

## Technical Documentation

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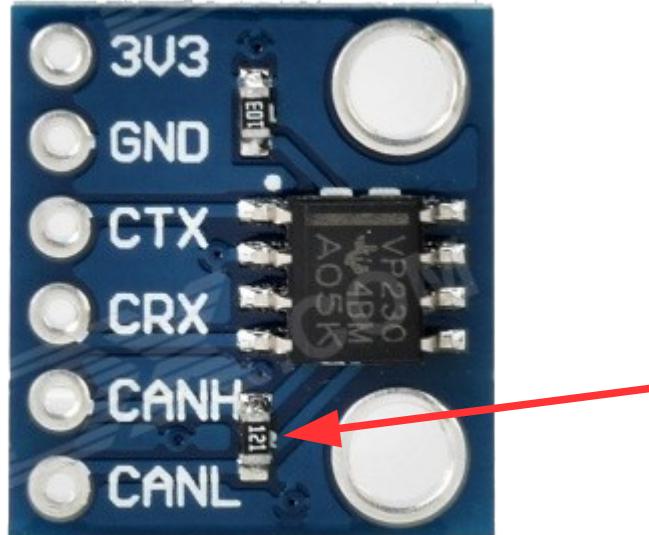
## A) Hardware

### 1) List of components

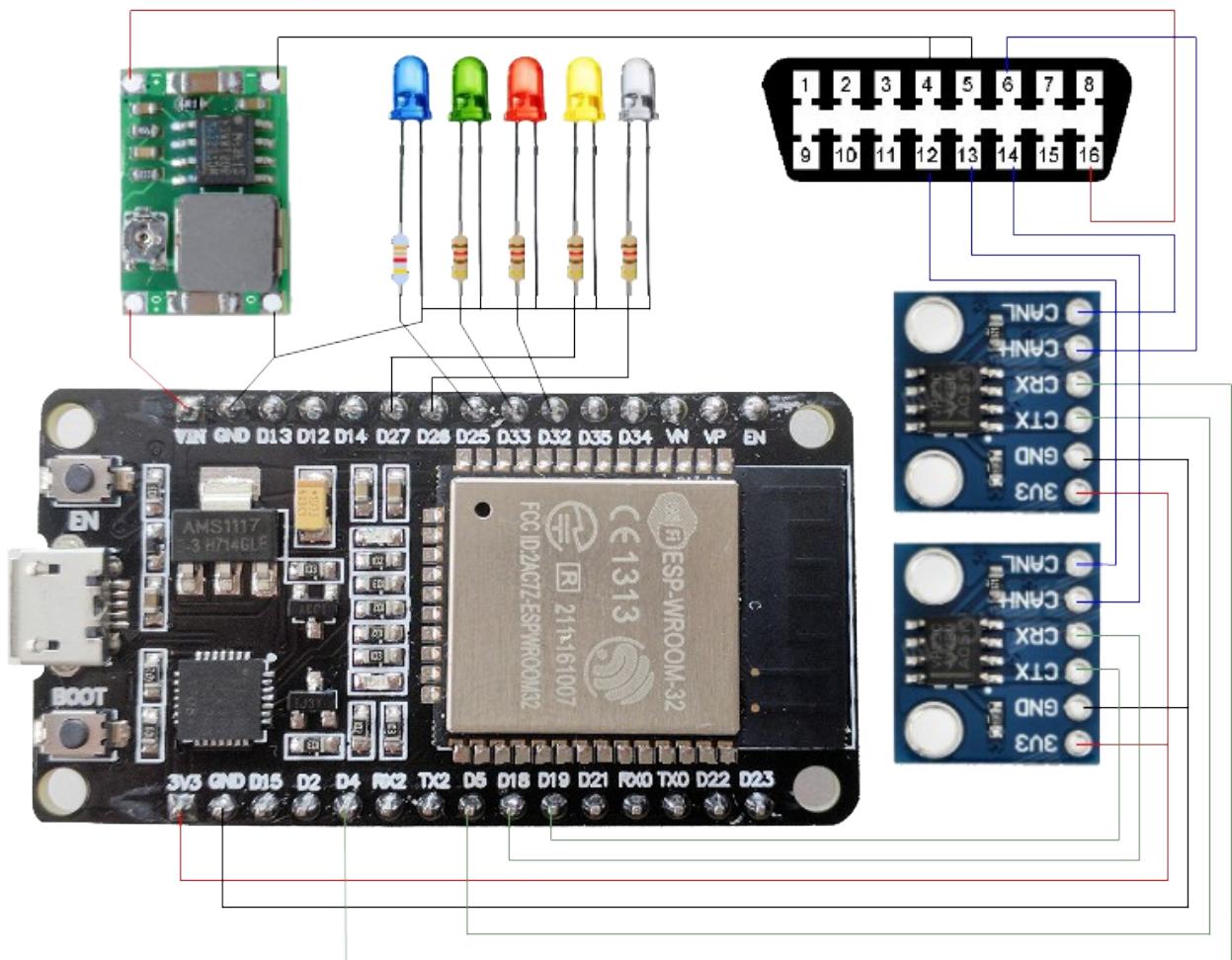
- 1x ODB case with connector  
<https://www.aliexpress.com/item/CASE-ELM327-OBD2-Connector-J1962m-Plug-with-Enclosure-16pin-Male-Connector/32827624441.html>
- 1x DOIT ESP32 DEVKIT or similar  
<https://www.aliexpress.com/item/ESP32S-ESP-32S-ESP32-ESP-32-CP2102-Wireless-WiFi-Bluetooth-Development-Board-Micro-USB-Dual-Core/32842731763.html>
- 1x Mini DC-DC converter  
<https://www.aliexpress.com/item/10Pcs-Mini-DC-DC-12-24V-To-5V-3A-Step-Down-Power-Supply-1-8V-2/32848669016.html>
- 2x SN65HVD230 CAN bus transceiver  
<https://www.aliexpress.com/item/SN65HVD230-CAN-Bus-Transceiver-Communication-Module-Thermal-Protection-Slope-Control-for-Arduino/32851150816.html>
- 5x 3mm LED (blue, green, red, yellow, white)
- 4x 120 Ω resistor
- 1x 3.3 kΩ resistor

### 2) Preparing the parts

The transceivers do need some special treatment before you can use them. It has installed by default a termination resistor, which should not be there if connected to a car, so you really need to remove it or your dongle won't be able to communicate with the car.



### 3) Connecting things together



The DC-DC converter must be adjusted to an output of 5V. **Don't mix up CAN connections on the ODB2 connector, as you may break your car's bus system if improperly connected!**

### 4) Pin usage

Pin	Connection
4	RX of main CAN bus
5	TX of main CAN bus
18	RX of multimedia CAN bus
19	TX of multimedia CAN bus
25	blue LED
26	white LED
27	yellow LED
32	red LED
33	green LED

## B) Software

### 1) The repository

The repository of the CANSee code is located on Gitlab

<https://gitlab.com/jeroenmeijer/cansee>

### 2) Configuration settings

%

### 3) Serial configuration commands

Command	Explanation																		
a	Show all buffered free CAN_frames																		
z	Reboot (needed for all configuration changes except debug mode)																		
r	Reset configuration to default and reboot.																		
gxxx	Get free frame with id xxx																		
ixxx, yyyy	Get ISO-TP frame with id xxx, PID yyyy																		
nxxx, config	<p>set EEPROM configuration          xxx is determined by this table</p> <table border="1"> <tr> <td>100</td><td>           Set the flags configuration as hex as ssbbwwlldd [01010200ff]            ss: Serial over USB            00 for off, any other for on            bb: Bluetooth            00 for off, any other for on            ww: WiFi            00 for off, 01 for Station mode, 02 for Soft Access Point mode.            For station mode a DHCP server is assumed.            ll: Use leds            00 for off, ff for on            dd: Debug            00 for off, ff for on. A bit pattern can be used and added            01: show CANbus receive free CAN_frame_std            02: show CANbus receive ISO-TP CAN_frame_std            04: show Commands issued            08: show free frame Commands            10: show ISO-TP Commands         </td></tr> <tr> <td>200</td><td>Set the Bluetooth name [CANSee]</td></tr> <tr> <td>201</td><td>Set the Bluetooth pin [1234, <b>not implemented by the API!!</b>]</td></tr> <tr> <td>300</td><td>Set the WiFi ssid for Soft Access Point mode [CANSee]</td></tr> <tr> <td>301</td><td>Set the WiFi password for Soft Access Point mode [CANSeeMe]</td></tr> <tr> <td>400</td><td>Set the WiFi ssid for Station mode [Home]</td></tr> <tr> <td>401</td><td>Set the WiFi password for Station mode [Password]</td></tr> <tr> <td>500</td><td>           Set CANbus parameter for CAN0 in hex as sprxtx            sp: speed in 25 kbps increments. [0x14 for can0, 0x0a for can1]            rx: Rx pin of transceiver [4 for can0, 0x12 for can1]            tx: Tx pin of transceiver [5 for can0, 0x13 for can1]            Note that this is a very advanced setting and selecting pins that are internally used on your board (notably 6-11) will crash the board. Also pins 34 and up are input only.         </td></tr> <tr> <td>501</td><td>Set CANbus parameter for CAN1 in hex as sprxtx (see above).</td></tr> </table>	100	Set the flags configuration as hex as ssbbwwlldd [01010200ff] ss: Serial over USB 00 for off, any other for on bb: Bluetooth 00 for off, any other for on ww: WiFi 00 for off, 01 for Station mode, 02 for Soft Access Point mode. For station mode a DHCP server is assumed. ll: Use leds 00 for off, ff for on dd: Debug 00 for off, ff for on. A bit pattern can be used and added 01: show CANbus receive free CAN_frame_std 02: show CANbus receive ISO-TP CAN_frame_std 04: show Commands issued 08: show free frame Commands 10: show ISO-TP Commands	200	Set the Bluetooth name [CANSee]	201	Set the Bluetooth pin [1234, <b>not implemented by the API!!</b> ]	300	Set the WiFi ssid for Soft Access Point mode [CANSee]	301	Set the WiFi password for Soft Access Point mode [CANSeeMe]	400	Set the WiFi ssid for Station mode [Home]	401	Set the WiFi password for Station mode [Password]	500	Set CANbus parameter for CAN0 in hex as sprxtx sp: speed in 25 kbps increments. [0x14 for can0, 0x0a for can1] rx: Rx pin of transceiver [4 for can0, 0x12 for can1] tx: Tx pin of transceiver [5 for can0, 0x13 for can1] Note that this is a very advanced setting and selecting pins that are internally used on your board (notably 6-11) will crash the board. Also pins 34 and up are input only.	501	Set CANbus parameter for CAN1 in hex as sprxtx (see above).
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		Usage of the semi-secondary CAN bus by switching the single controller to another pin pair is not supported and basically fails spectacularly.
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