use EMI RFI filter Mains Socket

Input

110V AC +/- 25%

neutral

J2 PLUG AC FEMALE

phase

F3 FUSE 3A SB

SW1

SW DPST 230V 5A

DS1 LAMP NEON

R17 1M 1/2W

Use Presets with series resistor as required so that you can test or calibrate.

all mains wiring and connections should be designed for high voltage and current, They should be isolated visually from control circuits by 10 mm or more.

J1 PLUG AC MALE

neutral

phase

220V AC +/- 10%

Output

TRX1

110 PRI X 2 - 230V SEC TAPPED 500VA1

270V

240V

200V

180V

110V AC

110V AC

9-0-9

1A

D1 1N4007

D2 1N4007

+9V

U6 7805

VI

VO

GND

C1 1000uF 40V

C2 104 CD

C3 10uF 40V

+5V

If input voltage is 230V put the two 110V windings in series in proper polarity.

This circuit is only a design concept, it has not been tested.

The triac will switch at zero cross over because of MOC3041, hence no problem of an interwinding short, but then control circuit may fail or malfunction, so use fuse as shown . Also a snubber made of a 47E resistor and 0.02uF 630V pl cap in series must be placed across each triac.

FUSE 3A SB F1

BTA16600 Q1

R5 470E

R3 27E

MOC3041

ZERO CROSS CIRCUIT U1

Q2 BTA16600

FUSE 3A SB F2

R9 470E

R10 27E

MOC3041

ZERO CROSS CIRCUIT U3

FUSE 3A SB F4

BTA16600 Q3

R12 470E

R15 27E

MOC3041

ZERO CROSS CIRCUIT U4

FUSE 3A SB F5

Q4 BTA16600

R16 470E

R21 27E

MOC3041

ZERO CROSS CIRCUIT U5

R23 39K

C4 10uF 40V

+5V

R1 150E

R2 10M

U2A

R6 150E

LM324

R4 24K

2.6V

R7 2.2K

R8 10M

U2B

R11 150E

R13 3.9K

2.4V

R14

U2C

R18 150E

R19 2.2K

2.0V

R20 10M

U2D

LM324

R22 18K

1.8V

2.2V (220V)

R24 10K

R25 10K

use heatsinks for all parts that heat, air circulation.

BTA16600 is a ST part, metal tab is electrically insulated, 16A and 600V.

This Stabilizer should not be used with Inductive loads like motors or solenoids it may be ok for lighting and small electronics.

use 74HCT40XX chips in place of CD40XX for only 5V and high speed designs. Use Shrink sleeves and proper gauge of wire.

put 104 CD cap for all ICs from positive to negative close to IC, even if ommited in circuit, for opamps on dual supply two caps.

unused inputs of logic and opamps pull up or down to avoid oscillations and noise. connect supply of all chips if not mentioned.

"analog ground" and "digital ground" must be linked at power supply only, avoid loops, let grounds radiate from a ground plane.

use MFR 1% for all Resistors, 33E means 33 ohms, 22K means 22 kilo ohms, 1M is 1 megohm. 10T tp means ten turn trimpot.

'474 CD' is 47 with 4 zeros pF, 470000 pF, 470 nF, 0.47uF, ceramic disc. "pl" is plastic, low leakage multilayer.

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