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

R7F701x FLASH Programmer

User Guide

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1. PREFACE

This manual will guide you through the installation and operation of the R7F701x FLASH Programmer, referenced hereafter as the R7F701x-Programmer.

The R7F701x-Programmer is designed for programming the DFLASH/PFLASH memory in the Renesas RH850 Microcontroller Unit (MCU):

✓ R7F701A223

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

☞ **Note**: Devices that are not mentioned in above may not be programmable by R7F701x-Programmer.

2. CHECKLIST AND REQUIREMENTS

The following describes what items are supplied with the R7F701x-Programmer and the system requirements if used by a PC.
- ✓ One ETL Hyper Programmer Board – *provided*
- ✓ One 9 Pin Flat Cable – *provided*
- ✓ One USB cable - *provided*
- ✓ R7F701x-Programmer PC software on CD-ROM – *Extra Option*

■ Desktop/Laptop PC with USB Port
■ Windows XP (SP3) or Windows 7/8/10 64/32-bit
■ Microsoft.NET Framework Ver. 3.5 SP1 or later version.
■ Power supply: +12V to supply airbag module.

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

http://www.microsoft.com/downloads/thankyou.aspx?familyId=ab99342f-5d1a-413d-8319-81da479ab0d7&displayLang=en

3. INSTALLATION AND USE

The R7F701x-Programmer uses the ETL HYPER PROG board to communicate with the target MCU. 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	No voltage applied to a target MCU. The HYPER PROG is connected to target MCU +5V circuit.
BLACK	No voltage applied to a target MCU. The HYPER PROG's 9-pin cable not plugged or not soldered to the MCU +5V circuit.

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

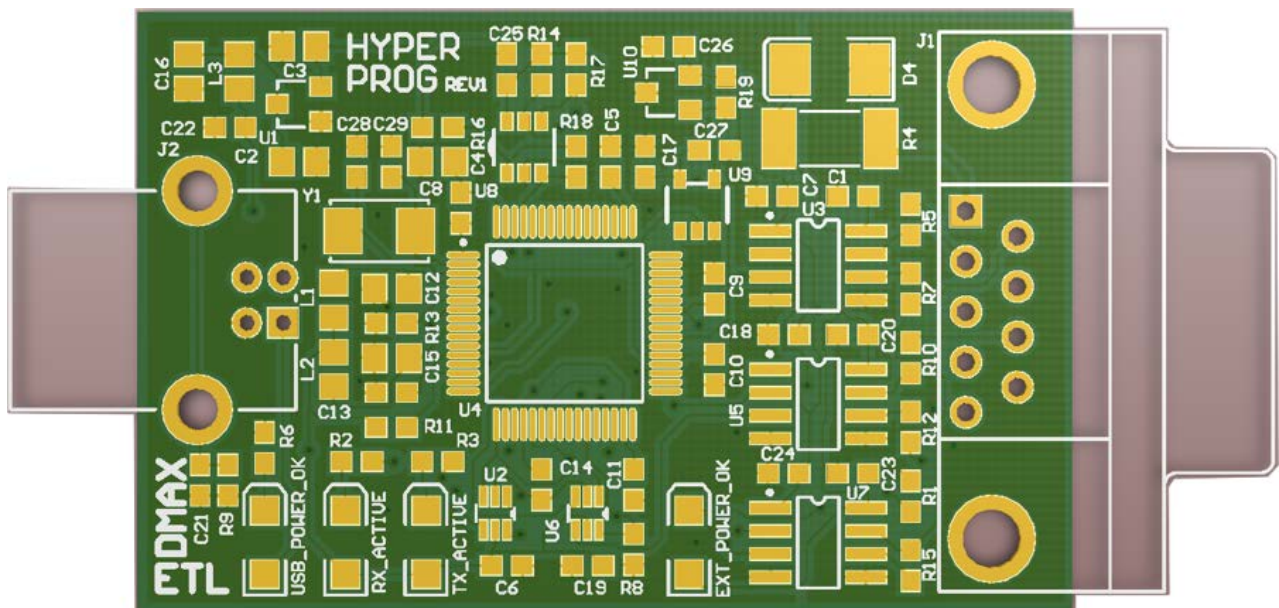| GREEN	The HYPER PROG transmits data via RXD pin
BLACK	The HYPER PROG transmitter is in wait mode.

Table 3. TX_ACTIVE LED color meaning

Figure 1. The ETL HYPER PROG board layout

3.1 USB DRIVERS INSTALLATION FOR WINDOWS 7

This section describes how to install the USB drivers for the R7F701x-Programmer on the Windows 7 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 R7F701x-Programmer software form the ETL website.
- Install the software. After installation, the driver will be located in the "C:\Program Files\ETL\R7F701x_Programmer\USB_Driver\" directory.
- Plug the HYPER PROG board into a USB port.
- Wait until the Windows7 failed to install the driver(Figure 2)
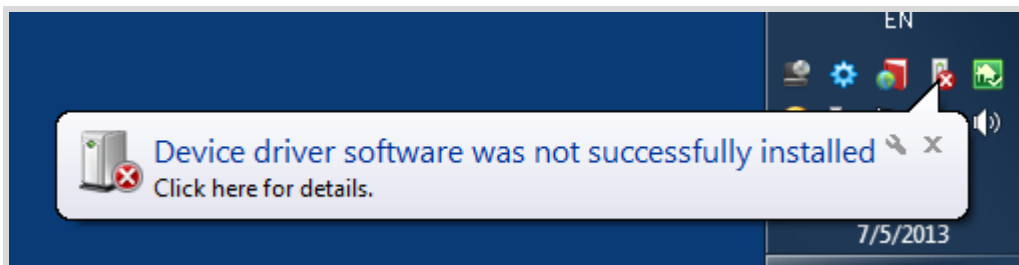

Figure 2. The "Windows 7" driver installation failed

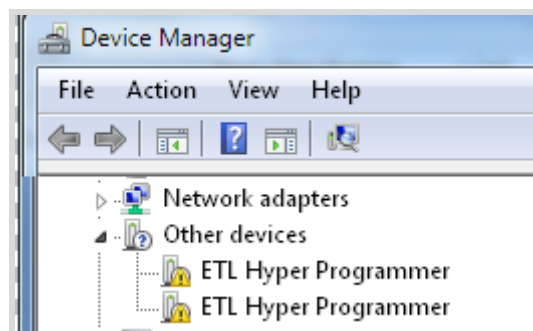- Open the "Device Manager" and locate "ETL Hyper Programmer" devices (Figure 3).

Figure 3. 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 4).
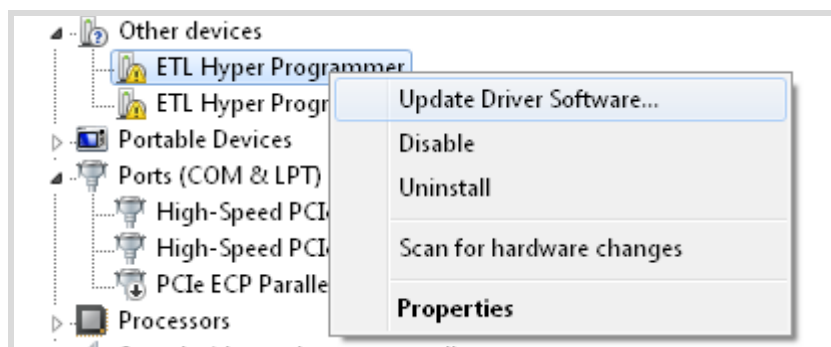

Figure 4. The "Update Driver Software" menu item selection

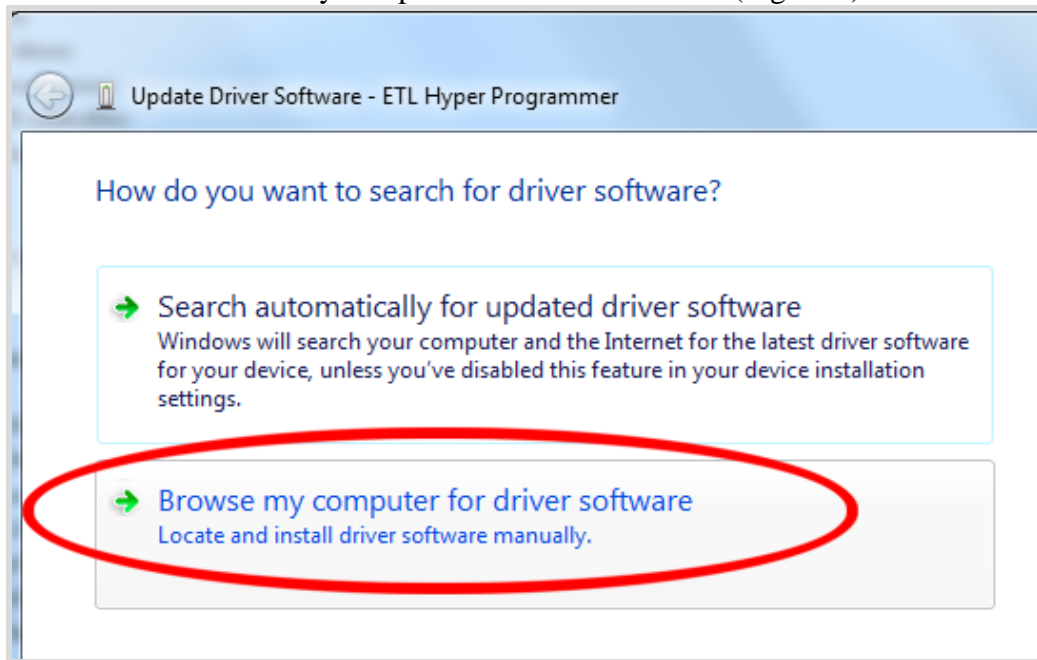■ Select the "Browse my computer for driver software" (Figure 5)

Figure 5. 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\R7F701x_Programmer\USB_Driver".

■ For Windows7 64-bit the location will be C:\Program_Files_(x86)\ETL\R7F701x_Programmer\USB_Driver".
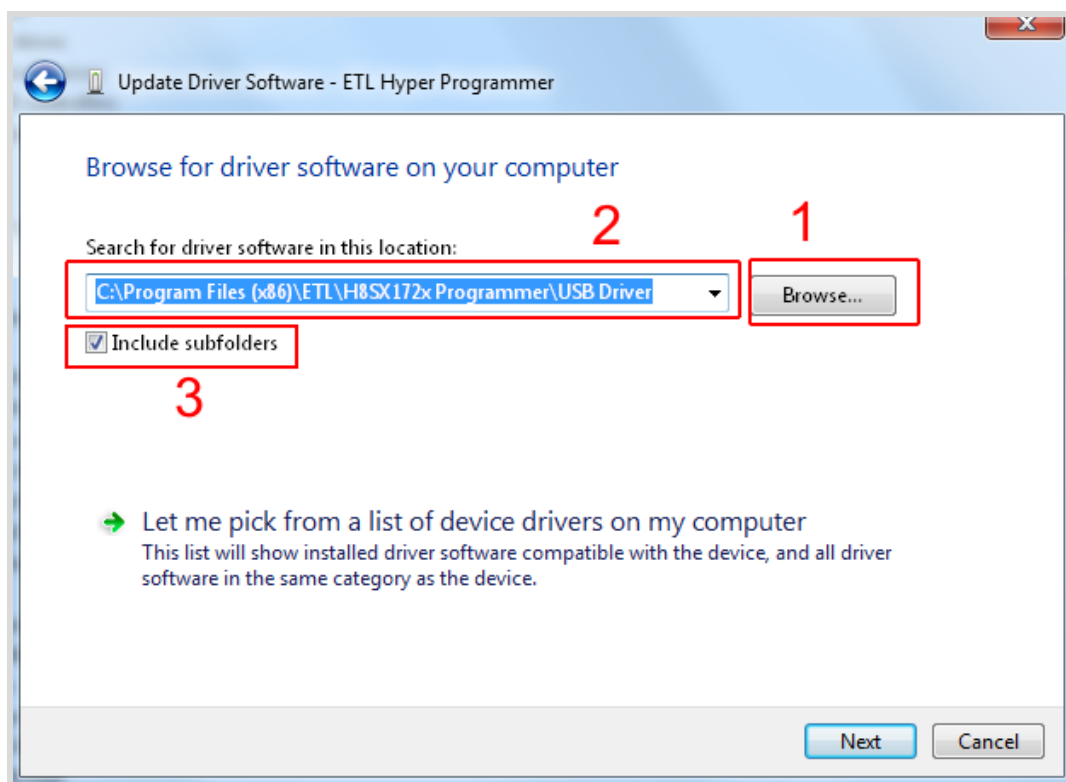

Figure 6. Update Driver Software - "ETL Hyper Programmer"

■ 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."
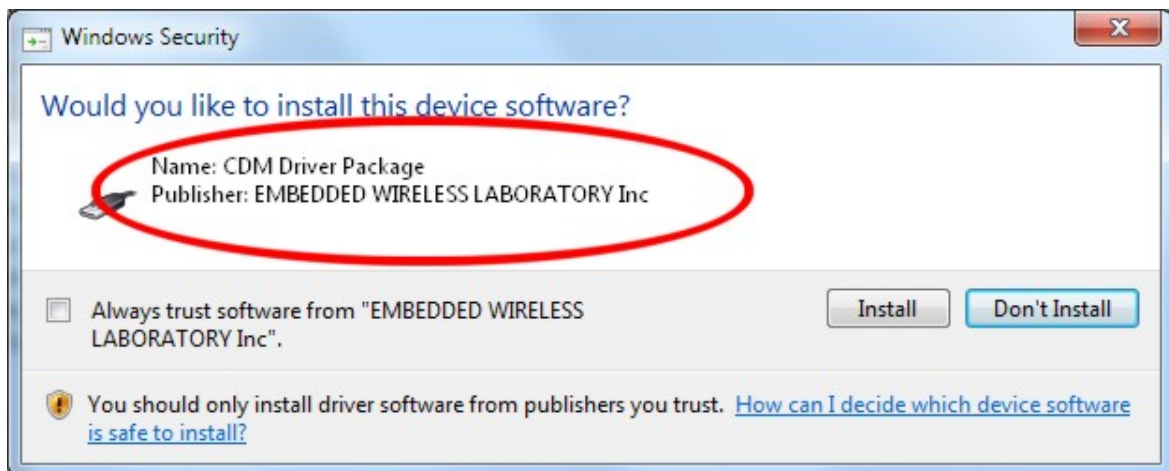Press the "Install" button (Figure 7)

Figure 7. "Windows Security" alert

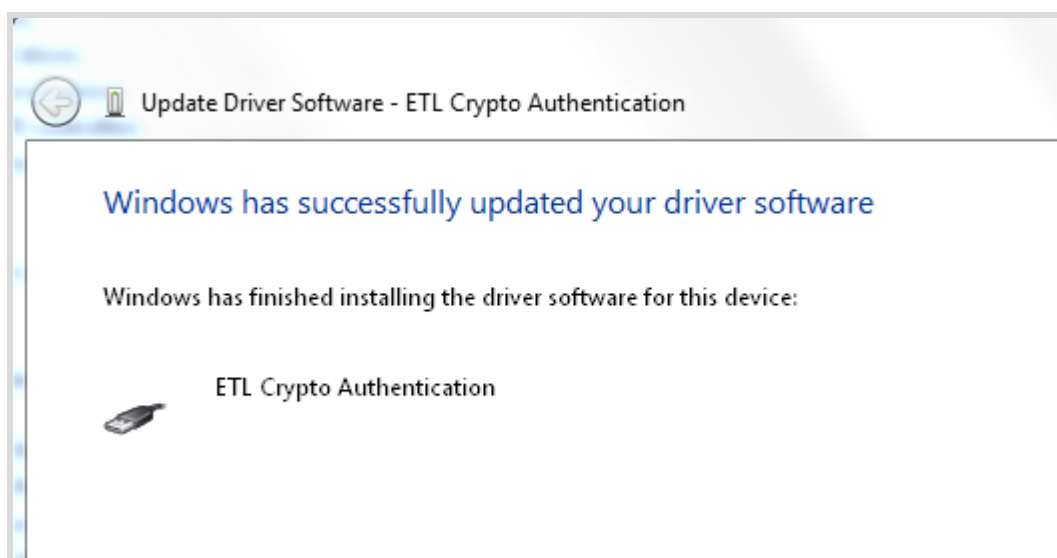■ Shortly the "Update Driver Software" screen will appear(Figure 8)

Figure 8. 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 driver was installed successfully (Figure 9). Install another driver for the "ETL Hyper Programmer" same way.
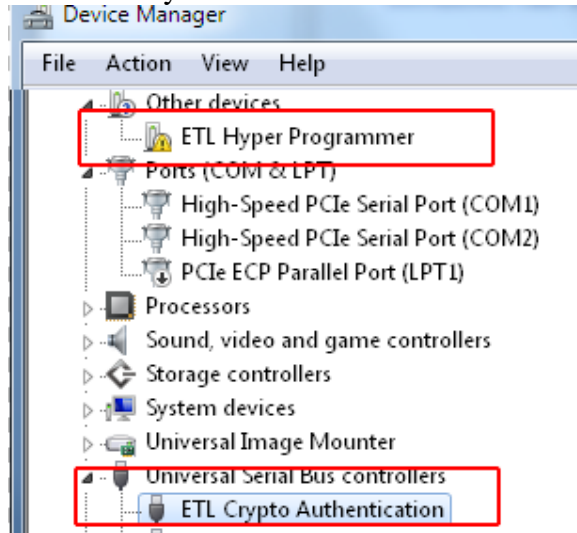

Figure 9. The "ETL Crypto Authentication" device successful installation

■ 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 10).
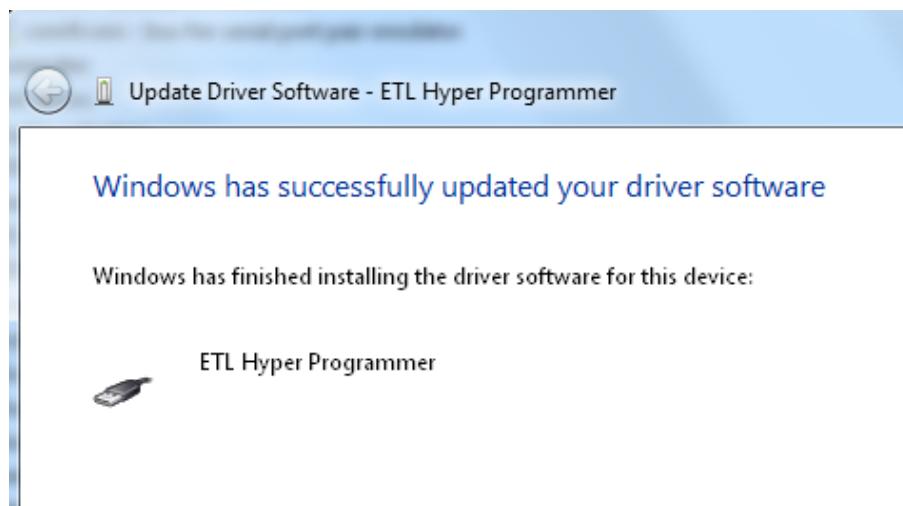

Figure 10. The "ETL Hyper Programmer" device successful installation

■ To make sure that the drivers were installed successfully open the "Device Manager" and locate the "ETL Crypto Authentication" and "ETL Hyper Programmer"(Figure 11).
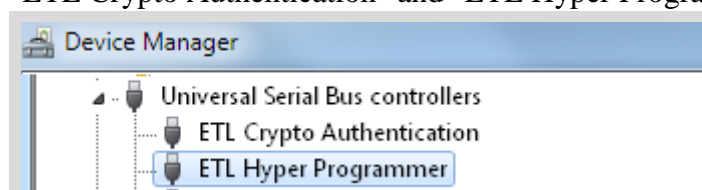

Figure 11 The "ETL Crypto Authentication" and "ETL Hyper Programmer" devices

3.2 USB DRIVERS INSTALLATION FOR WINDOWS XP

This section describes how to install the USB drivers for the R7F701x-Programmer on the Windows XP 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 R7F701x-Programmer software form the ETL website.
- ■ Install the software. After installation, the driver will be located in the "C:\Program Files\ETL\R7F701x_Programmer\USB_Driver\" directory.
- ■ Plug the HYPER PROG board into a USB port.
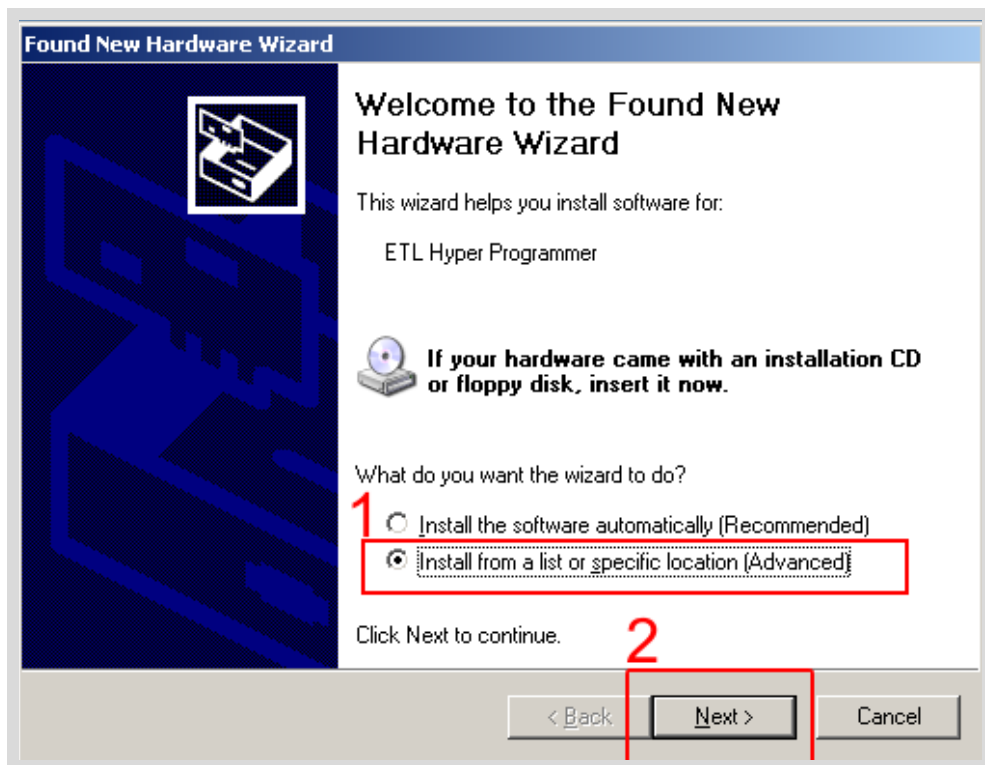- ■ Wait for the "Welcome to the Found New Hardware Wizard" screen(Figure 12).

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

- ■ Select the "Install from a list…" button. Press the "Next" button to continue.
- ■ In next screen select the "Search for best driver in the locations"(Figure 13).
- ■ Check "Include this location in the search:" checkbox.
- ■ Browse for the drivers folder location. The location is "C:\Program_Files\ETL\R7F701x_Programmer\USB_Driver"
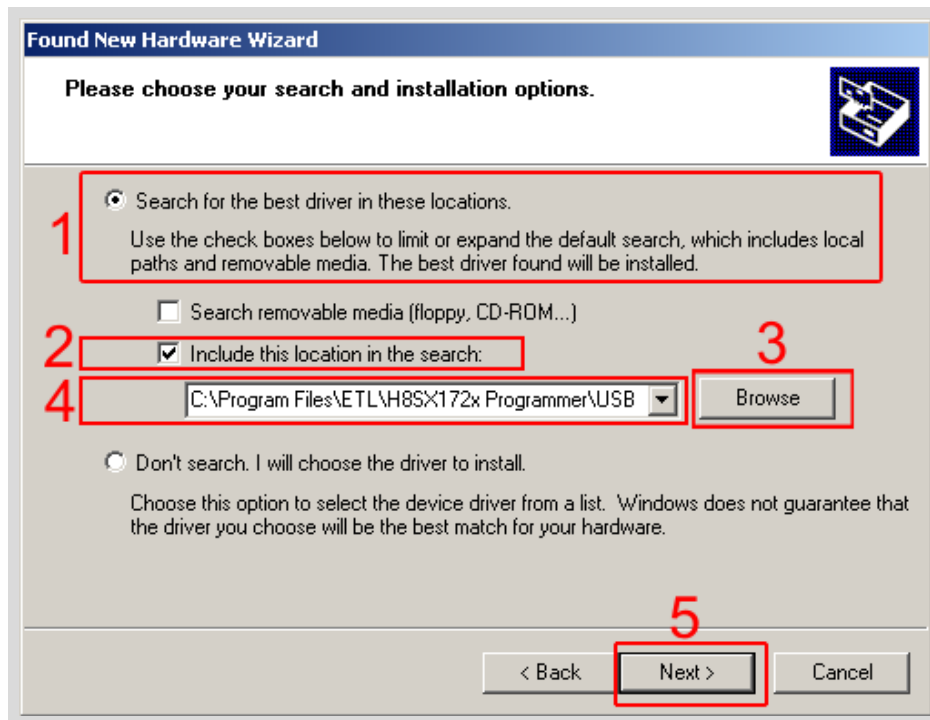- ■ Press "Next" Button.

Figure 13 The Windows XP "Found New Hardware Wizard."

■ Wait for the "Found New Hardware.." security alert(Figure 14) and press "Continue Anyway" button.
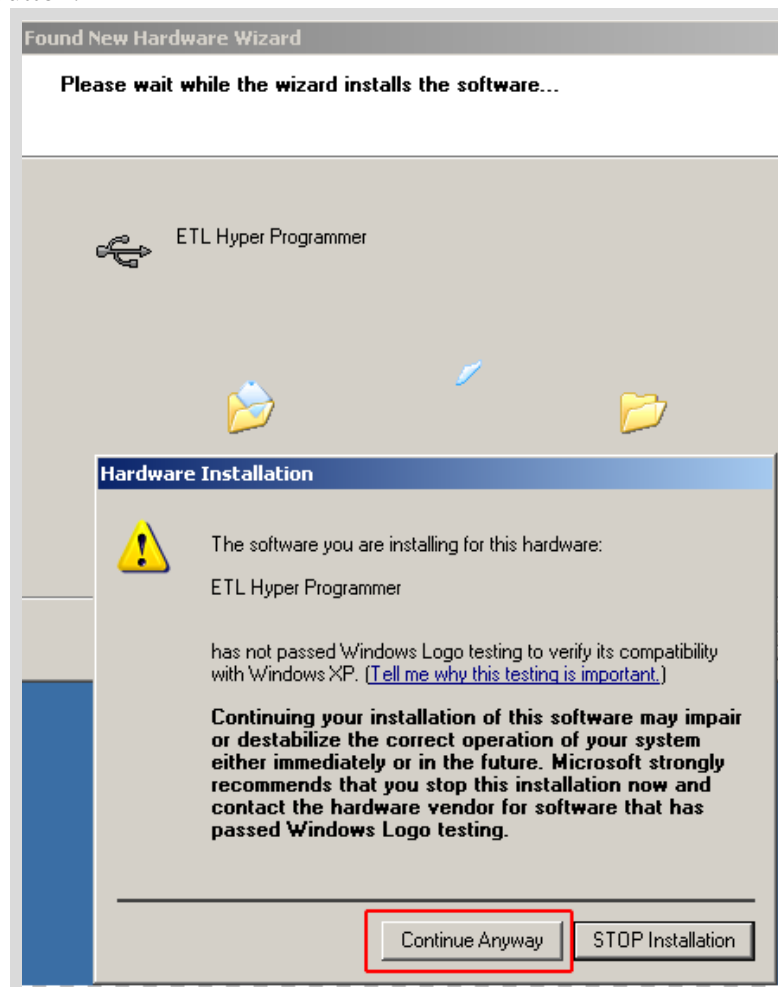

Figure 14. The "Found New Hardware.." security alert.

■ Soon you will see the "Completing The Found New Hardware.." screen (Figure 14) and press "Continue Anyway" button.
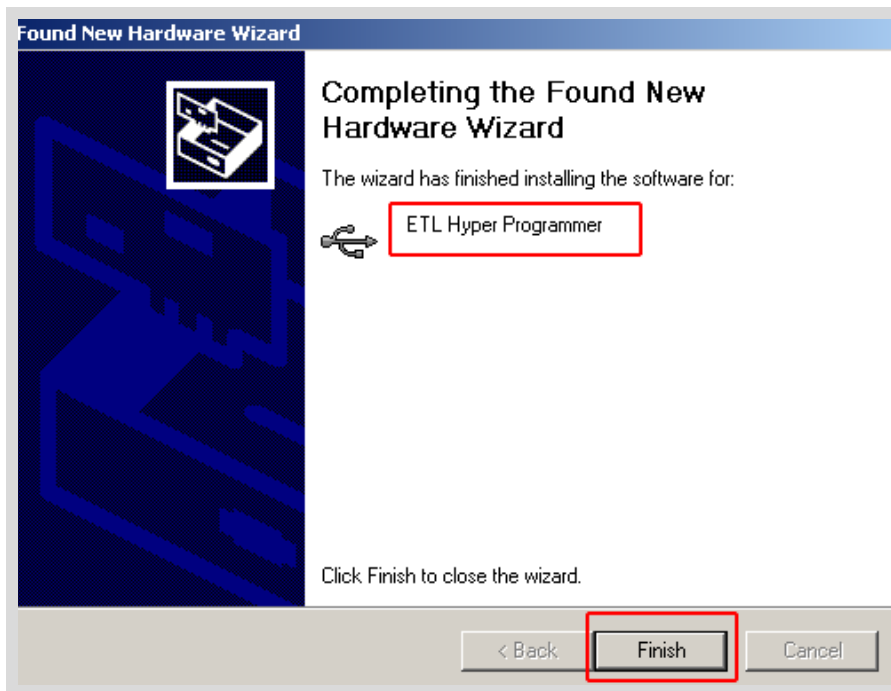

Figure 15. The "Completing The Found New Hardware.." screen

■ Next, the new driver installation wizard will appear.
■ Select the "Install from a list…" button. Press the "Next" button to continue.
■ In next screen select the "Search for best driver in the locations"(Figure 13).
■ Check "Include this location in the search" checkbox.
■ Browse for the drivers folder location. The location is "C:\Program_Files\ETL\R7F701x_Programmer\USB_Driver"
■ Press "Next".
■ Wait for the "Found New Hardware" security alert (Figure 14) and press "Continue Anyway". Eventually, you will see successive completing screen (Figure 16).
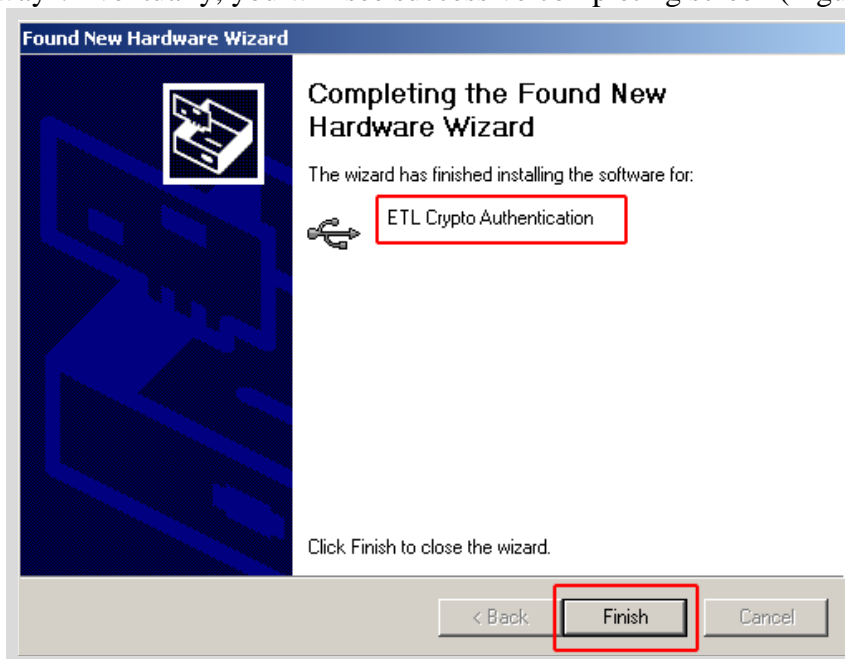

Figure 16. The "Completing The Found New Hardware.." screen

■ To make sure that the drivers were installed successfully open the "Device Manager" and locate the "ETL Crypto Authentication" and "ETL Hyper Programmer"(Figure 17).

Figure 17 The "ETL Crypto Authentication" and "ETL Hyper Programmer" devices

☞ **Note**: If you are logged in as an Administrator and there is still an error at the moment of the driver installation, delete all device entries with the "CDMuninstaller" software. Please refer to Section 3.3 for more information.

☞ **Note**: Proper R7F701x-Programmer and drivers operation can be guaranteed on the Windows XP Service Pack 3 only.

3.3 USB DRIVERS UNINSTALLATION

This section describes how to uninstall the USB drivers for the R7F701x-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 18).
- ■ Click the "Add" button.
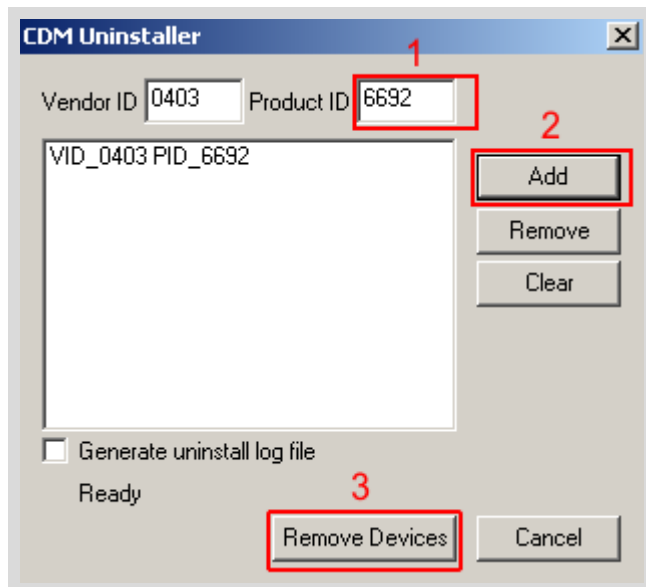- ■ Click the "Remove Devices" Button.

Figure 18 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 R7F701x-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 R7F701x-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 R7F701x-Programmer software.
- Press the "Connect Programmer" button.
- Wait until the "ETL Programmer is connected!" and the HYPER PROG serial number messages appear.
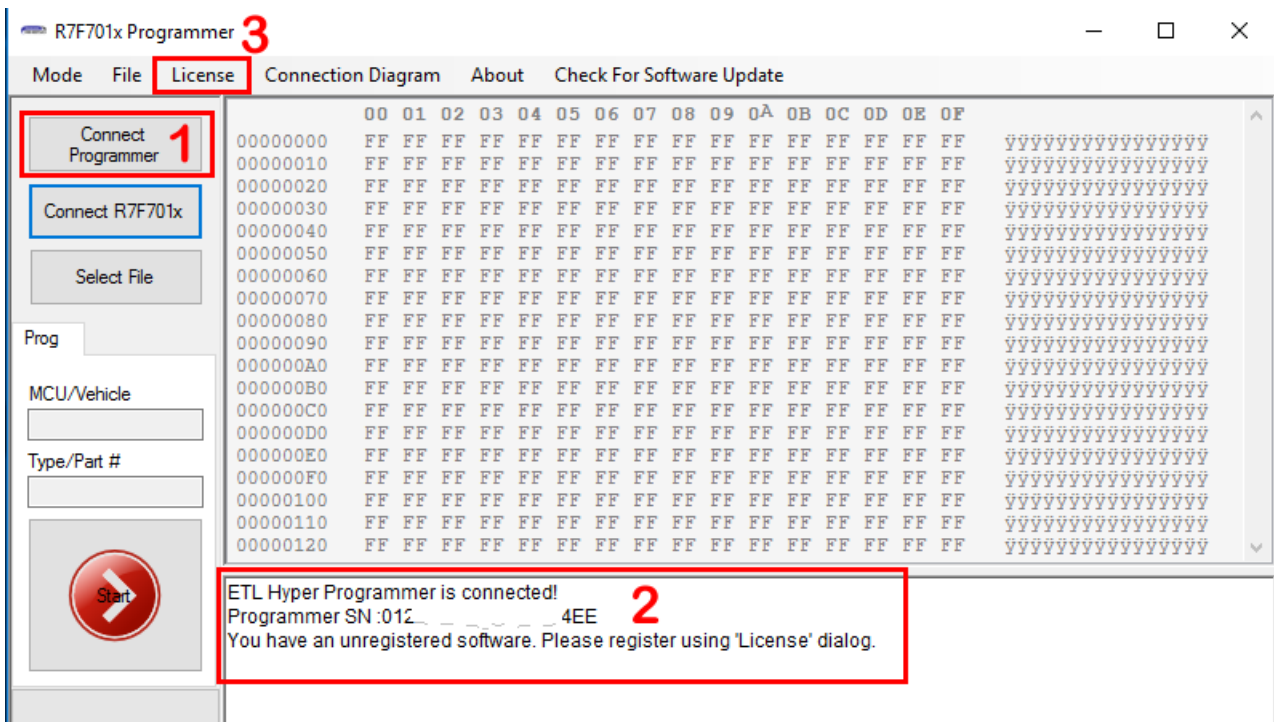

Figure 19 R7F701x-Programmer software

- Select the "License" menu item and then press "Register Product".
- Press the "Read" button to read the HYPER PROG board serial number.(Figure 20).
- Compare this serial number with the serial number provided together with the license key.
- Enter License Key.
- Press the "Activate" button.
- After Activation process completed, the "Registration Status" must be "REGISTERED" and "Clock Manipulation" is "NOT DETECTED".

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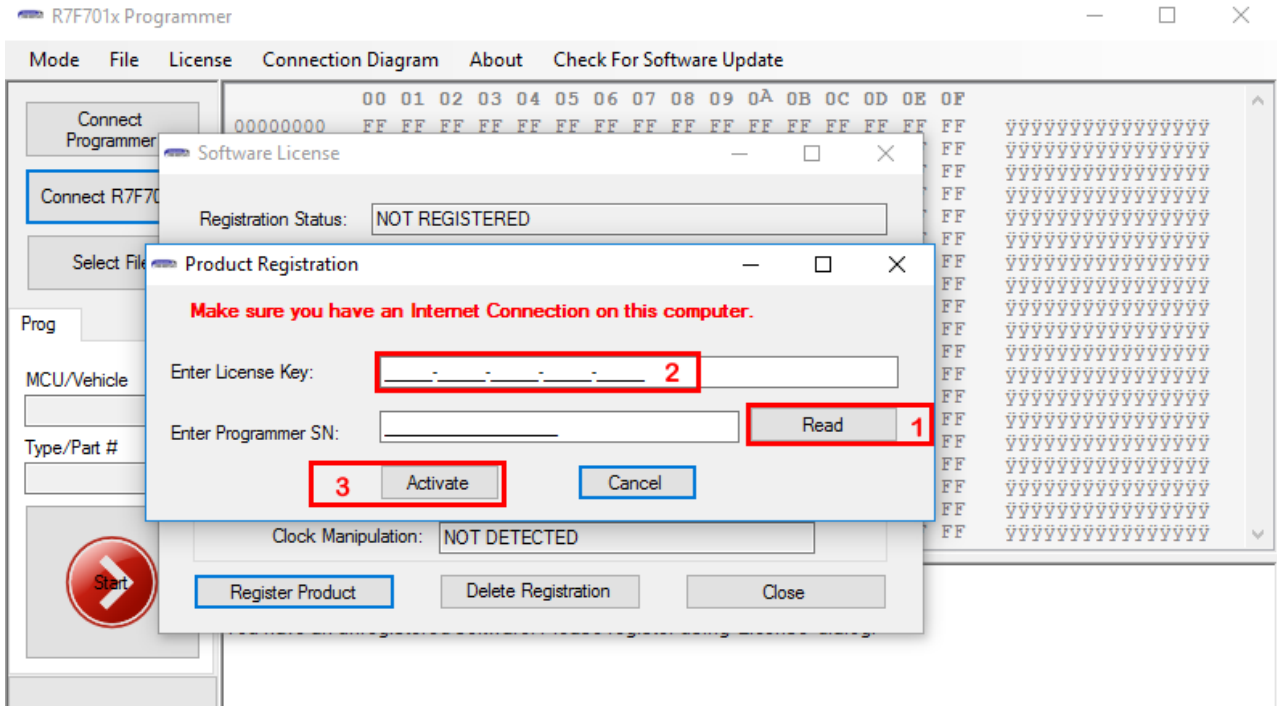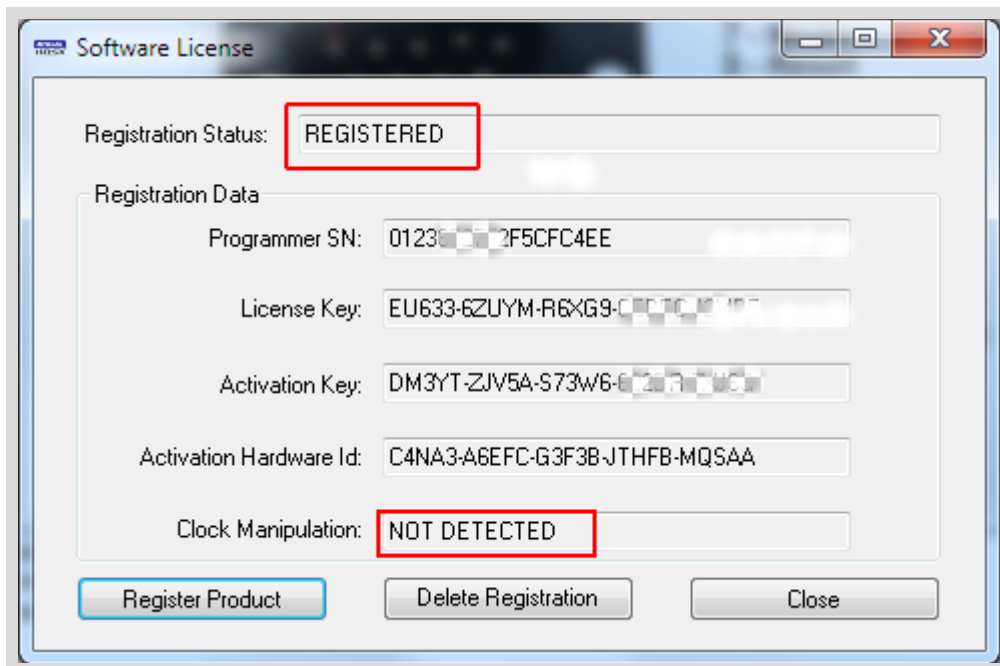

Figure 20 R7F701x-Programmer software activation

Figure 21 Successful R7F701x-Programmer software activation

5. FILES DOWNLOAD

After the successful installation and activation of the R7F701x-Programmer software, the user is eligible to download the "BIN file". The airbag connection diagrams will be loaded automatically as well. The new "BIN files" will be posted on the website and will be available for download (see figure 22).

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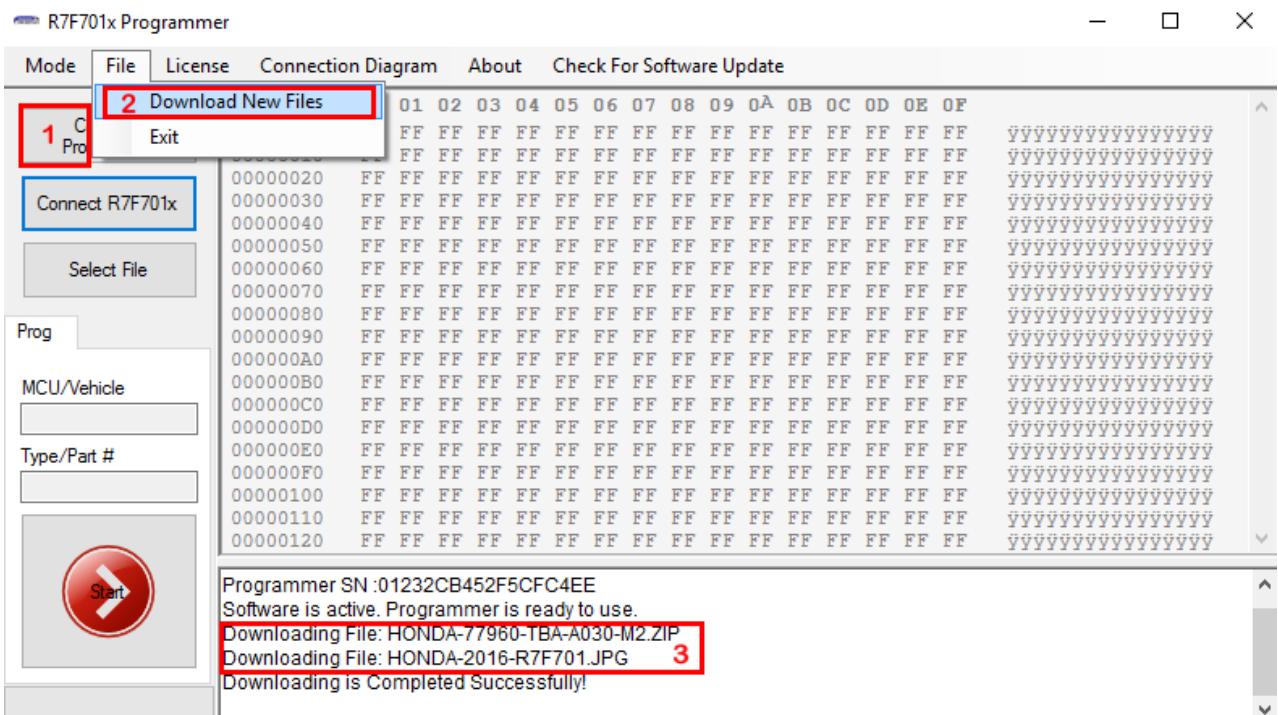- Select the "File->Download new files" menu item.

Figure 22 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. PROGRAMMING EXAMPLE IN 'SIMPLE' MODE

- Solder the R7F701x-Programmer 9 pin Connector to a target board (airbag).
- Plug the 9-pin connector to the ETL HYPER PROG board.
- Press "Connect Programmer" button on R7F701x-Programmer software (Figure 23)
- Press "Connect R7F701x" button.
- Select File with the "Select File" button.
- Press "Start" Button.
- Wait until programming procedure finishes with the message: "Programming is Completed Successfully.
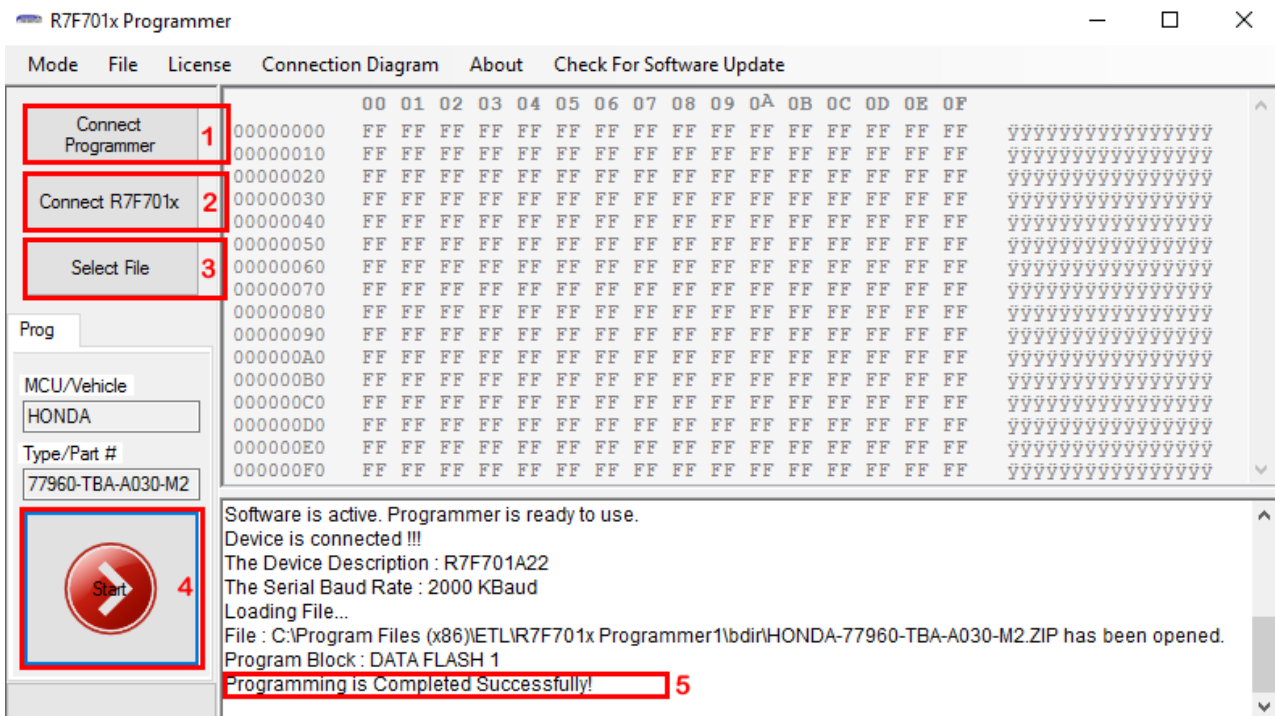- Disconnect power from the target board.

Figure 23 R7F701x-Programmer programming sequence.

7. READING EXAMPLE IN 'EXPERT' MODE

- Solder the R7F701x-Programmer 9 pin Connector to a target board (airbag).
- Plug the 9 pin connector to the ETL HYPER PROG board.
- Press "Connect Programmer" button on R7F701x-Programmer software (Figure 23)
- Press "Connect R7F701x" button.
- Select FLASH area(s) by "Select FLASH" button.
- Press "Start Button".
- Wait until reading procedure finishes with the message: "Reading is Completed Successfully!"
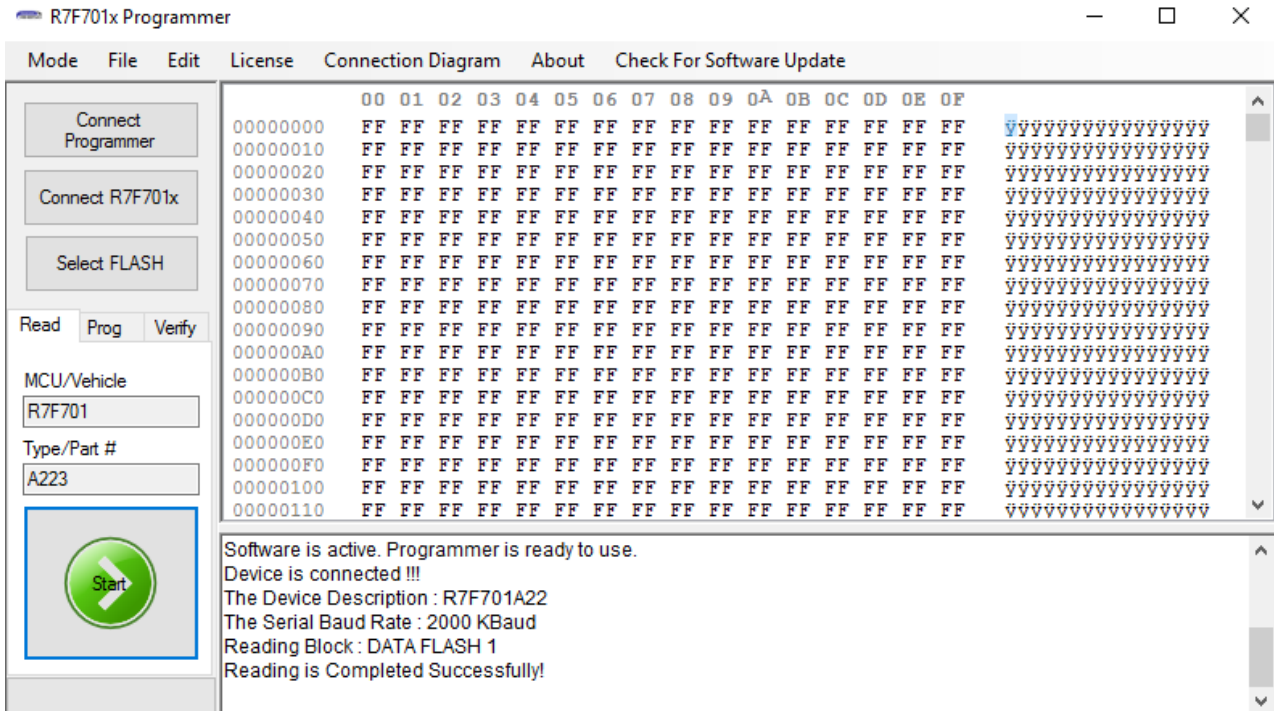

Figure 24 R7F701x-Programmer reading sequence.

8. WARRANTY STATEMENT

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