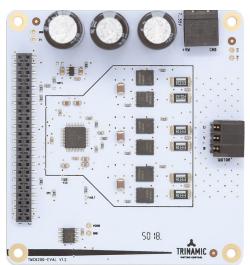
TMC6200-EVAL Evaluation Kit

Document Revision V1.00 • 2019-July-18

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.



Applications

- PMSM FOC drives and BLDC CNC Machines motors

LEV

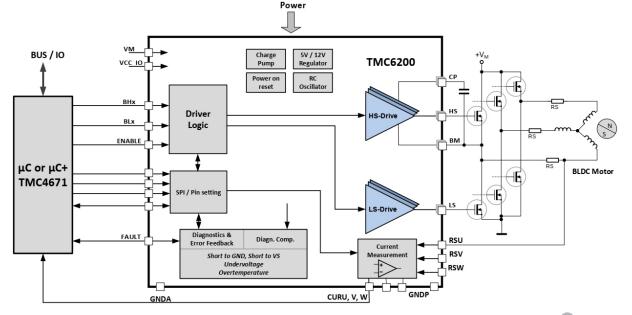
Industrial Drives

Robotics

Simplified Block Diagram

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
 - Factory Automation
 - Blowers
 - Pumps



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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!

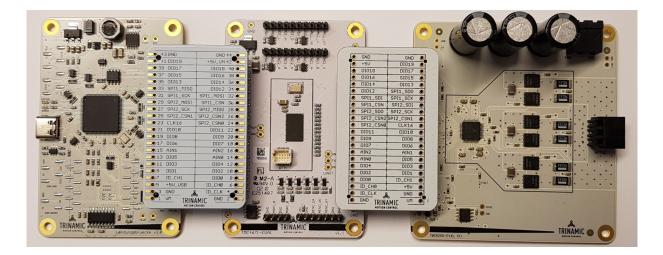


Figure 1: Getting started



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.

🚴 TMCL-IDE 3.0							
<u>File T</u> ools <u>O</u> ptions Views <u>H</u> elp							
1							
Connected devices ×							
Device							
V 🔩 USB							
🗸 💘 COM6: USB port							
🗠 🌰 ID1: Landungsbruecke 🔽 3.01]							
Uirect mode							

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.

Board Assignment Settings	Board Assignment Settings
Automated board detection	Reset
Push scan for automated detection of connected boards. Please keep the evaluation board firmware up to date.	You can reset the board settings to defaults here. Form mos Trinamic chips it's a matter of firmware to restore defaults.
Scan	Please note that the default settings are not neccessarily the chip reset settings. The default
	O Motion controller board only
Manual board assignment	O Power driver board only Reset boards to defau
Select connected boards manually. This is only recommended if automated detection fails somehow. Please keep the evaluation	Both
board firmware up to date. Choosing a wrong combination	Driver Enable
Motion controller Driver	Please disable drivers before plug/unplug a motor t
may lead to unexpected behaviour. Motion controller Driver	Please disable drivers before plug/unplug a motor t driver board. Otherwhise the driver may be damage
Motion controller Driver none +	Please disable drivers before plug/unplug a motor t driver board. Otherwhise the driver may be damage Enable drivers
Motion controller Driver none • Diagnostics	Please disable drivers before plug/unplug a motor t driver board. Otherwhise the driver may be damage Enable drivers Diagnostics
Motion controller Driver none Image: mone i	Please disable drivers before plug/unplug a motor t driver board. Otherwhise the driver may be damage Enable drivers Diagnostics Everything seems to be fine. Have Funt
Motion controller Driver none Image: semiclassic semicl	Please disable drivers before plug/unplug a motor driver board. Otherwhise the driver may be damage lagnostics Everything seems to be fine. Have Funt Information

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 upper box allows changing VCCIO of TMC6200. If not assembled, VCCIO = 3,3V. If this 0 Ω resistor is assmebled, VCCIO = 5V.

In the larger box with label VOFS the offset voltage of the internal current shunt amplifieres can be selected. By default it is 5V/2. When moving the existing $1k\Omega$ resistor to the left side solder pad VFOS is 3,3V/2.

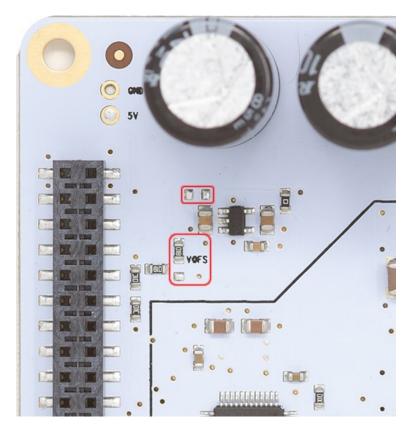


Figure 4: Solder jumper on TMC6200-EVAL

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

