

Applications

- Automotive CAN bus systems
- Automation CAN bus systems
- General purpose CAN bus interfaces
- CANopen

Product Features

- Complies with ISO 11898 standard
- Communication baud rate up to 1Mbps
- High speed SPI Interface
- Standard, extended data and remote frames
- Compatible with OBDII and SAE J1939
- Powered via Raspberry Pi models
- 120 Ohm termination resistor with dip-switch
- Power and CAN Bus RX-TX activity LEDs
- EMI noise suppression on the CAN Bus
- ESD protection on the CAN Bus
- Latest technology, highly durable components
- Extended operating temperature: -40 ~ +85 °C
- Extended storage temperature: -40 ~ +105 °C
- Fixing holes in compliance with Pi-HAT standard
- CAN Bus connection via standard 9-way D-SUB male connector, industrial 0.15in (3.81mm) push in spring and screw connector

General Description

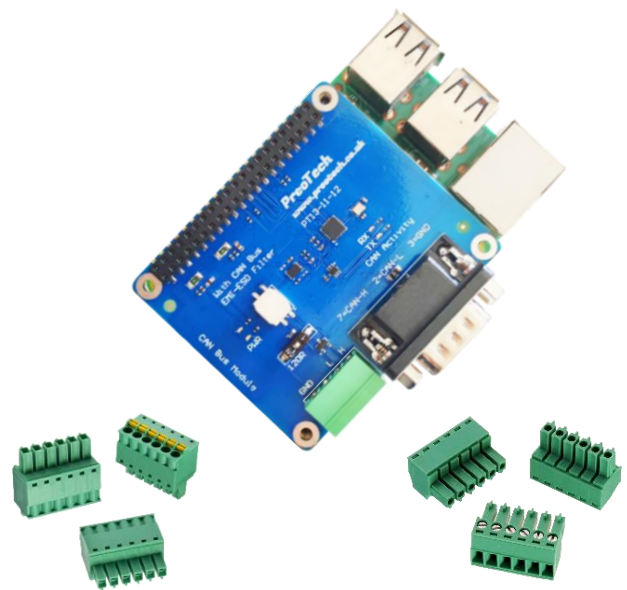
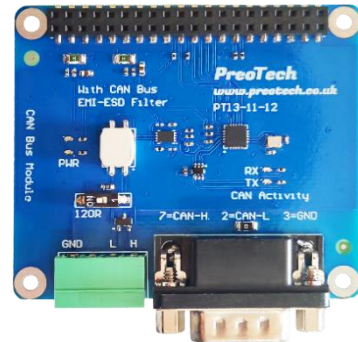
The Preotech CAN Bus Pi-HAT provides CAN Bus capability for the Raspberry Pi. Microchip MCP2515 CAN controller with Microchip CAN Bus transceiver is used for best performance. Connections are made via DB9 male, push in spring and screw connectors.

Designed for working under hard conditions and suitable for military standards.

Protection for the Raspberry Pi for short circuit possibility with fuses. Additional ESD and EMI protections for the CAN Bus Line.

Led indicator for main power, input (RX-Blue) and output (TX-Green) for the CAN Bus data communication.

Easy to install SocketCAN driver. Programming can be done in C or Python.



Pin Configuration

Connector Options:

- Screw Connector
 - Board side P/N: Wurth 691322310004
 - Cable side P/N: Wurth 691361300004
- Push-In Spring Connector
 - Board side P/N: Wurth 691322310004
 - Cable side P/N: Wurth 691368300004B
- DB9 Male Connector
 - Board side P/N: Wurth 618009231221

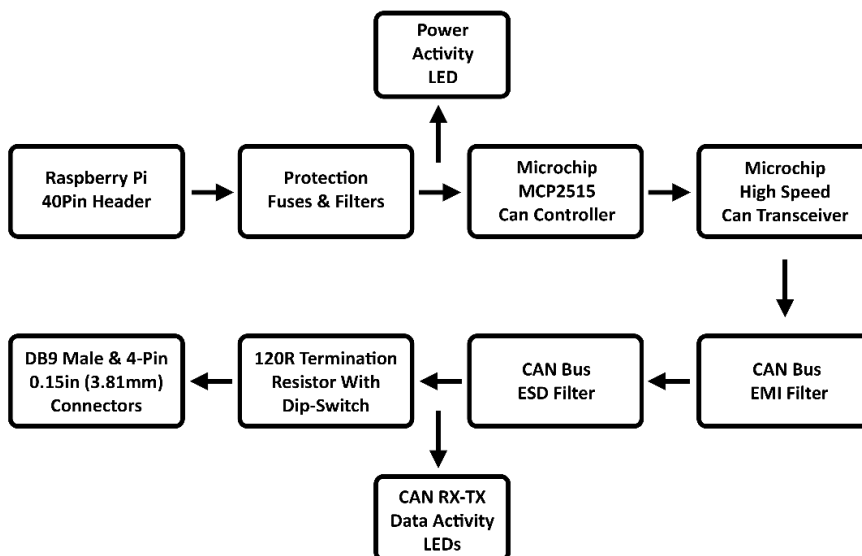


Pin 3: CAN-L Pin 1: CAN-GND
Pin 4: CAN-H



Pin 2: CAN-L Pin 3: CAN-GND
Pin 7: CAN-H

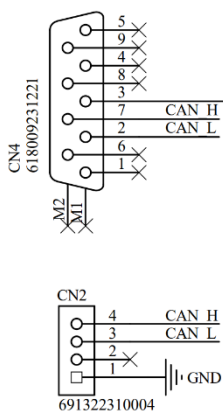
Functional Diagram



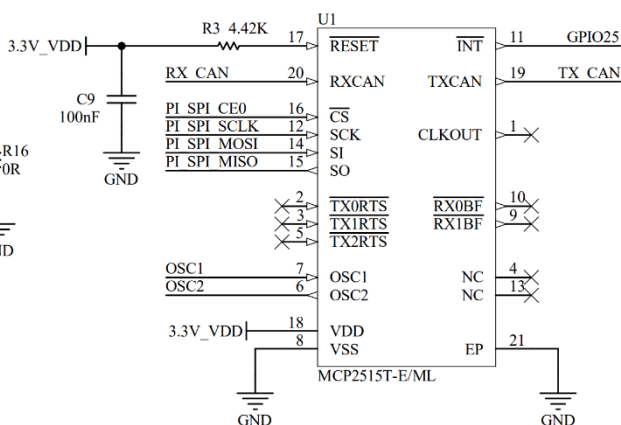
Board Schematics

Some parts of the PreoTech CAN Bus Pi-HAT schematics are given below.

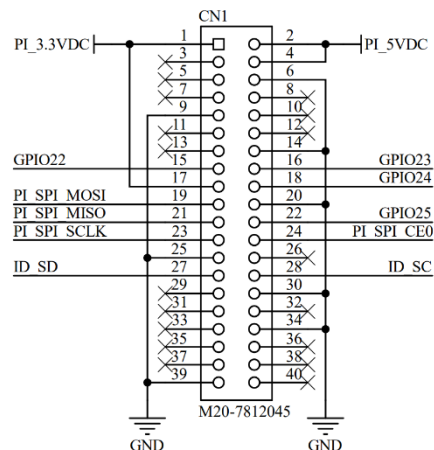
Connectors



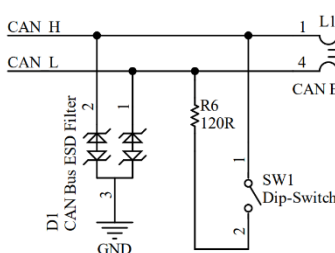
CAN Controller



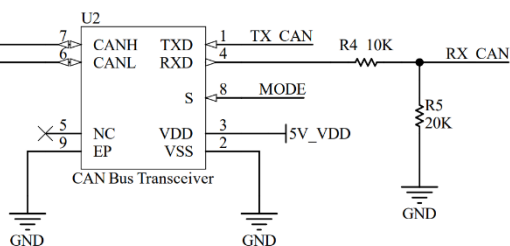
Pi Connector



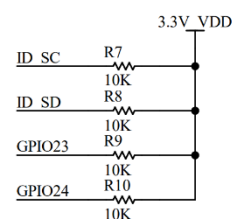
Filters



CAN Transceiver



Pull-Up Resistors



Driver Installation

It is best to start with a new Raspbian image.

Do an update and upgrade first:

```
sudo apt-get update
```

```
sudo apt-get upgrade
```

```
sudo reboot
```

Enable SPI and overlay it as follows:

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

The below lines to overlay SPI and set can0 interface to 16MHz, and interruption to GPIO25 pin:

```
dtoverlay=spi=on
```

```
dtoverlay=mcp2515-can0,oscillator=16000000,interrupt=25
```

```
dtoverlay=spi0-hw-cs
```

```
sudo reboot
```

Can check that the SPI and CAN module was started:

```
dmesg | grep -i spi
```

```
dmesg | grep -i can
```

If for any reason this is not the case, you can add CAN module at system start:

```
sudo nano /etc/modules
```

This is the tool to send and receive data:

```
sudo apt-get install can-utils
```

The two commands that will use are:

```
cansend can0... to send data.
```

```
candump... to listen to CAN network.
```

Communication Test

Set up the can0 interface with the same speed 250Kb/s for CAN Bus Line:

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

Set one of them to listen to any CAN message:

```
candump any
```

Or listen to any can0 messages:

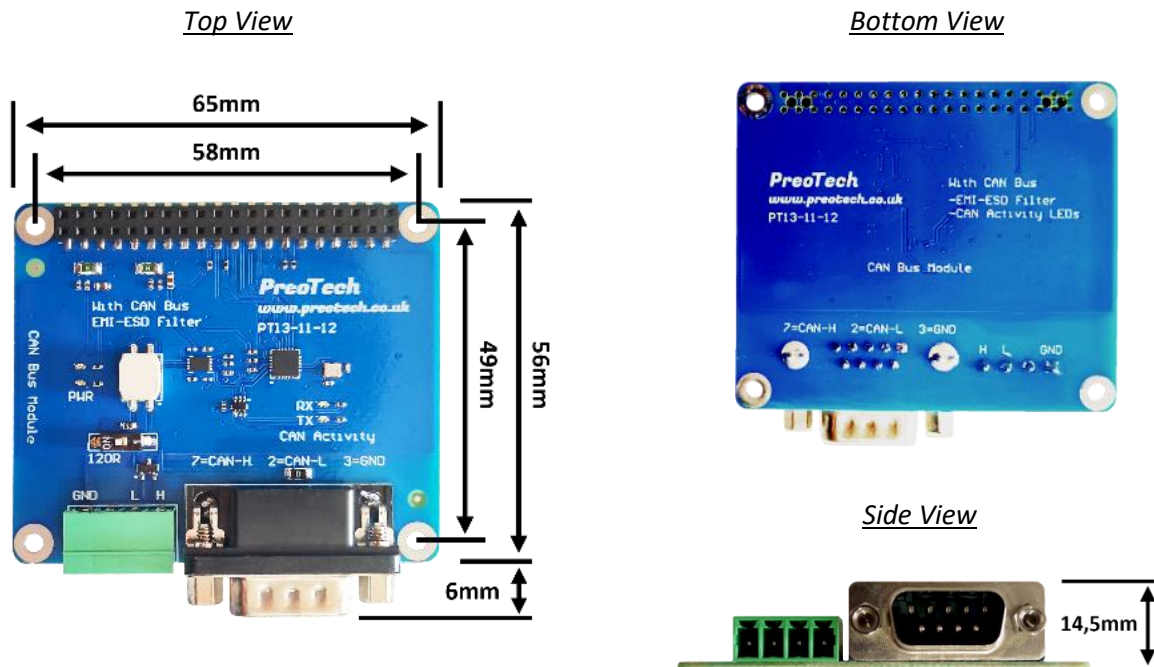
```
candump can0
```

Send something using the other one:

```
cansend can0 9999#FE
```

Completed! Can also do a little google search for more details.

Mechanical Information



Dimensions are in millimeters.

Packing List

- 1x Preotech CAN Bus Pi-HAT Board
- 1x Screw Connector, Cable Side: Wurth 691361300004
- 1x Push-In Spring Connector, Cable Side: Wurth 691368300004B
- 1x Datasheet: PT-PC-23-v2.2-DSA

**Depending on placement technique, should buy 40-pin header part.*

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations, and information about PreoTech:

 www.preotech.co.uk

 sales@preotech.co.uk

For technical questions and application information:

 engineering@preotech.co.uk

