Motor Controller for High Power Brushless Motors

HPC100B brushless motor controller is a driver for Permanent Magnet Brushless Motor. A special DSP (digital signal processor) chip suitable for motor controls is inside, and high frequency power device with sufficient heat-conduction is used. The carrier frequency is 16 kHz, and the output current is SPWM wave. The control is completely sealed (IP66) which with more features such as high-efficiency, little torque fluctuation, low noise, high-reliability. A system builds up with control and motor could be applied to electric car, motorcycle, and surfboard applications.

1. Specifications
   Suitable Motor: 48V/72V 3-10KW
   Three-phase PMSM motor with hall effect sensor.
   Power supply range: 30-100V_{DC}.
   Rated current: 120A/180A
   Overload capacity: 300A/500A
   Adjustable speed range: 6000 RPM.

Time of accelerator Full/Zero: ≤5S.

Direction: Forward and Reverse.

Protections:

Under-voltage: 31v~32v, the control will give an alarm; 30v, shut down.

Over-temperature: if inside temperature exceed 80℃, shut down; and could be restart (not automatically) if it below 75℃.

Insulation :Active terminals to shell ＞10MΩ.

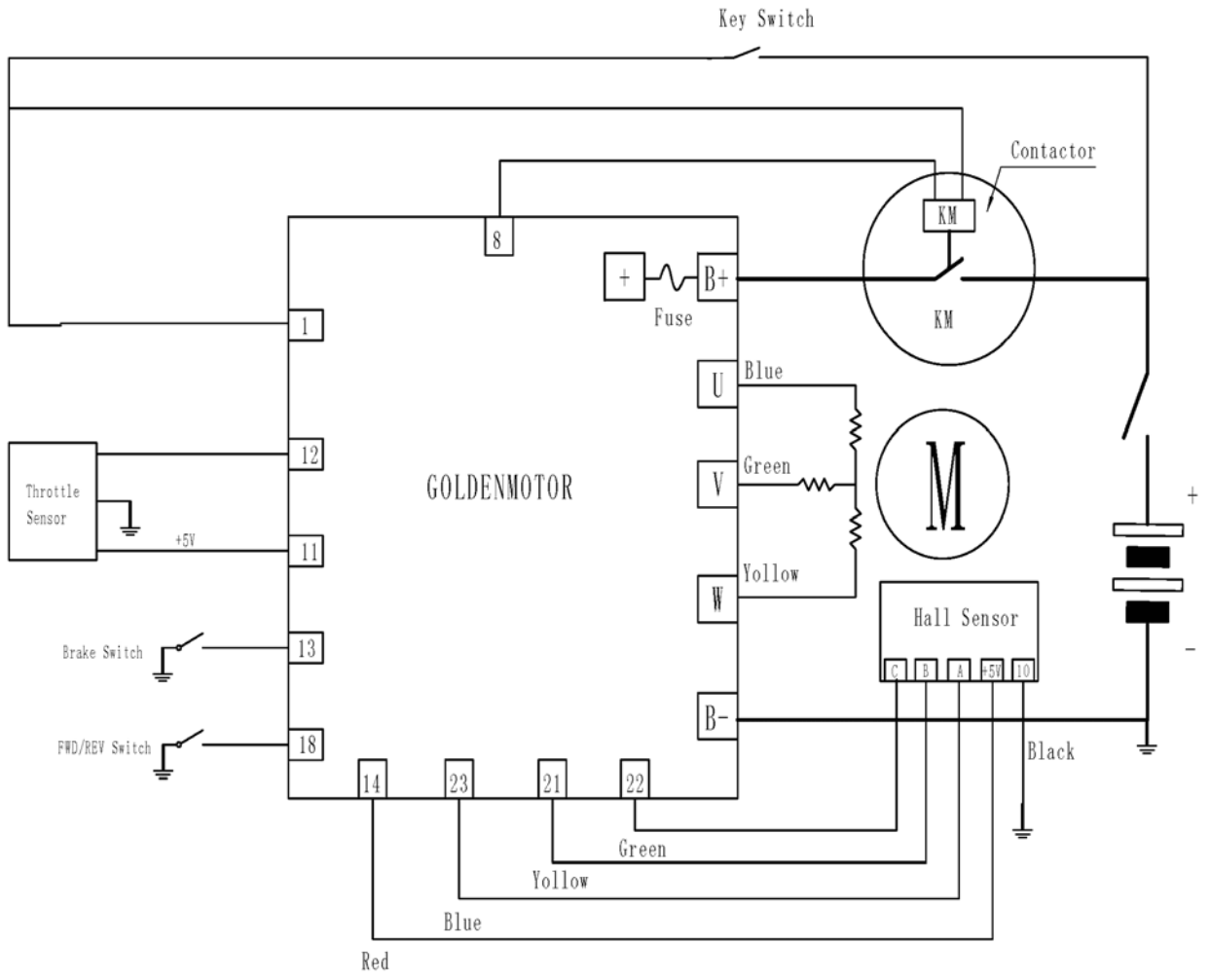
Dielectric strength: Active terminals to shell: 500Vac /1min

2. Installation

Outline: please see attached drawing.

Mounting: the control should be mounted onto a metal base plate, as large as possible to provide heat-sinking, by 4×M6 clearance holes. The heat-sinking surface finish should be flat, clean and thermal compound should be applied to the control base before fitting.

Wiring: please wire the system as attached drawing.



Maximum terminal install torque: 4NM

Signal terminal type: AMP TYCO776273-1

Beeper driving: 12V/ 200mA.

Line contactor driving: 36V/3A.

Notes:

Please ensure the connection of every part is correct as drawing show, and use right wires and terminals.

3. Function and Operation

Turn on the ON/OFF/Switch, then the control start to work (On alive state).

The control will stop working if the ON/OFF/Switch is turned off or the 4A FUSE failed.

When the motor works, the Lamp will shine. When the motor stops or power off, the Lamp will black out. When the control at a wrong state, the Lamp will flash.

At the alive state, when the FWD button is on, the rotation of motor will be in CCW (look into the motor shaft).

When the REV Button is on, the motor will be in CW.

If the FWD & REV button is both on and off, the motor can not run or will brake.

Adjusting the Throttle Sensor Resistor can change the motor's speed from 0 to 7000rad/min.

At any states, the Line Contactor should turn on before the motor runs.

At alive state, if V＜31.5±0.5vlots, the Beeper will give an alarm.

The Lamp should flash and the control stop working when a fault occurred in the control or caused by battery (under-voltages) or motor (overload or stall). The motor would not run until the operator restart the control again.

The control would do the same things if it over heated to 80℃, and could be restarted until the temperature down to75℃.

4. Trouble shoot

When you find the system failures, first of all, you should turn off the power supply immediately, and move the equipment to a safety place for examining.

Fault Examining:

1) Examine whether the terminals and wire connection are in good condition, good contact or not.
2) Examine whether the control or the motor are over-temperature or not.
3) Examine whether the motor or gears are twisted or locked by other things or not.
4) Examine whether the battery voltages are under-voltage or not.
5) Examine whether every Switch and adjuster are worn to bad contact or not.
6) Examine whether the Beeper, the LINE CONTACTOR are damaged or not.
7) Examine whether the terminals of control are oxidized or eroded to bad contact or not.
8) Examine whether there are burning smell or smoking in the control or not.
9) Examine whether the Lamp flash or not at alive state.

Fault Clearance:

1) Repair the wires and tighten the terminal.
2) Don't restart the system until the motor or the control cool down. Attention to be scalded.
3) Turn off the ON/OFF/Switch, take away the block.
4) Charge the Battery.
5) Change the device.

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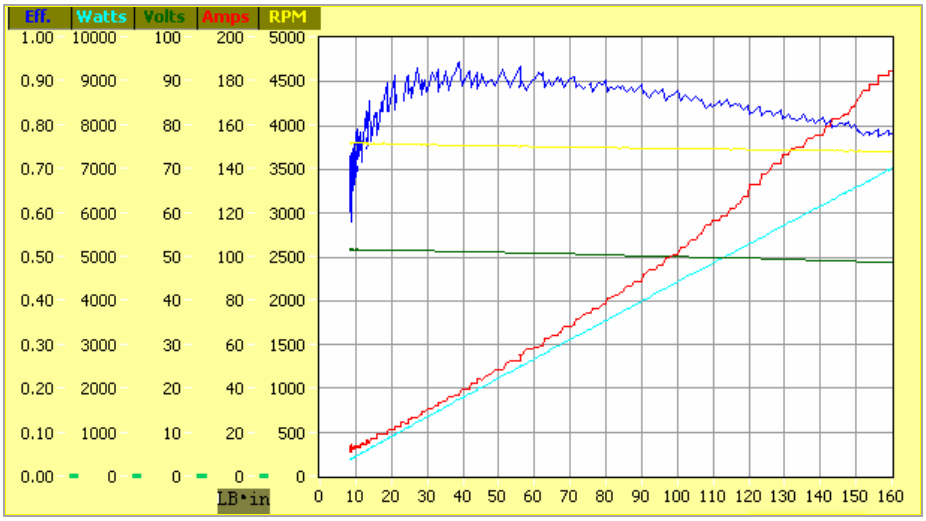
7) Repair the control's terminals or a new control is used instead.
8) Turn off the power supply and change a new control.
9) Let a professional to repair the control.

Note: First ensure safety of people in any term.



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