



# 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 1Vpp or 2.4Vpp.
- 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 Support since 6.1<sup>1)</sup>
- Patches for older Linux versions available:  
<https://lore.kernel.org/all/20221205132102.2941732-1-o.r-empel@pengutronix.de/>

<sup>1)</sup> 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.

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## Technical Data

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<b>USB Standard</b>	USB 2.0 via USB-C connector
<b>USB Interface IC</b>	Asix AX88772
<b>10Base-T1L Phy</b>	Texas Instruments DP83TD510E
<b>10Base-T1L Connector</b>	Anytec OQ0312510000G 3-Pin, 3.5mm <i>Phoenix-Contact</i> -style

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## Customization Services

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In case the USB-T1L does not fully fit your needs we provide customized hardware and software solutions based on our existing ecosystem.

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## Integration and Development Services

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With our partner Pengutronix we provide comprehensive services: We can help with integration of our USB-T1L into your embedded application.

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## Optional Accessories

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- Replacement 3-Pin connector

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## Further Links

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- Product Page



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

*Specification is based on the most recent prototype and can change as development progresses.  
This datasheet is subject to change without notice.*