

Interface S88 Gleisbox Raspberry Pi Manual

Guido de Hek

August 31, 2023

Contents

1	Introduction	3
2	Setup of the Raspberry Pi	4
2.1	Shutdown Button	4
3	Setup of CAN-interface	5
3.1	Connection Scheme	5
3.2	Oscillator Settings	5
3.3	Rocrail Server Settings	5
4	Setup of S88n-interface	6
4.1	Connection Scheme	7
4.2	S88UDP installation	7
5	PCB Description	8

1 Introduction

System for controlling a marklin track using a rpi

2 Setup of the Raspberry Pi

t.b.d.

2.1 Shutdown Button

A button can be connected to the system to simplify the process of shutting the system down. First of all, a pushbutton must be connected between GPIO3 (header pin 5) and GND (e.g. header pin 6).

Next, the following script must be installed:

```
git clone https://github.com/Howchoo/pi-power-button.git  
  
./pi-power-button/script/install
```

Uninstalling the script can be done via:

```
./pi-power-button/script/uninstall
```

Note: warning about pull-up resistor can be neglected.

3 Setup of CAN-interface

t.b.d.

3.1 Connection Scheme

The CAN-bus shall be connected to the Gleisbox as depicted in figure 1. The pin 1 (power supply) does not have to be connected.

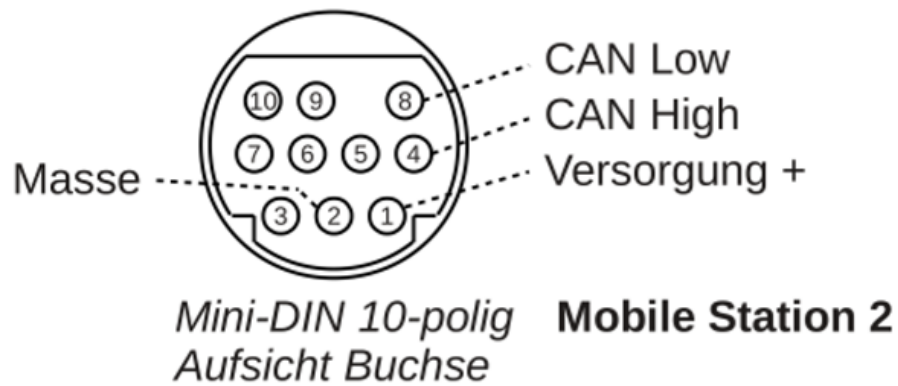


Figure 1: Pinout canbus.

3.2 Oscillator Settings

```
sudo ip link set can0 up type can bitrate 250000
```

3.3 Rocrail Server Settings

```

GNU nano 5.4 /boot/config.txt
arm_freq=800

# Uncomment some or all of these to enable the optional hardware interfaces
dtparam=i2c_arm=on
dtparam=i2s=on
dtparam=spi=on
dtoverlay=mcp2515-can0,oscillator=16000000,interrupt=25
dtoverlay=spi-bcm2835-overlay

# Uncomment this to enable infrared communication.
dtoverlay=gpio-ir,gpio_pin=17
dtoverlay=gpio-ir-tx,gpio_pin=18

# Additional overlays and parameters are documented /boot/overlays/README

# Enable audio (loads snd_bcm2835)
dtparam=audio=on

# Automatically load overlays for detected cameras
camera_auto_detect=1

```

Figure 2: Pi Oscillator settings.

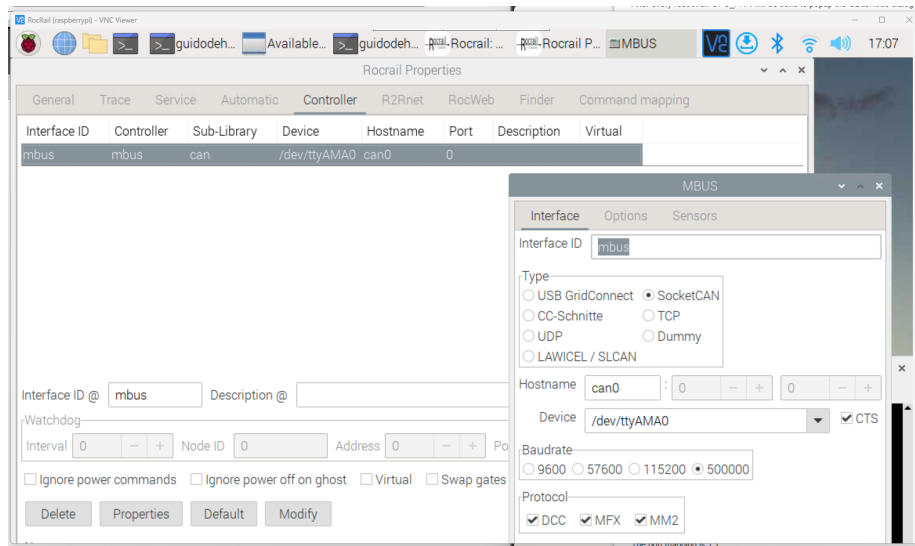


Figure 3: rocrailServerSettings.

4 Setup of S88n-interface

t.b.d.

Table 1: S88N pinout and description.

RJ45 pin	Colour in UTP cable	S88N Description
1	Orange-white	+5V (+12V not in this board)
2	Orange	Data
3	Green-white	GND
4	Blue	Clock
5	Blue-white	GND
6	Green	Load
7	Brown-white	Reset
8	Brown	Rail signal (not used in this design)

4.1 Connection Scheme

4.2 S88UDP installation

Using updated version from Gbert (original version from Sigg).
 Install (to prevent pcap.h compilation error):

```
sudo apt-get install zlib1g-dev libpcap-dev
```

Download and install S88UDP-rpi:

```
cd git clone https://github.com/GBert/railroad cd railroad/can2udp/src make
```

To start the interface:

```
sudo ./s88udp-rpi -v -f -c "17,22,23,24" -m 1
```

Arguments behind option -c are the gpio ports. The amount of S88 modules is set using option -m.

To test if the udp ports are assigned for use by Rocrail: `sudo netstat -autpn | egrep "Proto—157"`

The PID "Rocrail" should be displayed.

`http://www.airspayce.com/mikem/bcm2835/bcm2835-1.63.tar.gz tar zxvf bcm2835-1.63.tar.gz cd bcm2835-1.63`

5 PCB Description

todo:

- standard 9v input for S88

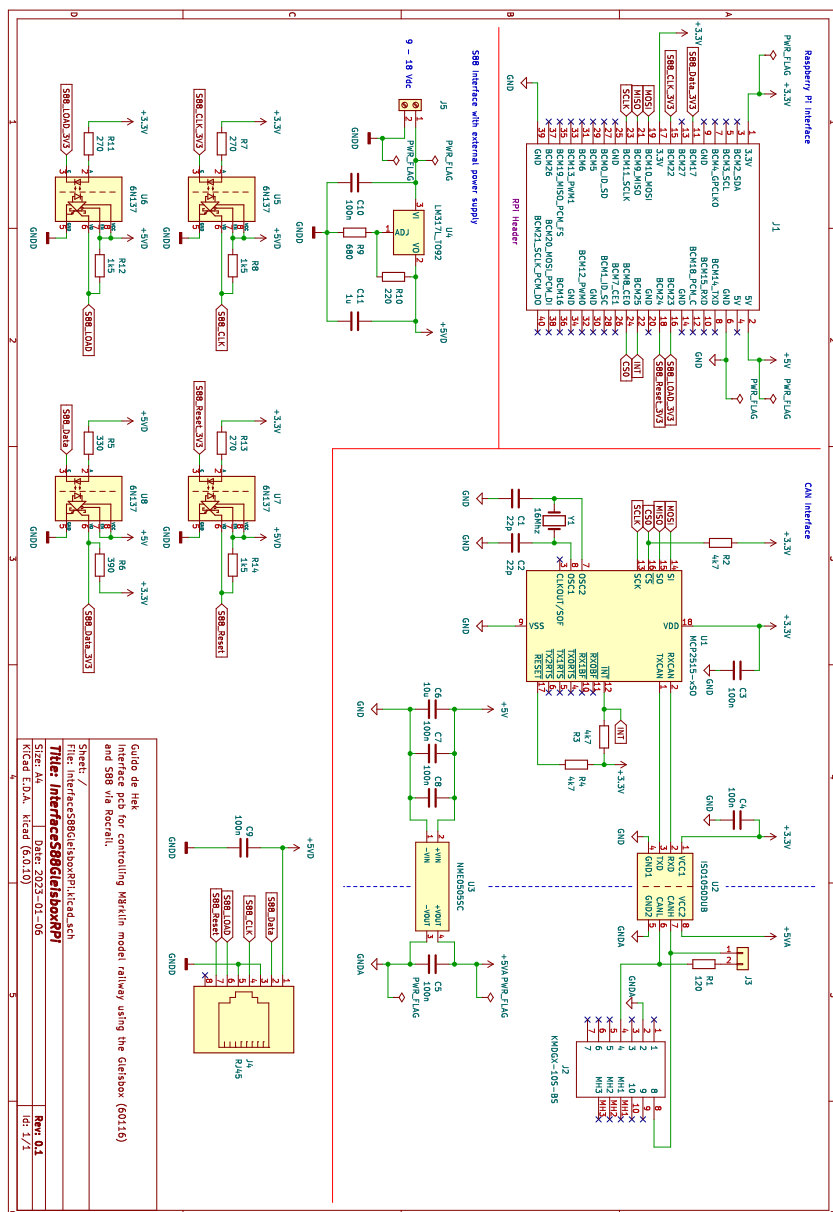


Figure 4: Schematic of the system.