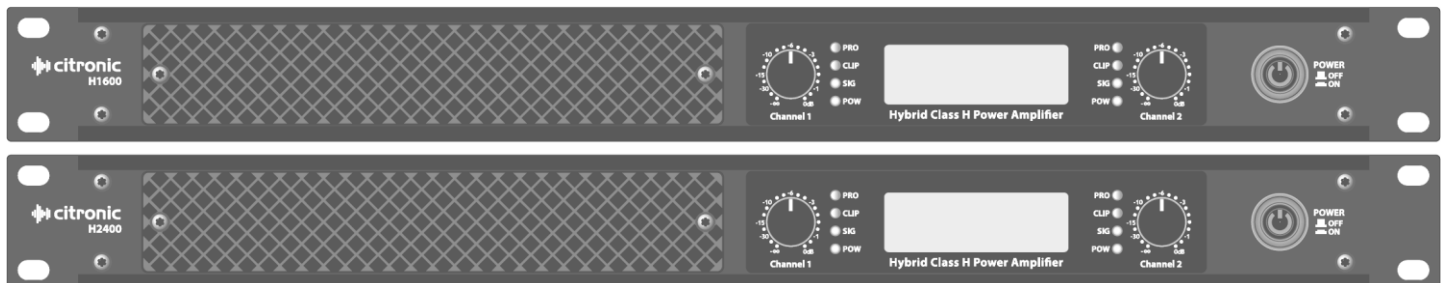


## H-SERIES

### HYBRID CLASS-H POWER AMPLIFIERS

Order ref: 172.116UK, 172.124UK

User Manual



Version 1.0



Caution: Please read this manual carefully before operating  
Damage caused by misuse is not covered by the warranty

## Introduction

Thank you for choosing a Citronic H-series power amplifier as part of your sound reinforcement system. These amplifiers use hybrid class-H architecture to offer high power output in a compact, lightweight form factor. Please read this manual fully and follow the instructions to achieve the best results from your amplifier and to avoid damage through misuse.

## Warning

To prevent the risk of fire or electric shock, do not expose any of the components to rain or moisture. If liquids are spilled on the casing, stop using immediately, allow unit to dry out and have checked by qualified personnel before further use. Avoid impact, extreme pressure or heavy vibration to the case. No user serviceable parts inside – Do not open the case – refer all servicing to qualified service personnel.

## Safety

- Check for correct mains voltage and condition of IEC lead before connecting to power outlet.
- Ensure speaker leads are good condition with no shorted connections or damaged plugs.
- Check that the impedance of speaker loads do not exceed the minimum stated load for the amplifier.
- Do not allow any foreign objects to enter the case or through the ventilation grilles.

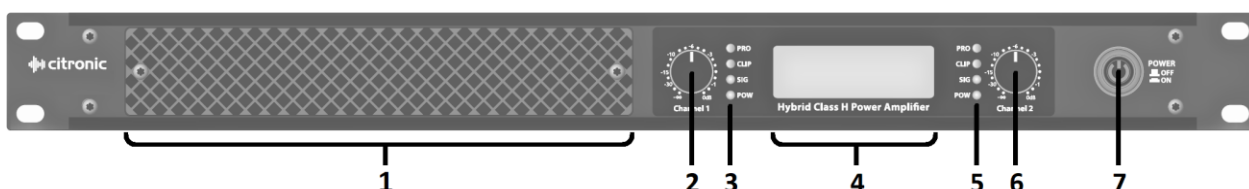
## Placement

- Keep out of direct sunlight and away from heat sources.
- Keep away from damp or dusty environments.
- When rack-mounting, ensure adequate support for the base of the amplifier and firm fixings for the front.
- Ensure adequate airflow and do not cover cooling vents at the front and rear of the amplifier.
- Ensure adequate access to controls and connections.

## Cleaning

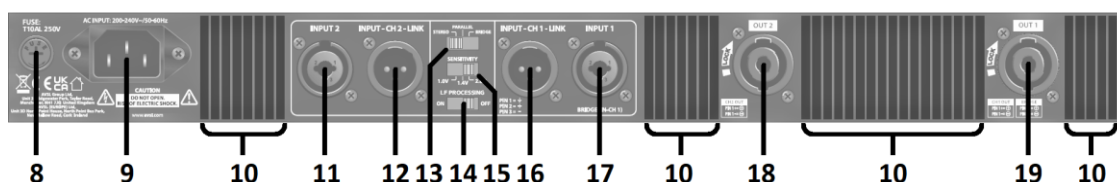
- Use a soft cloth with a neutral detergent to clean the casing as required.
- Use a vacuum cleaner to clear ventilation grilles of any dust or debris build-ups.
- Do not use strong solvents for cleaning the unit.

## Front Panel



- |  |                             |
|--|-----------------------------|
| 1. Cooling vent – do not cover or obstruct | 5. Channel 2 indicator LEDs |
| 2. Channel 1 level                         | 6. Channel 2 level          |
| 3. Channel 1 indicator LEDs                | 7. Power on/off switch      |
| 4. LCD status display                      |                             |

## Rear Panel



- |  |   |
|--|---|
| 8. Mains fuse holder                         | 14. Input sensitivity switch 1.0V/1.4V/2.0V |
| 9. IEC mains power inlet                     | 15. LF processing switch ON-OFF             |
| 10. Cooling vents – do not cover or obstruct | 16. Channel 1 line output (XLR)             |
| 11. Channel 2 input (XLR/jack)               | 17. Channel 1 input (XLR/jack)              |
| 12. Channel 2 line output (XLR)              | 18. Channel 2 speaker output                |
| 13. Mode switch - Parallel/Stereo/Bridge     | 19. Channel 1 speaker output                |

## Operation

Connect speaker cabinets to channel outputs (18, 19) using good quality Speakon® leads and ensure that the combined load on each channel is no lower than 2Ω.

For speaker loads connected in parallel...  $1/\text{speaker impedance} + 1/\text{speaker impedance}... = 1/\text{TOTAL impedance}.$

Therefore...

$8\Omega + 8\Omega =$	<b>4Ω</b> total
$4\Omega + 4\Omega =$	<b>2Ω</b> total
$8\Omega + 8\Omega + 8\Omega + 8\Omega =$	<b>2Ω</b> total

The rear panel has a MODE switch (13), which determines the way that the amplifier operates. The standard operating mode is **STEREO**, with each input feeding its relevant speaker output.

**PARALLEL** mode sums both inputs together in mono so that each amplifier channel receives a mix of both inputs.

Also, both channels can be combined to drive a single load at higher power by selecting **BRIDGE** mode. In this mode, the input is on channel 1 and the output is from the OUT 1 speaker connector as indicated on the rear panel (wired to pins 1+ and 2-) **WARNING – The minimum load for BRIDGE mode is 4Ω.**

Below the MODE switch is a SENSITIVITY switch (15), which has 3 settings for different input levels. The standard setting is 1.0V and further settings for 1.4V and 2.0V higher level inputs will reduce the input sensitivity.

When set to “on”, the LF PROCESSING switch provides a 2dB boost at 100Hz for enhanced bass response.

Connect each signal input from mixer or other line level source via XLR or 6.3mm jack connectors to the combo connectors (11, 17) on the rear panel using good quality signal leads. Depending on output level of the mixer, select the appropriate sensitivity on the rear panel. Wiring for balanced or unbalanced inputs are as follows...

Connector type	Signal hot +	Signal cold -	Ground (GND)	Unbalanced wiring
6.3mm jack	Tip	Ring	Sleeve	Ring + Sleeve combined
XLR	Pin 2	Pin 3	Pin 1	Pin 3 + Pin 1 combined

Each channel input also has a corresponding XLR line output (12, 16) for linking onto further amplifiers, as necessary.

XLR inputs and outputs for each channel are wired in parallel, allowing signal to be carried forward to further amplifiers.

Connect the amplifier to a mains supply (9), ensuring the IEC lead is earthed, in good condition and connected securely. With Channel 1 + 2 controls (2, 6) turned fully down, switch on the power to the amplifier (7). This unit has a “soft-start” function which makes some checks before engaging power to the amplifiers, which may take a few seconds.

With mixer (or other signal source) levels turned down, gradually increase the amplifier’s channel level controls to the required level (normally full) and then gradually increase the signal level from the mixer or sound source until sound can be heard through the speakers and then continue increasing up to the required level.

The LED indicators for each channel (3, 5) are as shown opposite.

In normal operation, the **POW** indicators will be on and the **SIG** indicators will light when an input signal is present.

<b>PROT</b>	Protect mode
<b>CLIP</b>	Signal clipping (overload)
<b>SIG</b>	Signal present
<b>POW</b>	Power on

If the input signal is overloading the amplifier, this “clips” above the available power limit. When this happens, the **CLIP** indicators will light.

It is acceptable for **CLIP** indicators to flash very briefly in response to loud peaks in the audio signal. However, if they light for any longer than a brief instant or very frequently, the input level should be reduced or channel level controls on the front panel should be turned down until the regular clipping is eliminated.

If the internal protection circuitry detects a fault in the speakers or amp, the channel(s) will enter protect mode and **PROT** will illuminate on the front panel to show this. Switch the amplifier off and check the entire system (including speaker leads) before powering up again. If still in Protect Mode, seek advice from qualified service personnel.

Each H-series amplifier also has a backlit LCD display (4) on the front panel with the following information for monitoring.

- Mains supply voltage
- Internal temperature of each amplifier channel
- VU signal meters for each channel
- Fan speed

Before powering down, turn the channel gain controls fully down to avoid loud noises when switching off.

## Specifications

Model	H1600	H2400
Power supply	200-240Vac, 50Hz (IEC)	
Fuse	T8AL 250V	T10AL 250V
Output: RMS @ 2Ω	2 x 800W*	2 x 1200W*
Output: RMS @ 4Ω	2 x 650W	2 x 900W
Output: RMS @ 8Ω	2 x 450W	2 x 600W
Bridge power: RMS @ 4Ω	1700W*	2300W*
Bridge power: RMS @ 8Ω	1250W	1750W
Amplifier: construction	Hybrid Class-H	
Protection	Short/open circuit, thermal, RF, DC fault, on/off mute, active inrush limiting.	
Frequency response	20Hz-20KHz ±0.5dB	
THD +N	0.20%	
S/N ratio	-95dB	
Damping factor	>700	
Input sensitivity	1.0V - 1.4V - 2.0V switchable	
Input impedance	20KΩ (balanced), 10KΩ (unbalanced)	
Dimensions	483 x 361 x 44 mm (1U)	
Weight	6.8kg	7.0kg

\* Testing @ 2Ω under 40ms burst, 1kHz sine wave (1.0% THD)

## Troubleshooting

No power light on either channel	Ensure IEC inlet is connected to mains and lead is in good condition
	Ensure mains outlet is switched on
Power lights on but no other LEDs and no output	Check input signal and connection leads
	Ensure channel gain controls are not turned fully down
Power light and Signal LEDs are lit but no output	Check speaker cabinets are in good working order
	Check speaker leads are in good condition and connected properly
PROTECT LED is lit and there is no output	Switch off and disconnect from mains
	Check speakers are in good working order and not shorted out (using a multi-tester)
	After checking all connected items, power up again
	If still in Protect Mode, switch off again and refer to qualified service personnel
Output is very distorted and "CLIP" LEDs are lighting	Ensure cooling vents are clear and amplifier is not overheated
	Check the speaker impedance is not below 2Ω per channel (4Ω if bridged)
	Turn down the input level from audio source
Output is working but at very low level	Turn down channel gain controls
	Ensure input source is at line level
	Switch the SENSITIVITY to a lower voltage
	Increase input level from audio source
	Turn up channel gain controls



**Disposal:** The "Crossed Wheelie Bin" symbol on the product means that the product is classed as Electrical or Electronic equipment and should not be disposed with other household or commercial waste at the end of its useful life. The goods must be disposed of according to your local council guidelines.

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AVSL Group Ltd. Unit 2-4 Bridgewater Park, Taylor Rd. Manchester. M41 7JQ  
AVSL (EUROPE) Ltd, Unit 3D North Point House, North Point Business Park, New Mallow Road, Cork, Ireland