



LXA 10Base-T1L USB Interface

Typical Applications

The **USB-T1L** is a development tool for the relatively recent 10Base-T1L Ethernet standard, which is intended to become a major building block in upcoming industrial Ethernet products.

The device is build around the Texas Instruments DP83TD510E 10Base-T1L Phy.

Typical Applications:

- Embedded Linux operating system development
- Rapid prototyping and development of 10Base-T1L capable devices

Typical Use Cases

- **Adding a 10Base-T1L interface early in development**
With the USB-T1L it is possible to add a standard 10Base-T1L Phy to any embedded evaluation board with USB support.
- **Well known 10Base-T1L remote station**
The USB-T1L can be used as a well known remote station during development of 10Base-T1L capable devices.



USB-T1L Interface

Interfaces

- **USB interface**
Connects to any USB 2.0 host controller. (USB-C)
- **10Base-T1L interface**
Connects to any 10Base-T1L remote station. Cable connection is done via 3-Pin screw-in terminals for greatest possible flexibility.

Additional Features

- Maximum 10Base-T1L amplitude (Vpp) can be selected via jumper as 1 Vpp or 2.4 Vpp.
- Coupling network fitted for non-intrinsic safe operation. But PCB is prepared to be changed to intrinsic safe operation.
- Widely used USB-to-MII interface using AX88772.
- LEDs to display selected amplitude and link / activity.
- Schematic available for download.
- Unique MAC address.

System Requirements

- Linux Kernel 6.1 or newer¹⁾

¹⁾ Can be used with older Linux versions in *fallback-mode* or with patches applied to your kernel:
In *fallback mode* the device acts as a 10Base-T half duplex interface without any 10Base-T1L specific properties. Contact Linux Automation GmbH for instructions on how to use the device in this mode.
Patches for older kernel are available here:
<https://lore.kernel.org/all/20221205132102.2941732-1-o.rempel@pengutronix.de/>

Technical Data

USB Standard USB 2.0 via USB-C connector

USB Interface IC Asix AX88772

10Base-T1L Phy Texas Instruments DP83TD510E

10Base-T1L Connector Anytec OQ0312510000G
3-Pin, 3.5mm *Screw-In*

Customization Services

In case the USB-T1L 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 our USB-T1L into your embedded application.

Optional Accessories

- Replacement 3-Pin connector

Further Links

- Product Page



<https://www.linux-automation.com/en/products/usb-t1l.html>