

EM-217B (-H) INVERTER FOR 230VAC 1-ph INDUCTION MOTORS



FEATURES

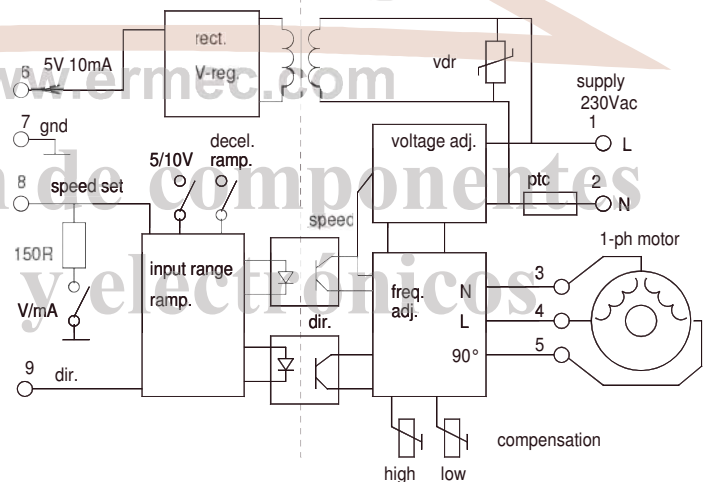
- speed control
- direction change
- start ramp
- slip compensation
- isolated control
- V/mA control signal
- EM-217B open card
- EM-217B-H (housed)
- low disturbances

EM-217B is a frequency inverter for speed control of small 1ph induction motors. This device creates two output voltages with 90 deg. phase difference to each other, so there is no need for auxiliary capacitor like often with 1ph motors. The frequency output range is from 15Hz up to 80Hz. The output stage works with PAM principle and that way the EMC emissions are very low. The control can be done with voltage or mA signal or with potentiometer. The rotation direction can be changed with digital command. All control inputs are galvanically isolated from mains supply. Device has also a start and stop ramp for smooth operation. If needed, the stop ramp can be disabled for quicker stop. The EM-217B has self recovery mains fuse that offers a good immunity against the mains voltage spikes

TECHNICAL DATA

Supply voltage 200-240Vac 50/60Hz
 Current consumption max. 200mA
 Motor recom. up to 15W
 Isolation 1500Vrms
 Aux. voltage output 5V max. 5mA
 Control signals 0-5V, 0-10V tai 4-20mA
 Potentiometer recom. 1-47kohm
 Input impedance 100kohm / 150ohm
 Dir. input level 4-30V =ON / <1V =OFF
 Dir input impedance 100k
 Start ramp 1s (0 to 100%)
 Stop ramp 1s. or 0s.
 Direction change delay 0.2s
 Connectors 1.5mm
 Operation temp. 0-60 °C
 Power loss max. 5W
 weight 80g (100g with box)
 Dimensions card 67x86x30
 Dim. with box 72x90x60
 EMC tested for household / light industry

BLOCK DIAGRAM EM-217B



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INSTALLATION

- Supply voltage 200-240Vac 50/60Hz
- Supply must be switched off when connecting
- Settings of switches:
 - input range: V / mA / Potentiometer
 - stop ramp on / off
- Turn compensation trims to recommended position (if motor is unknown, set both trims to min. position)

NOTICE !

- Installation of this device is allowed only for person who has competence for mains voltage voltage installation like a licensed electrician.
- The slip compensation adjustments are on mains voltage side. So use always insulated tools.

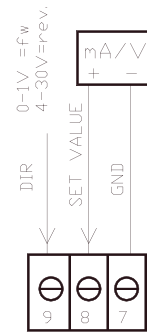
INTRODUCTION

Turn supply on and start to increase speed set voltage. Motor should start to run smoothly from low speed to high speed.

Try to change direction when motor is running at high speed. Motor should slow down and start to the other direction. If a fast direction change is desired, change the "stop ramp" link to off position.

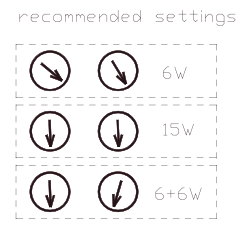
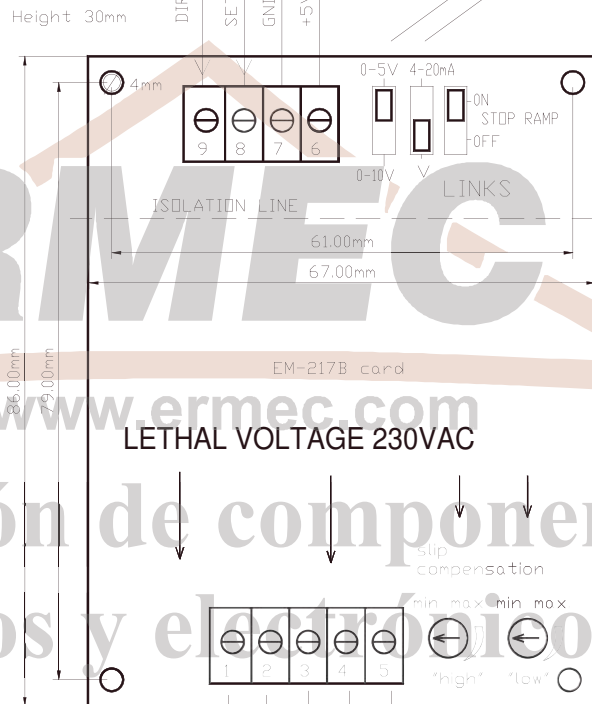
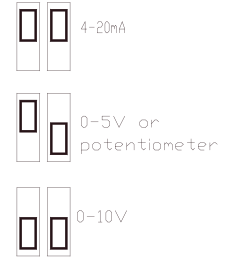
Adjustment of the compensation:

Turn "high" trim to middle position and "low" trim to minimum position. Set the motor to run at low speed and adjust "low" trim slowly towards max. until motor speed starts to rise. Then load the motor gradually and you should notice the driver increasing the motor speed. The compensation increase on higher speeds can now be adjusted with the "high" trim.

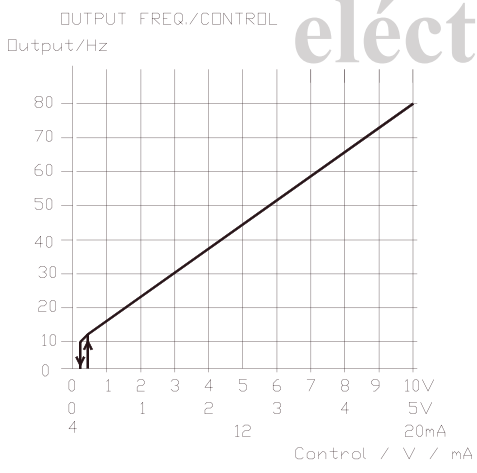
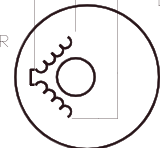


In this example device is controlled with voltage signal and logic signal. Notice ! input range is selected with links.

In example beneath the device is controlled with switch and potentiometer.



CONNECTION EXAMPLE FOR 1ph PANASONIC 4P6WS1



Example:
rotation speed range calculation
4-pol. motor 1500rpm/50Hz
given slip on nominal load 300rpm

max. $(80\text{Hz} \cdot 60\text{s}) / 2 = 2400\text{rpm} - 300\text{rpm} = 2100\text{rpm}$
min. $(15\text{Hz} \cdot 60\text{s}) / 2 = 450\text{rpm} - 300\text{rpm} = 150\text{rpm}$