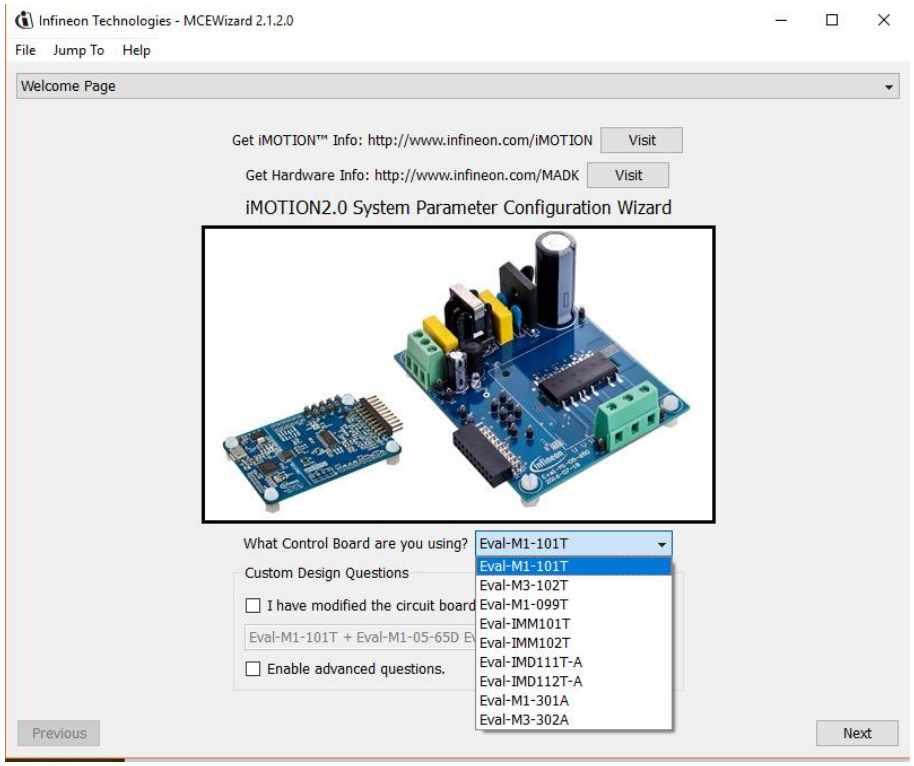
MCEWizard 2.0 User Guide

Step-by-step instructions for setting up motor control system with iMOTION™ ICs

Welcome Page
Selecting the Control Board Type

- If using iMOTION Kits, select one of the Control Board or Eval Board options offered.
- If you developed your own hardware, choose any of the boards that have the same controller type they are using and check "I have modified the circuit board" box. That would allow you to make changes to the default system parameters pre-populated in the tool, based on selected iMOTION Kit.



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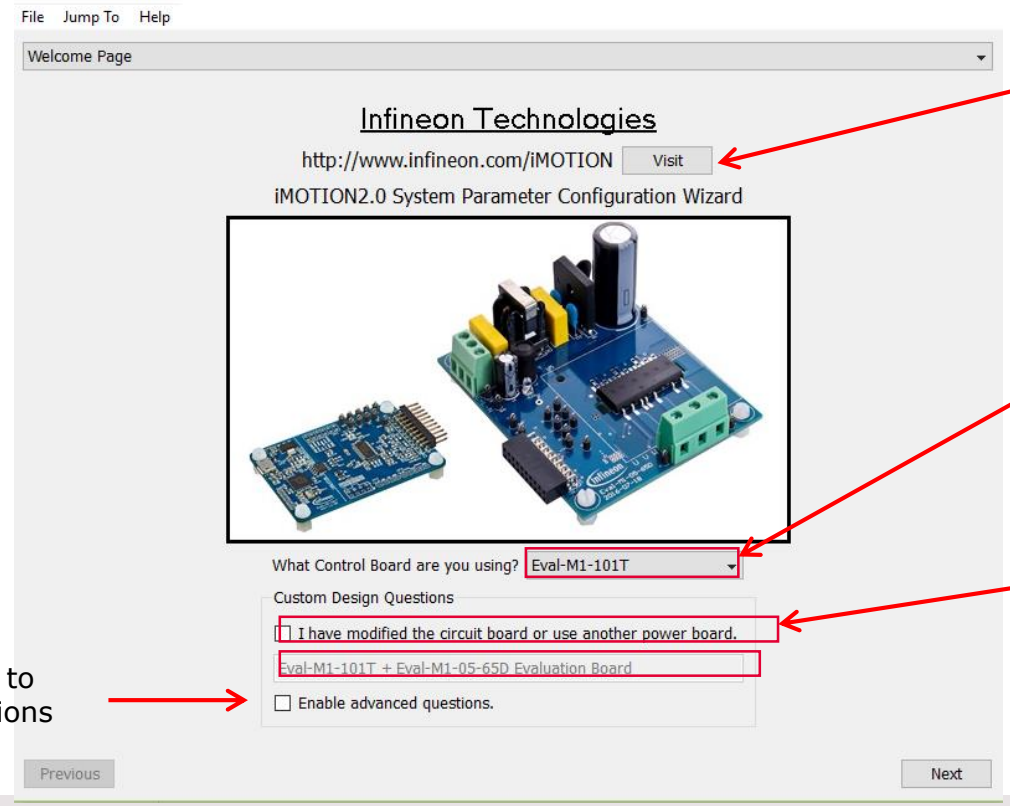
Welcome Page
Selecting the power boards/Enabling Custom Design

- If using iMOTION Kits, select one of the Power Board options offered.
- If you developed your own hardware (or modified existing iMOTION board), choose any of the boards that has similar characteristics to your custom hardware and and check "I have modified the circuit board" box. That would allow you to make changes to the default system parameters pre-populated in the tool, based on selected iMOTION Kit.



iMOTION Web Service

Select the Control/Demo Board or the same controller used on custom board

Select the check box if the boards used are custom boards or modified iMOTION Kits

Select the check box to enable advanced options

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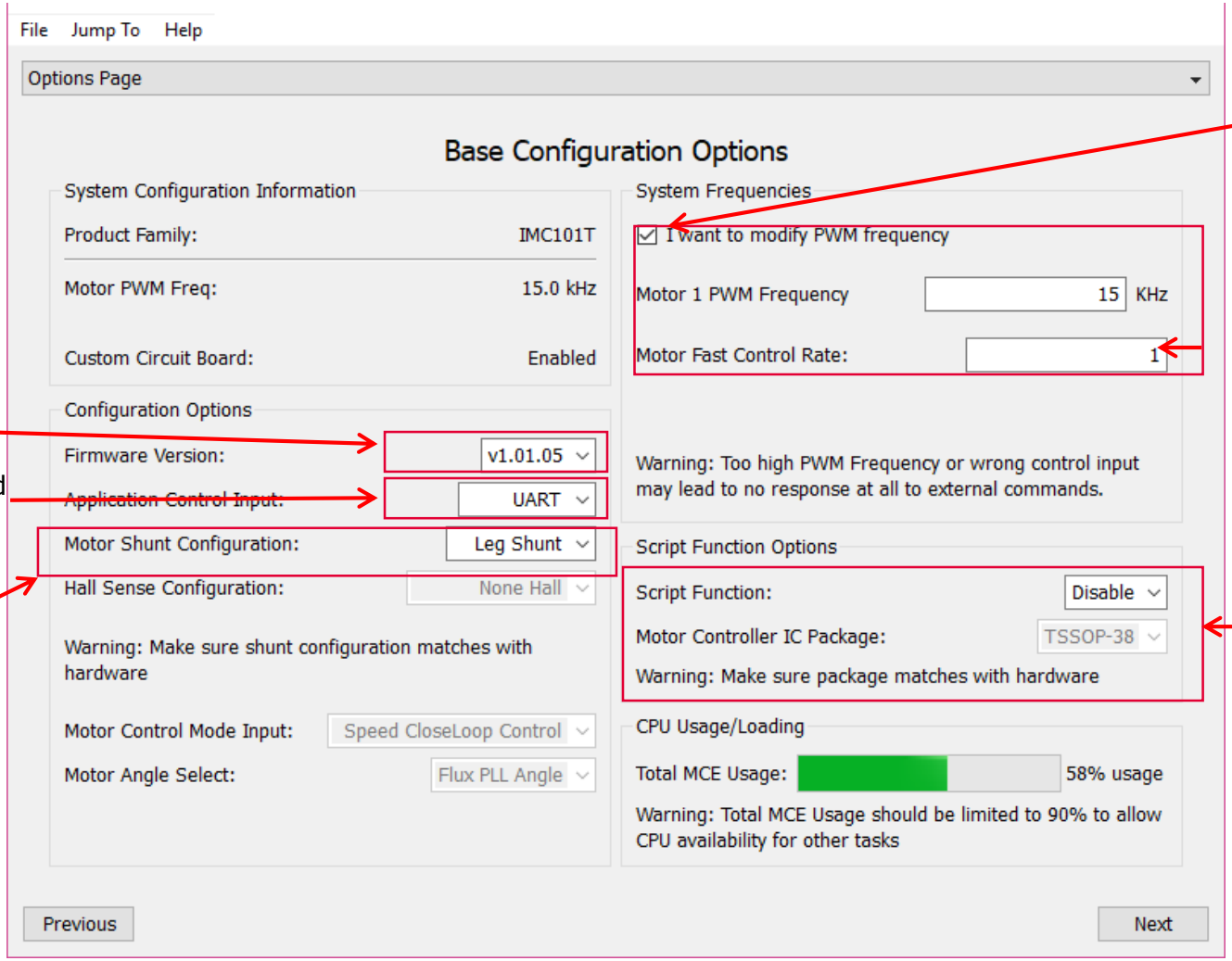
Options Page (Motor Control Only)

Configuring Options Page



Select the check box to modify PWM Frequency

Frequency of control loop updates:

1-> Every PWM cycle,

2-> every 2nd PWM cycle, etc.

Select the using firmware version

Select the method of Control Input

Select Leg Shunt /Single Shunt Configuration

Select Script function and Controller package

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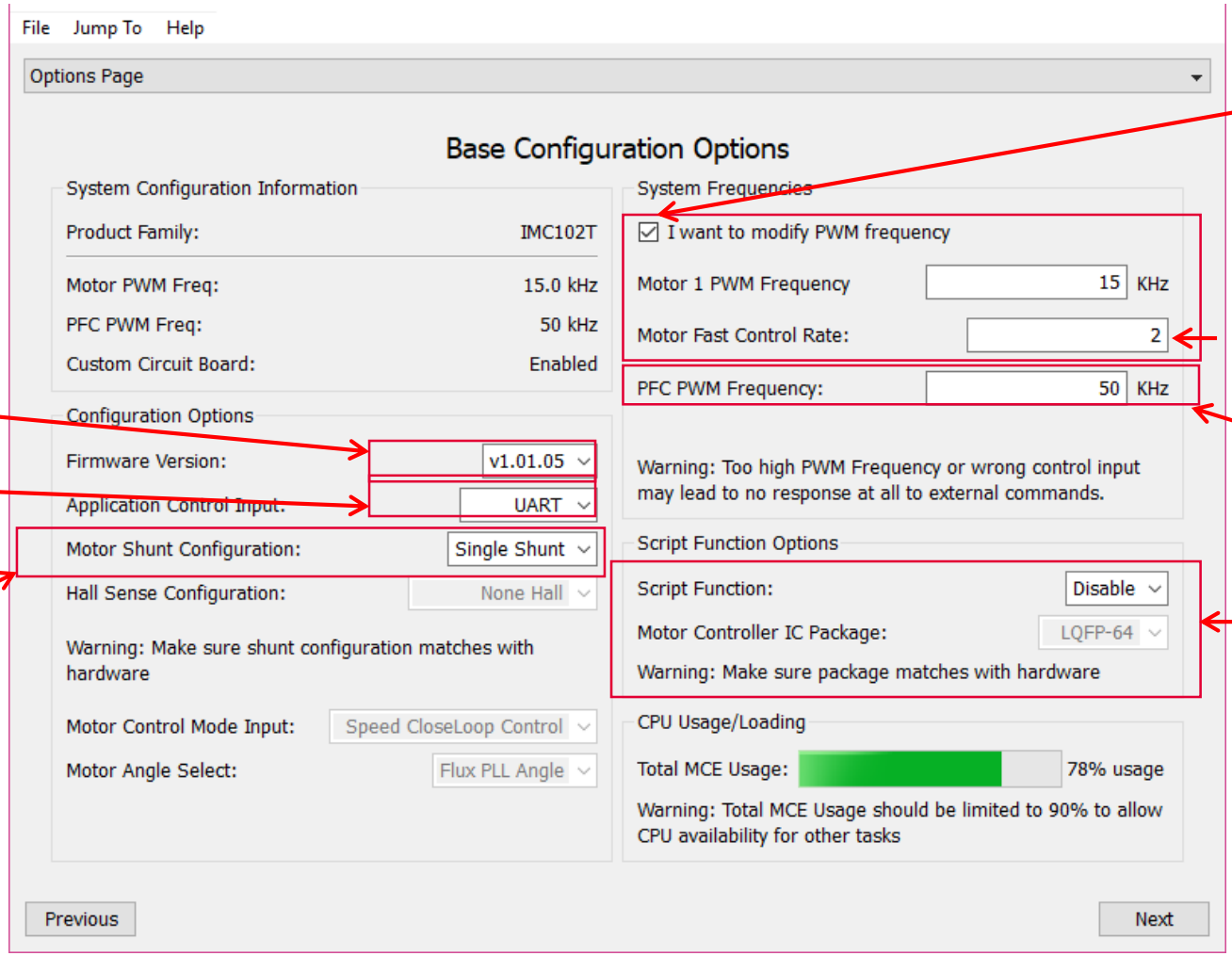
Options Page (Motor Control + PFC)

Configuring Options Page



Select the using firmware version

Select the method of Control Input

Select Leg Shunt /Single Shunt Configuration

Select the check box to modify PWM Frequency

Frequency of control loop updates:

1-> Every PWM cycle,

2-> every 2nd PWM cycle, etc.

Enter PFC switching frequency

Select Script function and Controller package

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Entering System Parameters

- In MCEWizard, there are two methods to enter the motor and board parameters.

  1. User-friendly (Wizard) Mode – Recommended for first-time or non-experienced users
     - Self-explanatory list of questions with descriptions and additional information helping to enter all the necessary system parameters.

  2. Advanced Mode
     - Recommended for users working regularly with MCEWizard tool.
     - All the parameters are listed on one page for the user to quickly enter or modify their respective values.

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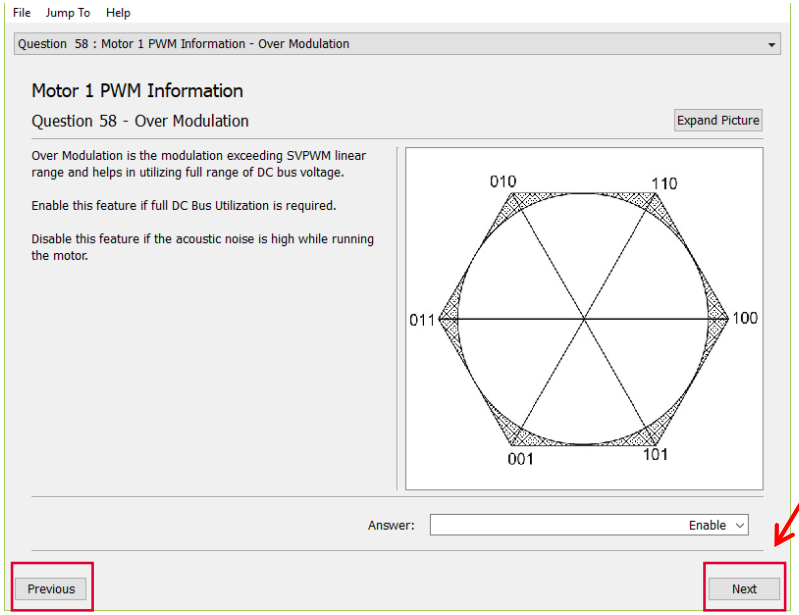
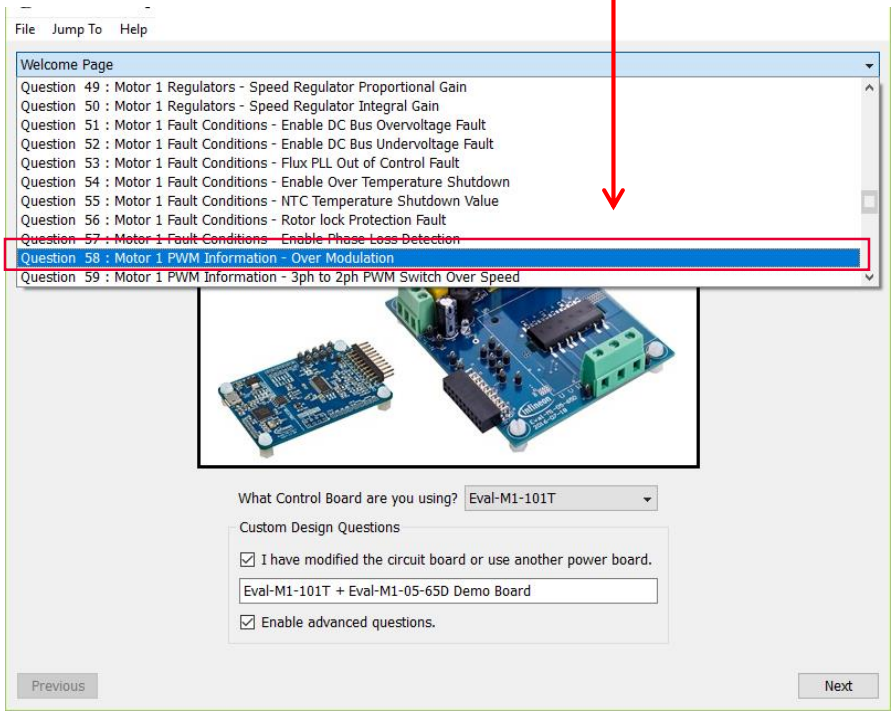
Entering System Parameters
Navigating through Wizard Mode



- There are 2 way to navigate through questions using Wizard Method
  - Move forward/back to the next/previous questions by clicking on "Next"/"Previous"
  - Navigate to different Wizard questions using drop down menu.



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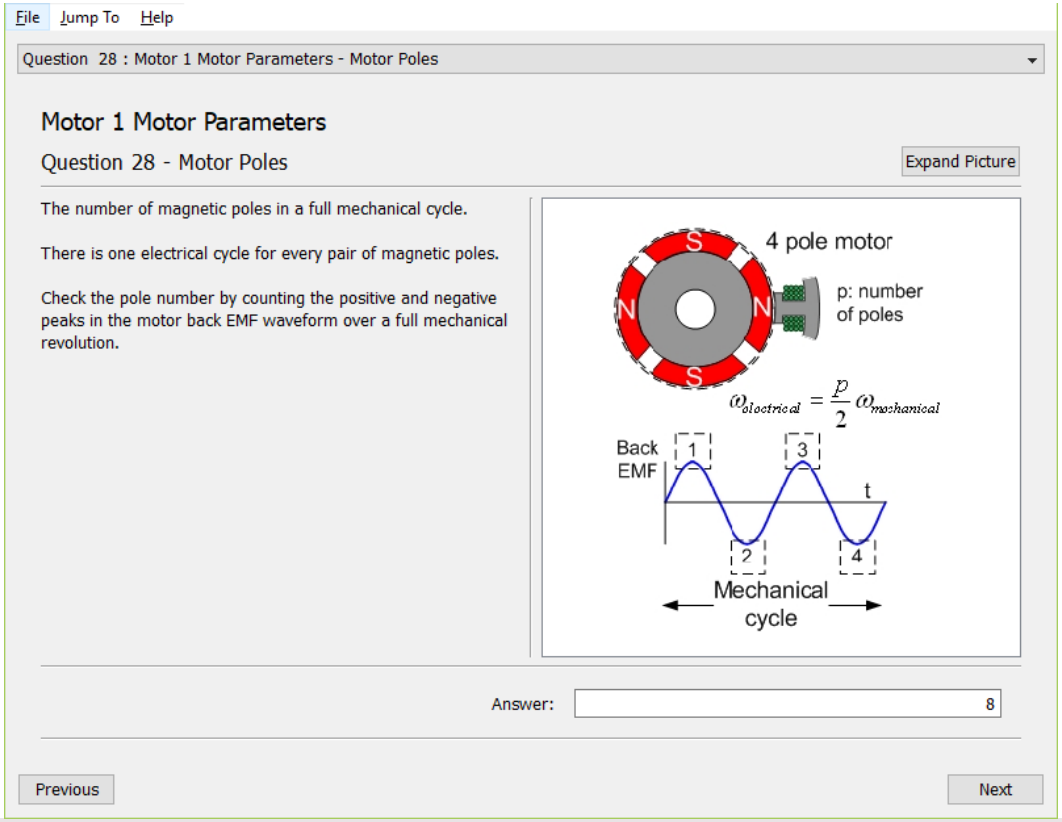
Entering System Parameters
Answering questions in Wizard mode

- Answer each question to enter the information needed for configuring the parameters specific to the motor and the inverter system.
- Additional information is provided on each page to help the user to answer the question



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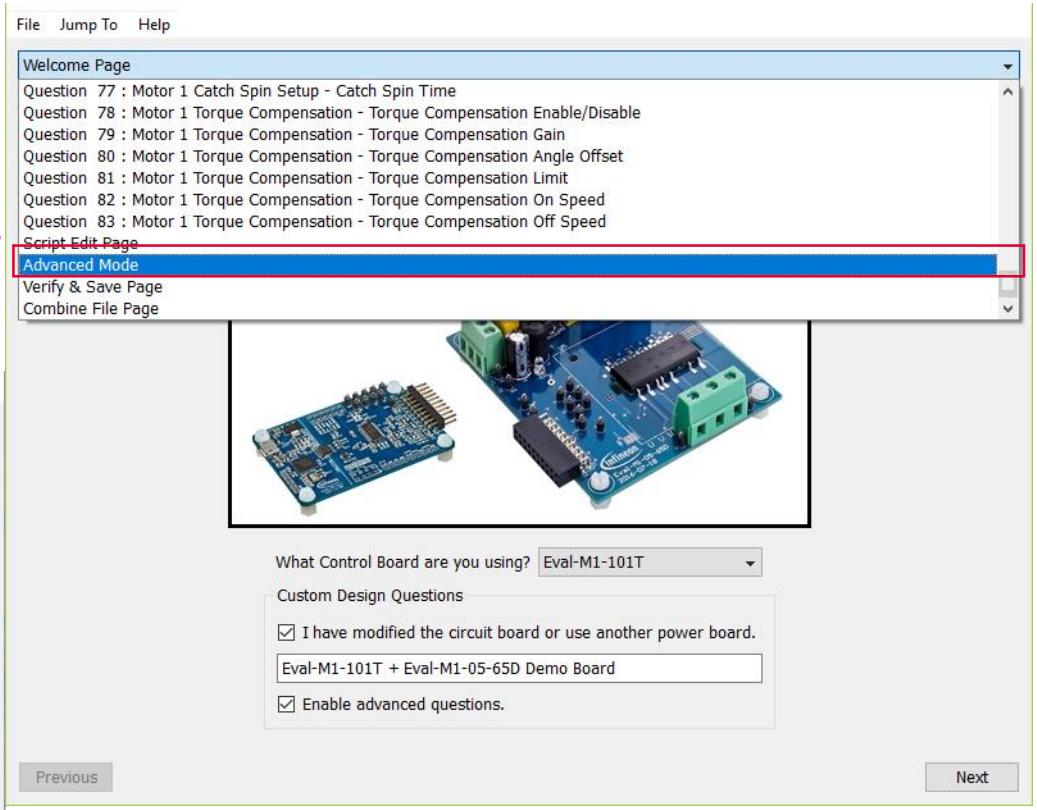
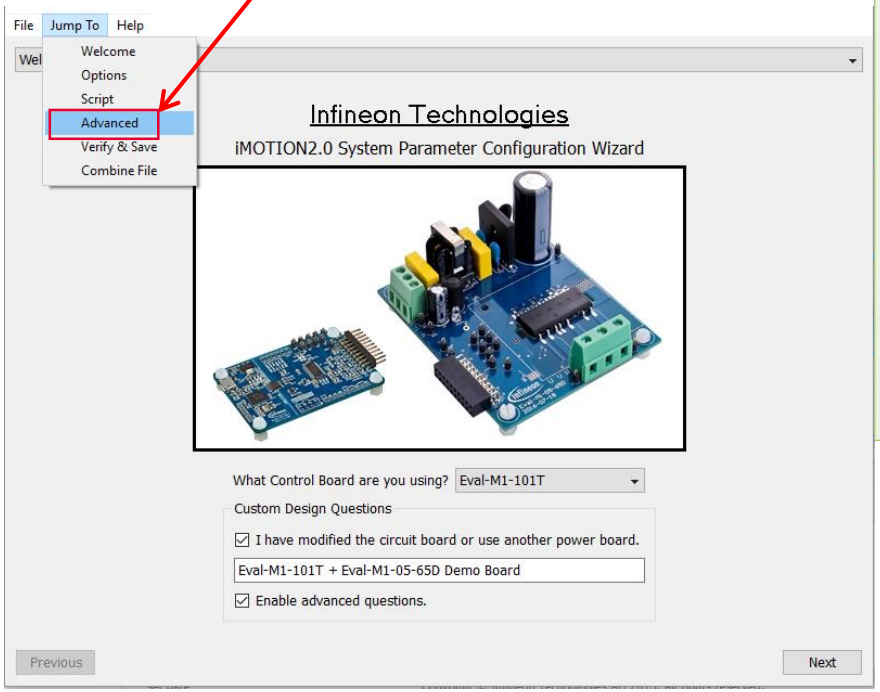
Entering System Parameters
Advanced Mode

- Users who are already familiar with the tool can use faster "Advanced Mode".
- There are 2 way to use the "Advanced Mode"
  - Navigate to "Advanced Mode" using drop down menu
  - From the top menu "Jump to" -> Advanced





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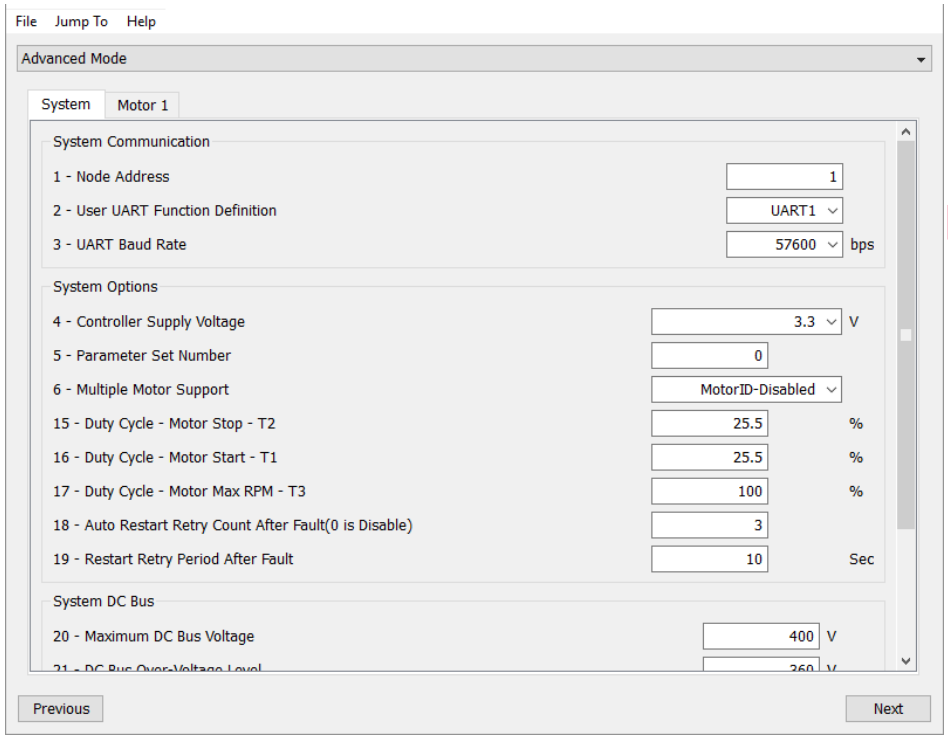
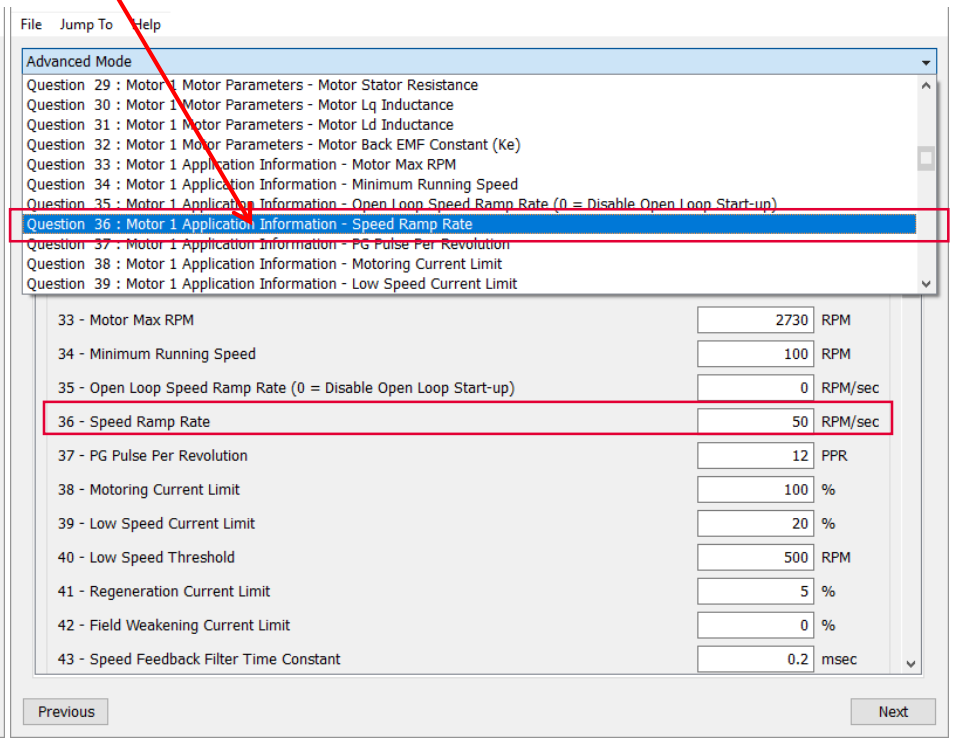
Entering System Parameters
Advanced Mode

- In this mode, the user can directly enter all the parameters requested in one parameter list
- Advanced mode questions are divided into “System” related questions and “Motor” related questions under corresponding tabs
- For help related to each entry in the list, the user can navigate to the corresponding Wizard page using drop-down list. For example, if help is needed for “Speed Ramp Rate” entry, then navigate to Question 36. using the drop-down list on top of the page.





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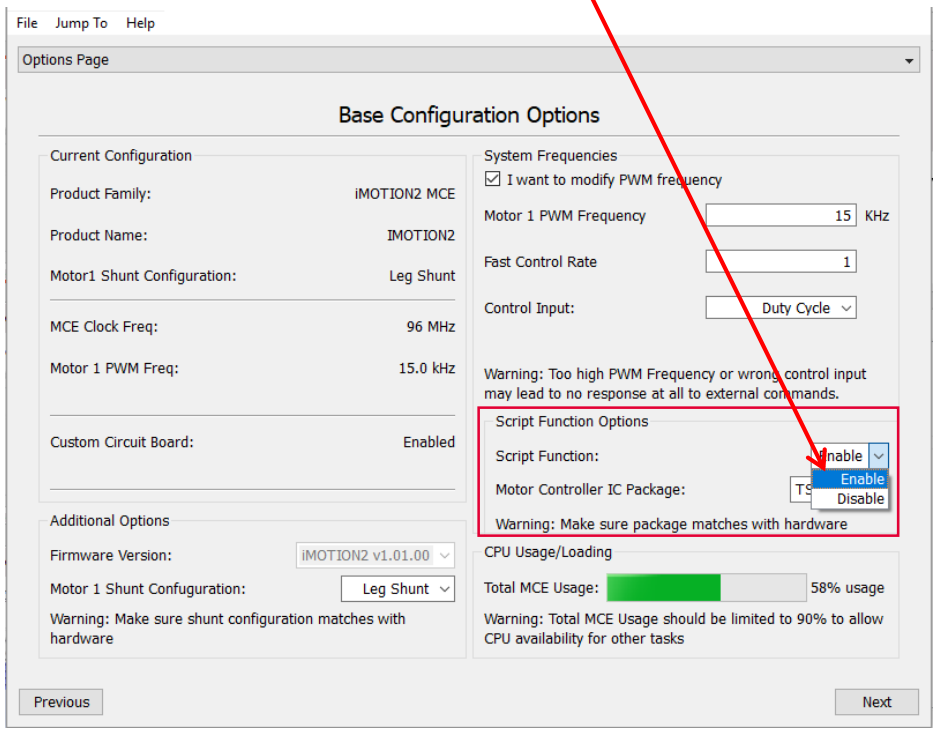
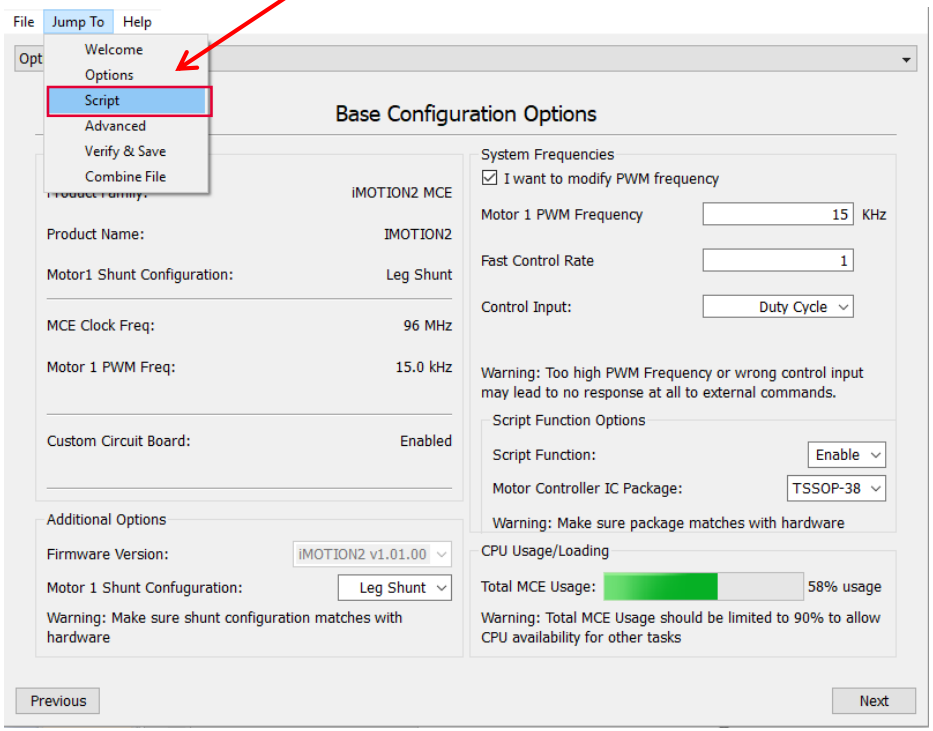
Using Script Function
Enabling Script Function

› First enable Script Function on the Options Page, then click “Jump To” -> “Script”.





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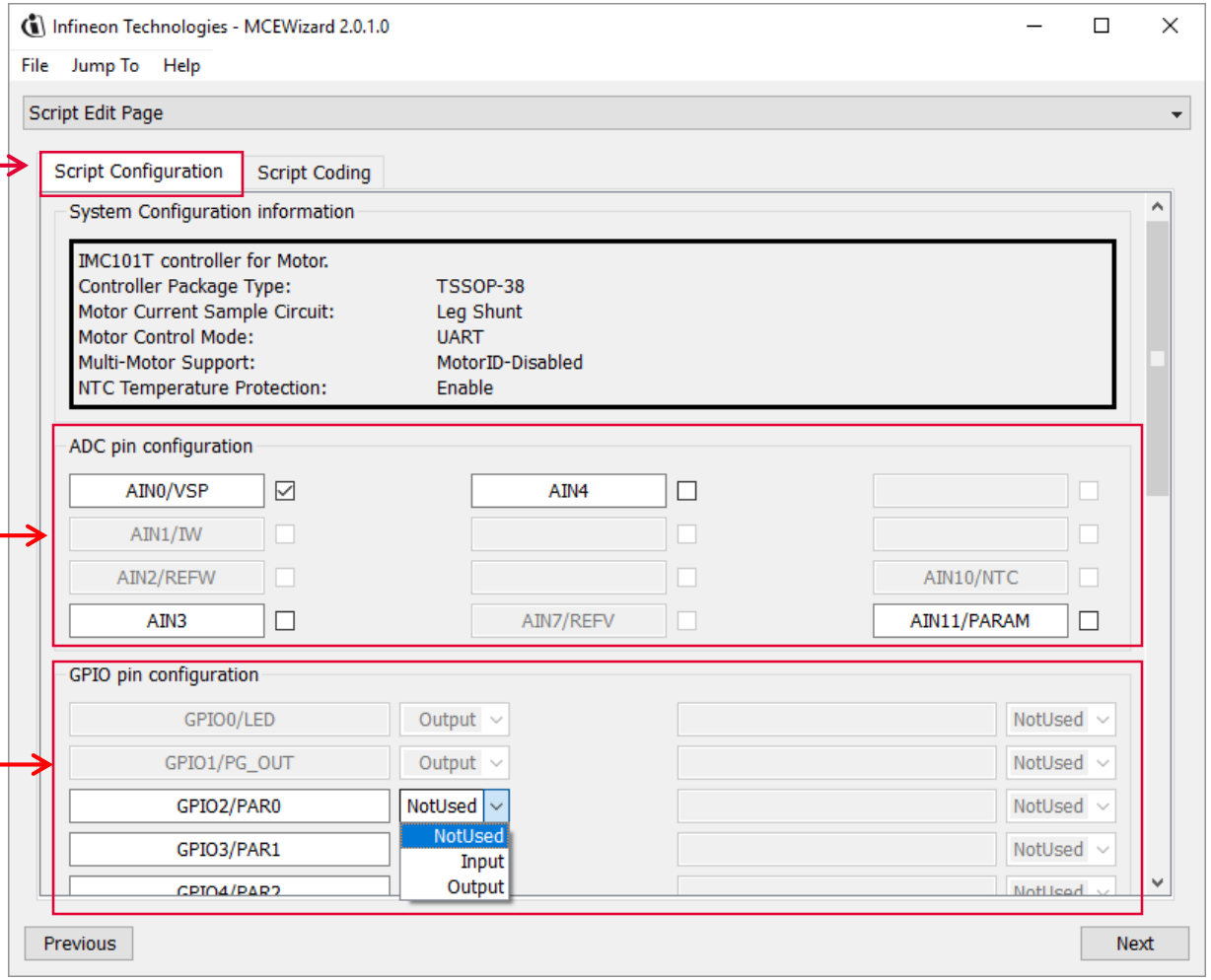
Using Script Function
Configuring Analog Inputs and GPIOs for Script

› Select the analog inputs and GPIOs to be used in script.

"Script Configuration" tab

Select the available ADCs to be used for Script control.

Select the available GPIOs to be used for Script control.



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Using Script Function
Script coding and compiler

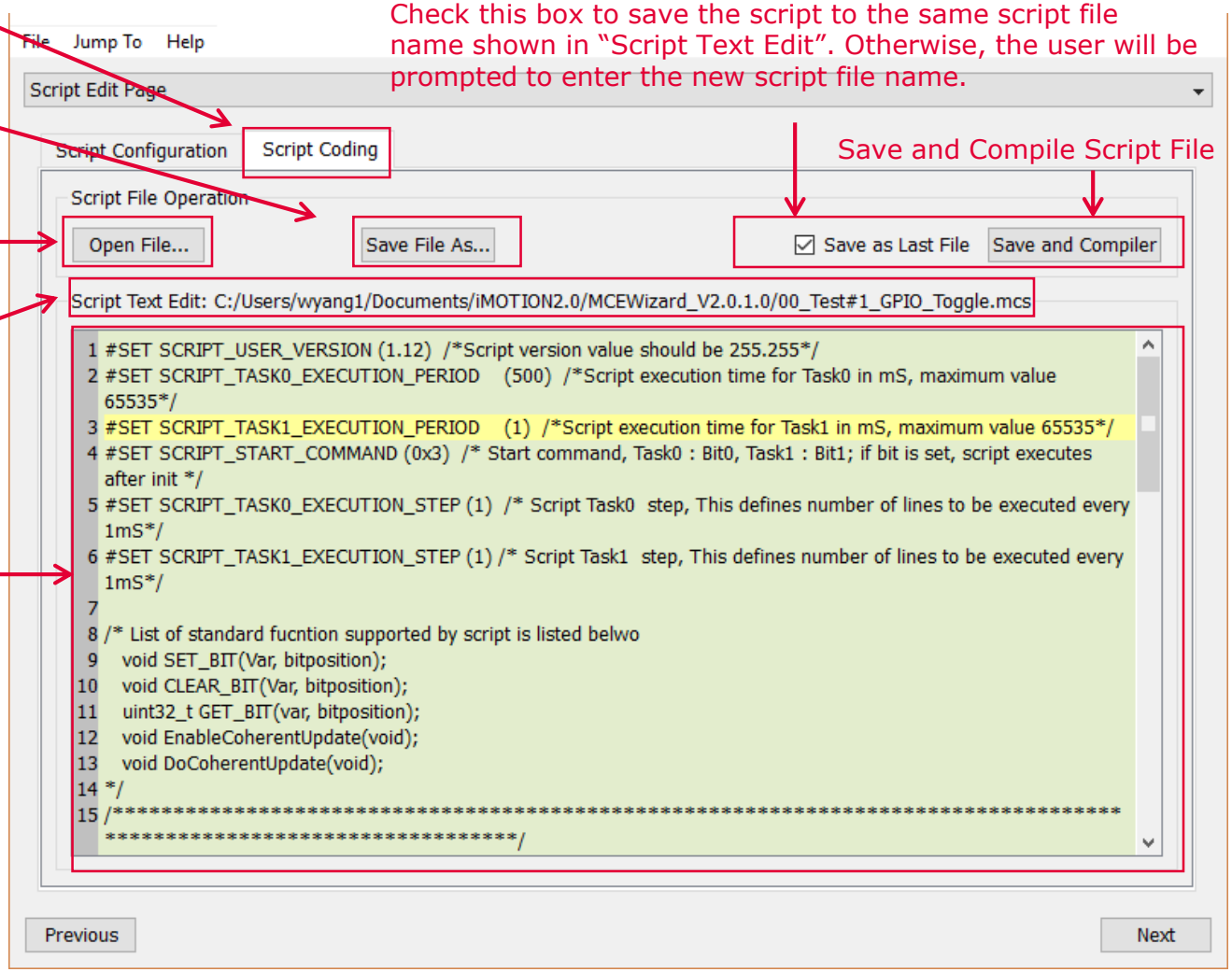
"Script Coding" tab

Save edited Script file without compiling.

Select saved Script file to edit or compile.

Current Script file being edited

Script edit field



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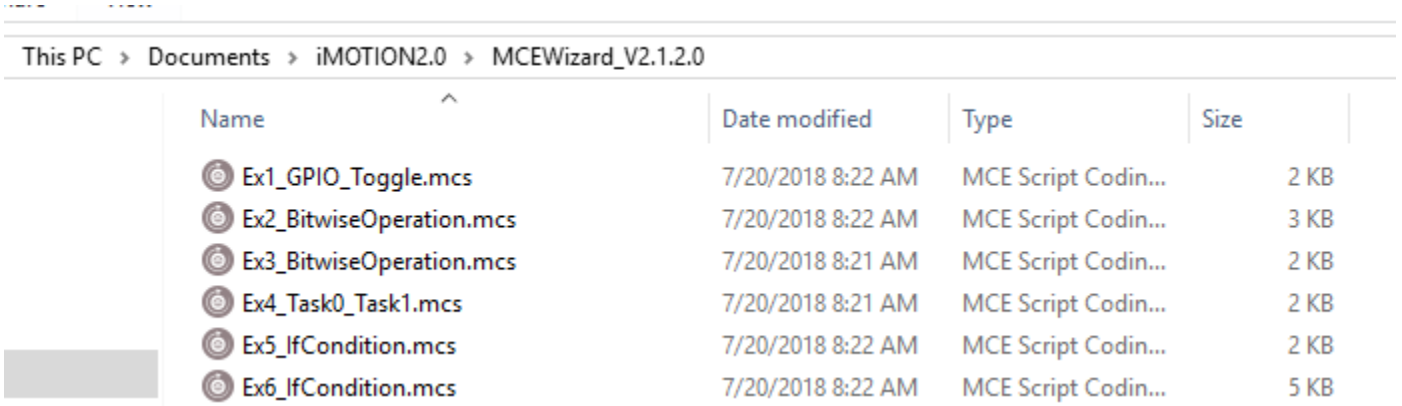
Example Script Files available in “MyDocuments” folder

- Selection of example script files is included in the MCEWizard installer package to help users getting started with script functionality



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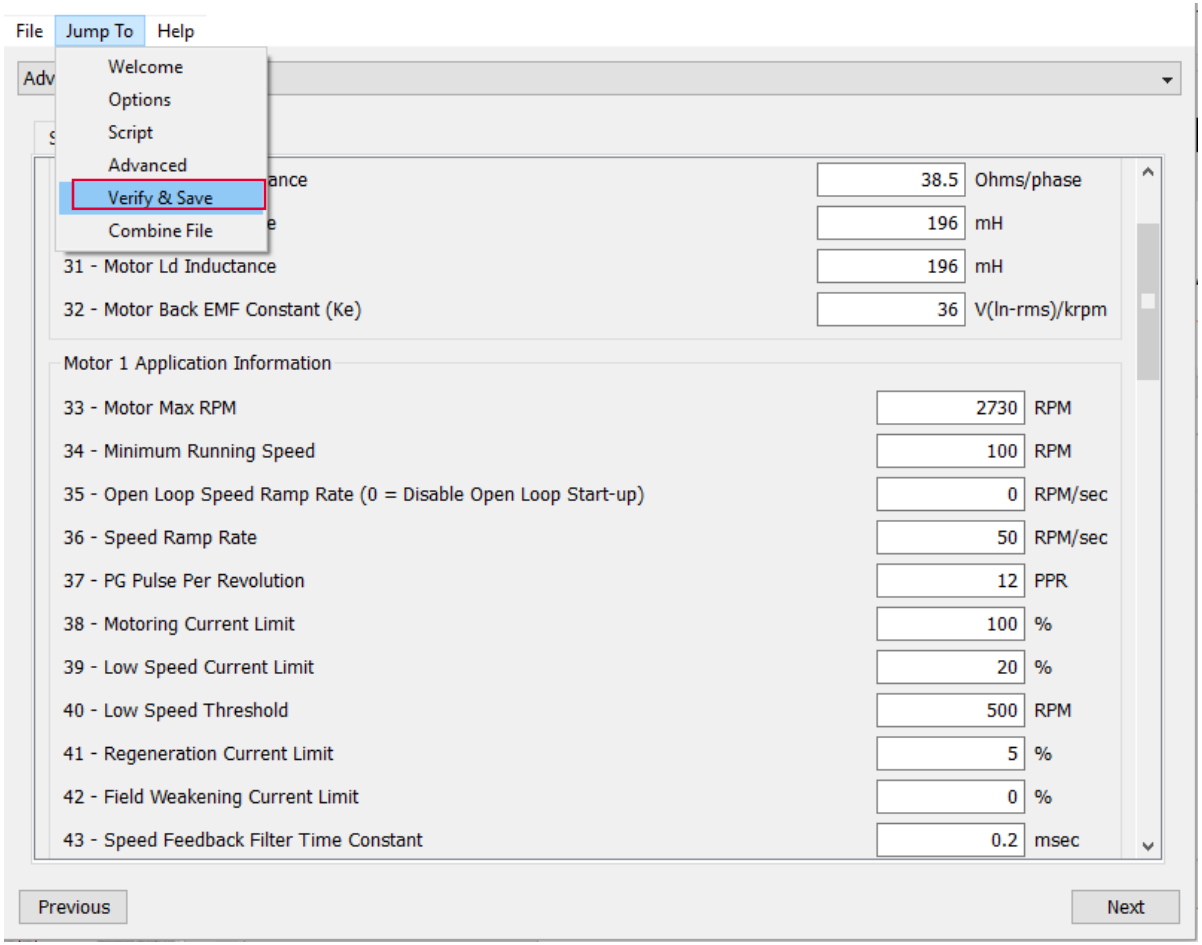
Generating the Parameter File
Verify & Save

› After entering all the system parameters, Click on “Verify & Save”.



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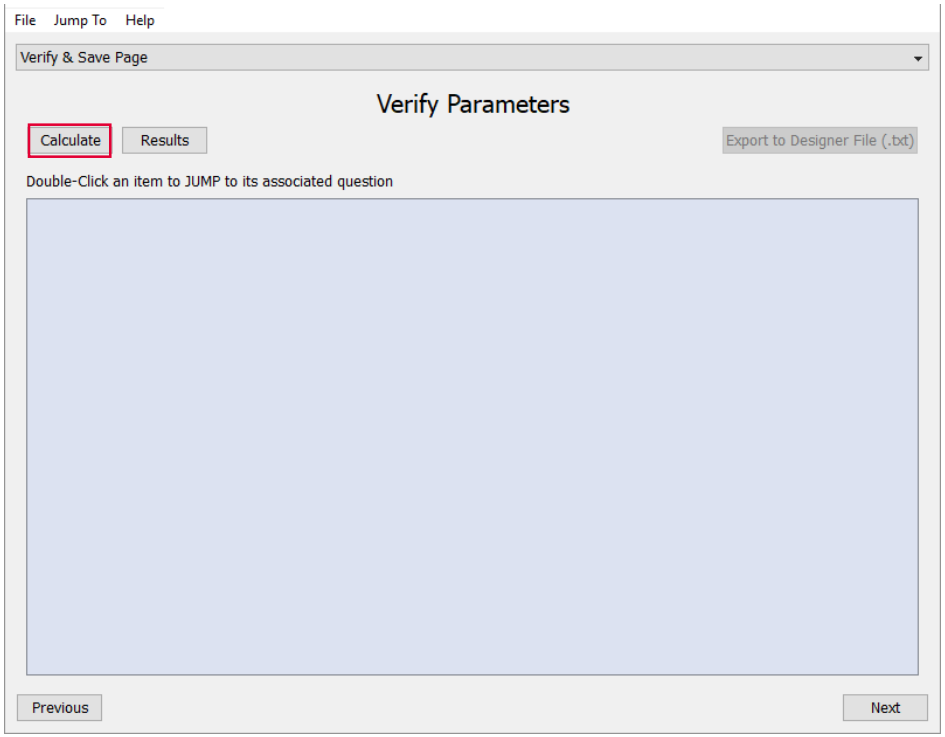
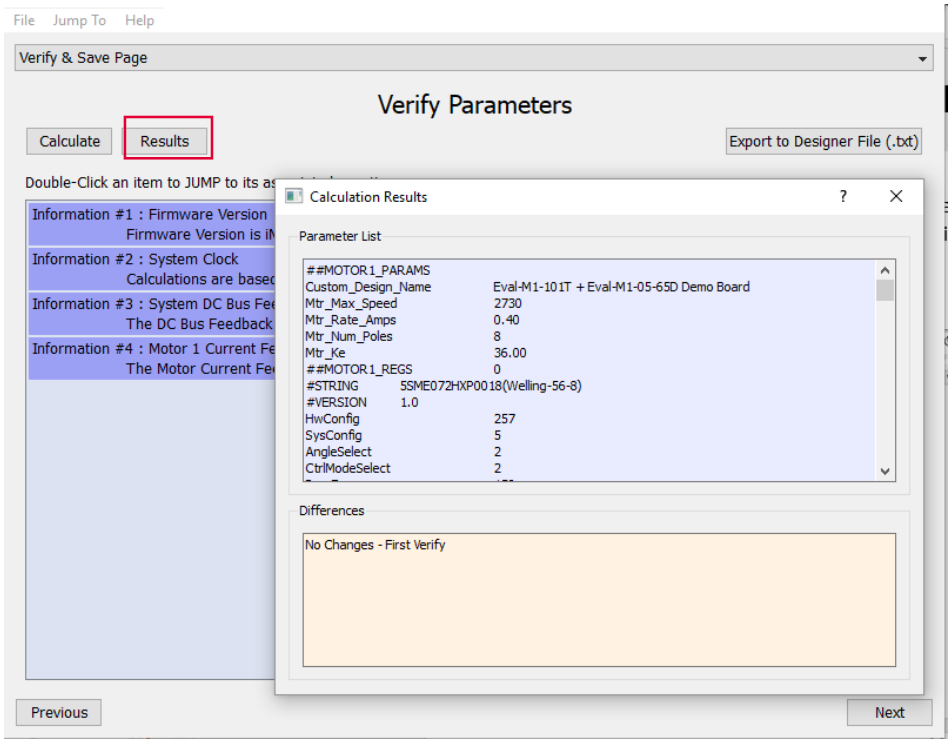
Generating the Parameter File
Calculate and Results buttons

- Click on “Calculate” to generate the parameter file.
- Generated parameter list can be viewed by clicking on “Results”.





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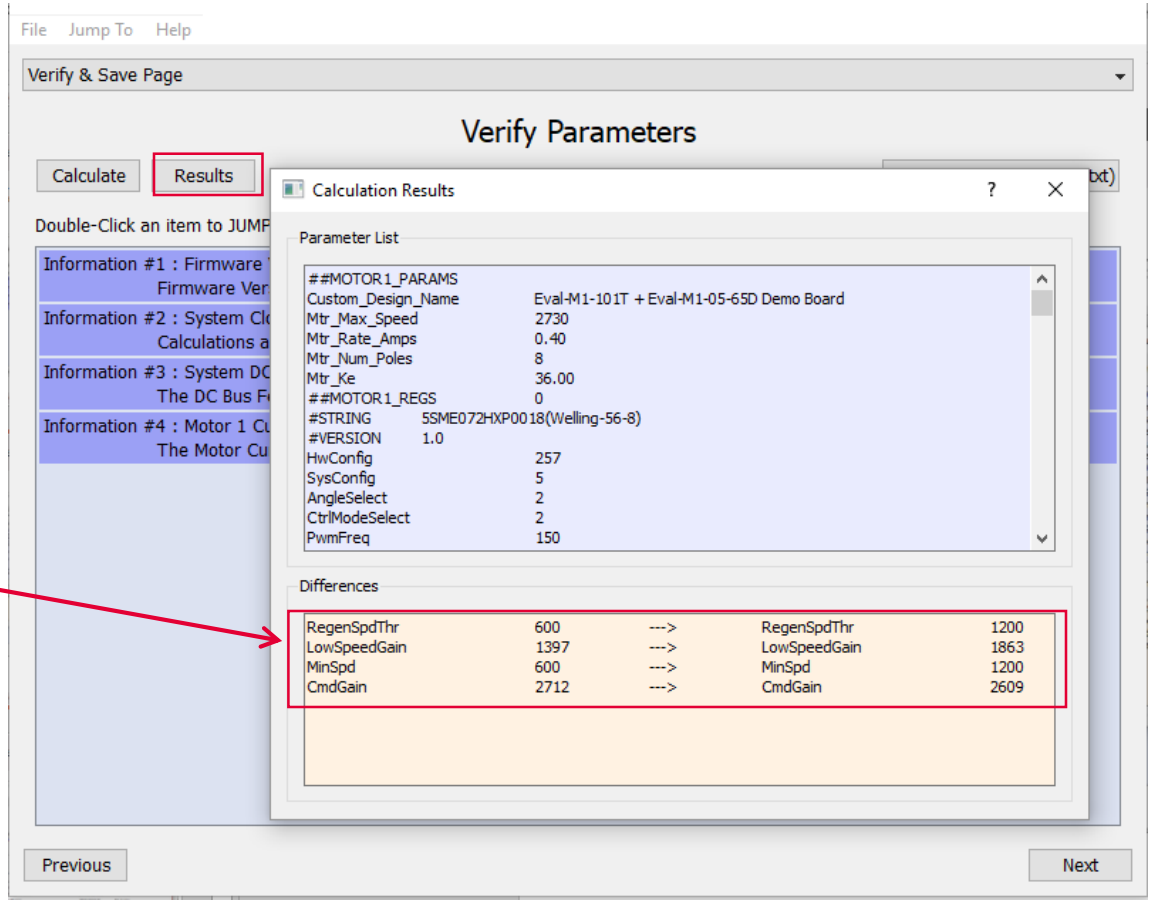
Generating the Parameter File
Differences in Results

- The impact of any parameter changes in the input configuration between actual and previous "Calculate" process, can be observed in the "Results" window, under "Differences".
- In the example here, the difference in parameters after changing the Minimum Speed of the motor from 100RPM to 200RPM, is shown in the "Differences" section of Results window.



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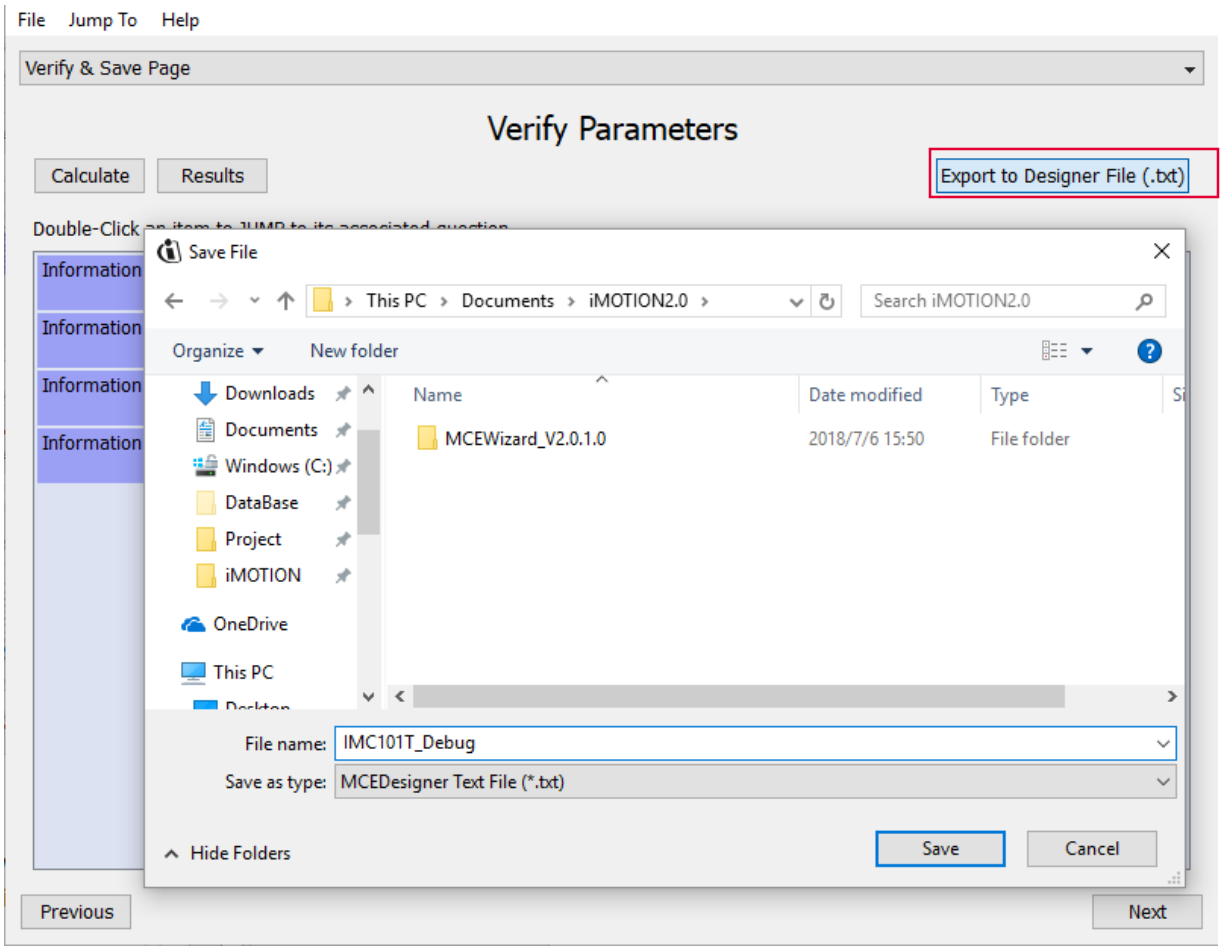
Generating the Parameter File
Exporting the .txt file

- Click on "Export to Designer File (.txt)" to save the generated parameter file at any desired location in the computer



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Generating the Combined File
Exporting the .ldf file for whole project

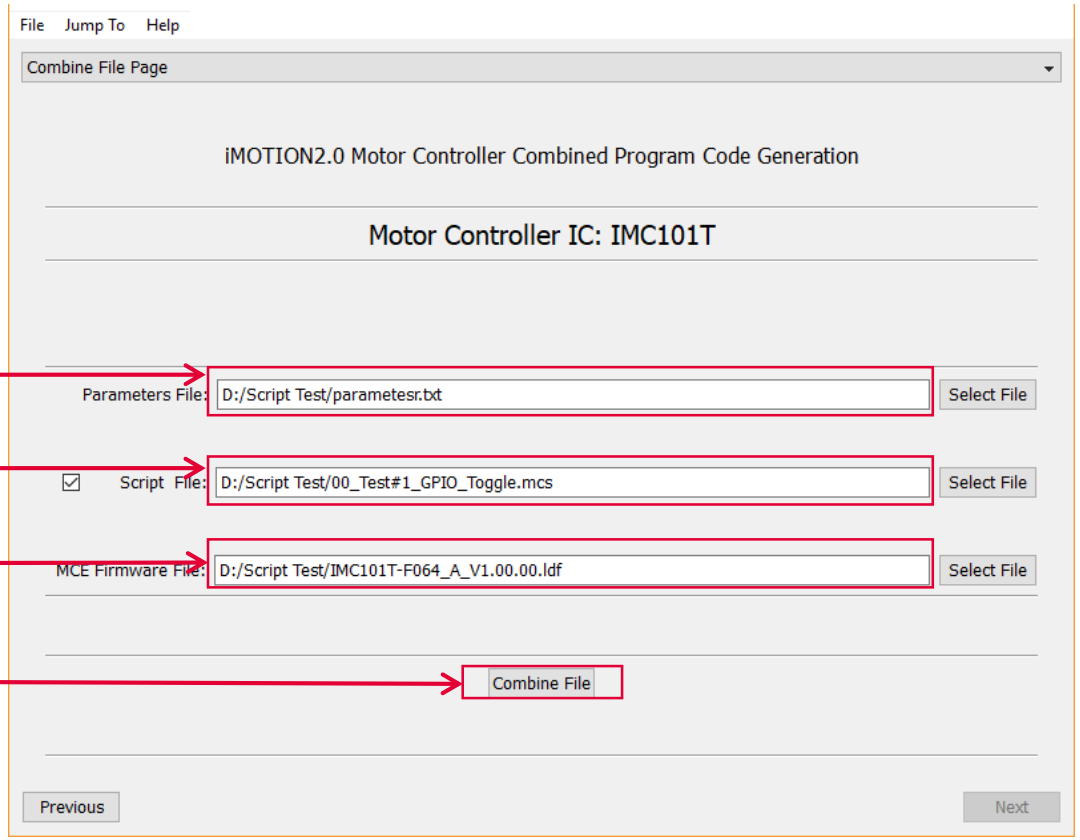
- MCEWizard creates 2 files: Parameters file and Script file (optional)
- These 2 files (or just Parameters file) can be combined with MCE firmware file in a single loader file (.ldf) for easier exchange and handling by the MCE Programmer Tool.

Parameters file:
.txt or .ldf file

Script file:
.mcs or .ldf file

MCE Firmware file:
.ldf file

Generate one combined file with CRC-16 value added



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