PROGRAMMING TOOL - BASIC V2.4.0 USER GUIDE

Thank you for purchasing and using Marlin Technologies' electronic control units. For seamless maintenance support of these ECUs, a team of software engineers at Marlin Technologies has created an advanced Programming Tool to simplify programming and parameters configuration tasks. The emphasis of the design was made on the ease-of-use and the speed of operations.

A list of supported USB-CAN convertor dongles

Starting from version 2.4.0, the Programming Tool application has been extended to support three most popular USB-CAN dongles on the automotive market:

1. 'Kvaser Leaf Light v2' (https://www.kvaser.com/product/kvaser-leaf-light-hs-v2/) as on fig.1,
2. 'CANfoxMI' (aka EC2112) (https://www.ifm.com/us/en/product/EC2112) as on fig.2,
3. 'PCAN-USB' (https://www.gridconnect.com/products/can-usb-adapter-pcan-usb) as on fig.3.

Figure 1: Kvaser Leaf Light v2.

Figure 2: CANfoxMI.

Figure 3: PCAN-USB.

How to install a USB-CAN convertor dongle's driver.

Before using any of the above-mentioned dongles, you must install a driver first.

a. For 'Kvaser Leaf Light v2' dongle, follow the https://www.kvaser.com/?s=driver#/download link and click on the 'Kvaser Driver for Windows' link to download the latest driver. You will find a downloaded executable file, 'kvaser_drivers_setup.exe' in the 'C:\Users\<your_name>\Downloads\' folder. Double click it to install the driver.
b. If you are using 'EC2112' dongle, follow the https://www.ifm.com/us/en/downloadarea/R360Content link, download and install the 'Driver for CANfox EC2112' Version v7.04.4400.0
c. If you are using 'PCAN' dongle, follow the https://www.gridconnect.com/pages/can-product-downloads-peak-system#packages link and click on 'Download(ZIP)' 'Device driver setup for Windows' option. Unzip the 'PEAK-System_Driver-Setup.zip' file and run the 'PeakOemDrv.exe' file to install the driver. Please keep in mind that the driver setup does not install the PCANBasic.dll. You need to copy the PCANBasic.dll manually to your Windows System directory:

   Windows 32-bit systems:
   32-bit DLL > Windows\System32

   Windows 64-bit systems:
   32-bit DLL > Windows\SysWOW64
   64-bit DLL > Windows\System32

How to install the Programming Tool application (requires Internet connection)

Unzip the 'MarlinProgToolSetupBasic_***.zip' file provided by Marlin Technologies, Inc., in any location of your PC. Locate and run the . . . \MarlinProgToolSetup_Basic\Release\setup.exe' file to initiate the Marlin CAN USB Programmer application installation. Follow prompts during the process.

How to uninstall the application

To uninstall the application, run the above-mentioned . . . \MarlinProgToolSetup_Basic\Release\setup.exe' file that was used during the installation process, again.

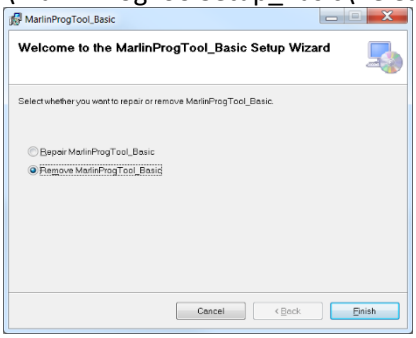

Figure 4.a

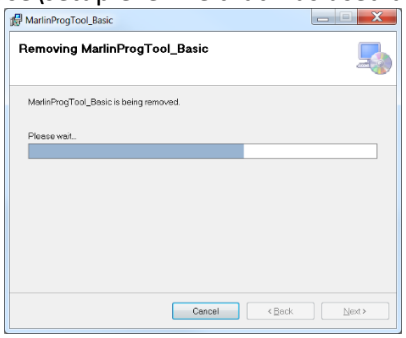

Figure 4.b

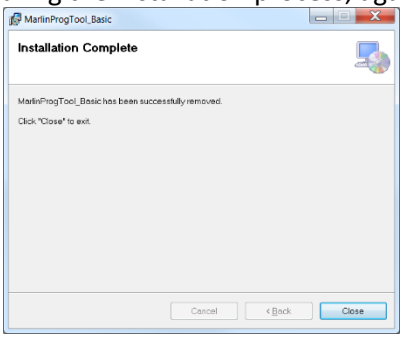

Figure 4.c

1. Check the 'Remove MarlinProgTool' radio button (fig. 4.a) and click on 'Finish' button. Wait for 'Installation Complete' window. Click on 'Close' button to complete the uninstallation (fig. 4.c).
2. If your workstation replies with the following pop-up window (fig.5):

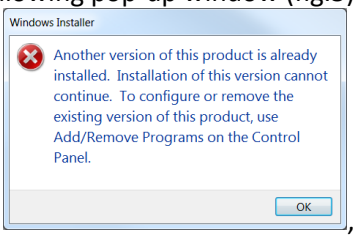

Figure 5:

, use the Control Panel shortcut from the Start Menu or the Start screen (all Windows versions). In Windows 7, you can find a *Control Panel* link directly in the *Start Menu*, on its right side (fig. 6).

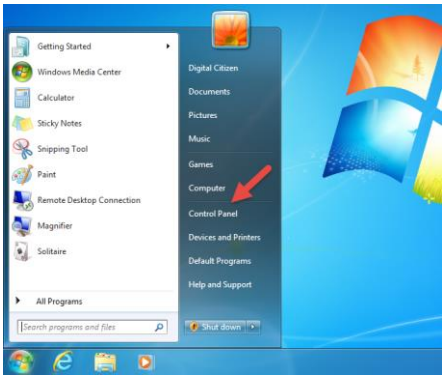

Figure 6: The Control Panel shortcut in Windows 7

A slightly slower way of starting the *Control Panel* in Windows 10 is to do it from the *Start Menu*. Click or tap on the '*Start'* button and, in the *Start Menu*, scroll down to the *Windows System* folder *(1)*. There you will find a '*Control Panel*' shortcut (2) (fig.7):

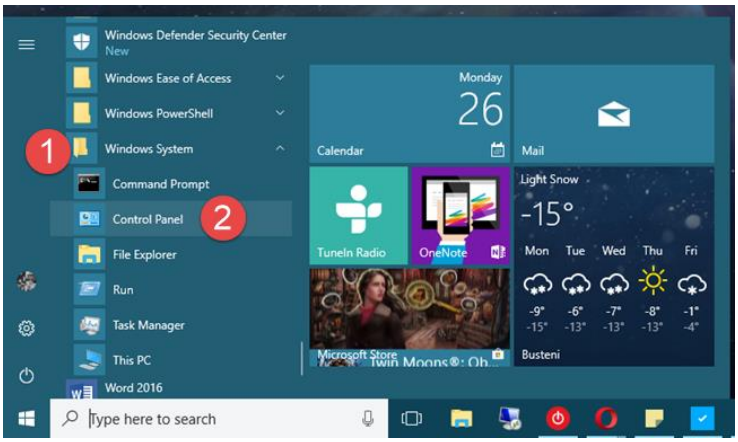

Figure 7: The Control Panel shortcut in Windows 10

After the 'Control Panel' is launched in 'Category' view (1), click on the 'Uninstall a program' (3) option in the 'Programs' item (2) (fig.8):

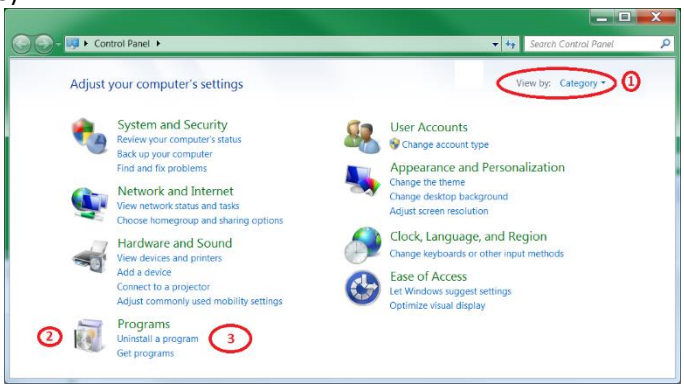

Figure 8: The 'Control Panel' window is open in 'Category' view (1).

Locate the installed 'MarlinProgTool' application (1), right mouse click on it, then left mouse click on the 'Uninstall' option (2) to initiate the process (fig. 9):

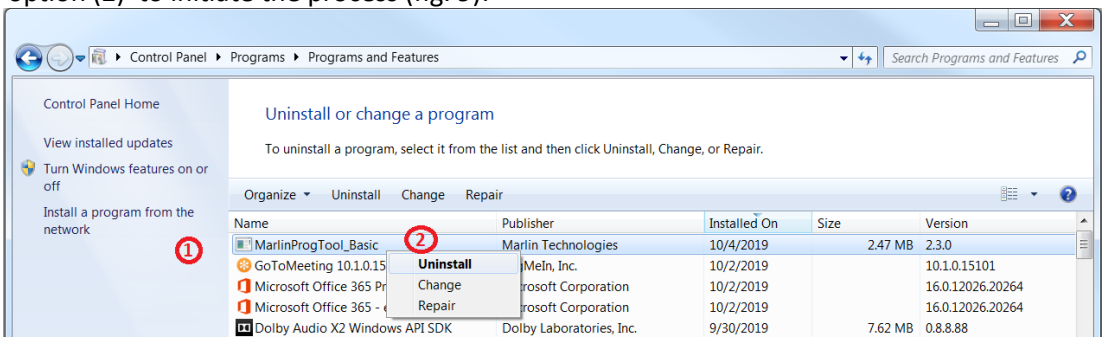

Figure 9: Uninstalling the application through the 'Control Panel'

Wait for the process's completion. The short-cut to the previously installed application should disappear from your workstation's Desktop.

Launch the installed application 

After successful installation, a shortcut to the 'MarlinProgTool_Basic' application will appear on the user's PC workstation desktop. . To launch the application, double click it.

Once the program is launched, the Main Form Window will appear (fig.10) and auto-search for compatible dongle(s) attached to the computer's USB port will be performed.

All three dongles can be connected to the user's PC workstation at the same time (fig. 10), however, only one of them can be active at a given time (fig. 11).

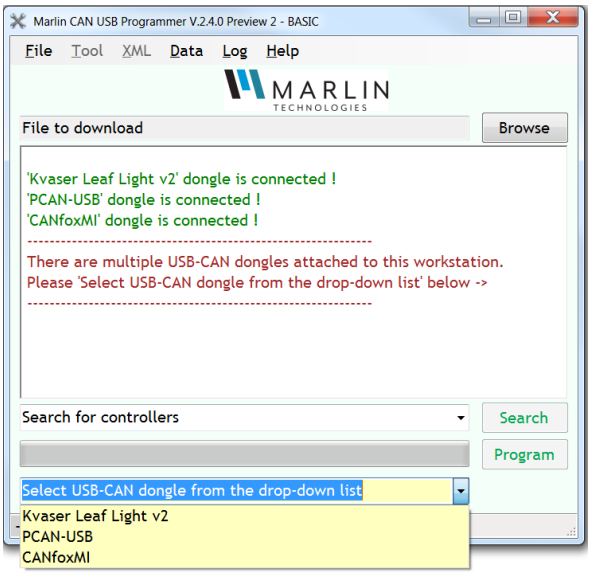

Figure 10: A case of multiple dongles connected.

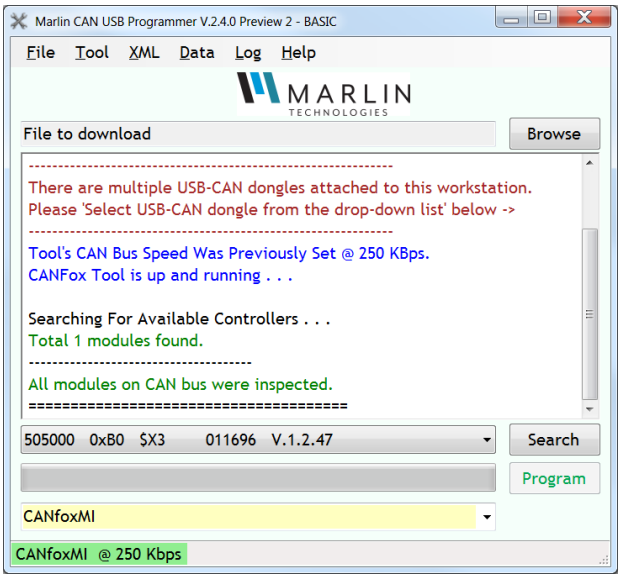

Figure 11: A choice of selecting 'CANfoxMI' dongle.

Once a dongle is chosen, the information about it will appear at the status strip at the bottom of the main window highlighted in green color (fig. 11). A search for available on CAN bus controllers will start automatically. Additionally, the user can repeat the search by clicking on the 'Search' button.

Setting up desired baud rate for a dongle

At a first launch, the application would choose a default value of 250 K Baud. If you require to change the speed, click on 'Tool' -> 'Baud Rate:' option to pick any of three available rates:
250 K, 500 K or 1 M Baud. At the next application's launch, the last remembered rate will be invoked.

Browse for a .s19 file to be programmed into selected controller

Click on the "Browse' button to choose a pre-built .s19 file saved on your PC's hard drive (fig.12).
If the desired file is located on your company's remote network drive, a local copy of this file will be created on your workstation's 'Desktop' directory to prevent the latency issues involved in some slow networks when performing a long file programming. After exiting the application, the file's copy will be removed from your 'Desktop'.

Note: Do not place your .s19 files into 'C:\Program Files (x86)\Marlin Technologies\' folder. The access to this location can be denied by your PC's operating system.

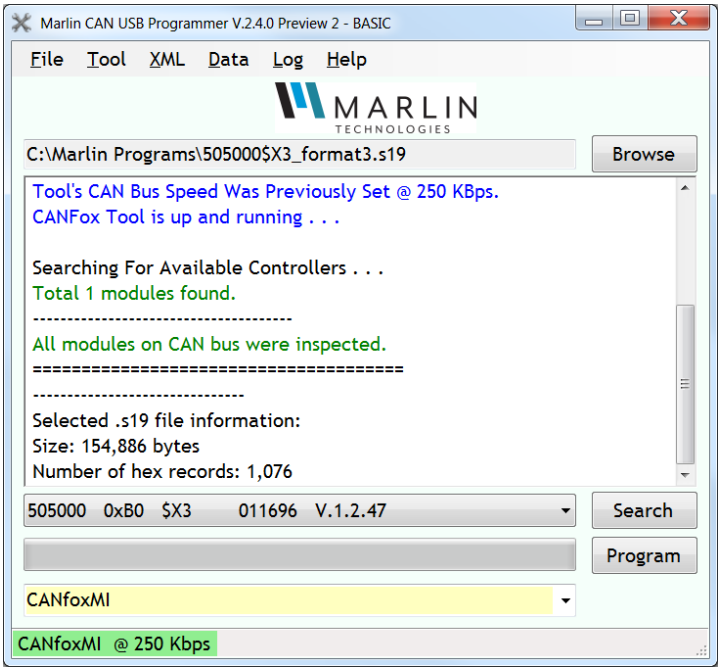

Figure 12: .s19 file is ready to be downloaded into a controller.

Download .s19 file into controller of your choice

You can now download a program to the selected controller by clicking on the "Program" button. The program will look for a .s19 file to download to the controller in the path outlined in the text box adjacent to the 'Browse' button. During programming, the progress bar will advance with actual completion percentage shown on it (Fig, 13).

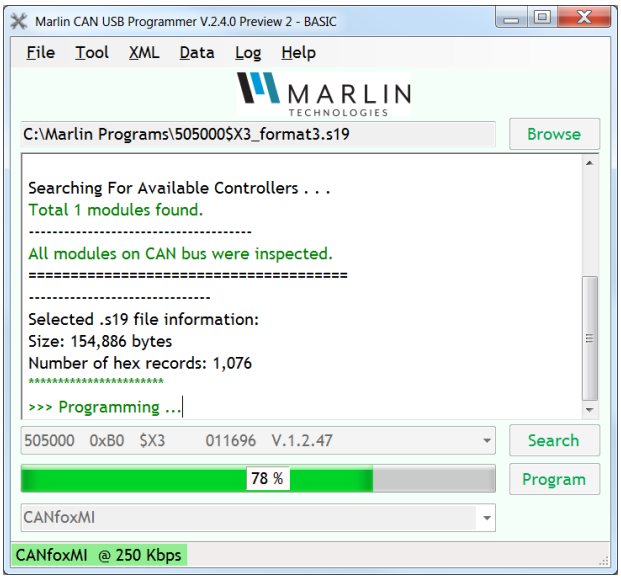

Figure 13: Programming .s19 file into a controller.

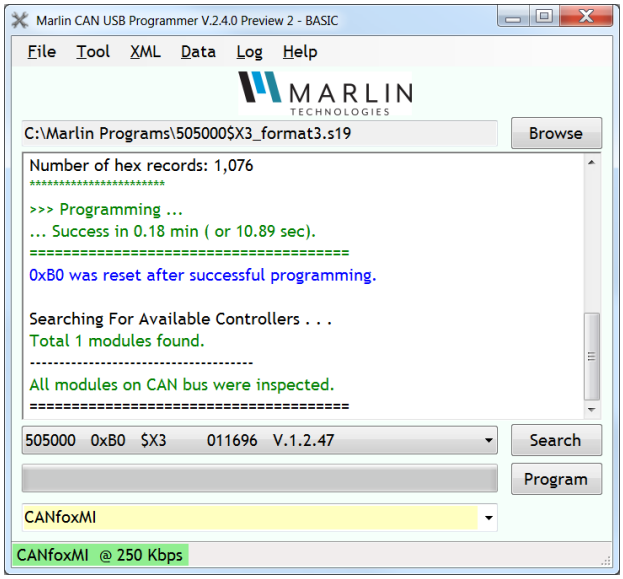

Figure 14: Programming complete.

Log CAN Bus traffic information

Check the 'Log' -> 'J1939' tab menu item to start logging the traffic on CAN Bus (fig. 15, fig. 16):

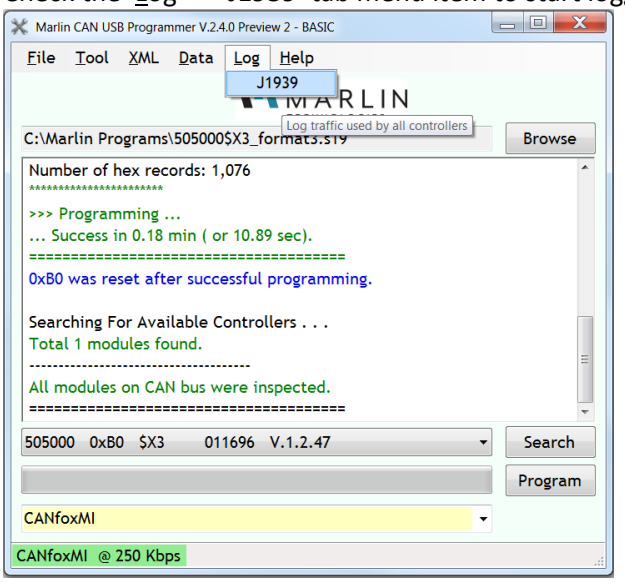

Figure 15. Initiating the logging process . . .

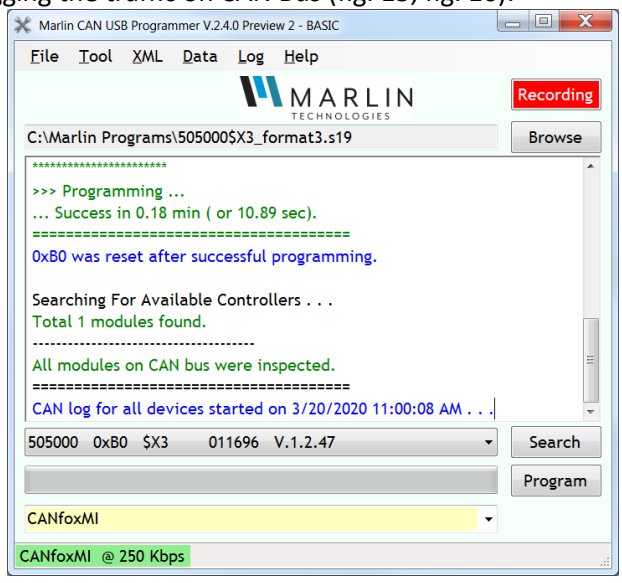

Figure 16: Logging CAN messages is in progress.

To stop the logging, click on the 'Recording' button (Fig. 16). A new time-and-date stamped log file of type .asc will be created and saved in the C:\Marlin Data\myLogs\' folder.

The log file's format is presented below:

```
date Tuesday, May 29, 2019 10:43:08 AM
base hex timestamps absolute
Begin Specific Device CAN Bus Activity Triggerblock
     306.7922 1 18EAFFF9x       Tx d 3  00 EE 00
     306.7928 1 04EEFFB0x       Rx d 8  A8 B4 07 00 00 FF 00 A0
     306.8099 1 18EAB0F9x       Tx d 3  DA FE 00
     306.8106 1 04FEDAB0x       Rx d 8  01 24 58 33 20 20 20 2A
     306.8147 1 18EAB0F9x       Tx d 8  AC FF 00 00 00 00 00 00
     306.8154 1 04FFACB0x       Rx d 8  00 00 00 00 74 02 08 08
End Log Triggerblock
```

Notes:

1. ***The log file's format is compatible with 'CANalyzer' application and immediately available for exporting into its 'Trace' window.***
2. ***Depending on CAN bus traffic intensity, the approximate uninterrupted record time is about 4 hours.***

A special note for PCAN-USB users:
the saved trace file format extension, .trc, is NOT compatible with the 'CANAlyser' application. In order to analyze CAN traffic using 'CANAlyser' or other .asc friendly applications, contact Marlin Technologies Service Group to request a conversion utility from GridConnect.

Reading EEPROM Data from controller into a .txt File.

If a controller of interest contains ECU specific data in its EEPROM, use 'Data'->EEPROM Dump' tab to read its content into a single .txt file saved in 'C:\Marlin Data\' folder (fig. 17):

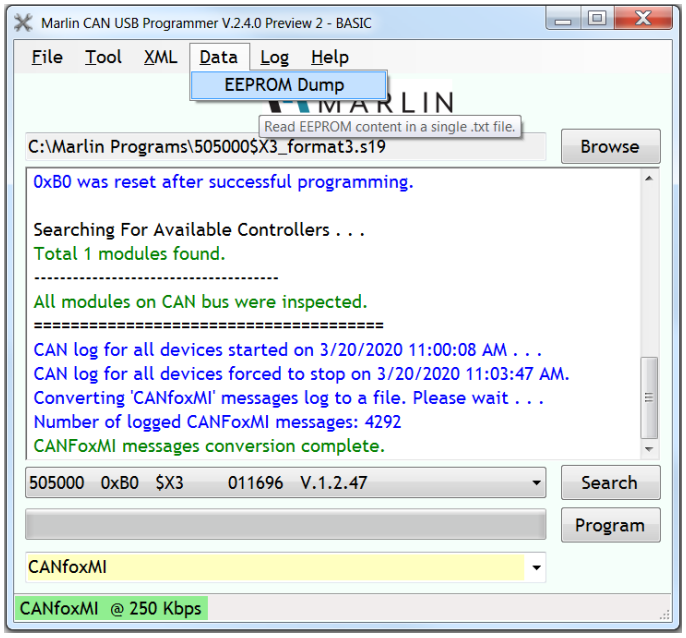

Figure 17: Reading EEPROM content into .txt file

Uploading Data from a controller into a pre-existing XML template File

The ser can read / write data from / to controller by selecting a 'XML' -> 'Single' tab (Fig. 18):

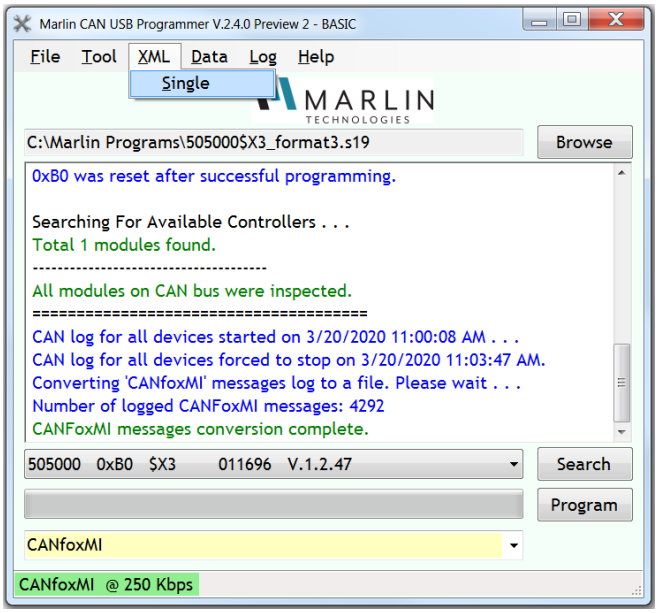

Figure 18: Choosing an XML file

The application will prompt you to browse and open a pre-defined template .xml file. After choosing the desired file, a separate window form '1' will appear (Fig. 19):

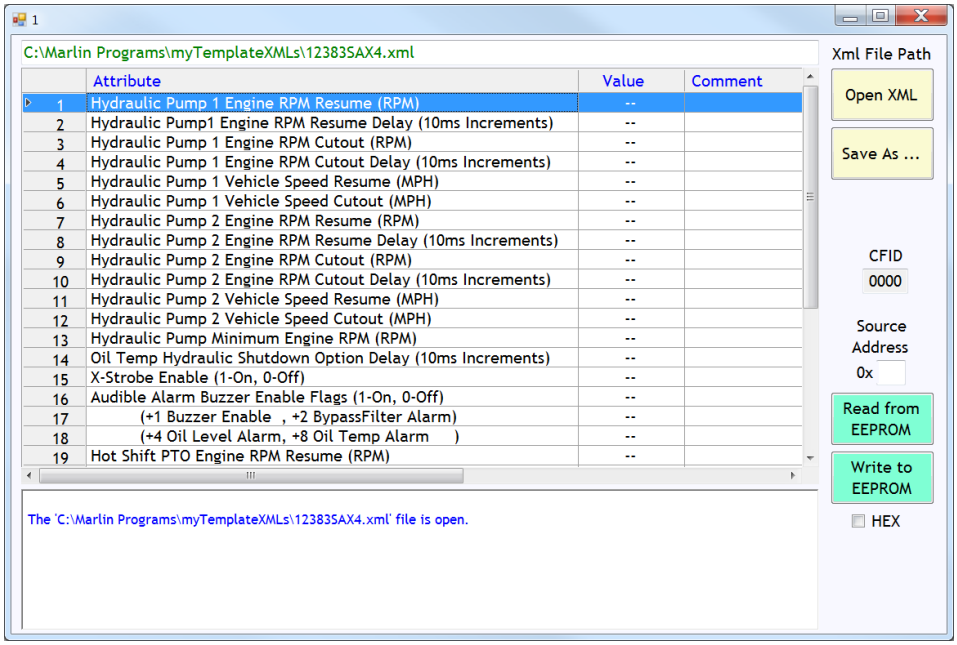

Fig. 19: A template XML file is open in a window form 1.

Up to 5.xml forms can be open and managed as a separate independent entity.
To read attributes from desired controller, specify its 'Source Address' found in the Main Menu Window first (fig. 20) and then click on 'Read from EEPROM' button:

Figure 20: The location of desired controller's source address in the Main Menu Window.

After reading attributes from controller, the user can:

- read attributes from another controller by changing the 'Source Address' and pressing on 'Read from EEPROM' button;
- modify the attributes' values and save changes by clicking on 'Write to EEPROM' button;
- save attributes as a new XML file by clicking on 'Save As…' button;
- open previously saved XML file by clicking on 'Open XML' button;

For convenience, if you need to see values of parameters in the hexadecimal format, check the 'HEX' box (fig. 15). To resume interaction with data grid, simply uncheck the 'HEX'' box.

Handling multiple hardware dongles of the same type

Not supported in this release.