ROBSTRIDE DYNAMICS

ROBSTRIDE DISCHARGEMODULE

Discharge Module

User Manual

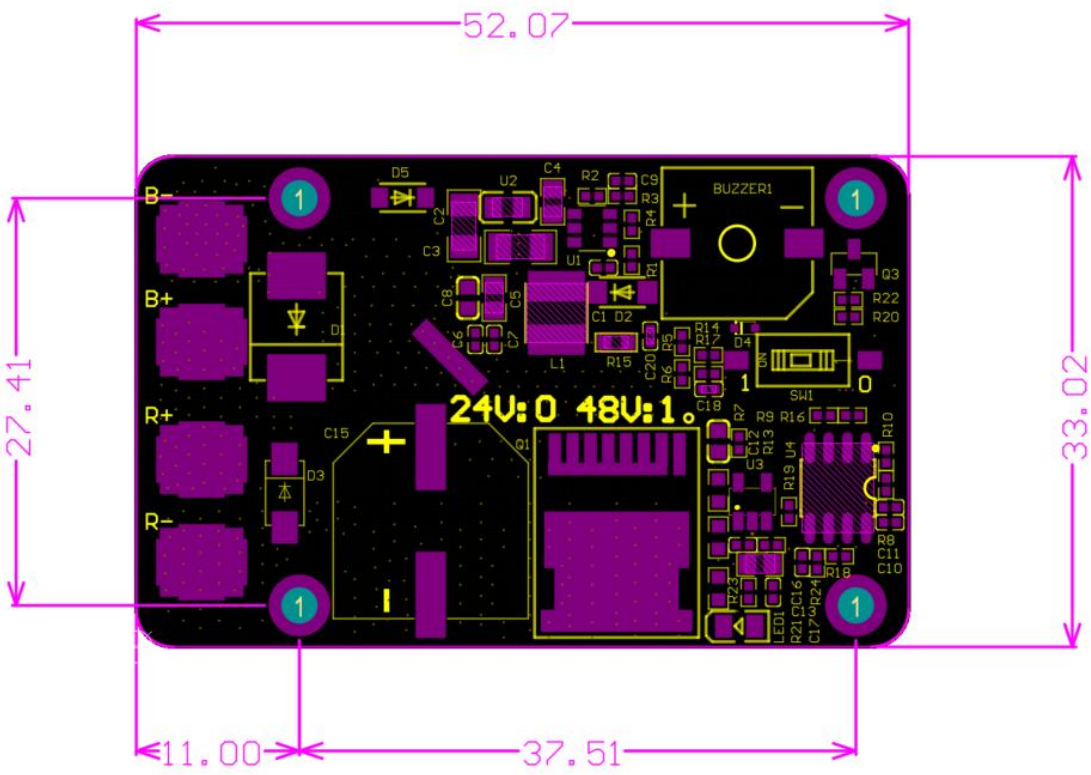
RobStride Dynamics

https://www.robstride.com/

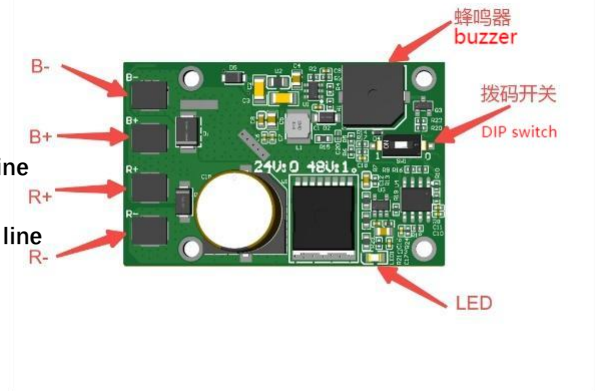
Discharge Module User Manual

Discharge module specifications

External shape and installation dimensions：



The overall and mounting dimensions are shown in the figure above. The module is fixed with 4 M2 screws, with a maximum height of 12.1mm.



Function Definition:

B-: Negative terminal of the power supply line

- B+: Positive terminal of the power supply line
- R+: Terminal of the discharge resistor
- R-: Terminal of the discharge resistor
- LED: Illuminated when the module is in the discharge state
- Buzzer: Sounds when the module is in the over-temperature state
- DIP switch: Set to the position marked "0" on the PCB silk screen for 24V power supply platform; set to the position marked "1" for 48V power supply platform.

Electrical Characteristics:

1.Insulation Withstand Voltage: The insulation withstand voltage between the discharge module and mounting holes is more than 500V

2. Operating Voltage Range: 15V ~ 60V; set the DIP switch to 0 for 24V power supply platform and 1 for 48V power supply platform

3. Peak Withstand Voltage: 80V (duration less than 100ms)

4. Discharge Start Voltage (24V mode): 34±0.5V

5. Discharge Shutdown Voltage (24V mode): 31±0.5V

6. Discharge Start Voltage (48V mode): 64±0.5V

7. Discharge Shutdown Voltage (48V mode): 59±0.5V

8. Maximum Continuous Discharge Current: 30A

9. Peak Discharge Current: 200A/100ms

10. Recommended Range of Discharge Resistor: 3Ω/500W ~ 10Ω/200W (The recommended power is mainly for the working scenarios of the upper and lower limbs of humanoid robots; the resistor power for other application scenarios needs to be selected according to the feedback power condition)

Notes

- Please use the product according to the operating parameters specified in this document; otherwise, it may cause serious damage!
- Before use, please check that all components are intact, the wiring is correct, and the voltage platform selection is correct.
- Do not switch voltage modes while the module is powered on. If switching is necessary, power off and then power on again after the switching is complete.
  Smaller bleeder resistor value:
  Advantages: Significant bleedering effect, effectively suppressing the rise of bus voltage caused by power supply.
  Disadvantages: Due to the larger bleeder current, the bleeder resistor has high power and large size. It can cause certain bus voltage fluctuations when the bleeder module is turned on and off. Especially in scenarios with long bus lines, the rapidly changing bleeder current may induce voltage spikes on the bus. The voltage spikes depend on the bleeder resistor value and the length of the power supply line.
- Larger bleeder resistor value:
- Advantages: Smaller bleeder current, resulting in smaller power and size of the bleeder resistor; more stable bus voltage during bleeder opening and closing.
- Disadvantages: Relatively weaker clamping capability for bus power supply.
- Usage Scenarios and Wiring Methods:

- The bleeder module is primarily used in motor power supply systems. It effectively bleeds and clamps the bus voltage when the motor is powered off, ensuring the bus voltage remains within a safe range and preventing damage to the power supply and motor driver due to bus overvoltage. The bleeder module is mainly suitable for the following two scenarios:
- 1. Battery Power Supply: When the battery has high internal resistance (lead-acid batteries or lithium batteries that have been used for a long time), or the bus power supply line is long, the battery's clamping ability to control motor power supply is weak. In this case, a bleeder module needs to be connected between the battery and the motor load to ensure the bus voltage is clamped within a safe range.
- 2. Switching Power Supply: Since most switching power supplies are unidirectional, meaning they do not have the ability to absorb motor power supply failures, a bleeder module must be connected between the switching power supply and the motor when the motor is powered off to ensure the bus voltage remains within a safe range.

Legal Statement

Before using this product, the user must read this manual carefully and operate the product in accordance with the contents of this manual. The Company shall not be liable for any property loss or personal injury caused by the user's use of the product in violation of the contents of this manual. This product is composed of many parts, so do not let children contact it to avoid accidents. To extend the service life of the product, do not use it in high temperature and high pressure environments. This manual contains as many function introductions and usage instructions as possible at the time of printing. However, due to the continuous improvement of product functions and design changes, there may still be inconsistencies with the product purchased by the user.

There may be deviations between this manual and the actual product in terms of color, appearance, etc. Please refer to the actual product. This manual is published by Beijing Robstride Technology Co., Ltd. (hereinafter referred to as Robstride). Robstride may make necessary improvements and changes to the latest inaccurate information in this manual at any time, or improve the programs and/or equipment. Such changes will be uploaded to the electronic version of the manual on the company's official website, for details, please check the Download Center column (www.robstride.com). All pictures are for functional description reference only, please refer to the actual object.

After-sales Policy

The after-sales service of this product is strictly implemented in accordance with the Consumer Rights and Interests Protection Law of the People's Republic of China and the Product Quality Law of the People's Republic of China. The service contents are as follows:

1. Warranty Period and Contents

a) Users who purchase this product through online channels can enjoy the 7-day no-reason return service starting from the day after signing for the product. When returning the product, the user must present a valid purchase certificate and return the invoice. The user must ensure that the returned

product maintains its original quality and function, intact appearance, and complete trademarks and various marks of the product itself and accessories. If there are gifts, they must be returned together. Returns will not be processed if the product is artificially damaged, disassembled manually, the packaging box is missing, or the spare parts are missing. The user shall bear the logistics costs incurred for the return (see the After-sales Service Fee Standard for the charging standard). If the user fails to settle the logistics costs, the actual incurred amount will be deducted from the refund amount. The paid purchase price will be returned to the user within seven days from the date of receiving the returned product. The refund method is the same as the payment method. The specific account arrival date may be affected by banks, payment institutions and other factors.

b) The warranty period of this product is 1 year.

c) If a non-artificially damaged performance failure occurs within 7 days from the day after the user signs for the product, the return service will be provided for the user after inspection and confirmation by the Robstride After-sales Service Center. When returning the product, the user must present a valid purchase certificate and return the invoice. If there are gifts, they must be returned together.

d) If a non-artificially damaged performance failure occurs from the 8th day to the 15th day after the user signs for the product, the replacement service will be provided for the user (the whole set of products will be replaced) after inspection and confirmation by the Robstride After-sales Service Center. After replacement, the three guarantees period of the product itself will be recalculated.

e) If a quality failure of the product itself is confirmed by the Robstride After-sales Service Center from the 16th day to the 365th day after the user signs for the product, free maintenance service will be provided. The replaced faulty products shall be owned by Robstride Technology Co., Ltd. Products without faults will be returned in their original condition. This product is factory-inspected through various strict tests. We have the right to refuse the user's return and exchange requirements if the fault is not caused by the product's own quality.

2. Non-warranty Provisions

The following situations are not covered by the warranty:

a) Exceeding the warranty period limited by the warranty terms.

b) Damage to the product caused by incorrect use in violation of the manual requirements.

c) Damage to the product caused by improper use such as improper operation, maintenance, installation, modification, testing, etc.

d) Routine mechanical wear and tear caused by non-quality faults.

e) Damage caused by abnormal working conditions, including but not limited to falling, impact, liquid immersion, severe collision, etc.

f) Damage caused by natural disasters (such as flood, fire, lightning strike, earthquake, etc.) or force majeure.

g) Damage caused by use beyond the specification parameters.

h) Other faults or damages caused by factors unrelated to the product's design, technology,

manufacturing, quality, etc.

The user shall bear the relevant expenses by themselves in the above situations.