

## **ELECTRIC MOTOR POWER PTY LTD 240v AC input Brushless controller**

### **Features:**

- Two current limits
  - Peak current limit to protect controller
  - Timed current shut off to protect motor
- Input voltage sensing and auto-shut off at low voltage
- Full variable speed control
- Inputs
  - Variable acceleration and speed via potentiometers
  - Forward reverse input
- Break output
- Voltage range 230v AC or up to 340v DC
- LCD readout of parameters (optional)
- Max power 1.5kW continuous for 220v (5A continuous)
- UART communication to allow synchronised motor control

### **Specifications:**

- Ø Input voltage 220v AC or DC
  - Ø Continuous max current per phase 5Amps
  - Ø Max input current 7Amps (2 minutes)
  - Ø Max power rating 1500Watts on 220v AC or 340v DC
  - Ø Max peak current\* 9Amps
  - Ø Input circuit breaker rating\*\* 8Amps
- \* Peak current rating for 1-second non-repetitive  
\*\* Input fuse not included and must be used to prevent damage in the event of failure

## **Inputs:**

### **Direction – Frw/Rev**

- This input is a voltage free contact. The state (open or closed) of this input will determine the direction of rotation of the motor.
- If the motor is in motion when this input is changed then the motor will decelerate to a stop then accelerate in the opposite direction.

### **Speed**

- This 3 terminal input is used for a 22K pot to control speed. If not used then a link should be placed between pin 1 & 2 of this terminal block for zero speed or 2 & 3 for maximum speed.
- If the wiring to the pot will be more than 10 meters, then a 1 $\mu$ F 50V capacitor should be placed between pin 1 & 2, to improve noise rejection induced on cabling.

### **Acceleration**

- This 3 terminal input is used for a 22K pot to control acceleration. If not used then a link should be placed between pin 1 & 2 of this terminal block.
- If the wiring to the pot will be more than 10 meters, then a 1 $\mu$ F 50V capacitor should be placed between pin 1 & 2, to improve noise rejection induced on cabling.

### **Input Voltage**

- The input voltage must be in the range of the rated voltage of the controller selected.
- There is reverse protection fitted to the controller. If power is applied to the controller with out a switch there will be a small spark as the capacitors are charged up, this is normal and indicates that you have connected power correctly.

### **Controller Voltage rating**

- 220V AC or DC (absolute max is 340V DC )

## **Outputs**

### **Break**

- Connect EMP break to this output taking care not to short the wiring as this will cause the break fuse to trip. The output voltage to the break is equivalent to the mains input voltage.
- The output is an open drain connection that is enabled whenever there is power applied to the motor windings.

### Motor connection

- PHA Red
- PHB Blue
- PHC White
- Active or (Connect positive from the battery)
- Neutral or (Connect negative from the battery)
- Earth should be connected to the chassis of the controller and to the motor frame

**Please refer to attached schematics for connections to controller.**

### Current Limit

- This is set in the factory to your requirements and limits the maximum instantaneous current available to the motor windings. Please note that this current is not the current measured at the input voltage terminals.
- There is also a preset delayed current limit below this setting. If the motor current is in this region for more than the delayed current time, then the motor will shut down. To restart the motor the speed must be set to zero, then back to the desired speed. The delayed current level and shut down time must be specified on order.

## **IMPORTANT INFORMATION**

- Ensure that positive and negative to the battery are correctly connected as this is very critical.
- Follow colour coding as noted on diagram, i.e.  
Phase A=Red/1,  
Phase B=Blue/2,  
Phase C=White/3
- The 5-Pin encoder should be connected to the controller before operating (can only be fitted one way).
- Potentiometers for speed control and acceleration/deceleration should be done as per attached drawing.
- To control "Forward/Reverse" connect a non-voltage contact switch as per attached diagram.

- (1) When all above connections are in place, turn speed potentiometer to minimum before applying voltage.
  - (2) Turn potentiometer clockwise slowly to ensure the motor starts operating smoothly. If motor fails to operate smoothly, then connections need to be checked. This procedure needs to be performed only once (during the commissioning of the motor).
  - (3) If no speed pot is to be used then a temporary pot should be fitted for commissioning to check that the installation is correct before fitting the fixed speed jumper.
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