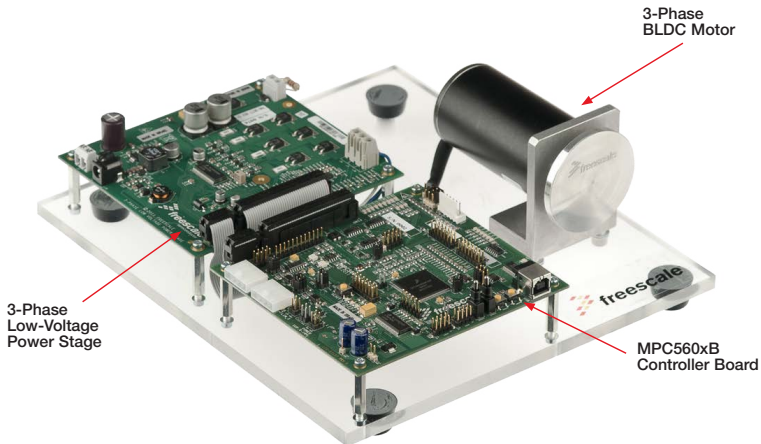


Quick Start Guide

**3-Phase Sensorless BLDC
Motor Control Development Kit
with Qorivva MPC5606B MCU**



3-Phase Sensorless BLDC Motor Control Development Kit with Qorivva MPC5606B MCU

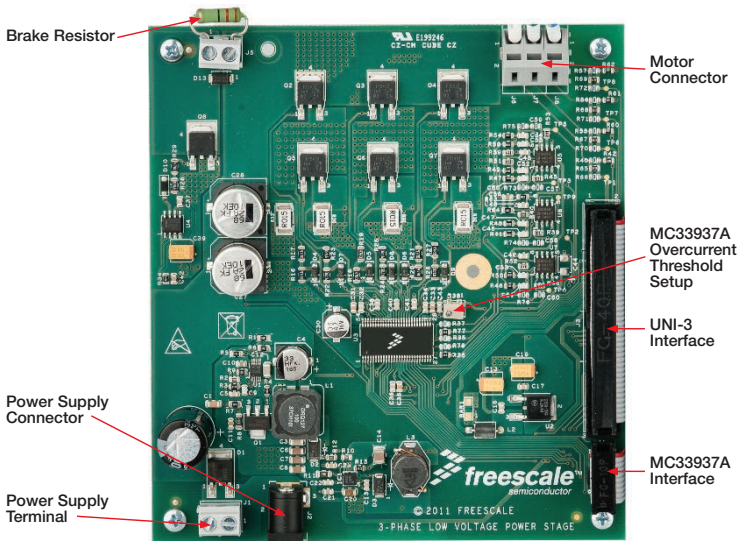




3-Phase Sensorless BLDC Motor Control Development Kit Features

- MPC5606B MCU (144-pin LQFP)
- MC33905D system basis chip
- MC33937A FET pre-driver
- Sensorless BLDC motor control support
- Hardware support for Hall sensor-based motor control
- DC bus overvoltage, overcurrent and undervoltage detection
- FreeMASTER instrumentation/visualization

3-Phase Low-Voltage Power Stage



Step-by-Step Installation Instructions

Learn how to set up and use the development kit with the FreeMASTER tool.

1 Install Tools and Drivers

- Install FreeMASTER runtime debugging tool.
- Install FTDI Virtual COM Port Driver.

The FTDI Virtual COM Port Driver installation file is available in the “Downloads” section at freescale.com/automcdevkits.

For the FreeMASTER application download, please visit freescale.com/freemaster.

2 Connect the USB Cable

Connect the MPC560xB controller board to the PC using the USB cable. Allow the PC to automatically configure the USB drivers if needed.

3 Connect the Power Supply

Connect 24 V/3 A power supply to the power connector on the 3-phase low-voltage power stage.

Power supply operation range is 8 to 24 V. The BLDC motor used is designed for 24 V phase voltage.

4 Using the FreeMASTER Project

- Download and unzip the application software for the MTRCKTSBN5606B available at freescale.com/automcdevkits.

Note: Ensure the development kit is updated with the downloaded application software before proceeding to next step.

- Open the FreeMASTER project **MTRCKTSBN5606B/SW/MPC5606B_BLDC_Sensorless MPC5606B_BLDC_Sensorless.pmp**.
- Set up the RS232 communication port and speed in the menu **Project/Options**. Set the communication speed to 19200 Bd.

The COM port number can be found using Windows Device Manager under “Ports (COM and LPT)” section as “USB Serial Port (COMn).

- Press the red **STOP** button in the FreeMASTER toolbar to enable the communication.

Successful communication is signaled in the status bar.

- To start the motor, set the **ON/OFF** flip-flop switch ON or set the flip-flop switch SW503 ON (left) on the MPC560xB controller board.
- Enter the required speed by changing the value of the “wRotElRequired” variable in the variables watch window, by double clicking the speed gauge, or by pressing the button SW502 (speed up) or button SW501 (speed down) on the MPC560xB controller board. The variable value is in revolutions per minute.
- To stop the motor, set the **ON/OFF** flip-flop OFF or set the switch SW504 OFF (right) on the MPC560xB controller board.
- To clear pending faults, click the green **Fault Clear** button or press the buttons SW501 and SW502 together on the MPC560xB controller board.

Faults present in the system are signaled by the fault indicators, pending faults by the small red LED-like indicator next to the respective fault indicator.

Qorivva MPC5606B MCU Controller Board Jumper Options

The following is a list of all jumper options. The default jumper settings are shown in white text within green boxes.

Jumper	Selector	Functions	Connections
J201	eMIOS_0/ eMIOS_1 Interconnection	PC[9]/E0UC[7] interconnected with PF[12]/ E1UC[25]	On
		No interconnection	Off
J202	MPC5606B Boot Mode	Serial boot (FlexCAN_0)	On
		Flash memory boot mode	Off
J301	LINFlex_6 Connection	LINFlex_TX connected to FT232RL_RXD	1-2
		LINFlex_RX connected to FT232RL_TXD	3-4
J600 ÷ J602	Control Signal Selection	Hall sensor signals	1-2
		MC33937A zero-cross signals	2-3
J704	CAN: L Termination	CAN: L termination	On
		No CAN: L termination	Off
J705	CAN: H Termination	CAN: H termination	On
		No CAN: H termination	Off
J706	LIN_1 Master Termination	LIN_1 master mode	On
		LIN_1 slave mode	Off



Qorivva MPC5606B MCU Controller Board Jumper Options *(continued)*

Jumper	Selector	Functions	Connections
J707	LIN_2 Master Termination	LIN_2 master mode	On
		LIN_2 slave mode	Off
J708	SBC Debug Mode Enable	MC33905D debug mode enabled	On
		MC33905D debug mode disabled	Off
J709	SBC Fail-Safe Mode Enable	MC33905D fail-safe mode enabled	On
		MC33905D fail-safe mode disabled	Off
J710	ADC Reference Voltage Select	3.2 V typical	On
		4.1 V typical	Off
J901	Aux. CAN: L Termination	Auxiliary CAN: L termination	On
		No auxiliary CAN: L termination	Off
J902	Aux. CAN: H Termination	Auxiliary CAN: H termination	On
		No auxiliary CAN: H termination	Off



Support

Visit **freescale.com/support** for a list of phone numbers within your region.

Warranty

Visit **freescale.com/warranty** for complete warranty information.

For more information, visit

freescale.com/automcdevkits

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