



HeadLine

Guitar Switching System



User Manual

The DACs **HeadLine** Guitar Switching System

Welcome

Thank you, from all at DACs, for investing in this product.

We take pride in our work and know this **HeadLine** will give you years of exemplary service. While this product was initially developed as a problem solver, we have pushed the feature set to produce a fully developed and reliable system for handling multi-amp and cabinet guitar setups.

I have no doubt that it will become an indispensable tool in your studio's arsenal.

A handwritten signature in black ink, consisting of several loops and flourishes, representing the name Douglas Doherty.

Dr Douglas Doherty

Managing Director

Conformities

This product conforms to the following Directive's standards

Application of Council Directive: 89/336/EEC

Standards to which Conformity is Declared:

Radiated Emissions to Specification EN50081-1
Conducted Emissions to Specification EN50081-1
Electro Static Discharge to Specification EN50082-1
Fast Burst Transients to Specification EN50082-1



Introduction

When preparing for a new album, guitarists really need a fast and reliable way to compare and reconfigure their many amplifiers and cabinets without the lengthy process of manually swapping cables. Accurate comparisons between the different combinations are near impossible and the time taken between setup changes interrupts workflow. Our design solution to this problem allows the guitarist and producer to sit in the control room sweet spot and remotely configure the amp collection in seconds; they can achieve in a morning what had often in the past taken up to two days or more.

What it does

The DACs **HeadLine** allows you to connect 8 amplifiers and 4 speaker cabinets. From there, you can select any connected amplifier and route it to a speaker or, if desired, two speakers simultaneously.

The **HeadLine** automatically detects whether loudspeakers are connected and only allows you to select channels which have speakers connected.

The **HeadLine** is packaged as two 1U rack enclosures. The first unit houses the user interface for the guitarist or engineer and the second unit is a relay switching box that sits next to the amplifiers. The units connect with a standard RJ45 network cable for easy routing and cable management.

The digitally-controlled relay switching ensures amp loads are maintained and the guitar input is muted during switching. The illuminated switches on the user interface indicate clearly which amp and speaker(s) are selected.





Using the DACs **HeadLine** Guitar Switching System

User Interface/Selector Unit

The **HeadLine** selector unit has 12 illuminated buttons, 8 red and 4 blue. The red buttons are for selecting guitar amplifiers and the blue for selecting loudspeaker cabinets. The loudspeaker connections are continuously monitored. This ensures that there is a functioning loudspeaker present and there is no short or open circuit.

When routing, available speaker outputs will be shown by a dimly lit switch. Unavailable outputs will not be illuminated. **NOTE – when initially powered up with NO SPEAKERS CONNECTED all 4 blue switches will flash.**

To label each amplifier and cabinet we use a Neodymium magnetic strip set into the case, onto which white magnetic labels are placed (we supply pre-cut strips with a whiteboard pen in a drawstring bag). The strips are cut to size. We have supplied extra labels, so you can keep a collection of prewritten labels or printed tape labels ready for use on a new session.

Relay Switcher Unit

The **HeadLine** switcher unit switches all screens/OV lines with the signal lines ensuring total isolation between amplifiers, and total fidelity of transmission.

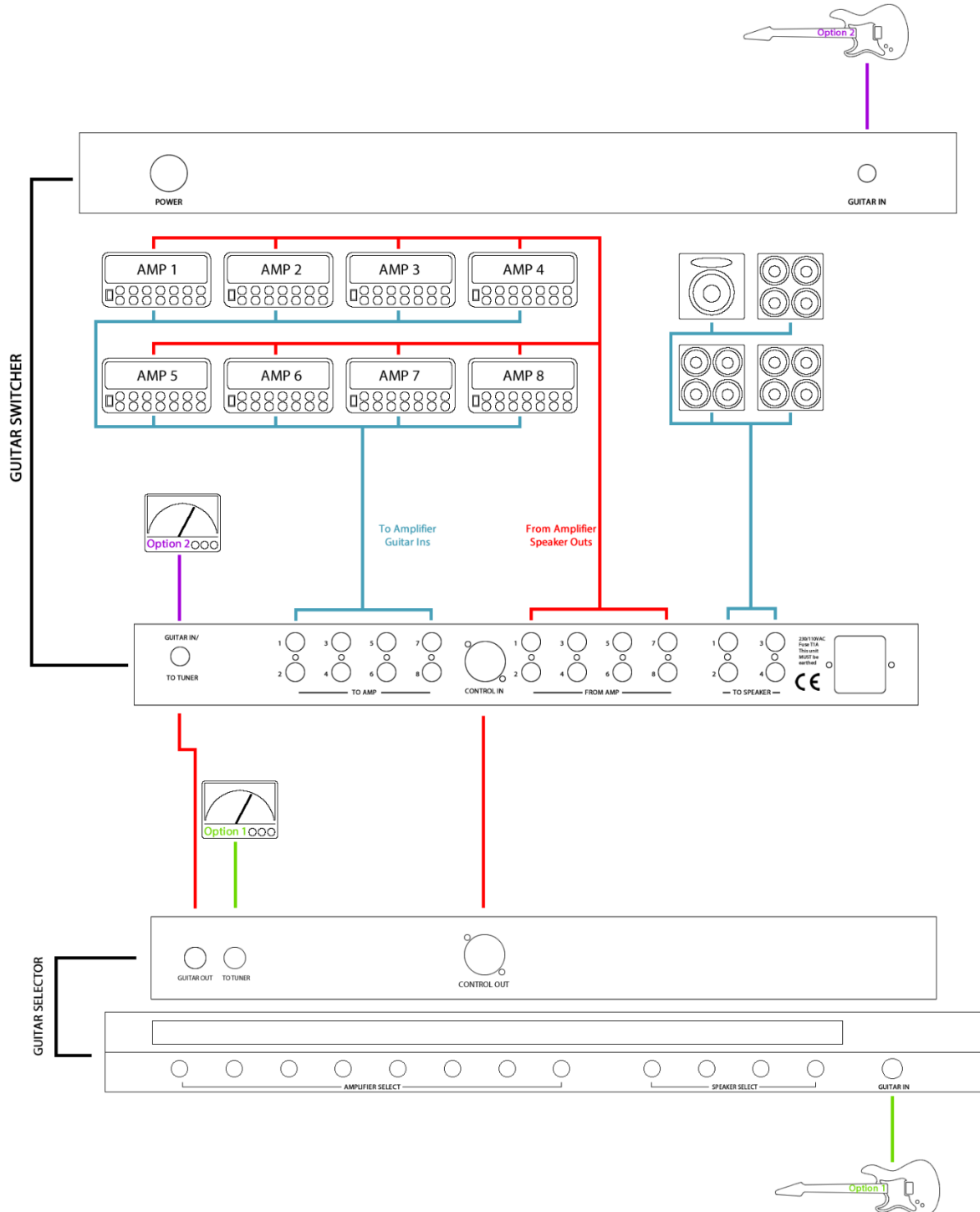
On unselected amplifier inputs, the signal and screen are linked (like a 'silent switch' jack) to ensure there is no hum or other interference picked up by the amplifier. Unselected amplifier outputs are connected to a dummy load to ensure that sensitive valve output stages are not compromised.

When a new amplifier or loudspeaker is selected, the first step is to disconnect the currently active amplifier input line and link the signal and screen. Very shortly after this the selected amplifier output is routed to the selected loudspeaker, then the guitar input is connected.

The very short delay gives the amplifier a chance to settle, and any reverb to dissipate before disconnecting its output. Changing loudspeakers follows the same procedure.

Connecting the HeadLine system

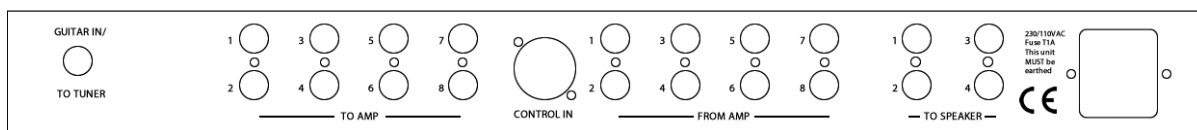
DACS HeadLine guitar switching system connection diagram



We recommend that the Relay Switcher is placed close to the amplifiers, and the Selector unit close to your listening position. They should be linked with a good quality network cable (CAT5 or CAT6). We have tested up to 20m.

For plugging in the guitar there are two possibilities (included with the **HeadLine** is a 5m guitar cable):

- Guitar is plugged into the front of the Selector unit, which is paralleled to two connectors on the rear, one for connecting to a tuner and one to route to the Relay Switcher; this cable can be plugged into the front or rear of the Relay Switcher
- Guitar is plugged into the front of the Relay Switcher unit and the jack on the rear can be connected to a tuner



On the rear of the Relay Switcher unit are a number of jack sockets, an RJ45 input and the mains power connector.

The left most socket (GUITAR IN/TUNER) will either be fed as **Option 1 from the guitar selector unit**, or as **Option 2 to a tuner** (see connection diagram).

The eight TO AMP sockets should be connected to the inputs of amplifiers 1 -8 with high quality guitar cables.

The CONTROL IN socket requires a standard CAT5/6 network cable connected to the selector unit (a 5m cable is included with the **HeadLine**).

The eight FROM AMP sockets come from the amplifier loudspeaker outputs. We recommend loudspeaker cable, 1.5mm²/conductor (AWG 15/16), with high quality jack plugs (gold plated for long term reliability).¹

The four TO SPEAKER sockets are connected to the loudspeakers. Again, we recommend loudspeaker cable, 1.5mm²/conductor (AWG 15/16), with high quality jack plugs (gold plated for long term reliability).

That's it. Once connected you can select what you want to hear and set up each amplifier before getting down to the serious business of comparing options and choosing your combinations.

¹ To enable us to house it all in a 1U case, we used Neutrik stacking jacks. These have a 16.5mm (.65") vertical gap between sockets so will not accept 'jumbo' jacks. Neutrik NP series jacks have a diameter of 14.5mm (.571"), and the NPC series 16.2mm (.638") and both will fit. Both accept cables of diameter 4-7mm (.157" - .279") and the NP series have an optional bush that will accept cables from 7-8mm (.276" - .315")



Labelling the Selector

The selector has a neodymium magnetic strip over the switches. We provide 20 white magnetic labels and a white board pen. The strips are cut to size to align with the switches. We have supplied 20 labels so you can keep a collection of prewritten labels or stick on printed tape labels (Red on clear for amplifiers, Blue on clear for speakers for example) ready for use on a new session.

Selecting

Selecting the amplifier and speaker(s) you want to hear is very straightforward; press the amplifier select button for the amp you want, and one of the illuminated speaker select buttons to choose the cabinet. To select two cabinets, hold one key down then press another available button (PLEASE SEE BELOW).

TECHNICAL NOTES

Matching the output of valve amplifiers to speaker cabinet impedance can be critical. Most amplifiers have switches for changing the expected impedance, and many cabinets have different connection options. Please check that the amplifiers you have can drive the connected cabinets.

If selecting two cabinets, please ensure that your amplifier can drive the reduced impedance.

As a general rule, the two cabinets should be of the same impedance. The resultant impedance is half that of each cabinet. In practice two 16 Ohm cabinets will result in an 8 Ohm load, two 8 Ohm cabinets a 4 Ohm load, and two 4 Ohm cabinets a 2 Ohm load.

Accessories

We considered carefully what might be required when installing the system, and offer the following additional items:

- A set of heavy-duty shelves designed to house 8 large valve amplifiers; it includes power distribution and cable management, and a slot for the **HeadLine** guitar switcher unit
- Full high-quality cable looms designed to allow front and rear connection for the amplifiers, with designated cables for plugging into the switcher. For these cables we use Neutrik Jack plugs, offering a variety of options (gold plated or nickel, straight or right angle and silent switch for the guitar end of guitar leads). The guitar signal cables are VDC's classic XKE instrument cable, colour coded, while the speaker cables use VDC Studio Grade 1.5mm² and are numbered. Please email on sales@dacs-audio.com to discuss your cabling requirements. For those purchasing the shelves, the to and from the amplifier loom is pre-measured, while you will need to specify the TO SPEAKER cable lengths.



Specifications

Switching time between amplifiers

Typically 40ms

Switching time between loudspeakers

Typically 150ms

Crosstalk between 'To Amplifier' jacks; levels measured on Outputs 2-8 with +10dBu on Output 1
-120dB (threshold of measurement)

THD+N – measures the same as a wire linking input to output of test unit (Prism D Scope)