FR-GB6 Flexrack 6 Way Matching, Distribution, Gain, Mixing & Stereo to Mono Converter

1. Introduction

The FR-GB6 module provides six channels of high-performance analogue signal processing, each with very wide-range gain controls and electronically balanced inputs and outputs. Any may be individually unbalanced without loss of level. Hence, by selective unbalancing this module may be used for multiple balanced-to-unbalanced or unbalanced-to-balanced conversion at both professional and semi-pro levels, as well as for simple gain adjustment.

Internal one-touch function switches provide further functionality: the FR-GB6 can be configured as a three-way stereo distribution amplifier with individual output level controls, a three-input stereo mixer with individual channel gains or a triple stereo-to-mono converter.

Up to four function modules, which may be FR-GB6s, or others, can be accommodated in 1U in the Flexrack FR-RK1 chassis.

2. Compliance

Please read all of this manual and familiarise yourself with the module and its connections before attempting to use it. To ensure satisfactory operation it is the responsibility of the user to install and operate this equipment correctly and in accordance with the manufacturer's specifications. ProAVM accept no responsibility for damage caused to the FR-GB6, or to user equipment, through incorrect installation or usage of the module.

Do not expose this module to rain or any other sources of water.

Unauthorised adjustment, modification or repair of this equipment may invalidate any warranty and/or safety approvals that apply. In case of query please contact your local distributor, or ProAVM.

3. Unpacking

Unless the FR-GB6 module has been supplied as part of a pre-configured system, this package should contain (in addition to this manual):

1x FR-GB6 module
4x module fixing screws (non-countersunk)
4 x panel fixing screws (countersunk)
1 x power supply ribbon cable

If any items are missing or damaged please inform your supplier immediately.

4. General Theory of Operation

The FR-GB6 module contains six audio processing channels, each consisting of a balanced input stage, a gain/mixer section and a balanced output stage. The balanced inputs and outputs are floating, i.e. one leg of the balanced signal may be grounded without affecting the gain or output level of the unit. This property is vital if a mixture of balanced and unbalanced equipment is to be accommodated.

The gain stages are adjustable over an extremely wide range using multi-turn controls accessible from the front panel. Special care has been taken to ensure that the full gain range is usable by spreading it evenly across the travel of the control. Extra versatility is built in through the provision of three internal configuration switches. By varying the interconnections around the gain sections, these switches allow the six channels to interact and the overall module to act as a distribution amplifier, a mixer or a stereo-to-mono converter as well as a simple gain block.

5. Connections and Indicators

INPUT connector (15 way female D-type)

Pin:	Function:
1	audio input 1A -/cold
9	audio input 1A +/hot
2	audio input 1 screen
10	audio input 1B +/hot
3	audio input 1B -/cold
11	audio input 2A -/cold
4	audio input 2A +/hot
12	audio input 2 screen
5	audio input 2B +/hot
13	audio input 2B -/cold
6	audio input 3A -/cold
14	audio input 3A +/hot
7	audio input 3 screen
15	audio input 3B +/hot
8	audio input 3B -/cold

Front Panel Gain Controls

Individual multiturn adjustments for channel gain. Nominal gain range -20 to +20dB.

OUTPUT connector (15 way male D-type)

Pin:	Function:
1	audio output 1A -/cold
9	audio output 1A +/hot
2	audio output 1 screen
10	audio output 1B +/hot
3	audio output 1B -/cold
11	audio output 2A -/cold
4	audio output 2A +/hot
12	audio output 2 screen
5	audio output 2B +/hot
13	audio output 2B -/cold
6	audio output 3A -/cold
14	audio output 3A +/hot
7	audio output 3 screen
15	audio output 3B +/hot
8	audio output 3B -/cold

Internal Function Switches

Change the module configuration (gain block/matching unit/distribution amplifier/mixer/stereo-to-mono converter)

Connections

Audio Inputs

The audio inputs are electronically balanced and floating, with an input impedance of 25kohm. They may be unbalanced without affecting level by tying the -/cold leg to the corresponding screen pin. To achieve specified performance, leads should be of quality screened cable.

Audio Outputs

The audio outputs are electronically balanced and floating, with an output impedance of 200 ohms. They may be unbalanced without affecting level by tying the -/cold leg to the corresponding screen pin. To achieve specified performance, leads should be of quality screened cable.

Setting Up

As A Simple Gain/Matching Unit

With all three internal switches in their "out" position, six independent audio channels are available, each with a wide-range gain control. For matching unbalanced source equipment to balanced loads, wire the required inputs unbalanced as described above. For matching balanced sources to unbalanced loads, wire the required outputs unbalanced as described above. Any mixture of balanced and unbalanced loads is permitted so, for example, bi-directional matching for record/replay equipment is easily accomplished.

In all cases, up to 20dB of gain or loss can be introduced on each channel by adjusting the front panel gain controls (clockwise to increase gain).

As A Distribution Amplifier

With the internal COPY switch, S1, set to its "in" position and the other two switches left "out", the FR-GB6 is reconfigured as a three-output stereo distribution amplifier. Input 1A is routed to outputs 1A, 2A and 3A and input 1B to outputs 1B, 2B and 3B. The other inputs are unused.

The six front panel gain controls now allow individual adjustment of each output gain, with 20dB of gain or loss available (clockwise to increase gain), so distribution of the same signal at different levels is possible. Again, inputs and outputs may be wired unbalanced if required (see above).

As A Mixer

With the internal MIX switch, S2, set to its "in" position and the other two switches left "out", the FR-GB6 is reconfigured as a three-input stereo mixer. The mixed signal is fed to all three output pairs, i.e. the mix of inputs 1A, 1B and 1C is routed to outputs 1A, 2A and 3A and the mix of inputs 1B, 2B and 3B is routed to outputs 1B, 2B and 3B. The gain for each individual input is automatically reduced by a factor of three to maintain the headroom of the mixed signal.

The six front panel gain controls now allow individual adjustment of each input gain, with 20dB of gain or loss available (clockwise to increase gain, so the mix ratios can be adjusted to suit the application. Again, inputs and outputs may be wired unbalanced if required (see above).

As A Stereo To Mono Converter

With the internal MONO switch, S3, set to its "in" position and the other two switches left "out", the FR-GB6 is reconfigured as a triple stereo-to-mono converter. Each pair of inputs (1A and 1B, 2A and 2B, 3A and 3B) is mixed in a 1:1 ratio and routed through a single gain control to the corresponding pair of outputs. For example, inputs 1A and 1B are mixed, fed through the 1L(eft)/M(ono) gain control and the resulting mono signal is copied to both outputs 1A and 1B. The gain of each mono signal is reduced by a factor of two to maintain its headroom.

The three active front panel gain controls allow individual adjustment of each mono signal, with 20dB of gain or loss available (clockwise to increase gain). Again, inputs and outputs may be wired unbalanced if required (see above).

6. Specifications

(All at 1kHz, 0dB gain, 0dBu output unless specified)

Inputs	Electronically balanced on 15 way female D-type
Input impedance	25kohm
Maximum input level	+25dBu
Input CMRR	80dB typical
Outputs	Electronically balanced on 15 way male D-type
Output impedance	200ohm
Maximum output level	+25dBu (100kohm load), +20dBu (600ohm load)
Nominal gain range	-20 to +20dB
Noise	< -90dB (RMS, 22Hz-22kHz)
Harmonic distortion	< 0.003% (100Hz-10kHz)
Inter-channel crosstalk	< -80dB
AF response	< ±0.1dB (22Hz-22kHz)
Power supply	Supplied by Flexrack chassis, FR-RK1 <6VA total
Size	210 x 88 x 44mm

7. How to Contact ProAVM

For all enquiries write to:-

ProAVM
61 Station Road
Irthlingborough
Northants
NN9 5QE
United Kingdom

Or telephone 01933 650 700 within the UK, +44 1933 650 700 from outside the UK.

Or fax 01933 650 726 within the UK, +44 1933 650 726 from outside the UK.

Or email sales@proavm.com for sales enquiries or technical.support@proavm.com for technical support.

Alternatively visit our web site: http://www.proavm.com

8. Declaration of Conformity

Name of Manufacturer: ProAVM
Address of Manufacturer: 61 Station Road
Irthlingborough
Northants
NN9 5QE

Product: FR-GB6 Flexrack 6 Way Matching, Distribution, Gain, Mixing & Stereo to Mono Converter

Declaration: The product described above complies with the requirements of the Low Voltage Directive (73/23/EEC) and the protection requirements of the EMC Directive (89/336/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Standards:

EN 60065:1993	Safety requirements for mains operated electronic and related apparatus for household and similar general use
EN 55103-1:1997	Electromagnetic compatibility - Product family standard for audio, video, audiovisual and entertainment lighting control apparatus for professional use (emissions - environmental categories E1 to E5)
EN 55103-2:1997	Electromagnetic compatibility - Product family standard for audio, video, audiovisual and entertainment lighting control apparatus for professional use (immunity - environmental categories E1 to E5)

9. Warranty

This product is shipped with a 5 year return to base warranty. Please return the product to the company that you bought it from.