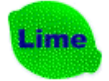


**Lime Technologies**  
The Noise Limiter Specialists



**AVC2 - D**

***AUTOMATIC VOLUME CONTROL***

***USERS MANUAL***  
Lime Technologies  
noiselimiters.co.uk

## GENERAL DETAIL

The AVC2 - D is a stereo unit which can also be used as a 2 independent mono channels, it performs as an intelligent volume control. The unit utilises digital circuits for the logic and control aspects while keeping a very pure analogue signal chain.

To make the unit as versatile as possible 3 operating modes are featured. It is envisaged that software upgrades will be available that will allow the AVC2 - D to fulfil further functions e.g. The ability to intelligently adjust the level of a sound system (paging etc.) based upon the surrounding ambient noise level. A clip indicator is fitted to show in the input to the AVC2 - D is being overloaded, and provision to connect remote warning and clip led indicators is also featured.

### Operating Modes.

#### Mode 1.

If Mode 1 is selected the AVC2 - D is a stereo unit which controls volume levels depending if the incoming signal is above or below the set threshold. If the incoming signal is below the threshold the AVC2 - D has no effect. If the average programme level exceeds the set threshold the AVC will reduce its output level. The level is reduced slowly so as not to effect the dynamics of the music. And is almost undetectable in use. The more one tries to increase the volume the more the AVC2 - D will decrease it so that the system will barely change in perceived level. A, 2 X 20 segment multi function liquid crystal display (LCD) will show the mode in use and the attenuation level in both channels which will always be the same to preserve the stereo image.

#### Mode 2.

If Mode 2 is selected the AVC2 - D is a 2 channel mono unit that will behave in a similar manner to mode 1 except that the 2 channels will operate independently. The LCD will display the mode in use and the attenuation levels in channels A & B. The clip indicator will indicate if any channel is overloaded.

#### Mode 3.

If Mode 3 is selected the AVC2 - D is a stereo unit which controls volume levels based on an input from an optional measuring microphone. This microphone measures actual sound pressure level in the venue and controls accordingly. The advantages of using a microphone are that absorption of sound in a venue that is full of people is automatically catered for.

The AVC2 - D has no external controls for the operator to worry about - just a display and some indicator led's to inform the operator of the status of the unit.

An external remote warning indicator may be connected to warn the operator that the operating level is 3dB away from the threshold at which the AVC2 - D will start to control level.

A clip indicator is fitted to show if the input to the AVC2 - D is being overloaded, and provision to connect a remote clip led indicator is also featured.

A mute function is fitted which can be operated by an external switch to improve system security or a fire alarm connection to mute the system in case of fire.

A provision is also included to dim the output level by 20dB. When releasing this attenuation the action is to fade back to the normal level.

The AVC2 - D also has provision to connect an external switch, to switch between two operating levels (stereo modes only).

## INSTALLATION

The unit should normally be installed in the signal chain either between the mixer or pre amp and the amplifiers, or in larger systems the mixer/ preamp and the electronic crossover.

The unit should ideally be mounted where the operator can see the indicator leds on the front panel or alternatively a remote indicator could be installed (see auxiliary connections section)

As supplied the unit will be set to Mode 1 detecting the incoming signal to control the output level. (See later section Operating Modes and set up)

Connections are via XLR connectors for the audio and 3 X 4 way connectors for auxiliary connections. ***A tamper proof cover is supplied which can be sealed. This cover prevents the connectors from being disconnected and is often a requirement when the unit is installed as a noise controlling device specified in a licencing application .***

The unit features balanced inputs and outputs which are self compensating. Either side may be tied to the screen for unbalanced operation without loss of level or performance. (NB. For unbalanced operation the negative output should be tied to the screen and not left single ended. An unbalanced connection between positive and screen with no connection to negative will result in a loss of signal level).

When wiring to balanced circuits for stereo operation both left and right channels should be identical to maintain phase.

To avoid ground loop problems, the audio common (cable screens) in this equipment is NOT connected to mains earth within the unit. The mains lead earth connection is only connected to the case and this must always be connected to MAINS EARTH.

**AUXILIARY CONNECTIONS.** 3 X 4 way connectors are provided for the auxiliary connections. The connectors are labelled 1,2,3,4 for the first connector, 5,6,7,8 for the second connector and 9,10,11,12 for the third connector. The mating halves for these connectors are supplied with each unit.

Connector 1 (pins 1,2,3,4.)

The unit is supplied with a link which is fitted between pins 1 and 2. This is the security link and these two terminals need to be joined for the unit to operate. Removing the link will mute the unit.

Pins 3 and 4 labelled coms are for future use and can be disregarded do not connect anything to pins 3 and 4.

Connector 2 (pins 5,6,7,8.)

Pins 5 and 6 are provided to allow a warning indicator to be connected to the system. An led indicator may be connected directly to pins 5 and 6 observing polarity to avoid damaging the led. The warning led will indicate 3dB before the unit starts to control volume levels

Pins 7 and 8 are provided to allow a remote clip indicator to be connected to the system. An led indicator may be connected directly to pins 7 and 8 observing polarity to avoid damaging the led.

If larger mains voltage indicator lamps are required, solid state relays may be connected that are compatible with 5V DC. Input. The outputs provides a current limited 5V D.C. Voltage.

**“Do not attempt mains voltage wiring unless you are qualified to do so”**

Connector 3 (pins 9,10,11,12.)

Pins 9 and 10 when joined allow the unit to be dimmed by 20dB. When the connection is removed the unit will fade back to the previous level.

Pins 11 and 12 are provided for switching between two output levels. (Stereo operation only) This function may be controlled by a time switch or key switch as required. (Switches are not supplied).

**All the auxiliary connections are low voltage low current connections, When connected to external switches fire alarms etc. they must be totally isolated and fully floating from any other electrical circuit.**

## Operation Modes and Set Up

All adjustments are made through holes on the rear of the unit to prevent accidental changes. The security cover supplied should be fitted after set up to prevent tampering.

Mode selection is by push button labelled MODE. Pressing the button cycles through Mode's 1, 2, & 3, holding the button down while in the various modes selects the set up display for each mode. Hold the button down until the display clears then release. Pressing the button again changes back to the normal operation display.

Mode 1 display  
Normal operation

MODE	1		A	0 dB
STEREO		INPUT	B	0 dB

THRES	1	+	4 dB	ATK	5
THRES	2	-	2 dB	DCY	5

Setup display

Mode 1

The attenuation level is shown on the right this will change if the incoming signal is greater than the set threshold if this is crossed it will show the amount of attenuation. (Mode 1 is a stereo mode so both channels will be the same.)

Mode 1

Setup display. The threshold level for level 1 and 2 is shown these are set by the TH1 and TH2 presets. (Connecting aux pins 11 & 12 together selects level 2.)

The control chain attack and decay settings are also shown factory settings are No 5 for each setting. The adjustment presets are internal see later section.

**Mode 2** allows the unit to be used to control 2 independent mono systems in this mode switching to a second level is not possible.

Mode 2 (2 x mono) display  
Normal operation

MODE	2		A	0 dB
MONO		INPUT	B	0 dB

THRES	A	+	4 dB	ATK	5
THRES	B	-	2 dB	DCY	5

Setup display

Mode 2

Normal display. The attenuation level shown on the right will change if the thresholds are crossed and then will show the amount of attenuation per channel.

Mode 2

Setup display. The threshold level for each channel is shown these are set by the TH1 and TH2 presets. (Connecting aux pins 11 & 12 together will have no effect in this mode) The control chain attack and decay settings are also shown factory settings are No 5 for each setting. Both channels will have the same settings.

## Mode 3. Microphone Sensing operation

When mode 3 is selected the AVC2 - D control chain is operated by a signal derived from a measuring microphone. The advantages of this are that the amount of absorption which takes place when a venue is full of people is automatically catered for.

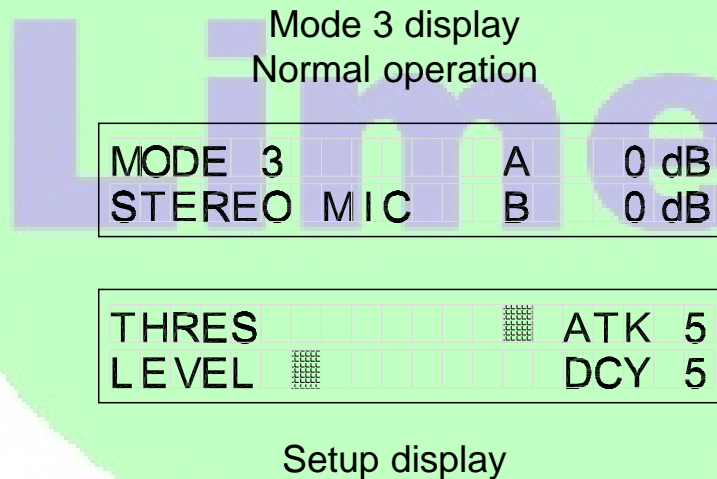
It also means that operators cannot cheat by turning amplifiers up that are after the AVC2 - D in the signal chain, as the control is based upon actual SPL (sound pressure level).

A good quality low impedance, balanced microphone with a reasonably flat response, should be used. Phantom power at 15V is available for an electret or capacitor microphone. The microphone should be mounted reasonably central it should not be mounted too close to any loudspeaker. Formula Sound can supply a suitable microphone if required, contact our sales office.

### Mic Tamper

To prevent microphone tampering a security feature is included. e.g.

If Mode 3 is selected and an input signal is present, but no microphone signal is detected the AVC2 - D will display **No Mic Signal** and attenuate to -20dB until the mic signal is restored.



### Setting up

When setting up the microphone control option (mode 3) the signal from the microphone is displayed in the bottom half of the LCD display the threshold is displayed in the top half of the display. With the system playing at the desired level adjust the mic gain trimmer so that the threshold is crossed at the appropriate level. If it is not possible to get enough level from the microphone with the gain at maximum the threshold may be reduced by using the threshold trimmer but this should be a last resort. The normal setting for the threshold is maximum (mode 3 only) If switching between 2 levels in this mode the highest level should have its threshold set at max if at all possible

If the threshold is set too low the system may not have enough mic signal at low levels to hold off the mic tamper. In this situation a more sensitive (electret) microphone will probably solve the problem.

### **Basic operation**

As supplied the unit will be set to Mode 1 and will be adjusted to operate at an average nominal programme line level of 0Vu (+4dBu) and in most cases will not need any adjustment. This is the level that a standard Vu meter will read before going into the red (end section), therefore the operator can use the readings on the Vu meters fitted to the mixer to be an indication of maximum permitted volume level.

To achieve the required system volume level adjust the output level of the AVC2 - D by using the output pot on the rear panel. The output pot is accessible through a small hole located between the input and output connectors and is labelled OP,

Check the level by driving the system until the LCD displays starts to show some attenuation and readjust the output as necessary.

The AVC2 - D is slow acting to differentiate between dynamic peaks of music and an increase in average level. Bear this in mind when making adjustments.

### **INTERNAL ADJUSTMENTS**

Do not attempt to make any internal adjustments unless you are qualified to do so and you know what you are doing. Refer to Drg 1013 (later page)

### **ALWAYS DISCONNECT POWER BEFORE REMOVING COVERS.**

Access is gained by removing the top cover.  
Remove 3 screws from either side of the case.  
Remove 2 screws from the top and lift top cover off.  
When the adjustments are completed refit the case top.

**ALL OTHER PRESETS ARE FOR ALIGNMENT AND TEST PURPOSES AND ARE  
FACTORY SET. AND SEALED DO NOT - REPEAT - DO NOT TOUCH!**

**INCORRECT SETTING OF ANY SEALED ADJUSTMENT WILL INVALIDATE THE WARRANTY.**

## AVC2-D SPECIFICATIONS

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Frequency response	20Hz - 30kHz	+/- 0.5dB
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Distortion (THD and noise) freq 1kHz	O/P@ any level 0 to +22dBu	Attenuation @ any level 0 to -90dB	< 0.01% (typically 0.005%)
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Noise measured 20Hz-20kHz	Equiv. input noise	< -90dBu
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INPUTS Electronically balanced, connect pins 1 & 3 to screen pin 2 hot for unbalanced use

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XLR Connectors	Pin 1 screen Pin 3 -Ve Non Phase Pin 2 +Ve Phase
Input impedance	Balanced 20K ohms Unbalanced 10K ohms
Maximum input level	+22dBu
Clip indicator	Indicates @ +20dBu

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OUTPUTS Electronically balanced, connect pins 1 & 3 to screen pin 2 hot for unbalanced use

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XLR Connectors	Pin 1 screen Pin 3 -Ve Non Phase Pin 2 +Ve Phase
Source impedance	100 ohms
Minimum load impedance	600 ohms

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Operating Threshold Range Average level +10 dBu -20dBu

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Operating Modes 3

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Mode 1	Stereo operation. (A & B channels are controlled together)
Mode 2	2 x Mono operation. (A & B Channels are controlled independently)
Mode 3	Stereo operation With control taken from an optional microphone which will measure & control actual sound pressure level (SPL) in the venue.

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AUX CONNECTIONS	1 & 2 Open to Mute	3 & 4 Coms (future development)
	5 & 6 Warning LED	7 & 8 Clip LED
	9 & 10 close to DIM - 20dB	11 & 12 Close to select level 2

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MICROPHONE CONTROL INPUT XLR Connector Lo Z Balanced input (15V Phantom internal selection)

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DISPLAY 2 X 20 Segment Liquid Crystal Display (LCD)  
Backlight & Contrast are internally adjustable  
1 Red LED Power indicator 1 Red LED Input Clip indicator

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POWER 220-240 V AC 110 -120V AC Operation Internal selection I.E.C. Mains connector

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Mains Fuse 220V operation 250mA slow blow. 110V operation 500mA slow blow

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FINISH

Front and Rear panels - Black anodised aluminium with silver notation  
Case black plastic-coated steel.

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DIMENSIONS

19" Rack mounting 1RU  
Width 482mm (19") Depth 200mm (7.9") Height 44mm (1.75")

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