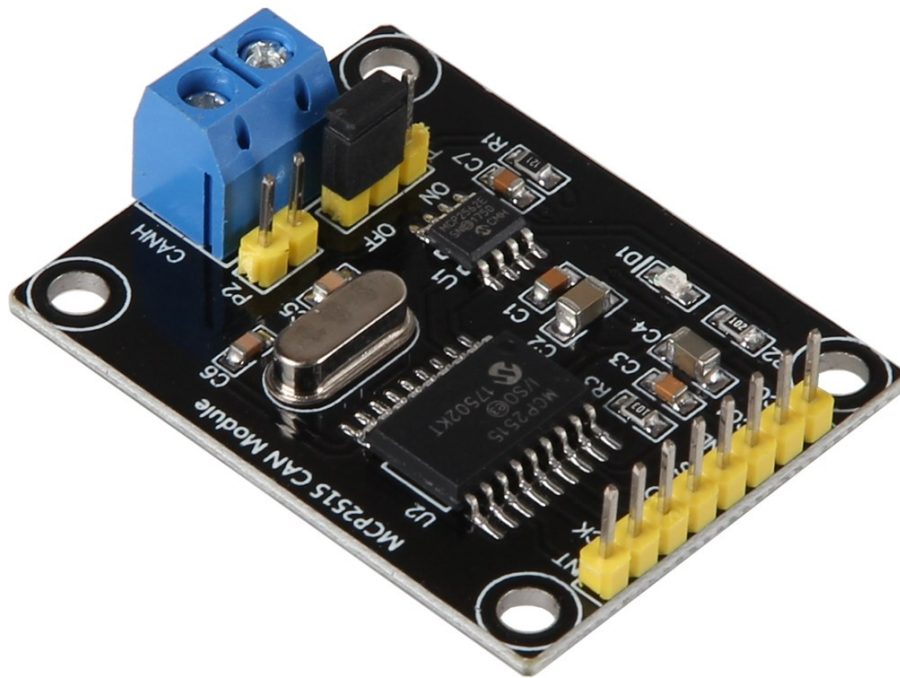


JOY-IT



CAN Module

with MCP2515 CAN Interface & MCP 2562 Transceiver

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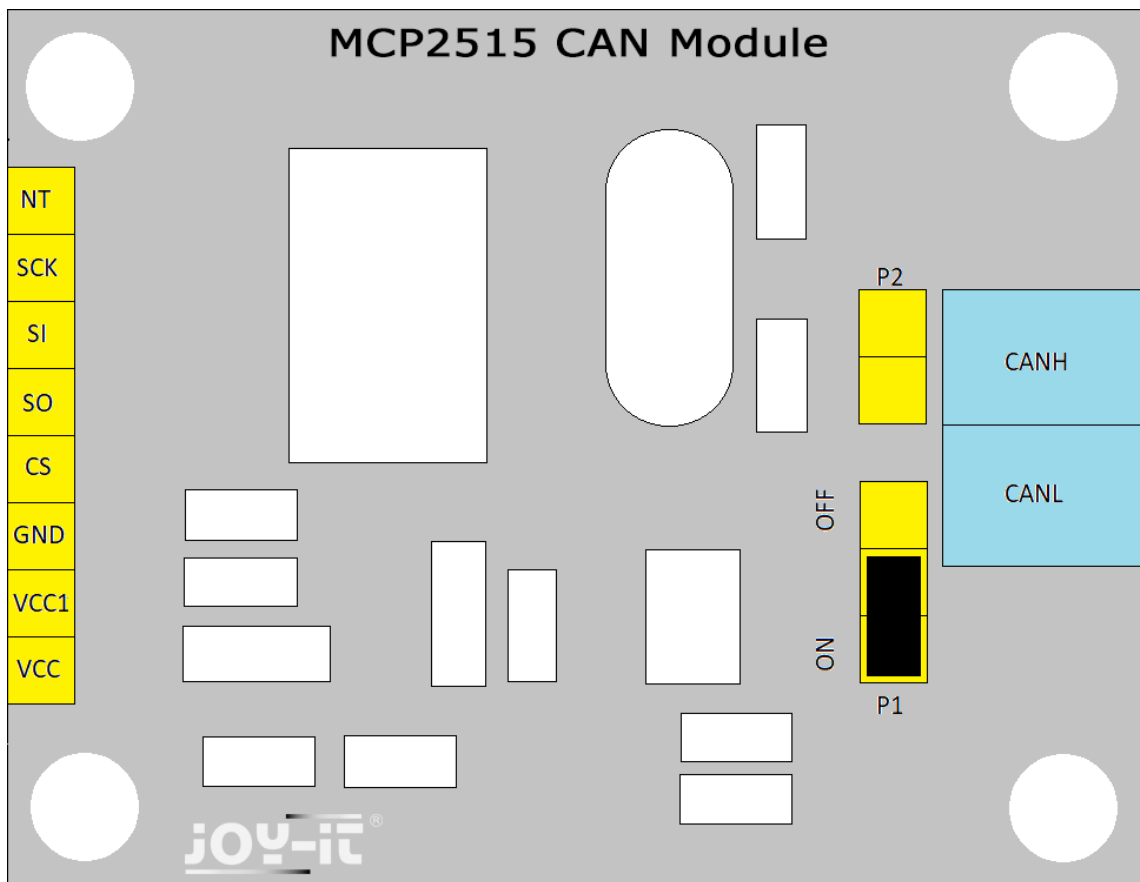
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1. OVERVIEW

Dear customer,
 Thank you for choosing our product.
 In the following we will show you what has to be considered during commissioning and use. Should you encounter any unexpected problems, please feel free to contact us.

2. ANSCHLUSSPLAN

The CAN board is compatible with Raspberry Pis (and other ARM single board computers) on a voltage level of 3.3V, as well as with Arduinos on a voltage level of 5V. A general pin assignment can be found in the following diagram and table. A detailed connection overview and instructions for use in combination with the different systems can be found in the following chapters.

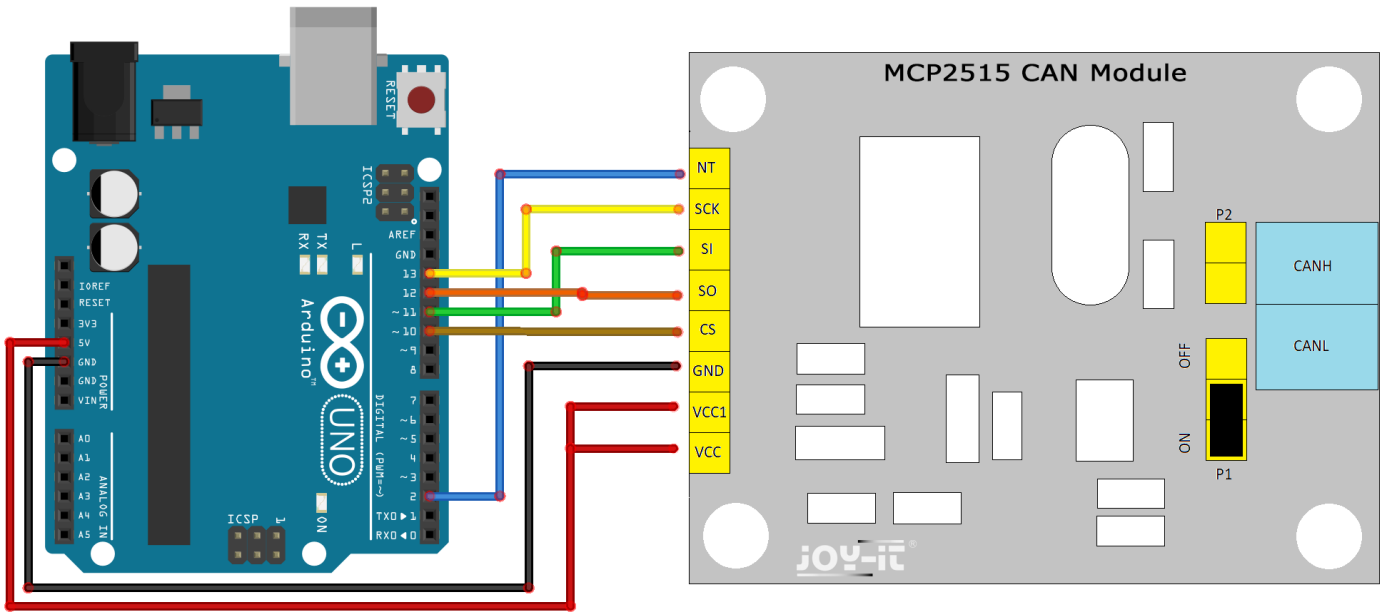


Connection	Description
NT	Interrupt
SCK	Serial Clock
SI	MOSI
S0	MISO
CS	Chip Select
GND	Ground
VCC1	5V
VCC	3.3V
P2	Additional connection of CANH and CANL signals
P1	Activation / deactivation of the terminal resistor
CANH	CAN High
CANL	CAN Low

For best operation between CAN High and CAN Low, a terminal resistor is required.

A 120 Ω resistor at each bus end is optimal for a maximum range over longer distances. This is already integrated in our module and can be activated or deactivated at connection P1.

3. USAGE WITH AN ARDUINO



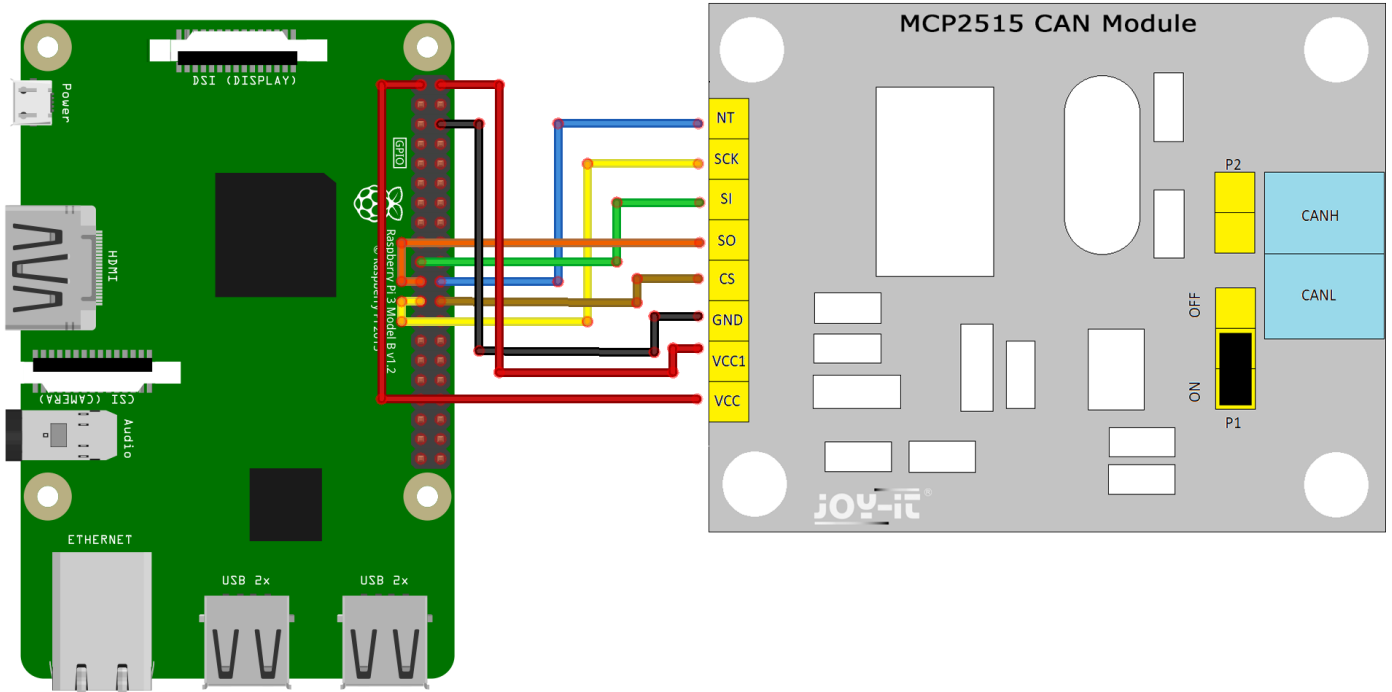
CAN Module	Arduino
NT	D2
SCK	D13
SI	D11
SO	D12
CS	D10
GND	GND
VCC1	5V
VCC	5V

For use with an Arduino, we recommend using the **MCP2515 library**.

This is available on the Github platform and can be downloaded there. Simply copy the library folder into your Arduino library. This is usually located at : "C:\[your username]\Documents\Arduino\libraries".

Among the examples of this library you can find an example for a transmitter as well as for a receiver. With these examples the basic functionality of the system can be explored excellently. With a second Arduino and a second Can module, for example, a communication between both devices can be established, where one module takes over the transmitter and the other module the receiver. In this case, connect both CAN-High interfaces and both CAN-Low interfaces of the two modules with each other.

4. USAGE WITH A RASPBERRY PI



CAN Module	Raspberry Pi
NT	22 (GPIO 25)
SCK	23 (SCK)
SI	19 (MOSI)
SO	21 (MISO)
CS	24 (CE0)
GND	6 (GND)
VCC1	2 (5V)
VCC	1 (3.3V)

Attention! Please make sure to connect the VCC1 and VCC connectors correctly. The module works with a voltage level of 5V, but in contrast to an Arduino, the inputs and outputs of the Raspberry Pis are only designed for a voltage of 3.3V. For this reason, our module has two voltage inputs (VCC1 and VCC). This allows you to use the module on your Raspberry Pi without hesitation and without permanently damaging it.

To install the necessary extensions and to be able to use the CAN module with a Raspberry Pi, please update the package lists first and install the extension **can-utils**:

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

Next, use the following command to get the kernel version of your Raspberry pi. This is necessary for the further configuration of the system.

```
uname -a
```

You will be shown the current kernel version (e.g. "4.4.41-v7").

Next, open and edit the **config.txt** file with the following command:

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

If your kernel version is 4.4.x or newer, please add the following lines to the end of the file:

```
dtparam=spi=on
dtoverlay=mcp2515-can0,oscillator=8000000,interrupt=25
dtoverlay=sp1-1cs
```

However, if your Raspberry Pi runs with an older kernel version, please add the following lines to the end of the file instead:

```
dtparam=spi=on
dtoverlay=mcp2515-can0,oscillator=8000000,interrupt=25
dtoverlay=sp1-bcm2835-overlay
```

Save the file with the key combination **CTRL+O**, confirm the saving process with **Enter**, and exit the editor with the combination **CTRL+X**.

Restart your Raspberry Pi with the following command:

```
sudo reboot
```

After the restart has been completed, you can now start the CAN interface:

```
sudo ip link set can0 up type can bitrate 500000
```

The system should now be ready. You can now start a first send attempt with the following command:

```
cansend can0 127#DEADBEEF
```

Instead of attempting to send, you can also start receiving:

```
candump can0
```

For example, in order to gain initial experience with the module, two Raspberry Pis and two CAN modules can be used to initiate communication between the two devices.

In this case, make sure that you also connect the CAN high pins of both modules as well as both CAN low pins.

5. INFORMATION AND TAKE-BACK OBLIGATIONS

Symbol on electrical and electronic equipment



This crossed-out dustbin means that electrical and electronic appliances do not belong in the household waste. You must return the old appliances to a collection point. Before handing over waste batteries and accumulators that are not enclosed by waste equipment must be separated from it.

Return options

As an end user, you can return your old appliance (which essentially fulfils the same function as the new appliance purchased from us) free of charge for disposal when you purchase a new appliance. Small appliances with no external dimensions greater than 25 cm can be disposed of in normal household quantities independently of the purchase of a new appliance.

Possibility of return at our company location during opening hours

Simac GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn

Possibility of return near you

We will send you a parcel stamp with which you can return the device to us free of charge. Please contact us by e-mail at Service@joy-it.net or by telephone.

Information on packaging

If you do not have suitable packaging material or do not wish to use your own, please contact us and we will send you suitable packaging.

6. SUPPORT

We are also there for you after your purchase. If you still have questions or problems, we are also available by e-mail, telephone and ticket support system.

E-Mail: service@joy-it.net
Ticket-System: http://support.joy-it.net
Phone: +49 (0)2845 98469 – 66 (9:30 - 17:00 o'clock)

For further information please visit our website:

www.joy-it.net