

— In SPI mode, the comparison between driver temperature and different motors, driver current, radiator and working time,

As following:

Driver subdivision	Stepper motor	Heat sink	Driver current	Temperature after driving 10minutes	Temperature after driving 30 minutes	Temperature after driving 60 minutes	Temperature after motor running for 10 minutes	Temperature after motor running for 30 minutes	Temperature after motor running for 60 minutes
256	42	YES	1A	33.1	35.4	35.2	31.2	30.6	32.1
256	42	NO	1A	34.6	37.3	38	38.3	41.5	42.6
256	42	YES	1.5A	35.3	38.2	40.8	32.4	33.1	32.8
256	42	NO	1.5A	39.2	41.6	42.2	39.7	41.2	43.1
256	42	YES	2A	39.7	▲	▲	71.3	✘	✘
256	42	NO	2A	42.3	▲	▲	65.6	✘	✘
256	57	YES	1A	27.8	33.9	33.4	31.8	30.6	31.2
256	57	NO	1A	25.6	28.2	26.5	33.5	34.2	36.7
256	57	YES	2A	29.1	34.5	36.3	33.5	32.7	33.9
256	57	NO	2A	32.3	34.6	38.5	32.1	33.4	35
256	57	YES	3A	33.6	34.4	34.6	29.8	30.2	31
256	57	NO	3A	39.5	42.1	41.8	38.4	37.8	38.1

“✘” The temperature is too high to continue the test.

“▲” The motor temperature is too high to continue to test the driver temperature.

For example: 42 motor running down 2 A electricity run 10 minutes, drive temperature 39.7 °C is normal, motor temperature of 71.3 °C, it can't continue to test.

- From the above table data, it can be seen that the driver in the normal case, current driven temperature does not exceed 50 °C.
- The maximum current that the 42 step motor can withstand is generally 1.5A. Therefore, when the 42 motor is driven by TMC5160-V1.0, the set current shall not exceed 1.5A, otherwise, as shown in the above table, the motor temperature will overheat, leading to motor damage, thus damaging the drive.
- When the 57 stepper motor operates under the current of 1A, the motor torque force is obviously insufficient. Therefore, when we use the 57 stepper motor, the driving current shall be set to 2A and above.
- When the 42 stepper motor is used under the current of 1.5A, the heat sink may not be used. This can avoid damage to drive caused by improper use of heat sink.
- Because at room temperature, the temperature of the test in the form will have 5 °C to 10 °C temperature deviation.

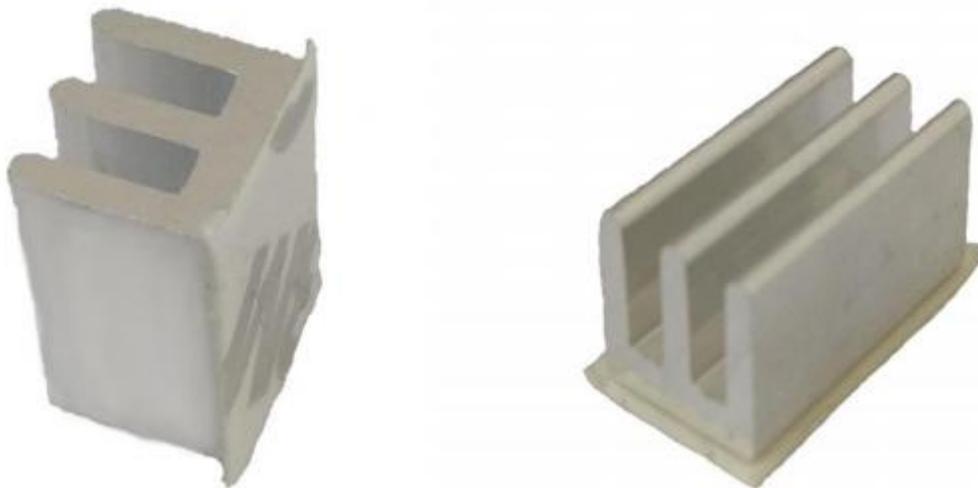
In summary

① When the driving temperature is less than 45 C, radiators are not recommended to use, so can avoid improper installation that damaged the motor driver

② When using 42 stepper motors, the driving current should not exceed 1.5A.

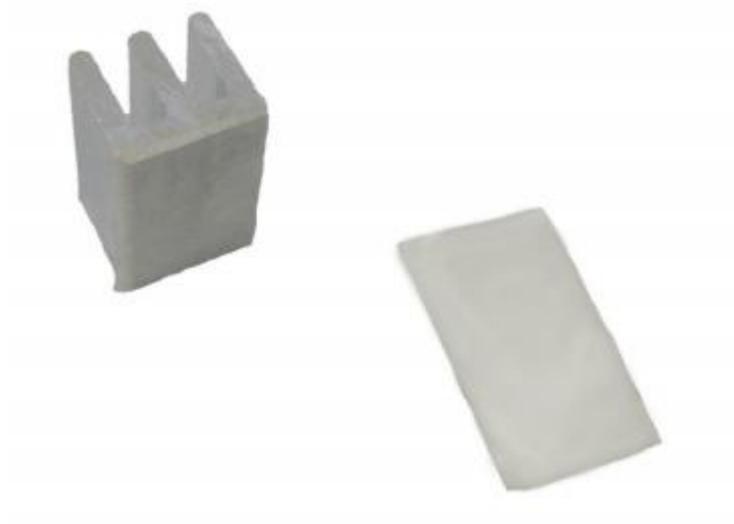
③ When using 57 stepper motors, the driving current should not be less than 2A.

二. Installation of radiators (black radiators are used for products)



Step one:

Tearing the protective layer on the bottom of the heat sink and apply the adhesive that is beyond the bottom to the heat sink to ensure that the entire bottom is covered with double-sided tape.



Step two:

Stick the radiator on the top of the four MOS tubes, make sure there is double-sided adhesive tape under the radiator and no exposed metal. Be sure to stick the radiator firmly.

Attention: the radiator cannot touch the needle pins on the board, in case short circuit.

