



CV AMPLIFIER

User Guide

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Installation

CV500, 800 & 1000

These amplifiers occupy three units of rack space (i.e. 5.25"/133mm). All three amplifiers feature front entry forced air cooling which enables any number of amplifiers to be racked without the need for special ventilation provided that a free flow of air is available at the rear of the rack housing.

All the CV range of amplifiers are designed for continuous operation at high power levels and will tolerate a good deal of abuse. Output short circuits or mis-matched loads, can be tolerated without harm.

Input Connections

Inputs to all the amplifiers are connected via XLR-3-31 type connectors. The input circuit is electronically balanced and where possible, the balanced mode is preferable. If the input is used in the unbalanced mode, pin 3 must be linked to pin (0v). The input is then connected to pin 1 (ground) and pin 2 (hot).

When used in the balanced mode, pin 1 is ground, pin 2 is in-phase, pin 3 in non phase.

Input impedance is 20K ohms balanced, 10K ohms unbalanced.

Provided pin 3 is grounded in the unbalanced mode, the input sensitivity is 0dBu (775mV) for both balanced and unbalanced modes.

Output Connections

The output from all the CV amplifiers is connected via an XLR-3-32 type connector or binding posts. The minimum recommended load is 4 ohms. The two output channels must never be connected in parallel.

XLR connections are pin 1 = 0v, pin 2 = phase (hot).

Mode of Operation

All amplifiers have a 3 position mode switch on the rear panel, adjacent to the Channel B input socket.

Stereo

In the centre position marked "Stereo" the amplifier operates as two independent channels for typical stereo operation.

Mono

With the switch in the "Mono" position the channel A input is internally connected to drive both channels of the amplifier. The front level controls remain in operation as normal and the limiters also work normally on each channel. When the "Mono" mode is in use, the appropriate LED on the front panel illuminates, and channel B input is disabled.

Bridge

With the switch in the "Bridge" position the load should be connected between the two "Hot" output terminals (XLR pin 2 or Red binding posts). The amplifier then operates as a single channel unit with a minimum load impedance of 8 Ω . Channel A input socket, limiter and level control are operative, with channel B input circuits disabled. The "Bridge" LED on the front panel illuminates when the mode switch is in this position.

Important. In the bridge mode, the full output of the combined channels is available at the output terminals and care must be taken to ensure that the loudspeakers are capable of handling the available power.

Mains Connections

The amplifier is provided with 3 pin Euro connector mounted on the rear panel, a suitable mains lead with plug is supplied.

CAUTION: This amplifier must be earthed.

All the CV amplifiers can be supplied to operate on 220v or 240v A.C. mains supplies. Refer to the service manual if the supply voltage requires changing.

Level Control

Independent level controls are provided for channels A & B. These would normally operate in the fully clockwise position. The limiter operates in the post level circuitry and is not affected by the position of the level control.

Limiter

The limiter circuit uses a studio quality VCA with comprehensive side chain circuitry. The fast attack time of 0.5ms ensures accurate control of transients, and the release time is program related: Fleeting overloads recover quickly whilst sustained limiting has a longer release characteristic. A release hold off circuit prevents "control voltage induced distortion" at low frequencies. All this adds up to a studio quality limiter, with very musical performance. When the limiter is correctly set up it is not possible to drive the amplifier into clipping, this protects the loudspeakers from overdrive, and is particularly effective for tweeter protection.

The limiter is factory set at 0.5dB below the onset of clipping with a 4 Ω load. All amplifiers are supplied with the limiter circuit switched on.

To avoid the risk of unauthorised adjustment the limiter on-off switches are mounted on the power amplifier printed circuit boards. Each channel can be switched independently. A small LED on the rear panel illuminates when the limiter is switched into operation.

Limiter switching: To switch the limiter in or out of circuit, first remove the top cover. Locate the switch marked "SW2" which is on the upper main PCB, on the right side when viewed from the front. The switch on/off position is detailed on the PCB. A small screwdriver is required to operate the switch on channel B. Insert the screwdriver through the hole adjacent to "SW2" on channel A to operate an identical switch on channel B. Visual indication of limiter in/out status is provided by small LED's on the rear panel.

Limiter Threshold: This control adjusts the point at which limiting commences. It is factory set to limit the output to 0.5dB below the threshold of clipping when operating into a 4 ohm load. If the amplifier is operating with a load impedance greater than 4 ohms, a small increase in output can be gained by adjusting the threshold control. This should only be carried out by experienced technicians, using electronic test equipment. Refer to the service information for further details.

LED Indicators

Protect: The Red "PROTECT" LED indicates the operation of various protection circuits built into the CV range of amplifiers. It also illuminates when the 5 second switch-on delay is operating.

Signal: The Green "SIGNAL" LED illuminates to indicate normal operation of the amplifier and the presence of an output signal above 20dBm (7.75v).

Peak: The Red "PEAK" LED illuminates approximately 1dB before the amplifier reaches clipping point. The reference circuits are load dependant and operate accurately for 4 to 16 ohm loads.

This LED also indicates that the threshold of limiting has been reached when the limiter is in circuit.

NOTE: If the "PEAK" LED's are on, no damage is being caused to the amplifier, it merely indicates waveform clipping, or limiting, if the limiter is operating.

Mono: The Yellow "MONO" LED indicates that the "Mono" mode is in operation.

Bridge: The Yellow "BRIDGE" LED illuminates when the amplifier is switched into the "Bridge" mode.

Protection

The Cloud CV multiple protection circuits include output open and short circuit protection, thermal sensing operating independently on each channel, D.C load protection, 5 second switch-on mute, sophisticated Over-current protection.

The CV800 and 1000 also have anti-surge power switch-on units fitted. (Soft-Start).

This product conforms to the following European Standards

BS EN 50081-1 : 1992

BS EN 50082-1 : 1992

BS EN 60065 : 1994

SAFETY CONSIDERATIONS

CAUTION - MAINS FUSE

TO REDUCE THE RISK OF FIRE REPLACE THE MAINS FUSE ONLY WITH THE SAME TYPE, WHICH MUST BE A CLASS 3, 240 VOLT, TIME DELAY TYPE, RATED AT 5A-CV500, 6.3A-CV800, 8A-CV1000 WHERE THE MAINS INPUT VOLTAGE IS SET TO 230 Volts $\pm 5\%$ AC.
FOR A MAINS VOLTAGE OF 115 Volts $\pm 5\%$ AC. THE FUSE SHOULD BE RATED AT 8A-CV500, 10A-CV800, 15A-CV1000
THE FUSE BODY SIZE IS 20mm x 5mm.

CAUTION - SERVICING

THIS UNIT CONTAINS NO USER SERVICEABLE PARTS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. DO NOT PERFORM ANY SERVICING UNLESS YOU ARE QUALIFIED TO DO SO.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

Specifications

GENERAL SPECIFICATION	CV500	CV800	CV1000
INPUT	Electronically balanced via XLR 3-31 per channel	Electronically balanced via XLR 3-31 per channel	Electronically balanced via XLR 3-31 per channel
OUTPUT CONNECTORS	1 XLR 3-32 & 2 heavy duty binding posts per channel	1 XLR 3-32 & 2 heavy duty binding posts per channel	1 XLR 3-32 & 2 heavy duty binding posts per channel
PROTECTION	VI Limiting,DC Offset,Thermal Shutdown with Auto reset	VI Limiting,DC Offset,Thermal Shutdown with Auto reset, Soft start.	VI Limiting,DC Offset,Thermal Shutdown with Auto reset, Soft start.
LED INDICATORS	'Peak Output', Signal Present' 'Limiter On', 'Protection Operating'	'Peak Output', Signal Present' 'Limiter On', 'Protection Operating'	'Peak Output', Signal Present' 'Limiter On', 'Protection Operating'
COOLING SYSTEM	Fan assisted by 120mm low noise fan	Fan assisted by 120mm low noise fan	Fan assisted by 120mm low noise fan
DIMENSIONS	483mm x 370mm x 132mm	483mm x 370mm x 132mm	483mm x 370mm x 132mm
WEIGHT	18.5Kgs	19Kgs	23Kgs
TECHNICAL SPECIFICATION			
RATED OUTPUT POWER 4Ω	250 watts per channel	400 watts per channel	500 watts per channel
RATED OUTPUT POWER 8Ω	135 watts per channel	210 watts per channel	285 watts per channel
BRIDGED OUTPUT POWER 8Ω	500 watts	800 watts	1000 watts
BRIDGED OUTPUT POWER 16Ω	270 watts	410 watts	570 watts
FREQUENCY RESPONSE	+0, -1db 10Hz to 50Khz	+0, -1db 10Hz to 50Khz	+0, -1db 10Hz to 50Khz
HARMONIC DISTORTION	0.03% typical 1Khz 8Ω load	0.03% typical 1Khz 8Ω load	0.03% typical 1Khz 8Ω load
INPUT SENSITIVITY	0dBm - 775mV	0dBm - 775mV	0dBm - 775mV
INPUT IMPEDANCE	20KΩ Balanced 10KΩ Unbalanced	20KΩ Balanced 10KΩ Unbalanced	20KΩ Balanced 10KΩ Unbalanced
SIGNAL TO NOISE RATIO	100dB below rated output Limiter out. CCIR	100dB below rated output Limiter out. CCIR	100dB below rated output Limiter out. CCIR
OUTPUT RISE TIME	3μs (10% to 90%) of 1v 1Khz	3μs (10% to 90%) of 1v 1Khz	3μs (10% to 90%) of 1v 1Khz
SLEW RATE	45 V/μs	45 V/μs	45 V/μs
LIMITER THRESHOLD	0dBu to -10dBu	0dBu to -10dBu	0dBu to -10dBu
COMPRESSION RATIO	50 : 1	50 : 1	50 : 1
ATTACK TIME	0.5ms	0.5ms	0.5ms
RELEASE TIME	Automatic Signal Related	Automatic Signal Related	Automatic Signal Related
POWER INPUT	230 Volts ± 5% 40-60Hz Via IEC Connector on the rear panel	230 Volts ±5% 40-60Hz Via IEC Connector on the rear panel	230 Volts ±5% 40-60Hz Via IEC Connector on the rear panel

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