Simplonics & Simply Pumps
SimplyDrive2_LITE – Brushless DC Motor Driver

The SimplyDrive2 is an easy-to-use sensorless brushless DC motor driver that does not require programming and is able to drive many motors without configuration. Additional capability, such as programmability, computer control, reverse control, analog control, wireless control, and electronic display, are possible enhancements for this baseboard and can be purchased separately.

Summary Specifications

Voltage Range	8 - 24V
Max Current Limit	3A
Ambient Temperature	0 - 70°C
Speed Control Mechanism	On-board Potentiometer External PWM
Recommended Motors	Sensorless Brushless DC Motors
Motor Direction Support (CW & CCW)	Swap any two motor leads
Dimensions (L & W)	1.78 x 1.59 inch
Programmability & Enhancements	Programming the board is possible. Contact Simplonics or Simply Pumps for more information.

Pinout | Designation

Pinout	Designation
1. GND	Ground
2. VREG	Output Regulator Voltage (≈ 5V)
3. NC	No Connection (Reserved)
4. FAU	Fault Indicator
5. SPD	Speed Indicator
6. SDO	Serial Data Output
7. SCK	Serial Clock
8. STRN	Serial Data Strobe
9. SDI	Serial Data Input
10. NC	No Connection (Reserved)
11. INT	Onboard (Internal) PWM** generated from pot
12. PWM	Input Speed Control PWM

Additional Information:

*Heatsink may be recommended for sustained high currents and can be soldered on the back of the board.

**PWM represents Pulse Width Modulation

***Removing the jumper between pins 11-12 disables the motor driver unless an external PWM input is applied on pin #12 (PWM). The addition of the jumper enables the motor

and uses the potentiometer (pot) as the speed control. Simply rotate the pot counterclockwise to reduce the speed and clockwise to increase the speed.

Figure 1: SimplyDrive2 Image

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The motor driver can be controlled with an external PWM signal, similar to Figs. 2-4 below. The output motor speed is directly proportional to the duty cycle applied to the PWM pin.
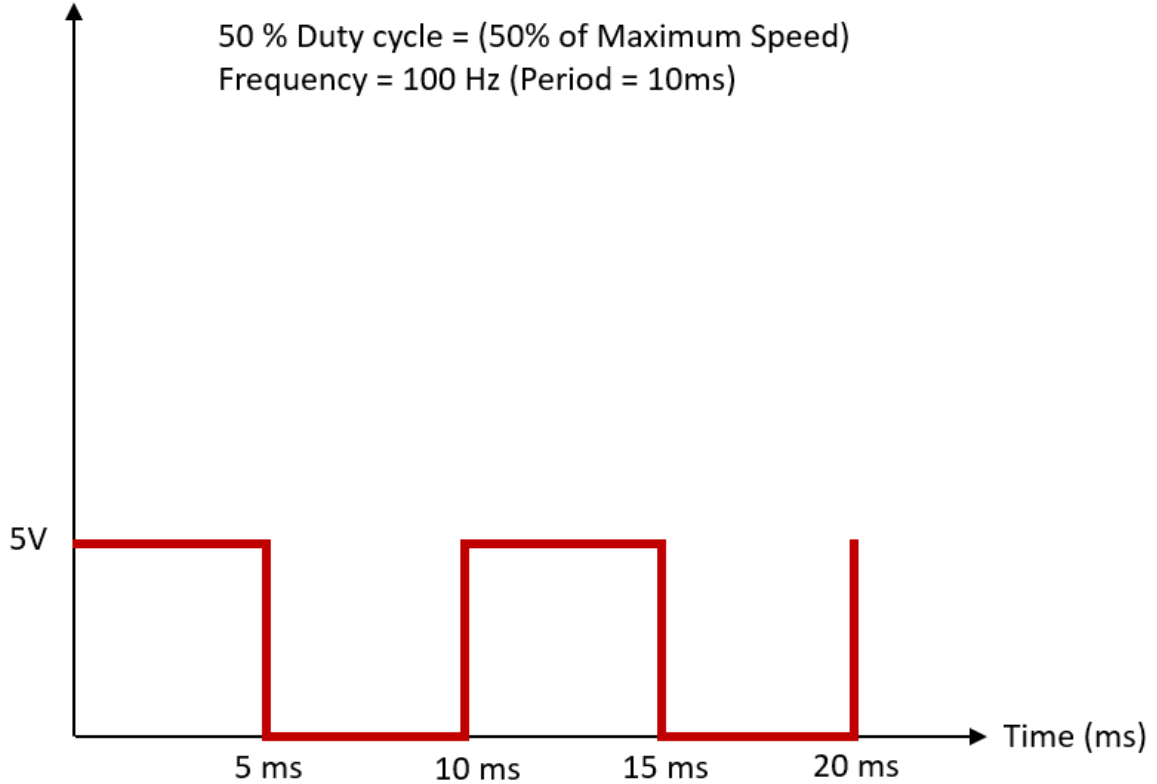

Figure 2: PWM Signal with 50% Duty Cycle

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Voltage on Pin #12

75 % Duty cycle = (75% of Maximum Speed)
Frequency = 100 Hz (Period = 10ms)

5V

7.5 ms   10 ms   17.5 ms   20 ms   Time (ms)
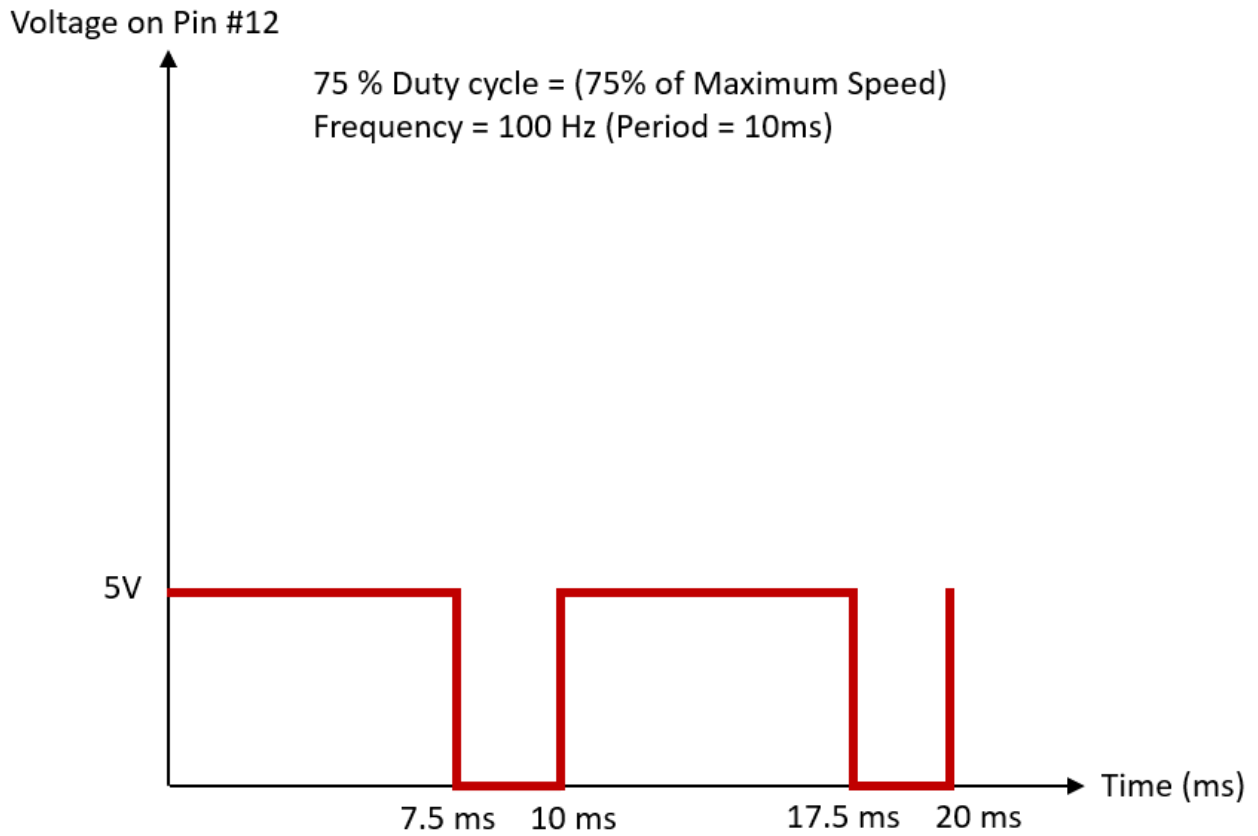
Figure 3: PWM Signal with 75% Duty Cycle

Voltage on Pin #12

25 % Duty cycle = (25% of Maximum Speed)
Frequency = 100 Hz (Period = 10ms)

5V

2.5 ms   10 ms   12.5 ms   20 ms   Time (ms)
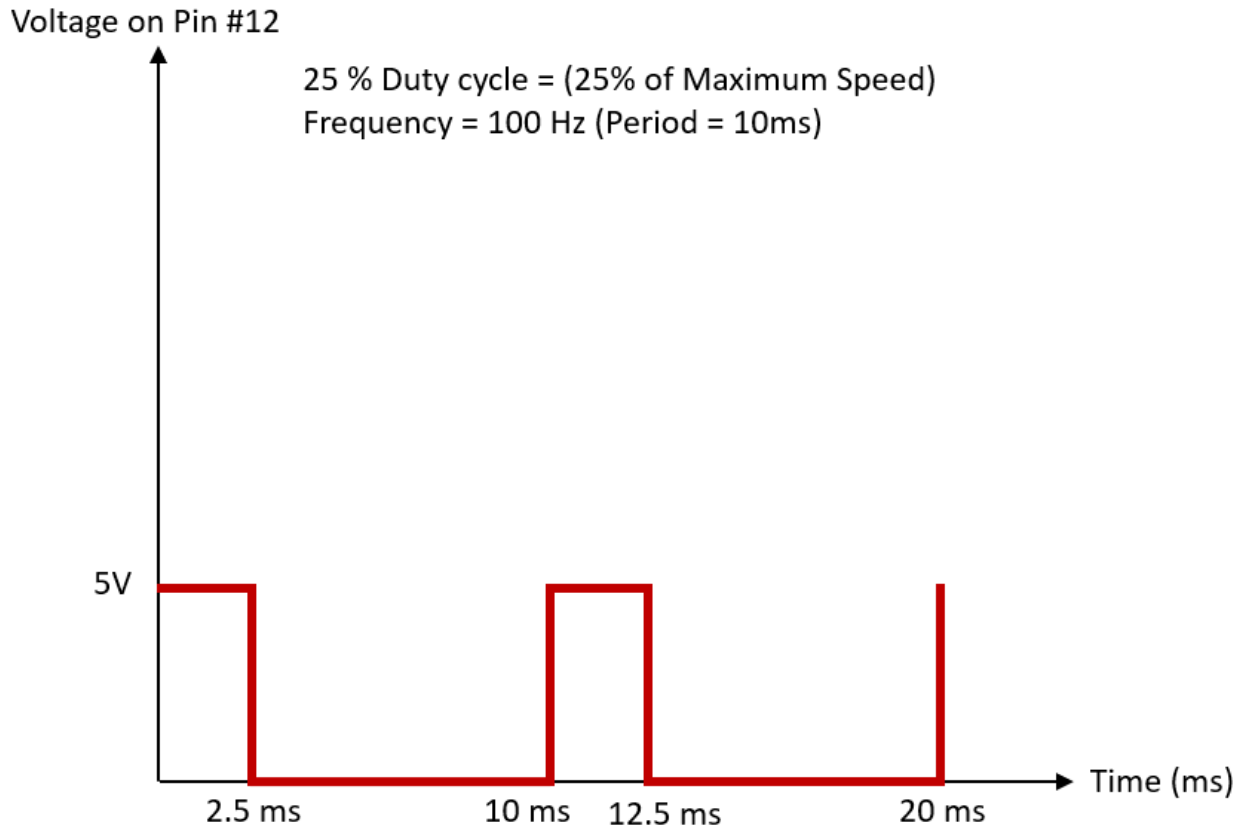
Figure 4: PWM Signal with 25% Duty Cycle

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Revision History

1. **REV_A (NEW)**	11/17/2019	Baseline Specification
2. **REV_A (1.0)**	1/4/2020	Added Duty Cycle Plots