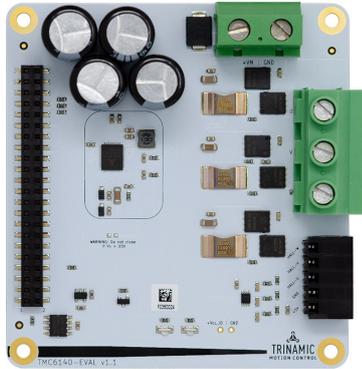


TMC6140-EVAL Evaluation Board

Document Revision V1.0 • 2020-SEP-11

The TMC6140-EVAL allows evaluation of the TMC6140 in combination with the TRINAMIC evaluation board system, or as stand-alone-board. It uses the standard schematic and offers several options in order to test different modes of operation.



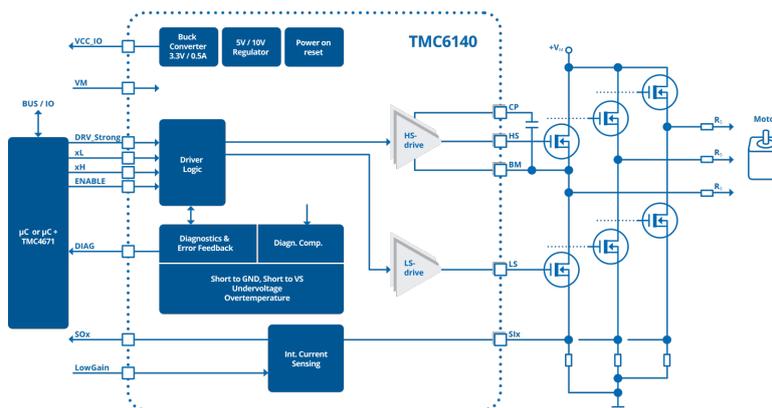
Features

- 3-phase motors up to 32 A RMS coil current
- Voltage Range 6...30 V DC
- Gate Drive 0.5 A or 1.0 A
- 3V3 Switching Regulator (0.5 A) with internal Schottky diode (up to 100 mA)
- Charge pump pin to utilize buck converter for step-up converter
- 3 Bottom Shunt Amplifiers
- Analog programmable short detect
- 2 Low Power Modes with 0.25 mA standby current consumption
- Diagnostics output via UART-TxD

Applications

- Industrial Drives
- Power Tools
- Robotics
- Textile Machines
- Factory Automation
- Laboratory Automation
- Pumps
- Fans
- Battery Operated Devices

Simplified Block Diagram



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1 Getting Started

You need

- TMC6140-EVAL
- [Landungsbruecke](#) with latest firmware. (The Startrampe does not support block commutation.)
- Eselsbruecke bridge board
- BLDC motor (e.g. QMot line)
- USB interface
- Power Supply
- Latest TMCL-IDE V3.0 and PC
- Cables for interface, motors and power

Precautions

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

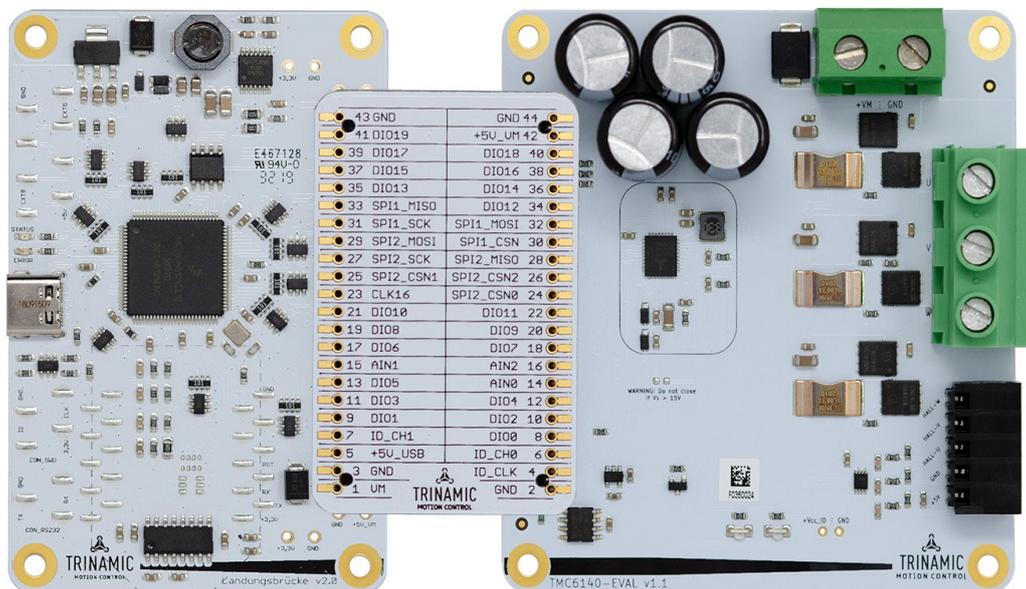


Figure 1: Getting started



1.1 First Start-Up

1. Make sure that the latest version of the TMCL-IDE 3.0 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 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 is using the latest firmware version. The firmware version is shown in the connected device tree.

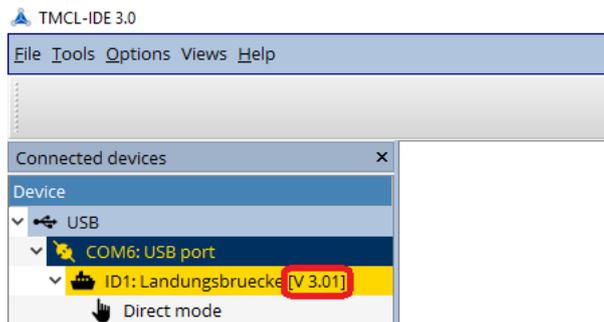


Figure 2: Firmware Version

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. The TMCL-IDE includes a dialogue for diagnostic tasks. Further, the dialogue provides an overview of the connected motion controller and driver chips. A window pops up immediately after connecting the evaluation kit the first time. The window shows the actual status of the connections. The second tab of the dialogue offers the possibility to choose basic settings or to reset the module to factory defaults.

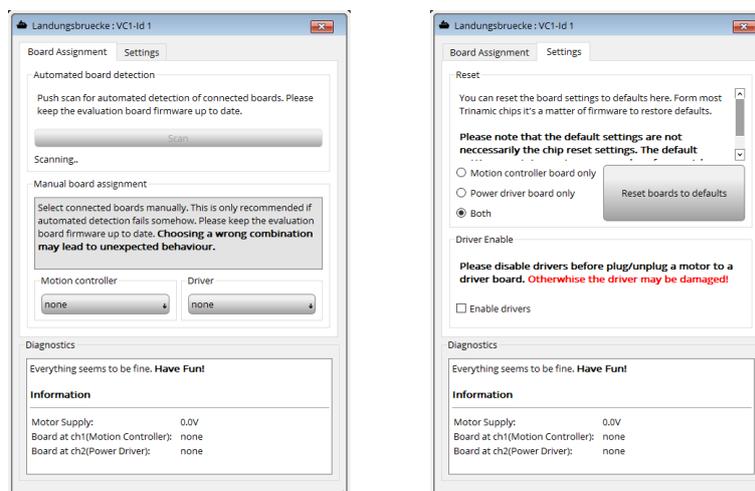


Figure 3: Landungsbruecke Dialogue



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. Please check schematics for Jumper settings and input/output connector description.

The files can be downloaded from the evaluation boards' website directly at our homepage: [TRINAMIC Eval Kit homepage](#).

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
1.0	2020-SEP-11	LH	Initial release.

Table 1: Document Revision

