

Volvo Penta - N2K Interface: Overview

Disclaimer: The wiring and pinout descriptions are what I found in my boat. Please make sure that wiring and pinout on your boat is identical or adjust your interface accordingly. The whole description of this solution is in experimental state and comes without any warranty. Any changes at the boats wiring or electrical and electronical givens can cause damages or critical situations. That is on your own risk.

Components

The Volvo Penta - N2K interface consists of hardware and software components.

Hardware

To connect the interface physically to the engines CAN-Bus you need an y-branch adapter cable. The plugs to get in the bus are 6-pin 'Deutsch Connectors', male and female.

To connect the interface physically to the N2K bus (either Seataalk NG or NMEA2000) you need a suitable cable. My interface is connected to a STNG network. So, I cutted a STNG standard spur cable to get a cable with a plug and an open end.

CAN-Bus transceiver

To connect the interface to the engines CAN-Bus on the protocol level I use a SPI-MCP2515-CAN-Transceiver-TJA1050. This transceiver is controlled by the MCP_CAN_lib of Cory J. Fowler.

To connect the interface to the N2K bus on the protocol level I use a Waveshare SN65HVD230. This transceiver is controlled by the NMEA2000 library of Timo Lappalainen.

Since the ESP32 needs 5V power supply and the CAN-Bus power is 12V you need a step-down converter to 5V.

Software

Additional libraries for CAN-Bus communication

https://github.com/coryjfowler/MCP_CAN_lib

<https://github.com/ttlappalainen>

Volvo Penta - N2K Interface: Project steps

Get the hardware components

ESP32 dev module

MCP2515-CAN transceiver

SN65HVD230 CAN transceiver

DC-DC Step down converter 5V

One pair 6 pin „Deutsch Connector “(male/female)

Create the y-branch cable. (See page 3)

Do the wiring. (See page 4)

Get the needed libraries.

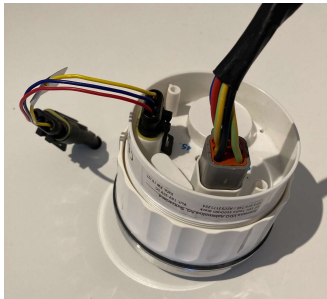
Compile and flash the software.

Install everything on your boat.

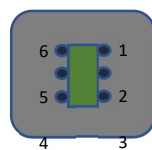
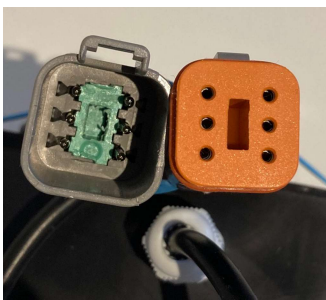
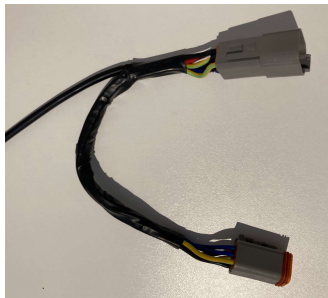
Have fun.

Volvo Penta - N2K Interface: Connecting the interface to the VP CAN-Bus

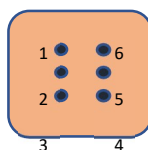
- The tachometer with the integrated LCD display is connected to the engines MDI via a wiring harness and a **6-pin Deutsch connector**. Data are provided as CAN based J1939 datagrams.



- To connect to the bus, you need a y-branch cable.
- Connect the cable between the plug of the harness and the tachometer.



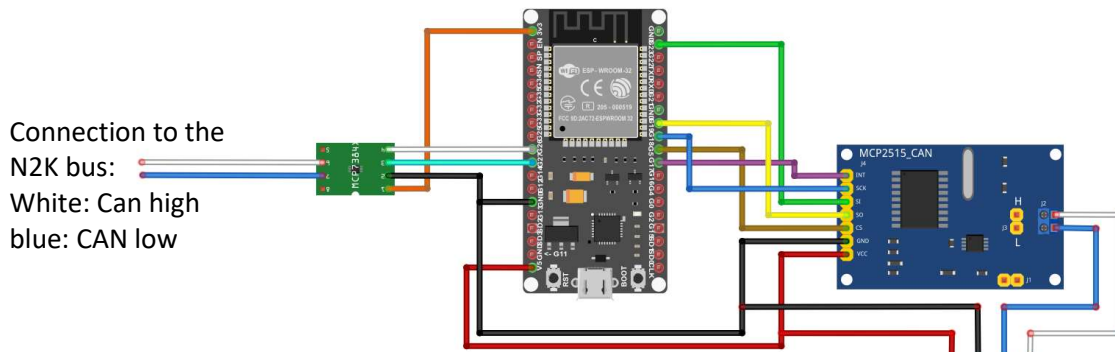
male
connector



female
connector

- Pin assignment:
 - 1 not used
 - 2 CAN low
 - 3 not used
 - 4 GND
 - 5 CAN high
 - 6 + power 5V

Volvo Penta - N2K Interface: Wiring Diagram



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Connection to the Volvo Penta EVC/MDI CAN-Bus „6-pin Deutsch Connector“:

- Red: 5 V (**Important:** Voltage must be adapted from 12V to 5V by a DC-DC step down converter)
- Black: Ground
- Blue: CAN low
- White: CAN high