

100BASE-T1 MEDIACONVERTER USB

USER MANUAL

July 2020

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1 GENERAL INFORMATION

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



Figure 1-1: 100BASE-T1 MediaConverter USB

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

1.1.1 Features

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

1.1.2 General Information

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

1.1.3 LINKS

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

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

1.1.4 General operating and safety strategy of Technica Engineering's Products

Technica Engineering's products are designed for operation in automotive systems and for supply voltages of nominal 12 V or 24 V. The applicable limit values adhere to the standard norms for 12 V or 24 V automotive onboard power systems correspondingly and can be found in the mentioned norms.

Should Technica Engineering's products be operated in voltage ranges beyond those specified in the norms, which represents a breach of the conditions of operation, then this will void the product warranty and Technica Engineering will assume no liability whatsoever of the results and/or consequences thereof.

This is especially valid whenever the voltage level reaches or exceeds the limits of the low-voltage directive. In this case, damage to the devices cannot be excluded. Due to the manufacturing characteristics of the devices, there is no imminent fire hazard from the device itself, if the devices are being operated in an environment according to the conditions of use. A secondary fire hazard cannot be excluded, should those conditions not be met. A protection against overvoltage cannot be provided in such a breach of the conditions of use.





1.1.5 General design rules for the power supply of Technica Engineering's products



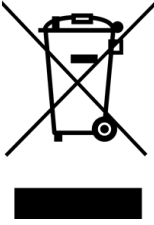

The power supply circuit of Technica Engineering's products are equipped with self-protection components. This automatic function protects the devices against excessive temperature and too high supply-voltage by switching the device off. This automatic switch-off function is independent of any software function.

The root-cause of excessive temperature in the power supply circuit can eventually be due to a too high environment temperature or due to an internal failure of the device. In both cases, the automatic switch-off function will switch-off the power supply from the device to avoid further damage.

The protection against too high supply-voltage protects the device even in case of an internal failure of the Technica Engineering device.

1.2 Warranty and Safety Information

	<p>Before operating the device, read this manual thoroughly and retain it for your reference.</p> <p>The latest documentation for the 100BASE-T1 Media Converter USB can be downloaded here: https://technica-engineering.de/produkt/100base-t1-media-converter-usb/</p>
	<p>Use the device only as described in this manual. Use only in dry conditions. Do not insert any foreign object in the slots/openings of the housing. Do not apply power to a damaged device. The device may only be used by specialists.</p>
	<p>Do not open the device. Otherwise warranty will be lost.</p>
	<p>This product is intended for use in automobiles or automotive-like environments. An automotive-like environment includes test setups or test benches in the office, laboratory and workshop areas. In the test setups the same environmental conditions apply as in vehicle electrical systems. Technica Engineering products are not intended to be used as standard IT equipment. The test systems and products from Technica Engineering are designed as customer and application-specific test modules that are only used by specialists for development and test facilities.</p> <p>When integrating the modules in a vehicle or test set-up, the user must ensure appropriate ventilation or air convection.</p> <p>Technica Engineering products must not be considered as a safety element out of context when using safety-critical systems and must be included in the safety assessment when used. The development class in a safety system must be taken into account with standard QM referred to ISO26262.</p>

	<p> The device can get hot</p> <p>Do not cover the device due to fire danger. Do not place the device near to highly flammable materials due to fire danger. Do not use the device above the specified operating temperature. The operating temperature is the ambient temperature of the installation space.</p>
	<p>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</p>
	<p>Please refer to CHAPTER 9 for the EU Declaration of Conformity in accordance with Directive 2014/30/EU.</p>

1.3 RoHS Certificate of Compliance

Technica Engineering's 100BASE-T1 MediaConverter USB complies with RoHS (Restriction of Hazardous Substances Directive) Certificate of Compliance.

1.4 Scope of Delivery

The delivery includes:

- 1x USB 100BASE-T1 MediaConverter
- 1x Cablesset
 - Cable for USB 2.0 to Mikro 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 100BASE-T1 MediaConverter USB 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 [TABLE 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

i 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 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.

i 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:

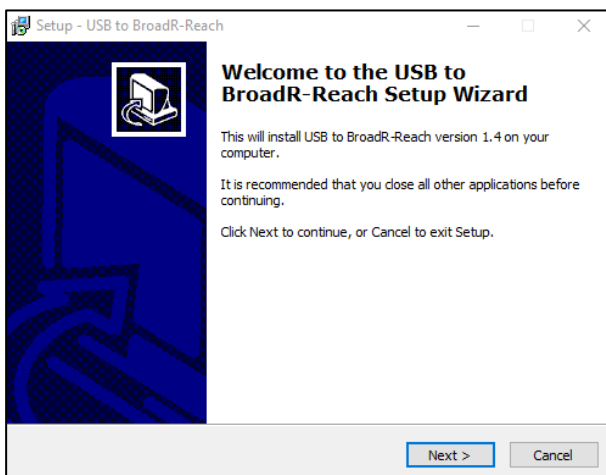
- ↳ Linux x64
- ↳ Windows x32 and x64

Download-link

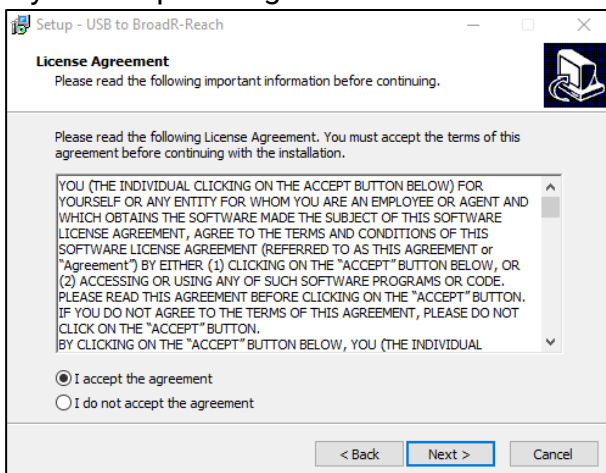
<https://technica-engineering.de/produkt/100base-t1-media-converter-usb/>

3.1 Installation for Windows

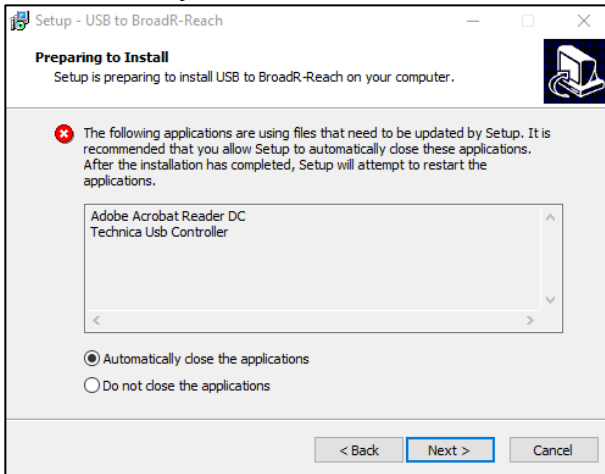
- ↳ Unzip the downloaded driver pack somewhere. It contains the file USB-BR.exe
- ↳ Double click to the USB-BR.exe-file for execution
- ↳ Click "Next"



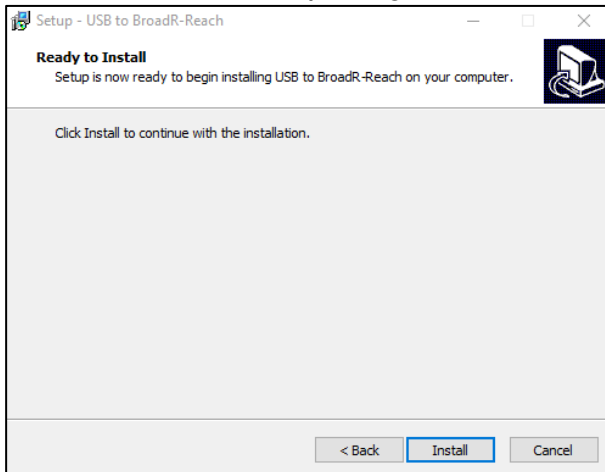
- ↳ If you accept the agreement click "Next"



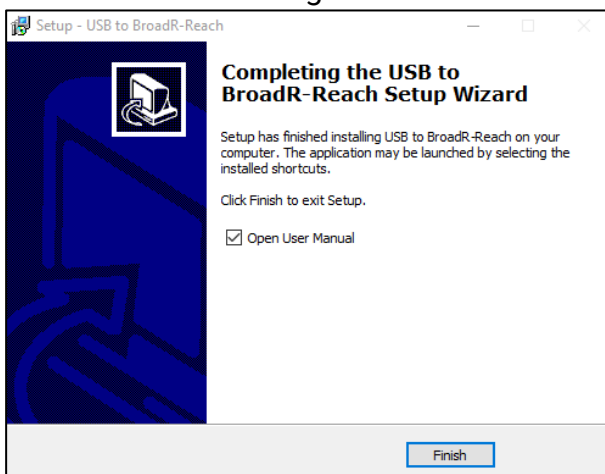
- In case you have an old application running the installer will prompt to close automatically



- Click "Install" for completing the installation




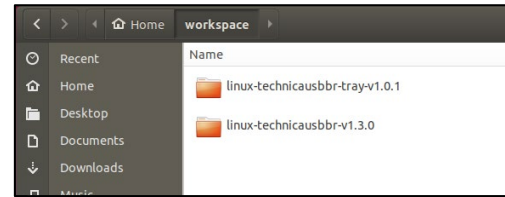
- Click Finish for closing the installation setup



3.2 Installation for Linux

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

 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:

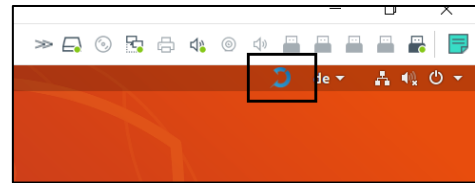
1. If you are using Ubuntu then execute following command to install dependencies:

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

2. To install, please run:

```
./install.sh
```

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



4. To uninstall, run `./uninstall.sh`

5. Enter your superuser (sudo) password when asked

Troubleshooting:

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

- Restart the machine
- After restart if application is still not visible then check Gnome-extensions and ensure Ubuntu Appindicators 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.

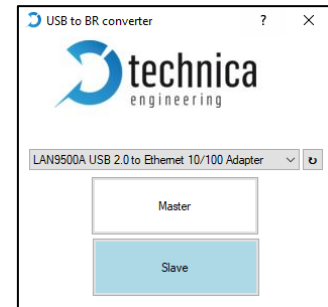



Figure 4-1: Tray Application

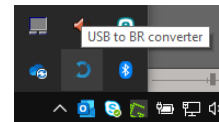
When new devices are connected, they are detected automatically and appear on the drop-down list.

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

-  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

6 LIST OF FIGURES

Figure 1-1: 100BASE-T1 MediaConverter USB	4
Figure 2-1: Label of 100BASE-T1 MediaConverter USB with pinning information	9
Figure 4-1: Tray Application	15

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
2.4	1.1.4	Added information on General Operating and Safety Strategy of Technica Engineering's Products	July 2020
	1.1.5	Added information on General Design Rules for the Power Supply of Technica Engineering's Products	
	1.2	Warranty and Safety Information updated	
	1.3	RoHS Certificate of Compliance added	
	9	Declaration of conformity added	

8 CONTACT

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

Technica Engineering GmbH
Leopoldstr. 236
80807 München
Germany

Technical support:

support@technica-engineering.de

General information:

Info@technica-engineering.de

Most current user manuals and product information:

<https://technica-engineering.de/>

9 DECLARATION OF CONFORMITY

Български

С настоящото Technica Engineering GmbH декларира, че продуктът Модул за улавяне 100BASE-T1 MediaConverter USB (TE-1350), е в съответствие с Директива 2014/30/ЕС. Цялостният текст на ЕС декларацията за съответствие може да се намери на следния интернет адрес:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Čeština

Tímto Technica Engineering GmbH prohlašuje, že produkt 100BASE-T1 MediaConverter USB (TE-1350), je v souladu se směrnicí 2014/30/EU. Úplné znění EU prohlášení o shodě je k dispozici na této internetové adrese:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Dansk

Hermed erklærer Technica Engineering GmbH, at produktet 100BASE-T1 MediaConverter USB (TE-1350), er i overensstemmelse med Direktiv 2014/30/EU. EU-overensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Deutsch

Hiermit erklärt Technica Engineering GmbH, dass das Produkt 100BASE-T1 MediaConverter USB (TE-1350) die Richtlinie 2014/30/EU entspricht. Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Eesti

Käesolevaga deklareerib Technica Engineering GmbH, et toode hõivamismoodul

100BASE-T1 MediaConverter USB (TE-1350), vastab direktiivi 2014/30/EL nõuetele. ELi vastavusdeklaratsiooni tselik tekst on kttesaadav jrgmisel internetiaadressil:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

English

Hereby, Technica Engineering GmbH declares that the product 100BASE-T1 MediaConverter USB (TE-1350), is in compliance with Directive 2014/30/EU. The full text of the EU declaration of conformity is available at the following internet address:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Español

Por la presente, Technica Engineering GmbH declara que el producto 100BASE-T1 MediaConverter USB (TE-1350), es conforme con la Directiva 2014/30/UE. El texto completo de la declaración UE de conformidad está disponible en la página web siguiente:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Ελληνικά

Με την παρούσα ο/η Technica Engineering GmbH, ότι το προϊόν 100BASE-T1 MediaConverter USB (TE-1350), πληροί την οδηγία 2014/30/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ διατίθεται στην ακόλουθη ιστοσελίδα στο διαδίκτυο:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Français

Le soussigné, Technica Engineering GmbH, déclare que le produit 100BASE-T1 MediaConverter USB (TE-1350), est conforme la directive 2014/30/UE. Le texte complet de la déclaration UE de conformité est disponible l'adresse internet suivante:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Hrvatski

Technica Engineering GmbH ovime izjavljuje da je proizvod 100BASE-T1 MediaConverter USB (TE-1350) u skladu s Direktivom 2014/30/EU. Cjeloviti tekst EU izjave o sukladnosti dostupan je na sljedećoj internetskoj adresi:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Italiano

Il fabbricante, Technica Engineering GmbH, dichiara che il prodotto 100BASE-T1 MediaConverter USB (TE-1350), conforme alla direttiva 2014/30/UE. Il testo completo della dichiarazione di conformità UE disponibile al seguente indirizzo Internet:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Latviešu

Ar šo Technica Engineering GmbH deklarē, ka produkts 100BASE-T1 MediaConverter USB (TE-1350), atbilst Direktīvai 2014/30/ES. Pilns ES atbilstības deklarācijas teksts ir pieejams šādā interneta vietnē:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Lietuvių

Aš, Technica Engineering GmbH, patvirtinu, kad produktas sugavimo modulis 100BASE-T1 MediaConverter USB (TE-1350), atitinka Direktyvą 2014/30/ES. Visas ES atitikties deklaracijos tekstas prieinamas šiuo internet adresu:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Magyar

Technica Engineering GmbH igazolja, hogy a termék 100BASE-T1 MediaConverter USB (TE-1350) a 2014/30/EU irányelvnek. Az

EU-megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Malti

B'dan, Technica Engineering GmbH, niddikjara li l-prodott 100BASE-T1 MediaConverter USB (TE-1350), huwa konformi madDirettiva 2014/30/UE. It-test kollu tad-dikjarazzjoni ta' konformit tal-UE huwa disponibbli f'dan l-indirizz tal-Internet li ġej:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Nederlands

Hierbij verklaar ik, Technica Engineering GmbH, dat het 100BASE-T1 MediaConverter USB (TE-1350) product voldoet aan richtlijn 2014/30/EU. De volledige tekst van de EU-conformiteitsverklaring kan worden geraadpleegd op het volgende internetadres:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Polski

Technica Engineering GmbH niniejszym oświadcza, że produkt 100BASE-T1 MediaConverter USB (TE-1350), jest zgodny z dyrektywą 2014/30/UE. Pełny tekst deklaracji zgodność I UE jest dostępny pod następującym adresem internetowym:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Português

O(a) abaixo assinado(a) Technica Engineering GmbH declara que o produto 100BASE-T1 MediaConverter USB (TE-1350), está em conformidade com a Diretiva 2014/30/UE. O texto integral da declaração de conformidade está disponível no seguinte endereço de Internet:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Română

Prin prezenta Technica Engineering GmbH declară ca produsul 100BASE-T1 MediaConverter USB (TE-1350), este în conformitate cu Directiva 2014/30/UE. Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Slovensko

Technica Engineering GmbH potvrdjuje, da je izdelek 100BASE-T1 MediaConverter USB (TE-1350), skladen z irektivo 2014/30/EU. Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>

Slovensky

Technica Engineering GmbH týmto vyhlasuje, že produkt 100BASE-T1 MediaConverter USB (TE-1350), je v slade so smernicou 2014/30/EÚ. Úplné EÚ vyhlásenie o zhode je k dispozícii na tejto internetovej adrese:

<https://technica-engineering.de/wp-content/uploads/2018/06/100base-t1-mediaconverter-usb-1350-eu-declaration-of-conformity.pdf>