

DRAWMER

4X4R

ACTIVE MIC/LINE SIGNAL SPLITTER



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ONE YEAR LIMITED WARRANTY

Drawmer Electronics Ltd., warrants the Drawmer 4X4R, 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.

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.

IN NO EVENT WILL DRAWMER ELECTRONICS LTD. BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE PRODUCT, INCLUDING LOST PROFITS, DAMAGE TO PROPERTY, AND, TO THE EXTENT PERMITTED BY LAW, DAMAGE FOR PERSONAL INJURY, EVEN IF DRAWMER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

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 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.

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

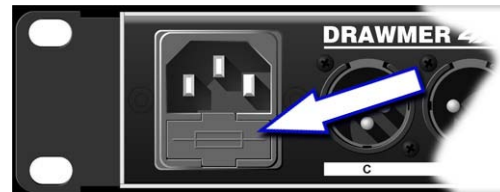
DRAWMER 4X4R

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



DRAWMER

4X4R

ACTIVE MIC/LINE SIGNAL SPLITTER



INTRODUCTION

The 4X4R is a 4 in/16 out mic/line signal splitter. Its extremely high audio quality, and robust build 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.

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

INSTALLATION

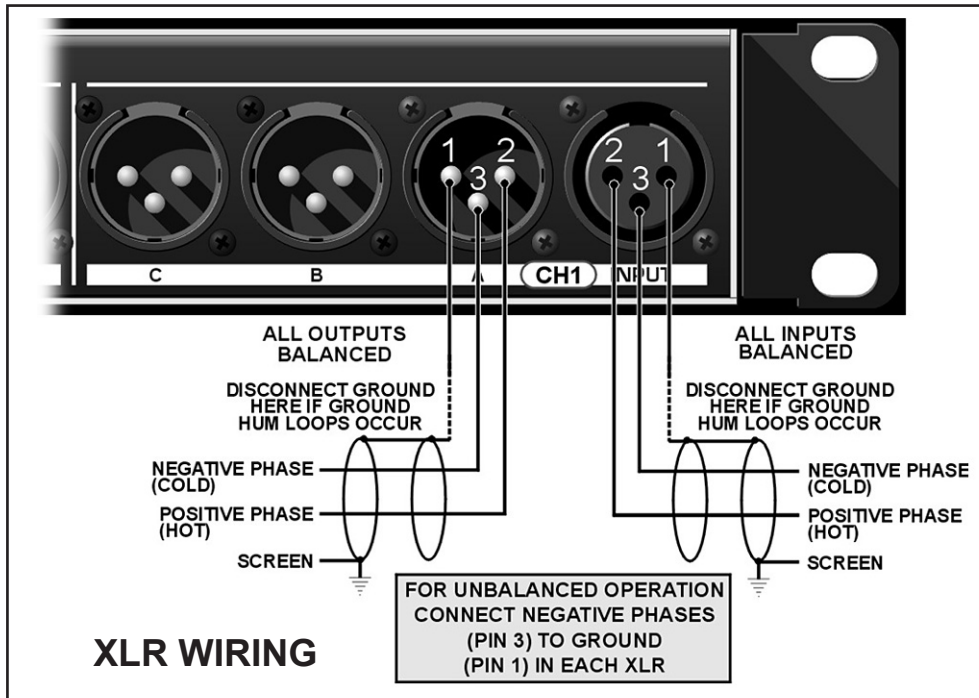
The 4X4R is designed for standard 19" rack mounting and occupies 1U of rack space. Avoid mounting the unit directly above power amplifiers or power supplies that radiate significant amounts of heat.

If the unit is to be used in a mobile situation, it is strongly recommended that the rear of the unit is supported in the carrying rack to avoid bending the front panel rack mounting 'ears'. Use fibre or plastic washers to prevent the front panel becoming marked by the mounting bolts.

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 4X4R operates from mains voltages between 85 - 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.

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:**

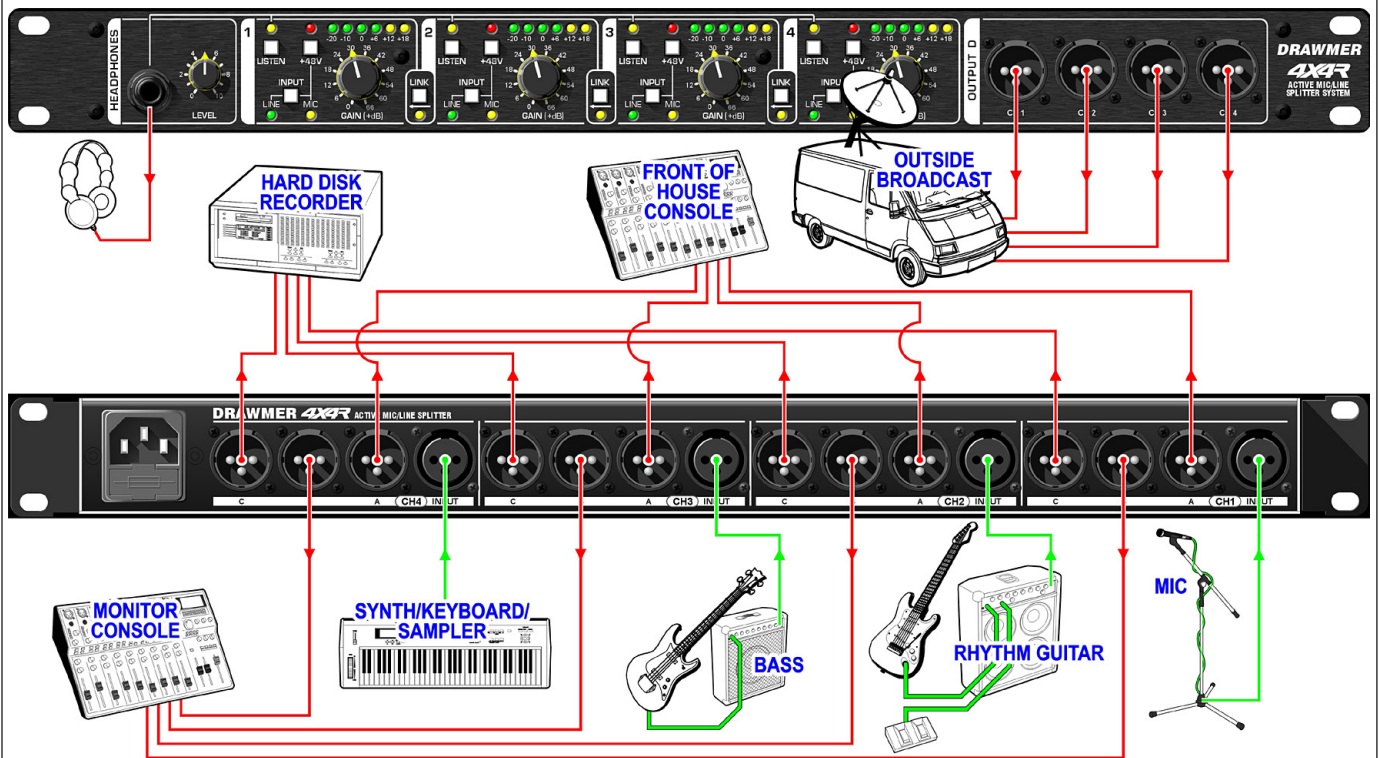
If the unit is to be used where it may be exposed to high levels of disturbance such as found close to a TV or radio transmitter, we advise that the unit is operated in a balanced configuration. The screens of the signal cables should be connected to the chassis connection on the XLR connector as opposed to connecting to pin 1. The 4X4R 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 4X4R to the patchbay. If such measures are necessary, balanced operation is recommended.

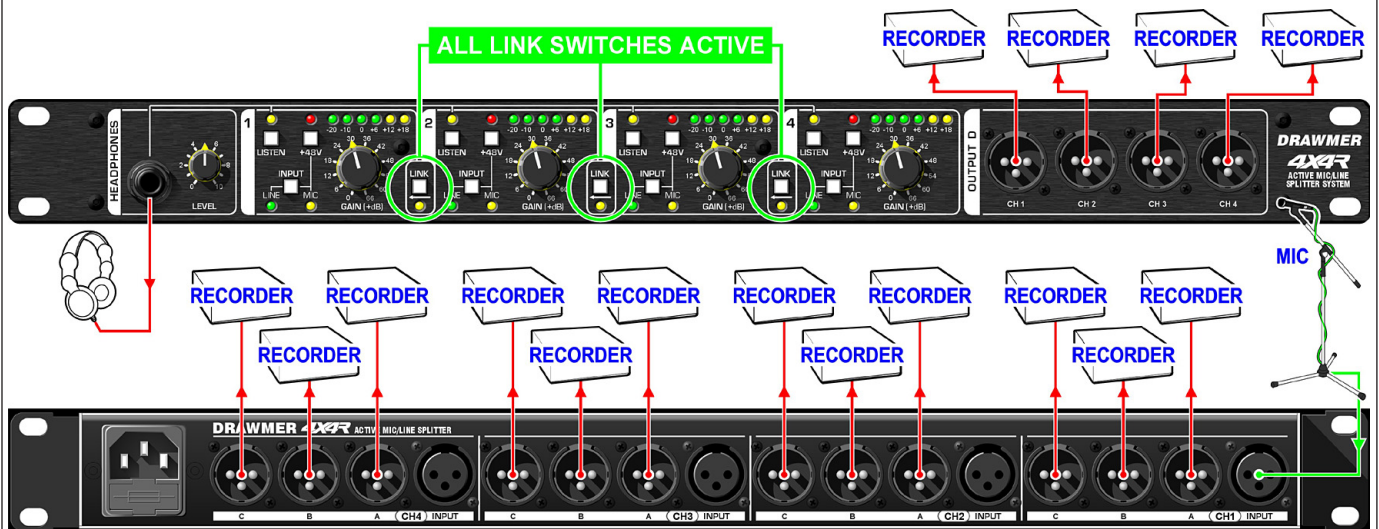
TYPICAL CONNECTION GUIDE

FOR OUTSIDE BROADCAST



Each of the four inputs has its own set of four outputs - to simultaneously send to Front of House, Monitor Console, Recording and Outside Broadcast, for example.

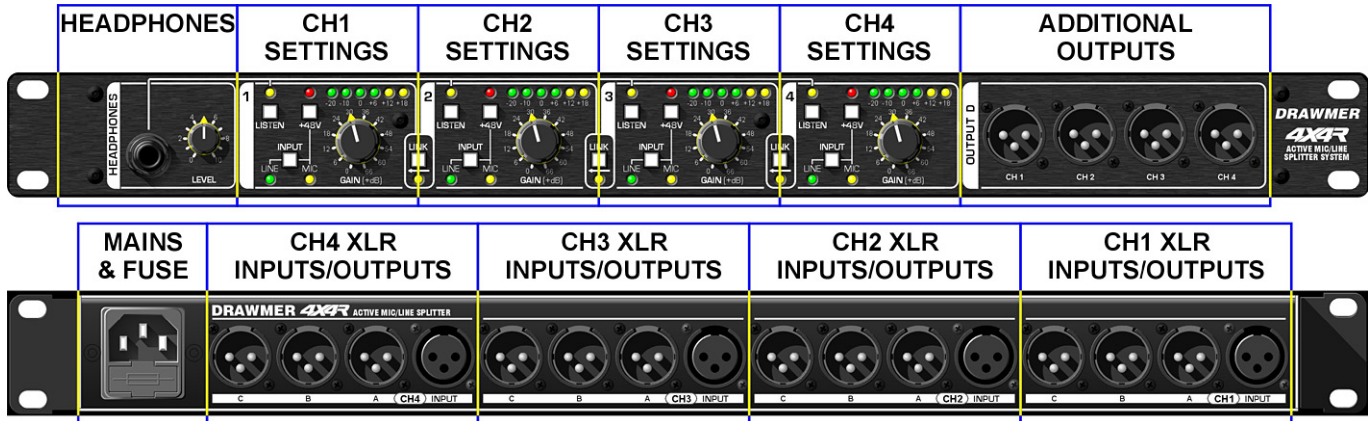
FOR PRESS CONFERENCES



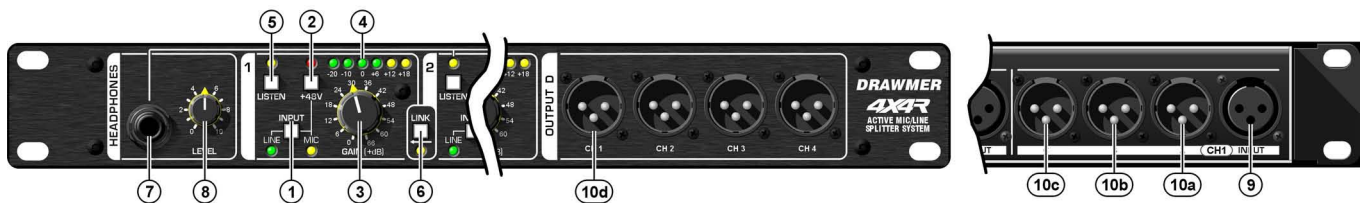
With all the link switches active, one input can be sent to all sixteen outputs - to be used in a press conference, for instance, so that all parties can have a direct feed. In such cases the output level, +48v, mic/line etc. is controlled by the CH1 parameters.

CONTROL DESCRIPTION

The control layout of the Drawmer 4X4R 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



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

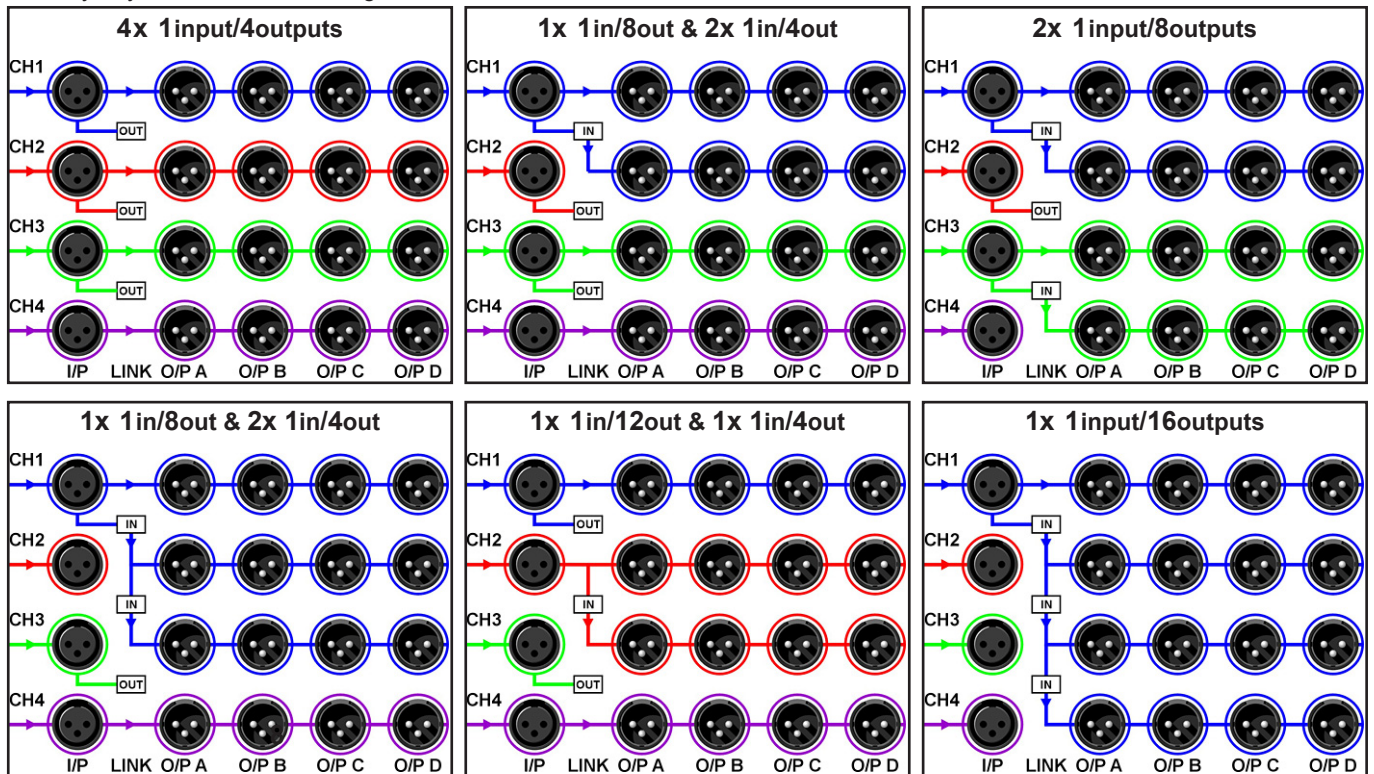
Inputs

- ① **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.
- ② **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.
- ③ **GAIN** A twelve position switch adds gain in 6dB steps from 0dB to +66dB, to have total control over levels and make it incredibly easy to replicate.
Note that it is advised that if there is no input connected to the channel that the Gain switch is turned to 0dB.
- ④ **V.U. METER** Each channel has an six LED VU meter, covering the range from -20dB to +18dB.
- ⑤ **LISTEN** Activating the switch will route the input from that particular channel to the headphone section for

Linking

⑥ 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 -



Headphones

A single 1/4" TRS jack socket (7) with fully adjustable level control (8) has been incorporated to provide headphone monitoring. To determine which input is monitored see LISTEN (5).

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

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

Inputs

⑨ 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).

Note that it is advised that if there is no input connected to the channel that the Gain switch is turned to 0dB.

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 remove 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.

10a 10b 10c OUTPUTS

Each channel has four outputs, via standard XLR connectors (pin one is screen, pin two is positive (hot) and pin three negative (cold)) three of which are located on the rear panel adjacent to the input,

10d

and one, for each channel, is located on the front panel.

4X4R 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

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

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

482mm(W) x 44mm(H) x 223mm(D)

WEIGHT

w/o isolating transformers 2.8kg
with isolating transformers 3.3kg

BLOCK DIAGRAM

