

BLDC driver

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Working Environment

Tools:

- Environment: PlatformIO
- Framework: Arduino
- Code editor: Visual Studio Code
- FOC: Arduino Simple FOC

Hardware:

- Mcu: STM32G030C8T6

How to build and Flash

Setup Visual studio Code

The VS code setup Instructions are available in [Getting Started](#).

- Setup Visual studio code according to the Host operating system.
- Install [PlatformIO](#) extension inside VS code
- Install [STM32 Platform](#) in PlatformIO
- Install Board support packages for STM32G0C038T6
- Select the board and Framework as Arduino

Building and Flashing Application:

To build the application, clone the `affbotics_software` repo and go to the folder `BLDC_driver`

- Pull the [repository](#) locally
- Navigate to the directory `affbotics_software/firmware/avg/BLDC_driver/`
- Select the COM port
- Click Upload

Program Flow

Basic Workflow:

Firmware is present in `affbotics_software/firmware/avg/BLDC_driver/src/main.cpp`

- BLDC driver board communicates using Modbus over RS485
- The Modbus I registers `0x2000` can be Written with a value from -200 to 200 for setting the velocity of the motor.
- Where -ve values spin the motor in the opposite direction
- comment the line `#define IAM_LEFT` for Right motor or leave it uncommented for Left motor

Am a Geek:

- Modbus Register address and `SLAVE_ID` can be changed by changing `#define` values
- Motor PID values can be tweaked if needed using `motor.PID_velocity.P,`
`motor.PID_velocity.I,` `motor.PID_velocity.D`
- change the phase angle `motor.P_angle.P` and direction `motor.initFOC(0, Direction::CW);` if required.