

Alice[®]

BROADCAST SOLUTIONS™

Alice 828 MK3



User Handbook and Operating Notes

Alice 828 Mk3

User Handbook and Operating Notes



The first ALICE 828 was introduced by the ALICE Company in Windsor in 1978. The 828 quickly established itself as the industry standard for audio-visual production and presentation, high-quality sound reinforcement, mobile recording facilities and CCTV installations as well as for location recording for TV programmes and series.

The 828 Series 3 adopts the 'S' version format and retains the compact and ergonomically attractive design of the original 828 but with several important improvements and new features, including EQ IN/ OUT switching on mono channels, comprehensive monitoring facilities with aux input and PFL on meters, a robust 48 volt phantom power supply and a power supply operating from any mains without selector switching.

The 'S' version, introduced in 1980, was developed specifically for local radio and hospital broadcasting stations, and included improved monitoring facilities and stereo channels with in-built RIAA (phono) equalisation.

The new 828 Series 3 has been in development for 43 years!

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The ALICE 828 Mk3 is available in three standard models:-

1. 828 - 3 mono mic/line inputs, 5 stereo line channels (2 with RIAA preamplifiers), 2 output groups, VU meters, fader electronic microswitch for L.S. mute on channel 1.
2. 828-8 - 8 mono mic/line channels, 2 output groups, VU meters.
3. 828-12 - 12 mono mic/line inputs, 2 output groups, VU meters.

To special order, any combination of mono and stereo input channels may be fitted up to a total of 12. PPMs and additional fader microswitches for remote starts, red lights etc may also be available.



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Mono Mic/Line Channels

Each mono channel has two inputs, both are transformer balanced.

The mic input is a standard 3-pole XLR female socket (pin 1 ground, 2 hot & 3 cold signal), and the line input is high impedance balanced via a standard 1/4" (6.35mm) 3-pole jack socket.

A push-button switch selects the required input, and the continuously variable rotary gain control has a range of 50dB on mic. and 24dB on line.

The equaliser has HF and LF boost and cut and a very useful MF section which allows the frequency of a boost or cut to be varied over a wide range (see SPECIFICATION). A push-button switch allows the equaliser section to be completely by-passed if required.



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Stereo Line Channels

The 828 stereo channel is a dual-purpose design, incorporating a compact RIAA stereo pre-amplifier section on stereo channels 4 and 5. This is accessed by phono sockets, allowing a magnetic phono cartridge to be connected directly into the mixer. Two mono jack sockets are provided on each stereo channel giving access to the channel at line level, this latter is wired through break contacts in the jacks so that connecting a line level signal disconnects the pre-amplifier (on channels 4 and 5).

On stereo channels 1, 2 and 3 the lower jack socket switches to 'mono' when there is no connection into the upper socket.

The continuously variable rotary input gain control has a useable range of approximately 24dB; the two auxiliary outputs are mono derived.

The balance control has a range of $\pm 6\text{dB}$; the channel has mono derived PFL and a stereo fader.



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Groups

The two output groups each have a line level input via a rotary gain control, designated 'aux in L & R'.

Each group has a simple but extremely effective peak limiter, with individual threshold and 'on' controls, and status indicating LEDs.

Two auxiliary outputs are provided, one pre-fader (aux 1) and one post (aux 2). The output master send controls are above the group faders. The left group carries the master aux 1 control, and the right group the master aux 2.

A pan-pot allows each channel to be adjusted in a stereo mode between the two output groups, and a latching push-button switch connects the pre-fader channel signal to the monitor section.

The 60mm conductive plastic track fader is fitted on channel 1 with an electronically controlled micro-switch for activation of muting systems, red lights etc. A mono post-fader direct line output is available on a standard 1/4" (6.35mm) 2-pole jack, in addition to the stereo mix via the pan pot.



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Connectivity

- All jack connectors are 3-pole.
- If the connection is stereo, the tip is L and the ring is R.
- If the connection is balanced mono, the tip is 'hot' and the ring is 'return'.
- For unbalanced line input and outputs the ring is grounded.

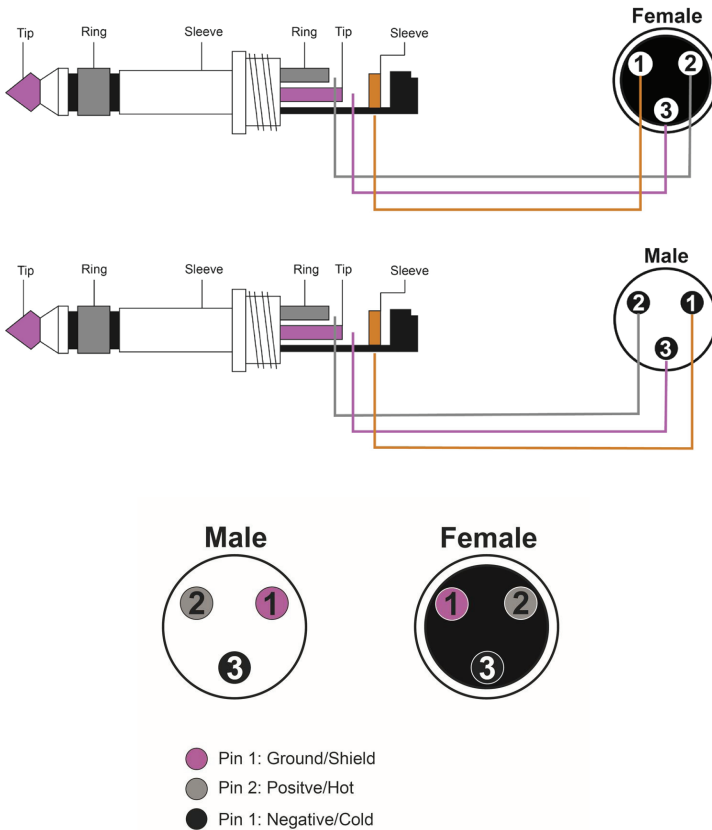


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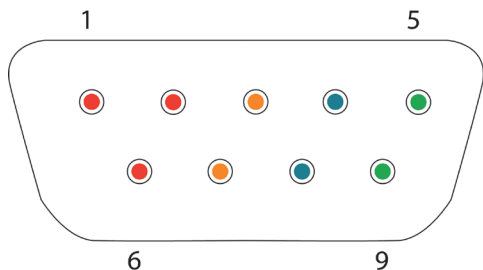
Connectivity *continued*



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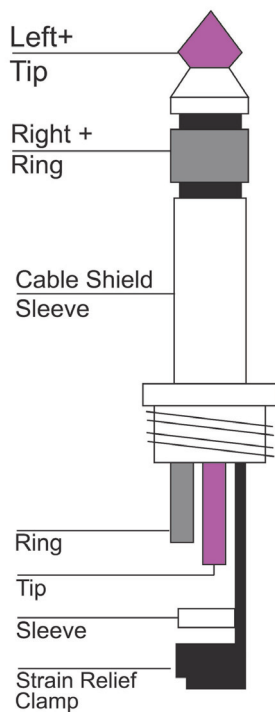
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Connectivity *continued*



Key

- 1,2 & 6 not connected
- 3 & 7 closing contact
- 4 & 8 closing contact (where fitted)
- 5 & 9 closing contact (where fitted)



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Construction

The Alice 828 Mk 3 is completely enclosed in a three-piece mild steel box. The rear termination panel is bolted to the main chassis during assembly and is not normally removeable. Access to the electronics is by removing the base tray which is secured by four M4 bolts.

All the electronics are mounted on printed circuit boards which are secured to the main chassis top panel by the potentiometer fixings and braced by connectors on the rear panel and the 10-way ribbon cable which connects the channel, group and monitor boards.

In the rare event of a component malfunction or failure, any module may be removed by disconnecting the ribbon cable, slackening the M4 bolts holding the rear panel, freeing the input terminations and releasing the control fixings.

The mains power converter assembly is mounted on a steel sub-frame in the right-hand end of the mixer behind the rear mounted meters.

Standard finish is in charcoal grey semi-gloss stove enamel, with abrasion resistant white screen printing. Other colours may be available upon request.

The 828 Mk3 was designed by Ted Fletcher, it is personally supervised, manufactured, hand assembled by Alice Ltd totally in the UK.

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Power supply

The internal mains power supply is a switch-mode type operating on any mains voltage from 95v AC to 250v AC. It supplies 24v DC for the electronics and drives a separate switch-mode regulator for 48V phantom power.

Individual switches are provided for mains on/off and phantom power.

The mixer is designed for operation on any mains supply. Power consumption is 5 watts and a 20mm 1A mains fuse is fitted in a holder on the power supply PC board situated behind the meters. Access to the power fuse is by removing the base-plate which is secured with 4 X M4 bolts.

A captive three core mains cable is fitted; the signal and chassis earths are connected to the mains earth and this should always be connected to ground via 3-pin mains plug and fused at **2 amps**.

The internal power supply gives 24 volts stabilised DC for the electronics and for meter illumination, 48 volts DC for the phantom power supply to the microphone inputs is supplied via a further DC/DC converter on the monitor board.

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Channel Inputs

a) Microphone. All microphone inputs are transformer balanced and floating via a standard 3-pin XLR type female connector. The input impedance is designed for 200-ohm microphones, but will accept other types down to 30 ohms impedance.

The minimum input level for 0VU output is -80dBu (approx. 0.03mV); the maximum input level is -10dBu (approx. 240mV). If high levels are anticipated, attenuator pads should be used in the mic circuits.

Phantom power (48V) is available to all mic channels, the switch and indicator light are in the monitor section.

b) Line level. Mono line level inputs are via 3-pole jack sockets. They will operate from any audio feed balanced or unbalanced. The inputs are transformer isolated.

Input levels of -30dBu up to +20dBu can be handled by the mono channels.

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Channel Inputs *continued*

c) Stereo line level. Individual jack inputs on the rear panel feed line level to the stereo channel. These inputs can be at any audio level from -30dB upwards and are suitable for outputs from digital work stations and computer interfaces.

If input is plugged into the lower (left) jack socket only, the channel acts as a mono channel routing to both L and R groups. (Stereo channels 1,2 and 3 only)

Stereo channels 4 and 5 are fitted with preamplifiers designed to interface with magnetic phono cartridges. They have built-in filters to correct for RIAA disk curves. Access to the RIAA preamplifiers are via pairs of phono connectors on the rear panel.

The RIAA preamplifiers are disabled/bypassed by plugging in line level feeds into the jack sockets.

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Aux 1 and 2

Each input channel has aux gain controls. Aux 1 is a pre-fader feed direct to an aux 1 mix stage and master output control in the L group.

Aux 2 is a post-fader feed to the aux 2 mix stage and master output control in group 2.

The aux feeds from the stereo channels are mono mixes of L and R.

Aux master output controls are labelled Aux 1 send and Aux 2 send. The unbalanced line level outputs of the aux controls appear as Jack sockets on the rear panel.

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Limiters

The Alice 828 Mk3 limiters were designed primarily for overload protection to prevent possible damage from transient audio signals in loudspeaker systems, but experience over many years show the limiter to be a versatile compression tool. It can be used either as a pure overload protection, or as a volume compressor.

The device is strictly speaking, a limiter, it works independently on L and R groups and there is no stereo link, however, the attack knee and the ratio make it suitable for operation in stereo without serious image shift problems.

To operate the limiters start by working with the master faders at 10dB down from the full-scale position, then with the limiters switch in (push button pressed and green indicator on) when the threshold control is at '5' or above, the limiter will be in operation. Limit function can be seen by the red indicator coming on.

With the threshold at '7' and the master fader at -10, the limit threshold is at approx. 0dB.

The limiter ratio is about 12:1 and so care should be taken not to overdrive the inputs with the limiters engaged or overloads could occur.

As Joe Meek used to say, *"If it sounds right, it is right!"*

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Monitoring

The monitor system allows for both studio loudspeaker monitoring and headphone monitoring.

Loudspeaker monitoring is via a stereo jack socket on the rear panel and the audio feed to this is controlled from the monitor volume control and also a mute system activated by the fader on channel 1.

The headphone output is via a stereo jack on the front panel. The volume is also controlled from the monitor volume control but it is not interrupted by the mute function.

Caution, keep the monitor volume control turned well down as high audio outputs are possible from the monitor system.

Monitoring is normally from the groups and audio is shown on the VU meters. When a PFL button is pressed, an indicator red light turns on in monitoring and the audio from the groups is replaced by the individual channel signal selected by the PFL button.

An overall monitor switch (master/return) allows for external line level feeds to go direct to monitor via the 'return' system. The external input volume is controlled by the monitor return control. This overrides all monitor functions.

The monitor system has facility for polarity reverse, mono and dim, these are simple push-button controls used to quality check monitor audio.

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Monitoring *continued*

The monitor output is derived either directly from the group outputs or from the stereo 'monitor return' input via a level control.

Polarity reverse on left channel, mono and dim facilities are provided, followed by a level control which feeds a continuous feed stereo headphone socket on the front panel and a loudspeaker outlet on the termination panel which is controlled by the channel 1 mute system.

The automatic PFL electronic switch is before the A/ B selector which feeds the meters and monitor outputs. Thus PFL levels may be monitored in the 'master' condition, and tape machine line-up and recorded quality can be assessed in 'return'.

In standard form, the monitor output rear panel jack socket is muted by an electronic muting system controlled from the channel 1 fader. Whenever fader 1 is lifted, the monitor output is muted.

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Meters

The standard metering on the 828 is VU meters. These are true moving-coil meters specifically manufactured for Ted Fletcher's TFPRO company.

Audio metering

The VU meters fitted to the Alice 828 Mk3 are nominally VU dynamics but unlike original USA VU meters, which were seriously inaccurate when measuring audio also creating audio distortion, these Alice meters are pseudo-peak meters with separate amplifier electronics.

They are set up so that 0VU represents an audio output of 0dBu or 0.775v RMS measured across pins 2 and 3 of the audio output XLR.

The level set-up of the VU meters can be adjusted with pre-sets on the VU amplifier sub-board on the monitor module. This is accessible once the base panel is removed.

Most meters demonstrate an element of under-read when the meter is reading human speech, a VU meter normally underreads by up to 10dB, but the Alice 828 Mk3 meter has a very much faster attack time and shows little or no underread (compared to the standard BBC PPM meter) and therefore can be relied upon for accurate levels.

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Specification

INPUTS & OUTPUTS

- **Microphone Inputs (XLR).** 1 Kohm (transformer balanced, to suit 200 ohm microphones).
- **Mono Line Inputs (1/4 inch jack).** 10 Kohm transformer balanced, suitable for both balanced and unbalanced line level signals.
- **Stereo Line Inputs (Individual L and R 1/4 inch jack).** 10 Kohm unbalanced.
- **Phono (RIAA) Inputs.** To suit medium impedance magnetic cartridges.
- **Aux 1 and 2 Line level inputs (1/4 inch jack).** 10 Kohm unbalanced.
- **Master return Inputs (1/4 inch jack).** 10 Kohm unbalanced.
- **Main Outputs (XLR).** 400 ohm floating transformer balanced suitable to drive balanced or unbalanced lines.
- **Aux outputs (1/4 inch jack).** 600 ohms unbalanced.
- **Mono channel Individual Outputs (1/4 inch jack).** 5 Kohm unbalanced.
- **Monitor Outputs (1/4 inch stereo jack).** 10 ohms (to suit headphones > 100 ohm impedance).

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Specification *continued*

OUTPUT LEVELS

- Main and Aux Outputs, 0 VU produces dBu (0.775 volts)
- Max output > +18 dBu (6 volts)
- Mono Channel Direct Outputs, Nominal -6db

ABSOLUTE MAXIMUM GAIN

- Mic Input 80dB
- Mono Line 38dB
- Stereo Line 32dB

FREQUENCY RESPONSE

- + 1, - 2dB 20Hz to 20kHz

DISTORTION

- Within 0.1 % T.H.D. at OdBu output from 40Hz to 15kHz

NOISE

- Mic. at 70dB gain, 128dB below 200 ohm input RMS 20Hz -20kHz
- Line 80dB below high level input at 1kHz

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Specification *continued*

EQUALISER PARAMETERS

- HF ± 15 dB at 10kHz Shelving (Baxandall)
- MF ± 15 dB from 700Hz to 4kHz 'Q' approx. 1.4
- LF ± 15 dB at 60Hz Shelving (Baxandall)

LIMITER PARAMETERS

- Ratio approx. 12:1, threshold variable down to -6 dBu

POWER

- 95 - 250v AC @ 50/60Hz, 5vA
- Supplied with a UK 13 amp plug (fitted with 2 amp fuse) and 2 metre flex

SIZE

- 18" x 14" x 4.5" (460 x 360 x 115mm)

WEIGHT

- 7.4Kg

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Upgraded Mixer Options

We have upgraded some of the options available on the Alice 828 MK3 mixer with the introduction of being able to change the pre/post options on the aux channels as well as the direct output facility.

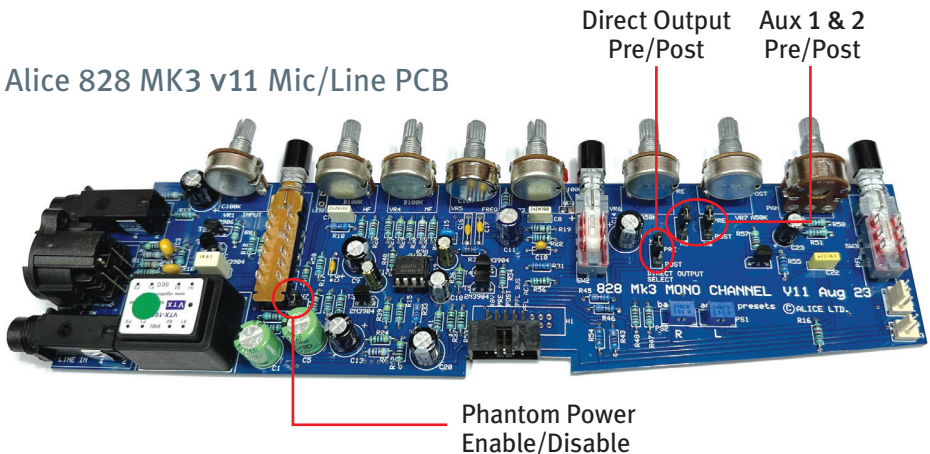
Also, phantom power can be disabled on individual channels as required.

The default from factory will be:

Aux outputs – Pre | Direct outputs – Post | Phantom Power – Enabled

These configurations can be changed at the time of ordering

Alice 828 MK3 v11 Mic/Line PCB





REGULATIONS AND SAFETY

The Alice 828 Mk3 has been designed and built to conform to all known safety requirements in the world.

Within the European Union the mixer easily meets the requirements for electrostatic and electromagnetic emissions, and conforms to all safety requirements of the European Common Market. the 'CE' symbol on the rear of the unit indicates compliance. In the United States of America the mixer complies with UL requirements and uses UL approved components in all power supply functions.

WARRANTY

In the unlikely case of a breakdown, please return the unit in its original packing through the supplier. Alice equipment is designed and manufactured in the UK.

www.alice.co.uk

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