Linux Automation GmbH

candleLight USB-CAN-Interface

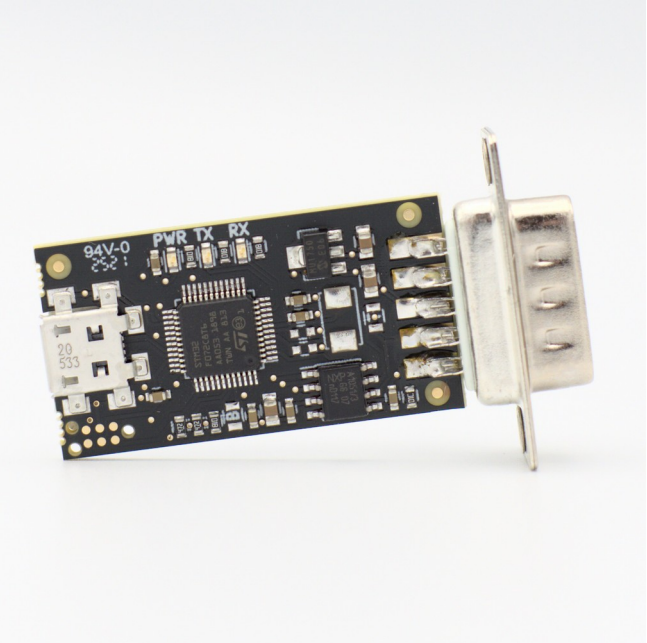
Typical Applications

The **candleLight** is a versatile, low cost USB-interface for the CAN bus. 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.

Typical Use Cases

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



Candlelight

Interfaces

- **USB interface**
  Connects to any USB 2.0 host controller (Micro-USB B)
- **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) 2)]
- Firmware Updates via USB without physical access

[1)] May needs a newer firmware than the one pre-flashed on our devices.
[2)] 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/candleLight
- **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.
- USB 2.0 port
- Optional: We suggest to use *systemd-networkd* to manage the Linux CAN interface.

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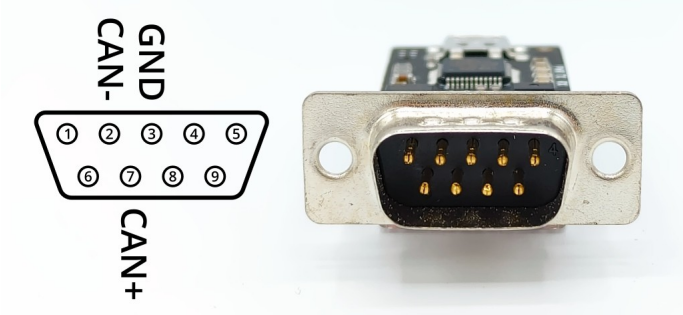
Technical Data

USB Standard	USB 2.0 via Micro-USB-B connector
Microcontroller	ST Micro STM32F072C8T
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.html

Specification is based on the most recent revision.
This datasheet is subject to change without notice.