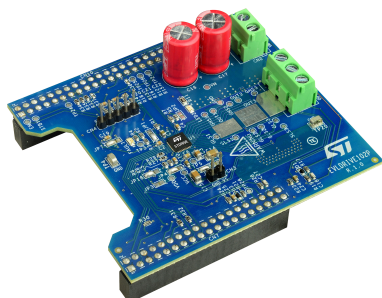


## STDRIVE102P evaluation board for three-phase brushless motors



### Product status link

[EVLDRIVE102P](#)
[STDRIVE102P](#)
[STL220N6F7](#)

### Features

- Operating voltage from 6 V to 50 V
- Output current up to 12 A<sub>rms</sub>: Power stage based on STL220N6F7 60 V, 1.2 mΩ N-channel power MOSFETs
- Single shunt configuration
- STDRIVE102P triple half-bridge gate driver
  - Programmable gate current (up to 1 A source / 2 A sink)
  - Charge pump for 100 % duty cycle operation
  - One embedded PGA and one comparator for current sensing and overcurrent detection
  - Full set of protections: UVLO, thermal shutdown, VDS monitoring
- Full configuration and diagnostic through SPI
- Input connector for Hall-effect based sensors and encoder
- Motor BEMF sensing network
- Bus voltage sensing
- NTC temperature sensing
- Morpho connectors compatible with a wide range of STM32 NUCLEO boards

### Applications

- Battery supplied power tools
- Portable vacuum cleaners
- E-bikes
- Industrial automation
- Robotics
- Pumps and fans

### Description

The **EVLDRIVE102P** evaluation board is a three-phase inverter based on the **STL220N6F7** power MOSFETs. This evaluation board allows a full evaluation of the features of the **STDRIVE102P**, a triple half-bridge gate driver.

The **STDRIVE102P** is fully configurable by setting its internal registers through the SPI interface. Moreover, the status of the device and its internal protections can be monitored in real-time by accessing its status registers.

The power stage uses a single shunt topology: the current sensing and the overcurrent protections are implemented using a programmable gain amplifier (PGA) and the one programmable comparator embedded in the **STDRIVE102P**.

The embedded protections of the **STDRIVE102P**, such as the UVLO on the driving voltage and the VDS monitoring for each power MOSFET, ensure a safe driving operation of the power stage.

The **EVLDRIVE102P** evaluation board is thermally protected by exploiting both the hardware thermal shutdown protection embedded in the **STDRIVE102P** and also an onboard NTC sensor placed close to the power stage, for a firmware thermal protection.

The **nFAULT** pin, fully configurable via SPI for custom diagnostic, is connected to the control board and is also visible through LED indicators.

The EVLDRIVE102P evaluation board can support FOC and six-step motion control algorithms. In case the motor is equipped with positioning sensors, they can be connected to the connector for Hall-effect based sensors and for the encoder, in order to increase the precision of the control algorithms. Nevertheless, sensorless control algorithms can be implemented as well: each output phase of the inverter has a read-out network, which allows the sensing of the phase voltage/BEMF of the motor. In addition, the bus voltage sensing present on the board ensures that the control algorithms are properly implemented.

The EVLDRIVE102P evaluation board is compatible with a wide range of Nucleo control boards, thus allowing the evaluation of the STDRIVE102P together with different STM32 microcontrollers.

## 1 Specifications

Ratings of the board can be found in [Table 1](#).

**Table 1. EVLDRIVE102P - specifications**

Parameter		Value
Supply voltage	Nominal	From 6 V to 50 V
Maximum current	Continuous <sup>(1)</sup>	12 A <sub>rms</sub>
	Peak	25 A
Maximum power	Continuous <sup>(1)</sup>	350 W

1. At 25 °C ambient temperature.

## Revision history

**Table 2. Document revision history**

Date	Version	Changes
16-Jan-2026	1	Initial release.



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