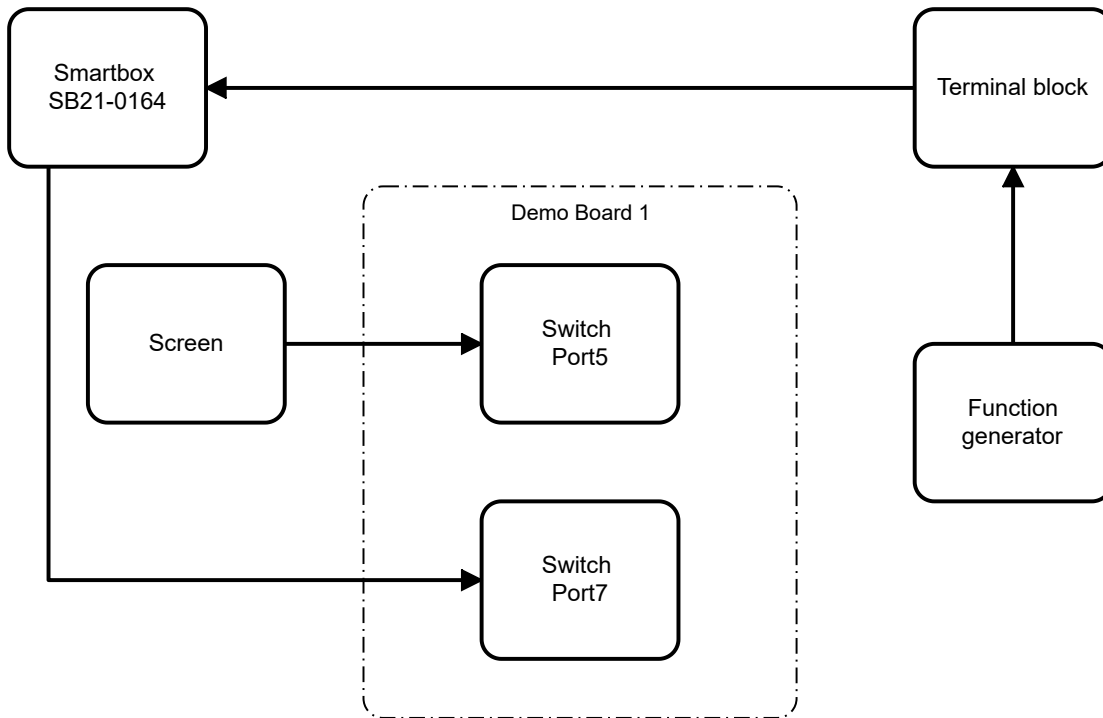
Schematics

Visual schematic

A schematic overview of the installed modules on the **3-channel current board**.

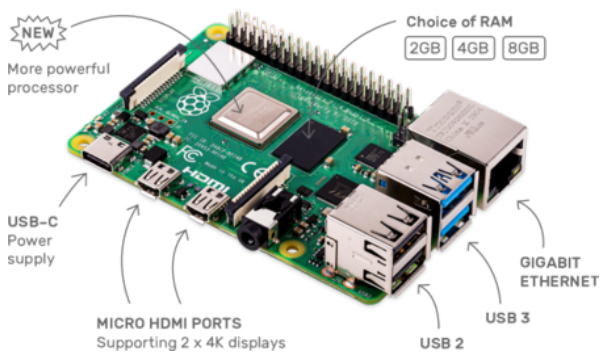


BPMN schematic



Components

- 1x Raspberry Pi 4 B's 8GB (<https://www.raspberrypi.com/products/raspberry-pi-4-model-b/>)



- 1x HMTECH 10" display (<https://www.amazon.com/HMTECH-Raspberry-Touchscreen-1024x600-Portable/dp/B0987468N2>)



- 1x USB-C power supply (https://www.sossolutions.nl/3a-usb-c-voedingsadapter-voor-raspberry-pi-4?gclid=Cj0KCQiA0oagBhDHARIsAI-BbgfYDe0NciZEUtcj58KnTNkzp9ccT42XB9CHikkBCmmCseNA4Y4NnTgaAtHbEALw_wcB)



- 1x Preconfigured Smartbox (http://wiki01.prd.priv.vangenechten.com/mediawiki/index.php/Smartbox_-_C_omplete_Build_&_Testing_Guide)



- 1x Power cable (https://www.thomann.de/be/varytec_power_twist_power_cable_15_m.htm?gclid=Cj0KCQiA0oagBhDHARIsAI-BbgcLUYsHo8Nfs5yV6aG0fDjGNWvb_8UkBuOIAfCKsWR_GLMA4GiKWggaApFHEALw_wcB)



- 1x Function generator (https://www.amazon.com.be/-/en/Function-Generator-Simple-Operation-Signal/dp/B091BLCP8J/ref=asc_df_B091BLCP8J/?tag=begogshpadde-21&linkCode=df0&hvadid=633370715410&hvpos=&hvnetw=g&hvrand=2549930165572060606&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcm dl=&hvlocint=&hvlocphy=1001082&hvtargid=pla-1479558254354&pssc=1&gclid=CjwKCAiAu5agBhBzEiwAdiR5tGkprE6xb7ffEhAmtwZLTc-5L3efMBc3_qZxkxkFcu7ICqPxx99PVxoC3oYQAvD_BwE)



- 1x terminal block



Configuration

Hardware

Function generator

The function generator simulates the speed of the machine.

Switch connection

The screen is connected to the switch with an ethernet cable.

Demo board 3	Switch	IP
Screen	Port 5	10.1.65.212

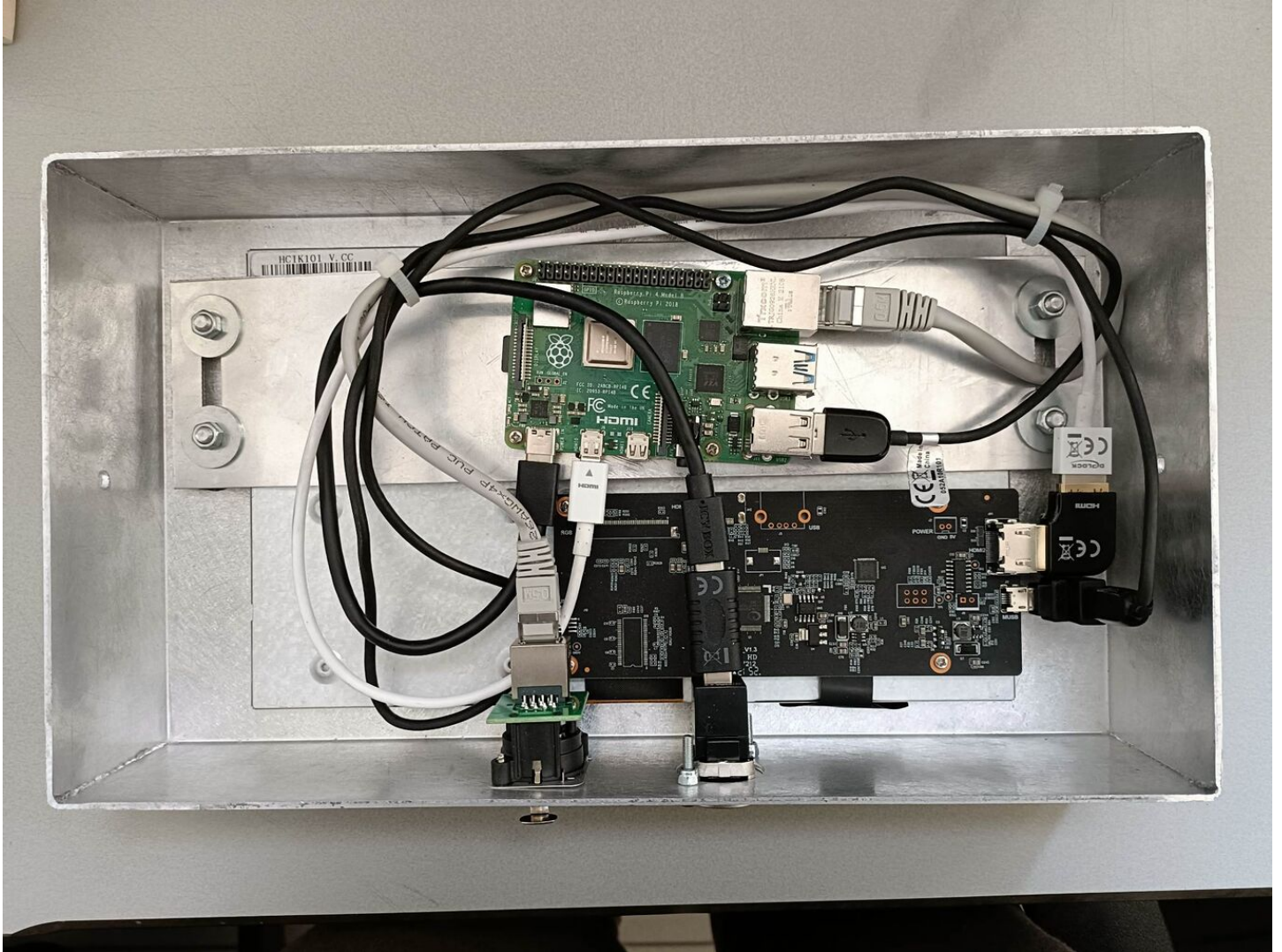
If you want to establish a remote connection, install VNC Viewer (<https://www.realvnc.com/en/connect/downlo>

ad/viewer/)

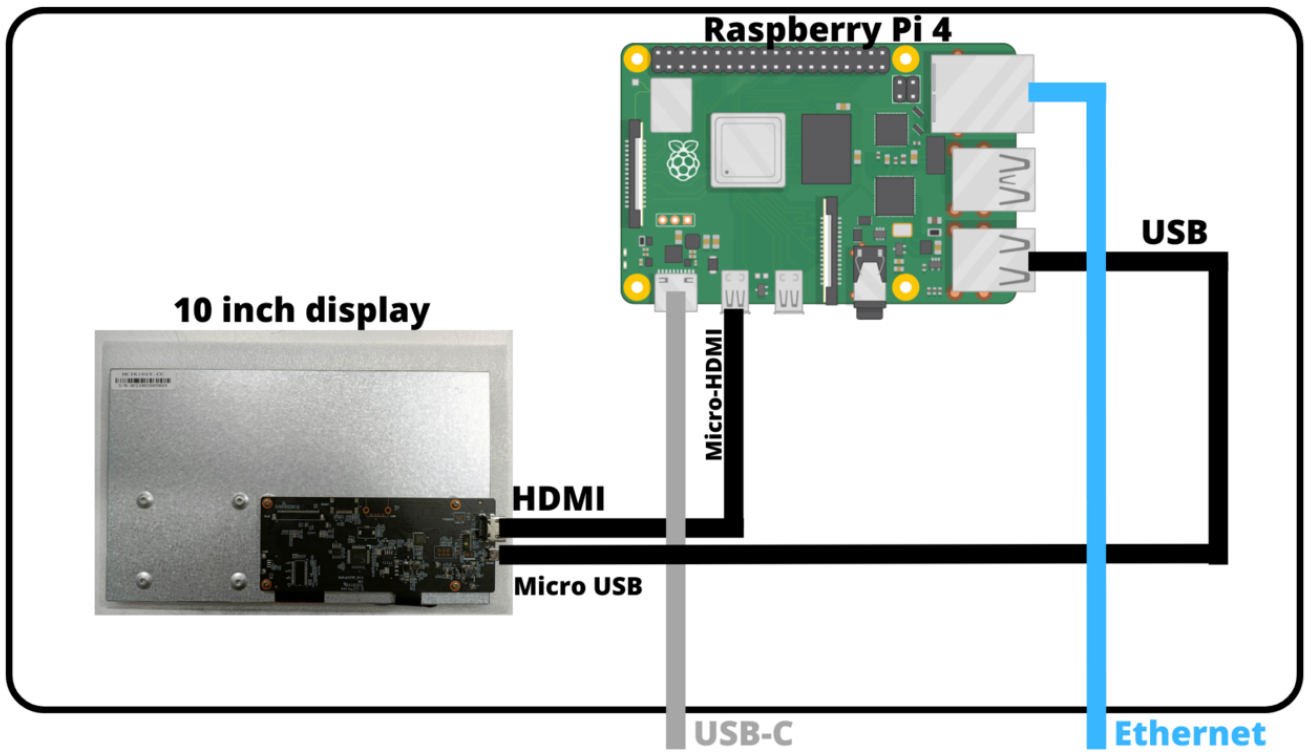
Screen

A Raspberry Pi is connected to the 10" display with an HDMI cable.

Build overview



Schematic overview



Software

Node-Red

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways.

It provides a browser-based editor that makes it easy to wire together flows using the wide range of nodes in the palette that can be deployed to its runtime in a single-click.

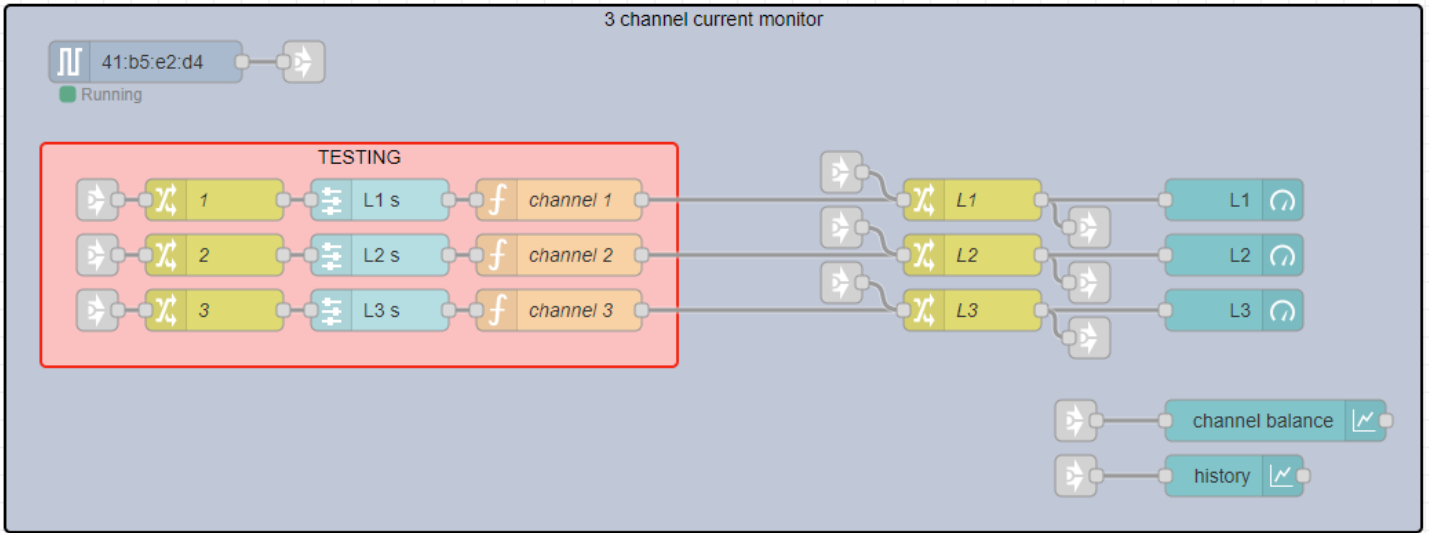
Node-red is already installed on the Raspberry Pi

If you want to install Node-Red yourself, follow the procedure on their website.

Official site: <https://nodered.org/>

In our case Node-Red is already installed on the smartbox.

Node-red configuration: <http://10.1.60.233:1880/>



OS

A Raspberry Pi with an HDMI screen is installed as a monitor. We can access the screen's OS with ssh. Ssh allows you to login to the pi's terminal.

Screen

Status

Hostname	RPI Version	Environment	OS	Location	IP	Owner	Status
raspberrypi	RPI4	/	raspios_arm64 (https://downloads.raspberrypi.org/raspios_arm64/images/)	Imas	10.1.65.212	Demoboard 3	Online

Login

We can access the screen's OS with ssh. Ssh allows you to login to the pi's terminal.

```
ssh pi@10.1.65.212
```

Copy Code

NOTE: The password can be found in Keepass

```
[2:56:25] swillems → ~ ssh pi@10.1.65.115
pi@10.1.65.115's password:
Linux raspberrypi 5.15.61-v8+ #1579 SMP PREEMPT Fri Aug 26 11:16:44 BST 2022 aarch64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Mar  6 12:06:10 2023 from 10.1.248.9

SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set a new password.

pi@raspberrypi:~ $ ls -l
total 52
drwxr-xr-x 2 pi pi 4096 Jan 28 2022 Bookshelf
-rwxr-xr-x 1 pi pi 187 Oct 24 12:41 browser_startup.sh
drwxr-xr-x 2 pi pi 4096 Mar 20 2022 Desktop
drwxr-xr-x 2 pi pi 4096 Mar 20 2022 Documents
drwxr-xr-x 2 pi pi 4096 Mar 20 2022 Downloads
-rw-r--r-- 1 root root 5 May 30 2022 imgMode.txt
drwxr-xr-x 2 pi pi 4096 Mar 20 2022 Music
drwxr-xr-x 2 pi pi 4096 Mar 20 2022 Pictures
drwxr-xr-x 2 pi pi 4096 Mar 20 2022 Public
drwxr-xr-x 4 root root 4096 May 30 2022 sfClient
drwxr-xr-x 2 pi pi 4096 Mar 20 2022 Templates
drwxr-xr-x 2 pi pi 4096 Mar 20 2022 Videos
drwxr-xr-x 7 root root 4096 May 30 2022 websockify
```

Smartbox

Status

Hostname	RPI Version	Environment	Location	IP	FQDN	Owner
SB21-0164	RPI4	PRD	Imas	10.1.60.203	https://sb21-0164.rad.priv.vangenechten.com	Demoboard 3

Login

We can access the smartbox with ssh to view its files.

```
ssh pi@10.1.60.203 Copy Code
```

NOTE: The password can be found in Keepass

```
[3:18:49] swillems → ~ ssh pi@10.1.60.203
The authenticity of host '10.1.60.203 (10.1.60.203)' can't be established.
ECDSA key fingerprint is SHA256:3YWvYmZPaLsXgCTpfjBwmnRstu/s0Jgsqr9nacVJlhE.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.1.60.203' (ECDSA) to the list of known hosts.
pi@10.1.60.203's password:
Permission denied, please try again.
pi@10.1.60.203's password:
Linux sb21-0164.rad.priv.vangenechten.com 5.15.61-v8+ #1579 SMP PREEMPT Fri Aug 26 11:16:44 BST 2022 aarch64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Feb 27 14:00:44 2023 from 10.1.249.52

Wi-Fi is currently blocked by rfkill.
Use raspi-config to set the country before use.

pi@sb21-0164:~ $ ls -l
total 132
drwxr-xr-x 2 root root 4096 Oct 24 15:23 buster2bullseye
-rw-r--r-- 1 root root 9 Mar 3 2022 imgMode.txt
-rw-r--r-- 1 root root 117864 Oct 24 15:19 pijuice-base_1.8_all.deb
-rwxr-xr-x 1 root root 236 Oct 24 15:20 send-message-to-kafka.sh
drwxr-xr-x 4 root root 4096 Oct 24 15:17 sfClient
```

Startup script

This script automatically sets the screen into kiosk mode. This means it can only be used as a monitor and not an editor.

browser_startup.sh

```
#!/bin/bash
i=0
while ! ping -c 1 -n -w 1 10.1.60.203 &> /dev/null
do
    ((i++))
done
export DISPLAY=:0.0
firefox --kiosk "http://10.1.60.203:1880/ui/#!/0?socketid=go1_im2qC3sqPXBqAAAB"
```

Copy Code

The script opens a firefox browser and goes to the user interface of Node-Red.

UI view: http://10.1.60.203:1880/ui/#!/0?socketid=go1_im2qC3sqPXBqAAAB



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