



ELECTRIC MOTOR POWER Pty. Ltd

ELECTRIC MOTOR POWER PTY LTD
12V-50V 100A⁽¹⁾ Controller for Brushed DC Motors

Model #: EMP100A⁽¹⁾

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
- Voltage range 12-50v DC.

.../..2

- LCD readout of parameters (optional)
- Max power to 5kW continuous for 50v (100A⁽¹⁾ continuous)
- UART communication to allow synchronised motor control
- IP65 Enclosure available (optional)
- Brushless motor version available

Specifications:

- Ø Input voltage 12-50v DC.
 - Ø Continuous max current per phase 100Amps⁽¹⁾
 - Ø Max input current 100Amps⁽¹⁾
 - Ø Max power rating 5000Watts on 50v DC
 - Ø Up to a max peak current* 150Amps for 2 seconds
 - Ø Max input circuit breaker rating** 100Amps⁽¹⁾
- * Peak current rating for 1-second non-repetitive
** Input fuse not included and must be used to prevent damage to controller

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 (default = 1 sec).

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 1µF 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 1µF 50V capacitor should be placed between pin 1 & 2, to improve noise rejection induced on cabling.

...../...3

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 without 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

- 12-50v DC (absolute max is 50VDC for fully charged batteries)

Outputs

Brake

- Connect EMP brake (if fitted) to this output ensuring that wires do not short across the terminal causing a fault in the brake output. The output voltage to the brake is equivalent to the mains input voltage.

Motor connection

- PHA Red
- PHB – Not used with brushed motors
- PHC Black
- +V (Connect positive from the battery)
- -V (Connect negative from the battery)

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 drive will shut down. To restart, the motor command speed must be set to zero and power supply cycled off and on. The delayed current level and shut down time must be specified on order.

...../...4

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=Not used with brushed motors
Phase C=Black/3
- The 5-Pin encoder (if required) 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 drawing.
- To control "Forward/Reverse" connect a non-voltage contact switch as per below diagram.

FINALLY

- (a) When all above connections are in place, turn speed potentiometer to minimum before applying voltage.
- (b) 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).
- (c) 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.

DIMENSIONS

270(L) x 130(D) x 110(H) --- Excluding cover if required

NOTES:

⁽¹⁾ 100A continuous ONLY with cooling fan installed
All controllers are sold in an "open" box. Covers can be supplied if required at an additional charge.