technica engineering

USB-100BASE-T1 CONVERTER

USER MANUAL

March 2019

Manual-Version: 2.1.2.

Hardware-Version: 2.2

Content

1 GENERAL INFORMATION

1.1 Functionality and Features of the USB-100BASE-T1 Converter

Figure 1-1: USB-100BASE-T1 Converter

The Technica Engineering USB-100BASE-T1 Converter 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 firmware and documentation for the USB-100BASE-T1 Converter here:

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

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 USB-100BASE-T1 Converter here:

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

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.

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 USB-100BASE-T1 Converter.

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 Converter has one status LED at 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 BR 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

3.1 Driver Installation

A driver is available for following operating Systems (version 1.4):

- Linux x64
- Windows x32
- Windows x64

Download-link
https://technica-engineering.de/en/produkt/usb-100base-t1-converter/

For Windows, please follow the described steps for installation:

1) Connect your USB-100BASE-T1 Converter device to your computer

2) browse your driver installation data folder and double click on the setup called "USB-BR_1.4"

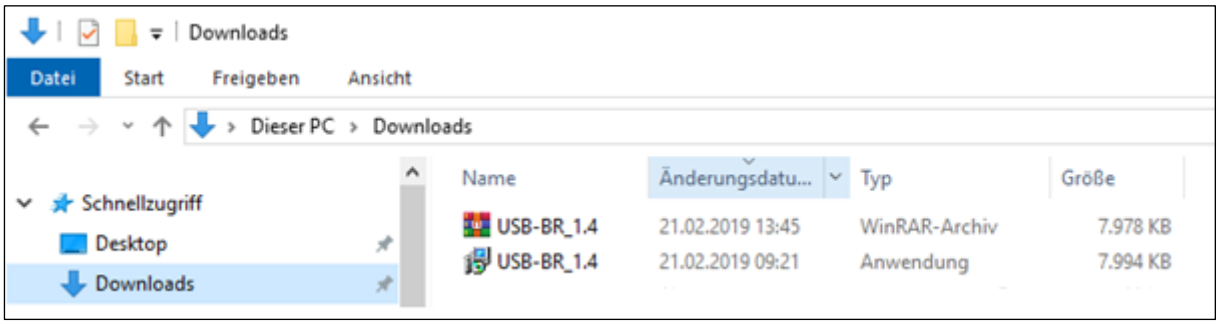

Figure 3-1: Driver Installation Data Folder

Accept the prompt to install the application.

3) Follow through the Wizard menus as shown below:

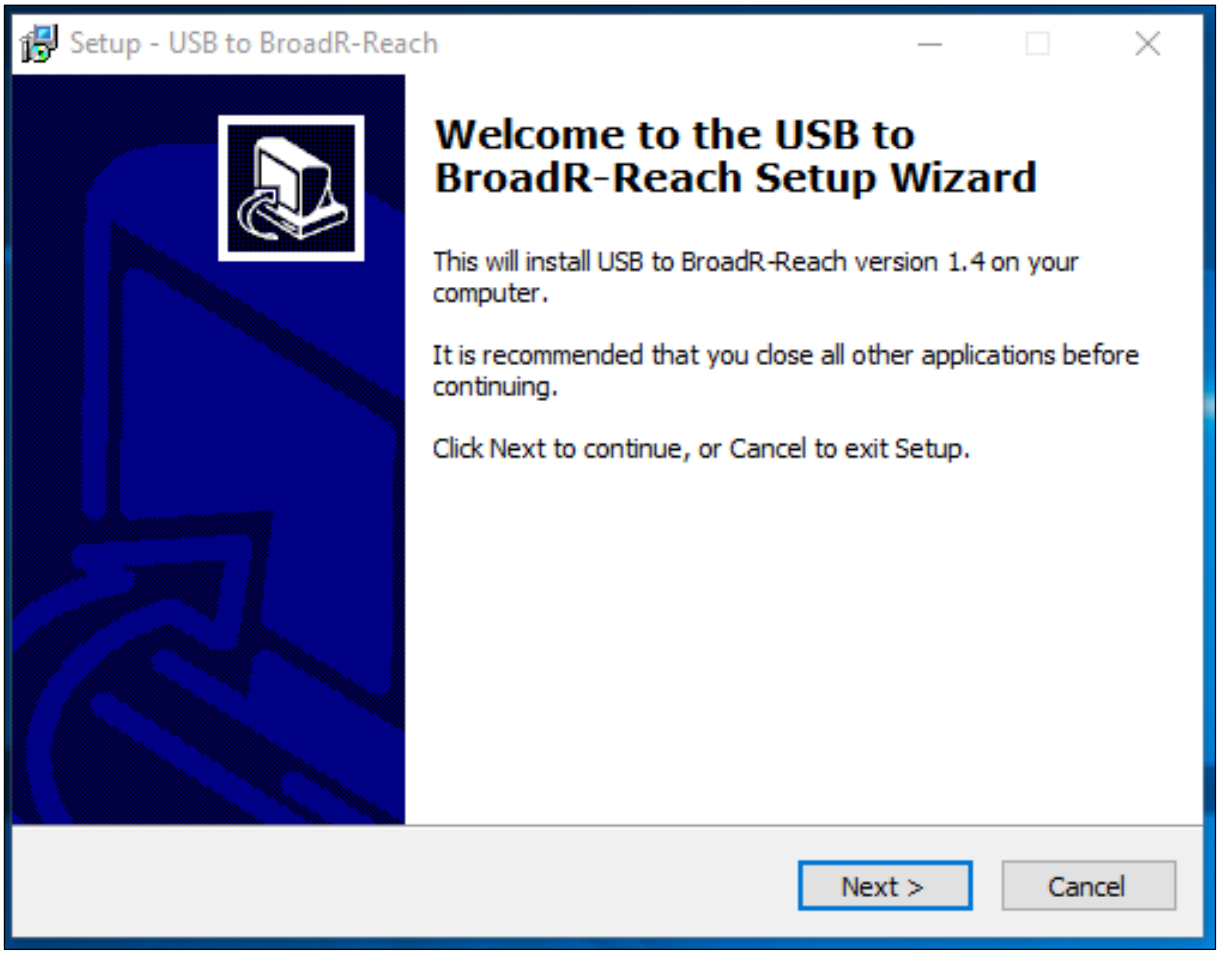

Figure 3-2: Driver Installation Start Up screen

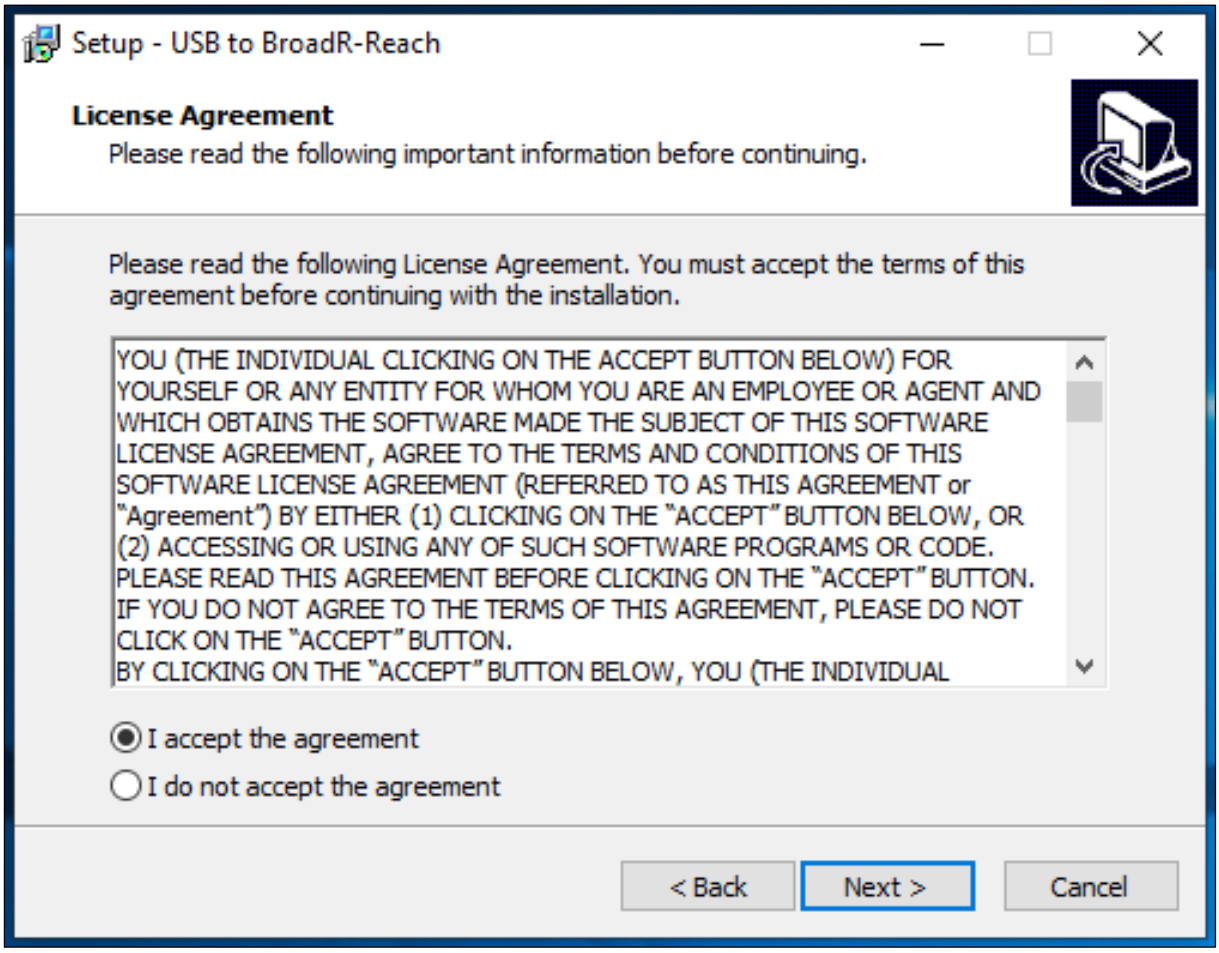

Figure 3-3: Driver Installation Terms and Conditions

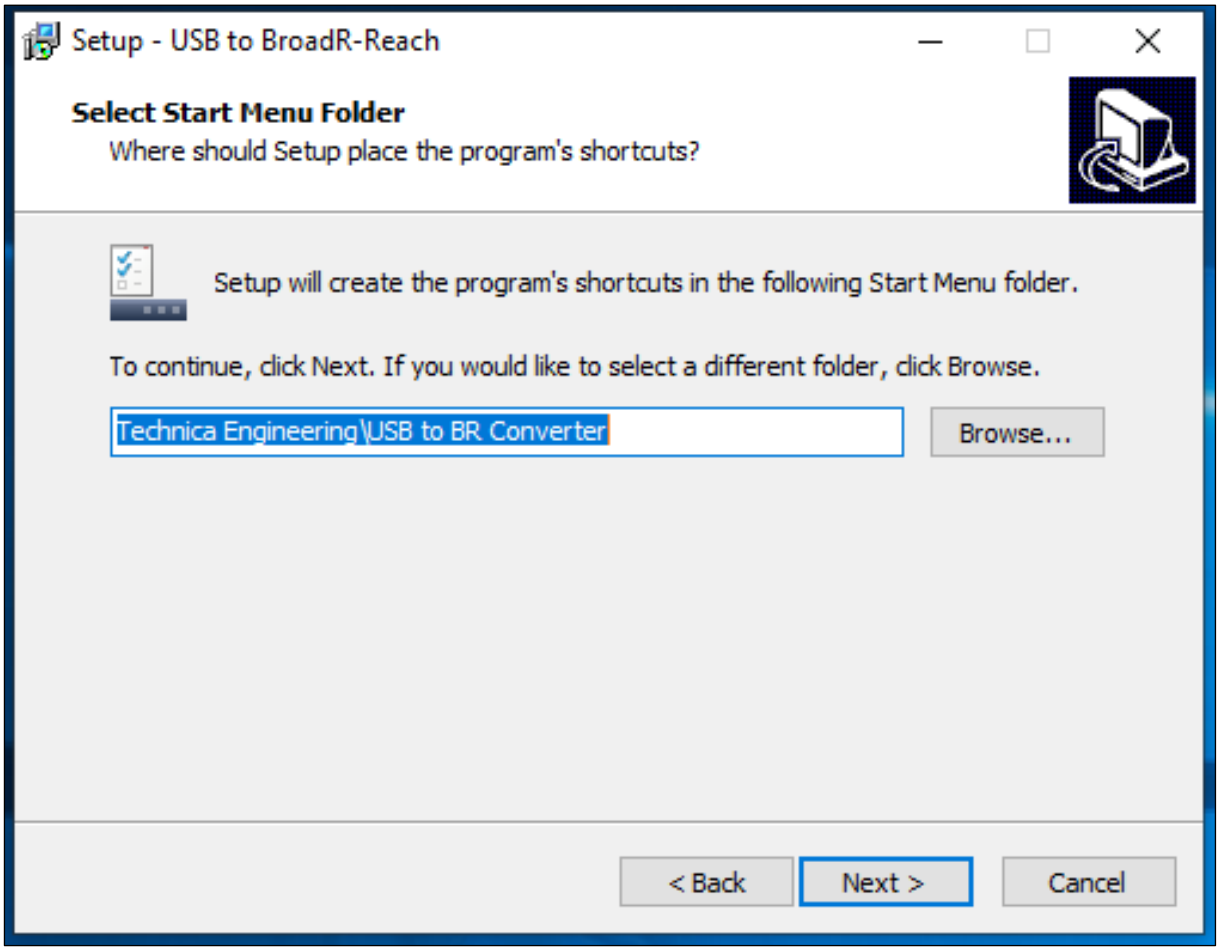

Figure 3-4: Driver Installation

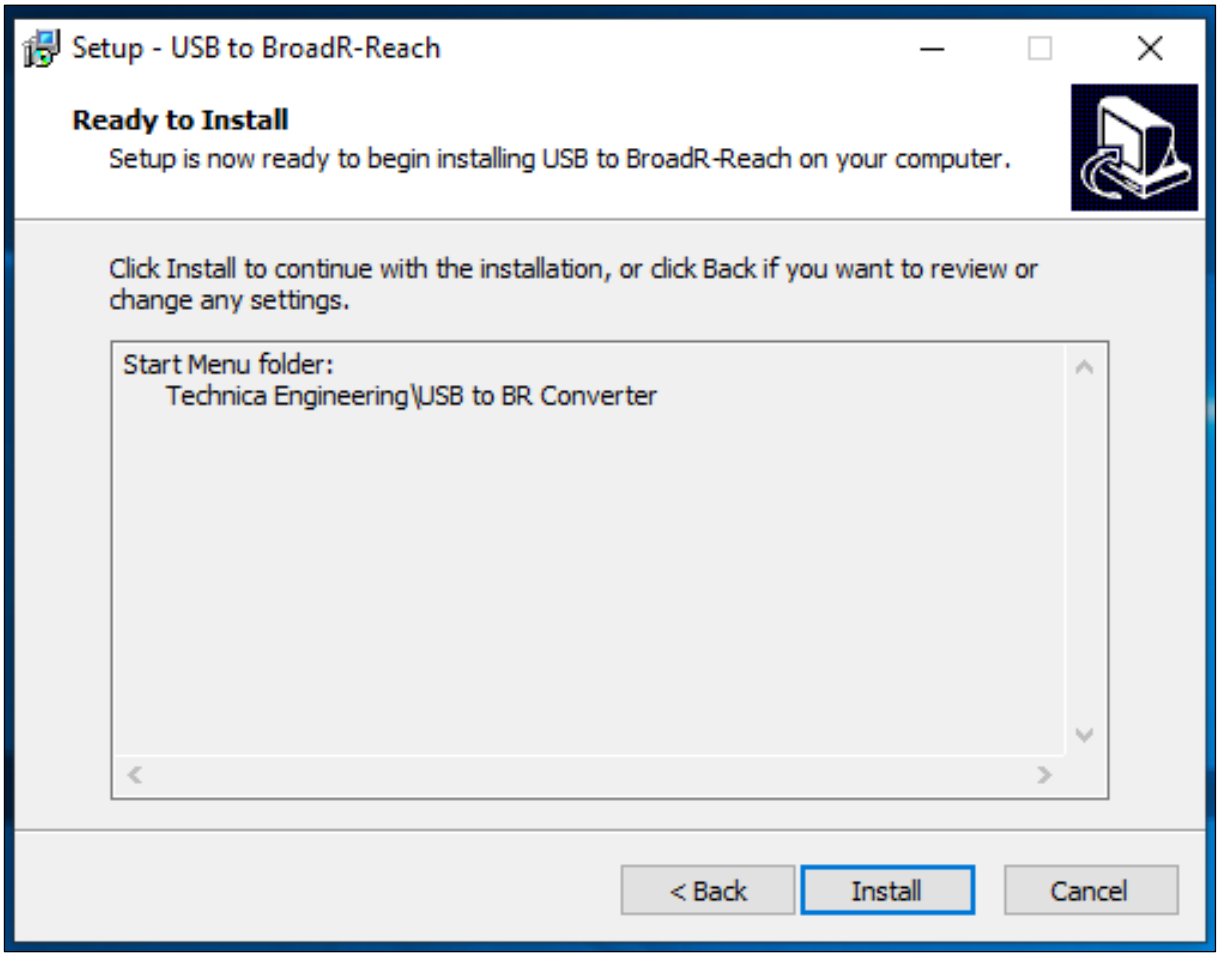

Figure 3-5: Driver Installation

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

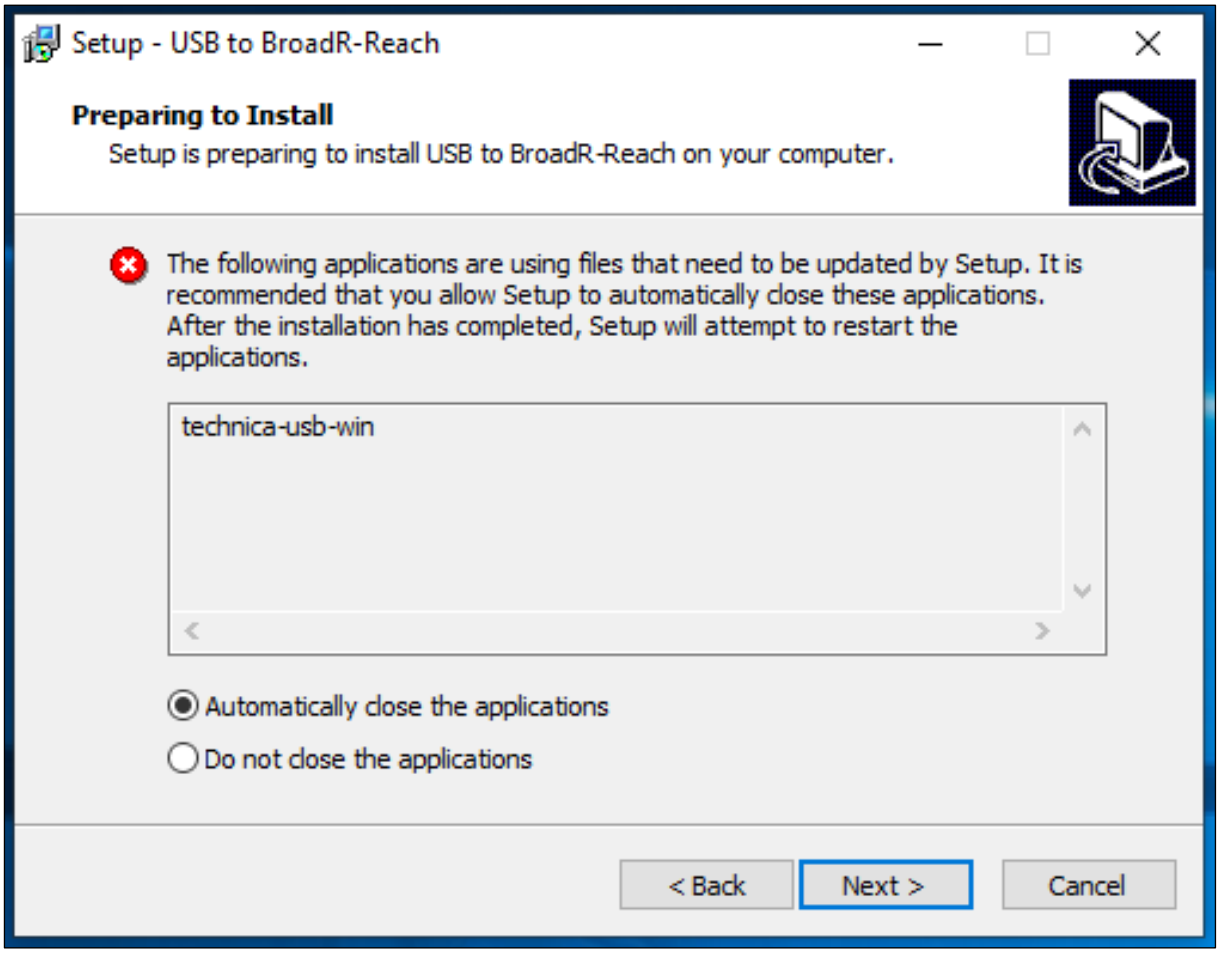

Figure 3-6: Driver Installation

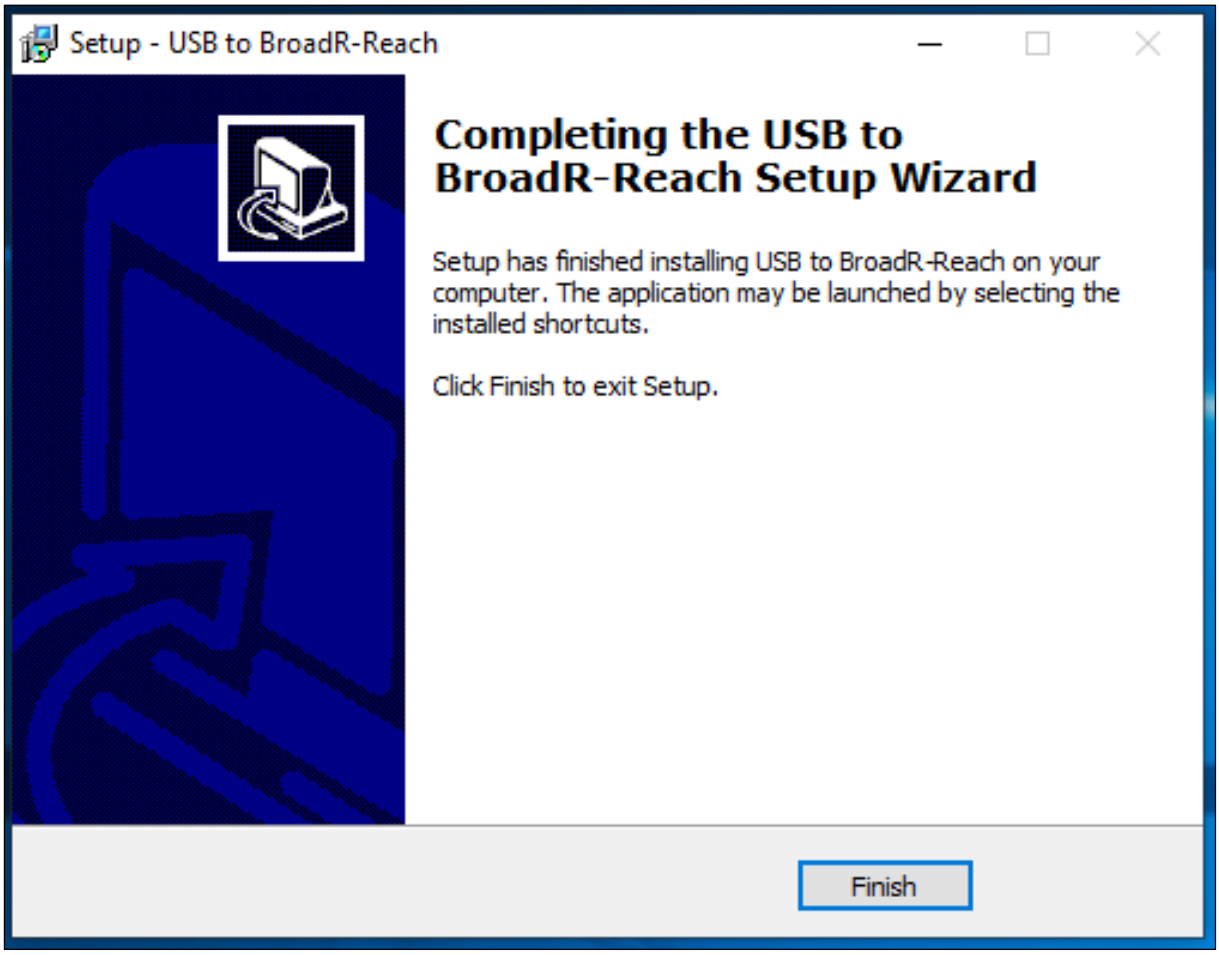

Figure 3-7: Driver Installation

4 CONFIGURATION

The USB-100BASE-T1 Converter is configured by using the Configurator window or using directly the system try icon.

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

Figure 4-1: Windows Driver window (one device connected and detected)

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.

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 "↻" button.

The Master/Slave settings for each device are kept in memory, so that when 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.

On version 1.4 the user documentation is not directly linked to the “?” icon, so you will get the following information:

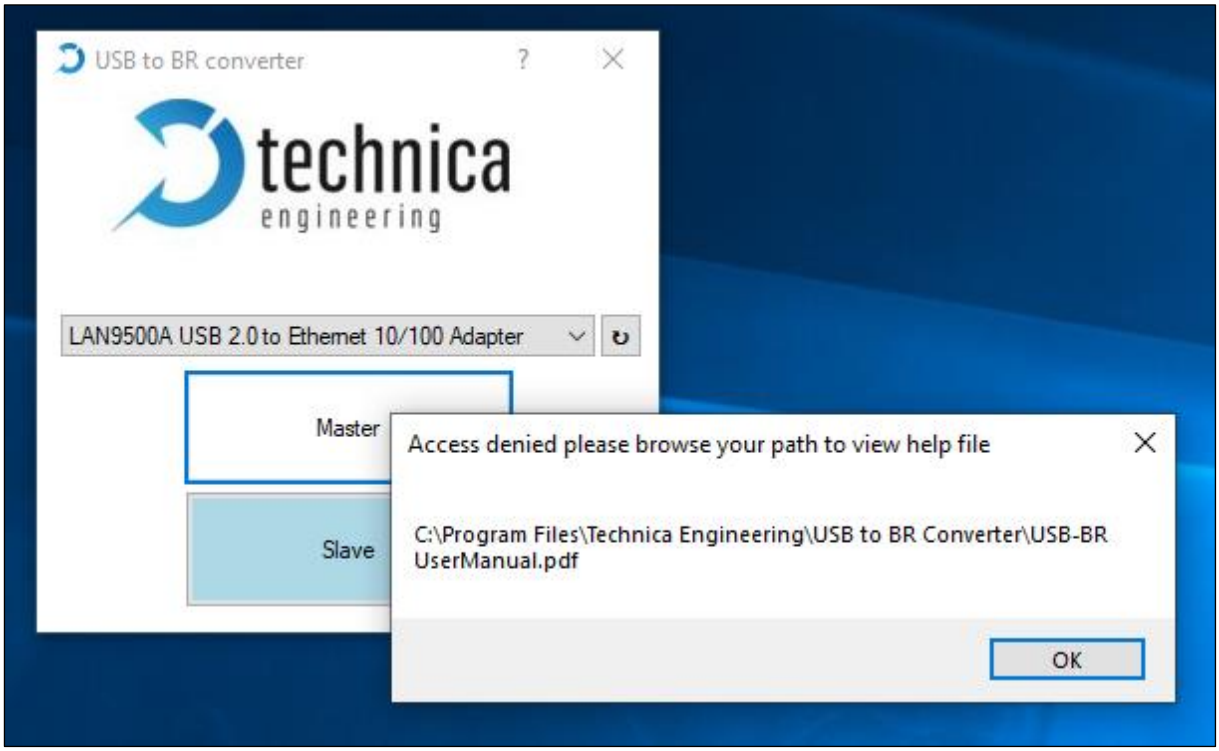

Figure 4-2: Prompt for Documentation

Please wait for version 1.5 coming soon!!

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

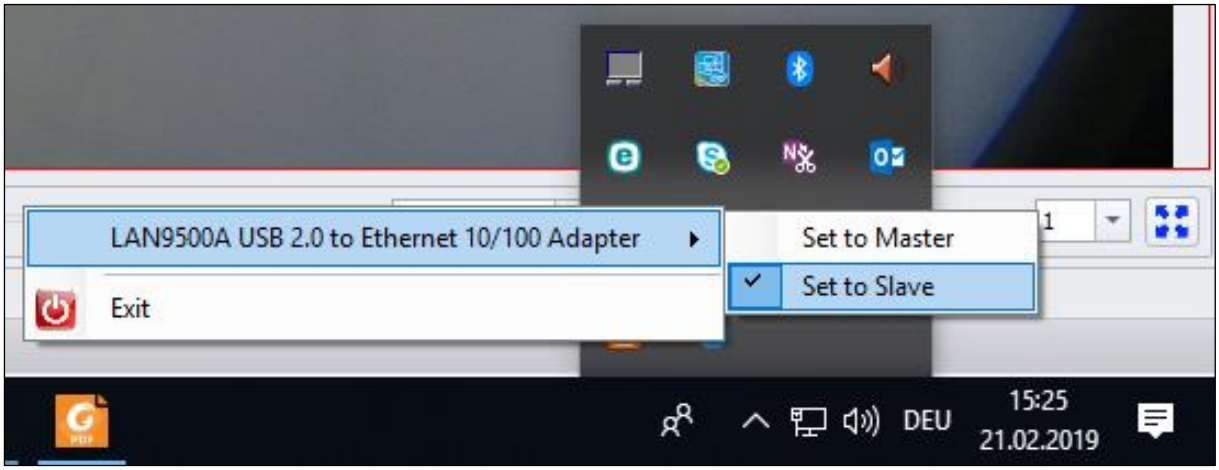

Figure 4-3 Device Settings in Master / Slave

4.1 NIC settings (information)

1) Network Interface Card (NIC) Set Up:

   For the USB 100Base T1 device the NIC of the PC the default mode for the device speed on the USB-LAN side is “Auto Negotiation”.

   The 100BASE-T1 phy is always only set to 100 Mbps full duplex.

   If desired, the user can follow these steps change USB-LAN NIC from auto negotiation to 100Mbps Full Duplex.

   However, it must be noted, that these might have no influence at all in the functionality of the device.

   i. Go to Control Panel > Hardware and Sound > Device Manager
   ii. In the Device Manager Click on Network adapters > Right Click on LAN9500A USB 2.0 to Ethernet 10/100 Adapter > Properties

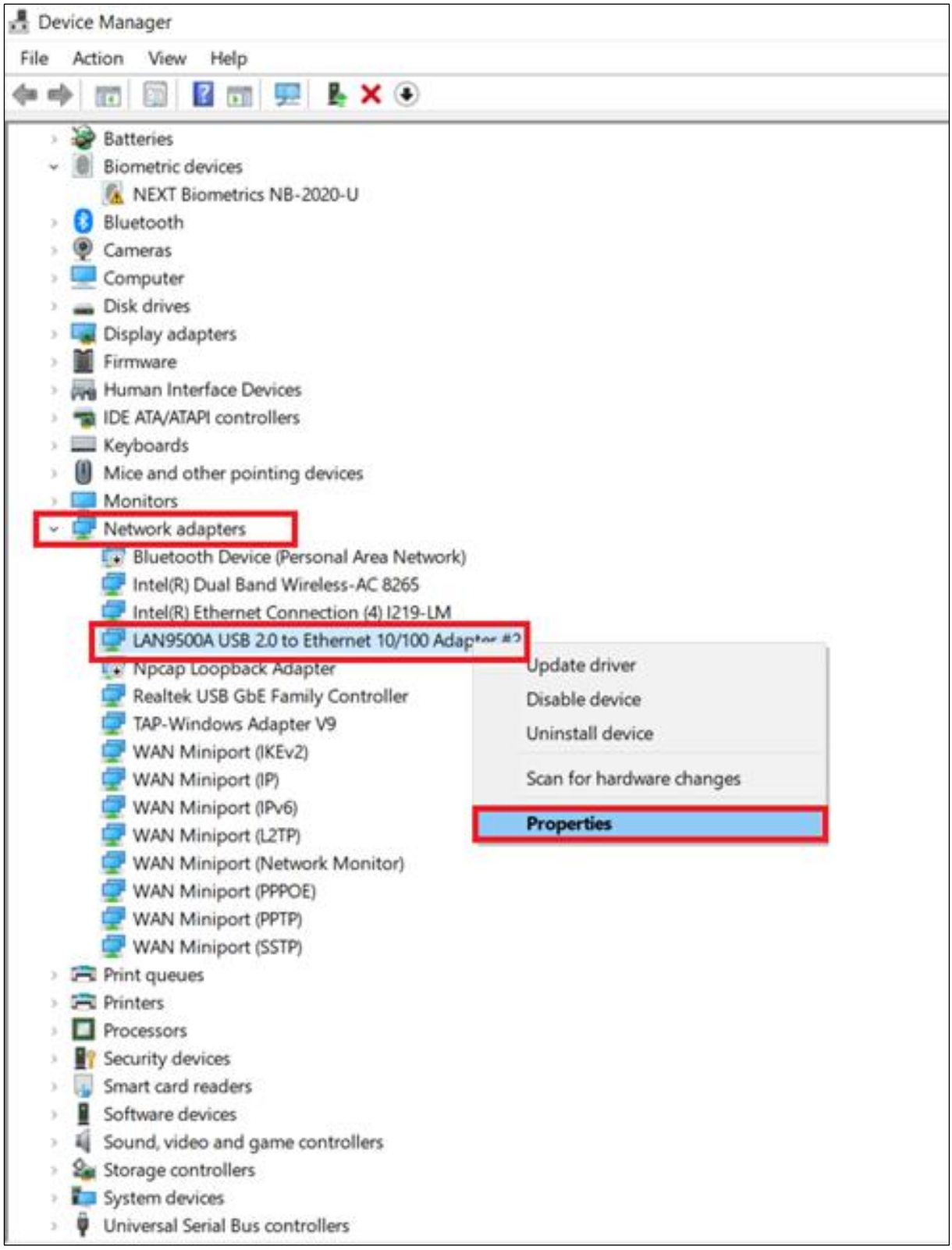

Figure 4-4: Device Manager Properties

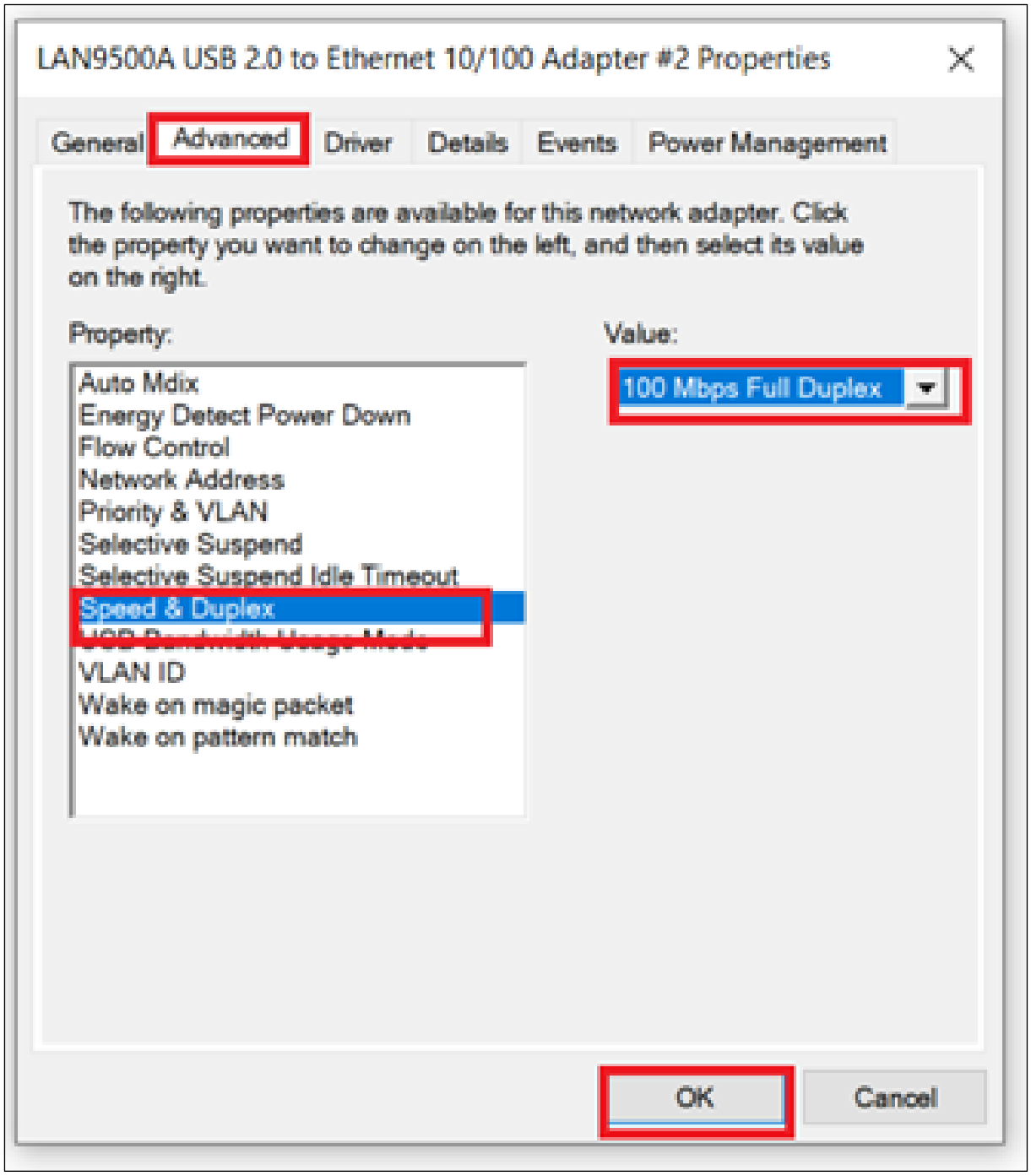

Figure 4-5: 100Mbps Full Duplex Speed Selection

iii. In Properties > Click on Advanced Tab > Select Speed & Duplex
iv. In the Value drop down menu select 100 Mbps Full Duplex and Click OK

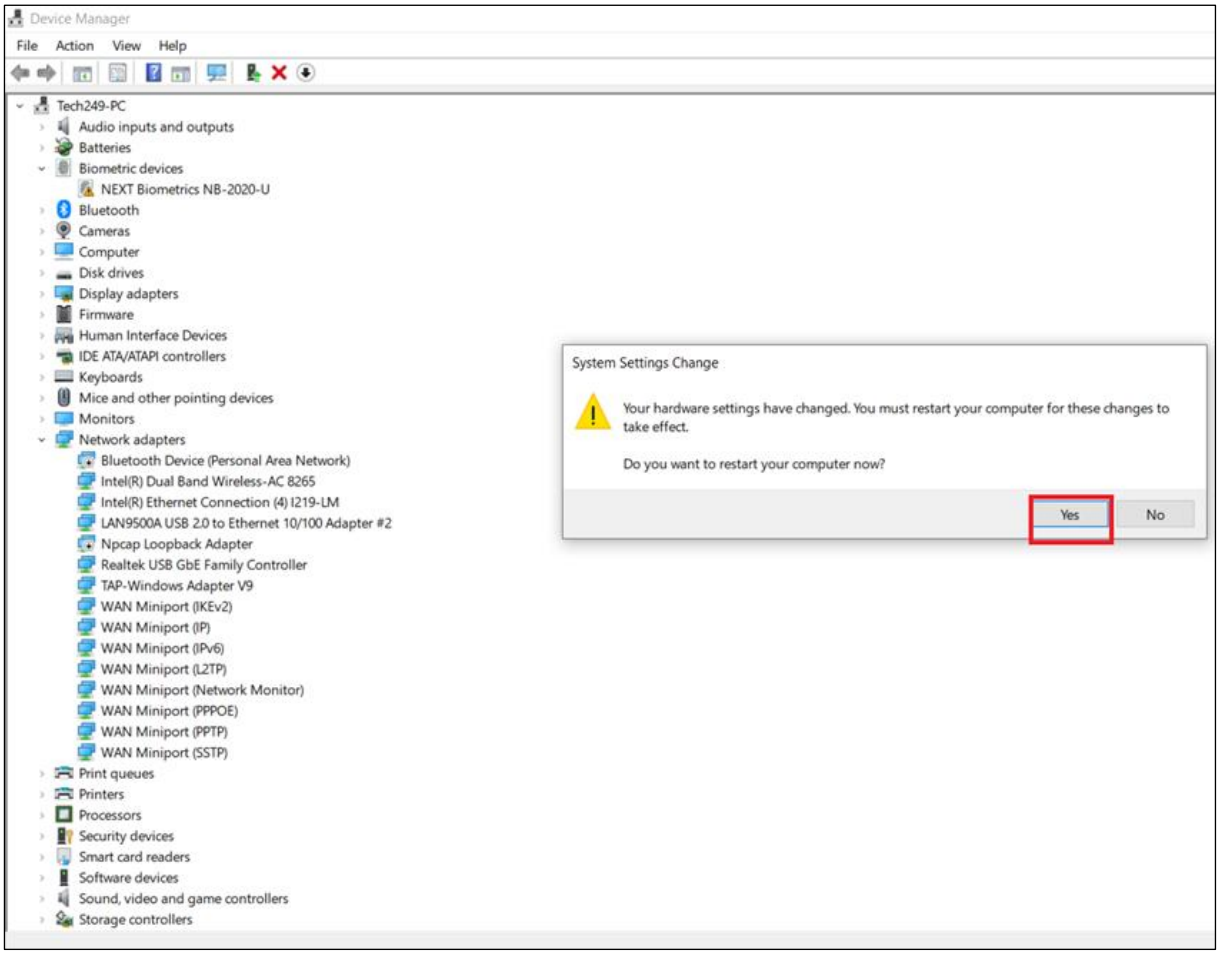

Figure 4-6: Apply Changes

v. Windows will send a prompt to restart the computer after this change. Click OK to restart the computer for the change to take place.

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

6 LIST OF FIGURES

7 CHANGELOG

Version	Chapter	Description	Date
1.0	All	First release	
2.0	All	Second Release	25.09.2018
2.1.1	All	New Design and added Configuration for NIC	06.02.2019
2.1.2	All	Adaptions for new driver version 1.4, minor enhancements	21.02.2019
2.1.3	All	Bugfixes	25.03.2019

8 CONTACT

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

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