



RFID-Reader – assembly
305982-8144-000



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Abbreviations:

UID: Unic Identifier
 RFID: Radio Frequency Identification
 USB: Universal Serial Bus
 MNR: Partnumber
 PC: Personal Computer
 LED: Light Emitting Diode

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1 Product Marketing Name

HVIN: RFID -Assembly
PMN: 305982-8144-000

The RFID Modul is to be used with compatible medical devices of CZ Meditec AG.

2 §15.19 & RSS-GEN/CNR-GEN, 8.4

2.1 FCC + ISED

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s) and complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage.
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

3 Further Part 15 notices (FCC only)

3.1 §15.21

Changes or modifications made to this equipment not expressly approved by **<company name>** may void the FCC authorization to operate this equipment.

3.2 §15.105

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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4 RF Exposure Information

4.1 Portable devices

The radiated output power of the device is far below the

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radio frequency exposure limits. Nevertheless, the device should be used in such a manner that the potential for human contact during normal operation is minimized.

4.1.1 Highest reported SAR

The highest reported SAR based on 1.1307 - 1.1311, 15.247(b)(4), 2.1091 and 2.1093 for head, body-worn accessory, product specific, simultaneous transmission, and extremity (hand) exposure conditions are

Maximum SAR value (W/kg) for FCC:	
	Reported
1g SAR for body with 0mm distance:	0.075
10g SAR for Hands/Feet/Ankle/Wrist with 0mm distance:	0.044
Maximum SAR value (W/kg) for ISED:	
	Reported
1g SAR for body with 0mm distance:	0.075
10g SAR for Hands/Feet/Ankle/Wrist with 0mm distance:	0.044

Table 1: maximum SAR

5 Description of functionality

The device consists of an RFID-Reader and an antenna from the manufacturer ELATEC, which are mounted on a mountingplate assembled inside a robotic arm. Additionally there is a cable for use of the device.

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The module is ready for use, so that it can directly be mounted into a medical system. The power is delivered over a USB2.0 cable with connector type A.

The Reader can be controlled over USB from a computer. Furthermore, the USB connection is used to read data from the reader and/ or program a RFID-Transponder according to ISO15693.

5.1 Techn. Data of RFID-module

Standard:	ISO14443A/B (T=CL), ISO15693, ISO18092 / ECMA-340 (NFC)
Frequency:	13,56MHz
Power supply:	3.3V +/- 5%/120mA (using onboard voltage regulator 4.3V - 5.5V)
Transmitting power:	125 kHz: 26 mW bzw. 14.1 dBm (deactivated) 13.56 MHz: 13.9 mW bzw. 11.4 dBm
Output power:	-7.0 dBμA/m @10m
Modulation:	125 kHz: ASK (deactivated) 13.56 MHz: ASK
Working temperature	-25 °C....+80 °C
Storage temperature	-45 °C....+85 °C
Flammability PCB RFID	UL94 V0
E-Number PCB RFID	E69148

5.1.1 Used Frequency

The RFID-Reader is capable to read or write to RFID-Transponders with 125kHz or 13,56MHz. Here in this application in the medical system, only the function according to ISO15693 with 13,56MHz is used due to the usage of a 13.56 MHz antenna.

5.2 Technical Data of Antenna

Antenna type	PCB Antennas (ANT-032)
Dimensions	
- Length (MM/INCH)	20 / 0.79
- Width (MM/INCH)	40 / 1.57
- Height (MM/INCH)	2.2 / 0.09
Impedance (HF)	50 Ohm
Connectors	HF: UMCC/U.FL

5.2.1 Used Frequency

The used antenna is capable to read or write with RFID reader with 13,56MHz.

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6 Programming of the RFID-Reader

6.1 Preparation of the PC

- Before any operation, please ensure that you've downloaded and extracted the latest TWN4DevPack (currently working with TWN4DevPack464).
- Extract folder TWN4DevPack464.zip to a directory on your PC. e.g. C:\RFID_RD
- Connect RFID-Reader over USB cable to PC.

6.1.1 Reading tags

- a) Open director.exe software in TWN4DevPack
- b) Press "connect"

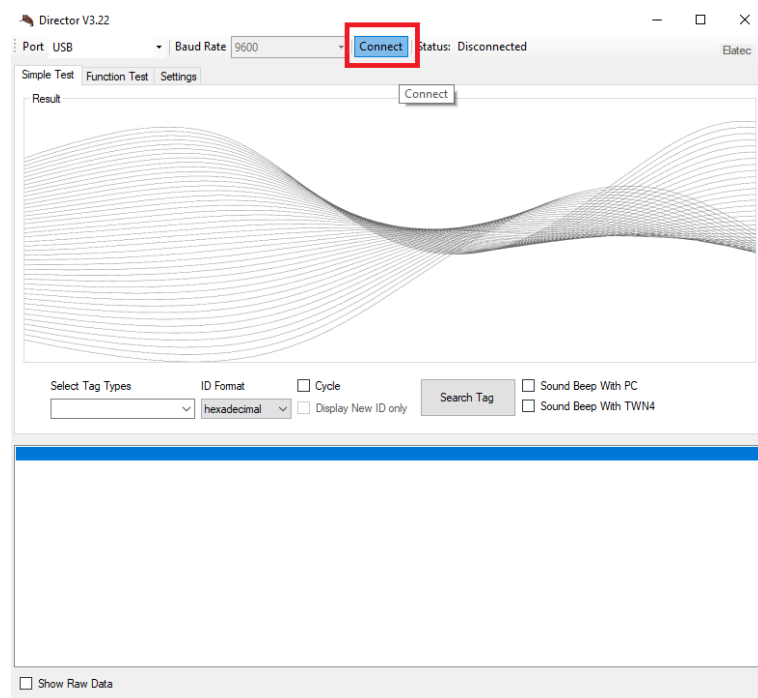
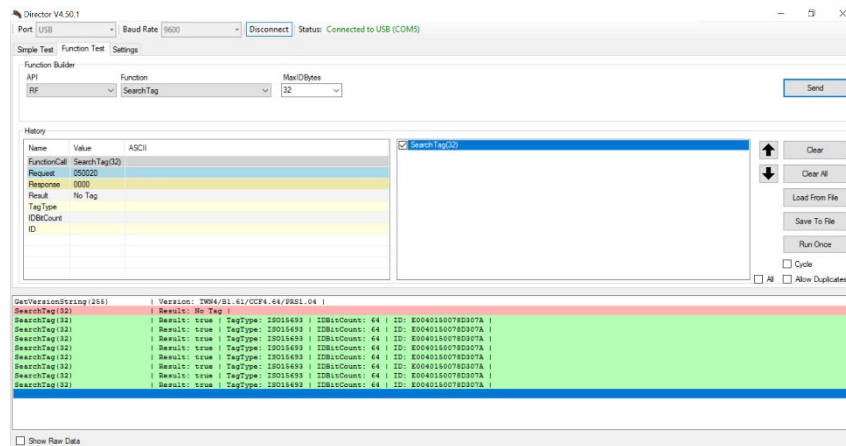


Figure 1: step b)

- c) Go to "Function Test"
- d) Select as API "RF" as function "SearchTag" and click on "send"



- e) Select as API “ISO 15693” as Function “ISO15693_ReadSingleBlock” as BlockNumber “0x0000” (or whatever block you want to read) and as BufferSize “0xFF” and click on “Send”
- f) Activating the box at “cycle” leads to periodic execution of chosen commands.

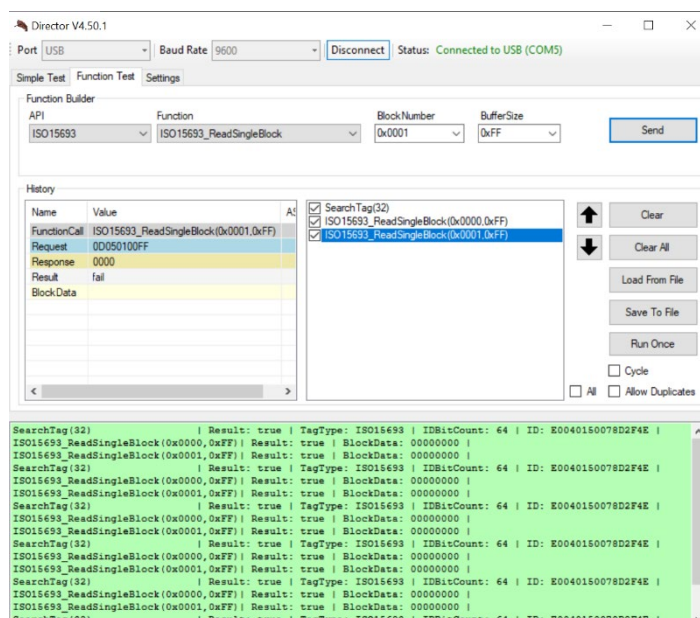


Figure 2: Director software interface, steps d) –f)

6.1.2 Driver installation in Windows 10

- Open the device manager on your computer and check the driver installation
- Computer Management
- Device manager

Device will not be shown with Windows 10 (after plug in of RFID-Reader TWN4)

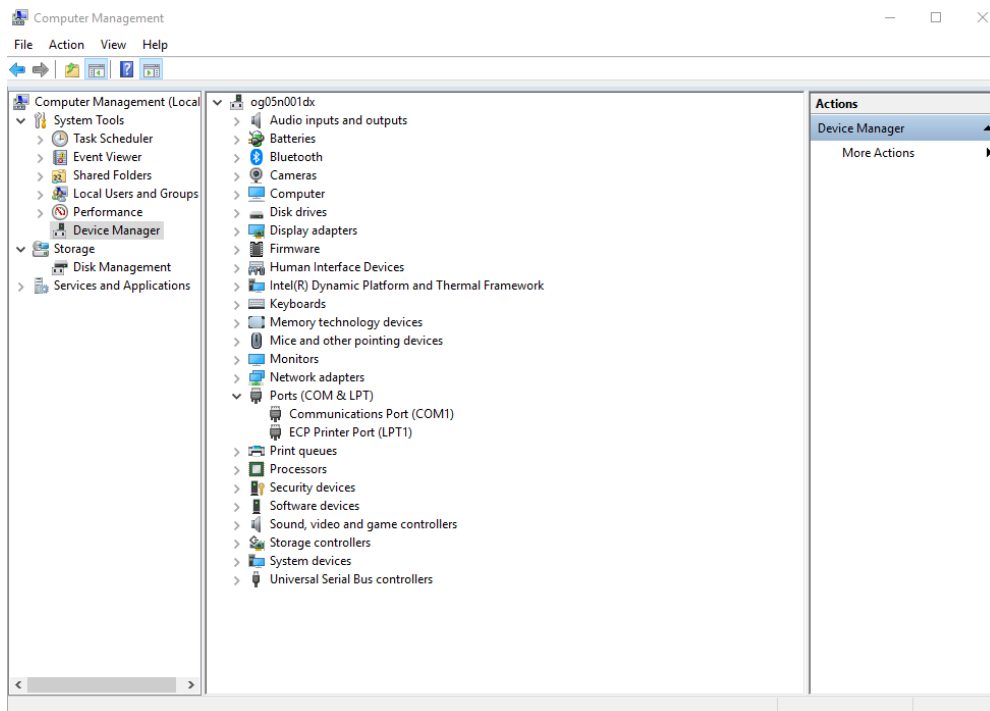


Figure 1: RFID-Device not visible

Info:

If the RFID-Device is not visible in the device manager window, right click on device manager, press view and activate "Show hidden devices"

- right click on Device manager
- View
- activate "Show hidden devices"

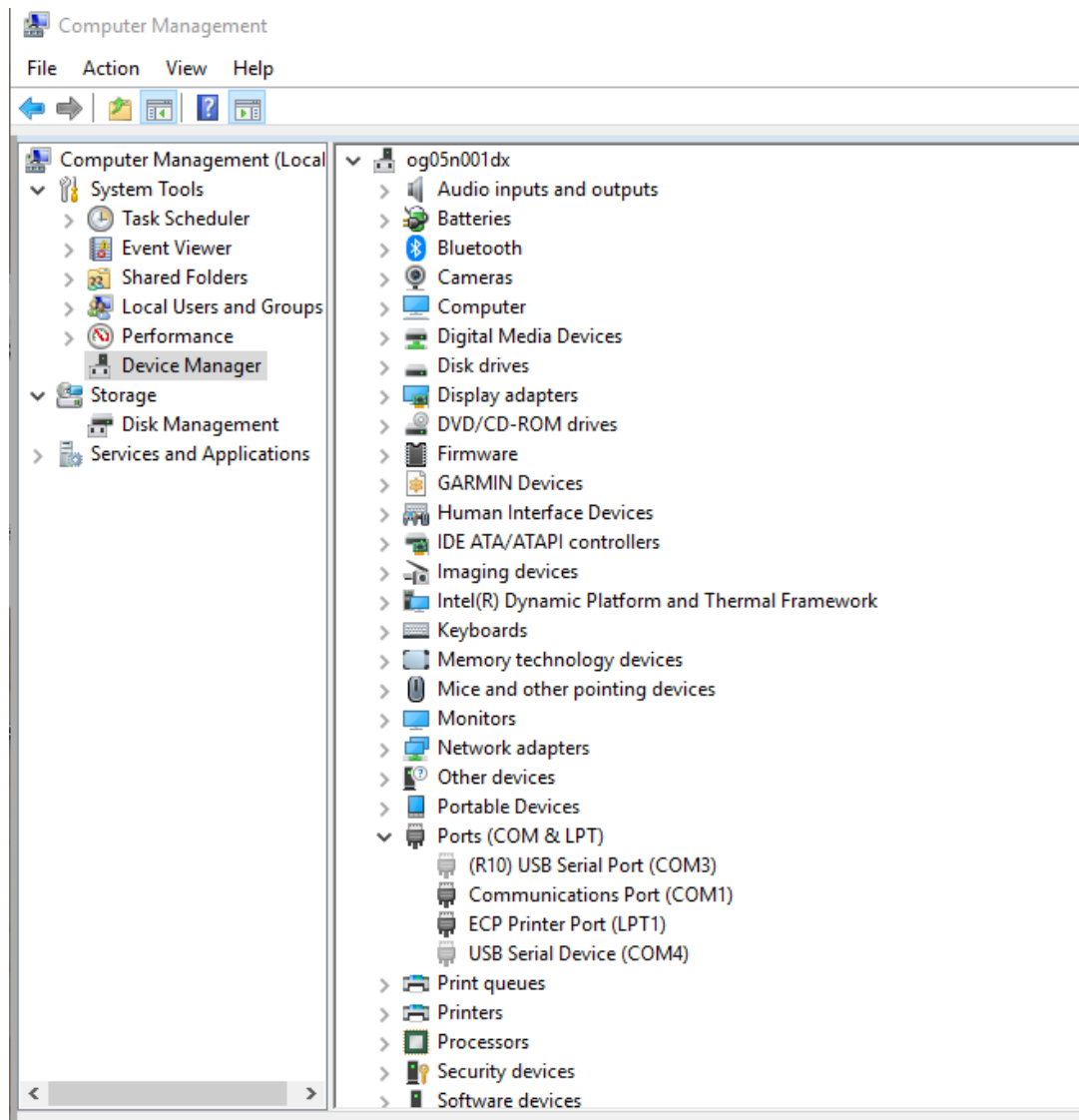


Figure 2: USB device visible

Check the installation of RFID-Reader:

Plug off and on the USB connection of the RFID-Reader: >>> Device manager window should update the device list on each plug-in process.

>>> programming of RFID-Reader is possible.

6.1.3 Driver Installation in Windows 7

After plugging in the RFID-Reader the driver will be installed automatically and shown in the device list of the device manager:

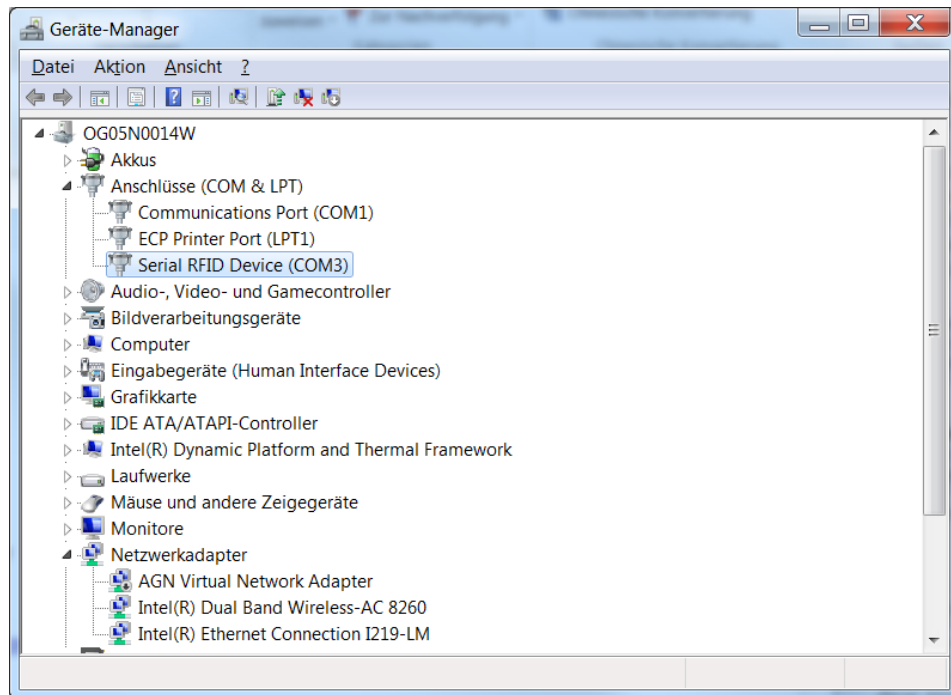


Figure3: RFID-Device visible

If the driver is not installed correctly, the RFID-Device is shown with an error.

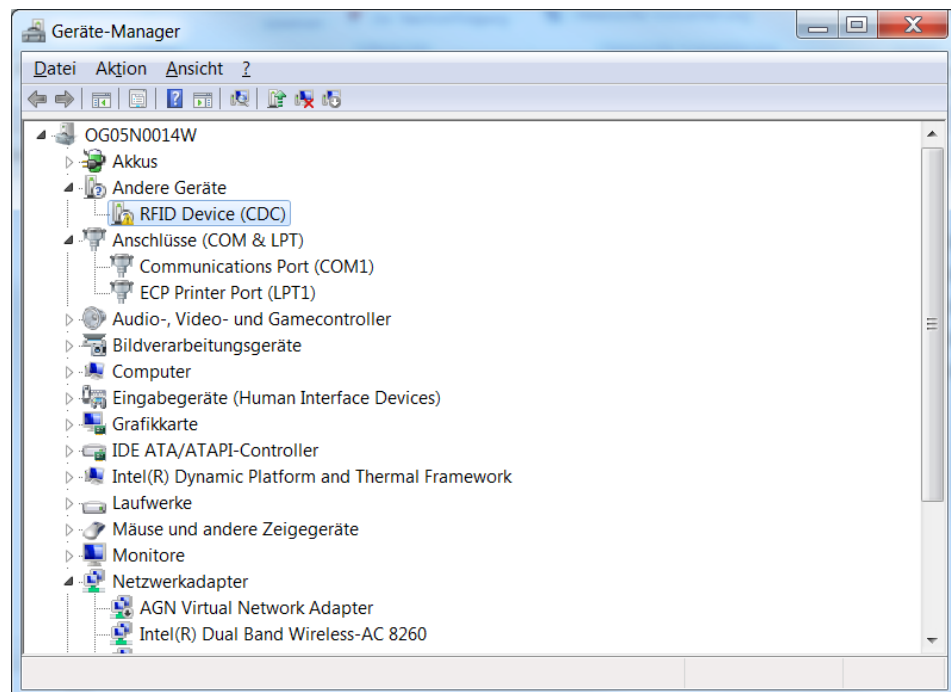


Figure 4: RFID-Device shown with an error

Then the RFID-Driver has to be updated as following.

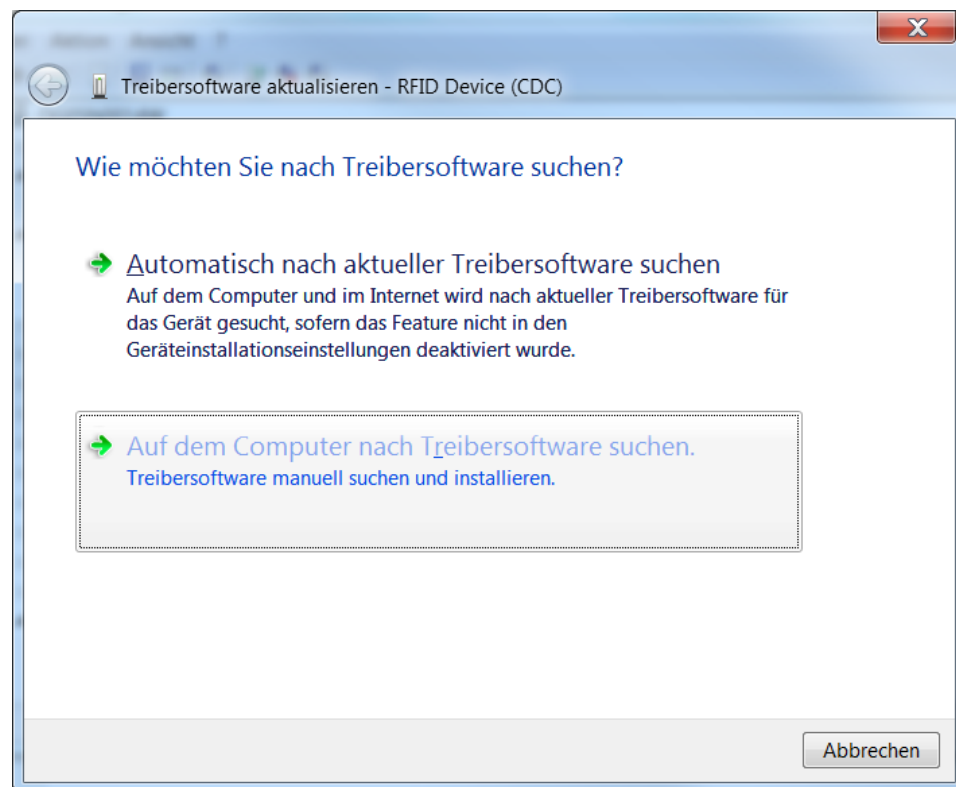


Figure 5: Manual driver update

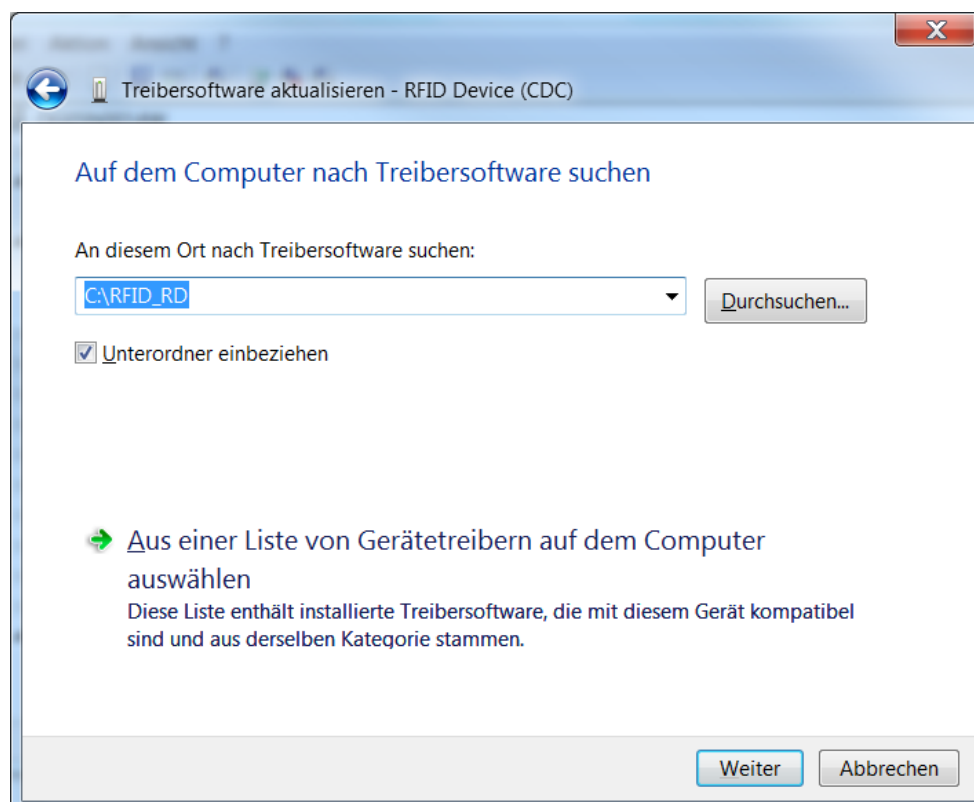


Figure 6: Path of RFID-Driver

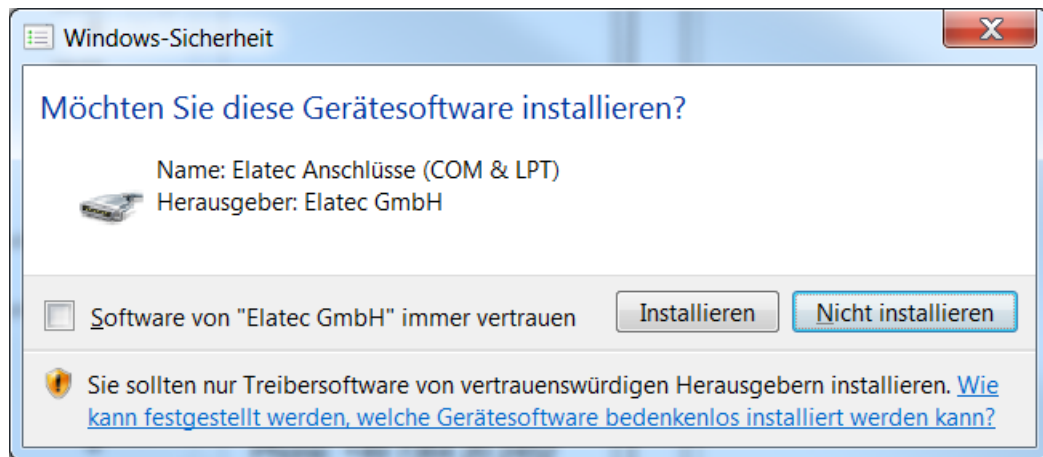


Figure 7: Confirmation of driver installation

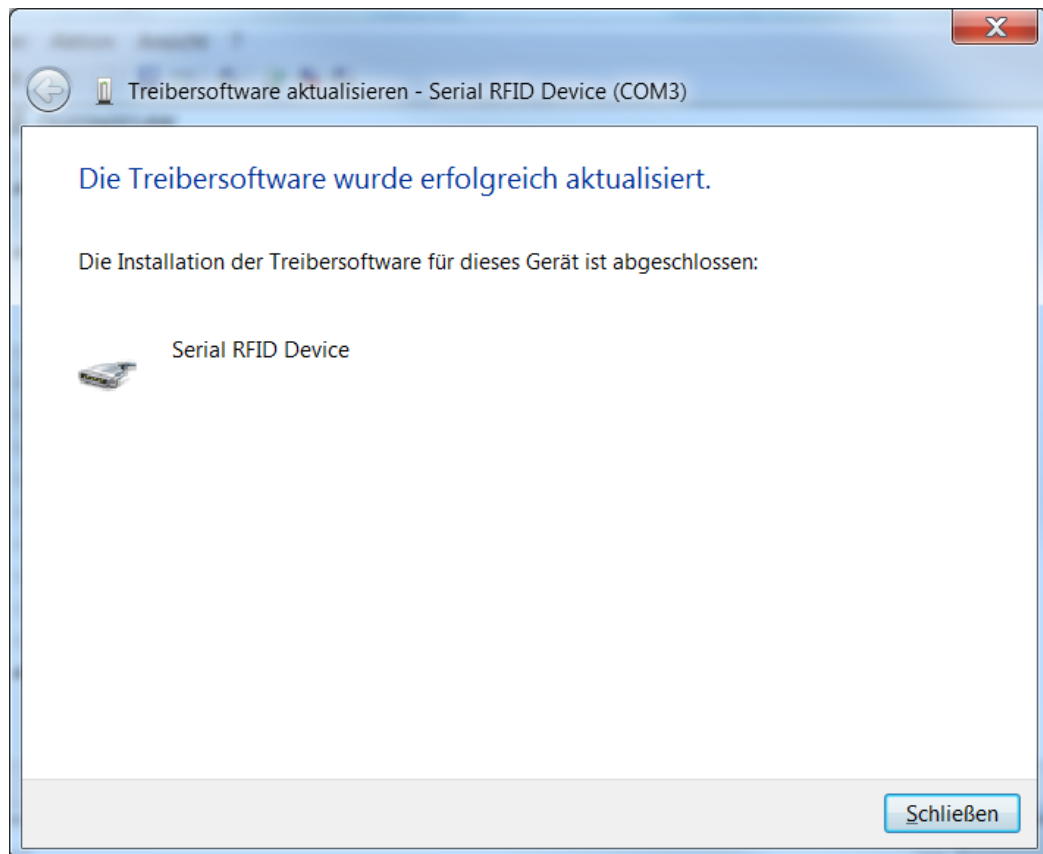
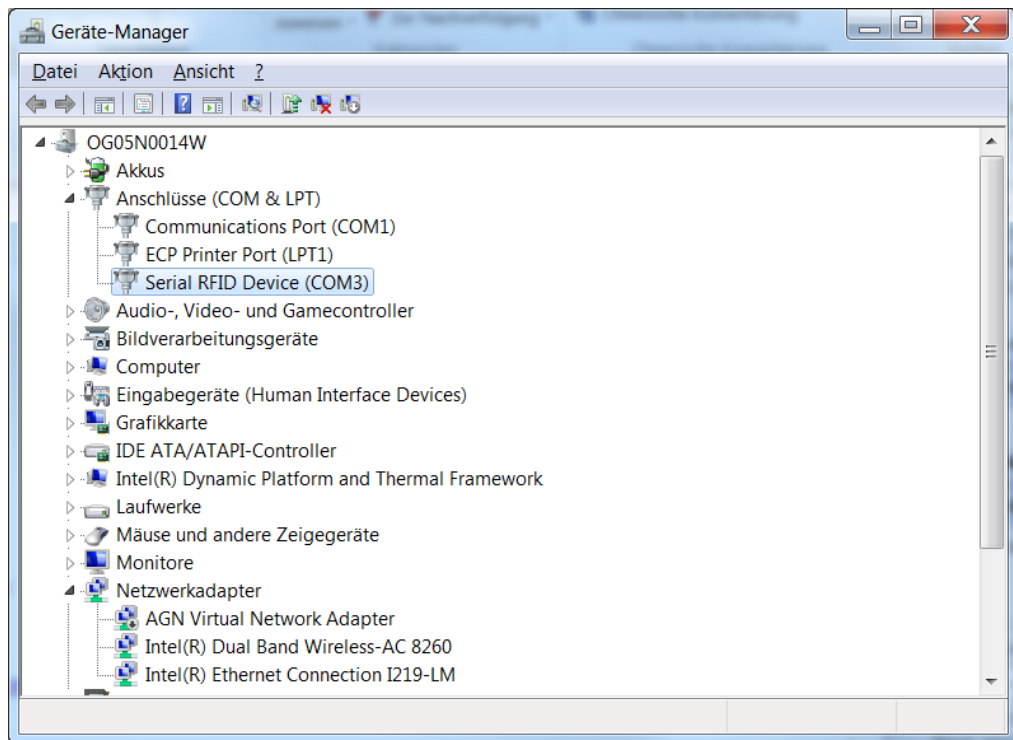


Figure 8: Installation of RFID-Driver finished



6.2 Preparation of Hardware

To power up the core module via connector A (USB connection), the jumper J3 (B3 and B4) must be closed. Please refer to Chapter 3.6 Jumpers in `TWN4DevPack464\Docs\TWN4 MultiTech Core\TWN4 MultiTech Core DocRev9.pdf`.

Therefore, B3 and B4 have to be bridged constantly.

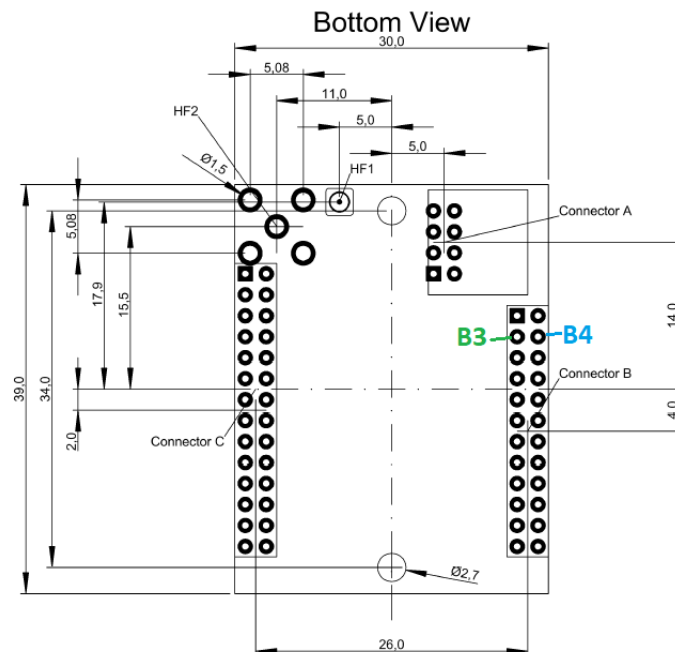


Figure 3: Board pinout

6.3 Flashing firmware image

- Execute Install.bat which is stored in \TWN4DevPack464\Driver folder
- Connect the reader to a USB port of the computer
- Open AppBlaster.exe tool in TWN4DevPack464 folder
- Select "Program Firmware Image"

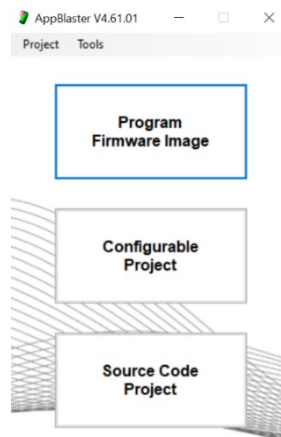


Figure 2: AppBlaster Interface, step d)

- Click on "select image" and browse to:
...\\TWN4DevPack464\Firmware\TWN4_xCx464_PRS104_Multi_CDC_Simple_Protocol.bix
- Click on "Program Image"

Now the firmware image is flashed on the RFID-Reader.

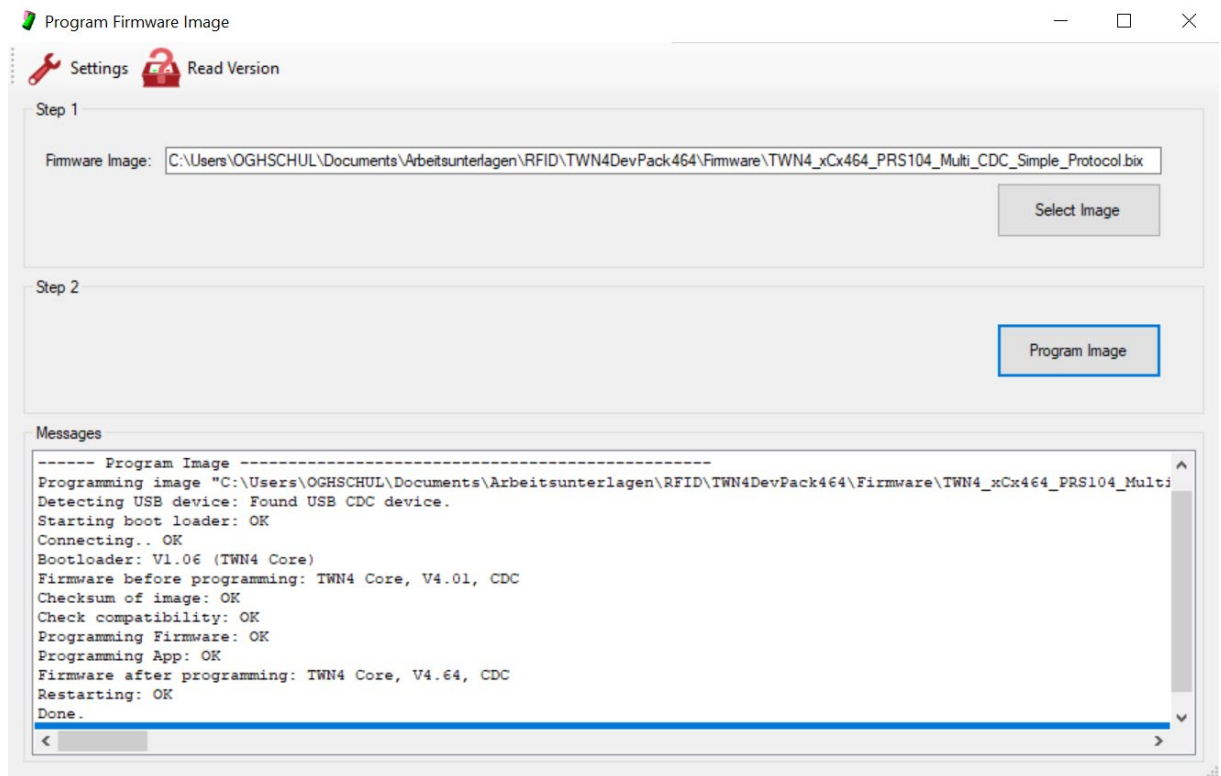


Figure 3: Endmessage flasching is done 1

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