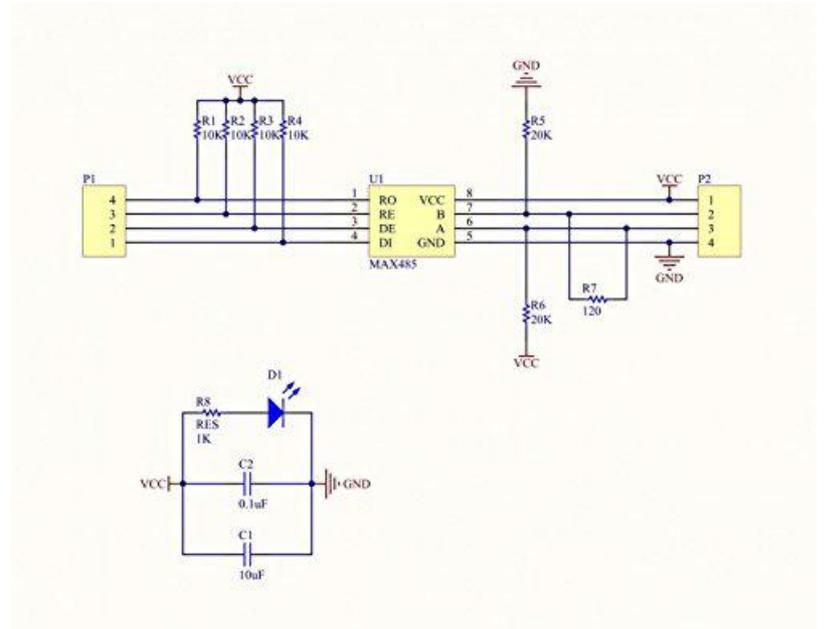
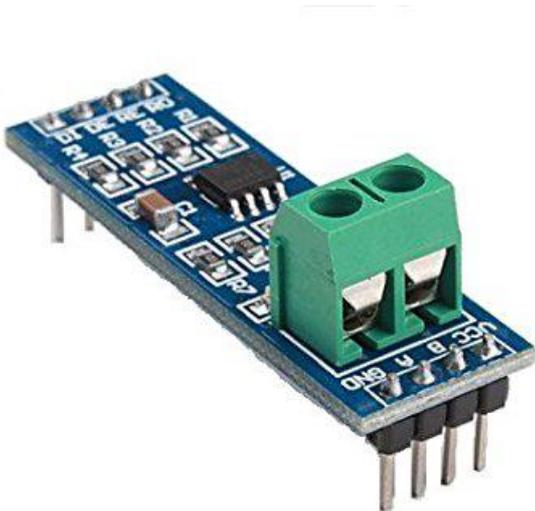


# RaspiBox Open Plus

## Application Note How to integrate a RS485 interface

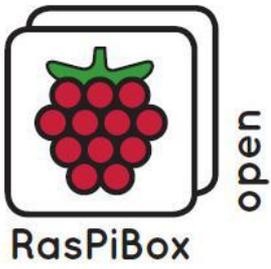
### 1 Introduction

RS-485 signals are used in a wide range of computer and automation systems. RS-485 is used as the physical layer underlying many standard and proprietary automation protocols used to implement Industrial Control Systems, including the most common versions of Modbus and Profibus. With a small RS485 extension module connected to the UART of the Raspberry Pi and placed to the breadboard area an integration in RasPiBox is easy doable.



### 2 Bill of Material

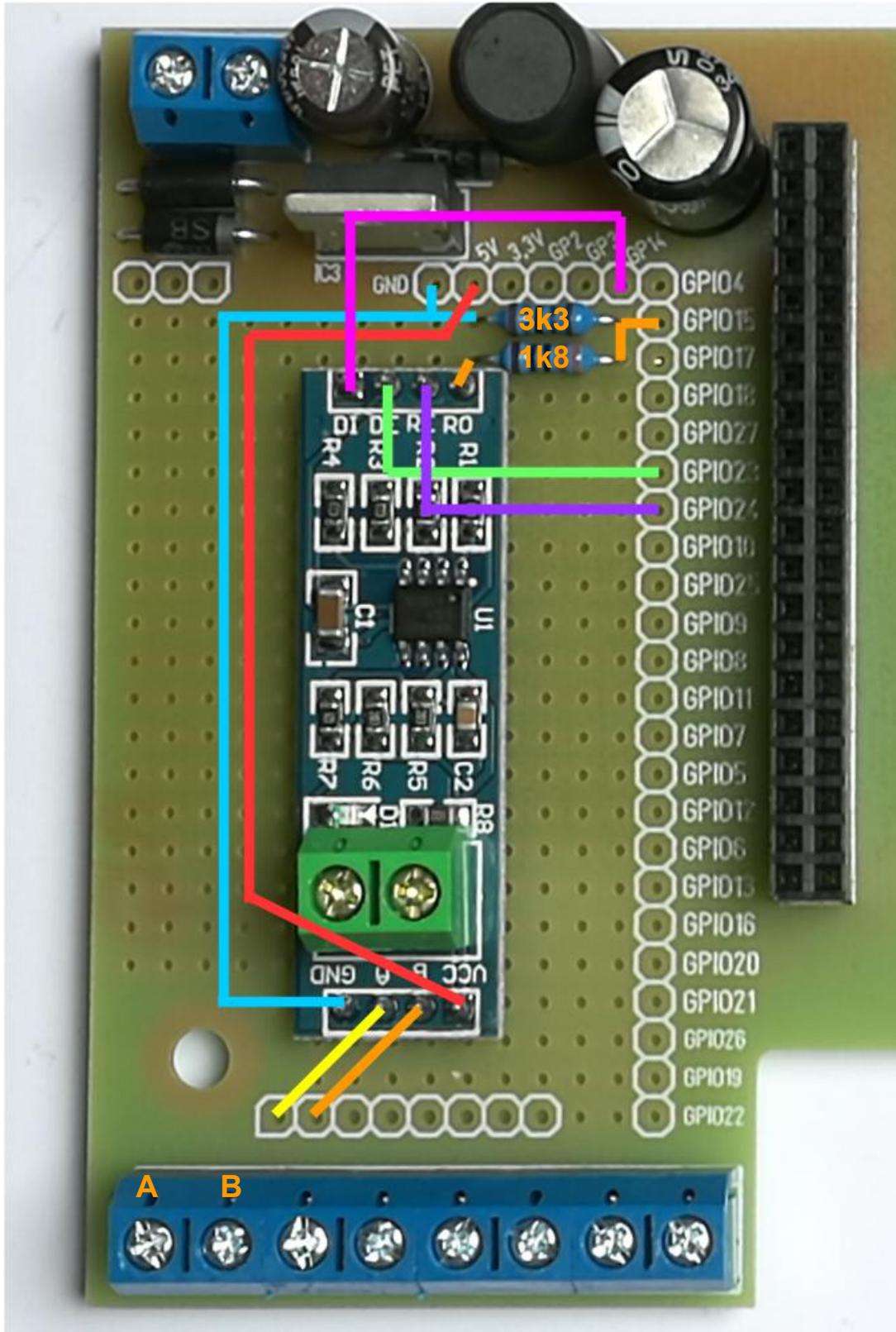
- RS485 integration module (available in our webstore)
- 1x 1.8k resistor; 1x 3.3k resistor
- RasPiBox Open Plus enclosure set
- hook-up wire
- Raspberry Pi 2 B or 3 B

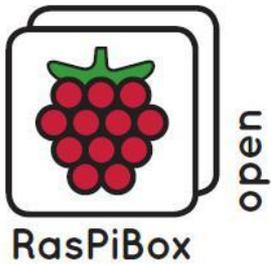


# RaspiBox Open Plus

## Application Note How to integrate a RS485 interface

### 3 Assembly of RS485 to the Breadboard





# Raspibox Open Plus

## Application Note

### How to integrate a RS485 interface

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The operating voltage of the MAX485 chip is 5V. The GPIOs of the Raspberry work with 3.3V. For the sending direction this is not critical but for the receiver. A additional voltage dividier (1.8K / 3.3k) is placed in the circuit to reduce the output voltage from 5V to 3.3V.

About DE and RE pins: Depending from your software solution it is possible also to connect booth pins to only one GPIO of the RPI.

## 4 Software

The RS485 interface is half-duplex and can not send and receive data at the same time. You have to enable and disable the receiver and transmitter via the DE and RE pins.

Please visit this link for a detailed introduction:

[https://www.homegear.eu/index.php/RS485\\_Serial\\_Module](https://www.homegear.eu/index.php/RS485_Serial_Module)

This software works with only one GPIO for DE and RE pins:

<https://www.raspberrypi.org/forums/viewtopic.php?f=44&t=37203&p=514164&hilit=MAX485#p514164>