

PSOC™ Control C3M5 Compact Kit

KIT_PSC3M5_2GO

Kit contents

1. PSOC™ Control C3M5 Compact Kit
2. Screwdriver for potentiometer tuning





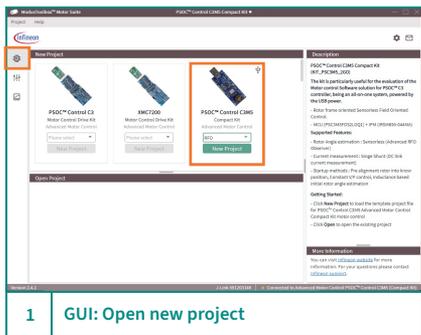
1 Hardware set up (connect to test PC)

Standalone operation

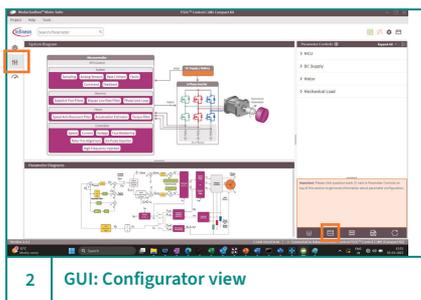
1. The kit is pre-programmed with the out-of-box (OOB) firmware, which is configured to operate the included motor in sensorless field-oriented control (FOC) single-shunt mode.
2. Connect the PSOC™ Control C3M5 compact kit to a system or computer USB socket as shown in above figure. The Green Power LED(D3) and Green Debug LED (D9) will turn on.
3. The onboard motor starts spinning in the clockwise direction (from motor's front side).
4. The motor speed is controlled by the potentiometer (R20). Rotate the potentiometer to adjust the motor speed.
5. During sensorless close-loop operation, motor stops if the set speed is too low due to brake boot mode of motor machine state. To restart the motor, set the speed to '0' and then increase it again using the potentiometer.
6. The user button (SW2) changes the motor's direction. In closed loop, when SW2 is pressed, the motor speed ramps down to '0' and stops. Set the potentiometer (R20) speed to '0' and then increase the speed to restart the motor in the reverse direction. In case of open loop (when motor speed is too low <20%, it automatically spin in reverse direction upon switch press.
7. The Green user LED (D8) shows the motor's direction:
 - Off - Clockwise direction
 - On - Counter-clockwise direction

Note: The motor speed determined by the potentiometer setting. If the potentiometer is set to '0' (fully turned counterclockwise), the motor will not run.

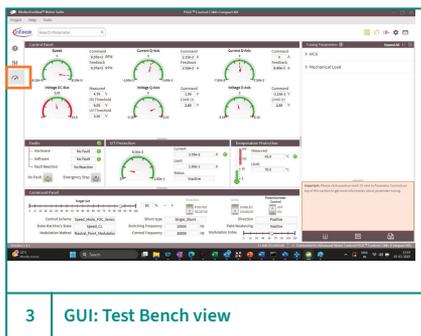
Note: Refer to page 4 for board details.



1 GUI: Open new project



2 GUI: Configurator view



3 GUI: Test Bench view

GUI-based operation

1. Download and install **ModusToolbox™ Motor Suite Setup** for Windows from Infineon Developer Center using the link [ModusToolbox™ Motor Suite](#).
2. Connect the compact kit to PC via USB-A connector and then open the **ModusToolbox Motor Suit GUI**.
3. Go to **PSOC™ Control C3M5 compact kit**, select **RFO**, and click **New Project** to open the **Configurator** view.

Configurator view

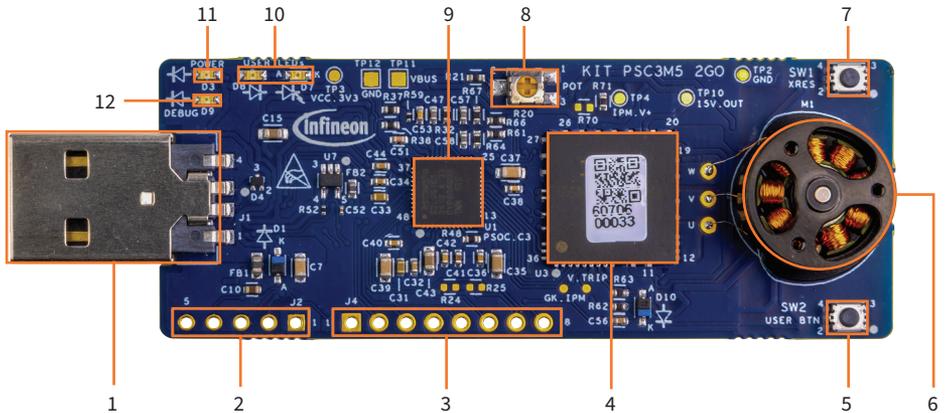
1. A green dot along with the notification **Connected to Advanced Motor Control PSOC™ Control C3M5 (Compact Kit)** at the bottom right of the GUI windows indicates a successful connection to the kit
2. The **Configurator view** provides the option to configure the static parameters.
3. Click **Flash Firmware** on the lower right side and then click on the **Default** option to reprogram the default firmware in to the controller.
4. Click the **Test Bench** button to switch to the **Test Bench view**.

GUI operation in Test Bench view

1. In the **Command Panel**, the Drive switch is used to enable/disable the drive.
2. If the Potentiometer Control switch is on, then the potentiometer (R20) on the kit controls the motor speed.
3. To set the motor speed using the **Target Set** slider in the Command Panel, turn off the **Potentiometer Control** switch in the GUI.
4. **Emergency Stop** under the Faults tab is used to stop/restart the motor, and clear the faults.
5. The **Control Panel** and **Command Panel** sections display parameters such as voltage applied, currents flowing, DC bus voltage, faults, control scheme, state of the state machine, and the motor direction.
6. To view current waveforms or other parameters, launch the Oscilloscope by clicking the icon in the Top right corner of Motor Suit GUI. For further details, refer to the user manual on the top left corner inside the **Oscilloscope** window.

Note: During the installation process, if prompted to install the J-Link driver, select "Yes" if it is not already installed on the test PC.

KIT_PSC3M5_2GO card details



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|---|---|----|---|
| 1 | USB-A connector (J1) | 7 | Reset button (SW1) |
| 2 | XMC4200 SWD programming header (J2) | 8 | Potentiometer-POT (R20) |
| 3 | GPIO header (J4) | 9 | PSoC™ Control C3 device (PSC3M5FDS2LGQ1 - U1) |
| 4 | Intelligent power module (IPM) three-phase (IRSM836-044MA - U3) | 10 | User LEDs (D7, D8) |
| 5 | User button (SW2) | 11 | Power LED (D3) |
| 6 | BLDC motor (M1) | 12 | Debug LED (D9) |

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