Release Notes

MCE Software Package

MCE Software V1.02.01 for IMC101T-T038
iMOTION ™ Platform Turnkey Software

Summary

Product Name	MCE_IMC101T-T038_V1.02.01.zip
Release Version	V1.02.01
Type Of Release	Release Candidate
Name of the Supplier	Infineon Technologies
Mode of Release	Infineon Server (http://www.infineon.com/iMOTION)
Date of Release	2019-06-03
Previous Versions	- V1.01.05 - V1.01.00 - V1.00.00 -

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1 Released Items

This chapter lists the atrifacts, the items of the test package and the test environment. It also presents the changes in the current version, the limitations and deviations as well as the known issues.

The iMOTION2.0 MCE addressing 3-phase Permanent Magnet Synchronous Motor (PMSM) control using Sensorless/Hall sensor based Field Oriented Control (FOC) schemes. This software is primarily targeted for end applications of industrial/consumer drives, pumps, and compressors.

List of Features

- Motor Control: Hall sensor support : 3/2 Digital hall and 2 Analog hall
- Motor Control: Low noise phase shift PWM for single shunt motor current measurement
- System: IEC/UL60730-1 ClassB support
- Scripting: Scripting language support
- Sensorless FOC control: High performance sensorless Field Oriented Control (FOC) of Permanent Magnet Synchronous Motor.
- Sensorless FOC control: Angle sensing for initial rotor angle detection.
- Sensorless FOC control: Startup schemes: Parking, Open loop and Catch-Spin free running motor.
- Motor Control: Single shunt or leg shunt motor current sensing.
- Motor Control: Support 3ph and 2ph PWM modulation.

1.1 Artifacts

This release V1.02.01 consists of the following artifacts:

Artifact	Description
IMC101T_T038_A_V1.02.01.ldf	MCEDesigner project file. MCEDesigner tool is used to program binary file and control parameter configuration.
IMC101T_V1.02.01.irc	Encrypted binary file for IMC101T-T038 device.
IMC101T-T038_Parameter.txt	Sample parameter file, generated from MCEWizard.
IMC101T-T038_V1.02.01_Default.map	Default MCEDesigner map file, to reset the Design_ID value
iMOTION_Software_License_Agreement.pdf	License agreement document.
IMC101T-T038_V1.02.01_ReleaseNotes.pdf	This release note.
Readme.txt	Readme file brief description of how to use tools.

1.2 Test Environment

The MCE software was tested, using the following environment.

- Control Board: EVAL-M1-101T
- Power Board: Eval-M1-05-65D
- Motor Specification: 8Pole, 0.4A R=38.5ohm, Lq= 196mH, Ld=196mH, Ke= 36V, 2730 RPM

1.3 Changes and Enhancements

The following items have been changed in release V1.02.01. Please refer to the ***revision history*** for previous versions.

Features

- Motor Control: Hall sensor support : 3/2 Digital hall and 2 Analog hall
- Motor Control: Low noise phase shift PWM for single shunt motor current measurement

Enhancements

- Interface: Lock/unlock mechanism to update STATIC parameters from MCEDesigner
- System: CPU load peak value capture function

Bug Fixes

- Motor Control: Sensorless FOC: Flux estimator angle compensation problem has been fixed. No need to double the "ATanTau" parameter for those who had manually adjusted it before.

1.4 Limitations and Deviations

This section lists features that are missing or were incompletely implemented in the current release, but may be provided in future releases.

- Sensorless FOC: Limited up to 150% rated speed field weakening and requires further tuning for higher operation
- FOC: 2Phase modulation only Type3 is supported
- Hall Support: Analog Hall is not supported for leg shunt configuration
- Analog Hall: Only 2 Analog Hall interface is supported
- Control Input: Control Input via Frequency or Duty control input is not supported in case of Hall sensor or Hybrid mode

2 Supported Tools and Packages

The following items are compatible with the current release.

2.1 Tools

Tool	Description
MCEWizard (V2.1.2.0)	MCEWizard is an interactive design tool that calculates control IC parameters in digital counts based on the system specifications expressed in engineering units.
MCEDesigner (V2.1.2.0)	MCEDesigner is the drive evaluation software that communicates with the digital IC and allows on the fly tuning of drive parameters.

3 Revision History

This chapter lists the changes and enhancements of the previous releases.

3.1 Revision V1.01.05

Bug Fixes

- Motor Control: System went into failsafe mode with Class B enabled or flagged execution fault with Class B disabled when configured PWM frequency is more than 20 kHz. This issue has been fixed.
- Motor Control: Current offset calculation was performed every time when motor enters into stop state. This doesn't allow to perform multiple startup in a very short time interval. This issue has been fixed. Current offset calculation is performed once after power on reset.
- Motor Control: Zero vector PWM is applied after BTS charging instead of switch on low side switch.
- Motor Control: It was not possible to set negative value to "OpenLoopAngle" variable and "ParkAngle" parameter from MCEDesigner/Scripting. This issue has been fixed. These registers input range is updated [-32768 : 32767] as per MCE Software reference manual.
- Scripting: Coherent update of variables index values more than 127 was not working. This issue has been fixed.
- .irc File: Parameters and variables names in read group are updated as per MCE Software Reference manual.

3.2 Revision V1.01.00

Features

- System: IEC/UL60730-1 ClassB support
- Scripting: Scripting language support

3.3 Revision V1.00.00

Features

- Sensorless FOC control: High performance sensorless Field Oriented Control (FOC) of Permanent Magnet Synchronous Motor.
- Sensorless FOC control: Angle sensing for initial rotor angle detection.
- Sensorless FOC control: Startup schemes: Parking, Open loop and Catch-Spin free running motor.
- Motor Control: Single shunt or leg shunt motor current sensing.
- Motor Control: Support 3ph and 2ph PWM modulation.

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