Dual Channel 10A DC Motor Driver

User's Manual

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1. INTRODUCTION/OVERVIEW

DUAL DRIVER is the dual channel version of SINGLE DRIVER which is designed to drive 2 brushed DC motors with high current up to 10A continuously. Just like SINGLE DRIVER, the DUAL DRIVER also supports locked-antiphase and sign-magnitude PWM signal. It is also using full solid state components which result in faster response time and eliminate the wear and tear of the mechanical relay.

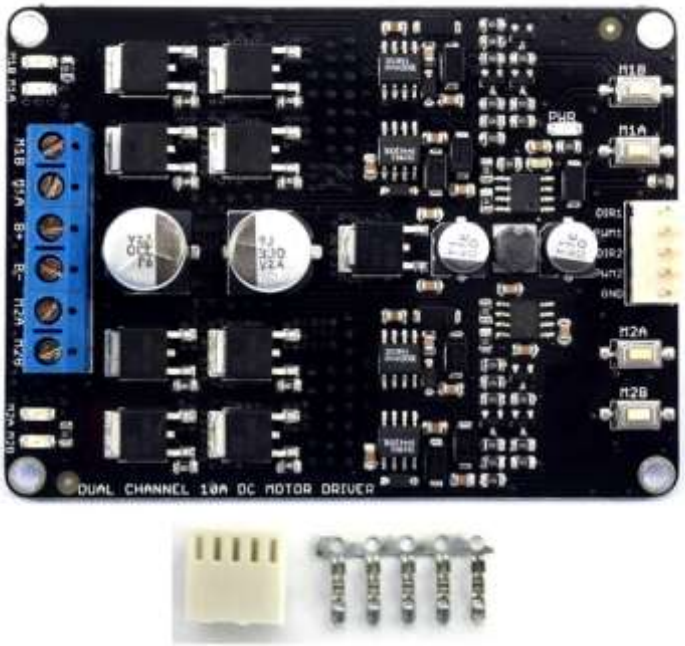
DUAL DRIVER has been designed with the capabilities and features of:

- Bi-directional control for 2 brushed DC motors.
- Support motor voltage ranges from 5V to 25V.
- Maximum current up to 10A continuous and 30A peak (10 second) for each channel.
- Solid state components provide faster response time and eliminate the wear and tear of mechanical relay.
- Fully NMOS H-Bridge for better efficiency and no heat sink is required.
- Speed control PWM frequency up to 20KHz.
- Support both locked-antiphase and sign-magnitude PWM operation.
- Onboard push button to control the motor manually.

Dimension: **84.5mm x 62mm**

2. PACKING LIST

Please check the parts and components according to the packing list. If there are any parts missing, please contact us.



1. 1 x Dual Channel 10A DC Motor Driver
2. 1 x 2510 PCB Connector - 5 Ways (Female)
3. 5 x 2510 Iron Pin

3. PRODUCT SPECIFICATION AND LIMITATIONS

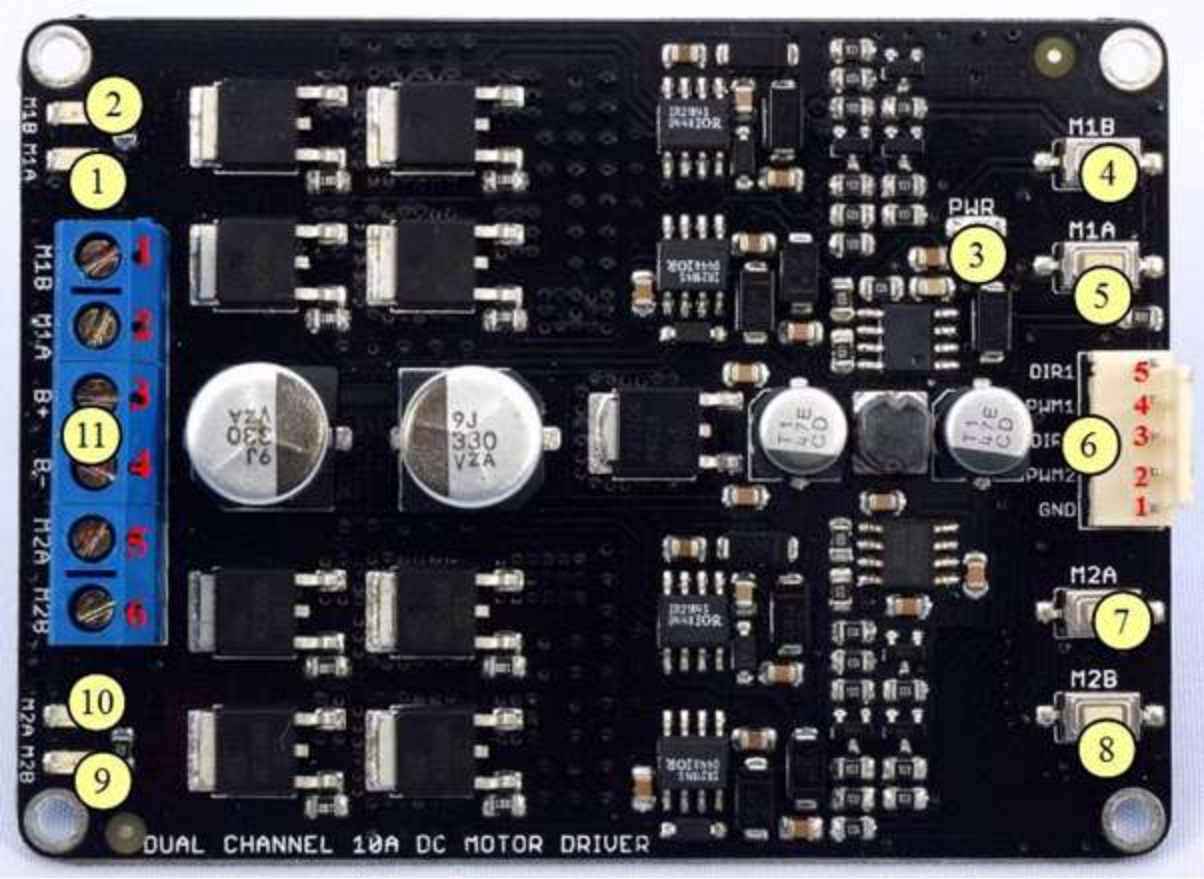
Absolute Maximum Rating

No.	Parameters	Min	Typical	Max	Unit
1	Power Input Voltage	5	-	25	V
2	I_{MAX} (Maximum Continuous Motor Current)	-	-	10	A
3	I_{PEAK} – (Peak Motor Current) *	-	-	30	A
4	V_{IOH} (Logic Input – High Level)	3	-	5.5	V
5	V_{IOL} (Logic Input – Low Level)	0	0	0.5	V
6	Maximum PWM Frequency	-	-	20	KHz

**** Must not exceed 10 seconds.***

4. DIMENSION

5. BOARD LAYOUT



1. Red LED M1A – Turns on when the output M1A is high and output M1B is low. Indicates the current flows from output M1A to M1B.

2. Red LED M1B – Turns on when the output M1A is low and output M1B is high. Indicates the current flows from output M1B to M1A.

3. Green LED – Power LED. Should be on when the board is powered on.

4. Test Button M1B – When this button is pressed, current flows from output M1B to M1A and motor will turn CCW (or CW depending on the connection).

5. Test Button M1A – When this button is pressed, current flows from output M1A to M1B and motor will turn CW (or CCW depending on the connection).

6. Input

Pin No.	Pin Name	Description
1	GND	Ground
2	PWM2	PWM input for speed control (Motor 2)
3	DIR2	Direction input (Motor 2)
4	PWM1	PWM input for speed control (Motor 1)
5	DIR1	Direction input (Motor 1)

The truth table for the control logic for motor 1 and motor 2 are as follow:

PWM	DIR	Output A	Output B
Low	X(Don't care)	Low	Low
High	Low	High	Low
High	High	Low	High

7. Test Button M2A – When this button is pressed, current flows from output M2A to M2B and motor will turn CW (or CCW depending on the connection).

8. Test Button M2B – When this button is pressed, current flows from output M2B to M2A and motor will turn CCW (or CW depending on the connection).

9. Red LED M2B – Turns on when the output M2A is low and output M2B is high. Indicates the current flows from output M2B to M2A.

10. Red LED M2A – Turns on when the output M2A is high and output M2B is low. Indicates the current flows from output M2A to M2B.

11. Terminal Block – Connect to motor and power source.

Pin No	Pin Name	Description
1	Motor 1 Output B	Connect to motor 1 terminal B
2	Motor 1 Output A	Connect to motor 1 terminal A
3	POWER +	Positive Supply
4	POWER -	Negative Supply
5	Motor 2 Output A	Connect to motor 2 terminal A
6	Motor 2 Output B	Connect to motor 2 terminal B

6. GETTING STARTED

6.1 Getting Started DUAL DRIVER with SK40C

DUAL DRIVER is compatible with 2 types of PWM operation, which are:

1. Sign-Magnitude PWM – For sign-magnitude PWM operation, 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. Locked-Antiphase PWM – For locked-antiphase PWM operation, 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).