

USB 100BASE-T1 MEDIACONVERTER

USER MANUAL

March 2020

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1 GENERAL INFORMATION

1.1 Functionality and features of the USB 100BASE-T1 MediaConverter



Figure 1-1: 100BASE-T1 MediaConverter USB

The **Technica Engineering USB 100BASE-T1 MediaConverter** transmits data frames from the physical layer BroadR-Reach (100BASE-T1) to USB 2.0-LAN.

Features:

- 1 port 100BASE-T1 with Broadcom BroadR-Reach Technology
- 1 port USB 2.0 mini B
- 1 Status LED

General Information:

Power requirement:	5V
Power consumption:	2,5 Watt

LINKS:

The User can download the latest driver and documentation for the USB 100BASE-T1 MediaConverter here:

<https://technica-engineering.de/produkt/100base-t1-mediaconverter-usb/>

1.2 Warranty and safety information



Before operating the device, read this manual thoroughly and retain it for your reference.

The latest documentation for the 100BASE-T1 MediaConverter USB here:

<https://technica-engineering.de/produkt/100base-t1-mediaconverter-usb/>



Use the device only as described in this manual.

Use only in dry conditions.

Do not apply power to a damaged device.



Do not open the device. Otherwise warranty will be lost.



This device is designed for engineering purpose only.

Special care has to be taken for operation.

Do not use this device in a series production car.

As this device is likely to be used under rough conditions, warranty is limited to 1 year.

Manufacturer liability for damage caused by using the device is excluded.



Caution: The device can get hot.

Do not cover the device due to fire danger.

Do not place the device near to highly flammable materials due to fire danger.



If you wish to discard a USB 100BASE-T1 MediaConverter from Technica Engineering GmbH, please contact your dealer or supplier for further information.

This symbol is only valid in the European Union. If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal. Technica Engineering GmbH is registered as manufacturer of the brand "Technica Engineering" and the device type "Small devices of Information- and Telecommunications- technology for exclusive use in non-private Households". WEEE reg. No. DE 20776859

1.3 Declaration of conformity

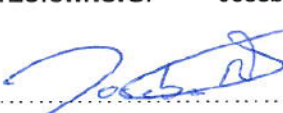
<u>EG-Konformitätserklärung</u>	
gemäß der EG-Richtlinie 2004/108/EG (elektromagnetische Verträglichkeit) vom 15. Dezember 2004	
<p>Hiermit erklären wir, dass das nachstehend bezeichnete Gerät in seiner Konzeption und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Richtlinie 2004/108/EG entspricht. Bei einer mit uns nicht abgestimmten Änderung des Gerätes verliert diese Erklärung ihre Gültigkeit.</p>	
Hersteller:	Technica Engineering Leopoldstr. 236 80807 München
Bevollmächtigter:	Joseba Rodriguez
Beschreibung des Gerätes:	USB-100BASE-T1 Converter
Datum der Erklärung:	03.09.2016
Name des Unterzeichners:	Joseba Rodriguez
Unterschrift:	

Figure 1-2: Declaration of conformity

1.4 Scope of delivery

The delivery includes:

- 1x USB 100BASE-T1 MediaConverter
- 1x Cable set
 - Cable for USB 2.0 to micro USB plug
 - Connector for MQS
 - 100BASE-T1 Cabling
 - Crimp contacts

2 HARDWARE INTERFACES

2.1 Connectors

On the label on top of the device you can see an overview about all HW interfaces of the 100BASE-T1 MediaConverter USB.



Figure 2-1: Label of USB-100BASE-T1 Converter with pinning information

2.1.1 Black MQS Connector

The pinning of the ECU connectors is listed on the label on top of the device as well. (See [Figure 2-1](#))

The connector color is black.

The Tyco Electronics (TE) Micro Quad Lock System (MQS) is used.



Name	Picture	Part Number
Tyco, MQS Buchsengehäuse 3 Pol		4-1718346-1
Tyco crimp contact		928999-1

Table 2-1: Parts of black MQS connector

Note: You can use the official Tyco tool for these crimp contacts. A cheap variant is the crimp tool for “PSK” contacts.

Pin	Function
1	n.c.
2	100BASE-T1 Port, positive
3	100BASE-T1 Port, negative

Table 2-2: Pinning of black MQS connector

2.1.2 Universal Serial Bus Connector

There is one USB 2.0 mini B Port for connection to a laptop or PC. Since the chip used is a USB-LAN chip, your PC will identify a new Ethernet Network Interface Card.

2.2 Other Interfaces

2.2.1 Status LED

The USB 100BASE-T1 MediaConverter has one status LED on the frontside of the case for the 100BASE-T1 Port.

It is lit when there is linkup. It is toggling when there is communication.

Note: There is a bug in the used BroadR-Reach PHY. When the 100BASE-T1 Plus and Minus lines are swapped, and the 100BASE-T1 port is set to Slave, then the Link LED is lit, but there is no data transmission possible. So please ensure that the 100BASE-T1 lines (positive/positive and negative/negative) are connected correctly.

3 INSTALLATION

A driver is available for following operating systems:

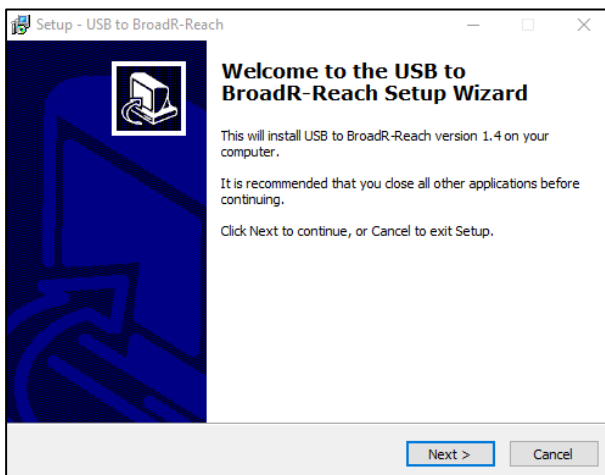
- ↳ Linux x64
- ↳ Windows x32 and x64

Download-link

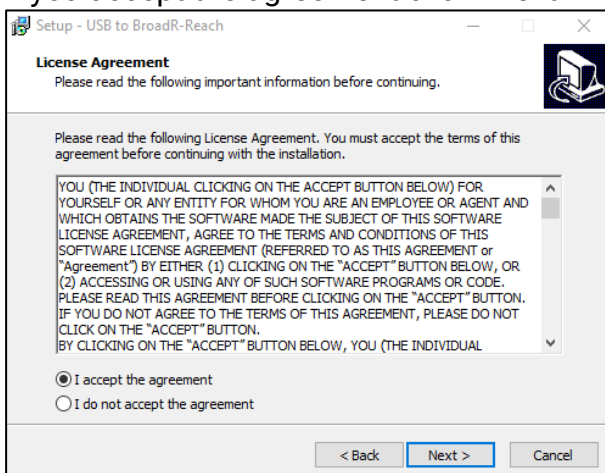
<https://technica-engineering.de/en/produkt/usb-100base-t1-converter/>

3.1 Installation for Windows

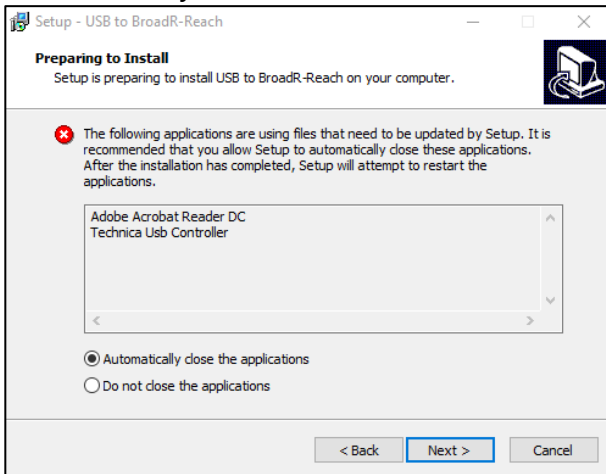
- ↳ Unzip the downloaded driver pack somewhere. It contains the file USB-BR.exe
- ↳ Double click to the USB-BR.exe-file for execution
- ↳ Click "Next"



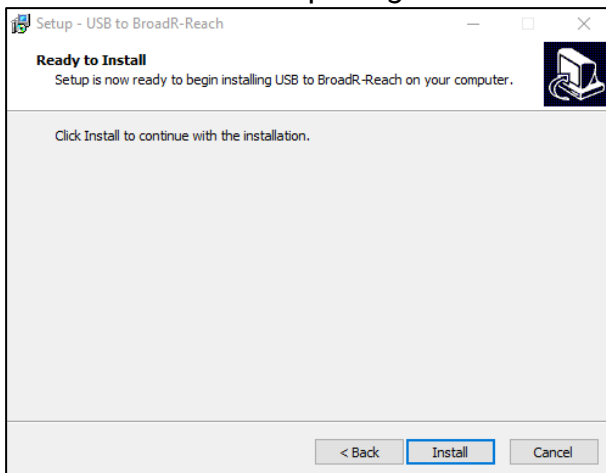
- ↳ If you accept the agreement click "Next"



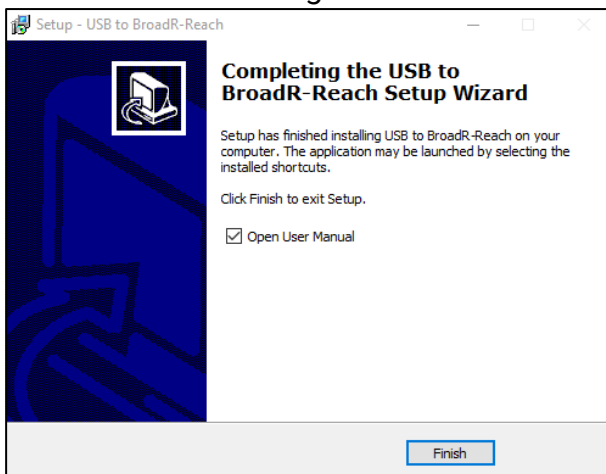
- In case you have an old application running, the installer will prompt to close automatically



- Click "Install" for completing the installation



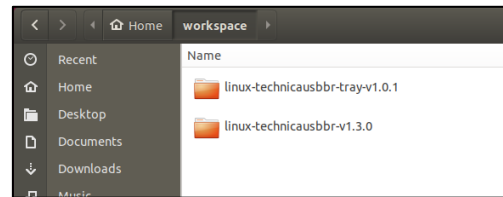
- Click Finish for closing the installation setup



3.2 Installation for Linux

Unzip the downloaded driver pack for Linux. It contains the device drivers and try application.

Note: drivers must be installed before the try application.



3.2.1 Driver Installation

Navigate to the driver folder `\technica-usbbr_linux\linux-technicausbbr-vx.x.x\linux-technicausbbr-master` and follow instructions in the readme file to install the drivers. Alternatively, you can follow the instructions here:

Requirements:

- DKMS (for automatic kernel module installation). To install DKMS package execute `sudo apt-get install dkms`.
- kernel version v4.12 or higher

Installation:

To install drivers using DKMS, run:

```
sudo make install-dkms
```

To uninstall drivers using DKMS, run

```
sudo make uninstall-dkms
```

3.2.2 Try Application Installation

Navigate to `\technica-usbbr_linux\linux-technicausbbr-tray-vx.x.x\linux-technicausbbr-tray-master` folder to install tray application.

This package provides a tray application to manage Technica Engineering USB BroadR-Reach converters.

Requirements/Dependencies:

- cmake (v3.1 or higher)
- gtk+-3.0
- libudev
- libappindicator

Installation:

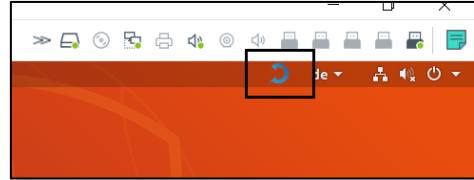
If you are using Ubuntu, then execute following command to install dependencies:

```
sudo apt-get install cmake libgtk-3-dev libudev-dev libappindicator3-dev
```

To install, please run:

`./install.sh`

Enter your superuser (sudo) password when asked. After successful installation, a tray icon will appear (top right) with Technica application, which will allow you to configure the device.



To uninstall, run

`./uninstall.sh`

Enter your superuser (sudo) password when asked.

Troubleshooting:

If the application doesn't appear automatically in the tray area, then try the following options:

- Restart the machine
- After restart, if application is still not visible, then check Gnome-extensions and ensure Ubuntu App indicators option is enabled.

Alternatively, the application can be launched in the tray manually by executing following command:

`technicabr-tray`

4 CONFIGURATION

4.1 In Windows

The **USB 100BASE-T1 MediaConverter** is configured by using the Configurator window or using directly the system tray icon.

After successful installation, you will see a new window with a drop-down menu containing a list of all Technica Engineering 100BASE-T1 USB devices connected to your PC.

Configuration Options:

- The “Master” button can be used to configure the BroadR-Reach port to work in Master mode.
- The “Slave” button can be used to configure the BroadR-Reach port to work in Slave mode.



Figure 4-1: Tray Application

When new devices are connected, they are detected automatically and appear on the drop-down list.

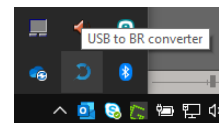
If you connect a new device and it doesn't appear automatically on the list, please press the "U" button.

The Master/Slave settings for each device are kept in memory, so if you un-plug and re-plug them, the latest setting will be used.

Note: In a BroadR-Reach Link one device must be set as Master, the other must be set as Slave.

The user documentation is linked to the “?” icon.

You can close the window by clicking on the “x”, you can then find it again in the system tray:



Please double click the symbol, then the window is in the taskbar available again.

4.2 In Linux

After successful installation of drivers, it is already possible to control Master/Slave mode by using ethtool:

- For master mode: `sudo ethtool -s <interface name> mdix off`
- For slave mode: `sudo ethtool -s <interface name> mdix on`

With [Tray Application](#) it is the same as in Windows

5 ADDITIONAL INFORMATION

- The maximum cable length for BroadR-Reach segments is limited to 15 meters.
- The single unshielded twisted pair cable (UTP) must fulfill the IEEE 100BASE-T1 specifications.

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7 CHANGELOG

Version	Chapter	Description	Date
1.0	All	First release	
2.0	All	Second Release	09.2018
2.1.1	All	New Design and added Configuration for NIC	02.2019
2.1.2	All	Adaptions for new driver version 1.4, minor enhancements	02.2019
2.3	All	Rework of content	03.2020

8 CONTACT

If you have any questions regarding this product, please feel free to contact us:

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General information:
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Most current user manuals and product information:
<https://technica-engineering.de/>