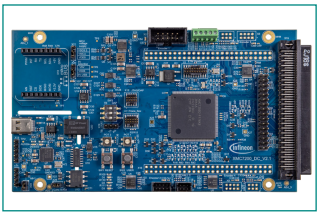
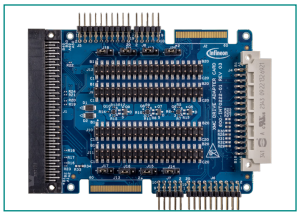
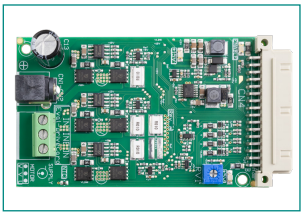
QUICK START GUIDE

XMC7200 Complete System Motor Control Kit

KIT_XMC7200_MC1

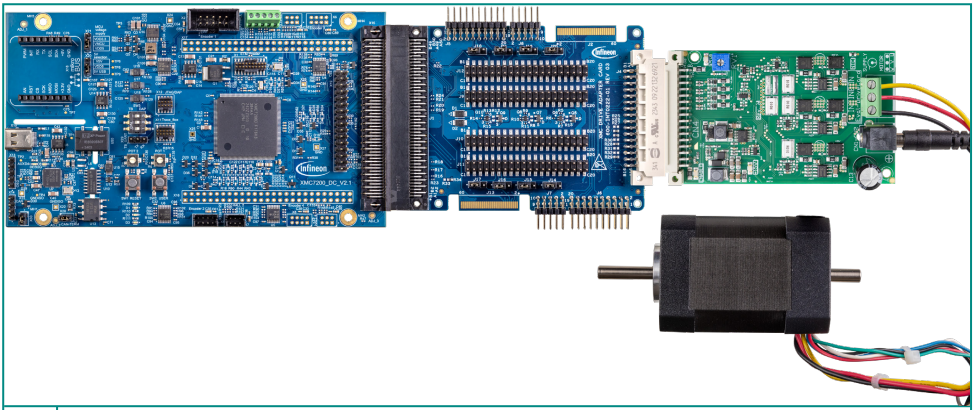
Kit contents

1. KIT_XMC7200_DC_V1 motor control card
2. Drive adapter card
3. KITMOTORDC250W24VTOBO1 power board
4. USB-A to USB-C cable
5. Screwdriver
6. Nanotec DB42S03 or DB42M03 24V BLDC motor
7. 24 V/1 A AC-DC adapter
8. Quick start guide (this document)




www.infineon.com/KIT_XMC7200_MC1

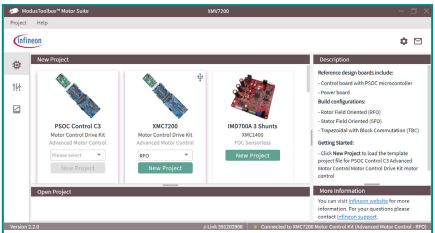


1	Complete setup with motor and adapter

Standalone operation

1. The MCU is pre-programmed with the out-of-box (OOB) firmware configured to run the included motor in sensorless field-oriented control (FOC) three-shunt mode.
2. Ensure that the 5 V selection jumper (X20) is set to position 2-3 (V5V) and the MCU voltage supply jumper (X21) is set to position 1-2 (VDD5).
3. Connect the control and power board using the adapter board as shown in above figure.
4. Connect the motor wires to the motor screw terminal connector (CN3) on the power board as follows:
   - Yellow : U
   - Red : V
   - Black : W
5. Connect the 24 V/1 A power adapter to the DC input barrel jack (CN1) on the power board and turn on the power supply.
6. The motor shaft starts spinning in the clockwise direction (with respect to the motor's front side).
7. The motor speed is controlled by the potentiometer (R6). Use the screwdriver (provided with the kit) to change the potentiometer setting.
8. The user button (SW2) changes the motor direction. When pressed, the motor speed ramps down to '0' and stops. Set the potentiometer (R6) speed to '0' and then increase the speed to restart the motor in the reverse direction.
9. The yellow LED1 (D1) shows the motor direction:
   - On for clockwise direction
   - Off for counter-clockwise direction

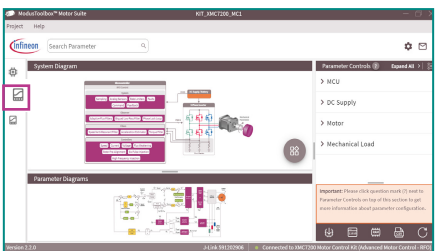
Note: The motor speed depends on the potentiometer setting. If the potentiometer is set to '0' (fully turned clockwise direction), the motor will not run.



1 GUI: Open new project

GUI-based operation

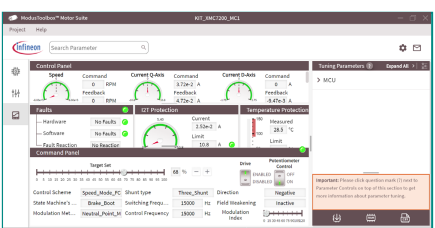
1. Install **ModusToolbox™ Setup** for Windows from the www.infineon.com/mtb page by clicking on Download.
2. Install **ModusToolbox™ Industrial MCU Pack** from **Additional Packages**. This installs the ModusToolbox™ Motor Suite GUI.
3. Ensure that all the micro switches of SW3 are on the right side for proper operation.
4. Follow step 1 to 5 in the standalone operation to setup the hardware.
5. Connect the USB cable to the PC and the control card USB socket. Open the **ModusToolbox™ Motor Suite GUI**.
6. Go to **XMC7200**, select **RFO**, and click **New Project** to open the **Configurator** view.



2 GUI: Configurator view

Configurator view

1. A green color at the bottom of the suite indicates a successful connection.
2. The **Configurator** view provides the option to configure the static parameter.
3. Click **Flash Firmware** on the lower right side to reprogram the default firmware.
4. Click the **Test Bench** button to switch to the Test Bench view.

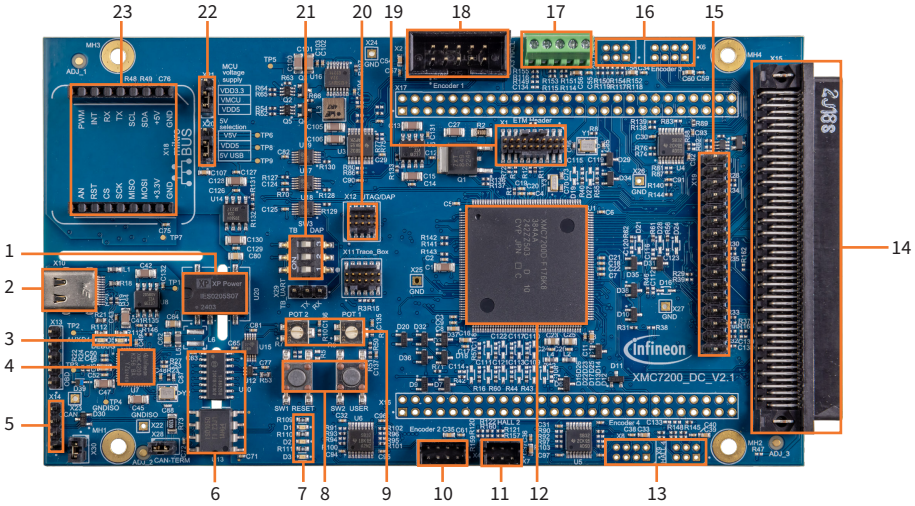


3 GUI: Test Bench view

GUI operation in Test Bench view

1. In the **Command Panel**, the **Drive** switch is used to enable/disable the drive.
2. To set the motor speed using the **Target Set** slider in the **Command Panel**, turn off the **Potentiometer Control** switch in the GUI.
3. If the **Potentiometer Control** switch is on, then the potentiometer (R6) on the kit controls the motor speed.
4. **Emergency Stop** is used to stop/restart the motor, to 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. Select the **Oscilloscope** view to stream the parameters and see the user manual on the top left corner of the Oscilloscope window for more details.

KIT_XMC7200_DC_V1 Motor Drive Card details



1	DC-DC (U20)	12	MCU XMC7200D (U1)
2	USB-C socket (X10)	13	Motor4 encoder and Hall inputs (X8, X9)
3	DEBUG (D5) and AUX LEDs (D4)	14	HD 100-pin connector (X15)
4	XMC4200 MCU(J-Link - U7)	15	MADK M5 pinout header (X19)
5	Isolated CAN header (X14)	16	Motor3 encoder and Hall inputs (X5, X6)
6	SWD/UART and CAN isolators (U13, U10)	17	Motor1 Hall sensor inputs (X3)
7	User LEDs (D1, D2)	18	Motor1 encoder input (X2)
8	User button (SW2) and reset button (SW1)	19	ETM-Trace header (X1)
9	Potentiometers (R6, R7)	20	10-pin SWD/JTAG header (X12)
10	Motor2 encoder input (X4)	21	Debug interface selection (SW3)
11	Motor2 Hall sensor input (X7)	22	Supply selection jumpers (X20, X21)
		23	mikroBUS header (X18)

Next steps

- The ModusToolbox™ software supports this kit and the associated code examples.
- Visit the kit website and ModusToolbox™ webpage for more information on code examples supported for this kit and the kit documentation.

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