# TMC6200-EVAL Evaluation Kit

Document Revision V1.00 • 2019-Mar-19

The TMC6200-EVAL is designed for evaluating all features of the TMC6200. The evaluation board is part of TRINAMICs user-friendly plug-in system for chip evaluation. Just connect the TMC6200-EVAL with Landungsbruecke, the associated base board. Therefore, use the dedicated connector board, called Eselsbruecke. Eselsbruecke offers test points for every connector pin.
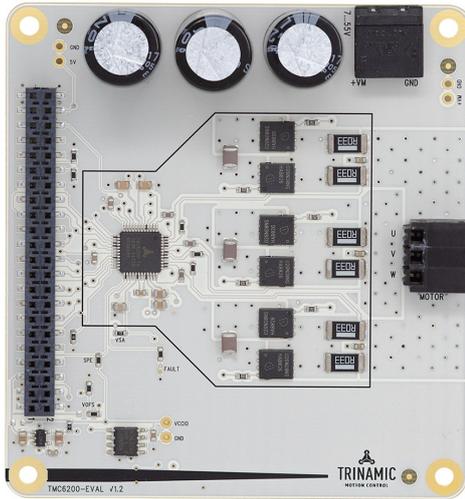
Features

- 3-phase BLDC/PMSM motor with up to 10A coil current
- Gate Drive Programmable 0.5A/1A/1.5A
- Supply Voltage 8. . . 48V (55V max)
- SPI Interface for diagnostics and configuration
- Optional BBM break-before-make logic for single line control
- Programmable Short and Overload current threshold and retry
- Programmable Control Interface with 3 line or 6 line drive
- Full Protection & Diagnostics
- Integrated Current Shunt Amplifiers

Applications

- PMSM FOC drives and BLDC motors
- Robotics
- CNC Machines
- Industrial Drives
- LEV
- Factory Automation
- Blowers
- Pumps

Simplified Block Diagram

Read entire documentation.
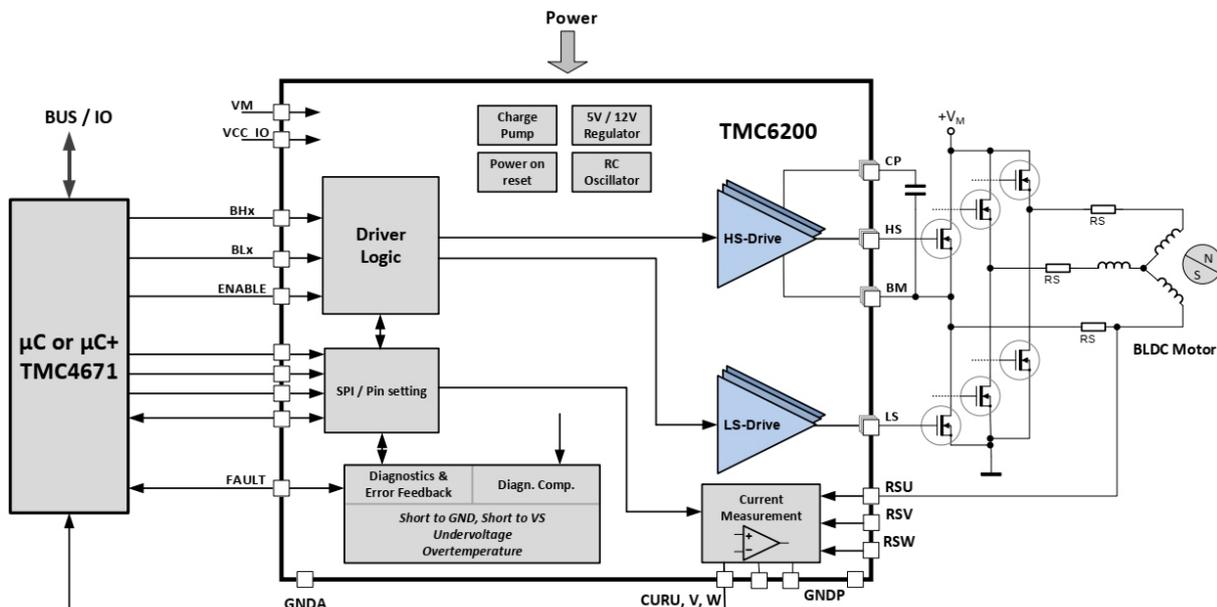
TRINAMIC

MOTION CONTROL

Contents

1 Getting Started

You need

- TMC6200-EVAL
- Landungsbruecke or Startrampe with latest firmware (from V3.06 on). We recommend the Landungsbruecke as it offers faster USB communication.
- 2 x Eselsbruecke
- TMC4671-EVAL (Hardware FOC Controller)
- BLDC motor with supported feedback system
- USB interface
- Power Supply
- Latest TMCL-IDE (please download from www.trinamic.com) and PC
- Cables for interface, motors and power

Precautions

- Do not mix up connections or short-circuit pins.
- Avoid bounding I/O wires with motor wires.
- Do not exceed the maximum rated supply supply voltage!
- Do not connect or disconnect the motor while powered!
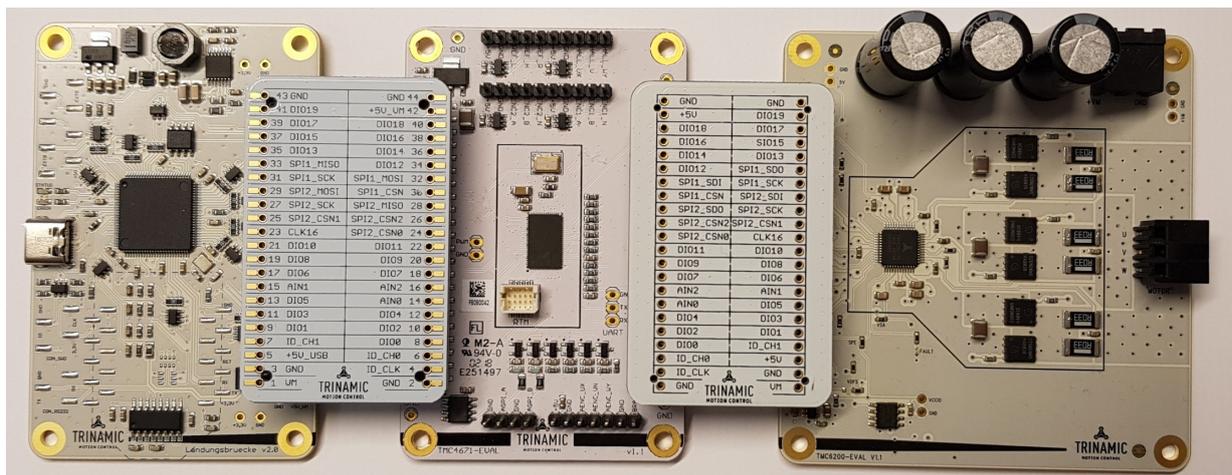- START WITH POWER SUPPLY OFF!

Figure 1: Getting started

| NOTICE | The Landungsbruecke operates on USB Power Supply. All other voltages are generated from V_M. Kit works only, when V_M is applied. |

1.1 First Start-Up

1. Make sure that the latest version of the TMCL-IDE is installed. The TMCL-IDE can be downloaded from www.trinamic.com/support/software/tmcl-ide/.

2. Open the TMCL-IDE and connect the Landungsbruecke or Startrampe via USB to the computer. For Windows 8 and higher is no driver needed, on Windows 7 machines the TMCL-IDE is installing the driver automatically.

3. Verify that the Landungsbruecke or Startrampe is using the latest firmware version. The firmware version is shown in the connected device tree.
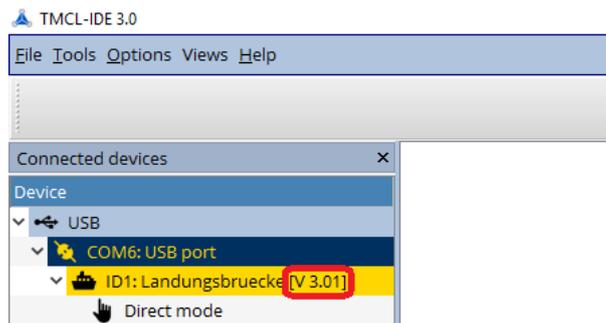

Figure 2: Firmware Version

4. The TMCL-IDE 3.0 needs room to show all important information and to provide a good overview. Therefore, arrange the main window related to your needs. We recommend using full screen. For evaluation boards it is essential to have access to the registers. Therefore open up the Register Browser (left side). For a better view click top right on the normal icon to get a maximized register browser window.
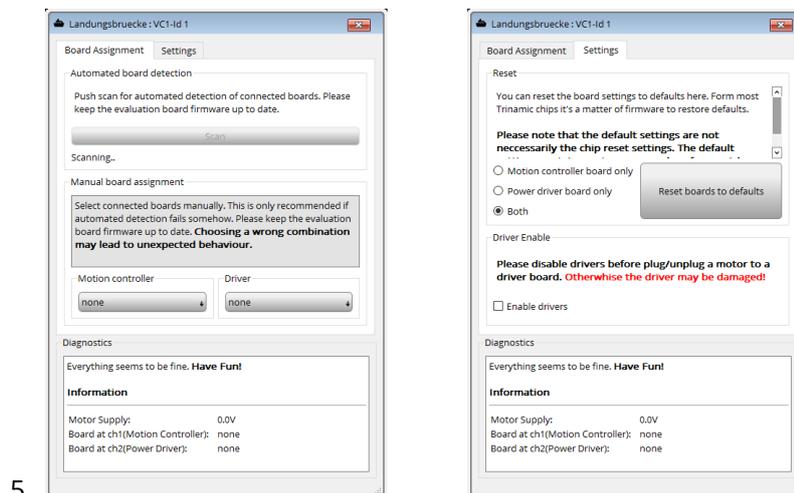
5.

Figure 3: Landungsbruecke Dialogue

6. There are 2 solder options available on the TMC6200-EVAL as highlighted in the image below. The resistor in the small left square allows changing VCCIO of TMC6200. If not assembled, VCCIO = 3.3V. If this 0-Ohm resistor is assmebled, VCCIO = 5V.
In the larger square with label VFOS the offset voltage of the internal current shunt amplifieres can be selected. By default it is 5V/2. When moving the existing 1k-Ohm resistor to the left side solder pad VFOS is 3.3V/2.
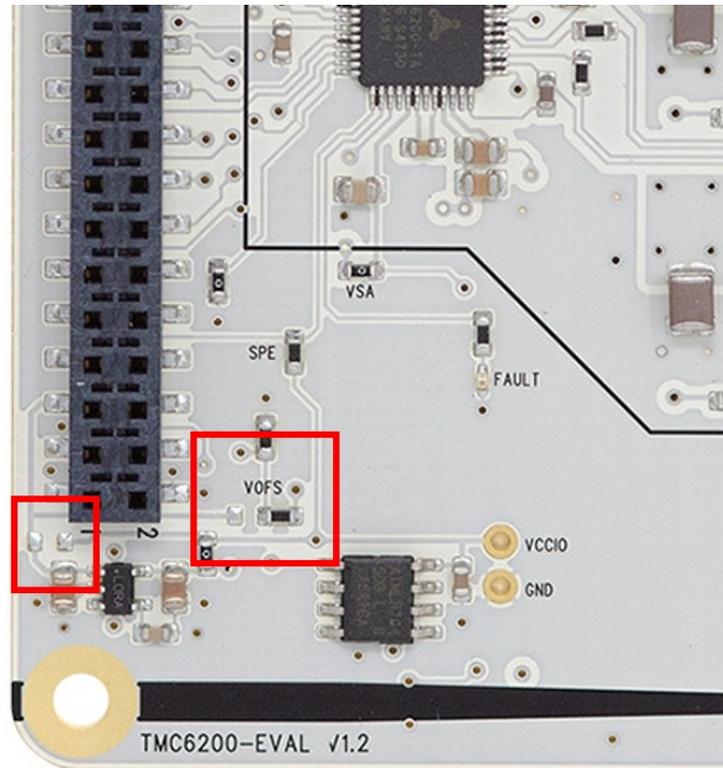

Figure 4: Solder jumper on TMC6200-EVAL

2   Hardware Information

All design files for our evaluation boards are available for free. We offer the original ECAD files (Eagle, Altium, or PADS), Gerber data, the BOM, and PDF copies.

The files can be downloaded from the evaluation boards' website directly at `https://www.trinamic.com/support/eval-kits/`.

Note   If files are missing on the website or something is wrong please send us a note.

---

3   Revision History

3.1   Document Revision

Version	Date	Author	Description
1.00	2018-12-17	SK	Initial release.

Table 1: Document Revision