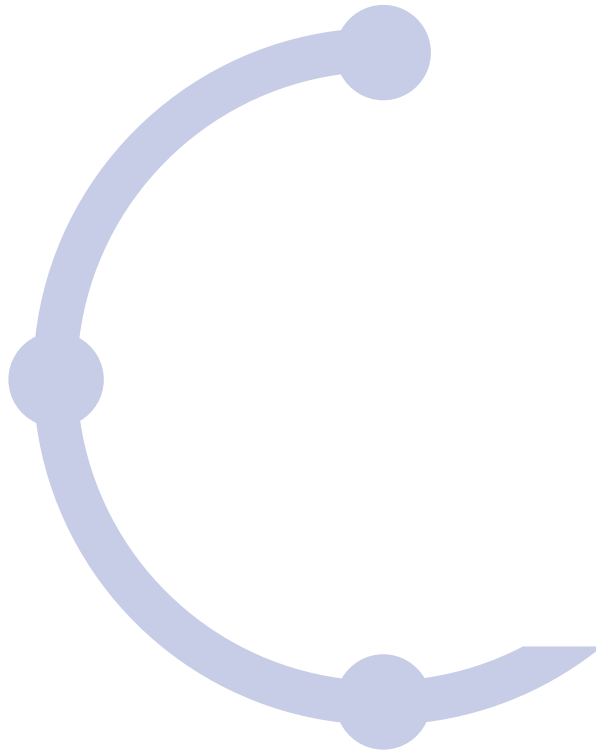




# Product Catalogue



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## Introduction



Designed and manufactured to the highest specifications, ProAVM products comprise of a range of RoHS & CE compliant analogue and digital audio interfaces for use in a multitude of professional audio applications. There are 2 ranges of products:

### IT Range

The ProAVM IT Range has been engineered to provide reliable, high performance and professional answers to the interfacing and signal processing problems encountered while creating a smoothly running audio system. With solutions for most matching, distribution, limiting and amplification dilemmas, the IT range is a wide-ranging collection of low-cost products.

### Flexrack Range - Multifunction modular rack system

The innovative Flexrack Range offers systems integrators an alternative to stacks of problem-solving boxes or prohibitively expensive dedicated rack units. Its basis is a 1U high chassis with an integral mains power supply, capable of housing up to four further sub-modules. By choosing and fitting different modules, a variety of unique systems can be constructed in a

tidy, compact and professional way. Also, repeated functions such as multiple silence sensors may be fitted without occupying large amounts of rack space.

### Categories

Many of the IT range and Flexrack range products have a number of functions, so we've put the products into different categories of use, so that you can more easily search for what you need.

Stock Code	Description	Page No.
<b>IT Range</b>		
ProAVM DA-IT	1 Input, 4 Output Stereo Distribution Amplifier	1
ProAVM DA-ITR	1 Input, 4 Output Stereo Distribution Amplifier, Rackmnt	1
ProAVM DA-ITR4x16	4 Input, 16 Output Versatile Matrix Routing Distribution Amplifier, Rackmnt	2
ProAVM MATCH-IT	Stereo Matching Unit - Record & Replay	3
ProAVM MATCH-IT2	Dual Stereo Matching Unit - Dual Replay	3
ProAVM LINE-IT	Multifunctional Line Level Amplifier	4
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ProAVM MICLIM-IT	Mic/Line Limiter	5
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<b>Flexrack Range</b>		
ProAVM FR-RK1	Flexrack Chassis Including FR-PSU Power Supply Module	6
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ProAVM FR-DSS	Flexrack Dual Silence Sensor	8
ProAVM FR-GB6	Flexrack 6 Way Matching, Distribution, Gain, Mixing & Stereo to Mono Converter	9

Category	Stock Code	Description
Accessories	ProAVM RACK-IT	Rack-kit For IT Range
	ProAVM FR-RK1	Flexrack Chassis including FR-PSU
	ProAVM FR-BNK	Flexrack Front & Rear Blanking Panels (Pair)
	ProAVM FR-PSU	Flexrack Spare Power Supply Module
	ProAVM FR-RBN	Flexrack Spare Internal Ribbon Cable
	ProAVM FR-EAR	Flexrack Spare Rack-Ears (Pair)
Digital Converters	ProAVM FR-ADC	Flexrack Analogue to Digital Converter
	ProAVM FR-DAC	Flexrack Digital to Analogue Converter
Distribution Amplifiers	ProAVM DA-ITR	1 Input, 4 Output Stereo Distribution Amplifier, Rackmount
	ProAVM DA-IT	1 Input, 4 Output Stereo Distribution Amplifier
	ProAVM DA-ITR4x16	4 Input, 16 Output Versatile Matrix Routing Distribution Amplifier, Rackmount
	ProAVM FR-GB6	Flexrack 6 Way Matching, Distribution, Gain, Mixing & Stereo to Mono Converter
Limiters	ProAVM LIM-IT	Stereo, or Dual Mono, Line Level Limiter
	ProAVM MICLIM-IT	Mic/Line Limiter
M&S Encoder/Decoder	ProAVM LINE-IT	Multifunctional Line Level Amplifier
	ProAVM MIC-IT	Dual Microphone Pre-amplifier
Matching Amplifiers	ProAVM LINE-IT	Multifunctional Line Level Amplifier
	ProAVM MATCH-IT	Stereo Matching Unit - Record & Replay
	ProAVM MATCH-IT2	Dual Stereo Matching Unit - Dual Replay
	ProAVM FR-GB6	Flexrack 6 Way Matching, Distribution, Gain, Mixing & Stereo to Mono Converter
Microphone Amplifiers	ProAVM MIC-IT	Dual Microphone Pre-amplifier
	ProAVM MICLIM-IT	Mic/Line Limiter
Mixers	ProAVM DA-ITR4x16	4 Input, 16 Output Versatile Matrix Routing Distribution Amplifier, Rackmount
	ProAVM FR-GB6	Flexrack 6 Way Matching, Distribution, Gain, Mixing & Stereo to Mono Converter
Silence Detectors	ProAVM FR-DSS	Flexrack Dual Silence Sensor
	ProAVM LINE-IT	Multifunctional Line Level Amplifier
Stereo To Mono Converters	ProAVM LINE-IT	Multifunctional Line Level Amplifier
	ProAVM FR-GB6	Flexrack 6 Way Matching, Distribution, Gain, Mixing & Stereo to Mono Converter

## Category - Distribution Amplifiers

### ProAVM DA-IT 1 Input, 4 Output Stereo Distribution Amplifier



A versatile stereo, four output distribution amplifier with individually gain controlled, fully buffered outputs.

The DA-IT solves the problem of feeding multiple loads from a single audio source, simultaneously delivering professional, domestic, balanced, unbalanced, mono and stereo outputs. Feeding each load from a separate output introduces valuable fault tolerance to a system since critical feeds, be they to a transmitter, recorder, or amplifier,

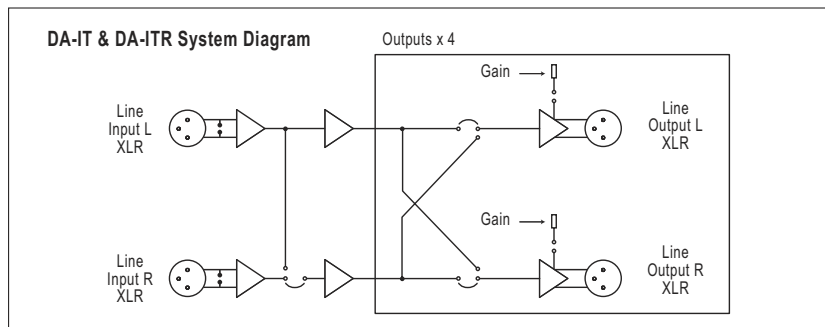
are isolated from fault conditions on any other.

Eight outputs are available, each with an individual wide range gain control. Given a stereo input, they may be assigned as four stereo pairs, eight internally generated mono mixes, or any combination of the two by means of internal links. Alternatively, a single mono input can drive all eight outputs. This, combined with the ability of each output to run unbalanced and at

domestic levels, means that use of a DA-IT can in many cases eliminate the expense of additional level matching and summing boxes.

The DA-IT is packaged in a robust metal case suited to mounting on rack shelves, beneath woodwork or inside rack cabinets by means of screws, ties or sticky pads. It is supplied with a mains lead, comprehensive instructions and a five year warranty.

**// A versatile stereo, four output distribution amplifier with individually gain controlled, fully buffered outputs. //**



#### Audio Specification For ProAVM DA-IT & DA-ITR

Inputs/outputs	Electronically balanced
Input impedance	20k $\Omega$ or 600 $\Omega$ (switchable)
Maximum input level	+26dBu
Input CMRR	60dB typical
Nominal gain range	-25 to +10dB
RMS Noise (0dB gain)	-98dB ref +8dBu output
THD (1kHz)	0.005% at +8dBu output
AF response	<math>\pm 0.1\text{dB}</math> (20Hz-20kHz)
Maximum output level	+26dBu with 10k $\Omega$ load, +25.5dBu with 600 $\Omega$ load
Power supply	230V AC $\pm 10\%$ (115V optional)
Power consumption	< 10VA
Dimensions DA-IT	431mm x 127mm x 44mm (exc. switches & connectors)
Dimensions DA-ITR	484mm x 127mm x 44mm (1U) (exc. switches & connectors)
Fixing centres DA-IT	5mm holes on 413mm x 87mm rectangle
Weight DA-IT	Nett: 1.25kg Gross: 1.6kg
Weight DA-ITR	Nett: 1.35kg Gross: 1.7kg
Warranty	5 Years

### ProAVM DA-ITR 1 Input, 4 Output Stereo Distribution Amplifier, Rackmounted

The DA-ITR is a 1U rack-mountable version of the DA-IT with all of the same features and specifications.



Category - Distribution Amplifiers & Mixers

ProAVM DA-ITR4x16 4 Input, 16 Output Versatile Matrix Routing Distribution Amplifier, Rackmounted



The DA-ITR4x16 packs four inputs, sixteen outputs and a flexible routing system into a 1U high package. It is designed to distribute audio sources to multiple loads, each of which may be balanced, unbalanced, mono or stereo. Feeding each load from a separate output introduces valuable fault tolerance to a system since critical feeds, be they to a transmitter, recorder, or amplifier, are isolated from fault conditions on any other.

The four inputs have individual front panel gain controls, and drive "audio present" LEDs

for at-a-glance monitoring of signal status. Each output may be individually assigned to any of the inputs, or to one of two internal mix busses which carry a user-defined combination of the input signals and can be used for simple mono mixes, or more complex applications.

These capabilities allow the DA-ITR4x16 to operate in standard configurations - 1 in 16 out mono, 1 in 8 out stereo, etc. - as well as more unusual situations. The extra pair of inputs allow dual stereo operation where

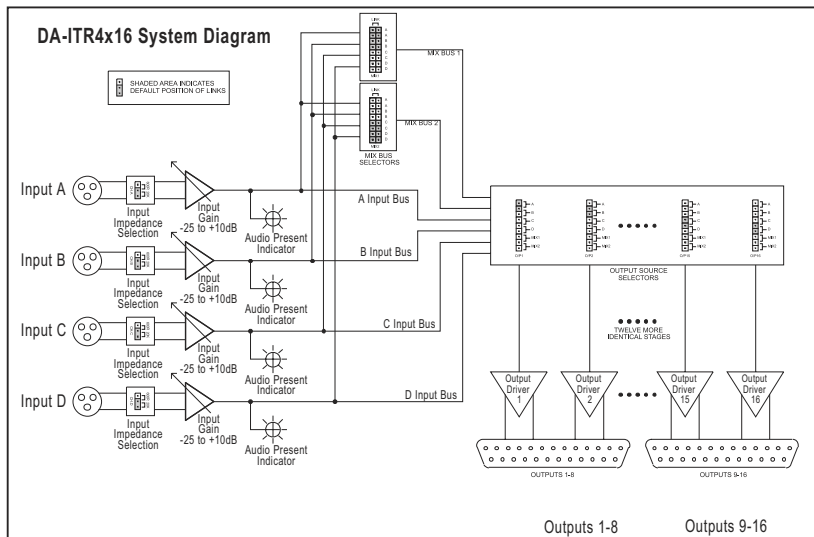
two conventional units would have been required, with the additional advantage that the user can choose exactly how many outputs are assigned to each source.

Other applications include simultaneous mono and stereo distribution of sources or the mixing of an auxiliary signal - perhaps talkback or announcements - into some feeds but not others. Inverting the phase of one or more inputs leads to the possibility of using the mix busses to generate cleanfeeds.

Inputs (on female XLR-3) and outputs (on male D-type connectors) are electronically balanced and may be individually unbalanced without affecting their level.

The DA-ITR4x16 is in a 1U case with moveable rack ears allowing mounting with the connectors facing either direction within a 19 inch rack. Alternatively, the ears may be rotated through 90 degrees for screw-down or screw-under mounting.

The product is supplied with a mains lead, comprehensive instructions and a five year warranty.



Audio Specification For ProAVM DA-ITR4x16	
Input/output	Electronically balanced
Input impedance	20kΩ or 600Ω
Maximum input level	+26dBu
Input CMRR	>60dB
Nominal gain range	-25dB to +10dB
Output noise	(RMS, 20Hz-22kHz, 0dB gain) -100dB re +8dBu O/P
Distortion	(1kHz THD, +8dBu O/P) 0.005%
Frequency response	20Hz-20kHz ±0.1dB
Outputs	Electronically balanced on male 25 Way D-types
Maximum output level	+26dBu (10k load) +25.5dBu (600 load)
Power supply	230V AC ±10% (115V optional)
Power consumption	24VA
Dimensions	483mm x 135mm x 44mm (excluding connectors)
Weight	Nett: 1.35kg Gross: 1.7kg
Warranty	5 Years

ProAVM RACK-IT Rack Kit For Small IT Range Boxes

The RACK-IT is a 1u rack-mounting kit for the small IT Range interfaces:

ProAVM MATCH-IT, ProAVM MATCH-IT2,  
ProAVM LINE-IT, ProAVM MIC-IT,

ProAVM MICLIM-IT and ProAVM LIM-IT



Category - Matching Amplifiers

Audio Specification For ProAVM MATCH-IT

Unbalanced to balanced section

Inputs	Unbalanced on RCA phono socket
Input impedance	22kΩ
Maximum input level	+24dBu
Nominal gain range	0 to +25dB
RMS Noise (14dB gain)	-94dB ref +8dBu output
THD (1kHz)	0.005% at +8dBu output
AF response	<±0.1dB (50Hz-20kHz)
Outputs	Electronically balanced on XLR
Maximum output level	+26dBu with 10kΩ load

Balanced to unbalanced section

Inputs	Electronically balanced on XLR
Input impedance	20kΩ
Maximum input level	+25dBu
Input CMRR	60dB typical
Nominal gain range	-25 to 0dB
RMS Noise (-14dB gain)	-94dB ref +8dBu input
THD (1kHz)	0.005%
AF response	<±0.1dB (50Hz-20kHz)
Outputs	Unbalanced on RCA phono socket
Maximum output level	+24dBu with 10kΩ load

Physical specifications

Power supply	230V AC ±10% (115V optional)
Power consumption	< 6VA
Dimensions	294mm x 114mm x 44mm (exc. switches & connectors)
Fixing centres	5mm holes on 276mm x 74mm rectangle
Weight	Nett: 0.8kg Gross: 1.0kg
Warranty	5 Years

ProAVM MATCH-IT Stereo Matching Unit - Record & Replay

A compact stereo matching unit for domestic or semi-pro record and replay equipment, the MATCH-IT allows the benefits of inexpensive source equipment to be applied to the professional installation with no compromise in sound quality. As well as substantial cost savings, such machines also offer far wider choice and availability compared to their professional brethren and, if well chosen, can prove extremely reliable.

Mounted as close to the source equipment as possible, the MATCH-IT translates between the low level, unbalanced signals used by consumer devices and the higher amplitude, more noise-immune balanced format found in the professional environment. From that point onwards, mains hum and interference from densely packed equipment will be rejected.

The MATCH-IT provides matching in both the record (balanced

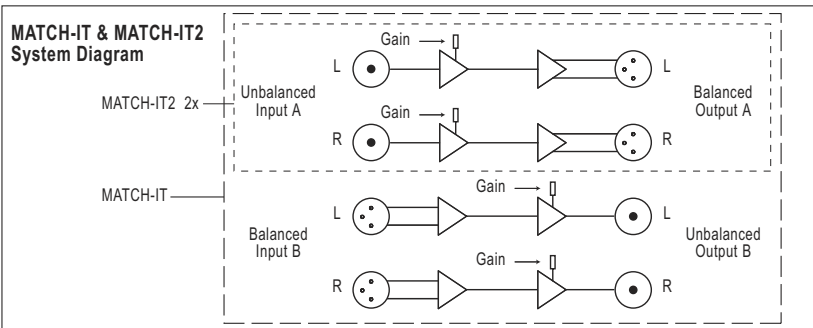
to unbalanced conversion) and replay (unbalanced to balanced) directions for one piece of domestic recording equipment, such as a tape or MiniDisk recorder.

The gain of both sections may be individually varied over a wide range that includes 0dB for higher level sources requiring balancing but no amplification.

The MATCH-IT is packaged in a robust metal case suited to mounting on rack shelves, beneath woodwork or inside rack cabinets by means of screws, ties or sticky pads. An optional 1U rackmount kit, RACK-IT, is also available. They are supplied with a mains lead, comprehensive instructions and a five year warranty.



ProAVM MATCH-IT2 Dual Stereo Matching Unit - Dual Replay



The MATCH-IT2 is a dual stereo unit that operates like the MATCH-IT, but provides matching in the playback direction only for two domestic sources, such as CD players and tuners.

Typically set to +14dB, the gain applied can be varied over a wide range that includes 0dB for higher level sources (e.g. some CD players) which require balancing but no amplification.

The MATCH-IT2 is packaged in a robust metal case suited to mounting on rack shelves, beneath woodwork or inside rack

cabinets by means of screws, ties or sticky pads. An optional 1U rackmount kit, RACK-IT, is also available. They are supplied with a mains lead, comprehensive instructions and a five year warranty.

Audio Specification For ProAVM MATCH-IT2

Inputs	Unbalanced on RCA phono socket
Input impedance	22kΩ
Maximum input level	+24dBu
Nominal gain range	0 to +25dB
RMS Noise (+14dB gain)	-94dB ref +8dBu output
THD (1kHz)	0.005% at +8dBu output
AF response	<±0.1dB (50Hz-20kHz)
Outputs	Electronically balanced on XLR
Maximum output level	+26dBu with 10kΩ load
Power supply	230V AC ±10% (115V optional)
Power consumption	< 6VA
Dimensions	294mm x 114mm x 44mm (exc. switches & connectors)
Fixing centres	5mm holes on 276mm x 74mm rectangle
Weight	Nett: 0.8kg Gross: 1.0kg
Warranty	5 Years



## Category - Matching Amplifiers, Stereo To Mono Converters, M&D Encoder/Decoder

### ProAVM LINE-IT Multifunctional Line Level Amplifier

The LINE-IT offers three common signal processing functions - stereo line amplifier, stereo to mono converter and M+S encoder/decoder - in one, at no cost penalty.

Use all three regularly in changing situations such as OBs, RSLs and hire, or simply take advantage of a single, high quality function with the other two available for occasional use or when the need arises to reconfigure your system.

Line mode is for buffering, amplification, and the driving of long lines.

Mono mode provides two individual mono mixes of the stereo input to drive, for example, mono transmitters, monitoring loops and loggers.

In sum and difference mode, the LINE-IT decodes Middle+Side recordings made with the MIC-IT, or encodes signals already at line level.

Inputs and outputs may be individually unbalanced as required, and the wide range gain controls accommodate both professional and domestic signal levels. A front panel switch selects one of the three processing functions.

The LINE-IT is packaged in a robust metal case suited to mounting on rack shelves,

beneath woodwork or inside rack cabinets by means of screws, ties or sticky pads. An optional 1U rackmount kit, RACK-IT, is also available. It is supplied with a mains lead, comprehensive instructions and a five year warranty.

#### Audio Specification For ProAVM LINE-IT

Inputs/outputs	Electronically balanced
Input impedance	20kΩ
Maximum input level	+26dBu
Input CMRR	60dB typical
Nominal gain range	-25 to +10dB
RMS Noise (0dB gain)	-98dB ref +8dBu output
THD (1kHz)	0.005% at +8dBu output
AF response	<±0.1dB (50Hz-20kHz)
Maximum output level	+26dBu with 10kΩ load, +25.5dBu with 600Ω load
Power supply	230V AC ±10% (115V optional)
Power consumption	< 7VA
Dimensions	294mm x 114mm x 44mm (exc. switches & connectors)
Fixing centres	5mm holes on 276mm x 74mm rectangle
Weight	Nett: 0.8kg Gross: 1.0kg
Warranty	5 Years



## Category - Microphone Amplifiers, M&S Encoder/Decoder

#### Audio Specification For ProAVM MIC-IT

Inputs/outputs	Electronically balanced
Maximum input level	-6dBu
Phantom power	48V switchable
Input impedance	>5kΩ
Nominal gain range	33 to 75dB
Equip input noise (RMS)	-129dB at 60dB gain
THD (1kHz)	0.005% at 40dB gain
Input CMRR	>60dB
AF response	<±0.1dB (50Hz-20kHz)
Selectable HP filter	-3dB at 80Hz, -12dB/Octave
Maximum output level	+26dBu with 10kΩ load, +25.5dBu with 600Ω load
Power supply	230V AC ±10% (115V optional)
Power consumption	< 7VA
Dimensions	294mm x 114mm x 44mm (exc. switches & connectors)
Fixing centres	5mm holes on 276mm x 74mm rectangle
Weight	Nett: 0.8kg Gross: 1.0kg
Warranty	5 Years

### ProAVM MIC-IT Dual Microphone Pre-amplifier

A high-performance dual microphone preamplifier with multiple output modes, the MIC-IT offers a professional upgrade for systems in which a microphone input is not available or is of insufficient quality.

Cost and space constraints often compromise the performance of preamplifiers fitted to inexpensive mixing desks, portable digital recorders and PC soundcards. External microphone preamplification from a MIC-IT can noticeably enhance overall performance, giving a wider range of gain and a reduction of noise levels.

Other applications include the matching of quality balanced microphones to unbalanced inputs without degradation, line driving for OBs or remotely situated microphones, and the conversion of spare mixer line channels to accept microphone inputs.

A novel output mode switch provides two extra functions for specialised or occasional requirements. The line level outputs may be summed, creating a two input microphone mixer - perhaps to feed a PA system - and a sum and difference mode supports the renewed interest in Middle+Side recording (for a line level M+S decoder, see LINE-IT). There are also front panel switches to assign 48V phantom power and a powerful hum and rumble rejecting high-pass filter to one or both of the inputs.

The MIC-IT is packaged in a robust metal case suited to mounting on rack shelves, beneath woodwork or inside rack cabinets by means of screws, ties or sticky pads. An optional 1U rackmount kit, RACK-IT, is also available. It is supplied with a mains lead, comprehensive instructions and a five year warranty.



## Category - Microphone Amplifiers, Limiters

Audio Specification For ProAVM MICLIM-IT	
Input/output	Electronically balanced
Input impedance	> 5k $\Omega$
Maximum input level	-6dBu (mic), +26dBu (line)
Input CMRR	60dB typical
Nominal gain range	33 to 75dB (mic), -25 to +18dB (line)
THD (1kHz)	< 0.05% below limit point
Noise (RMS)	< -70dB re limit point
AF response	20Hz-20kHz $\pm$ 0.3dB
Output level at limit	-53 to -41dBu (mic), 0dBu to +10dBu (line) threshold
Power supply	230VAC $\pm$ 10% (115V optional)
Power consumption	< 7VA
Dimensions	294mm x 114mm x 44mm (exc switches and connectors)
Fixing centres	5mm holes on 276mm x 74mm rectangle
Weight	Nett: 0.8kg Gross: 1.0kg
Warranty	5 Years

The ProAVM MICLIM-IT is a high quality single-channel limiter providing cost-effective level control in a wide variety of broadcast and associated environments, either to deliberately process sound or in a protective role. It can assist inexperienced presenters with level control, prevent overloading of mixer inputs or act as a preamp for PC-based sound systems where the broadcast style limiter, with circuitry

### ProAVM MICLIM-IT Mic/Line Limiter



optimised for tight control of absolute level, will go a long way towards preventing unpleasant distortion effects.

The limiter section itself is based upon a deviation limiter. A complex programme dependent attack and release time system is used coupled with FET gain reduction to give a clean sound, free of the harshness often associated with VCA based designs. Input gain and output level while limiting are adjustable via front panel presets, and clear indication of the amount of limiting is given by a pair of LED indicators. Switchable

phantom power is available for mic level inputs. The electronically balanced input and output are both switchable between microphone and line levels, allowing easy integration into any system.

The MICLIM-IT is housed in a compact and robust metal case suited to mounting on rack shelves, beneath woodwork or inside rack cabinets by means of screws, ties or sticky pads. An optional 1U rackmount kit, RACK-IT, is also available. Units are supplied with comprehensive instructions, a mains lead and a five year warranty.

## Category - Limiters

### ProAVM LIM-IT Stereo, or Dual Mono, Line Level Limiter



A stereo or dual mono line level limiter offering the same clean sound and characteristics as the popular MICLIM-IT microphone limiter. The LIM-IT provides cost-effective level control in a wide variety of broadcast and associated environments, both to deliberately process TV or FM broadcast sound or in a protective role, assisting inexperienced presenters with level control, preventing overloading of links or codecs, or levelling variable playback levels.

The LIM-IT - like its single channel sibling - uses Field Effect Transistors for gain control, along with a complex programme dependent attack and release time system

rather than the more common but often harsher sounding VCAs.

The two channels possess tightly matched limiting characteristics and may be used entirely independently or linked for stereo operation.

Input gain and output level while limiting are adjustable via front panel presets, and clear indication of the amount of gain reduction is provided by a pair of LED indicators. The electronically balanced inputs and outputs may be individually unbalanced for compatibility with domestic equipment, allowing easy integration into any system.

Audio Specification For ProAVM LIM-IT	
Inputs/outputs	Electronically balanced
Input impedance	20k $\Omega$
Maximum input level	+26dBu
Input CMRR	60dB typical
Nominal gain range	-25 to +10dB
THD (1kHz)	< 0.02% below limit point
Noise (RMS)	< -88dB re +8dBu O/P
AF response	20Hz-20kHz $\pm$ 0.3dB
Output level at limit threshold	Adjustable 0dBu to +12dBu
Power supply	230VAC $\pm$ 10% (115V optional)
Power consumption	< 7VA
Dimensions	294mm x 114mm x 44mm (exc switches and connectors)
Fixing centres	5mm holes on 276mm x 74mm rectangle
Weight	Nett: 0.8kg Gross: 1.0kg
Warranty	5 Years

The LIM-IT is housed in a compact and robust metal case suited to mounting on rack shelves, beneath woodwork or inside rack cabinets by means of screws, ties or sticky pads. An optional 1U rackmount kit, RACK-IT, is also available. Units are supplied with comprehensive instructions, a mains lead and a five year warranty.

**Category - Accessories**

**ProAVM FR-RK1 Flexrack Chassis Including FR-PSU Power Supply Module**



The FR-RK1 Flexrack chassis is a 1U rackmount chassis which includes a switchable 115V-230V power supply and has 4 slots for housing Flexrack modules. It incorporates moveable rack ears which allow the unit to be mounted with the connectors facing either direction within a 19 inch rack; alternatively, the ears may be rotated through 90 degrees for screw-down or screw-under mounting. When the screw-down or screw-under mounting method is used, an extra pair of rack ears is recommended to support the rear of the unit.

Up to four modules may be fitted to each Flexrack chassis, with only a crosshead screwdriver required for installation. All modules are supplied with comprehensive instructions and a five year warranty.

**Audio Specification For ProAVM FR-RK1**

Power supply	230V AC $\pm$ 10% (115V optional)
Power consumption	24VA
Dimensions	483mm x 135mm x 44mm (excluding connectors)
Weight (full)	Nett: 1.5kg Gross: 1.9kg
Warranty	5 Years

**ProAVM FR-BNK Flexrack Blanking Plates**

The FR-BNK Flexrack blanking plates are required to fill unused modules in the FR-RK1 flexrack chassis.



**ProAVM FR-EAR Flexrack Ear Plates**



Spare pair of rack ears for Flexrack FR-RK1.

FLEXRACK RANGE - PROAVM FR-RK1 & FR-ADC

**Category - Digital Converters**

**ProAVM FR-ADC Flexrack Analogue to Digital Converter**

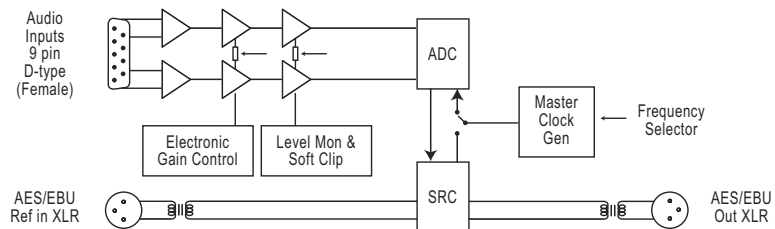


The FR-ADC module converts stereo balanced analogue signals to AES/EBU digital audio at 24-bit resolution and output sample rates up to 96kHz. The sample rate may be derived from an external AES/EBU reference, for synchronisation across a larger system, or derived from an internal high-stability oscillator at all standard rates from 32 to 96kHz. Output data resolution may optionally be reduced to 20 or 16 bits with dither added to the signal to maximise performance.

The analogue input level resulting in full scale digital data (0dBFS) may be set between 0 and +24dBu, with extremely low noise and distortion at all levels. An optional soft clipper reduces the sonic effects of input overloads, or may be completely removed from the circuit. Front panel LEDs indicate the presence of audio and whether soft or hard clipping is taking place.

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

**FR-ADC System Diagram**



Category - Digital Converters (FR-ADC continued...)

ProAVM FR-ADC Indicators & Controls	
RATE selector switch rate	Specifies the output sample rate generated when the FR-ADC is operating from the internal clock.
RESOLUTION selector switch	Specifies the output data word length.
OPTIONS switches	Enable/disable the soft clipper function and allow selection of clock mode.
SIGNAL indicators (one per channel) approximately -10dBFS.	Illuminate when the peak audio level present exceeds approximately -10dBFS.
SOFT CLIP indicators (one per channel)	Illuminate when the soft clip function is enabled and peak audio level exceeds the soft clipper threshold.
CLIP indicators (one per channel) -0.5dBFS.	Illuminate when peak audio level exceeds approximately -0.5dBFS.
EXT. LOCK indicator	Illuminates when the AES reference clock receiver is locked onto a valid reference signal.
LEVEL control	A multi-turn input gain control, operating equally on both input channels.

ProAVM FR-ADC Technical Specifications	
<i>(Unless specified, output = 24 bit, 48kHz @ 0dBFS; input = 1kHz @ +12dBu; measurement bandwidth = 20kHz; soft clipper OFF; INT clocking)</i>	
Digital output	3 pin male XLR, balanced, transformer isolated, AES/EBU format
Digital output impedance	110Ω
Digital output level (terminated)	5Vp-p nominal
Digital output resolution	selectable: 16,20 or 24 bits (truncated with dither when required)
Digital output sample rate	selectable: 32,44.1,48,64,88.2 or 96kHz (internal clock)
Digital output sample rate	32 to 96kHz (external reference clock)
Converter type	Multi-level delta-sigma
Conversion resolution	24 bits
Reference clock input	3 pin female XLR, balanced, transformer isolated, AES/EBU format
Reference clock input impedance	110Ω
Reference clock input sensitivity	200mVp-p

Analogue inputs (L & R)	9 way female D-type, electronically balanced
Analogue input impedance	20kΩ
Maximum input level	+24dBu
Input level range	0 to +24dBu input for 0dBFS output
Level range adjustment	Externally in 0.5dB steps
Soft clipper	OFF or soft clip at -1.5 to -9dBFS
THD+Noise	-96dB (RMS, output = 48kHz, 20kHz bandwidth)
THD+Noise	-92dB (RMS, output = 96kHz, 40kHz bandwidth)
Signal to noise ratio	100dB (RMS, output = 48kHz, 20kHz bandwidth)
Signal to noise ratio	98dB (RMS, output = 96kHz, 40kHz bandwidth)
Inter-channel crosstalk	-100dB
AF response	+0dB, -0.3dB (20Hz-20kHz)
Power supply	Supplied by Flexrack chassis, FR-RK1 <6VA total
Size	210 x 88 x 44mm

Category - Digital Converters

ProAVM FR-DAC Flexrack Digital to Analogue Converter



The FR-DAC module converts AES/EBU digital audio to stereo balanced analogue signals at 24-bit resolution and input sample rates of up to 96kHz. The analogue output levels resulting from full scale digital data (0dBFS) may be set anywhere between 0 and +24dBu, with extremely low noise and distortion at all levels.

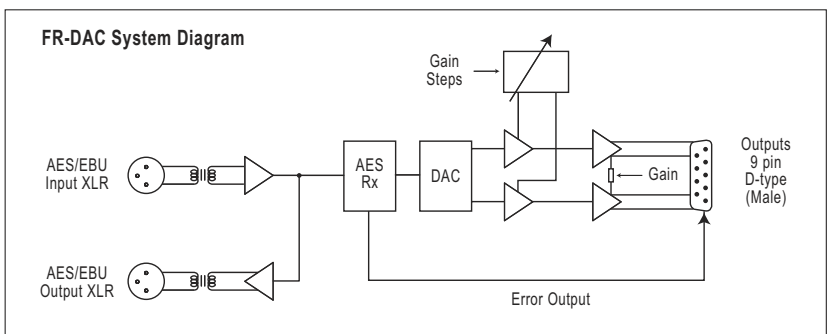
A fully buffered AES through output replicates the digital input signal, allowing "daisy-chaining" of units without impedance mismatch or signal degradation. Front panel LEDs indicate the sample rate of the incoming data and an ERROR status output is provided for confidence monitoring of the input data stream.

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

ProAVM FR-DAC Indicators & Controls	
SAMPLE RATE Indicators	Show the sample rate of the incoming digital audio signal
ERR Indicator	This LED indicates a problem with the digital audio input signal, e.g. coding or parity errors in the received data
OUTPUT LEVEL control	A 10 position front panel switch determines the analogue output level, 0dBu to +24dBu, delivered when a digital input level of 0dBFS is applied
Internal trimmers	Provide an additional ±3dB of gain to allow precise setting of output levels

ProAVM FR-DAC Technical Specifications	
<i>(Unless specified, input = 24 bit, 48kHz @ 0dBFS; output = 1kHz @ +12dBu; measurement bandwidth = 20kHz)</i>	
Digital input	3 pin female XLR, balanced, transformer isolated, AES/EBU format
Digital input impedance	110ohms
Digital input sensitivity	200mVp-p
Digital input sample rate	32 to 96kHz, determined by input datastream
Conversion resolution	16 to 24 bits, determined by input datastream
Converter type	Multi-level delta-sigma
Digital output	3 pin male XLR, balanced, transformer isolated, AES/EBU format

Digital output impedance	110Ω
Digital output level	2.5Vp-p nominal (terminated)
Analogue outputs (L&R)	9 way male D-type, electronically balanced
Analogue output impedance	50Ω
Minimum load impedance	600Ω
Output level range	0 to +24dBu output for 0dBFS input
Level range adjustment	Externally in 4dB (±0.2) steps, internal ±3dB trim
THD+Noise	-97dB (RMS, input = 48kHz, 20kHz bandwidth)
THD+Noise	-94dB (RMS, input = 96kHz, 40kHz bandwidth)
Signal to noise ratio	101dB (RMS, input = 48kHz, 20kHz bandwidth)
Signal to noise ratio	99dB (RMS, input = 96kHz, 40kHz bandwidth)
Inter-channel crosstalk	-100dB
AF response	+0dB, -0.3dB (20Hz-20kHz)
ERROR output	On analogue output 9 way male D-type, floating opto-transistor, max. ratings 30V 5mA
Power supply	Supplied by Flexrack chassis, FR-RK1 <6VA total
Size	210 x 88 x 44mm



FLEXRACK RANGE - PROAVM FR-DAC

## Category - Silence Detectors

### ProAVM FR-DSS Flexrack Dual Silence Sensor

This is a stereo/dual mono audio silence sensor for continuous monitoring of important or remote audio signals, capable of raising alarms directly or via a remote telemetry system and performing emergency signal changeover. False triggering is almost completely eliminated through the use of bandpass filters followed by separate dynamic range and static level detectors to discern between genuine valid audio and fault conditions such as 50/60 Hz hum on a line.

Detector thresholds, the time delay before an alarm is raised and the period of valid audio required before alarms are cleared are all user adjustable. Instantaneous audio status and timeout alarms are available as floating transistors as well as front panel LEDs, and an additional multipole relay can be used for audio changeover or further alarm signalling.

The FR-DSS module contains two entirely independent silence sensors. In each one, incoming audio is first filtered to reject inaudible frequencies and strong hum signals, then fed to separate static level and dynamic range detectors. The static level detector looks at the average signal level, whereas the dynamic range detector picks up short-term deviations from this average level. A speech or music signal will have both static level and dynamic range, whereas the majority of fault signals such as hum or broadband noise will possess static level but very little dynamic range. The outputs of both detectors are visible on front panel LEDs.

The outputs of the two detectors may be combined in several ways. One, either, or both of the signal properties can be made necessary for the audio to be deemed valid. Threshold levels for both detectors can be independently adjusted. The combined detector outputs form the instantaneous AUDIO STATUS signal, and this is available as an output for each channel. It is also applied to a digital timer which has user-programmable TIMEOUT and RECOVERY times. If no valid audio is detected for the TIMEOUT period, the TIMEOUT output changes state. Once this has happened, continuous valid audio

has to return for the RECOVERY period before the TIMEOUT alarm is cancelled. An uncommitted DPCO relay changes over at the same time as the TIMEOUT output, and may be used for audio changeover or for extra logic signals.

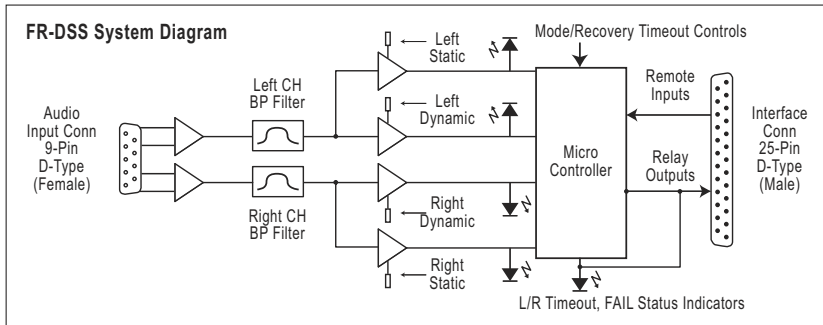
The front panel TIMEOUT LEDs stay green as long as there is valid audio present. When it is not, they are extinguished, and if audio does not return they will light red when the TIMEOUT period has expired.

When using the FR-DSS with a stereo input signal, there is the choice of monitoring left and right channels separately, with independent status outputs, or linking the two channels such that a fault on one causes a fault to be flagged on the other (and for both relays to change over). This is accomplished with the MODE switch and



gives flexibility in either "filling" a missing stereo channel or changing over to a completely separate stereo source.

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



#### ProAVM FR-DSS Indicators & Controls

<b>TIMEOUT Control</b>	This 16-position front panel control sets the time delay between the loss of valid audio and the TIMEOUT output changing state
<b>TIMEOUT LED</b>	Stays green as long as there is valid audio present
<b>RECOVERY Time</b>	This 16-position front panel control sets the time delay between the return of valid audio and deactivation of the TIMEOUT output
<b>MODE</b>	This front panel control sets the combination of static level and dynamic range used to define valid audio, and how TIMEOUT of one channel affects the other
<b>STATIC THRESHOLD</b>	This multiturn control sets the reference level for the static level comparators
<b>STATIC LED</b>	Used to set STATIC THRESHOLD level
<b>DYNAMIC THRESHOLD</b>	This multiturn control sets the reference level for the dynamic range comparators
<b>DYNAMIC LED</b>	Used to set DYNAMIC THRESHOLD level

#### ProAVM FR-DSS Technical Specifications

Audio inputs	9 way female D-type, A & B electronically balanced
Interface inputs/outputs	25 way male D-type (for channel A/B o/p relays, TIMEOUT i/p & o/p and AUDIO STATUS o/p)
Input impedance	100kΩ
Bandpass filters	-3dB at approximately 500Hz and 5kHz
Filter slope	18dB/octave (highpass), 12dB/octave (lowpass)
STATIC level threshold range	-30dB to -6dB
DYNAMIC range threshold range	1.5 to 15dB
TIMEOUT delay range	15 to 225 seconds
RECOVERY delay range	1 to 15 seconds
TIMEOUT and AUDIO STATUS outputs	Floating opto-transistor, max. ratings 30V 5mA
Relay outputs	1 x DPCO relay per channel, max. ratings 30V 300mA
Force inputs	Driving circuit must sink 0.5mA/block 5V
Power supply	Supplied by Flexrack chassis, FR-RK1 <6VA total
Size	210 x 88 x 44mm

Category - Matching Amps, Stereo To Mono Converters, Mixers, Distribution Amps

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



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 function switches provide further functionality so that the FR-GB6 can be configured as:

ProAVM FR-GB6 Indicators & Controls

**CHANNEL GAIN** Controls 6 x individual front panel trim pots adjusting -20dB to +20dB

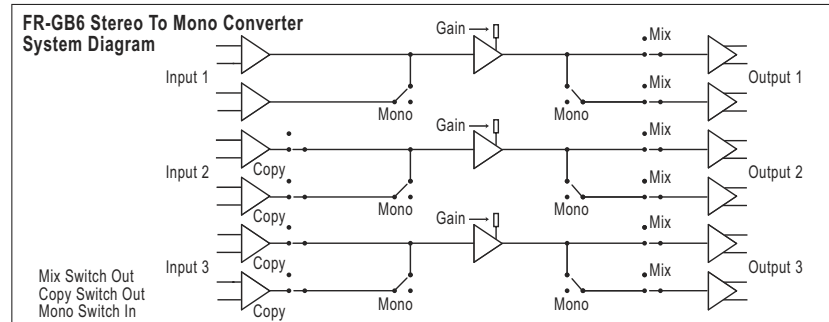
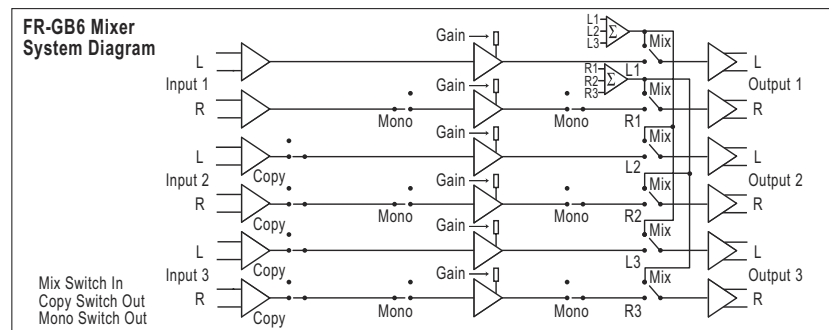
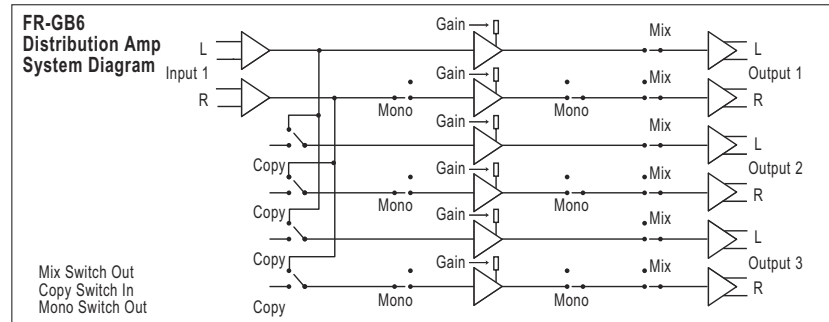
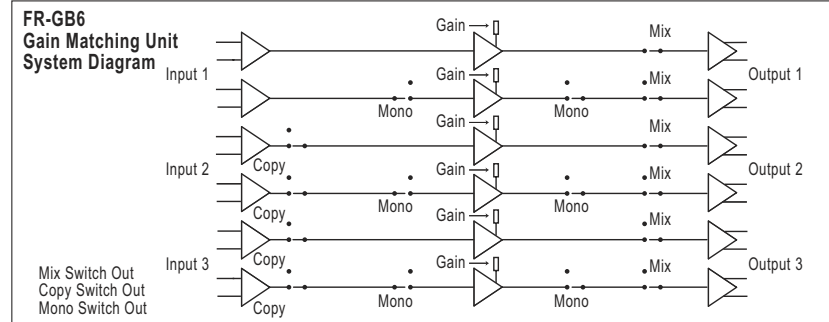
**ProAVM FR-GB6 Technical Specifications**  
(All at 1kHz, 0dB gain, 0dBu output unless specified)

Inputs	15 way female D-type, electronically balanced (6 mono inputs)
Input impedance	25kΩ
Maximum input level	+25dBu
Input CMRR	80dB typical
Outputs	15 way male D-type, electronically balanced (6 mono outputs)
Output impedance	200Ω
Maximum output level	+25dBu (100kΩ load), +20dBu (600Ω load)
Nominal gain range	-20 to +20dB adjusted on 6 x individual front panel trim pots
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

- A three input stereo matching amplifier
- 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.

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.

Each of the six audio processing channels consists of a balanced input stage, a gain/mixer section and a balanced output stage. The balanced inputs and outputs are floating,



FLECRACK RANGE - PROAVM FR-GB6

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