

# DRAWMER

## 4X4

PORTABLE ACTIVE  
SIGNAL SPLITTER



## CONTENTS

Warranty .....	2
Safety Consideration .....	2
Radio Frequencies Statement .....	2
<i>Chapter 1 - Introduction</i>	
Introduction .....	3
Installation ..	4
Audio Connection .....	4
Typical Connection Guide .....	5
<i>Chapter 2 - Control Description</i>	
Inputs .....	6
Linking/Outputs/Headphones .....	7
<i>Chapter 3 - General Information</i>	
If a fault develops .....	8
Contacting Drawmer .....	8
Specification .....	8
Block Diagram .....	9
Session Recall Sheet .....	11

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## ONE YEAR LIMITED WARRANTY

Drawmer Electronics Ltd., warrants the Drawmer 4X4, Portable Active Signal Splitter 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 or unauthorised repair.

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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.

### 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.

# DRAWMER 4X4

## PORTABLE ACTIVE SIGNAL SPLITTER SAFETY CONSIDERATIONS

### CAUTION - MAINS FUSE

TO REDUCE THE RISK OF FIRE REPLACE THE MAINS FUSE 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 T500mA.

TO REPLACE A FUSE: WITH THE MAINS CABLE REMOVED OPEN THE DRAW ON THE I.E.C. CONNECTOR (arrowed) AND SWAP THE FUSES. THEN CLOSE THE DRAWER.



**CAUTION - MAINS CABLE**  
DO NOT ATTEMPT TO CHANGE OR TAMPER WITH THE SUPPLIED MAINS CABLE.

**CAUTION - SERVICING**  
DO NOT PERFORM ANY SERVICING. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

**WARNING**  
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.



**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN



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

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# **DRAWMER**

## **4X4**

### **PORTABLE ACTIVE SIGNAL SPLITTER**

#### **INTRODUCTION**

The Kickbox 4x4 is an 'all terrain' 4 in/16 out mic/line signal splitter. Its extremely high audio quality, robust build and portability make it the ideal tool to provide multiple outputs for live sound, broadcast coverage, sports events, live recording, press conferences, corporate events and any situation where distribution of high quality audio is required. It incorporates 4 studio grade mic/line pre-amps, each providing up to 66dB of gain and 16 balanced output stages, each with the option of transformer isolation and comprehensive linking facilities.

The 4x4 is supplied as standard in a road proof case with a removable lid for unhindered access to all controls and connections.

#### INPUTS:

- 4 STUDIO GRADE MIC/LINE PRE-AMPS
- INDEPENDENT INPUT BARGRAPH METERING
- 66dB OF VARIABLE GAIN
- 48V PHANTOM POWER
- MIC/LINE SWITCHING
- HEADPHONE MONITORING FACILITY

#### OUTPUTS:

- 4 OUTPUTS PER CHANNEL
- OPTIONAL TRANSFORMER ISOLATION
- TRANSFORMER LOADED LED STATUS
- LINKING

#### CAN BE CONFIGURED AS:

- 1x 1 IN/16 OUT
- 2x 1 IN/ 8 OUT
- 1x 1 IN/12 OUT plus 1 IN/4 OUT
- 4x 1 IN/4 OUT

#### OTHER FEATURES:

- PORTABILITY
- INTERSTACKABLE
- REMOVABLE LID TO PROVIDE EASY ACCESS AND CABLE ROUTING
- COMPACT SELF CONTAINED ROADPROOF CASE ELIMINATES NEED THE FOR BULKY FLIGHT CASES
- WHEN LOCKED IT'S DUST/WATER/CORROSION PROOF



## INSTALLATION

The 4X4 is has been designed to be the go anywhere, all terrain solution for the on the go engineer. It requires no rack or installation but instead can be stored in the van/trailer for immediate access to provide up to sixteen output channels. It's perfect for small/medium gigs, press conferences or outside broadcasts - just remove the lid, plug in the cables, set the levels and you're ready.



The chassis/enclosure is incredibly strong and durable, and with the lid closed is water/dust/corrosion proof - supplied by Explorer Cases: [www.explorercases.com](http://www.explorercases.com)

Though it is tougher than the average piece of outboard gear, it has been designed for everyday use rather than volatile conditions, where it may receive sudden impact or constant vibration - such conditions should be avoided, and may invalidate the manufacturer's warranty.

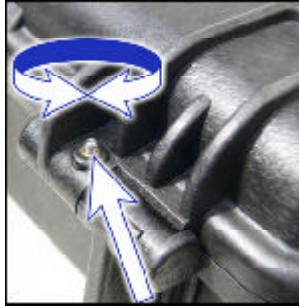
The unit will be supplied with a power cable suitable for domestic power outlets in your country. For your own safety it is important that you use this cable. The unit should always be connected to the mains supply earth using this cable.

Powered by a universal switch mode power supply, the 4X4 operates from mains voltages between 90 - 250v, eliminating the need to make any changes when touring and allowing the unit to remain fully operational during large fluctuations in the mains power supply.

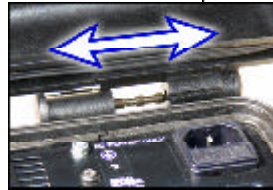
In operation is recommended that you remove the lid (to route the cables and gain better access to the controls) and do not sit the 4x4 on anything that generates heat or magnetic fields, such as transformers.

### REMOVING THE LID

**1** Loosen the screw that is located on the hinge at the rear of the unit.



**2** Open the lid to approximately 70 degrees and slide the lid off to the right. The unit can be sat securely on top of the lid so as not to lose it.



**3** Replacing the lid is a reverse of procedure 2 - the screw need not be tightened if preferred.

## AUDIO CONNECTIONS

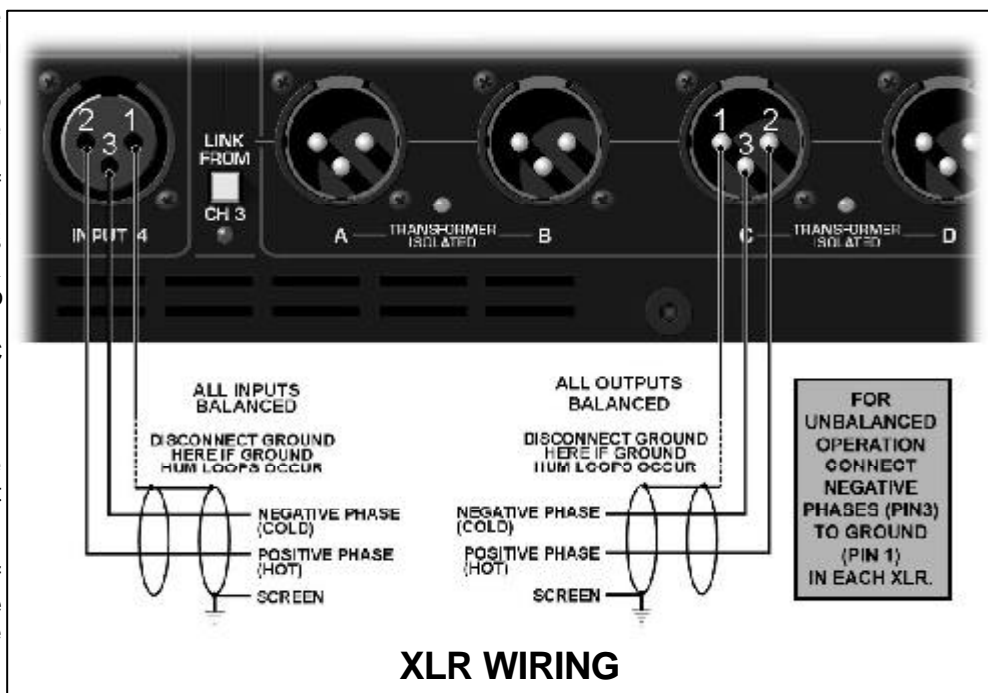
The inputs and outputs are electronically balanced on conventionally wired XLRs (pin 1 screen, pin 2 hot, pin 3 cold and XLR shell is connected to chassis). Balanced use is recommended.

### • Interference:

If the unit is to be used where it maybe 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 pin1. The 4X4 conforms to the EMC standards.

### • Ground Loops:

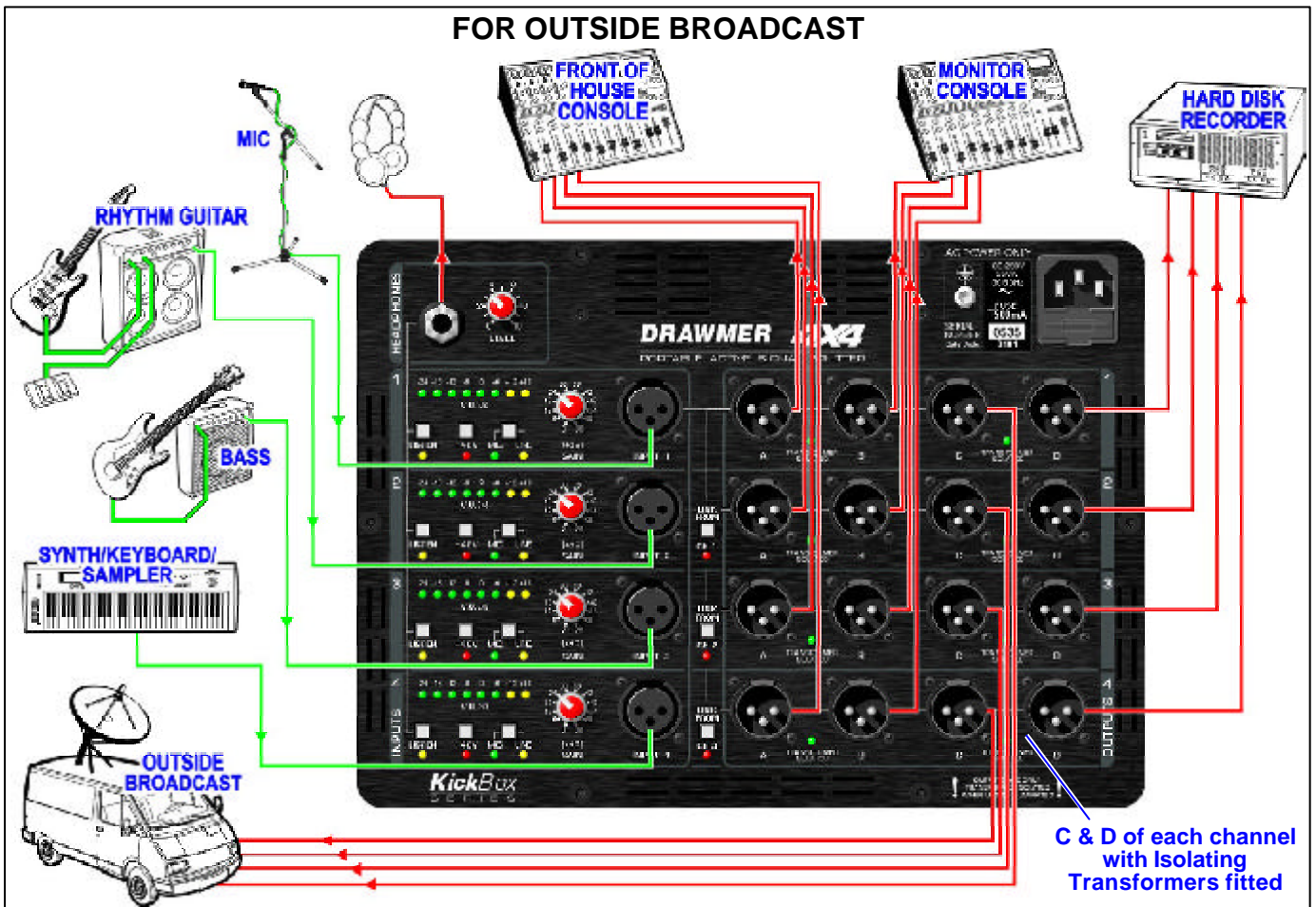
If ground loop problems are encountered, never disconnect the mains earth, but instead, try disconnecting the signal screen on one end of each of the cables connecting the outputs of the 4X4 to the patchbay. If such measures are necessary, balanced operation is recommended.



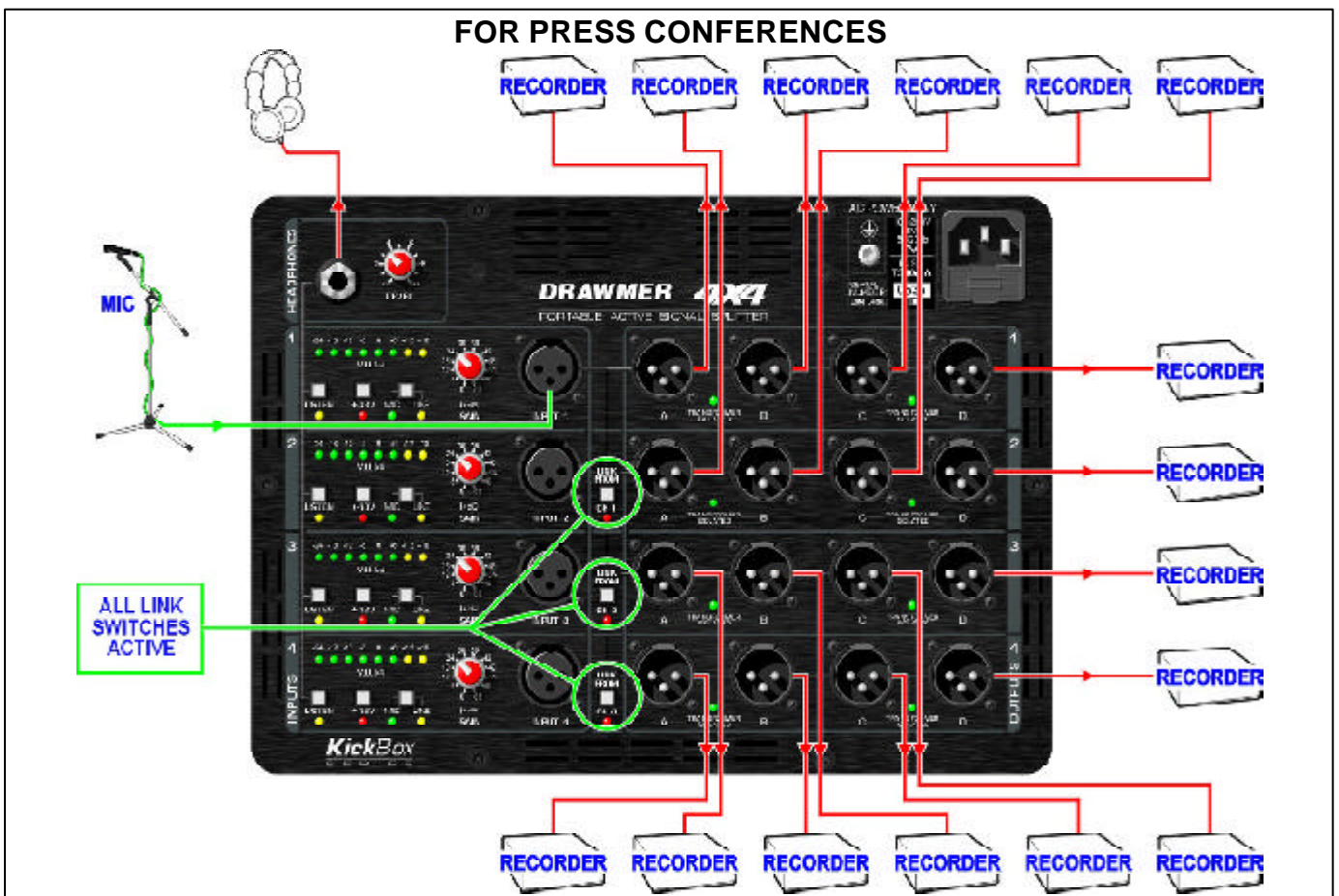
### XLR WIRING

# TYPICAL CONNECTION GUIDE

## FOR OUTSIDE BROADCAST



## FOR PRESS CONFERENCES

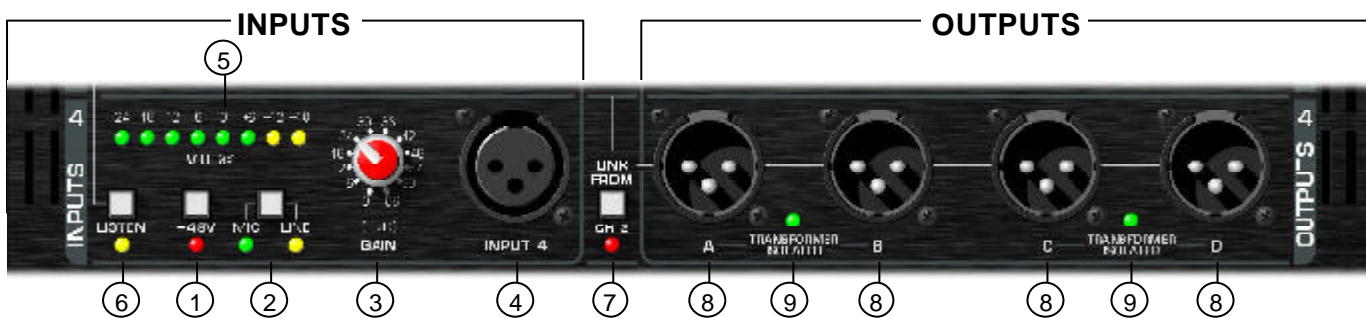


### CONTROL DESCRIPTION



The control layout of the Drawmer 4X4 comprises of the mains inlet, headphone monitoring section, and four identical pre-amplifier and splitter channels - the only difference being the link switches. Each of the four channels is based around Drawmer's own discrete component mic preamp, which delivers very low distortion and a wide dynamic range, providing upto 66dB of switchable gain, mic/line selection and phantom power, as well as four outputs, either electronic or transformer isolated (factory fitted optional extra).

The location of components has been carefully considered in order to be very intuitive and also to make cable routing as clean and unobtrusive as possible. When fully loaded the 4X4 will have a total of twenty XLR cables, a headphone cable and also the mains - with the 4x4 lid removed all of these cables can easily be routed to the back of the unit without covering any of the controls.



Each of the four channels are (almost) identical, with the controls for each as follows:

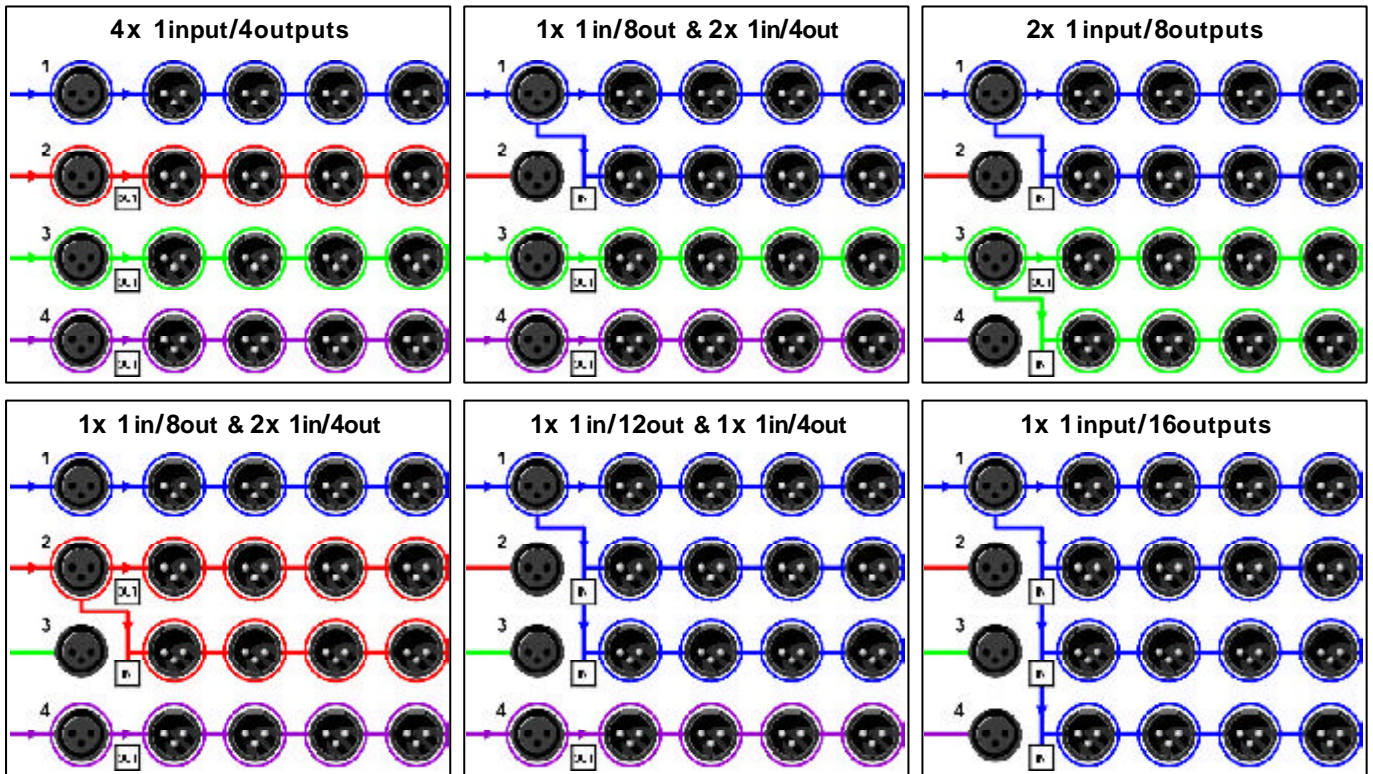
#### Inputs

- ① **PHANTOM POWER** A switch provides +48V Phantom Power down the XLR cable to microphones that require it.  
NOTE: DO NOT ACTIVATE THE +48V SWITCH UNLESS YOU ARE SURE THAT THE MICROPHONE REQUIRES IT.
- ② **MIC/LINE** Switches the level of input (4) between Mic or Line, with LED indication. When in the 'Line' position the phantom power switch is bypassed, the input has a 20dB pad, and the input impedance alters to >10k Ohms.
- ③ **GAIN** A twelve position switch adds gain in 6dB steps from 0dB to +66dB, making it incredibly easy to replicate previous levels and have to total control over levels.
- ④ **INPUT** The input is via a standard XLR for both mic and line input - pin one is screen, pin two is positive (hot) and pin three negative (cold).
- ⑤ **V.U. METER** Each channel has an eight LED VU meter, covering the range from -24dB to +18dB.
- ⑥ **LISTEN** Activating the switch will route the input from that particular channel to the headphone section for monitoring. Each channel can be active separately (solo) or all can be monitored at once if preferred. (SEE HEADPHONES).

## Linking

### ⑦ LINK

In certain situations four outputs may not be adequate, for example at a news conference where each reporter requires a feed, for this reason we have incorporated a very versatile, but intuitive linking system, that effectively converts the 4X4 into a pressbox. Linking is via three switches, so there's no need to open the unit up to swap jumpers, or worse still, re-solder connections. If a link switch is active the input feeding the four outputs of that particular channel is disabled, and re-routed to the input of the previous channel. If the link switch of that channel is also active, then it is re-routed further to the previous channel. In this way any combination of linking can be available -



## Outputs

Each input of the four channels is split (duplicated) into four separate outputs either electronically or using Transformer Isolation (a factory fitted optional extra).

Transformer isolation is the best way to get rid of ground loops that cause hum and buzz (by decoupling the ground), RF interference (by improving the "balanced" characteristic of the line (called "Common Mode Rejection" or CMR)), or to isolate mixing consoles so that the levels of one does not effect the other down the cables within the audio system.

An inherent problem with a direct splitter is that overall input impedance is reduced, which in critical high quality applications can degrade frequency response, particularly on long cables, such as those used in outside recording and broadcast, and add unwanted interference. The combination of adding gain via the preamplifier and transformer isolation improves this dramatically, allowing for longer cable lengths and clearer more defined recordings.

### ⑧ OUTPUTS

Each channel has four outputs, via standard XLR connectors - pin one is screen, pin two is positive (hot) and pin three negative (cold).

### ⑨ TRANSFORMER ISOLATION LED

The 4X4 comes with electronic isolation as standard and only has transformer isolation as a factory fitted optional extra. When fitted each transformer feeds two outputs (either A & B or C & D on each channel) and its presence is shown by the illumination of the LED that sits inbetween these two XLR's. In this way a total of eight transformers can be fitted if all outputs are to be transformer isolated.

## Headphones



A single 1/4" TRS jack socket with fully adjustable level control has been incorporated to provide headphone monitoring. To determine which input is monitored see **LISTEN ⑥**.

Caution should be used when using high output levels and low impedance headphones.

**DRAWMER do NOT accept any responsibility for damage caused to operator hearing or speaker devices by use of excessive output levels.**

## 4X4 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.

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### CONTACTING DRAWMER

Drawmer Electronics Ltd., will be pleased to answer all application questions to enhance your usage of this equipment. Please address correspondence to:

Drawmer (Technical Help line)  
Coleman Street  
Parkgate  
Rotherham  
S62 6EL  
UK

Alternatively contact us by E-mail on :

[tech@drawmer.com](mailto:tech@drawmer.com)

Further information on all Drawmer dealers, Authorised service departments and other contact information can be obtained from our web pages on:

<http://www.drawmer.com>

### SPECIFICATION

#### INPUT IMPEDANCE

Input Impedance mic: 1k Ohms  
line: 4.1k Ohms  
Maximum Input Level +21dBu

#### OUTPUT

Output Impedance 50 Ohms  
Maximum Output Level +21dBu

#### BANDWIDTH

<13.4Hz to 46kHz -1dB  
<8Hz to 85kHz -3dB

#### MIC EIN

Ref 150R, 0dB  
Audio Band -128dBu

#### Distortion THD

Line Input @+4dB 0.005%

#### LINE NOISE

Ref +4dB  
Audio Band -100dBu  
Full Band -93dBu

#### CROSSTALK

between adjacent channels better than 87dB @ 20kHz

#### POWER REQUIREMENTS

115V or 230V at 50-60Hz, 20VA

**FUSE RATING** T500mA for both 115V and 230V,  
Conforming to IEC 127-2

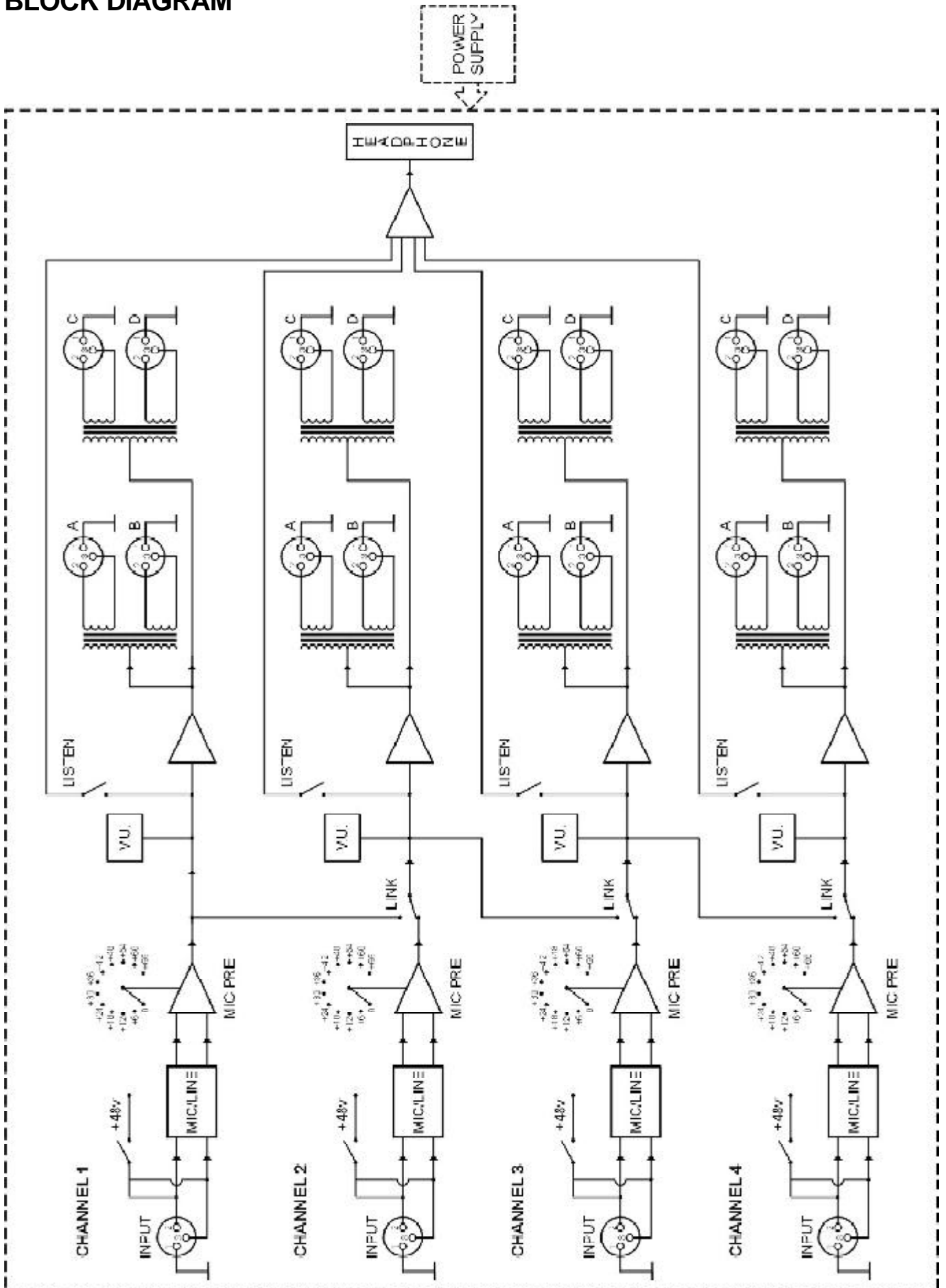
**FUSE TYPE** 20mm x 5mm, Class 3 Slo-Blo,  
250Volt working

**CASE SIZE** 305mm(W) x 144mm(H) x 270mm(D)

**WEIGHT** w/o isolating transformers 3.8kg  
with isolating transformers 4.3kg



# BLOCK DIAGRAM



HEADPHONES

LEVEL

4 3 2 1 0

2

3

4

5

6

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AC POWER ONLY

⏏

⏏

SERIAL NUMBER: **0535**  
Date Code: 0101

# DRAWMER 4X4

PORTABLE ACTIVE SIGNAL SPLITTER

1	2	3	4
<p>FROM</p> <p>INPUT 1</p> <p>LISTEN</p> <p>+48V</p> <p>MIC</p> <p>LINE</p> <p>V.U. (BEI)</p> <p>0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100</p> <p>GAIN (1-dB)</p>	<p>FROM</p> <p>INPUT 2</p> <p>LISTEN</p> <p>+48V</p> <p>MIC</p> <p>LINE</p> <p>V.U. (BEI)</p> <p>0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100</p> <p>GAIN (1-dB)</p>	<p>FROM</p> <p>INPUT 3</p> <p>LISTEN</p> <p>+48V</p> <p>MIC</p> <p>LINE</p> <p>V.U. (BEI)</p> <p>0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100</p> <p>GAIN (1-dB)</p>	<p>FROM</p> <p>INPUT 4</p> <p>LISTEN</p> <p>+48V</p> <p>MIC</p> <p>LINE</p> <p>V.U. (BEI)</p> <p>0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100</p> <p>GAIN (1-dB)</p>
LINK FROM CH 1	LINK FROM CH 2	LINK FROM CH 3	
TO	TO	TO	TO
A — TRANSFORMER ISOLATED	B — TRANSFORMER ISOLATED	C — TRANSFORMER ISOLATED	D — TRANSFORMER ISOLATED

**KickBox**  
SERIES

! OUTPUTS ARE ONLY TRANSFORMER ISOLATED WHEN LED IS ILLUMINATED !

# DRAWMER 4X4 Session Recall

Session No. \_\_\_\_\_  
Date \_\_\_\_\_  
Artist \_\_\_\_\_  
Tape Location \_\_\_\_\_

DRAWMER ELECTRONICS LTD ~ Coleman Street  
Rotherham ~ S. Yorkshire ~ UK  
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