



candleLight FD USB-CAN-Interface

Typical Applications

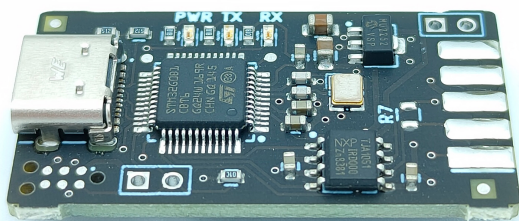
The **candleLight FD** is a versatile, low cost USB-interface for the CAN bus. It supports CAN 2.0 and CAN-FD. The CAN bus is a two-wire communication bus and is used in many automotive and industrial settings. The device is supported by most Linux distributions without additional drivers.

The device is completely open source: Firmware and hardware design are completely open.

Please note: This product needs some assembly: The D-SUB 9 connector needs to be soldered by the user.

Typical Use Cases

- **Development of devices**
Open hardware and open software make the candleLight FD a perfect fit for development.
- **Debugging**
Wire-speed transmitting and receiving allow to use the candleLight FD as additional node on existing CAN buses
- **USB-to-CAN interface**
In settings where a CAN bus is needed on a host system.



CandleLight FD (without D-SUB connector fitted)

Interfaces

- **USB interface**
Connects to any USB 2.0 host controller (USB-C)
- **CAN-Bus interface**
Connects to any CAN bus up to 1MBit/s (D-SUB 9, standard pinout)

Additional Features

- LEDs for:
 - Power on
 - Link active (Rx, Tx on)
 - Activity (Rx, Tx blinking)
- Uses the `gs_usb` Linux kernel driver and `socketcan`
Provides a standard Linux network interface to the user.
- Wire-Speed receiving and transmitting up to 1 MBit/s
- CAN-Bus termination can be fitted on 0805 resistor footprint (if needed)
- Timestamping of received frames ¹⁾
- Firmware Updates via USB without physical access

¹⁾ Timestamping is done in the Rx interrupt and not by the actual CAN controller. This leads to a slightly increased jitter but still yields better results than timestamping on the host.

Open Source

- **Firmware**
MIT licensed
https://github.com/candle-usb/candleLight_fw
- **Hardware**
Cern OHL licensed
<https://github.com/linux-automation/candleLightFD>
- **Housing**
Cern OHL licensed
<https://github.com/linux-automation/candleLight/tree/master/case>

System Requirements

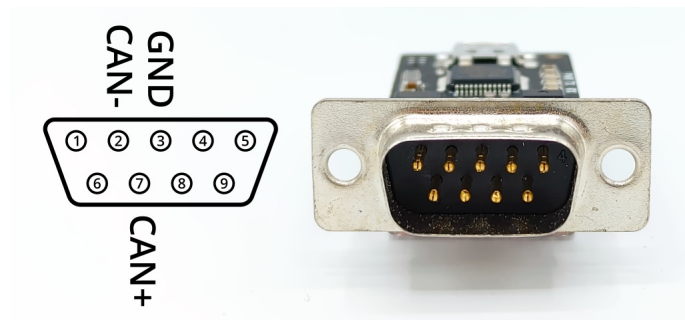
- Linux with `gs_usb` driver
This is the case for most desktop distributions.
- CAN-FD Operation needs Linux 5.18 or newer
- USB 2.0 port
- Optional: We suggest to use `systemd-networkd` to manage the Linux CAN interface.

Technical Data

| | |
|------------------------|----------------------------------|
| USB Standard | USB 2.0 via USB-C connector |
| Microcontroller | ST Micro STM32G0B1CBT |
| CAN phy | NXP TJA1051/3 |
| Size | 38mm x 20 mm (without connector) |

Connector Pinout

The following drawing shows the pinout of the D-Sub 9 connector:



Accessories

A 3D-printed housing for better mechanical stability is available:



The housing can be purchased in our webshop or you can print it yourself.

Customization Services

In case the candleLight does not fully fit your needs we provide customized hardware and software solutions based on our existing ecosystem.

Integration and Development Services

With our partner Pengutronix we provide comprehensive services: We can help with integration of the candleLight into your embedded application.

Further Links

- [Product Page](#)



<https://www.linux-automation.com/en/products/candlelight-fd.html>