*This product is designed and manufactured by ETL for Embedded Wireless Laboratory Inc.

TC179x FLASH Programmer

User Guide

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1. PREFACE

This manual will guide you through the installation and operation of the TC179x FLASH Programmer, referenced hereafter as the TC179x-Programmer.

The TC179x-Programmer is designed for programming the DFLASH/PFLASH memory in the Infineon TC179x Microcontroller Unit (MCU):

✓ TC1796
✓ TC1797

The TC179x-Programmer also supports next Bosch modules:

✓ EDC17 CP01
✓ EDC17 CP10

☞ **Note:** The In-circuit, CAN Boot mode only available for the programming devices.

☞ **Note**: Devices that are not above-mentioned may not be programmable by the TC179x-Programmer.

2. CHECKLIST AND REQUIREMENTS

The following list describes both what items are supplied with the TC179x-Programmer and the system requirements if used by a PC.

✓ One ETL Hyper Programmer Board – *provided*
✓ One HP CAN Adapter Board – *provided*
✓ One 15 Pin power and CAN Cable – *provided*
✓ One DC 12V, 2A power supply adapter – *provided*
✓ One USB cable – *provided*

■ Desktop/Laptop PC with USB Port
■ Windows 7/8/10 64/32-bit
■ Microsoft.NET Framework Ver. 4.6.2 or later version.

☞ **Note:** The link can download Microsoft.NET Framework:

https://www.microsoft.com/en-us/download/confirmation.aspx?id=53345

3. INSTALLATION AND USE

The TC179x-Programmer uses the ETL HYPER PROG board to communicate with the target ETL HP CAN Adapter. The HP CAN adapter communicates with the target MCU by CAN boot MCU mode. The ETL HYPER PROG has Optical Isolated interface to provide maximum safety at the time of connection and programming. Also, the ETL HYPER PROG board includes four LEDs (Figure 1).

LEDs indicate the HYPER PROG state and external power supply voltage (Table 1, 2).

GREEN	USB cable plugged, and the voltage applied to the HYPER PROG.
BLACK	No voltage applied to the HYPER PROG. Check the USB Connector and cable. Try another PC USB port.

Table 1. USB_POWER_OK LED color meaning

GREEN	The 12 Volt applied to the HP CAN adapter board. The HYPER PROG is connected to HP CAN adapter board.
BLACK	The 12 Volt is not applied to the HP CAN adapter board. The HYPER PROG is not connected to HP CAN adapter board.

Table 2. EXT_POWER_OK LED color meaning

GREEN	The HYPER PROG receives data via TXD pin.
BLACK	The HYPER PROG receiver is in wait mode.

Table 3. RX_ACTIVE LED color meaning

GREEN	The HYPER PROG transmits data via RXD pin
BLACK	The HYPER PROG transmitter is in wait mode.

Table 3. TX_ACTIVE LED color meaning

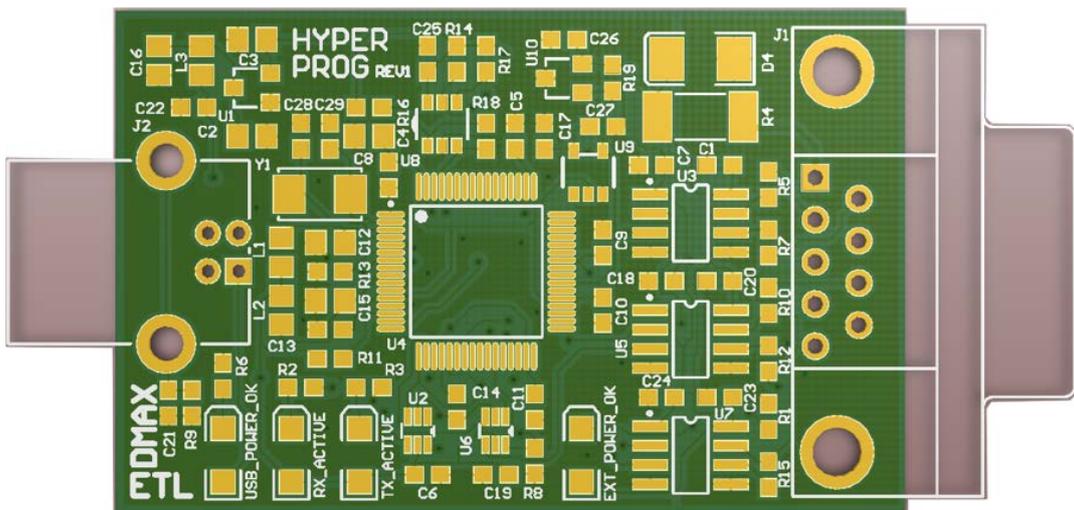Figure 1. The ETL HYPER PROG board layout

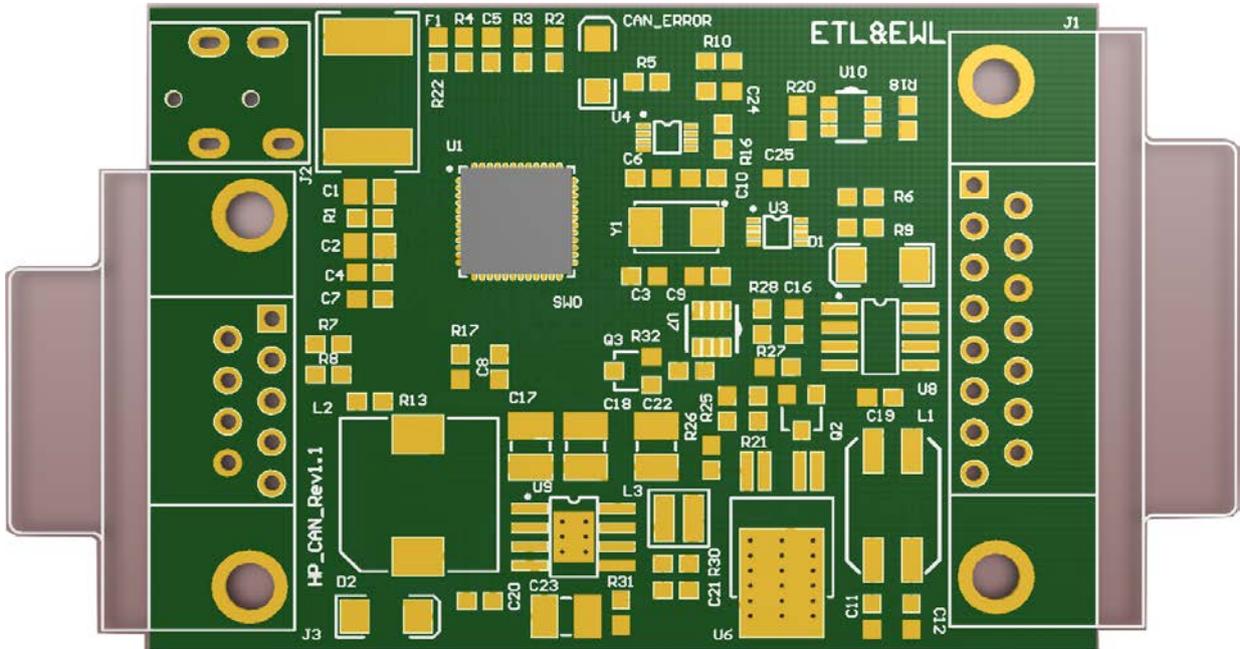| RED	A CAN bus error has been detected. Check the connection and CAN speed in software.
BLACK	Normal Operation Mode. No errors on CAN bus has been detected.

Table 4. CAN_ERROR LED color meaning

Figure 2. The ETL HP CAN adapter board layout

3.1 USB DRIVERS INSTALLATION FOR WINDOWS 7

Normally the USB Driver will be installed automatically in time of software installation. In case if driver installation failures follow the instruction below.

This section describes how to install the USB drivers for the TC179x-Programmer on the Windows 7, 8 or 10 OS. The ETL HYPER PROG uses the driver supplied by "FTDI Chip" company. The Product ID (PID) was changed to meet the design requirements.

Please follow next steps to install the driver:
- ■ Download the TC179x-Programmer software form the ETL website.
- ■ Install the software. After installation, the driver will be located in the "C:\Program Files\ETL\TC179x_Programmer\USB_Driver\" directory.
- ■ Plug the HYPER PROG board into a USB port.
- ■ Wait until the Windows7 failed to install the driver(Figure 2)
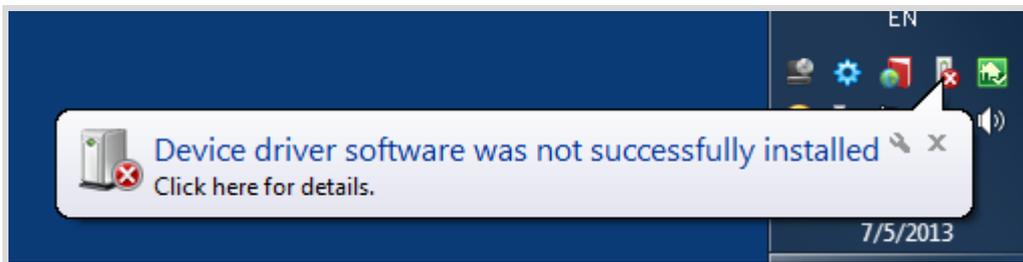

Figure 3. The "Windows" driver installation failed

- ■ Open the "Device Manager" and locate "ETL Hyper Programmer" devices (Figure 4).

Figure 4. The "ETL Hyper Programmer" devices in the "Device Manager."

- ■ Right Click on the first "ETL Hyper Programmer" device and then select "Update Driver Software" menu item (Figure 5).
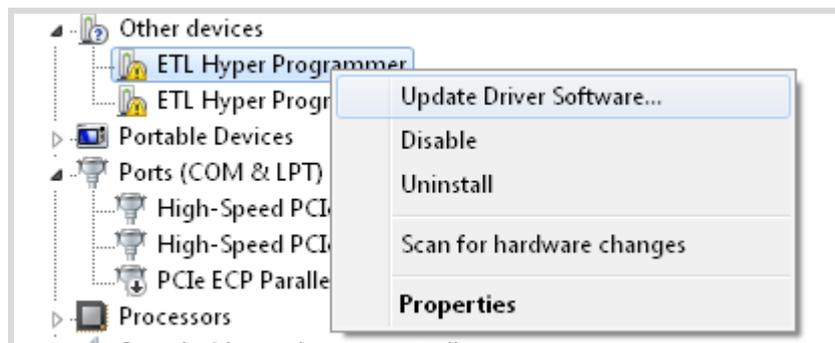

Figure 5. The "Update Driver Software" menu item selection

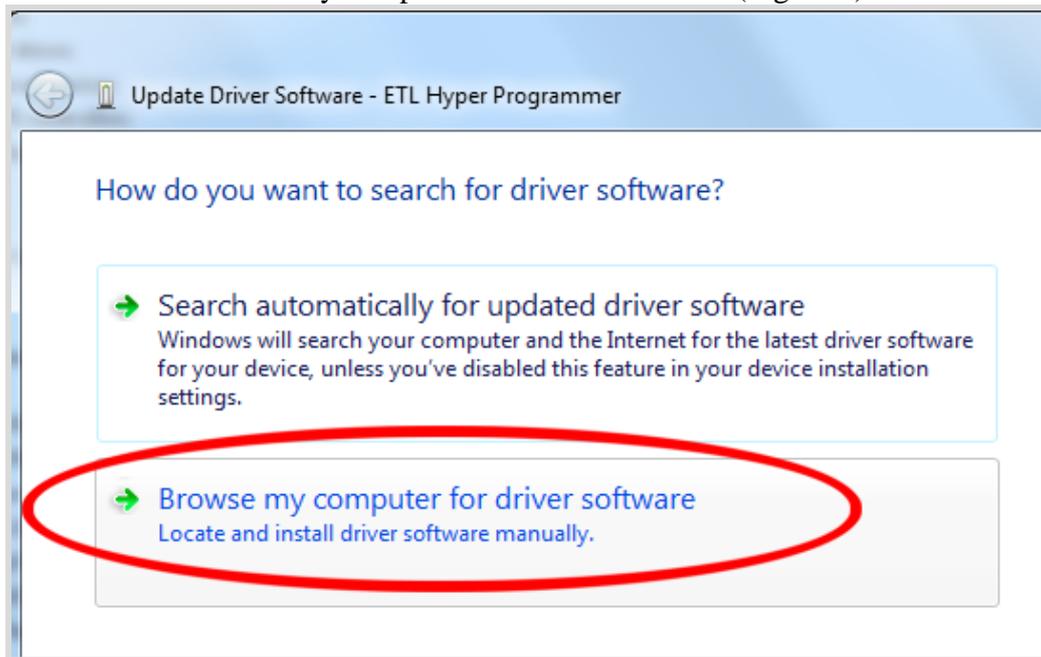■ Select the "Browse my computer for driver software" (Figure 6)

Figure 6. Update Driver Software - "ETL Hyper Programmer"

■ Press the "Browse" button to choose the USB driver location. For Windows7 32-bit the location will be C:\Program_Files\ETL\TC179x_Programmer\USB_Driver".

■ For Windows7 64-bit the location will be C:\Program_Files_(x86)\ETL\TC179x_Programmer\USB_Driver".
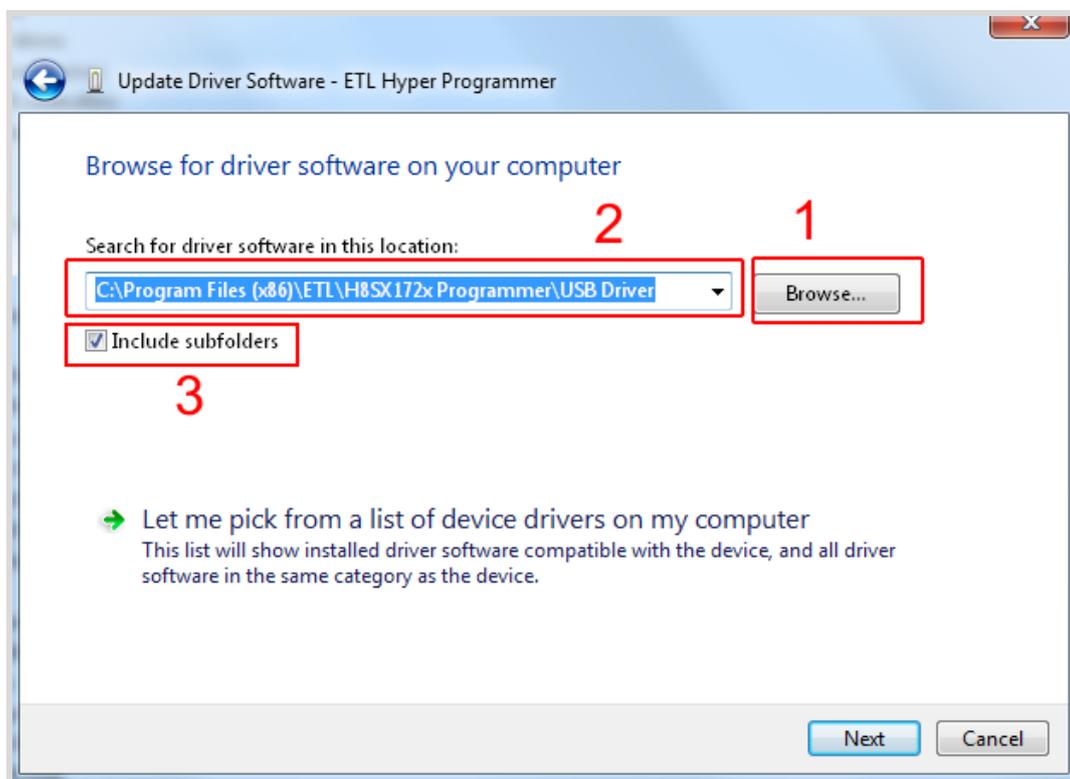

Figure 7. Update Driver Software - "ETL Hyper Programmer"

■ Check the "Include subfolders" checkmark. Click the "Next" Button.

■ In a couple of seconds, the Windows security alert screen will appear. Make sure the drivers are signed by "EMBEDDED WIRELESS LABORATORY Inc."
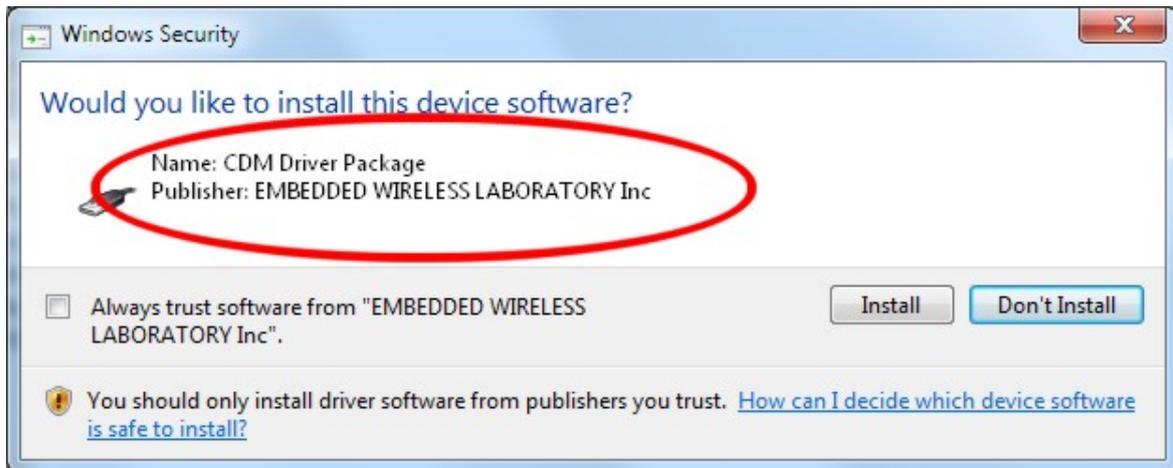Press the "Install" button (Figure 8)

Figure 8. "Windows Security" alert

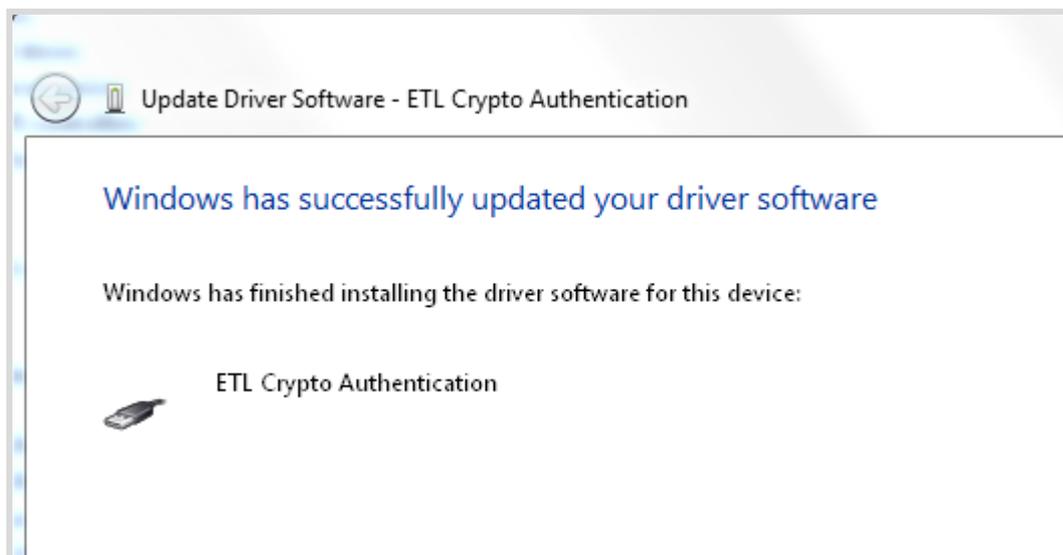■ Shortly the "Update Driver Software" screen will appear(Figure 9)

Figure 9. The successfully "Update Driver Software " screen

☞   **Note**: If an error occurred during the driver installation, probably the user does not have administrative rights on this Windows account. Log in as an Administrator and repeat steps described above.

■ One of the drivers was installed successfully (Figure 10). Install another driver for the "ETL Hyper Programmer" same way.
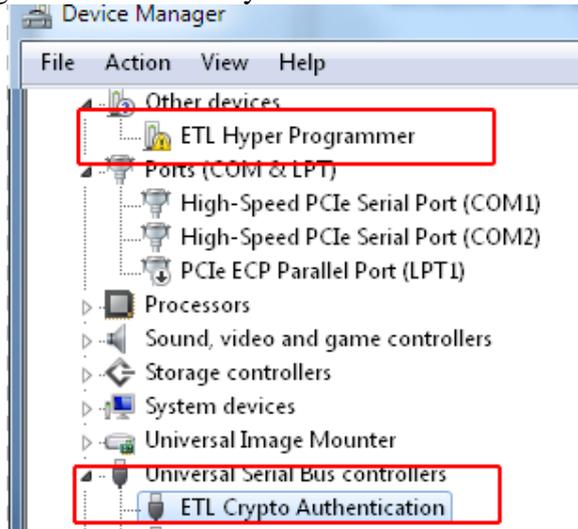

Figure 10. The "ETL Crypto Authentication" device successful installation

■ Open the "Device Manager" and locate "ETL Hyper Programmer" devices (Figure 3).
■ Right Click on the first "ETL Hyper Programmer" device and then select "Update Driver Software" menu item.(Figure 4).
■ Select the "Browse my computer for driver software" (Figure 5).
■ Press "Next" button.
■ In a couple of seconds, the Windows security alert screen will appear. Select the "Install this driver software anyway"(Figure 7)
■ Finally, you will see the driver installation confirmation for the second device. (Figure 11).
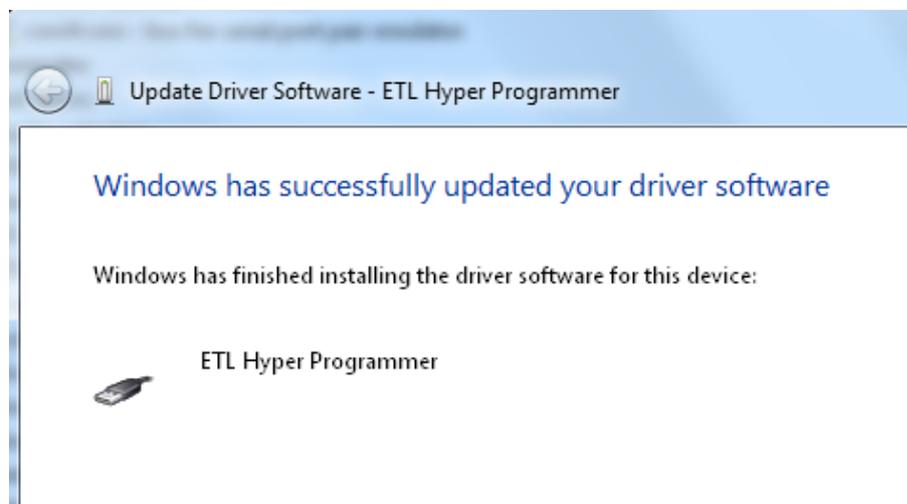

Figure 11. The "ETL Hyper Programmer" device successful installation

■ To make sure that the drivers were installed successfully open the "Device Manager" and locate the "ETL Crypto Authentication" and "ETL Hyper Programmer"(Figure 12).

Figure 12 The "ETL Crypto Authentication" and "ETL Hyper Programmer" devices

3.3 USB DRIVERS UNINSTALLATION

    This section describes how to uninstall the USB drivers for the TC179x-Programmer. Also, the driver un-installation will be helpful if "Windows" installed the wrong or old driver automatically. The ETL HYPER PROG uses the driver supplied by "FTDI Chip" company. The Product ID (PID) was changed to meet the design requirements. The Product PID of the HYPER PROG is 6692. The Vendor ID (VID) remained the same 0403. To uninstall the driver, we will use the CDMUninstaller software provided by "FTDI Chip" company. Download software at the http://www.ftdichip.com/Support/Utilities.htm website.

    Please follow the next steps to uninstall the driver:
- Unplug the HYPER PROG board from the USB port.
- Run the "CDMuninstallerGUI.exe" file.
- Change the PID to 6692(Figure 19).
- Click the "Add" button.
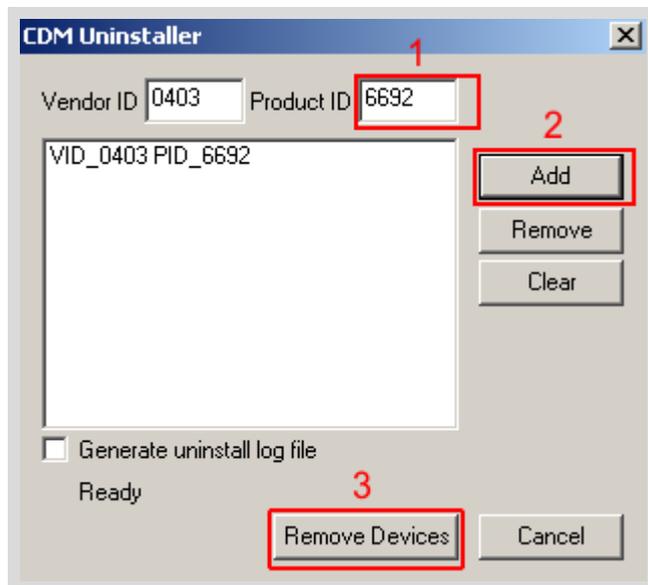- Click the "Remove Devices" Button.

Figure 19 The Drivers are uninstalled by the CDM Uninstaller software

- If there were installed drivers in the system, you will see the confirmation of un-installation.

4. SOFTWARE ACTIVATION

This section describes the software activation procedure. For activation, the user will need the "License key" provided in the time of TC179x-Programmer purchase. Also, the "ETL HYPER PROG" board has to be connected to the USB port and drivers previously installed. Refer to the Section 3. Note that the software can be activated on five computers only. If you are going to activate the TC179x-Programmer software on more computers, please contact the ETL technical support. Activation is valid for 14 days. After that period, the user has to activate the software again. The activation procedure is done automatically via the Internet. Make sure there is internet connection before activation procedure.
Follow next steps to complete the registration process:

- Connect the ETL HYPER PROG board to the computer.
- Execute the TC179x-Programmer software.
- Press the "Connect Programmer" button.
- Wait until the "ETL Programmer is connected!" and the HYPER PROG serial number messages appear.
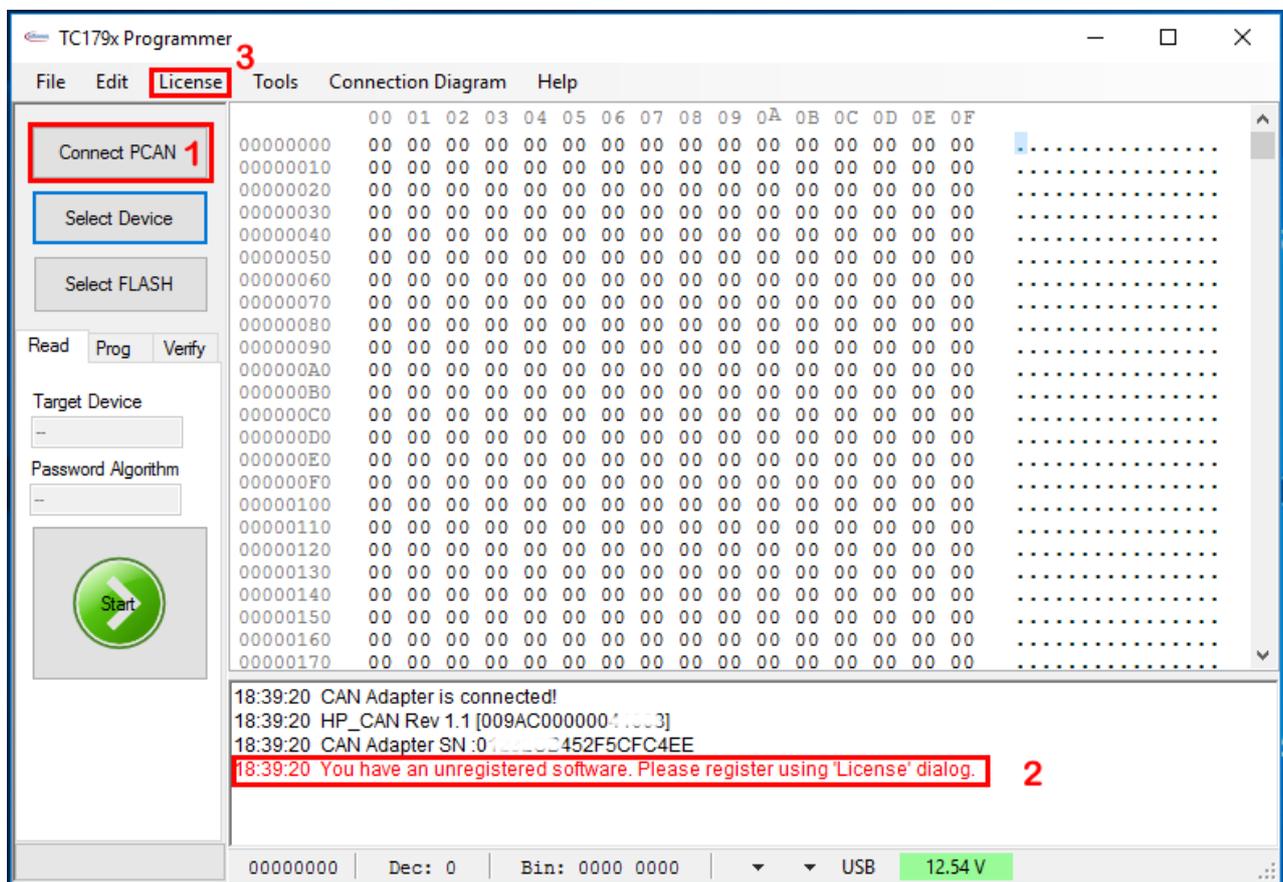

Figure 20 TC179x-Programmer software

- Select the "License" menu item and then press "Register Product".
- Enter License Key.
- Enter the Programmer Serial Number (Figure 21).
- Press the "Activate" button.
- After Activation process completed, the "Registration Status" must be "REGISTERED" and "Clock Manipulation" is "NOT DETECTED" (Figure 22).
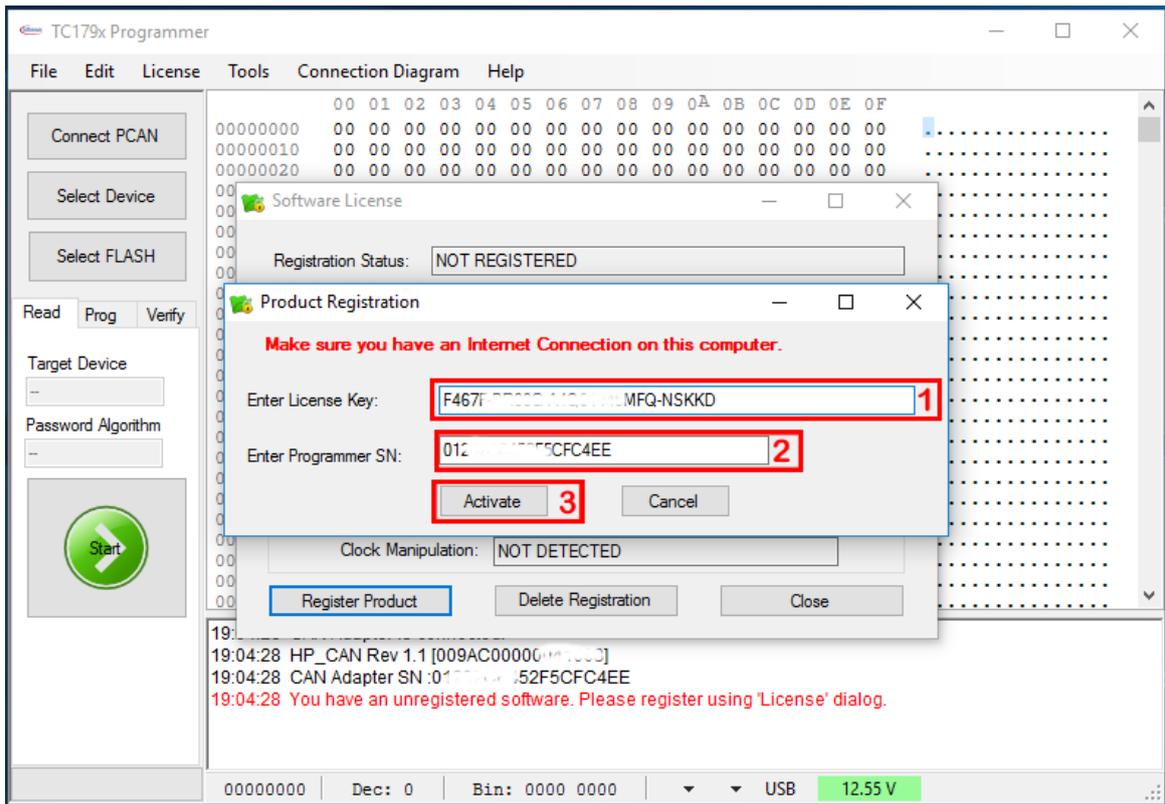
Figure 21 TC179x-Programmer software activation

Note: If activation procedure failed, please contact ETL technical support at the Email: info@etlweb.net
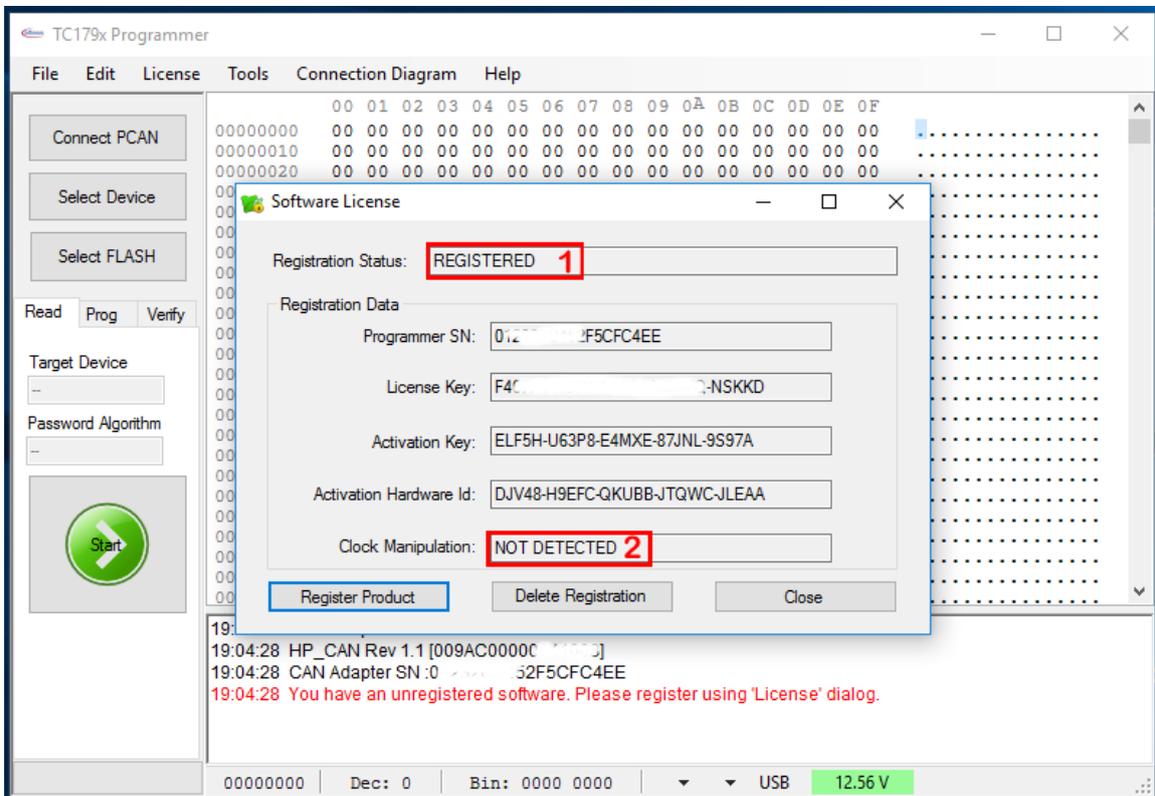

Figure 22 Successful TC179x-Programmer software activation

- Close the "License" the "Software License" window.
- Press the "Connect PCAN" button.
- Wait until the "Software is active. Programmer is ready to use" message appear (Figure 23).
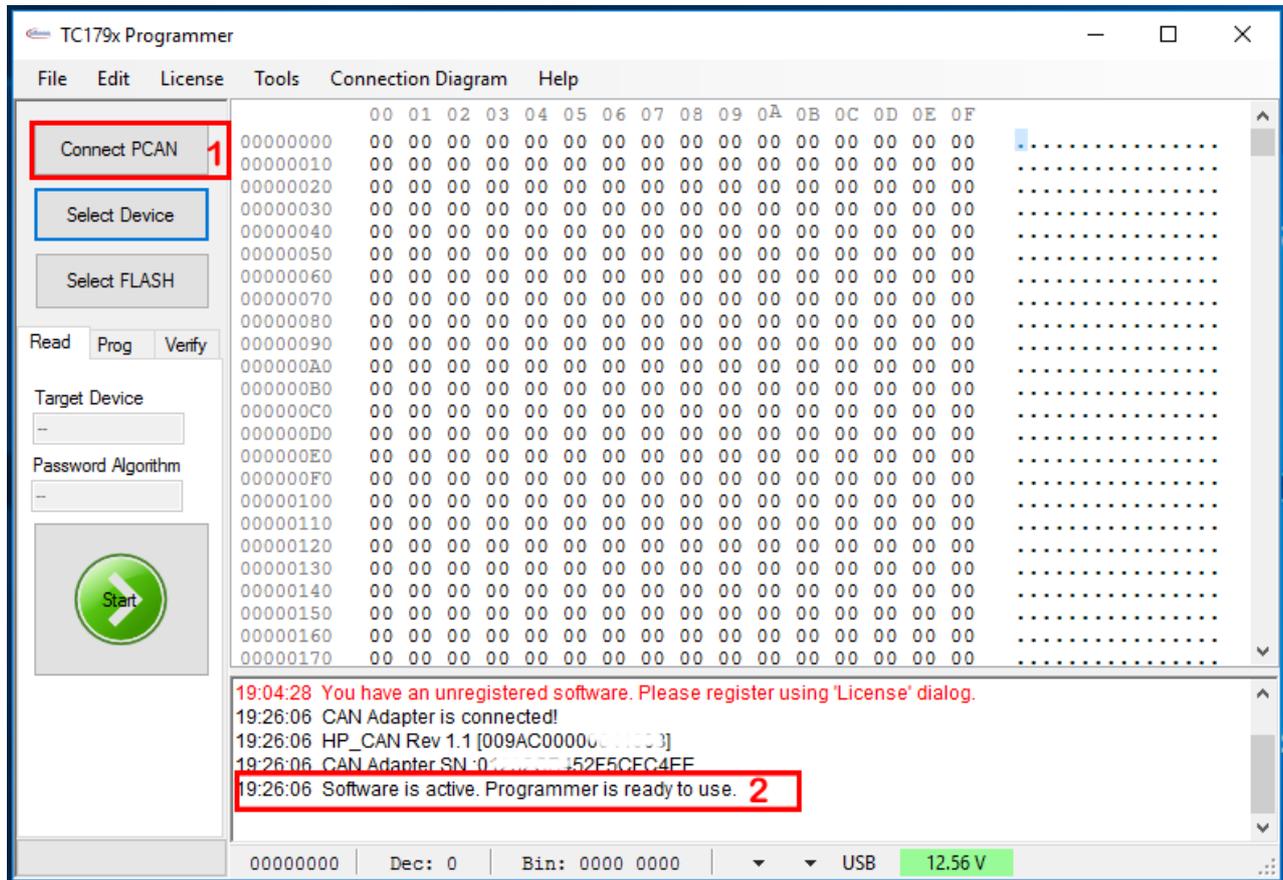

Figure 23 Successful TC179x-Programmer activation and connection

☞ **Note**: If message "You have unregistered software." appeared, make sure your "ETL HYPER PROG" board has same serial number as in "Software License" form.

5. FILES DOWNLOAD

After the successful installation and activation of the TC179x-Programmer software, the user is eligible to download the "BIN" files. The connection diagrams and pictures will be loaded automatically as well. The new files and connection diagrams will be posted on the website and will be available for download (see figure 24).

To start download, follow next steps:
- Connect the ETL HYPER PROG board to the computer.
- Press the "Connect PCAN" button.
- Make sure that the software is active and HYPER PROG is ready to use.
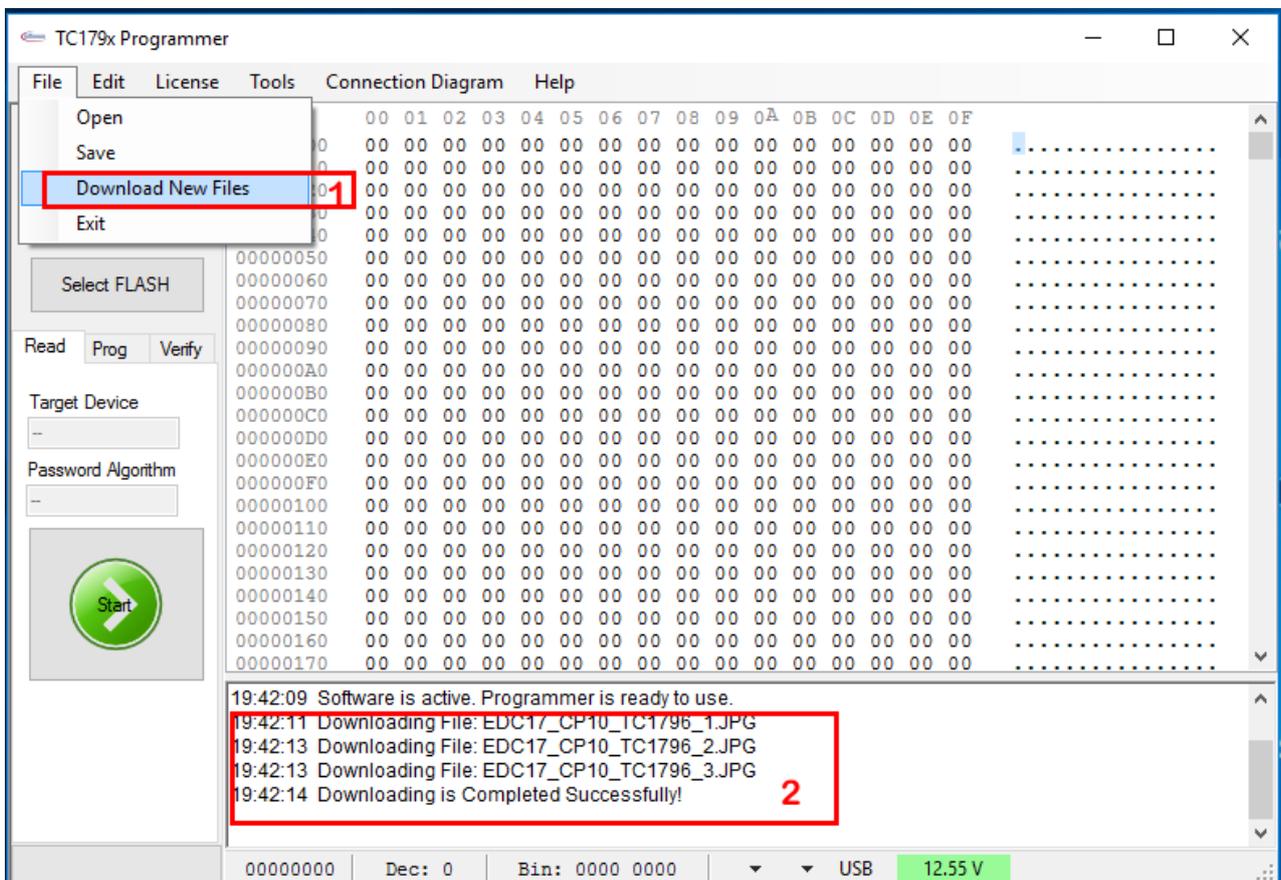- Select the "File->Download new files" menu item.

Figure 24 New Files Download

Note: Make sure the computer has the Internet connection before downloading.

Note: In the case that the download license has expired contact ETL support to renew it.

6. READING EXAMPLE USING Infineon TriBoard TC1796

- Connect CAN and power pins of the 15 pin cable to the TriBoard (Figure 25).
- Plug the 15 pin cable to the HP CAN adapter board.
- Supply HP CAN adapter board with 12 Volt, plug the adapter power cable.
- Press "Connect PCAN" button on TC179x-Programmer software (Figure 26)
- Select Device: TC1796, Password Algorithm: No and CAN Speed: _500K.
- Select FLASH: "EEPROM Sector 0" and "EEPROM Sector 1".
- On the "Read" panel press "Start" button.
- Wait until reading procedure is finished with the message: "Reading is Completed Successfully!"
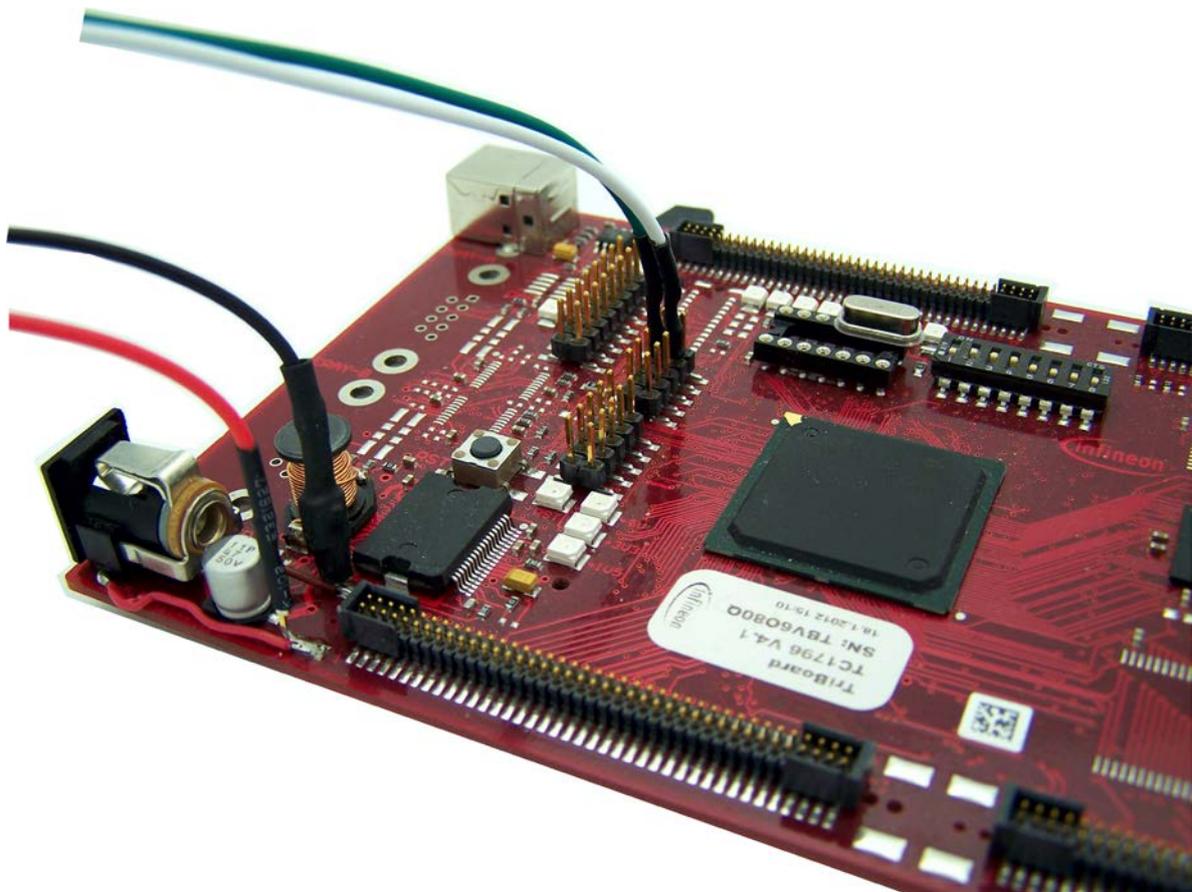

Figure 25 The DB15 Cable connections to Infineon TriBoard with the TC1796 MCU.

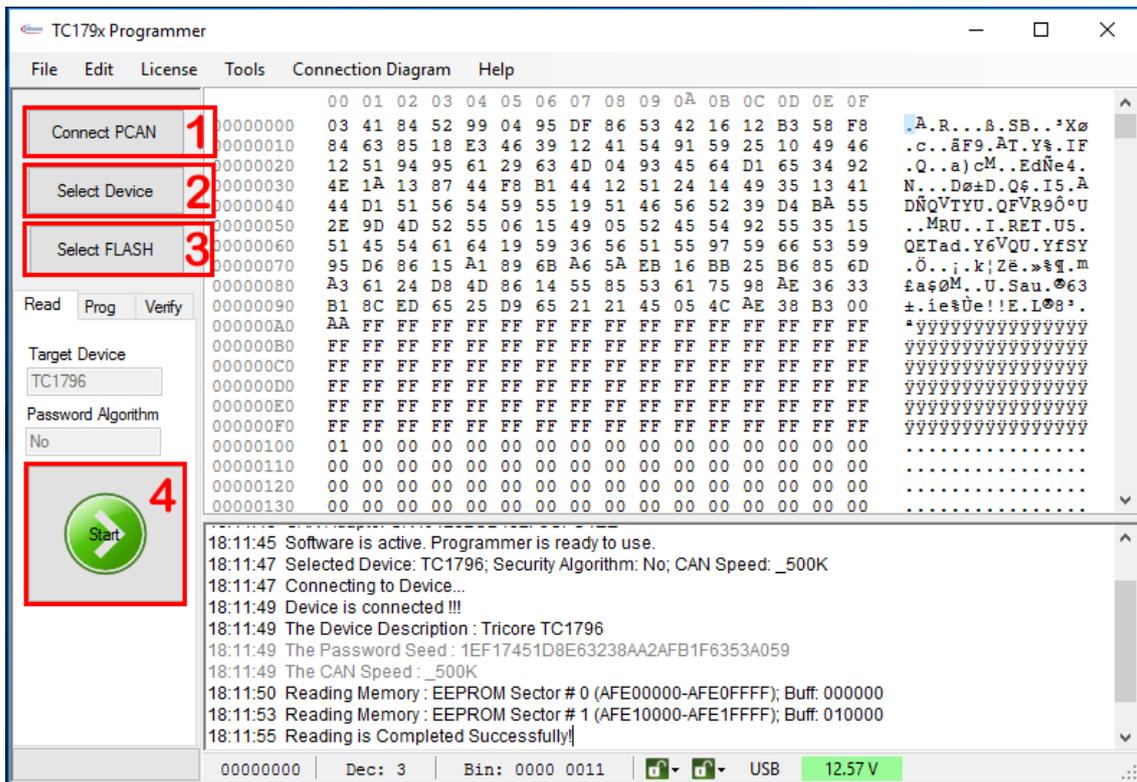☞　　　**Note**: Pay attention on CAN-Low(green) and CAN-High(white) polarity.

Figure 26 TC179x-Programmer reading sequence.

☞ **Note**: If the reading sequence is completed with the errors make sure the CAN wires CAN-Low and CAN-High polarities are connected properly.

7. READING EXAMPLE Using Bosch EDC17 with TC1796

- Connect CAN, Boot and power pins of the 15 pin cable to the Bosch ECU (Figure 27).
- Plug the 15 pin cable to the HP CAN adapter board.
- Supply HP CAN adapter board with 12 Volt, plug the adapter power cable.
- Press "Connect PCAN" button on TC179x-Programmer software (Figure 28)
- Select Device: TC1796, Password Algorithm: Bosch1 and CAN Speed: _500K.
- Select FLASH: "EEPROM Sector 0" and "EEPROM Sector 1".
- On the "Read" panel press "Start" button.
- Wait until reading procedure is finished with the message: "Reading is Completed Successfully!"
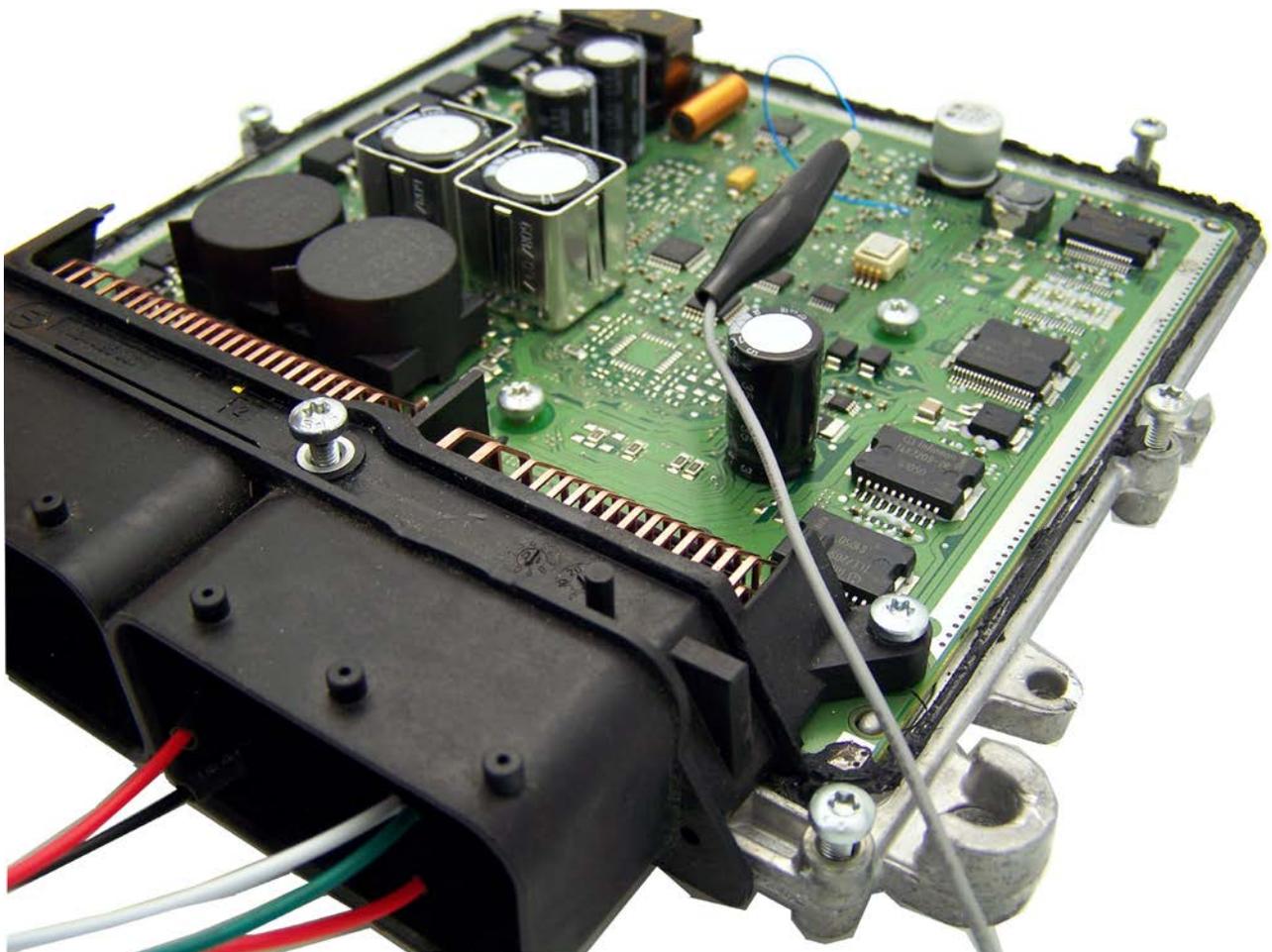

Figure 27 The DB15 Cable connections to Bosch EDC17 with the TC1796 MCU.

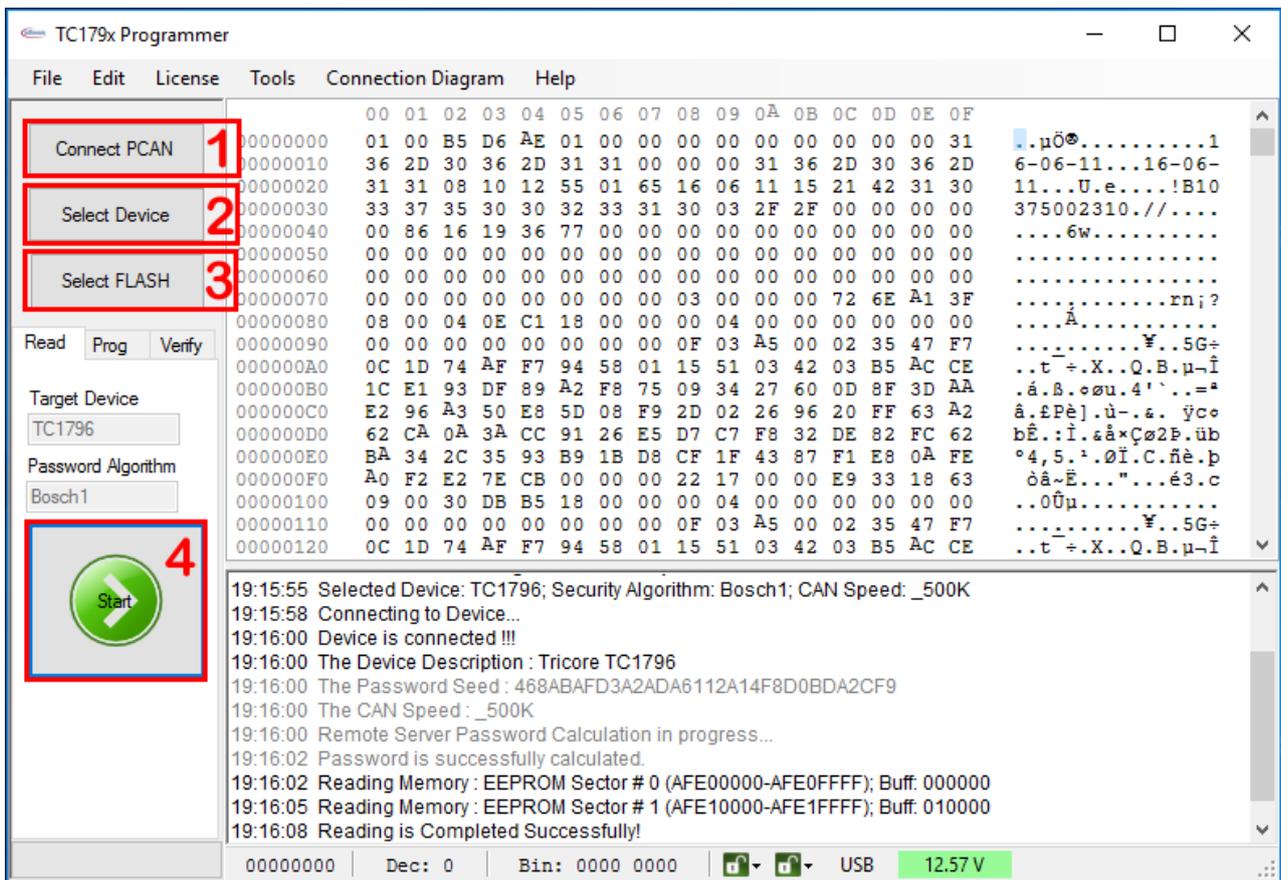☞   **Note**: Use the "Connection Diagram" menu item to see the DB15 cable connection to the specific module.

Figure 28 TC179x-Programmer reading sequence.

☞ **Note**: If the reading sequence is completed with the errors make sure the CAN wires CAN-Low and CAN-High polarities are connected properly. Also, check the +12V Supply, Ground and Boot pins.

8. WARRANTY STATEMENT

ETL guarantees all delivered products for 60 days from registration date against manufactory defects.