

Owner's Information

Rackmaster 290

The Zero 88 Rackmaster 290 dimmer pack is a 2U high, fan cooled, professional six channel power controller. It is capable of driving up to 16 Amps of lighting loads per channel, subject to a maximum total load of 84 Amps. These loads may be resistive or inductive and include tungsten, transformer driven low voltage (eg. pinspots), and quartz halogen. Some highly inductive loads such as neon will require a ballast load of 100 watts.

Technical Specifications

Electrical

Power supply:	50 or 60Hz
(a) 84 Amps	1 phase 2 wire 230 or 115v
(b) 28 Amps	3 phase 4 wire 250/440v
(c) 40 Amps	3 phase 3 wire (Delta) 230 or 115v
(d) 3 x 28 Amps	1 phase 230 or 115v
Max total load:	20kW @ 240v; 10kW @ 120v
Load per channel:	0.1A Min; 16A Max
No load consumption:	10w
Interference:	Suppression meets BS800 & VDE0875
Input Signals:	0 to +10v
Connections:	8 way Ring Locking DIN on the front Panel. An internal terminal block is also fitted.
Low Voltage Supply:	+20v nominal, The 250mA fuse is mounted on the Front Panel.

Physical

Max Operating Temp:	45 °C Ambient
Size	483mm x 88 x 380 (19" x 3.5" x 15")
Net Weight:	8.5 kg (19lbs)

Zero 88 Lighting Ltd reserves the right to make changes to the equipment described in this handbook without prior notice.

This equipment is designed for controlling lighting and is unsuitable for any other purpose.

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Issue 1

WARNING

DO NOT REMOVE ANY COVER WITHOUT FIRST COMPLETELY DISCONNECTING THE RACKMASTER 290 FROM THE MAINS SUPPLY

Wiring and Internal Links

To remove the connection panel:

- 1 Disconnect the Rackmaster 290 at the supply.
- 2 Remove from the 19 inch rack (if appropriate).
- 3 Undo the five screws securing the connection panel and remove it by pulling up, and towards you.

To access the printed circuit boards:

- 4 Turn the Rackmaster 290 over and remove four screw per side and one in the base of the machine which secure the bottom cover.
- 5 Lift off the bottom cover.
- 6 It may also be necessary to remove the breaker bracket by removing the two supporting screws.

Connections to the Rackmaster 290 can be made via the cut outs provided for 30, 25 and 20mm glands on the connection panel. **The packs are supplied set for 240 v, 50Hz, three phase operation. Changing a fuse and the position of a link is all that is required to change the voltage and frequency.**

To set the Frequency:

Locate the frequency setting links and reposition for the frequency required on each pcb.

To set the Voltage:

Locate the fuse and reposition for the voltage required on each pcb.

To set Channel Buttons for 50% Output:

Fit the links supplied with the spares kit in the positions shown on the diagram opposite.

Remember to mark the outside of the pack in some way to show the channels affected.

Reassemble the Rackmaster 290 in the reverse order.

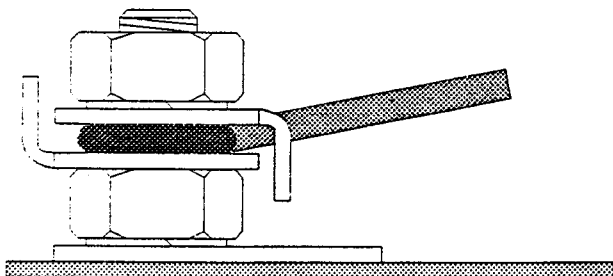
Fusing of Inductive Loads

All inductive loads (eg. pinspots, any transformer driven lamp) must be fitted with the correct value fuse. Failure to fit the correct fuse may mean that any supply disturbances could destroy the lamp transformer. For a single pinspot, a 500mA Quick Blow or 250mA AntiSurge fuse should be used.

Breaker Recommendations

It is advisable to set the preheat for a large lamp to avoid accidentally tripping the breakers when turning on from cold.

A minimum cable length of 10m is recommended between the dimmer and the lamp to give the triacs extra protection.



Always wire the supply as shown above.

Supply Wiring

A separate isolator and secure mains earth are required.

Phase to Neutral voltage must not exceed 250v

Rackmaster 290s are supplied wired for three phase star connected operation. All supply wiring can be done by removing only the connection panel as described above.

Single Phase

Remove the single phase busbar from the spares kit supplied and fit across the three phase input bolts.

Three Phase 'Star'

Remove the single phase busbar (if fitted) from across the three phase input bolts. Ensure that the neutral busbar is in place.

Three Phase 'Delta'

To make rewiring for delta connection easier to describe, the pcb which controls channels 1 and 2 (connected to phase 1) is referred to below as the phase 1 pcb. The phase 2 pcb controls channels 3 and 4; the phase 3 pcb controls channels 5 and 6.

Remove the blue neutral wires from the neutral busbar.

Connect the neutral wires from the phase 1 pcb to the phase 2 supply input; connect the neutral wires from the phase 2 pcb to the phase 3 supply input and then connect the neutral wires from the phase 3 pcb to the phase 1 supply input.

Remove the neutral and single phase busbars (if fitted).

Connect the neutral outputs 1 and 2 to the phase 2 supply input; connect the neutral outputs 3 and 4 to the phase 3 supply input and lastly connect the neutral outputs 5 and 6 to the phase 1 supply input.

Remember, **the voltage between phases must not exceed 250v when delta connected.**

Front Panel Controls

Channel Test Buttons

Each channel has a test button. Pressing this switches the channel full for rigging or test purposes. By changing internal links, these buttons may be set to switch the channels half on so that 115v lamps may be safely tested.

Lamp Preheat

Each Rackmaster 290 control input has a defined 'off' state in addition to its normal control range. If the input signal is disconnected, the output is 'off', so the lamp is without preheat. Each pair of channels has a preheat adjustment on the front panel. These may be used to set the preheat level of the channels provided that a controller is connected and set to minimum level on both the channels that are being adjusted.

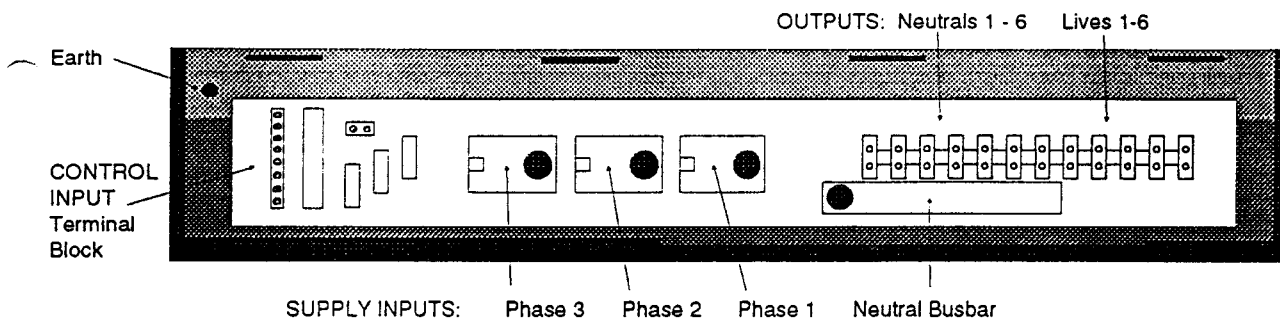
Diagnostic Lights

The green lights on each control board have the following functions:

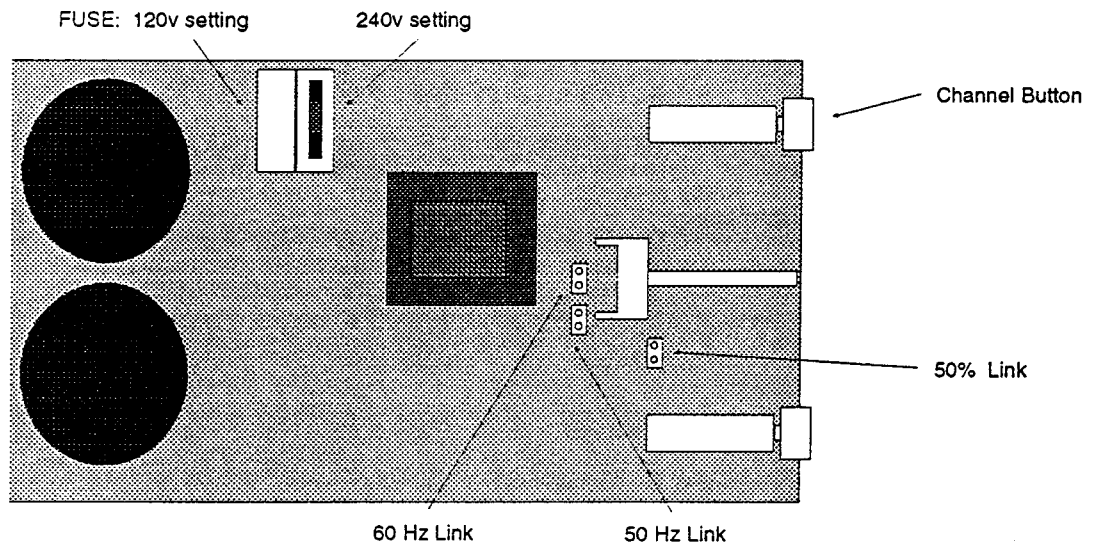
Ref OK : When lit the reference circuit is OK

Channel : Will be on slightly whenever a controller is connected. This shows that the electronics driving the opto isolator is OK. If any light is completely out, check that the signal cable is OK.

View of the rear with the rear cover removed



View of Printed Circuit Board



Simple Fault Finding

REGULARLY check that all the connectors are pushed fully on, all the screw terminals are tight and the fan and filter are clean.

Symptom	Action	Result	Fault
One channel dead	Check bulb & cable Check Circuit Breaker Press channel button	1: Ref OK on, channel led off 2: Ref OK on, channel led on	Circuit Breaker tripped, check circuit and reset Breaker. Channel drive circuit dead; change board.
One pair of channels dead (common ref)	Press both channel buttons	1: Ref OK off, both channels led off 2: Ref OK on, both channel led s off 3: Ref OK on, both channel led s on	Main triac or opto isolator dead; replace each in turn to find faulty item. a: Phase dead, check wiring and supply b: Reference circuit dead, change board c: Thermal cutout has operated. Check fan is working OK and intake is clear. If this happens repeatedly and fan is OK, change cutout. Both channels have circuits dead; change board.
All channels dead	Check all Ref OK Lights	1: All off 2: All on	Mains supply faulty or disconnected. Press all channel buttons, if lights come on, signal lead or connectors are dead.
One or more channels work on test buttons but not with controller	Ensure test buttons OFF and controller FULL ON	Channel light(s) completely out	a: Test signal cable b: Inspect cable inside Rackmaster between input pcb and each control board

Servicing

- To change a Main Triac: Remove the three wires, unscrew and replace with a new one, reconnect the wires and compare with the other triacs for correct wiring.
- To change an opto isolator: Unplug from its socket and replace with a new one.
- To change a control board: Unplug the wires and signal connector, remove the six securing screws. When the replacement board has been fitted, check the wiring and voltage/frequency settings with the other boards.