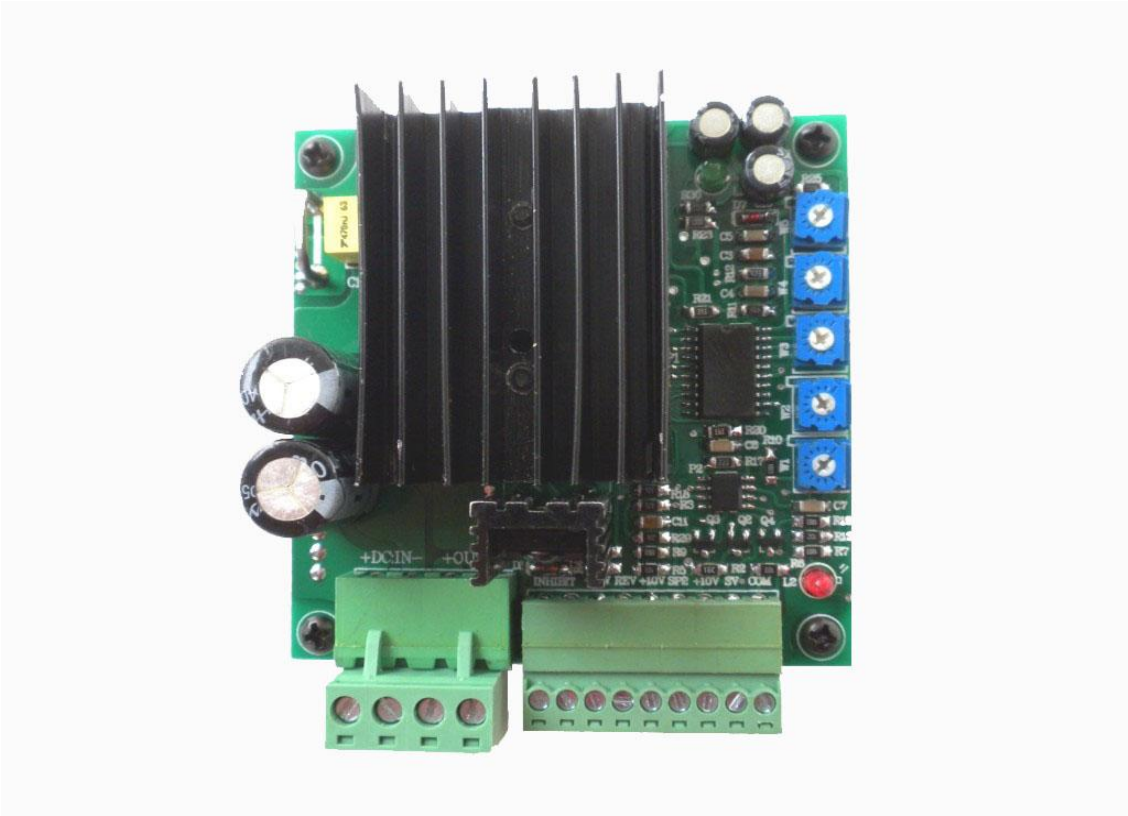
# ***MMT -4Q***

# DC24RT10BL
# DC36RT10BL
# DC48RT10BL
# Four-quadrant Driver
# Operation Manual




Jinan Keya Electronic Technology Co., Ltd

**Please read this operation manual thoroughly before using this device.**

Any failures and damages caused by non-compliance of precautions stipulated in this operation and installation manual are beyond the scope of warranty and the manufacturer disclaims any responsibility for them. This manual must be carefully kept. In case of any question, please contact us!

**⚠This picture represents an important notice or warning.**

**⚠Safety precautions**

- Installation, connection and commissioning of this device shall be carried out by professionals.
- Do not install, remove or replace device circuit under charged circumstances.
- Please make sure that necessary protectors are mounted between power input end of this device and power supply (storage battery) to avoid accidents or fatal damages; Devices need to be mounted: over-current protector, fuse, emergency switch.
- We recommend you to charge the driver by using a storage battery. If not, you should connect a electrolytic capacitor of 7000μF-10000μF in parallel between the positive and negative pole for its reliable working.
- Isolation and insulation protection between device and ground as well as devices shall be well equipped.
- In case that charged commissioning of this device is really needed, well-insulated nonmetal special screwdriver or special commissioning tools shall be used.
- This device shall be installed in well-ventilated environment.
- This device shall not be directly exposed to abnormal environments with high humidity, dust, corrosive gas and intense vibration.

**I. Product features:**

This series of speed controller is a low-voltage DC four-quadrant regeneration pulse width speed governor. It adopts special single-chip intelligent control mechanism and it responds quickly, operates steady, works reliable, and has complete defensive functions, etc..

◆Adopt SMT technology with small volume

◆ Pulse width modulation

The motor has little running noise, high effective, low maintenance, and it can improve the service life of DC motor better.

◆ Four-quadrant regeneration operating mode

◆ Regenerative braking function

It doesn't need external reversing contactor and will not result in overheating or burning down of motor parts or other components.

◆ Enabled/reversing terminal

To realize one of the functions using simple passive switching value or transistor collector open circuit.

◆ Status indicator light

Power supply indicator and over-current alarm indicator can provide the visible status of speed indicator.

◆ Output current setting function (amplitude limiting)

◆ Torque compensate function

◆ Double closed-loop PI regulation (currency, voltage)

◆ Standard analog quantity signal control

Analog quantity: 0-10Vor using potentiometer control

◆ A broader scope of input voltage: 20-55V

**II. Performance index**

1. PWM pulse width modulation
2. Speed ratio: 1:100
3. Control potentiometer: (1K ……50K ) /2W
4. Input voltage: 20-55V VDC
5. Output current: 0-10A(amplitude limiting)

6. Input impedance: ≥50KΩ
7. Rotate speed (standard precision %): 1 %
8. Start/braking time: 0.2-20 S
9. Environment temperature: -10℃~+50℃
10. Environment humidity: ≤80RH (no moisture condensation) (relative humidity)
11. Insulation and voltage resistance: 1100V DC 1 minute
12. Insulation resistance: > 20 MΩ
13. Leakage current: ≤ 0.9 mA
14. It is appropriate for tombarthite, permanent magnet and separately excited motor

**III. Installation requirement:**

Warning

1. Controller can be only installed, connected or removed without electricity. Otherwise it will cause accident or severe damage. You should read and understand the details of "safety warning" before installation, and obey the rules strictly.
2. Driver element is sensitive to the electrostatic magnetic interference, it is necessary to avoid the environment where electrostatic phenomena are inclined to happen. Otherwise it will cause the damage of speed indicator.
3. The driver should be kept away from dust, high humidity and avoid contacting accidently. To ventilate and modulate easily, you should maintain enough space around driver.
4. You should keep away from the other heat sources when fix the driver. Ensure the driver working in the indicated ambient temperature range. If the motor currency constantly exceeds 10A, you should ensure ventilation and control the ambient temperature in 50℃.
5. You should avoid equipments which has excessive vibration; If is needed, you should adopt fine precautions against vibrating.
6. The driver can be installed on a horizontal or vertical direction.

**IV. Wiring requirement:**

1. Attention:

You should inspect the power supply polarity of controller before wiring. You should change with the power supply of smoothing and the scope of voltage is: 20---55V (the wave<10%).

**2. You must combine external power supply and controller power supply input terminal with protective tube.**

3. The connection of signal wire and control wire should choose shielded wire, and it should be arranged separately with inlet wire and output wire of power supply.

Warning

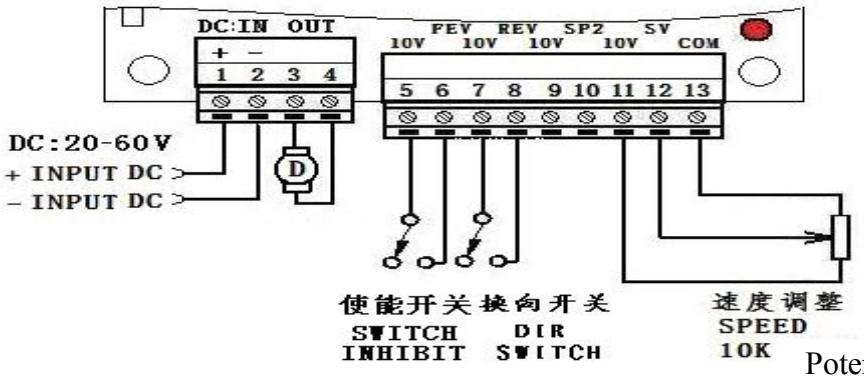
No matter when mixing together the signal wire, logic control wire and input wire, output wire(motor wire) of power supply and other power wire is forbidden, which will generate induced voltage that cause the interference of driver, malfunction or cause the driver damage directly.

4. You must maintain the power supply input of driver in line with the positive and negative pole of external power supply as there is no transposition defensive function in the driver. Otherwise, damages may be caused.
5. You should wire with appropriate instrument and ensure the wiring accuracy.

**V. Function schematic diagram of driver terminal connector:**

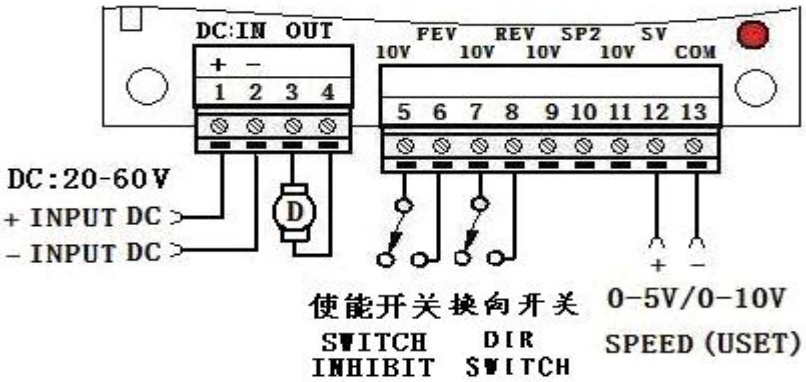
The wiring modes of driver can refer to as follows:

1. To control by adopting passive switch and potentiometer, see diagram I



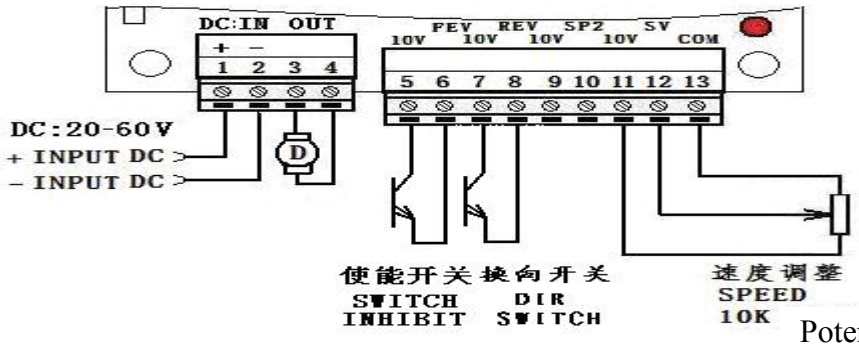
Potentiometer

2. To control by adopting passive switch and external analog signal (0-5V/0-10V), see diagram 2



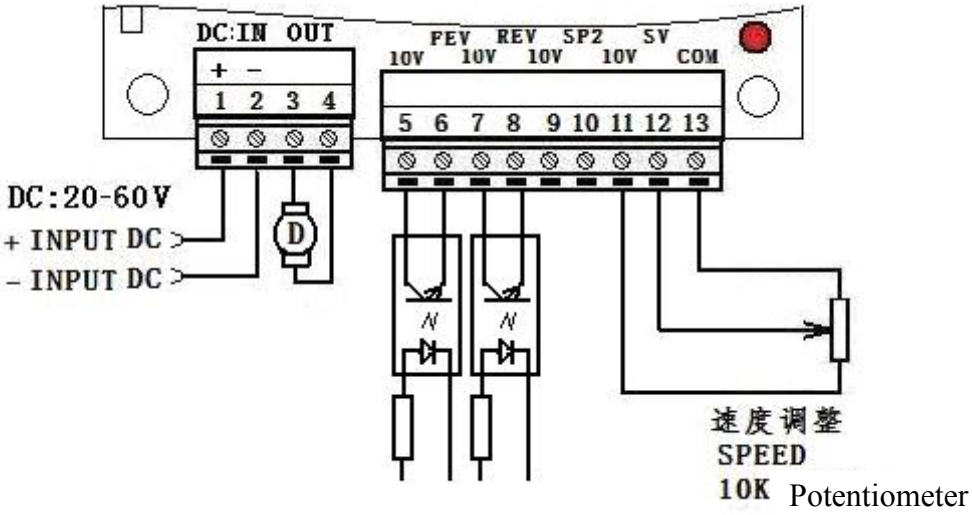
External analog quantity control

3. To control by adopting collector open circuit mode and potentiometer, see diagram 3



Potentiometer

4. To control by adopting optoelectronic isolation mode and potentiometer or external analog signal, see diagram 4




Warning

All the output connecting line of control terminals cannot close to the wires of the terminal of power supply and output.

To reduce the unnecessary electric signal inference, you should cut down the wire length of control terminal to the greatest extent. If the wire length exceeds 0.5m, you should use the shield cable.

**VI. Introduction of driver connection terminal:**

1. Input terminal of power supply positive pole
2. Input terminal of power supply negative pole
3. Motor armature
4. Motor armature
5. High-end of enabled control terminal
6. Low-end of enabled control terminal
7. High-end of commutation control terminal
8. Low-end of commutation control terminal
9. High-end of SP2 control terminal
10. Low-end of SP2 control terminal
11. High-end of speed control signal (+10V)
12. Input of speed control signal
13. Low-end of speed control signal (0V)

**VII. Function instruction of control terminal:**

1. Enabled control terminal; if the terminal switches on, adjust the speed regulator potentiometer and the motor operates, if the terminal switch off, the motor stops.

2. Directional control terminal: If the terminal switches off, the motor operates forward, if the terminal switches on, the terminal operates reverse.

3. SP2 control terminal: this terminal will be used under the circumstance without speed-regulating, namely, connect a switch between 9 and 10, and switch on this switch and enabled switch to realize the adjustment function by adjusting the W3 potentiometer. The SV input signal is invalid when this function is operating.

**VIII. Indicator light instruction:**

1. L1 (green) power supply indicator light, this light will light up when the current is turn on.

2. L2 (red) overload indicator light, this light will light up when the output current of controller is greater than rated current.

**IX. Adjustment instruction of function potentiometer:**

W1 Adjustment of maximum rotate speed, instantaneous indicator increase.

W2 Adjustment of torque compensation function, instantaneous indicator increase.

W3 Adjustment of maximum rotate speed of SP2, instantaneous indicator increase.

W4 Adjustment of start/braking time, instantaneous indicator increase.

W5 Output current adjustment, instantaneous indicator increase (amplitude limiting).

**X. Dimensions: see diagram 5**

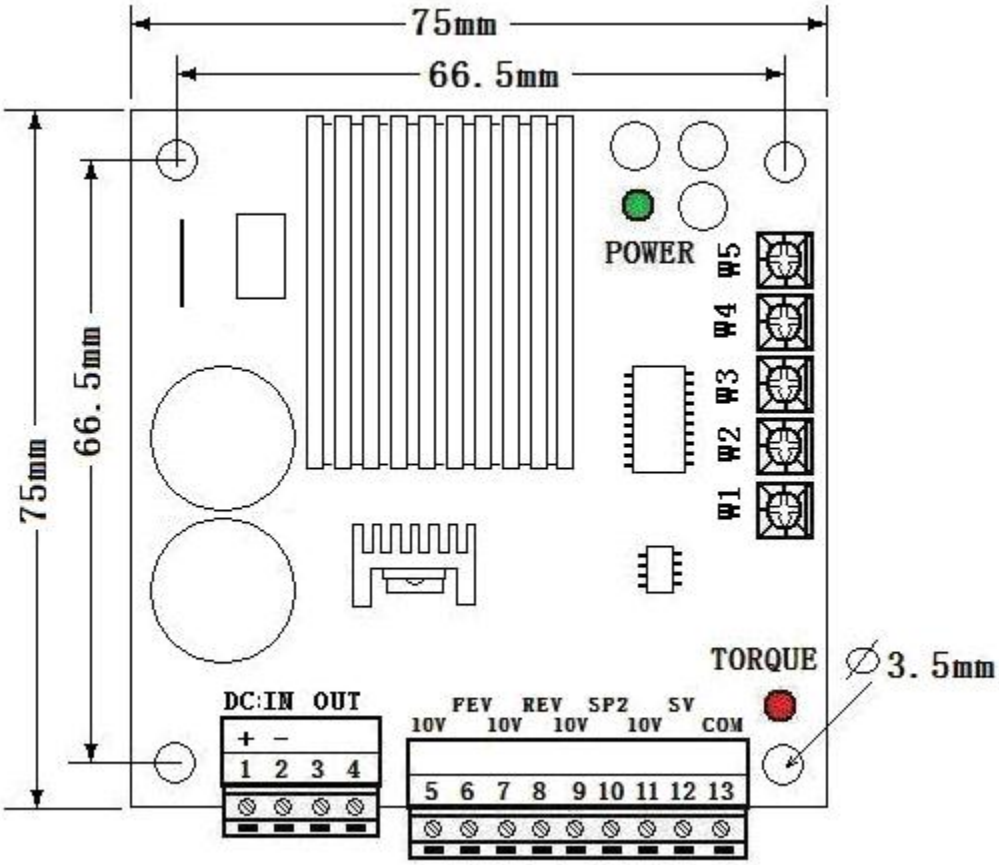



Figure 5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