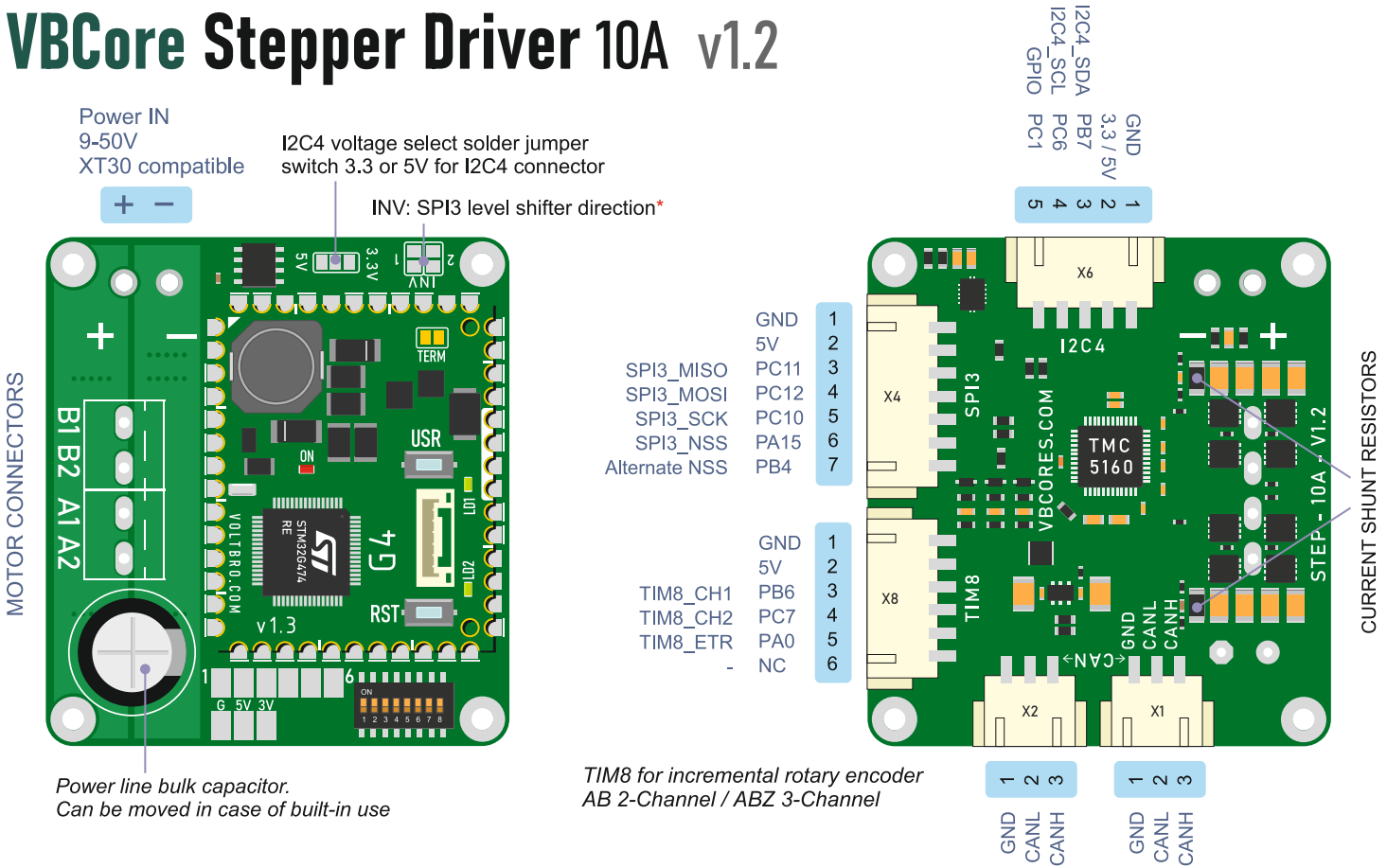
# VBCore Stepper Driver 10A v1.2




## Stepper driver

TMC5160, 8 to 60 V
Universal high voltage controller/driver
for two-phase bipolar stepper motor.

| Controll | PIN | Timer |
|---|---|---|
| REFL_STEP | PA8 | TIM1_CH1 |
| REFL_DIR | PA9 | TIM1_CH2 |
| CSN_CFG3 | PA4 | SPI1_NSS |
| SCK_CFG2 | PA5 | SPI1_SCK |
| SDI_CFG1 | PA7 | SPI1_MOSI |
| SDO_CFG0 | PA6 | SPI1_MISO |
| DIAG1_SWP | PC3 | |
| DIAG0_SWN | PC2 | |
| SD_MODE | PA12 | |
| SPI_MODE | PA11 | |
| ENCA_DCIN_ CFG5 | PB1 | |
| ENCB_DCEN_ CFG4 | PB0 | |
| ENCN_DCO_ CFG6 | PB2 | |
| DRV_ENN | PC5 | |

## EEPROM

256K, AT24C256C
**For enable, one of I2C4 voltage select solder jumper must be closed*

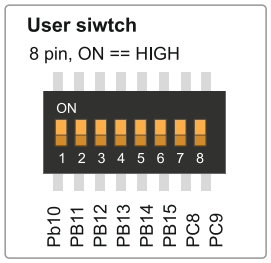
| Controll | PIN | I2C |
|---|---|---|
| A0, A1, A2 | GND | |
| Address | | 0x50 |
| SCL | PC6 | I2C4_SCL |
| SDA | PB7 | I2C4_SDA |

### VBCore Stepper Driver v1.2

VIN: 9-50V
MAX CURRENT 10A
MCU: VB32G4 (STM32G474RE)
DRIVER: TMC5160
SPI interface
ABZ encoder interface
I2C interface
Current control
I2C EEPROM
CAN / CAN-FD
Dimensions: 51x56mm
Mount holes: 45x50mm D2.5 mm

**NOTES:**

1. The SPI1 and SPI3 connectors are connected to the controller via level shifters.
2. The Hall sensor connectors are connected to the controller via a filter.
3. The I2C4 SCL and SDA lines have external pull-ups
   — **do not use the internal pull-up.**
4. To supply power to the I2C4 bus (including the EEPROM), close the voltage selection solder jumper.
5. To use the SPI3 7-pin connector as an SPI bus, leave the INV solder pads open.
   Close the INV_1 solder jumper to configure the PA15 and PB4 pins as inputs.
   Close the INV_2 solder jumper to configure the PC10 and PC12 pins as inputs.
6. *Carefully read datasheet for TMC5160 driver futures*

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## Current shunt resistor

Connected to TMC5160

| Size | Default |
|---|---|
| 1206 | 0.05 Ohm |

## Voltage control

Resistive voltage divider 16:1

| Controll | PIN | ADC |
|---|---|---|
| V input | PC0 | ADC1/2 |