

DN1248

OPERATORS MANUAL

Version 2

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KLARK TEKNIK
SIGNAL PROCESSING BY DEFINITION

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DECLARATION OF CONFORMITY

We, **Klark Teknik Group (UK) Plc**

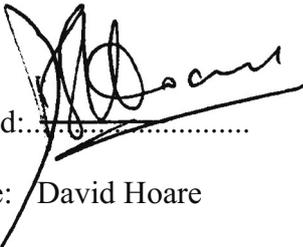
of, Klark Teknik Building, Walter Nash Road, Kidderminster, Worcestershire, DY11 7HJ

Declare that a sample of the following product:-

Product Type Number	Product Description	Nominal Voltage (s)	Current	Freq
DN1248		115V AC 230V AC	130mA 260mA	50/60Hz

to which this declaration refers, is in conformity with the following directives and/or standards:-

Directive(s)	Test Standard(s)
Generic Standard Using EN55103 Limits and Methods	EN50081/1
Class B Conducted Emissions Pavi	EN55103
CLass B Radiated Emissions Pavi	EN55103
Fast Transient Bursts at 2Kv	EN61000-4-4
Static Discharge at 4Kv	EN61000-4-2
Electrical Stress Test	EN60204

Signed:.....


Date: 10th December, 1999

Name: David Hoare

Authority: Technical Director, Klark Teknik Group (UK) Plc

Attention!

Where applicable, the attention of the specifier, purchaser, installer or user is drawn to special limitations of use which must be observed when these products are taken into service to maintain compliance with the above directives. Details of these special measures and limitations to use are available on request and are available in product manuals.

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Thank You For Using This Klark Teknik Product

To obtain maximum performance from this precision electronic product, please study these instructions carefully. Installation and operating the mic splitter is not complicated, but the flexibility provided by its operating features merits familiarisation with its controls and connections. This unit has been prepared to comply with the power supply requirements that exist in your location.

Precautions

Do not install this unit in a location subjected to excessive heat, dust or mechanical vibration.

Voltage Selection and Power Connection

Connection is made by means of an IEC standard power socket. The rear panel text indicates the voltage range required for satisfactory operation of the unit.

Before connecting this unit to the mains supply, ensure the fuse fitted is the correct type and rating is as indicated on the rear panel, adjacent to the fuse holder.

Safety Warning

This unit is fitted with 3-pin power socket: For safety reasons the earth lead should not be disconnected. Signal ground is referenced internally to chassis via a resistor capacitor network which provides earth loop immunity.

To prevent shock or fire hazard, do not expose the unit to rain or moisture. To avoid electrical shock do not remove covers. Refer servicing to qualified personnel only.

Attention!

Cables:

This product should only be used with high quality, screened twisted pair audio cables, terminated with metal bodied 3-pin XLR connectors. The cable should be connected to pin 1. Any other cable type or configuration for the audio signals may result in degraded performance due to electromagnetic interference.

Electric Fields:

Should this product be used in an electromagnetic field that is amplitude modulated by an audio frequency signal (20Hz to 20kHz), the signal to noise ratio may be degraded. Degradation of up to 60dB at a frequency corresponding to the modulation signal may be experienced under extreme conditions (3V/m, 90% modulation).

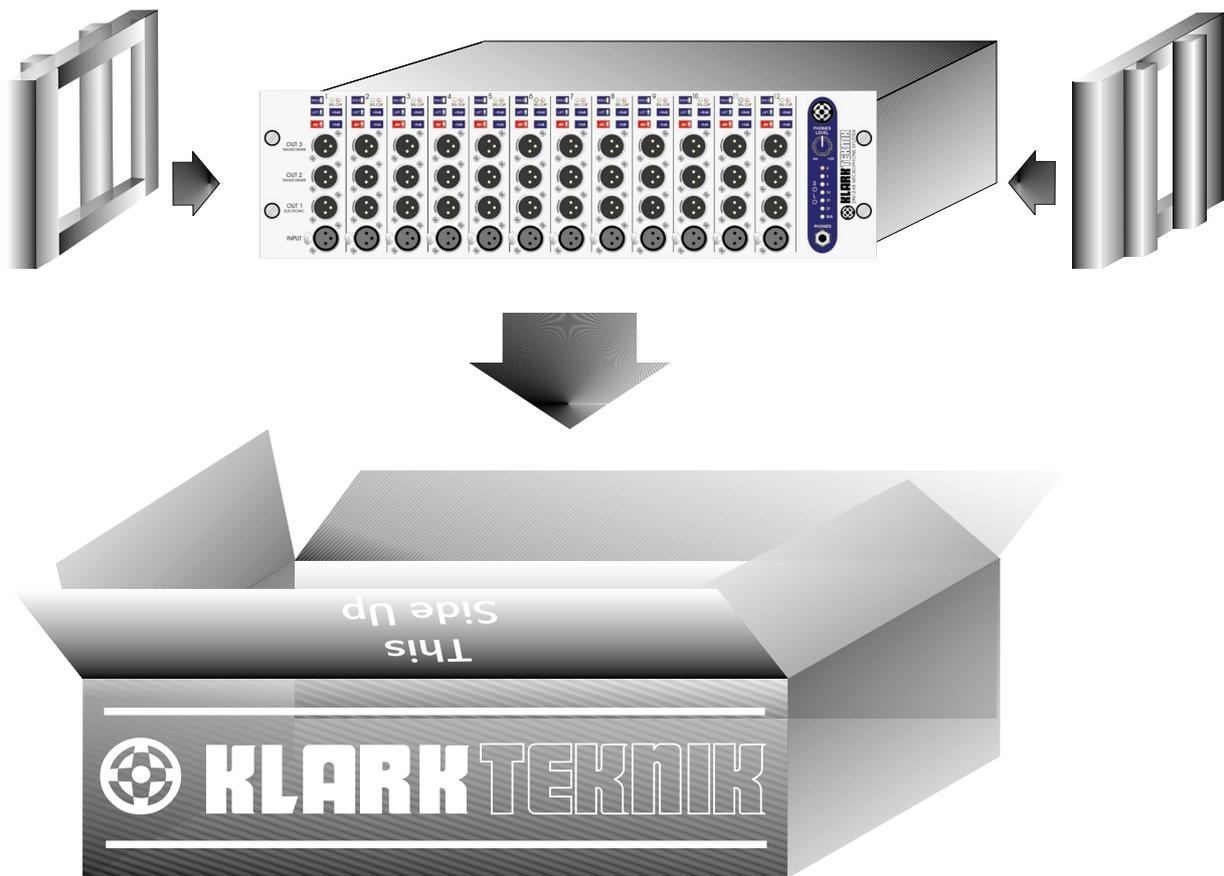
After You Have Unpacked The Unit

Save all the packing materials - they will prove valuable should it become necessary to transport or ship this product.

Please inspect this unit carefully for any signs of damage incurred during transportation. It has undergone stringent quality control inspection and tests prior to packing and left the factory in perfect condition.

If, however, the unit shows any signs of damage, notify the transportation company without delay. Only you, the consignee, may institute a claim against the carrier for damage during transportation.

If necessary, contact your supplier or as a last resort, your Klark Teknik importing agent, who will fully co-operate under such circumstances.



Introduction

The DN1248 active microphone splitter brings the legendary sound and reliability of Klark Teknik to this application for the first time. Housed in a rugged 3U rack enclosure, the DN1248 offers a cost and space-effective method of providing up to forty-eight outputs from twelve sources.

Key Features

- Midas Heritage Mic pre amp.
- Inter-unit linkable headphone bus with individual and multiple solo feature.
- -15dB pad, +30dB boost, earth lift and phantom power switches on all channels.
- Internal power supply with factory option of backup PSU.
- Five year international factory warranty.

The Klark Teknik DN1248 is an extremely high performance, 12-channel active mic splitter housed in a 3U, rack mounting case with an integral switch mode power supply that can automatically adapt to mains voltages in the range 100 to 240 Volts (50 to 60Hz). A dual PSU is available as a factory fitted option. Applications include splitting on-stage mic and DI box feeds to service monitor and FOH consoles as well as to facilitate the multitrack recording or broadcasting of live events.

Each microphone input feeds a superbly specified mic preamp based on the circuitry used in the acclaimed MIDAS Heritage live sound console. There are four balanced outputs per channel, two transformer isolated and two electronically-balanced.

All the audio connections are on balanced XLRs (wired pin 2 hot) featuring gold plated connectors. The mic input and three of the four outputs (two transformer and one electronically balanced) are mounted on the front panel for easy access. The remaining output (electronically balanced) is located on the rear panel. Signal Present and Clip LEDs are provided for each channel and a solo system allows any channel or combination of channels to be monitored via the integral headphone amplifier. Two gain switches (+30dB and -15dB) may be used individually or in combination to optimise the preamplifier gain. Standard 48 volt phantom powering is individually switchable on each channel. Each mic input is also fitted with a ground lift switch.

WARNING

48V phantom disabled if ground lift switch selected.

Installation And Connection

The Klark Teknik DN1248 is designed for standard 19" rack mounting and occupies 3U of rack space. Avoid mounting the unit directly above or below power amplifiers or power supplies that radiate excessive magnetic fields or heat. Ensure that the ventilation apertures on either side of the unit are not blocked or obstructed.

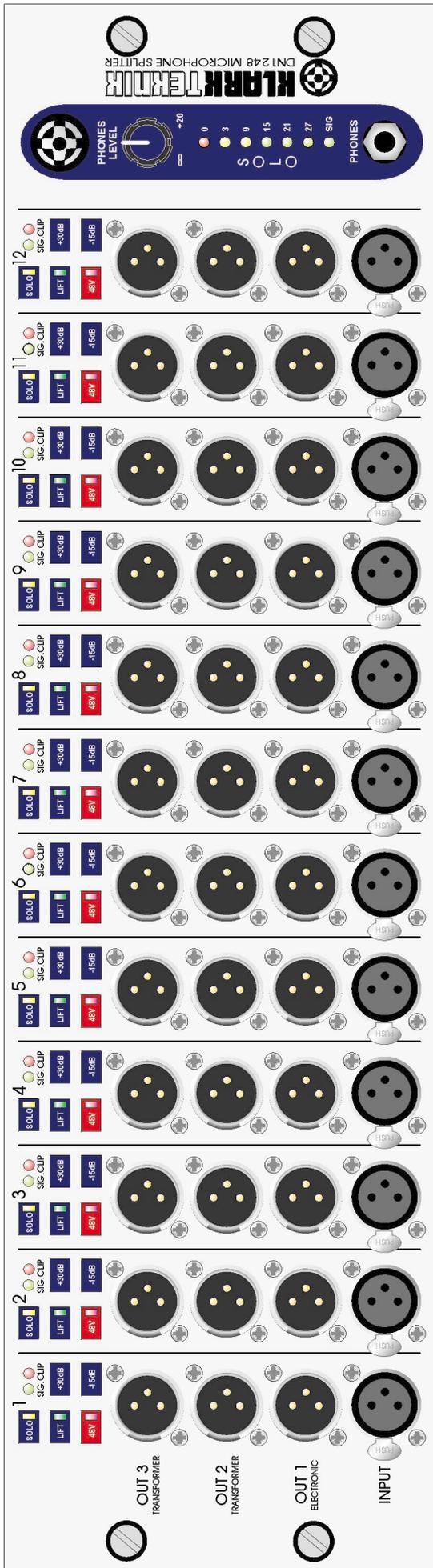
This unit must be earthed. If ground loop problems are encountered, the ground lift switches on the microphone inputs may be used. It is also permissible to disconnect the cable screen at one end or other of the output cables, though the signal input cable screen must be connected at both ends to ensure the phantom powering operates correctly.

The mains fuse should be rated T0.5L250V .

Outputs 1 and 4 are electronically balanced on conventionally wired XLRs (pin 1 screen, pin 2 hot and pin 3 return) with a nominal operating level of +4dBu and a maximum output capability of 21dBu. Transformer coupled outputs 2 and 3 have a maximum signal capability of +18dB. For unbalanced use, pin 3 of any output XLR may be grounded at the destination end of the cable.

The source impedance of the electronically balanced outputs is 50 Ω while the transformer balanced outputs have a source impedance of 70 Ω . Both are designed to feed a minimum load of 600 Ω .

Basic Operation

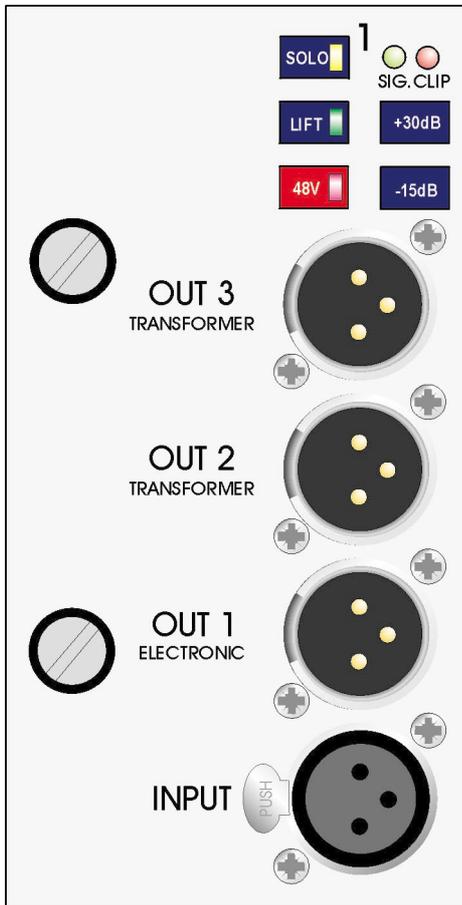


Connect all capacitor microphones and DI boxes to the DN1248 before applying phantom power. Ensure that the sound system level is turned down at this stage to prevent switch-on thumps or acoustic feedback. The phantom power should be switched off for any channel being used with a dynamic microphone or passive DI box, though no problems should arise if the phantom power is inadvertently left switched on, providing the sources are wired for balanced operation and connected using conventionally wired balanced cables. Under no circumstances should phantom power be applied to any unbalanced input source.

Use the solo facility to check the level of each input individually and set the gain and pad buttons to achieve the highest possible signal level without the clip LED illuminating. Leave sufficient headroom to allow for unplanned increases in level during performance.

Both the transformer balanced and electronically balanced outputs offer exceptional audio quality combined with excellent line driving capability. However, the transformer outputs may be preferred in situations where absolute electrical isolation must be maintained, such as running feeds to mobile studios or outside broadcast facilities.

In theory, the electronically balanced outputs remove any opportunity for the audio transformers to colour the sound, but in practice, the sonic quality of the two types of outputs is very similar.



Out 3 Transformer balanced XLR output.

Out 2 Transformer balanced XLR output.

Out 1 Electronically balanced XLR output.

Input Balanced XLR for microphone level signals.

Out 4 See rear panel

Note:

If either of the transformer balanced outputs (2 and 3) is shorted out, the signal level on the other output may be adversely affected. The electronically balanced outputs (1 and 4) will remain unaffected.

Signal Present LED (Green)

An input signal in excess of -25dBu will cause the signal present LED to illuminate.

Signal Clip LED (Red)

An input signal in excess of +21dBu will cause the signal Clip LED to illuminate. The Clip LED illuminates approximately 0.5dB below the actual clip level.

Solo

Pressing the electronically latching Solo button permits any channel to be monitored in isolation via the headphone socket on the front of the unit. Each Solo button has an integral status LED and features a dual mode of operation. When pressed briefly, the solo function will latch on electronically, whereas if the button is pressed and held, the solo is active only for as long as the button is held down. Pressing the button again will exit solo mode. Multiple channels may be solo'd. When multiple units are linked, the solo system permits phones monitoring from any of the linked units.

48V

Applies 48 volt phantom power to the channel's microphone input.

+30dB

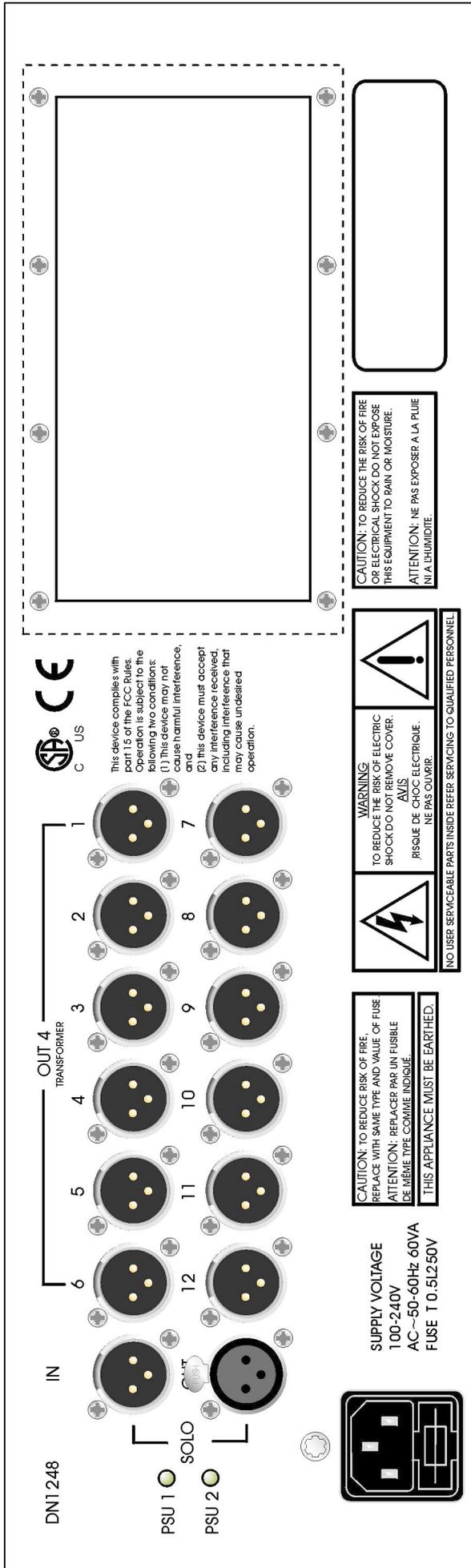
Switches in 30dB of mic pre-amp gain.

-15dB

Switches in a 15dB attenuator pad. (Note that both switches may be used together when a gain of 15dB is required.)

Lift

Isolates the input signal ground. Note: Switching in the ground lift disables phantom power operation. The Lift switch has an integral red status LED.



Channels 1 to 12

Out 4

Electronically balanced XLR output located on the rear panel. All four outputs produce nominally the same signal level.

Blanking plate

Dimensions of the plate: 158mm x 88mm
 Internal dimensions: 140mm x 70mm

Solo Bus Connectors

These are standard 3-pin male and female XLR sockets enabling the solo systems of two or more DN1248s to be linked by means of standard microphone cables. When linked, the units act as a single unit for solo monitoring purposes with the solo'd output being available on the phones outputs of any linked units

Mains Inlet

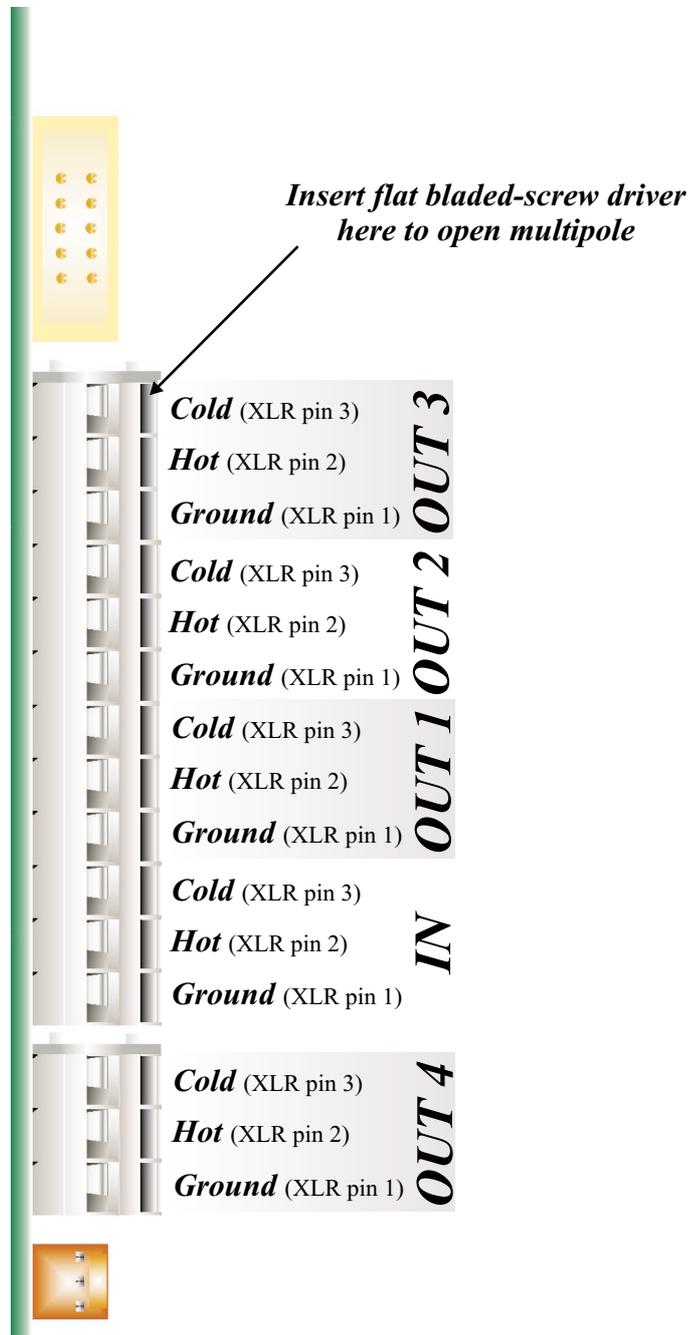
Standard non-switched IEC mains connector. A suitable cable is provided.

Rear Panel Blanking Plate and User Multipole Connections

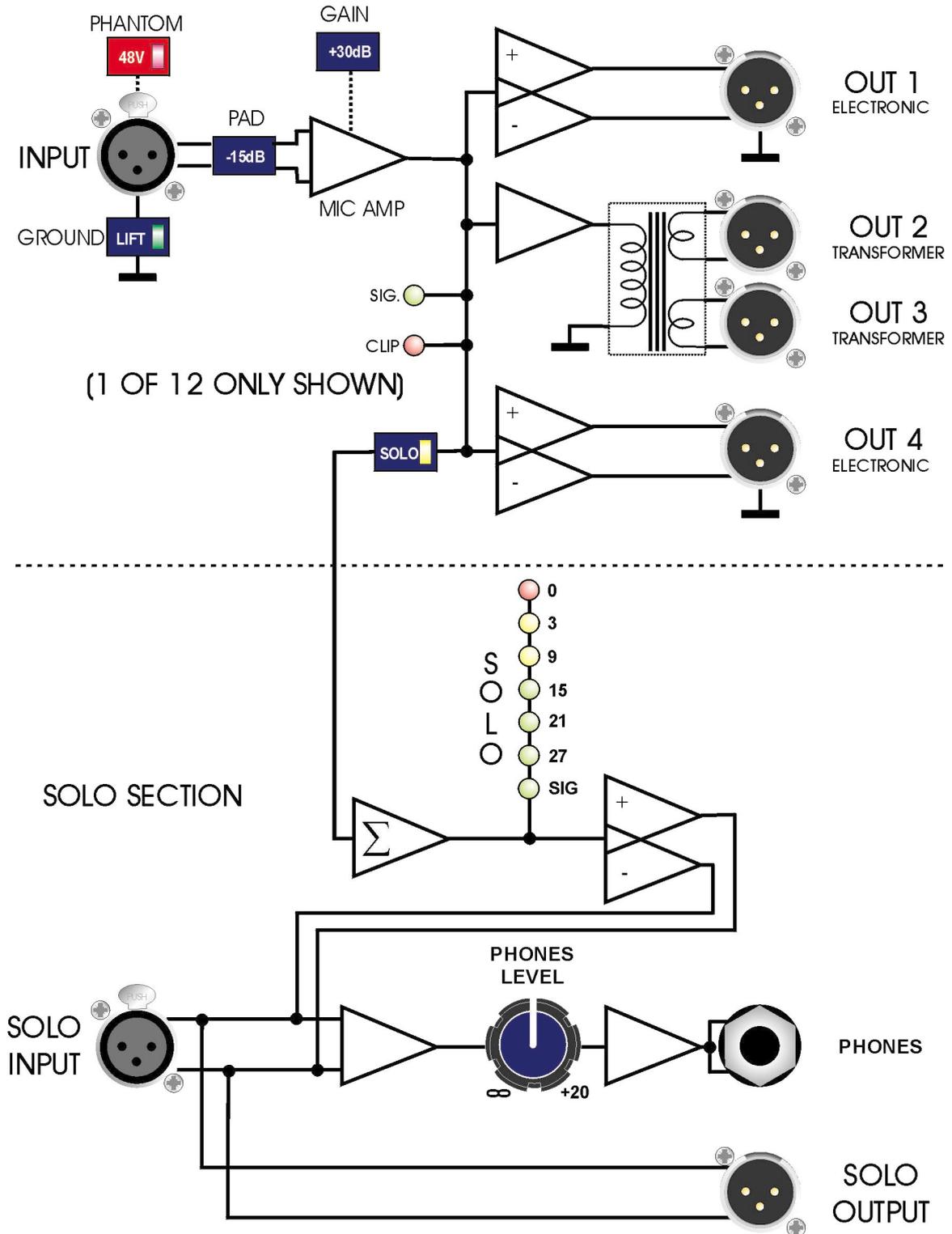
The rear panel has a removable blanking plate which is designed for users to fit their choice of multipole connectors. The circuit board for each of the twelve channels has a row of spring-leaf terminals along its rear edge to allow users to terminate cables from the multipole connectors.

The top cover should be removed from the unit to gain access to the blanking plate and the circuit board terminals. Please ensure that all screws are retained and used to re-attach the cover and blanking plate. ***Any warranty claims resulting from damage to the unit will be void if all of the screws are not used to re-secure both the cover and the blanking plate.***

The input and all four outputs are brought out to the circuit board terminals; to make a connection insert a small flat-bladed screwdriver into the upper rectangular slot and using a levering motion, move the screwdriver away from the circuit board - this action will open the contacts in the lower opening in the connector so that the bare ends of a wire can be inserted. Moving the screwdriver in the other direction will close the contacts, which will then hold the wire securely. ***Any warranty claims will be void if the damage has been caused by excessive force to these multipole connectors.*** It is recommended that screened twisted pair cable is used to make the connections between the individual circuit boards and the multipole connectors.



Mic Channel



The mic input is based around the same circuitry as used in the Midas Heritage live sound console and features exceptionally low noise and distortion combined with a generous level of headroom. The mic preamp gain may be adjusted by using the -15dB pad and +30dB boost switches either singly or in combination. With neither selected, the signal path is unity gain. The gain range is adequate to accommodate most microphones, keyboards, DI boxes, backline preamp outputs and active guitar/basses. Passive guitars require a high impedance load and should be connected via a suitable active DI box, such as the Klark Teknik LBB100 or DN1414.

Headphone Amp

Illuminated Logo

The DN1248 has no mains power switch. When power is connected, the logo at the front right of the panel will illuminate.

Phones Level

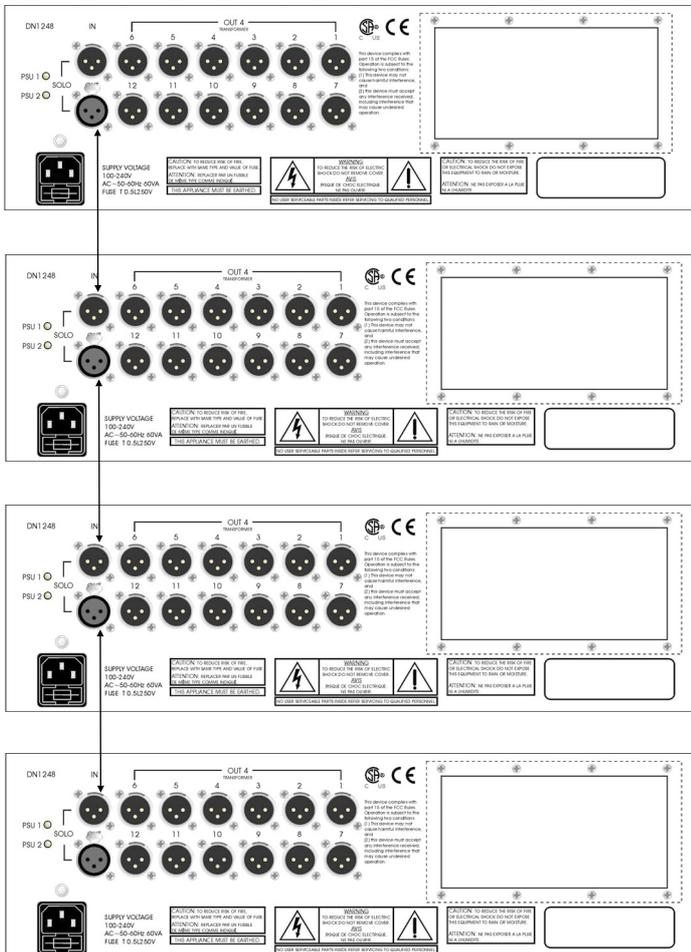
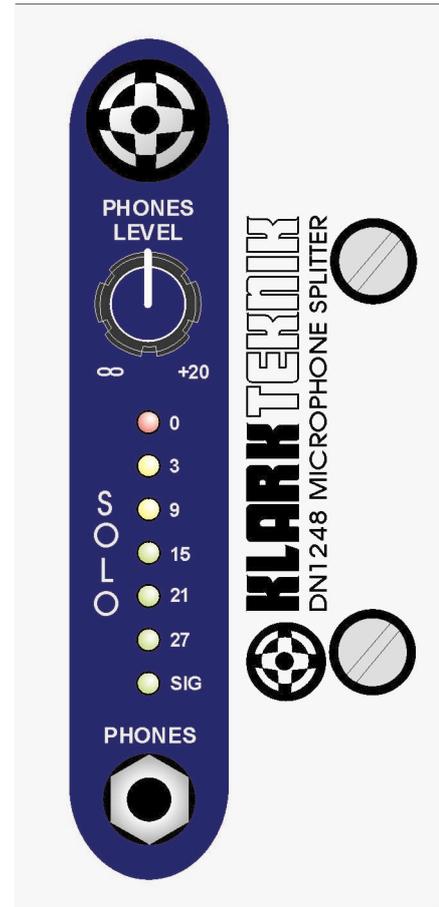
Sets the level of the headphone output used for Solo monitoring.

Meter

Seven segment LED meter monitors the level of any soloed signal in the range -40 (Sig) to 0dB. The metering may be used in conjunction with the input gain switches and the solo buttons to optimise the input gain settings.

Phones

Standard quarter inch TRS jack to accept conventionally wired stereo headphones. Any soloed channel or channels will appear at the headphone output under control of the Phones Volume control.



Solo Bus Operation

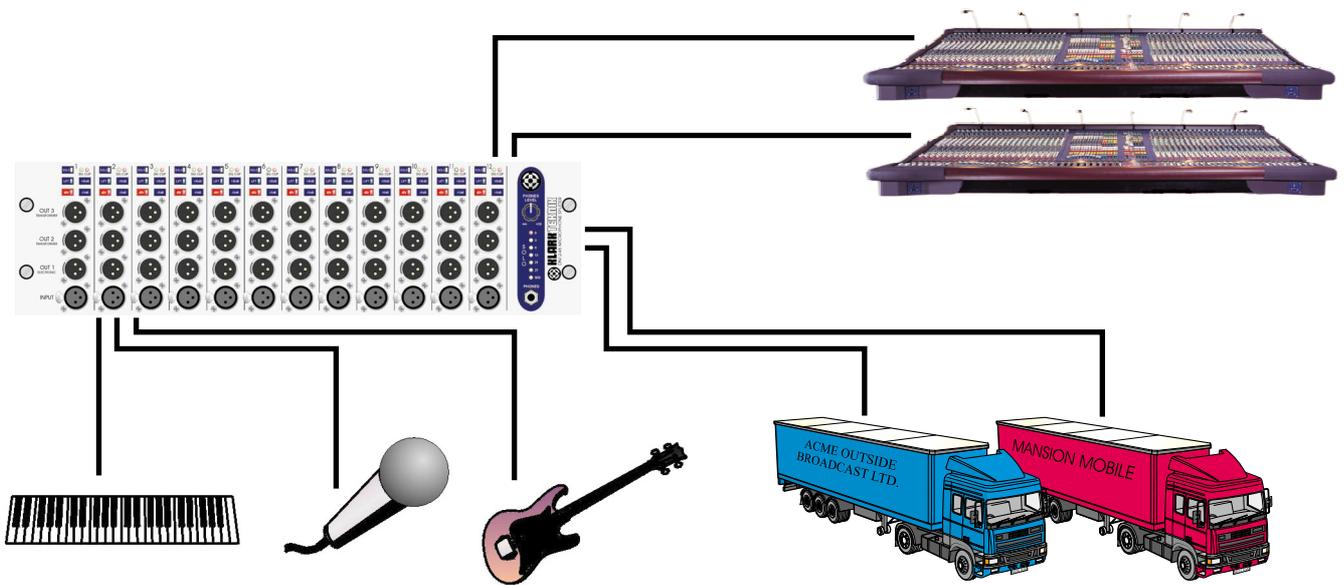
Pressing the electronically latching Solo button permits any channel to be monitored in isolation via the headphone socket on the front of the unit. Each Solo button has an integral status LED and features a dual mode of operation. When pressed briefly, the solo function will latch on electronically, whereas if the button is pressed and held, the solo is active only for as long as the button is held down. A channel which has been electronically latched can be cleared by briefly pressing in the same manner. The electronic latching function allows multiple channels to be switched onto the Solo bus.

The Solo bus external linking facility allows solo'd channels to be monitored using the headphone amp on any of the connected units. Note: The Solo bus bargraph on each connected unit only displays the signal level for that unit, which has the advantage of making it easier to isolate level or connection problems. Multiple units are connected Solo Out to Solo In as shown left.

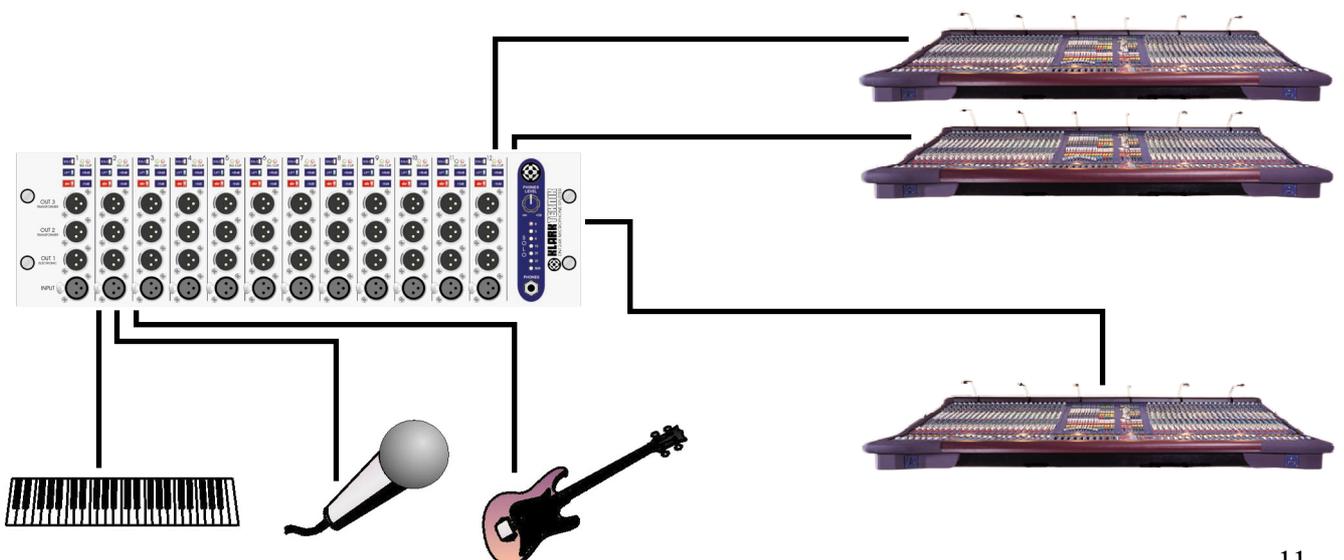
Applications

In a live recording situation, the DN1248 may be used either to split the stage mic signals at source or to take feeds from the group outputs of a live sound console. It is also able to accommodate feeds from backline preamp outputs, active instruments, keyboards and so on. Because there are four outputs per channel, it is possible to interpose the unit between an instrument and its backline amplification while still providing up to three feeds for mixing, monitoring or recording. A number of examples are illustrated below.

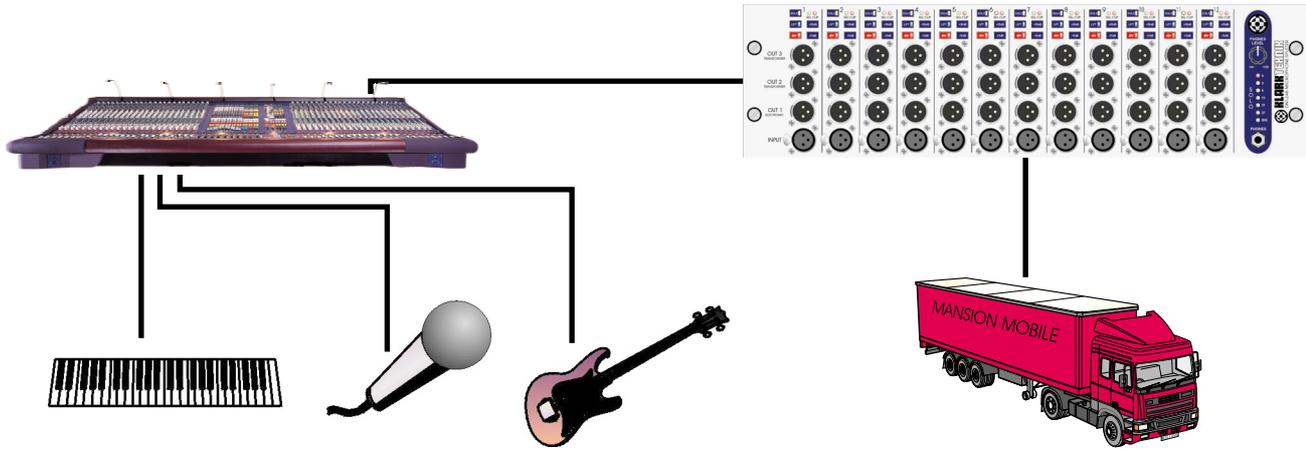
Example 1 Shows an outside broadcast application where the DN1248 supplies feeds to both the FOH live sound console and a monitor console as well as to two outside broadcast/recording trucks. Normally the transformer balanced outputs (2 and 3) would be used to feed the OB trucks.



Example 2 Shows a simple live recording situation where the stage mic feeds are split to serve the FOH live sound console, a monitor console and an on-site recording console. It is recommended that one of the transformer balanced outputs is used to feed the recording console, especially if the grounding scheme is outside the control of the PA operator.



Example 3 Shows a live recording application where the DN1248 is used to provide isolated feeds from the group outputs of the FOH live sound console.



Appendices

Architect's and Engineer's Specification

The Mic Splitter shall provide 12 discrete audio channels in a standard 3U 19" rack mount chassis. Each channel shall have a microphone preamplifier, two transformer-isolated outputs, and two electronically balanced outputs with two paralleled connectors. Both transformer - isolated outputs and one electronically balanced output will be mounted on the front panel, the remaining electronically balanced output will be mounted on the back panel.

Each channel shall also provide separate +30dB boost and -15 dB pad switches, switchable +48V phantom power, an earth lift function and a soloing facility.

The Mic Splitter shall have a headphone amp to allow the monitoring of soloed audio channels. The headphone amplifier shall have a ¼ -inch jack socket for the headphones, a rotary level control for the headphones output and a seven-segment LED bargraph for monitoring the soloed signal level.

Each Mic Splitter shall meet or exceed the following performance specifications:

Electronically Balanced Outputs

Distortion < 0.01% (1kHz @ +4dBu)
Frequency response +0/-0.5dB (20Hz to 20 kHz)

Transformer Balanced Outputs

Distortion <0.01% (1kHz @ +4dBu)
Frequency response +0/-1.0dB (20Hz to 20kHz)

The audio connections for each of the twelve audio channels shall be via 3-pin XLR style connectors one female connector for the input and four male connectors for the outputs.

The unit shall be capable of operating from a 90 to 250V, 50 to 60Hz AC power source. The unit should have the option of dual redundant power supplies.

The Mic Splitter shall be the Klark Teknik model DN1248 and no alternative option is available.

Specifications

Inputs

Input impedance	> 2k Ω
CMRR	> -100dB @ 100Hz to 10kHz
Equivalent input noise	< - 100dBu @ unity gain
Connectors	3 pin male XLR
Signal present level	> - 25dBu
Signal clip level	> + 21dBu

Outputs

Electronically balanced	
Source impedance	50 Ω
Min Load	600 Ω
Max level	+ 21dBu @ 1kHz
Connectors	3 pin female XLR

Transformer balanced & isolated

Source impedance	70 Ω
Min Load	600 Ω (-3dB level loss into 200 Ω)
Max level	+ 18dBu @ 1kHz
Connectors	3 pin female XLR

Performance

Electronically balanced	
Frequency response	+ 0 / - 0.5dB 20Hz to 20kHz
Distortion	< 0.01 % @ 1kHz +4dB

Transformer balanced & isolated

Frequency response	+ 0 / -3.0dB 20Hz to 20kHz
Distortion	< 0.05 % @ 1kHz +4dB

Power Requirements

90 to 250V a.c @ 50/60Hz @ < 75VA
3 pin IEC connector.

Dimensions

Width	483 mm (19 inches)
Height	132 mm (5.2 inches)
Depth	300 mm (12 inches)

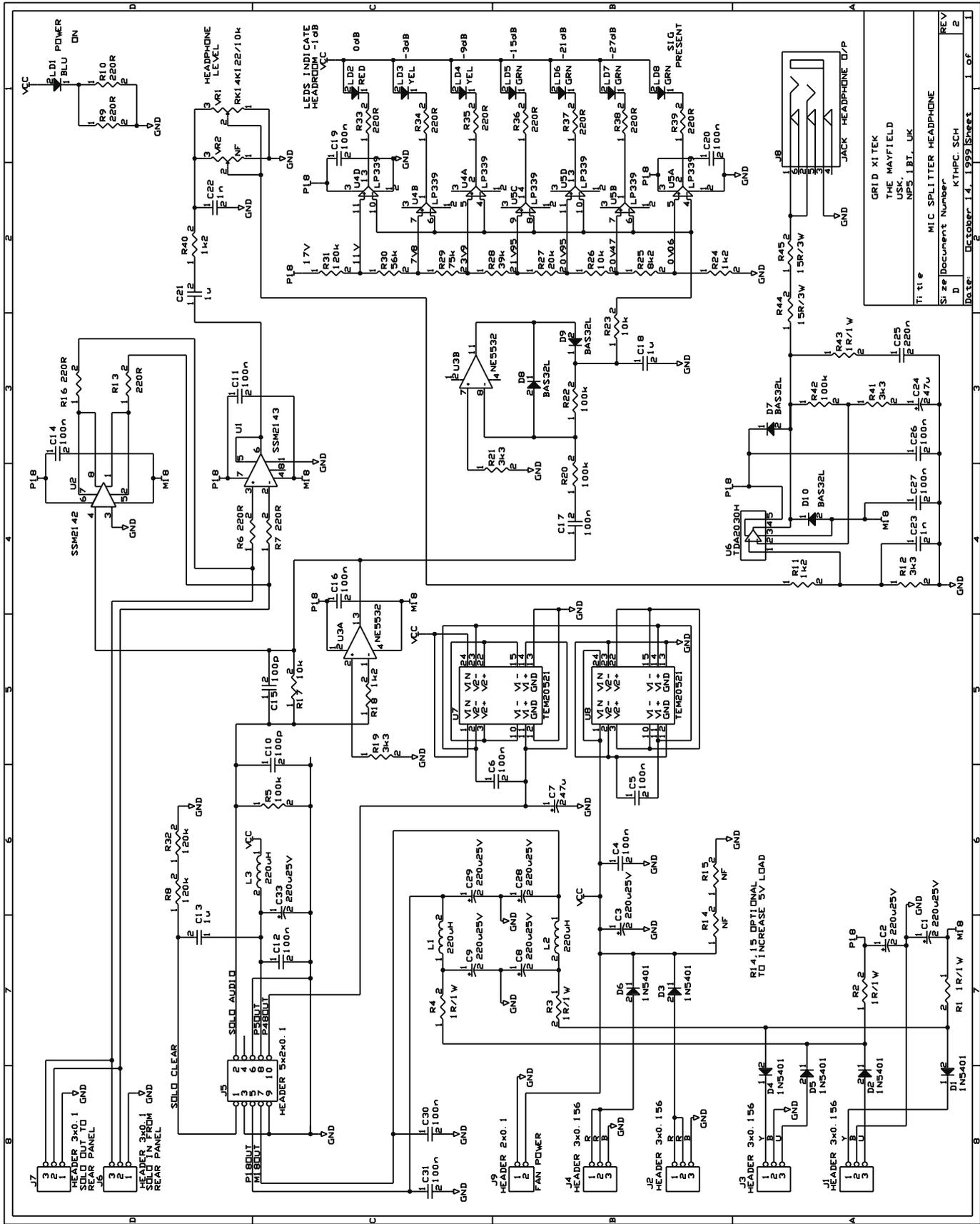
Weights

Nett	7.4 kg
Shipping	8.4 kg

Schematic Drawings

DN1248

Mic Splitter Headphones
Mic Splitter Channel Schematic 1
Mic Splitter Channel Schematic 2
Mic Splitter Channel Schematic 3



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 U2 SSM2142
 U1 SSM2142

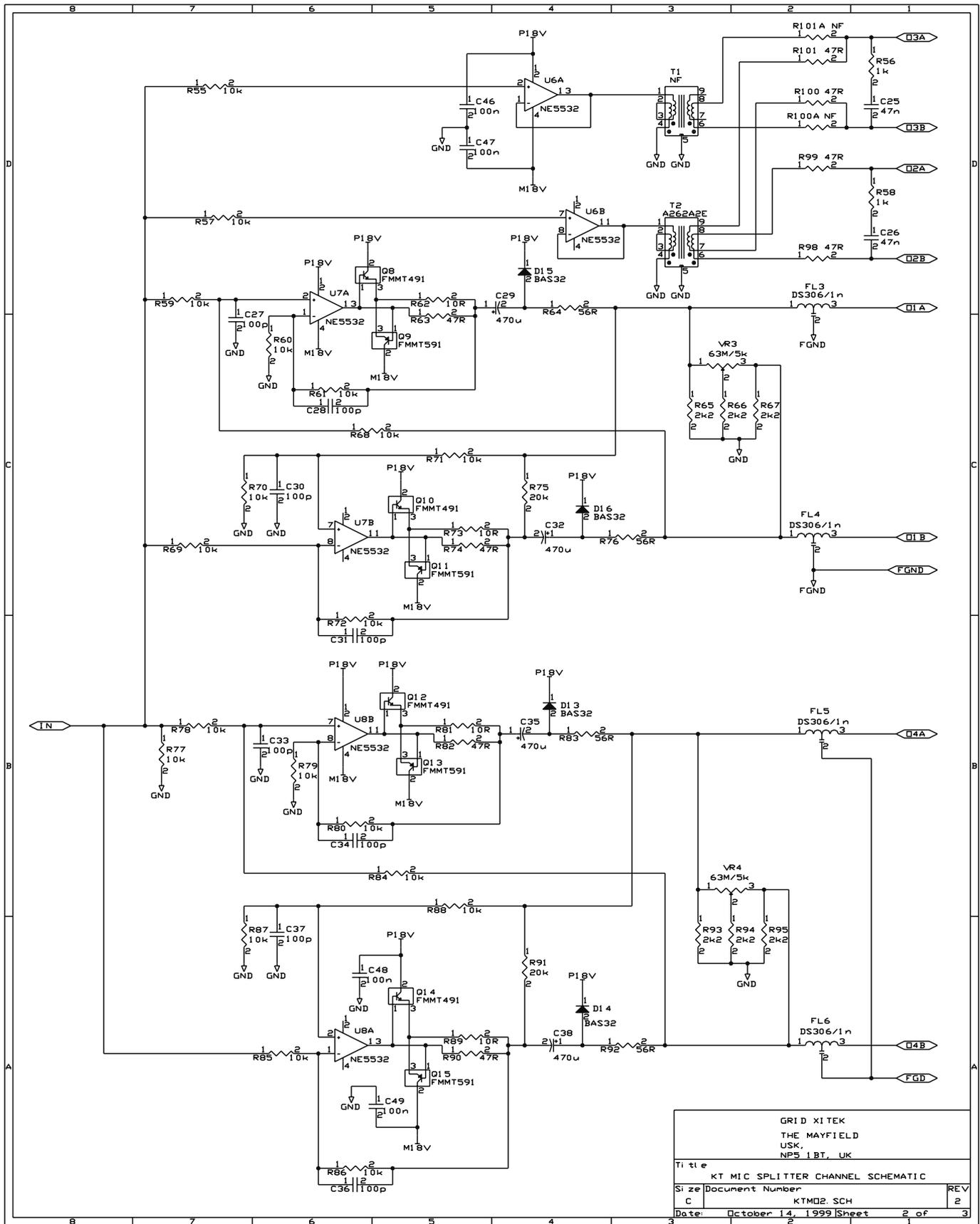
R1 1R/1W
 R2 1R/1W
 R3 1R/1W
 R4 1R/1W
 R5 100k
 R6 220R
 R7 220R
 R8 120k
 R9 220R
 R10 220R
 R11 1k2
 R12 3k3
 R13 220R
 R14 1.5 OPTIONAL TO INCREASE 5V LOAD
 R15 NF
 R16 220R
 R17 10k
 R18 1k2
 R19 3k3
 R20 100k
 R21 10k
 R22 100k
 R23 220R
 R24 1k2
 R25 10k
 R26 10k
 R27 220R
 R28 10k
 R29 220R
 R30 56k
 R31 120k
 R32 120k
 R33 220u25V
 R34 220u25V
 R35 220u25V
 R36 220u25V
 R37 220R
 R38 220R
 R39 220R
 R40 1k2
 R41 3k3
 R42 100k
 R43 1R/1W
 R44 1.5R/3W
 R45 1.5R/3W

C1 100n
 C2 220u25V
 C3 220u25V
 C4 100n
 C5 100n
 C6 100n
 C7 247u
 C8 220u25V
 C9 220u25V
 C10 100p
 C11 2100n
 C12 100k
 C13 1u
 C14 100n
 C15 100p
 C16 100n
 C17 100n
 C18 1u
 C19 100n
 C20 100n

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 D5 1N5401
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 D7 1N5401

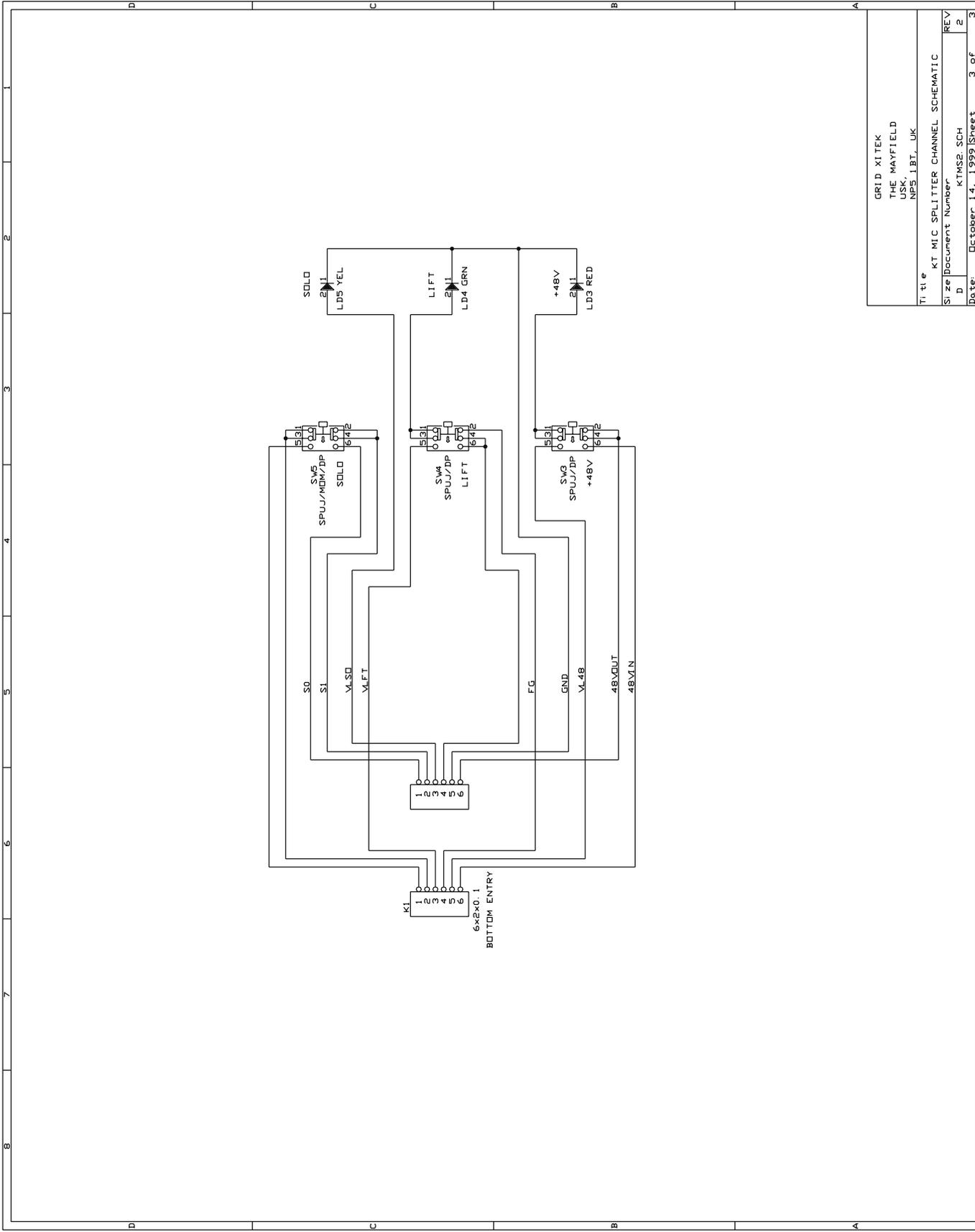
J1 3x0.1
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 J3 3x0.156
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 J5 3x0.1

U1 SSM2142
 U2 SSM2142
 U3 4NE5532
 U4 74VHC00
 U5 74VHC00
 U6 IDA62030H
 U7 78L05



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