

EM-101-BI MOTOR CONTROLLER 24V 4A 4-QUAD



FEATURES

- 4 Quadrants
- Self recovery fuse
- Adjustable current limit
- Adjustable accel./braking ramp
- Load compensation
- Special braking options
- Supply voltage compensation
- Speed control $\pm 10V$ ($\pm 5V$)
- Positive control logic
- Mounting with DIN-rail or screws
- High efficiency

EM-101-BI is designed for modern automation systems. Controls can be performed easily with relay- or open collector outputs. Analog controls work with $\pm 10V$ voltage. Usable motor can be permanent magnet motor with brushes in power range of 5...80 W. Due to the advanced pulse control (PWM) the unit operates with high efficiency, low temperature losses and provides a high starting torque.

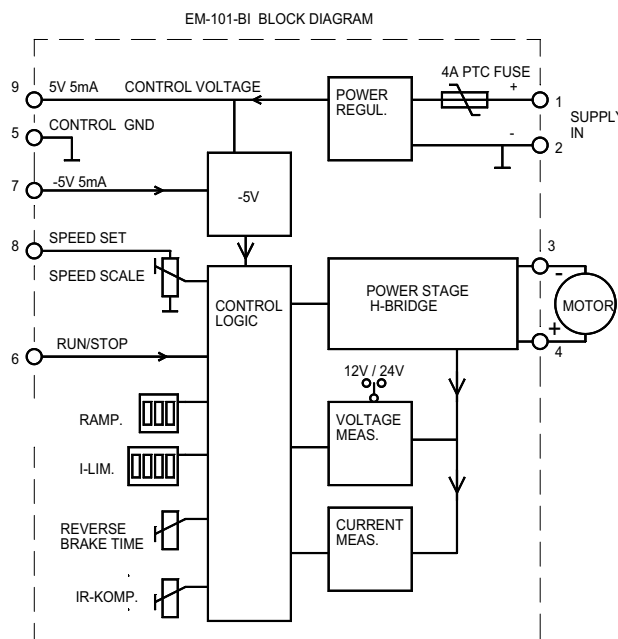
Loading of the motor can be compensated with inbuilt RI-adjustment. The current, or in other words, the torque of the motor can be controlled with DIP-switch. The operation of the current limit is indicated with a red led.

There are a variety of braking options available in this device. For most effective braking "reverse braking"-mode can be used. In this mode reversed driving is used for braking, which effects extremely fast function. Additionally the card utilises short circuit braking which short circuits the motor circuit during the braking.

EM-101 also has inbuilt settable time acceleration- and braking ramps.

TECHNICAL DATA

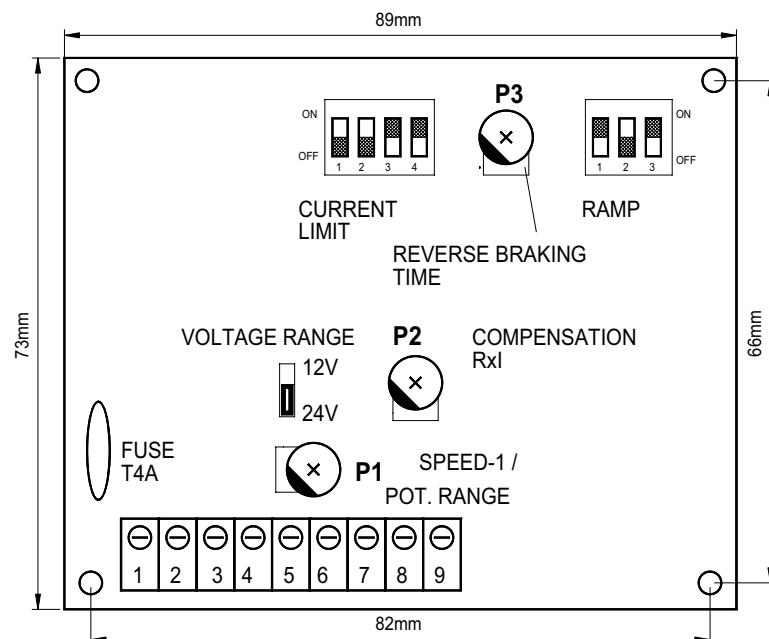
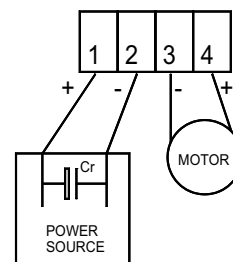
Supply	12-34Vdc
Over volt. protect.	36V
Idle current	approx. 50mA
Control current	4A continuous, 5A max.
Control power	80W continuous
Motor voltage	0-15V (12V range) 0-29V (24V range)
Current limit	0.3...5A
Voltage loss	1V when $I_m=4A$
Fuse	4A self recovery.
Ramp	0,5s...5s
Control voltage	-5...0...5V -->-10...0...10V
Control pot.	2...10kohm
Digital cont.	"on" when U_{in} 4 -30V "off" when U_{in} 0-1V or open
Dimensions	89x73x26mm
Weight	approx. 70g



OPERATING INSTRUCTIONS EM-101-BI

Supply voltage must be DC with ripple less than 20%. Supply voltage 12...34V. In the beginning set all trimmers as shown in lay-out picture. Choose 12 / 24 according to the supply used.

NOTE! When reversed braking is used the controller will take a very high current peak. Capacitor for the power supply should be at least 4700uF at 1A.



CONNECTORS

1. Supply 12-34Vdc
2. Supply GND 0V
3. Motor (-)
4. Motor (+)
5. Control GND 0V
6. Run / (Stop)
7. -5V Aux. voltage out (5mA)
8. Reference voltage in
9. +5 Reference out (5mA)

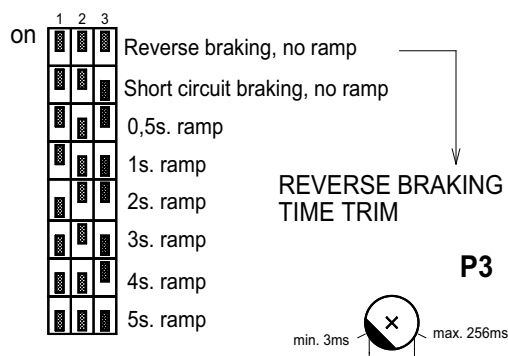
CURRENT LIMIT

Limitation of the current (torque)
Controlled with DIP-switches.

on	1	2	3	4		1	2	3	4	
	on	off	off	off	0A		on	off	off	2.5A
	off	on	off	off	0.3A		off	on	off	2.8A
	off	off	on	off	0.6A		off	off	on	3.2A
	off	off	off	on	1A		off	on	on	3.5A
	on	on	off	off	1.3A		on	on	off	3.9A
	on	off	on	off	1.6A		on	off	on	4.2A
	off	on	on	off	1.9A		off	on	on	4.6A
	on	on	on	on	2.2A		on	on	on	5.0A

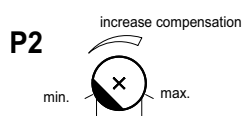
THE RAMP & BRAKING

In the map below the first two ramp settings are special braking options. The first position is so called reverse braking; the motor is controlled in opposite direction. Reverse braking time is set with trim P3. braking where the motor circuit is short circuited during the braking. Other positions are for normal acceleration and braking settings which are set with DIP-switches.



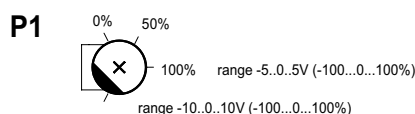
COMPENSATION

With compensation you can compensate the load effect to motor rpm. This feature increases controlling if current increases in the motor circuit. The need for compensation depends on application and motor. Typically small motors require more compensation than big ones. Over compensation occurs as twiching of the motor.



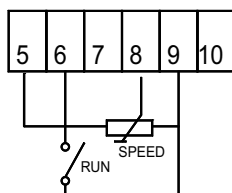
CONTROLLING

The max value of controlling voltage ranges $\pm(5 \dots 10V)$. The full range is thus maintained on $0 \dots 5V$. The range can be set with trim P1.

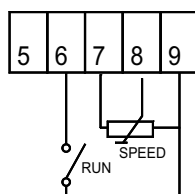


EM-101 CONNECTION EXAMPLES

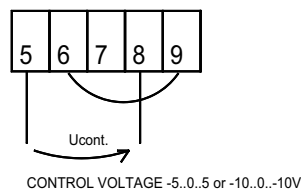
One direction drive.
Speed adjustment with
potentiometer.



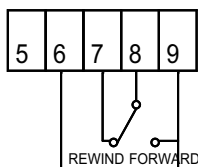
Two direction drive.
Speed and direction control
with potentiometer.



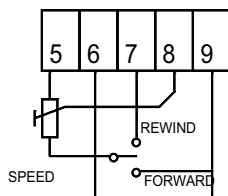
Two direction drive with voltage signal.
Run continuous on.



Two direction drive with switch.
Run continuous on.



Two direction drive with switch.
Speed with external potentiometer.
Run continuous on.



Two direction drive with voltage signal,
run with voltage control.

