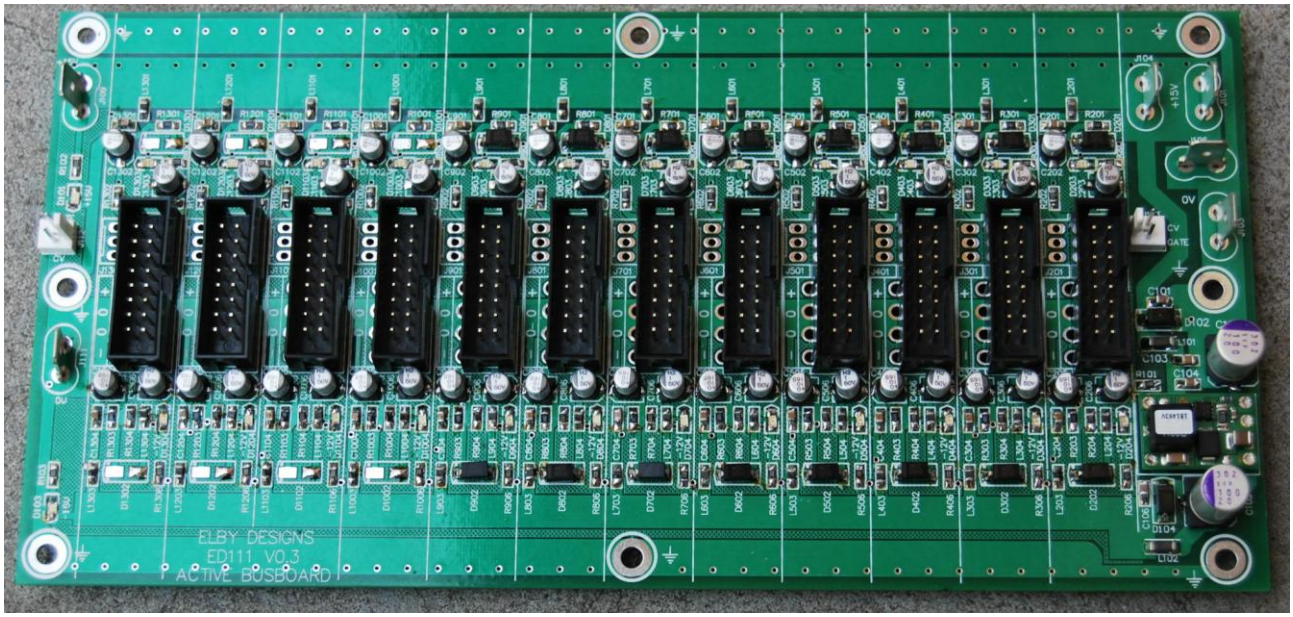
ED111 – Active Busboard



The ED111 Active Busboard is a member of the performance family of busboards and power supply solutions for modular synthesiser systems.

The ED111 strives to provide a high-quality DC power distribution system offering low-noise module power outputs and minimal bleed-through.

The ED111 comprises 12 power module zones each with its own dedicated pair of linear regulators that deliver the low-noise performance expected by audio and synthesiser users.

Power for the ED111 is derived from an external DC power supply with a nominal voltage rating of 15VDC. This supply directly feeds the positive rail regulators as well as powering a small SMPS module that generates a -15V rail for feeding the negative regulators.

The ED111 thus provides:-

- 12 x module power outputs with a build option of either 16-way IDC boxed connectors or 0.156” KK connectors
- Each module output provides:-
    - +12V with a nominal loading capacity of 500mA. Ripple is, typically, less than 50µV with the output voltage in the range 12.0V to 12.1V
    - -12V with a nominal loading capacity of 300mA. Ripple is, typically, less than 100µV with the output voltage in the range -12.0V to -12.1V

The maximum total loading on the -12V rail for each ED111 is around 700mA. A system using multiple ED111s, will, therefore, provide *n x 700mA*, where *n* equals number of ED111s in the system.

To determine the current capacity of the external supply, sum the +12V and -12V loading for all modules, add 100mA for each ED111 and then multiply by 1.25. So, for example, if your system has 1 x ED111, a total draw on the +12V rail of 1.2A and a total draw on the -12V of 400mA then the calculation for the external supply rating would be:-

total_loading = *total_draw* * 1,25

= (1.2A + 0.4A + 0.1A) * 1.25

= 1.7A x 1.25 = **2.13A**

So the optimum rating would be 15VDC @ 2.2A. A larger capacity supply can be used but ideally, the maximum rating should be kept to less than 2 x *total_loading* or 4.4A in this example.

No allowance is made in these calculations for a 5V module supply. If you use one of the 12V-5V adaptors then you should add a 5V_loading figure to your *total_draw* where:-

5V_loading = (total current draw on the 5V rail) * 0.42

Dimensions

The ED111 has dimensions of 205mm x 101mm which allows it to comfortably occupy a 3U 42HP section of your system. Builders may, therefore, optimise the size of the distribution system by determining how and where they require module power and selecting the appropriate number of ED111s to satisfy that need and any predicted future expansion.

Active and/or Passive?

The main intent of the ED111 is to provide a set of quality power outputs offering both low-noise and minimal inter-module interference. Typically it would be expected that sensitive modules such as VCOs would be connected to the ED111. It may be felt that other, more general purpose modules such as ADSRs may not need the performance capabilities offered by the ED111 and wish to power these from a more conventional distribution system. This is readily achieved by expanding the system with our ED126 Powered Busboard and, optionally our ED123 Busboard (not you must have at least 1 x ED126 in the system to generate the +/-12V required to be distributed via the passive busboards).

5V Supply

Some modules require an external 5VDC supply. When these modules are connected to an ED111 it is prudent to maintain a degree of inter-module isolation on the 5V rail as well. Most commercial offerings simply feed 5V on to the busboards 5V rail which is then shared by all modules connected to the bus rail. This, however, provides a potential path between 2 or more modules. To prevent this, our EURO-5V Adaptor is an inline 12V-5V converter which connects between a module power outlet on the ED111 and the module itself. In this configuration, only the module receives the 5V thus optimising the `isolation' from other modules on the busboard.

The EURO-5V can also be used on regular passive boards, including our ED126 and ED123, either in this inline mode or, with the optional `loopback jumper' fitted, as a common-fed 5V supply to all other modules on the busboard.

Being an inline module means that you do not lose a power module connector as is the case with some other offerings.

Readers are advised to read our document DC Distribution Systems which talks about the various busboard systems and includes suggested system configurations.

Installation

If mounting the ED111 in to case that does not have a metal back plate then we recommend using our Busboard Carrier Plate. This plate serves 2 functions:-

1. Provides a simple heat dissipator for the regulators on the ED111. The addition of some heatsink compound will enhance the cooling for the regulators.
2. Simpler installation requirements. Whereas the ED111 has 8 mounting points, the plate only has 4 so reducing the number of fixings that need to made in to your case. The footprint for the plate is also generic allowing all of our busboard solutions to be dropped in with ease.

The attached drawing shows general mounting details for our busboards using the Busboard Carrier Plate. Typical installation height for the ED111 is 19mm although you will need to allow additional height clearance for the insertion of module power cables.