ERMEC
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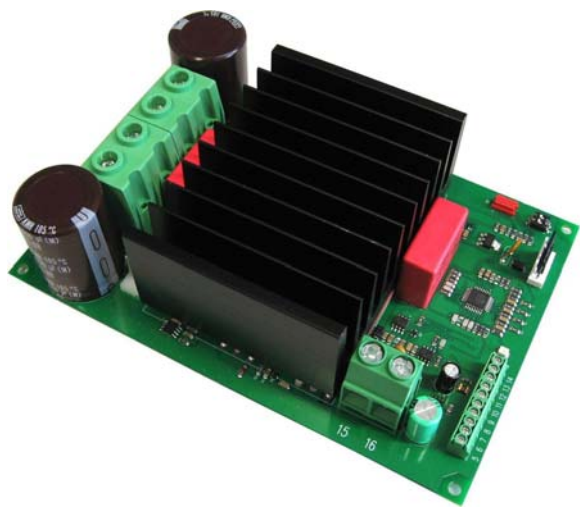Distribución de componentes
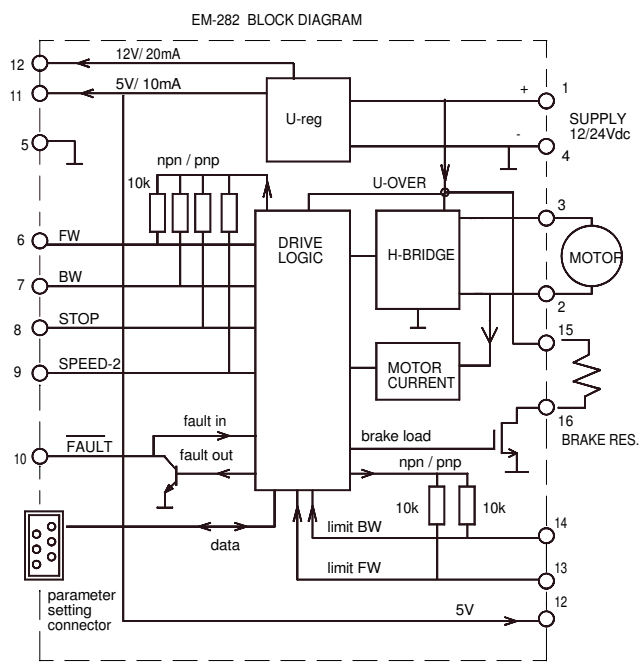eléctricos y electrónicos

EM-282 DC-MOTOR CONTROLLER 12-42V 100A

- **high current output**
- **brake load output**
- **current limit**
- **current limit for brake also**
- **zero current limit**
- **speed setting**
- **flexible control inputs**
- **impulse / continuous mode**
- **rail base mountable**
- **digital parameter setting**

EM-282 is a full bridge DC-motor starter. It is designed to work with DC-motor in applications where some special functions are needed. Starter has adjustable acceleration and deceleration ramps, which make possible the smooth starts and stops. Adjustable current limit protects motor against overcurrent and there is also current limitation for brake (regeneration) . This device has also two settable speeds, which are useful in positioning applications. Control inputs FW and BW start the forward and backward run. STOP is for the motor shut-down but there are also available individual limit inputs for FW and BW directions. SPEED-2 input activates preset speed-2, but it can also be used as input for analog speed control signal 0-5V. FAULT terminal has at the same time input and output function, the pin is normally high, but is pulled down in overheat and conditionally also in current trip situation. If FAULT-line is pulled down externally it will cause a stop and prevent the new start. For example, it is possible to link fault pins of several units together and achieve a syncronous stop.

There are 2 selectable control modes, contionuous and impulse. In continuous mode the motor runs as long as the control is active. In impulse mode a short comand starts the motor, and only a new impulse will change the status. The card has selectable input logics. Inputs are divided in two groups, control and limit -inputs. Groups can be individually set for NPN or PNP logic. The parameters are set with EM-236 interface unit. Operation of the controller and some of its functional values can also be monitored with EM-236 interface unit.

TECHNICAL DATA

Supply voltage 12-42V (10-50V)
shutdown voltage 10V
Overvoltage limit adjustable 15-50V
Idle current typ 20mA
Motor current max. continous 100A (at 25℃ amb temp),
80A (at 60° amb temp) and peak 200A (5s)
Braking load current max cont 50A peak 100A
Current limit adjustable 1-200A (at start 1.2 times)
Overheat limit 100℃
Start and stop ramp adjustable 0-5s
PWM frequency 2kHz
Speed input scale (speed-2) 0-5V = 0-100% pwm
Input control logic: high =4-30V, low=0-1V
Control input impedances typ. 10kohm
Control input response time typ 5ms.
Fault out. NPN open coll. max 42V / 0.5A
Fault in actives Uin < 1V (NPN)
Motor and supply connectors 16mm²
Control connectors 1mm²
Dimensions 180x122x60mm
CE-tested for industrial environment (EMC)
Operating ambient temp (Ta) -40...60℃
Weight 750g

EM-282 BLOCK DIAGRAM

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EM-282BRDE 25.5.10

CONNECTIONS

Supply voltage must be filtered DC of 10-45V,
and ripple should be less than 20% at full load.
CAUTION ! Wrong polarity can damage the unit.
CAUTION ! Unit doesn't have an internal fuse, so
an external fuse should be added if fuse required.

MONITORABLE VALUES

1 Motor current 0-200A (0-200)
2 Brake current 0-200A (0-200)
3 PWM-level-% 0-100% (0-100)
4 hour counter (max.65535h)
5start counter (max.65535)
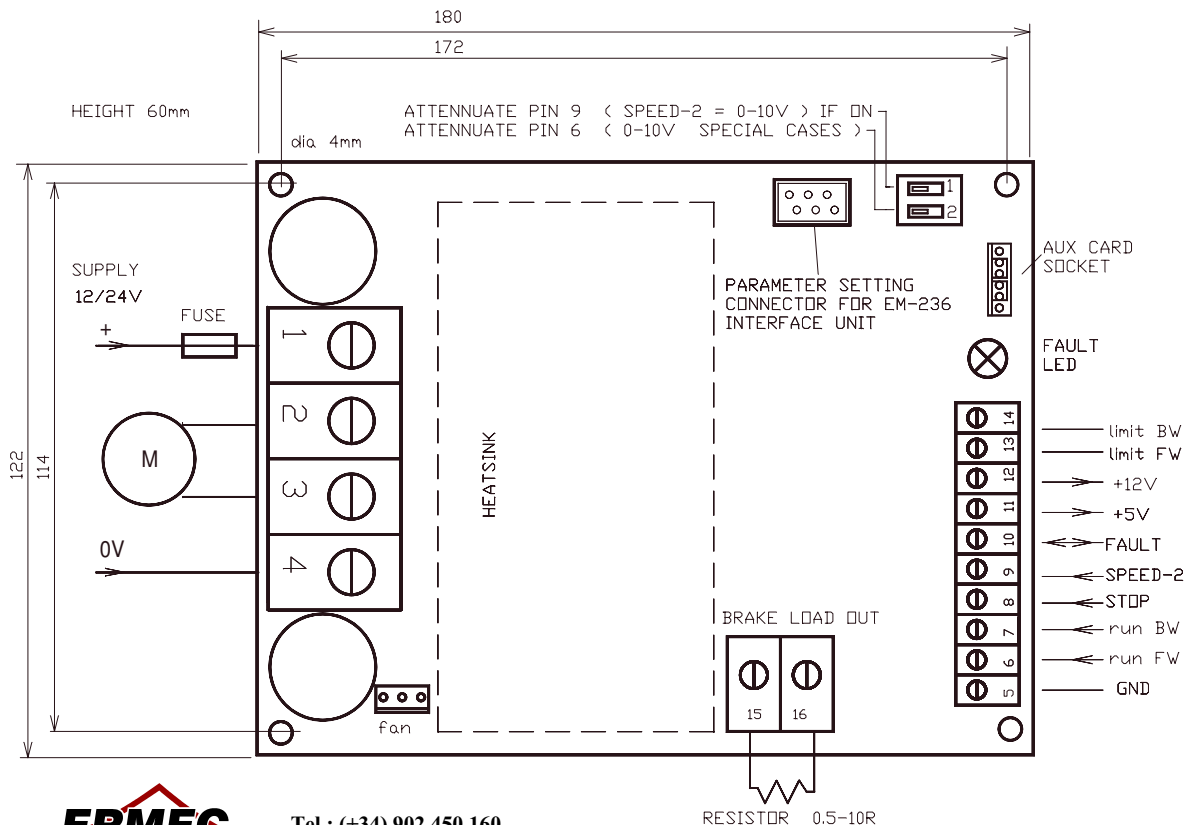6 carry counter for start counter

FAULT-LED signal codes

1. power on   one blink
2. current on limit led is lit
3. current trip   fast blinking...
4. zero-cur trip   long blink- short pause...
5. overvoltage   4 x blink -pause...
6. overheat   short blink- long pause...
7. timeout   3 x blink + long blink...
8. fault input   2 x short + 1x long blink...

ADJUSTMENT AND SETTINGS

Adjusting and parameter setting of eg.
current limit value, ramp times and speed-2
value is done with the EM-236 interface unit.
With EM-236 the parameters and adjusted
values can also be copied to multible
devices accurately and reliably.

SETTABLE PARAMETERS v1.3 (defaults in brackets)

1 command mode: continuous = 0, impulse= 1 (0)
2 start condition combinations: 0-3   (1)
  0= start both direction after I-trip and Stop
  1= start only opposite direction after I-trip
  2= start only opposite direction after Stop
  3= start only opposite direction after I- and Stop
3 input logic combinations 0-3 PNP/NPN (0)
  0= command and limit inputs as PNP (positive)
  1= command inputs NPN, and limit inputs PNP
  2= command inputs PNP. and limit input NPN
  3= command and limit inputs NPN (negative)
4 running speed-1: 0-100% / 0-100   (100)
5 running speed-2: 0-100% / 0-100   (50)
  Note: If selected to 0 "speed2-input" is
  used as analog 0-5V speed control input.
6 current limit :   1-200A / 1-200   (30)
7 current limit in brake : 1-200A / 1-200   (30)
8 Trip combinations: 0-3   (1)
  0= no I-trip, no zero-current-trip
  1= only I-trip
  2= only zero-current-trip
  3= both I-trip and zero-current-trip
9 I-trip delay: 0-255ms / 0-255 (20)
10 Fault output combinations: 0-3 (1)
  0= I-trip and zero current won´t cause fault output signal
  1= only I-trip causes fault output signal
  2= only zero current causes fault output signal
  3= both I-trip and zero currenT causes fault output signal.

11 overvoltage limit: 15-50V / 15-50 (40)
  Overvoltage can be caused by load driving the motor or
  when braking the speed down but supply can not accept
  the current back from driver. Exceeding the limit will cause
  first the brake load switc on and if voltage still rise 10% as
  limit value the power stage set to free-wheel state.
  With a direct battery supply the brake current is charging the
  battery and the voltage will not normally rise.
12 load compensation: 0-255 / 0-255 (0)
  Load compensation (RxI) improves low speed and start
  torgue, but too high compensation achieve unstable running.
  Run motor at low speed (30%) Increace compensation
  with small steps until motor start behaviour unstable,
  then decrease value about 10%
13 timeout: 0-255s. / 0-255 (0=not in use) (0)
14 reset for start and hour-counter 0/1   (0)
  selecting 1 and push save = reset counters
15 start ramp: 0-5s / 0-500 (100)
16 stop ramp: 0-5s / 0-500 (100)