

1000BASE-T1 MEDIACONVERTER

USER MANUAL

July 2019

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1 GENERAL INFORMATION

1.1 Functionality and Features of the 1000BASE-T1 Media Converter



Figure 1-1: 1000BASE-T1 MediaConverter

The **Technica Engineering 1000Base-T1 MediaConverter** converts the new Standard 1000Base-T1 to the widely known 1000Base-T and vice versa. Data Transfer is full duplex in both directions.

Additional to this it has option to convert 100Base-TX to 100Base-T1 and vice versa. The mode configuration can be done very easy by DIP Switch.

Features:

- 1 Port Gigabit Ethernet 1000 BaseT/ Fast Ethernet 100BASE-TX
- 1 Port 100/1000Base-T1 full duplex on a single unshielded twisted pair.
- Automotive Tyco Nano MQS Connectors for 100/1000Base-T1 and Power Supply
- Robust steel case
- DIP Switches for easy configuration

General Information:

Power requirement:	6,5 to 16 Volt DC (nominal 12 Volt DC)
Power consumption:	2 Watt
Weight:	0,25 kg
Size:	92 x 63 x 25 mm
International Protection:	IP 2 0
Operating Temperature:	-40 to +80 °Celsius

LINKS:

The User can download the latest firmware and documentation for the 1000BASE-T1 MediaConvert here:

<https://technica-engineering.de/produkt/1000base-t1-media-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 1000BASE-T1 MediaConverter can be downloaded here:

<https://technica-engineering.de/produkt/1000base-t1-media-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.

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:	1000BASE-T1 MediaConverter
Datum der Erklärung:	18.09.2017
Name des Unterzeichners:	Joseba Rodriguez
Unterschrift:	

Figure 1-2: Declaration of conformity

1.4 Scope of delivery

The delivery includes:

- 1x 1000BASE-T1 MediaConverter
- 1x 1m Ethernet Cable
- 1x Cablesset:
 - 1m twisted pair red/black cable, 0.35mm² (power cable)
 - 1m 100BASE-T1 twisted pair green/white cable, 0.35mm² (data cable)
 - Banana Connectors 4mm for power cable
 - nanoMQS connector
 - 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 1000BASE-T1 MediaConverter.

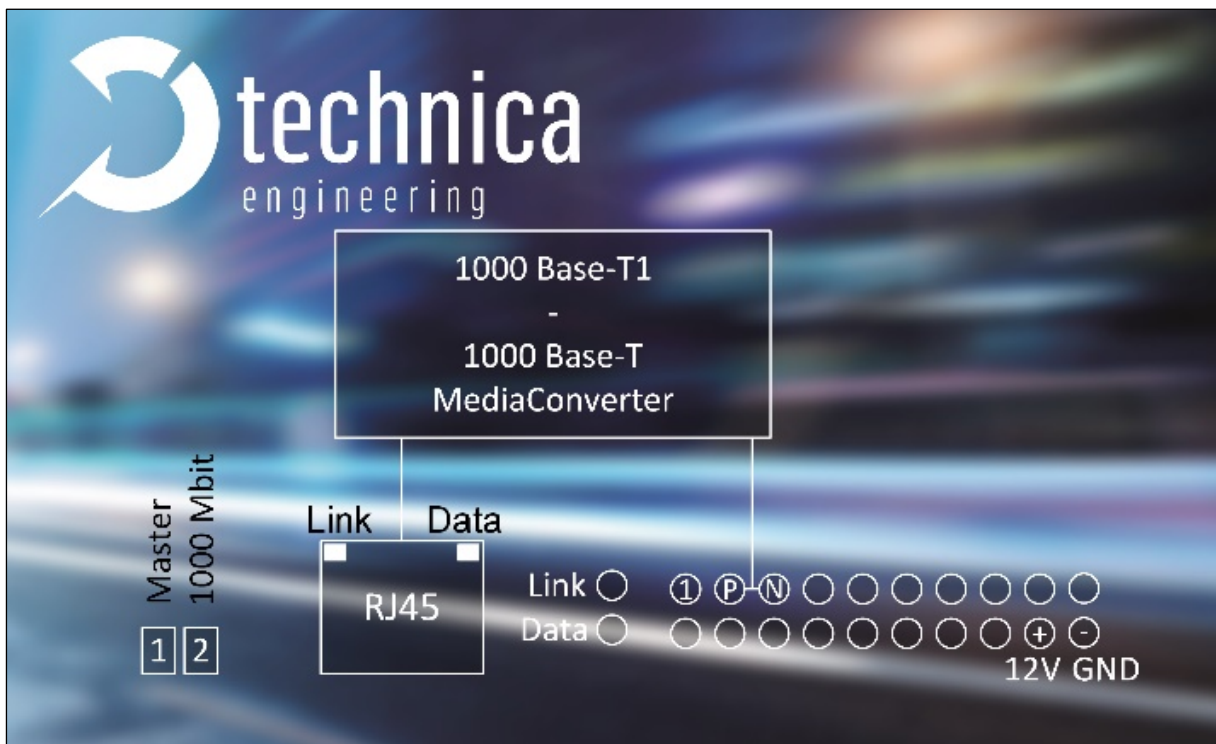


Figure 2-1: Label of 1000BASE-T1 MediaConverter with pinning information

2.1.1 nano-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 power supply for the device is supplied by pin 20 (Ground) and Pin 18 (12Volt). 100/1000Base T1 is connected to pin 3(positive) and pin 5 (negative)

Warning: If you apply a voltage higher than 18 Volt, the device will be damaged!

Pin	Function	Pin	Function
1	n.c.	11	n.c.
2	n.c.	12	n.c.
3	100/1000 BaseT1 Positive	13	n.c.
4	n.c.	14	n.c.
5	100/1000 BaseT1 Negative	15	n.c.
6	n.c.	16	n.c.
7	n.c.	17	n.c.
8	n.c.	18	Battery +12 Volt Input
9	n.c.	19	n.c.
10	n.c.	20	Battery Ground Input

Table 2–1: Pinning of black Nano MQS connector

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



Name	Picture	Part Number
20POS NANOMQS REC HSG CODE A		2141404-1
NANOMQS RECEPTACLE TERMINAL		2-1703930-1

Table 2–2: Parts of nano-MQS connector

<http://www.te.com/usa-en/product-2141404-1.html>

<http://www.te.com/usa-en/product-2-1703930-1.html>

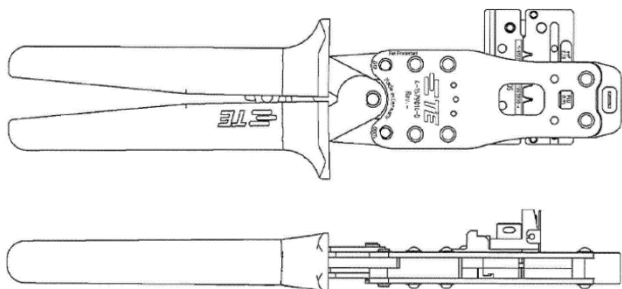
<http://www.te.com/usa-en/product-4-1579014-0.html>

<http://de.farnell.com/te-connectivity/2-1703930-1/contact-socket-crimp/dp/2528666>

Note: You can use the official Tyco tool for these crimp contacts:

TE CONNECTIVITY CS11K NANO-MQS, 0.13-0.35 SQ.M
 TE Internal Number: 4-1579014-0

Official Crimp Tool:



Name	TE CONNECTIVITY CS11K NANO-MQS, 0.13-0.35 SQ.M
TE Internal Number	4 -1579014 – 0
Distributor	Börsig GmbH www.boersig.com
Address	Siegmund-Loewe-Str. 5 74172 Neckarsulm

2.1.2 RJ45 Ethernet connectors

There is one RJ45 Standard Ethernet connector for Fast Ethernet (100BASE-TX).

2.2 Other Interfaces

2.2.1 DIP-Switches

The 1000BASE-T1 MediaConverter has two DIP-Switches for configuration (see [CHAPTER 3](#)).

2.2.2 Status LEDs

The 1000BASE-T1 MediaConverter has two status LEDs at the frontside of the case for the 1000BASE-T1 Port.

Upper LED:

Green Color. It is lit if there is a linkup on the 1000BASE-T1 port.

Lower LED:

Yellow Color. It is toggling if there is communication on the 1000BASE-T1 port

3 CONFIGURATION OF THE DEVICE

The 1000BASE-T1 Media converter is configured by 2 DIP Switches on the front of the device.

DIP-Switch	Status	Description
1	ON (up)	100/1000 BASE-T1 Port is set to Master
	OFF (down)	100/1000 BASE-T1 Port is set to Slave
2	ON (up)	The device is set to 1 Gbit Mode.
	OFF (down)	The device is set to 100 Mbit Mode.

Table 3-1: Configuration of DIP-Switches

Note: In a 100/1000 BaseT1 System, one device must be set to Master, the other link partner must be set to Slave Mode.

4 1000BASE-T1 MediaConverter mode A0 and A2

Nowadays, when we speak about 1000BASE-T1 MediaConverter, we have to mention that there are two devices but with a small difference.

On one hand 1000BASE-T1 Media Converter HW 0.6 (TE- 1401). It works with a PHY A0 from Marvell (88Q2112) which is only compatible with PHY Z0, Z1 and A0 versions. However, when connecting to 1000BASE-T1 Transceivers of different vendors, no linkup is possible.

On the other hand, is 1000BASE-T1 Media Converter HW 0.7 (TE-1401-1). It is a “new” version of the TE-1401 with A0 and A2 PHY from Marvell, where it has the following behavior:

- The device will always be initialized in “IEEE Compliant” mode after power up
- If no link can be established within 40 ms, it will automatically change to “A0 Mode”
- If within 40 ms no link can be established, it will switch back to “IEEE Compliant” mode
- This will repeat endlessly, until Link up can be established
- There is no need from the customer to make any configuration
- This will ensure, that the devices can work with new and existing 1000BASE-T1 devices

5 1000BASE-T1 Filter

The following 1000BASE-T1 Filter is used in the 1000BASE-T1 MediaConverter:
The Pulse AE5002 is used.

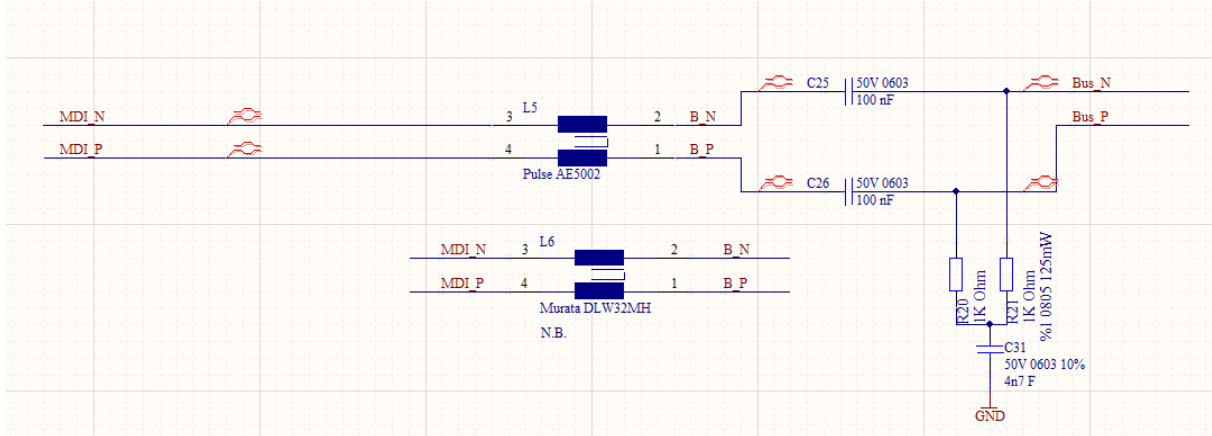


Figure 5-1: Used Filter in 1000BASE-T1 MediaConverter

6 ADDITIONAL INFORMATION

- The delay time is constant 2.0.us. The delay is independent of the Ethernet packet frame size.
- The 1000BASE-T1 MediaConverter_ is optimized for automotive use. The maximum cable length for 100/1000BASE-T1 segments is limited to 15 meters.

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8 CHANGELOG

Version	Chapter	Description	Date
	All	First release	
2.0	All	Second release	21.09.2018
2.1	4	New Chapter	29.07.2019

9 CONTACT

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

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80807 München
Germany

Technical support:

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General information:

Info@technica-engineering.de

Most current user manuals and product information:

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