

# MC2160RN

## Motor Control Release Notes v2.16.0

Rev. 0 — 4 June 2024

Release notes

## 1 Introduction

These release notes are for the motor-control middleware group of applications released together with the MCUXpresso SDK v2.16.0. This document provides a list of application examples, their notable features, supported hardware platforms, changes since the last MCUXpresso release, known issues, and links to further documentation. The latest documentation for the motor control SDK is available on <https://www.nxp.com/sdkmotorcontrol>.

## 2 Description

This motor-control middleware release describes the implementation of the motor-control software for 3-phase Permanent Magnet Synchronous Motor (PMSM). Applications can support high- or low-voltage hardware platforms and various MCU types. The following application types are available in the *mc\_pmsm* folder of your SDK archive (see [Section "Examples"](#)):

- **pmsm\_snsless** - Sensorless FOC example utilizing fractional and/or floating-point arithmetics. The Motor Identification (MID) software module in combination with the Motor Control Application Tool (MCAT) allow for rapid application development. The example is available on these boards:
  - MC56F80000-EVK, TWR-MC56F8200
- **pmsm\_enc** - Sensor and sensorless FOC example utilizing fractional and/or floating-point arithmetics. The Motor Identification (MID) software module in combination with the Motor Control Application Tool (MCAT) allow for rapid application development. The example is available on these boards:
  - MIMXRT1170-EVKB, MIMXRT1180-EVK, FRDM-MCXA153, FRDM-MCXA156, FRDM-MCXN947, LPCXpresso55S36-EVK, MC56F81000-EVK, MC56F83000-EVK, TWR-MC56F8400
- **pmsm\_enc\_iopamp** - Sensor and sensorless FOC example utilizing floating-point arithmetics. The Motor Identification (MID) software module in combination with the Motor Control Application Tool (MCAT) allow for rapid application development. In this example, the internal operational amplifiers are used instead of the external operational amplifiers. The example is available on these boards:
  - LPCXpresso55S36-EVK
- **pmsm\_enc\_dual** - Sensor and sensorless FOC example utilizing floating-point arithmetic for dual motor control application. The MID software is available. The MCAT is not available for this example. The example is available on these boards:
  - LPCXpresso55S36-EVK
- **blcdc** - Sensorless speed control example utilizing fractional and/or floating-point arithmetics. The example with Motor Control Application Tool (MCAT) allows for rapid application development. The example is available on these boards:
  - MIMXRT1170-EVKB

See the user's guide in the `\boards\<board_name>\demo_apps\mc_pmsm\<pmsm_example>` folder in your SDK package (see [Section "Examples"](#)) or in the [www.nxp.com/sdkmotorcontrol](http://www.nxp.com/sdkmotorcontrol) web page.

All examples support the FreeMASTER interface for quick and simple application debugging, tuning, control, and monitoring. See [www.nxp.com/freemaster](http://www.nxp.com/freemaster) and the application user's guide for more information.



### 3 Examples

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The example projects are distributed only in the form of the MCUXpresso SDK Archive and the release documentation is available in the SDK Documentation package. To acquire both packages (specific to your development platform), use the online MCUXpresso SDK Builder tool and perform the following steps:

- Go to [www.mcuxpresso.nxp.com](http://www.mcuxpresso.nxp.com).
- Click the **Select Development Board** button.
- Sign in or create the NXP account (if requested).
- Choose one of the development tools (see [Section 4](#) for the list of boards supported by this release).
- Click the **Build MCUXpresso SDK** button.
- Make sure that the **Motor Control** middleware is selected and click the **Download SDK** button.
- When the SDK Documentation and SDK Archive package build is done (you receive a notification email), it can be downloaded freely.

### 4 Development tools

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The motor-control application examples were developed and tested with the following development tools:

- IAR Embedded Workbench IDE version 9.60.1
- Arm<sup>®</sup> -MDK - Keil<sup>®</sup> µVision<sup>®</sup> version 5.39
- MCUXpresso IDE version 11.10.0
- ARMGCC IDE version 13.2.1
- CodeWarrior version 11.2

FreeMASTER tool version 3.2.3 was used for application monitoring. See [www.nxp.com/freemaster](http://www.nxp.com/freemaster) for the latest version.

### 5 What is new

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This section describes all notable changes since the last motor-control middleware MCUXpresso SDK release.

1. **Added pmsm examples with sensored speed and servo control for fraction arithmetics.**
2. **Added bldc example on MIMXRT1170-EVKB**
3. **New board supported**  
Supported FRDM-MCXA156.

### 6 Known issues

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This chapter contains the description of known issues or non-standard behavior of the released example.

- No known issues so far.

### 7 Feedback

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Your feedback is very important to us. Please feel free to leave a comment [here](#).

Contents

1 Introduction ..... 1

2 Description ..... 1

3 Examples ..... 2

4 Development tools ..... 2

5 What is new ..... 2

6 Known issues ..... 2

7 Feedback ..... 2