SmartElex 10D DC Motor Driver HAT
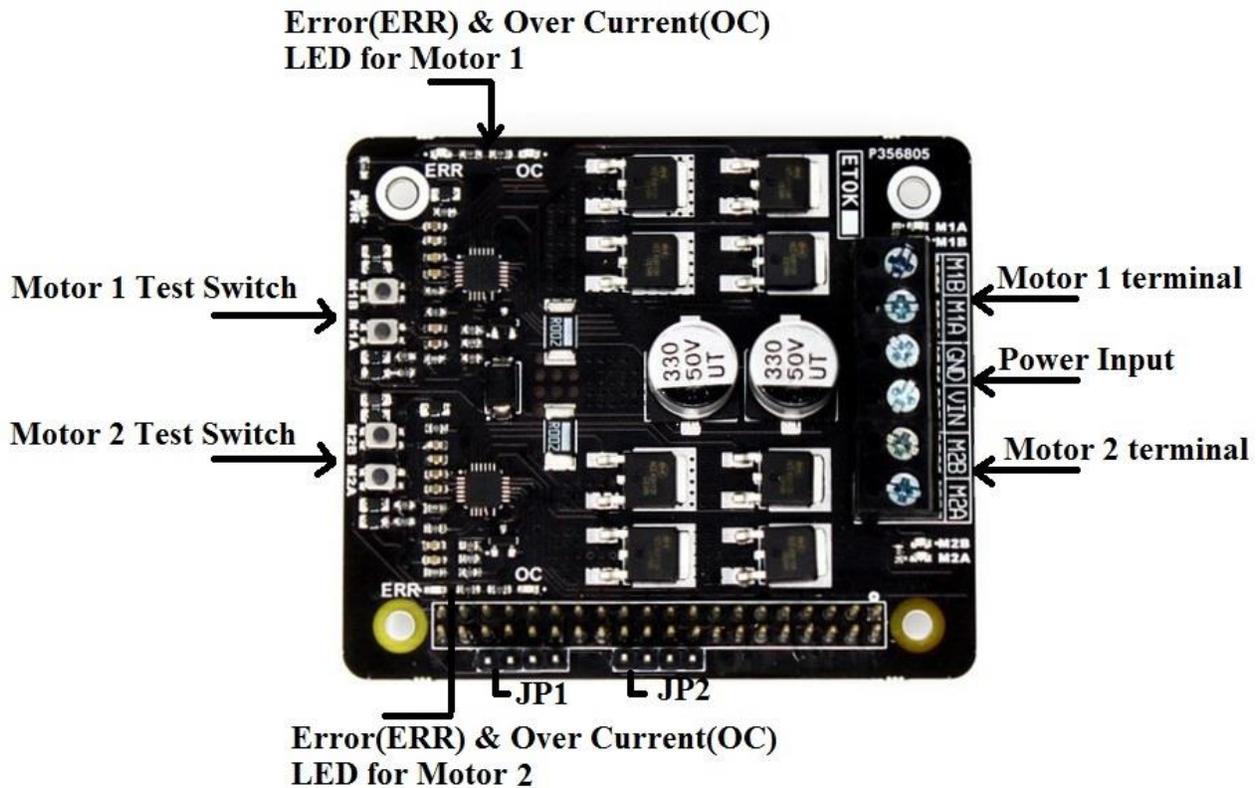
User's Manual
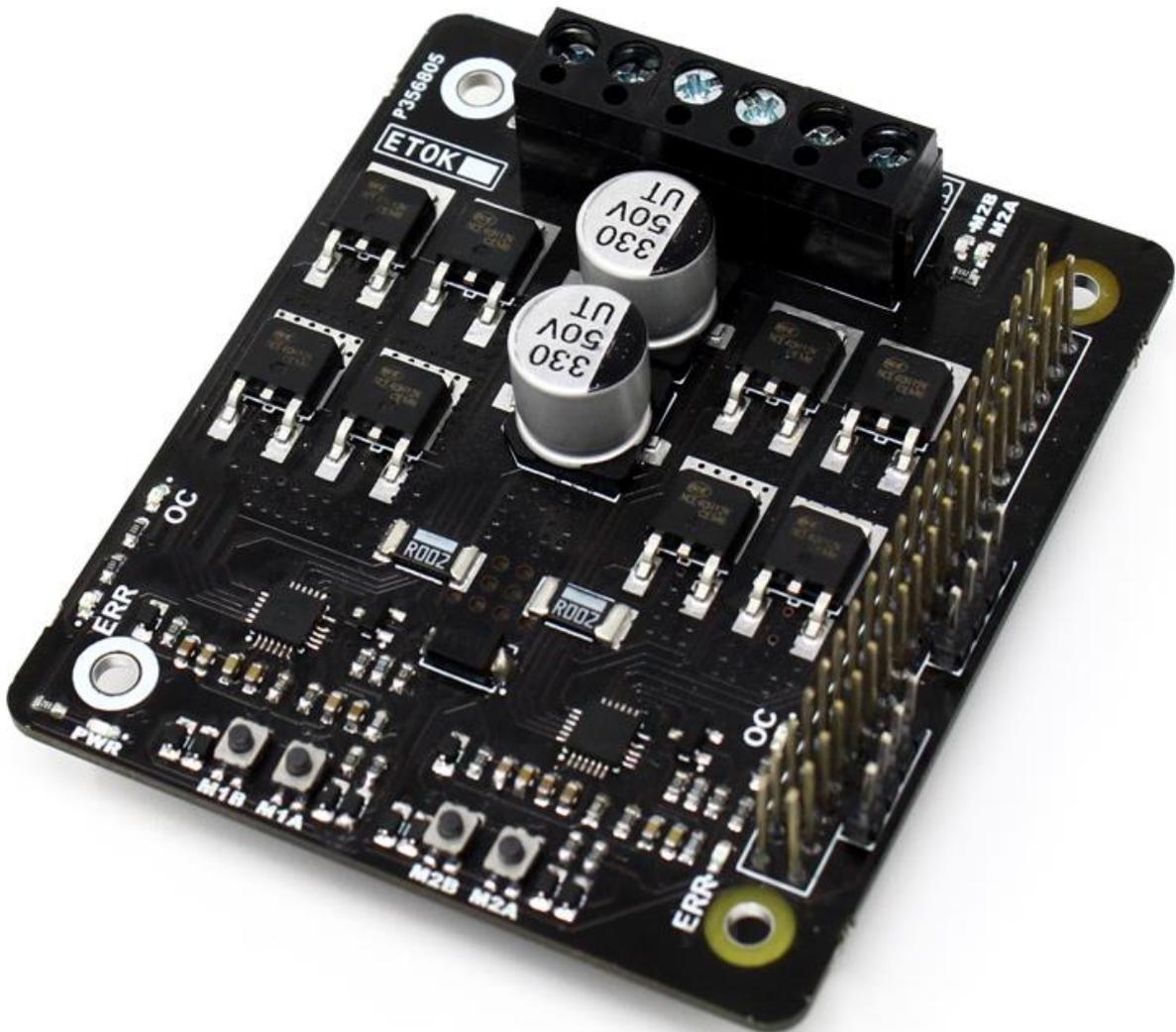
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INTRODUCTION

Brush DC motors are the most widely used drivers due to their low cost and simple drive control options. SmartElex 10D DC Motor Driver HAT is powerful motor driver board. This motor driver has a lot of great specs that make it useful for a wide variety of mechatronics. The wide operating voltage range and easy to interface with microcontrollers (MCU) allows customer to quickly adopt them into applications.

Features SmartElex 10D DC Motor Driver motor driver HAT:

1. Wide 6V to 28V motor Operating Voltage.
2. Continuous 10A maximum current without Heatsink and 30A peak current for 10 Seconds.
3. Two brushed DC motor Bidirectional control.
4. Current limiting at 35A.
5. PWM frequency up to 32KHz
6. Support TTL PWM from microcontroller
7. Internal thermal shutdown
8. Under-voltage lockout
9. PWM and direction controlled driving of four externally powered NMOS transistors
10. 3.3V and 5V logic level input.

Specification for the SmartElex 10D dc motor driver HAT

Sr.No	Parameter	Min	Max	Unit
1	Input Voltage	6	28	V
2	Maximum Continuous Current I_{max}	-	10	A
3	Peak Motor Current for 10 Sec	-	30	A
4	V_{IOH} (Logic Input – High Level)	3	5.5	V
5	V_{IOL} (Logic Input – Low Level)	0	0.5	V
6	PWM frequency	-	32	Khz

Error(ERR) & Over Current(OC)
LED for Motor 1

Motor 1 Test Switch

Motor 2 Test Switch

Motor 1 terminal

Power Input

Motor 2 terminal

JP1   JP2

Error(ERR) & Over Current(OC)
LED for Motor 2

Raspberry Pi Pins

Raspberry Pi Pins	HAT Pins
GPIO12/BCM32	PWM1
GPIO24/BCM18	DIR1
GPIO13/BCM33	PWM2
GPIO25/BCM22	DIR2

HOW TO USE

SmartElex 10D can be controlled by two way-

1. 2 control signals are used to control the speed and direction of the motor. PWM is feed to the PWM pin to control the speed while DIR pin is used to control the direction of the motor.

2. Only 1 control signal is needed to control the speed and direction of the motor. PWM pin is connected to logic high while the DIR pin is being feed with the PWM signal. When the PWM signal has 50% duty cycle, the motor stops running. If the PWM has less than 50% duty cycle, the motor will turn CW (or CCW depending on the connection). If the PWM signal has more than 50% duty cycle, motor will turn CCW (or CW depending on the connection).

DIMENSION
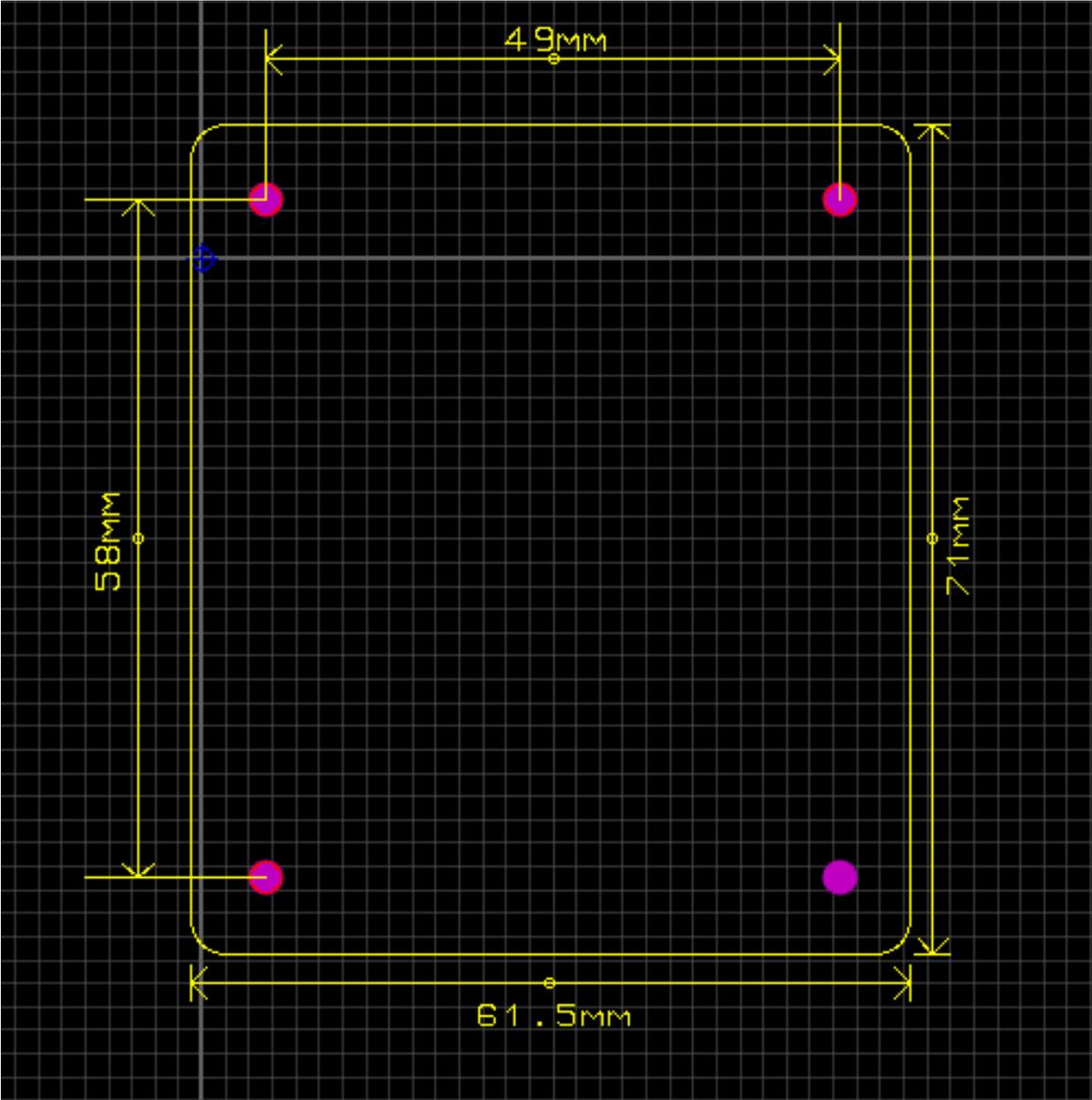
WARRANTY

- Standard warranty of product is 6 months.
- No warranty will apply if the Product has been subject to misuse, static discharge, neglect, accident, modification, or has been soldered or altered in any way.
- Warranty only applies to manufacturing defect.