

DRAWMER

MPA-90

MONITOR POWER AMPLIFIER



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ONE YEAR LIMITED WARRANTY

Drawmer Electronics Ltd., warrants the Drawmer **MPA-90 Monitor Power Amplifier** to conform substantially to the specifications of this manual for a period of one year from the original date of purchase when used in accordance with the specifications detailed in this manual. In the case of a valid warranty claim, your sole and exclusive remedy and Drawmer's entire liability under any theory of liability will be to, at Drawmer's discretion, repair or replace the product without charge, or, if not possible, to refund the purchase price to you. This warranty is not transferable. It applies only to the original purchaser of the product.

For warranty service please call your local Drawmer dealer. Alternatively call Drawmer Electronics Ltd. at +44 (0)1709 527574. Then ship the defective product, with transportation and insurance charges pre-paid, to Drawmer Electronics Ltd., Coleman Street, Parkgate, Rotherham, S62 6EL UK. Write the RA number in large letters in a prominent position on the shipping box. Enclose your name, address, telephone number, copy of the original sales invoice and a detailed description of the problem. Drawmer will not accept responsibility for loss or damage during transit.

This warranty is void if the product has been damaged by misuse, modification, unauthorised repair or installed with other equipment that proved to be faulty.

THIS WARRANTY IS IN LIEU OF ALL WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. DRAWMER MAKES NO OTHER WARRANTY EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE REPAIR OR REPLACEMENT AS SPECIFIED HEREIN.

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Some states and specific countries do not allow the exclusion of implied warranties or limitations on how long an implied warranty may last, so the above limitations may not apply to you. This warranty gives you specific legal rights. You may have additional rights that vary from state to state, and country to country.

In the interests of product development, Drawmer reserve the right to modify or improve specifications of this product at any time, without prior notice.

SAFETY CONSIDERATIONS

CAUTION - SERVICING

DO NOT OPEN. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING

TO REDUCE RISK OF FIRE/ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO MOISTURE.

WARNING

DO NOT ATTEMPT TO CHANGE OR TAMPER WITH THE SUPPLIED MAINS CABLES.

WARNING

THE FUSE IN THE INLET HAS BEEN SET TO A RATING THAT ENSURES IT WILL BLOW BEFORE THE INTERNAL FUSE IF THE AMPLIFIER IS DRIVEN AT CLIPPING LEVELS FOR ANY SIGNIFICANT LENGTH OF TIME. THIS IS TO PREVENT THE AMPLIFIER AND/OR SPEAKERS FROM BEING DAMAGED. TO REDUCE THE RISK OF FIRE REPLACE THE MAINS FUSES ONLY WITH A FUSE THAT **CONFORMS TO IEC127-2**, 250 VOLT WORKING, TIME DELAY TYPE AND BODY SIZE OF 20mm x 5mm. THE MAINS INPUT FUSE MUST BE RATED AT **T1.6A at 115V** and **T800mA at 230V**.

For the USA

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, then the user is encouraged to try to correct the interference by one or more of the following measures:

Re-orient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Unauthorised changes or modification to this system can void the users' authority to operate this equipment.

This equipment requires shielded interface cables in order to meet FCC class B limit.

For Canada

CLASS B

NOTICE

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

CLASSE B

AVIS

Cet appareil numérique ne dépasse pas les limites de la classe B au niveau des émissions de bruits radioélectriques fixés dans le Règlement des signaux parasites par le ministère Canadien des Communications.

MPA-90

Monitor Power Amplifier



As the perfect partner for Drawmer MC series of monitor controllers, the MPA-90 is a high performance Class D Stereo Power amplifier delivering 90W per channel into 4 Ohms (50W per channel into 8 Ohms) or, when in mono, acts as a 180W into 8ohms Monoblock.

The MPA-90 been designed to complement the Drawmer MC1.1 Monitor Pre-Amplifier but functions just as well if partnered with the MC2.1 or MC3.1, or indeed, any other pre-amplifier. It is perfect for powering passive monitors in the studio, such as the classic Yamaha NS10 or Auratone C5 types, for example, but is just as capable as part of your home hi-fi system. Pairing a MPA-90 with a MC1.1 and your favourite turntable and speakers would make a superb system to listen to your vinyl collection.

Features include thermal, overload and power up/power down protection and an output clipping indicator. In addition, it has switchable balanced XLR and unbalanced Phono inputs to suit your system.

One very smart feature of the MPA-90 is that, in addition to standard Stereo Power Amplifier operation, with the flick of a switch to set the MPA-90 to mono mode, and with a little speaker cable rewiring, it functions as a 180W into 8ohms Monoblock, allowing the system to operate in bi-amped or bridged modes.



Drawmer MPA-90 Monitor Power Amp Features at a Glance:

- 90+90Wrms into 4 Ohms@1%THD.
- 50+50Wrms into 8 Ohms@1%THD.
- 1x180W into 8 Ohms bridged mode.
- Stereo/Mono switch to use as a Stereo amplifier or as a Monoblock in Bridged or Bi-Amp Modes.
- Switchable balanced Neutrik XLR and unbalanced Phono inputs.
- Efficient, low heat design with Low Power Consumption. Consumes only 10W of power when idling and only 0.7W when in standby mode.
- Thermal, overload and power up/power down protection. Standby, fault and clip indicators
- Rugged steel chassis and stylish brushed aluminium cover.
- Can be stacked and is rack mountable (with the MCB 2U mounting kit).
- Dimensions: L 276mm x W 215mm x H 81mm.

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INSTALLATION

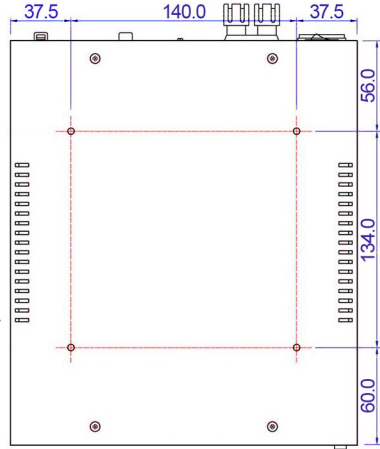
The MPA-90 is a free standing, desktop unit, with indication on the front panel and all other inputs and outputs on the rear. Multiple units can be stacked whilst sitting on the desk, however, the MPA can be screwed to the desk or into a standard 19" rack (using a 2U mounting kit).

Screwing the MPA-90 to a desk.

Rather than having the MPA-90 free standing it can be fastened down to a desk by utilising the holes that hold the rubber feet to the underside.

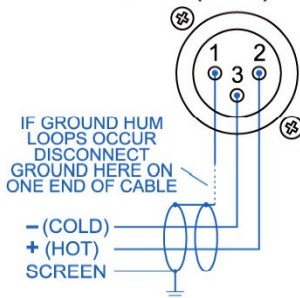
Drill four holes into the desk, at 4mm in diameter and to the dimensions as shown in the diagram. (Note that the diagram is viewed from above).

Pushing four screws through the under-side of the desk screw the MPA, including the rubber feet, to the panel to secure. The screws should be M3 and have a length of 14mm plus the thickness of the panel.

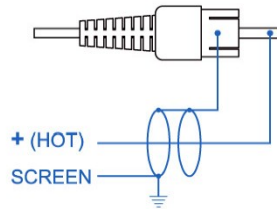


AUDIO CONNECTIONS

XLR - OUTPUT (MALE)



RCA (PHONO) JACK



- Interference:
If the unit is to be used where it may be exposed to high levels of disturbance such as found close to a TV or radio transmitter, we advise that the unit is operated in a balanced configuration. The screens of the signal cables should be connected to the chassis connection on the XLR connector as opposed to connecting to pin 1. The MPA-90 conforms to the EMC standards.
- Ground Loops:
If ground loop problems are encountered, never disconnect the mains earth, but instead, try disconnecting the signal screen on one end of each of the cables connecting the outputs of the MPA-90 to the patchbay. If such measures are necessary, balanced operation is recommended.

POWER CONNECTION

The MPA-90 unit will be supplied with a power cable suitable for domestic power outlets in your country. For your own safety, it is important that you use this cable to connect to the mains supply earth. The cable must not be tampered with or modified. The power supply socket has an integral fuse drawer containing the power fuse of the same value, to suit the mains voltage for which the unit has been supplied. Removal of the drawer is only possible with the power cord removed. The fuse should never blow under normal operation. If the fuse is suspected of having blown, then a fault will have occurred and this fault condition should be inspected by a qualified service engineer. When replacing the fuse, always comply with the Safety Instructions.

If the unit is to be used with a mains input operating voltage different to that for which the unit is supplied, the following procedure must be carried out by a technically competent person:

1: Disconnect the unit from the mains and cable.

2: Using a No.1 size pozidrive screwdriver, remove the eight screws that retain the top cover.

For conversion to 230Volt AC (previously set to 115Volt AC).....

3a. remove the jumper across the S101 socket

3b. Replace the Radial T PCB mount fuse at FH1 with a T1AL of the same type.

3c. Exchange the T1.6A fuse below the mains socket for a similar type rated at T800mA

For conversion to 115Volt AC (previously set to 230Volt AC).....

4a. Add a 5.08mm Pitch jumper across the S101 socket

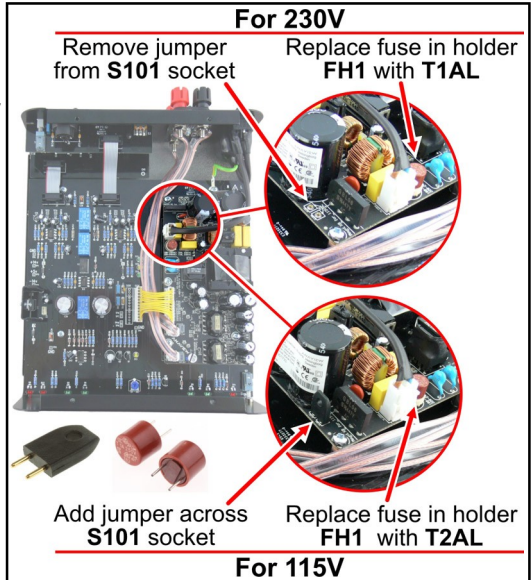
4b. Replace the Radial T PCB mount fuse at FH1 with a T2AL of the same type.

4c. Exchange the T800mA fuse below the mains socket for a similar type rated at T1.6A

In all cases:

5: Replace the top cover using the eight screws.

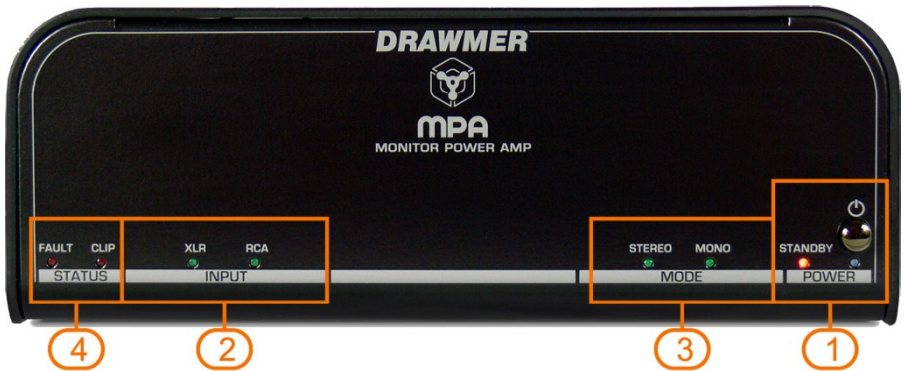
6: Reconnect to mains power source.



PORTABLE APPLIANCE TESTING

To undergo a Portable Appliance Testing procedure (commonly known as "PAT", "PAT Inspection" or "PAT Testing") use any one of the screws that hold the feet to the bottom of the unit. These screws connect directly to the chassis and provide the earthing point. If required, the foot can be removed and the cavity probed, or the screw can be replaced for something more suited to the job, such as a spade terminal with a M3 thread.

CONTROL DESCRIPTION



① POWER On / Standby

The unit has a soft on/off switch on the front panel. With the switch in the MPA is active and the LED indication beneath lights. With the switch out the MPA is operating in standby - the standby LED illuminates and the MPA draws 0.7 Watts of power.

② INPUT XLR / RCA

The two LED's illuminate to indicate which of the two inputs are in use, either XLR or RCA, as determined by the switch on the rear panel (see ⑤).

③ MODE Stereo / Mono

The two LED's illuminate to indicate which mode the MPA is in - either Stereo or Mono, as determined by the slide switch on the rear panel (see ⑦).

④ STATUS Fault / Clip

Fault: This is illuminated is the MPA has detected an error via it's built in sensors these include:

Power shut down by over temperature - If the temperature inside the MPA should pass the threshold of 100°C minimum to 110°C maximum (105°C typical) the MPA will shut down for a few moments. The shutdown time is short but increases as the unit heats up. As well as the illumination of the LED indication this protection mode will be heard as very short interrupts to the sound.

Over voltage shutdown. - If the mains voltage exceeds the absolute maximum rated level of ~ 90-132 / 180-264 VAC the MPA will momentarily shut down and the Fault LED will illuminate. This protection mode will be heard as very short interrupts to the sound.

In the event of a fault occurring the source of the problem should be repaired before permanent damage to the system occurs.

Clip: When the input from the pre-amplifier reaches the level of -0.1dBu the clip LED will illuminate. This is the point at which distortion is starting to occur at the speaker output and therefore anything above this level will show a deterioration in the audio quality. For the best audio quality you should operate the volume level so that the maximum level only rarely illuminates the Clip LED.



5 INPUT XLR / RCA

The MPA has two inputs comprising balanced Neutrik XLR's and unbalanced RCA's connectors. The switch above determines which is used, and this is shown on the front panel (2).

6 THRU' RCA

Whichever of the inputs is selected as the source is passed through to these unbalanced RCA's connectors. This allows the audio chain to continue and enables the signal to be sent to an active sub woofer, or to a recording device, for example. It also allows several MPA's to be daisychained to create a whole network of amplifiers to fill multiple rooms (see 'Daisy chaining' p14). Note that the thru output is not affected by the stereo/mono switch and so any one of these amplifiers within this chain could be in mono, to operate as a monoblock, without affecting any others.

7 MODE & WIRING Stereo / Mono

A slide switch selects the mode of the MPA-90, whether in standard STEREO mode or in MONO, allowing the MPA to operate in Bridged mode as a monoblock. This is indicated on the front panel (3).

In Stereo mode the MPA-90 operates like any standard stereo amplifier, with a power output of 90+90Wrms @ 4 Ohms, 50+50Wrms @ 8 Ohms.

Setting the switch to mono combines the power of the two channels into a single output of 1 x 180Wrms @ 8 Ohms, however, note that only two binding posts are used (see 8). Also note that when in Mono mode the MPA-90 derives its signal from the Left input only.

8 SPEAKER OUTPUTS L-/L+/R-/R+

The speaker outputs connectors are in the form of binding posts that can be wired directly to the speaker terminals via bare wires through the hole and tightened, via spade terminals, or via banana plugs.*

The diagrams on the following pages show some common wiring methods. Note that when in bridged mono mode the R- provides the negative terminal and L+ provides the positive, the other terminals are not used.

*Due to European legislation the use of banana plugs is not permitted. Banana plugs should only be used in the USA and Canada.

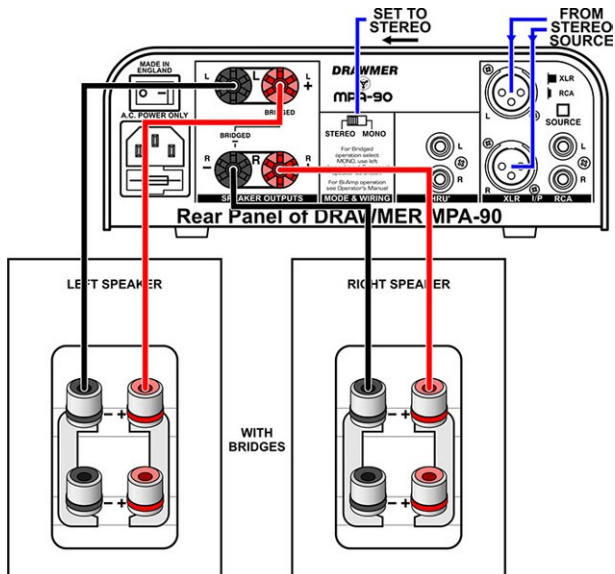
9 POWER

The mains inlet, I.E.C., which also incorporates the internal mains fuse, can be found on the rear of the unit. If a fuse should need replacing see section 'Power Connection'. A mains lead will have been provided with the MPA-90 to suit the mains configuration for the country of your purchase. Please use this cable.

The power switch is located above the I.E.C. and is used to switch the unit on and off. This is a hard boot switch (as opposed to a soft stand-by switch) and so when in the off position the MPA-90 will draw no mains power.

Note that a timed relay protection circuit has been incorporated into the MPA-90 to prevent bangs and other potentially harmful artifacts from occurring during power up and power down.

EXAMPLE WIRING METHODS

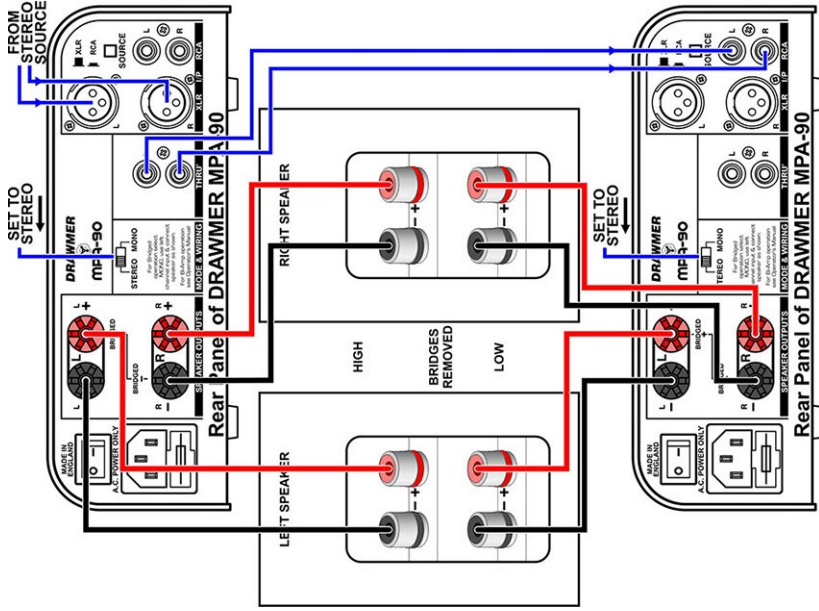


STANDARD STEREO WIRING

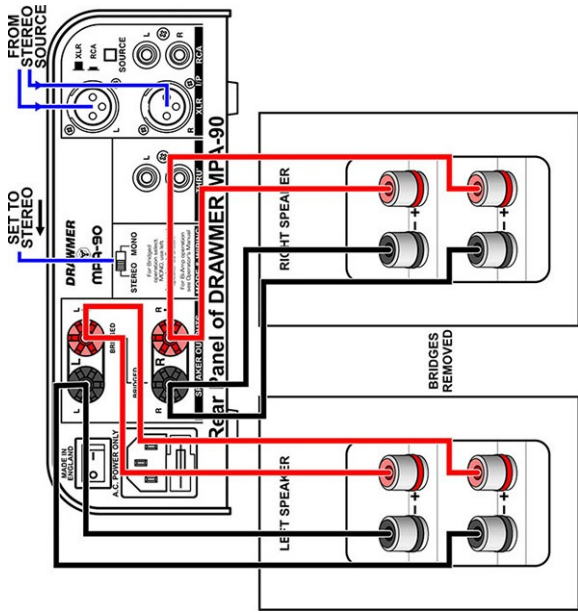
90+90Wrms into 4 Ohms@1%THD

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HORIZONTAL BI-AMPING (2 required)
180+180W rms into 4 Ohms@1%THD

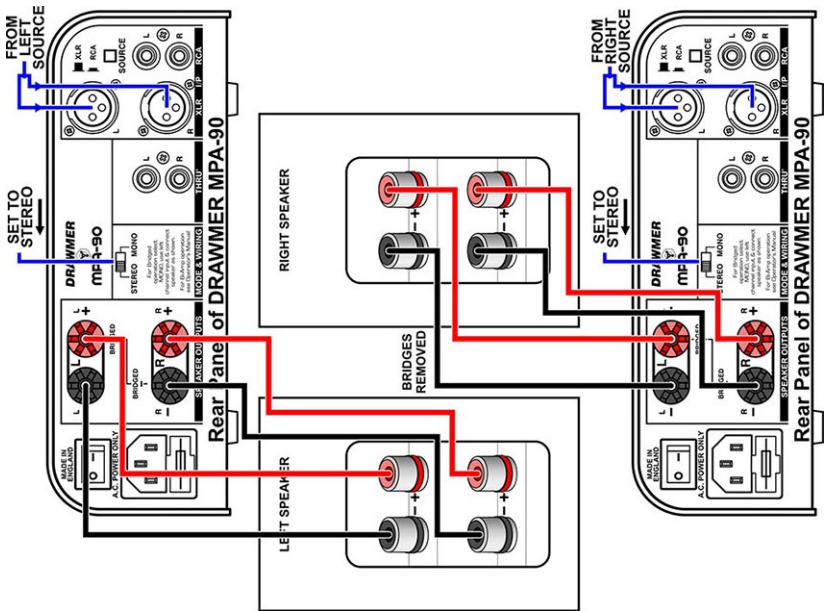


STEREO BI-WIRING
90+90W rms into 4 Ohms@1%THD



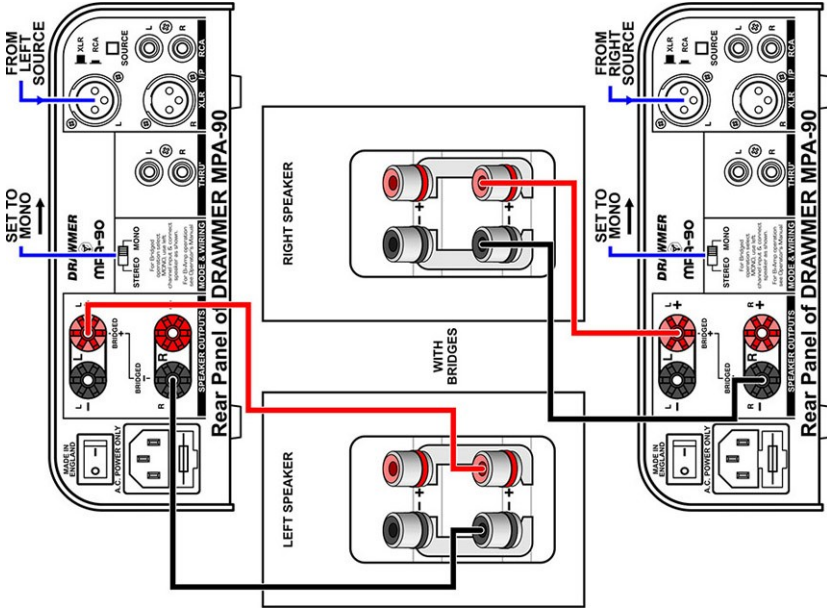
VERTICAL BI-AMPING (2 required)

180+180Wrms into 4 Ohms@1%THD



STEREO VIA MONOBLOCKS (2 required)

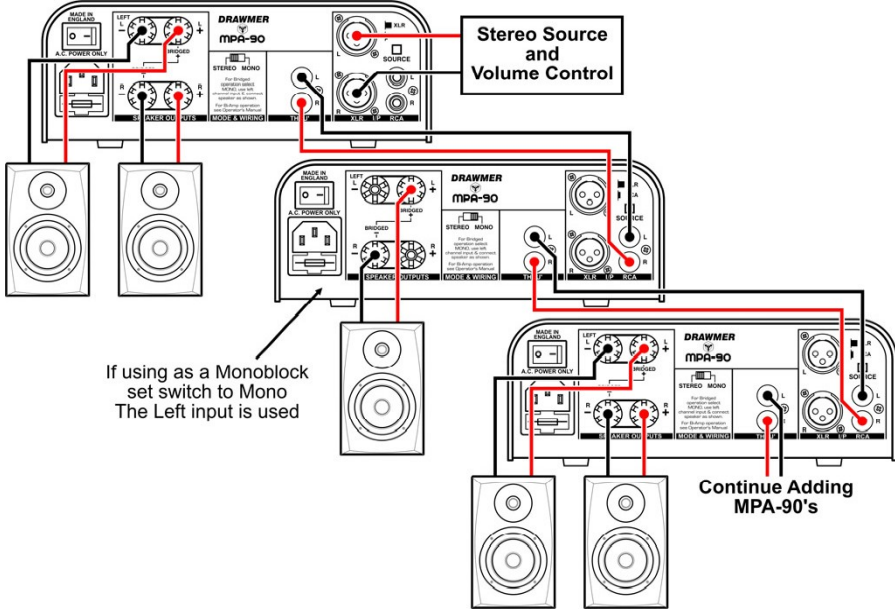
180+180Wrms into 8 Ohms@1%THD



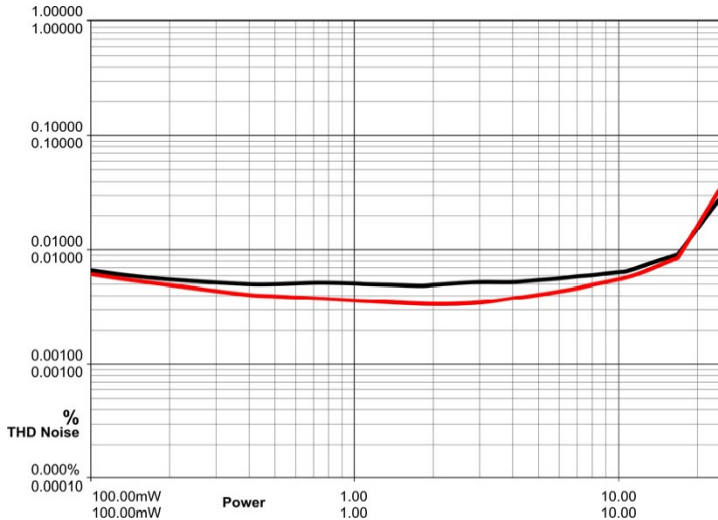
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DAISYCHAINING

The **Thru'** output on the rear of the unit allows several MPA-90's to be linked and controlled by one single volume control.



% THD Noise vs Power



MPA-90 GENERAL INFORMATION

IF A FAULT DEVELOPS

For warranty service please call Drawmer Electronics Ltd. or their nearest authorised service facility, giving full details of the difficulty. A list of all main dealers can be found on the Drawmer webpages. On receipt of this information, service or shipping instructions will be forwarded to you.

No equipment should be returned under the warranty without prior consent from Drawmer or their authorised representative.

For service claims under the warranty agreement a service Returns Authorisation (RA) number will be issued.

Write this RA number in large letters in a prominent position on the shipping box. Enclose your name, address, telephone number, copy of the original sales invoice and a detailed description of the problem. Authorised returns should be prepaid and must be insured.

All Drawmer products are packaged in specially designed containers for protection. If the unit is to be returned, the original container must be used. If this container is not available, then the equipment should be packaged in substantial shock-proof material, capable of withstanding the handling for the transit.

CONTACTING DRAWMER

We will be pleased to answer all application questions to enhance your usage of Drawmer equipment.

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Contact via E-mail: tech@drawmer.com

Further information on all Drawmer products, dealers, Authorised service departments and other contact information can be found on our website: www.drawmer.com

SPECIFICATION

	MPA-90 8ohm	MPA-90 4ohm
THD @ 1W	0.004	0.005
POWER @ 1% THD	50 + 50 Wrms	90 + 90 Wrms
BRIDGED POWER @ 1% THD	180Wrms	N/A
GAIN	28.5dB	28.5dB
Balanced CROSSTALK @ 0dBu 1kHz	<85dB	<85dB
Phono CROSSTALK @ 0dBu 1kHz	<79dB	<79dB
Input voltage for max unclipped output	775mv (0dBu)	775mv (0dBu)
Clip Led Threshold	-0.1 dBu	-0.1 dBu
Frequency Response (+/-0.25dBu)	20Hz-20kHz	20Hz-20kHz
Output Impedance	3milli ohms	3milli ohms
POWER REQUIREMENTS	FUSE	
Nominal rating: ~ 115 / 230 VAC	20mm x 5mm, Class 3 Slo-Blo,	
Absolute min/max:~ 90-132 / 180-264 VAC	250Volt working. Conforming to IEC 127-2	
45-63Hz	T1.6A @ 115V , T800mA @ 230V	
POWER CONSUMPTION	Note: the fuse in the inlet has been set to a rating that ensures it will blow before the internal fuse if the amplifier is driven at clipping levels for any significant length of time. This is to prevent the amplifier and/or speakers from being damaged.	
@ Idle 10W max at 230VAC, with Maximum load for Energy Star compliance	CASE SIZE	
@ Standby 700mW typical	276mm(D) x 215mm(W) x 81mm(H with feet)	
	WEIGHT	2.2kg

BLOCK DIAGRAM

