



Revision history

2.0.0-1 (2022-04-21):

- complete re-design around the ESP32-PICO-D4 microcontroller.
- improve CCD-bus transceiver circuits.
- add PCI-bus transceiver circuits.
- improve SCI-bus routing switches.
- add switchable bootstrap and programming voltage sources (12.0V/20.0V) to SCI-bus.

2.1.0-1 (2022-05-26):

- remove feedforward capacitor from boost converter.
- adjust programming voltages slightly higher than nominal (D15-D22 diode voltage drop).
- make VPP boost converter permanently enabled.
- replace SCI-bus switches.
- change I2C port expander (U16) device address.
- increase some resistor values to lower power dissipation.

2.1.0-2 (2023-01-22):

- remove SMT assembly features.

2.1.0-3 (2023-07-17):

- change R8-R12 resistor values from 499Ω to 0Ω.

2.2.0-1 (2023-11-06):

- change JP1 solder jumper (OBD2 signal ground) to bridged variant.
- add programmable bias voltage switch to J1962-7 for OBD1 compatibility.

2.3.0-1 (2025-02-17):

- mirror J1962 data link connector.
- remove unused J3 SCI connector.
- remove unused R4 resistor.
- add D23 TVS diode for power input protection.

2.3.0-2 (2025-09-23):

- add D24 Schottky diode to protect USB from backpowering.
- move D1 battery protection diode before bulk capacitor.
- add C40-C45 signal conditioning capacitors.
- change D5-D6, D10 ESD diode values.
- change PCI-bus power supply voltage from 8.0V to 7.5V.
- change PCI-bus receiver reference voltage from 4.0V to 3.5V.
- remove PCI-bus transmitter inductor.
- add power distribution load switch to USB output.

2.4.0-1 (2026-01-05):

- complete redesign of power-supply section.
- replace ESP32-PICO-D4 with ESP32-PICO-V3-02.
- adjust ESP32 antenna feedline for 50Ω controlled impedance.

| J1962/OBD2 connector pinout | | |
|-----------------------------|-----------------------------------------------|----------|
| Pin | | Function |
| 2 | J1850 VPW (PCI) | |
| 3 | J1567 CCD+ | |
| 4 | Chassis ground | |
| 5 | Signal ground JP1 | |
| 6 | J2610 SCI-A RX (PCM) VBB VPP | |
| 7 | J2610 SCI-A/B TX (PCM) J2610 SCI-A TX (TCM) | |
| 9 | J2610 SCI-B RX (TCM) VBB VPP | |
| 11 | J1567 CCD- | |
| 12 | J2610 SCI-B RX (PCM) VBB VPP | |
| 14 | J2610 SCI-A RX (TCM) VBB VPP | |
| 15 | J2610 SCI-B TX (TCM) | |
| 16 | Battery power (+12V) | |

Table 1.