



INSTALLATION AND OPERATION MANUAL

HSP SERIES

CONSTANT VOLTAGE POWER AMPLIFIERS	HS120P
WITH USB/RS232 CONTROL	HS250P
	HS2120P
	HS2250P
	HS4120P
	HS4250P

IMPORTANT SAFETY INFORMATION

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This appliance shall not be exposed to dripping or splashing water and that no object filled with liquid such as vases shall be placed on the apparatus.
16. Plug this apparatus to the proper wall outlet and make the plug to be disconnected readily operable.
17. Mains plug is used as disconnected device and it should remain readily operable during intended use. In order to disconnect the apparatus from the mains completely, the mains plug should be disconnected from the mains socket outlet completely.
18. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
19. An appliance with a protective earth terminal should be connected to a mains outlet with a protective earth connection.
20. The apparatus should be disconnected from the mains completely before speaker wiring. The speaker output should be proper protected from direct contact and pay attention to speaker connections, terminals and speaker wiring during normal operation.



PRÉCAUTIONS DURANT UTILISATION

1. LISEZ ces instructions.
2. Tenez ces instructions.
3. Notez tous les avertissements.
4. Suivez toutes les avertissements.
5. N'utilisez pas ce produit près de l'eau (la piscine, la plage, le lac, etc.).
6. Nettoyez seulement avec une étoffe sèche.
7. Ne bloquez aucuns trous de ventilation. Installez en accord avec les instructions du fabricant.
8. N'installez près aucunes sources de chaleur comme radiateurs, registres de chaleur, fours ou les autres équipements (y compris amplificateurs) qui produisent la chaleur.
9. Ne défaites pas le but de sécurité de la fiche polarisée ou base-type. Une fiche polarisée a deux tranchants avec un plus large que l'autre. Une fiche de base type a deux tranchants et une troisième pointe de base, le tranchant large ou la troisième pointe est fourni pour votre sécurité. Si la fiche donnée ne conforme pas votre prise de contact, consultez un électricien pour remplacement de la prise de contact obsolète.
10. Protégez le cordon de secteur contre être marchée dessus ou pincez en particulier aux fiches, aux douilles de convenance, et au point où ils sortent de l'appareil.
11. Seulement utilisez attachements/accessoires spécifiés par le fabricant.
12. Utilisez seulement avec un chariot, un stand, un trépied, un support ou une table indiquée par le fabricant, ou vendue avec l'appareil. Quand un chariot est utilisé, faites attention en déplaçant la combinaison d'appareil/chariot pour éviter de se déséquilibrer.
13. Arrachez la fiche du dispositif durant éclair et orage ou quand pas utilisé pour longues périodes de temps.
14. Référez au personnel qualifié de service pour toutes réparations. La réparation est donnée quand le système a été endommagé à n'importe façon, par exemple un fil ou une fiche endommagé(e) de la source d'alimentation. Avoir été exposé à pluie ou humidité, n'opère pas normalement, ou avoir été tombé.
15. L'appareil ne doit pas être exposé aux écoulements ou aux éclaboussures et aucun objet ne contenant de liquide, tel qu'un vase, ne doit être placé sur l'objet.
16. Branchez l'appareil à une source appropriée et faire que la prise à débrancher soit facilement accessible.
17. La prise du secteur ne doit pas être obstruée ou doit être facilement accessible pendant son utilisation. Pour être complètement déconnecté de l'alimentation d'entrée, la prise doit être débranchée du secteur.
18. **AVERTISSEMENT:** Pour éviter le risque d'incendie ou de chocs électriques, ne pas exposer cet appareil à la pluie ou à l'humidité.
19. Un appareil avec la borne de terre de protection doit être connecté au secteur avec la connexion de terre de protection.
20. Assurez-vous que l'appareil est hors tension avant de connecter les hauts parleurs. Vérifiez que la sortie des enceintes soit protégées contre un contact physique. Respecter les polarités des terminaux ainsi que le câblage des enceintes pendant le fonctionnement afin d'assurer une utilisation sécurisée.





HSP SERIES

Congratulations on choosing Australian Monitor for your professional amplification requirements.

The design of our HSP series constant voltage power amplifiers embraces all the aspects of a well-designed amplifier. The visual design, mechanical, electrical and sonic parameters, along with our dedicated manufacturing process, have all been optimised to provide a professional tool that exhibits quality, reliability and longevity.

The HSP series amplifiers are 1 unit 1.75" high, 19" wide, or 2 unit 3.5" high, 19" wide rack mountable units depending on the model.

Models are available in 1, 2 and 4 channel versions. The HSP amplifier is fully controllable over the included USB and RS232 interface which provides configuration and monitoring capabilities. An included mini DSP also allows control of the volume, muting, compressor/limiter and input channel selection which feeds an efficient Class D amplifier to deliver 120W or 250W of output power per channel.

These amplifiers have been specifically designed to deliver their high power output with minimal distortion, and provide the critical degree of control required by your speakers.

Introduction	3
Features & Protection Features	4
Controls, Connectors and Indicators	5
Software Setup	8
Installation	13
Basic Setup and Operation	16
Maintenance	17
Specifications	18
Serial Command Protocol	22

Revision 1.1: Jul 2018

WARNING!

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT USE THE PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

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

TO PREVENT ELECTRICAL SHOCK, MATCH WIDE BLADE PLUG TO WIDE SLOT & FULLY INSERT.

CAUTION

THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED SERVICE PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION

**RISK OF ELECTRIC SHOCK
DO NOT OPEN**

WARNING:

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



For European Union countries: This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. Please contact your local authority for further details of your nearest designated collection point.

Rating plate and caution marking are marked on the back enclosure of the apparatus



FEATURES & PROTECTION FEATURES

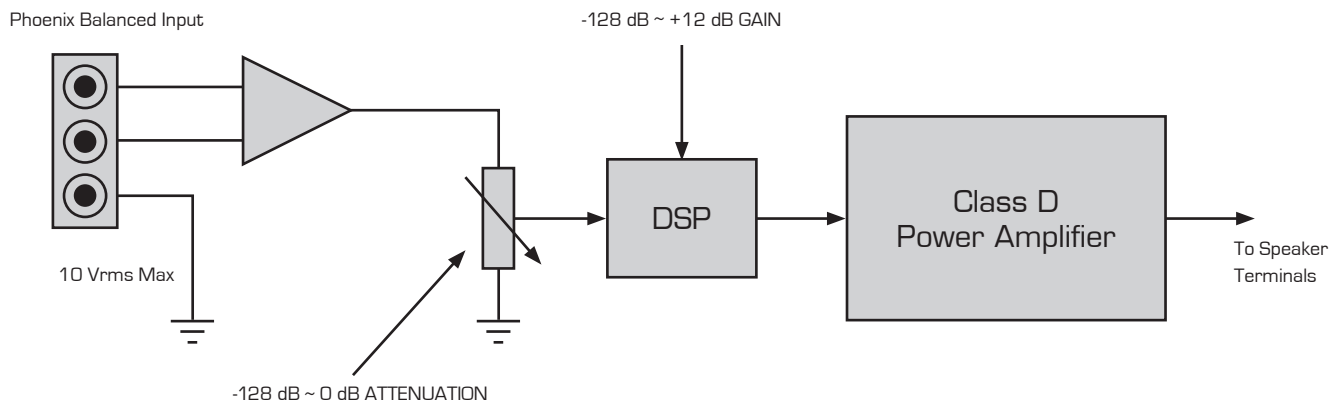
FEATURES

- Single Channel - HS120P- 1 x 120W, HS250P – 1 x 250W
- Dual Channel - HS2120P – 2 x120W, HS2250P - 2x250W
- Quad Channel - HS4120P – 4 x 120W, HS4250P – 4 x 250W
- Efficient Class-D amplification
- 4Ω/70V/100V output operation
- 1, 2 or 4 input to output channel variants with balanced input channels
- DSP provides:
 - > Volume Control
 - > High/Low Pass Filtering
 - > Compressor/Limiter
 - > Input/Output channel selection matrix
 - > Channel inversion
 - > Status monitoring
- PC controlled software graphical user interface control
- USB and RS232 interface for DSP configuration and overall product control
- Dedicated external Mute, Standby and Fault monitoring connector
- Amplifier and Signal status LED indicators
- Power factor corrected universal switch mode power supply (excluding HS120P)
- 1RU (1 and 2 channel models) / 2RU (4 channel models) height with front rack mount ears
- Fan cooled

PROTECTION FEATURES

- Clip protection
- Short-circuit protection
- Overload protection
- Thermal protection

HSP Amplifier Block Diagram



GLOSSARY

Term	Meaning
DSP	Digital Signal Processor
USB	Universal Serial Bus
XLR	Audio electrical connector type
LED	Light Emitting Diode.
Phoenix connector	Terminal block connector type. Also known as a Euroblock.
DIP switch	Dual in-line package switch. Used on the front and rear of the product to select various settings



Front panel

FRONT PANEL

HSP 1 Channel 1RU shown in above example.

1 USB Communications Port

Plug in the supplied USB Type A to Mini Type B connector into this port to communicate with the amplifier from the PC software application. The PC software application, downloadable from the Australian Monitor website, allows for real time monitoring of the amplifier inputs and outputs. The PC software application is also used to configure the DSP functionality to cater for the installation environment.

Consult the Software Control Over USB setup section of this manual for further details of this control.

2 LED Indicators

Status Indicator

This blue LED indicates various states of the amplifier.

LED	MEANING	INDICATION
Blue On	Normal Operation	LED solid on. Indicates that device is powered and that no faults exist.
Blue Slow Flash	Standby Mode	Flash LED: On for 50ms, Off for 4s
Blue Flash	Error Mode	LED Off for 2s followed by a flash count of the error code, On for 300ms, Off for 300ms. Multiple errors will be indicated in consecutive error sequences. Refer to the Fault Finding section of this manual to fix any errors displayed.

See the **Fault Finding** section of this manual to fix any errors displayed.

Protect Indicator

The following table indicates the meaning of each protection mode:

LED	Meaning
Yellow flashing	Amplifier temperature warm
Yellow on	Amplifier temperature hot
Red flashing	Amplifier over temperature*
Red on	Amplifier protect

See the **Fault Finding** section of this manual to fix any errors displayed.

* In the advent of a thermal overload, the internal operating temperature of the amplifier has exceeded a safe level of operation. The fan will continue to run and once the amplifier has cooled it will return to normal operation.

Signal LED

The following table indicates the meaning of the signal LED

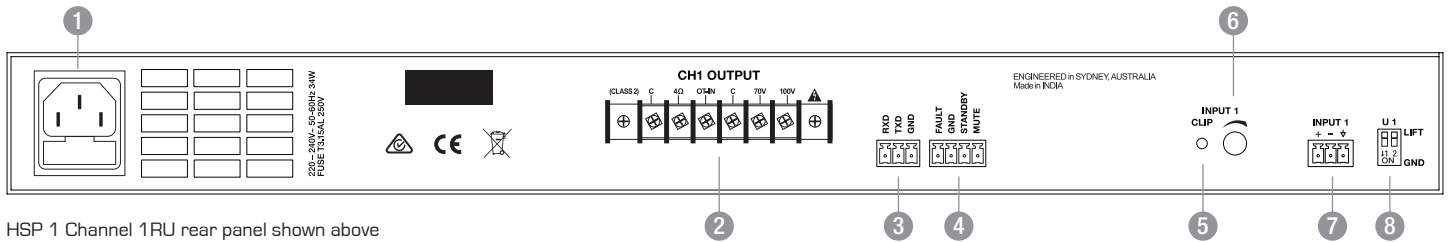
LED	Meaning
Green flashing	Audio signal mute
Green on	Audio signal present

Output Clip indicator

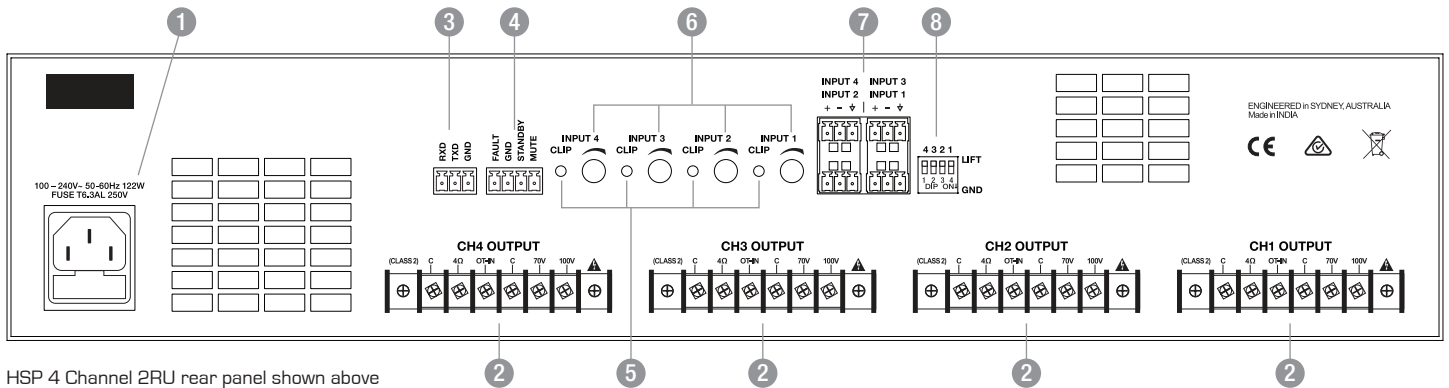
A red LED will illuminate when output signal clipping occurs.

3 Power Switch

Press the switch to the up position to power the unit on. At start-up (turn-on), the input to the amplifier is muted for approximately two seconds.



HSP 1 Channel 1RU rear panel shown above



HSP 4 Channel 2RU rear panel shown above

REAR PANEL

1 Mains Input Connector

Your amplifier is fitted with a standard IEC 60320-C14 socket for mains connection. Use the mains cable supplied to power up the unit.

NOTE: Your unit must always be earthed!

2 Speaker Outputs

The class D amplifier output features 100V Line, 70V Line or 4 Ohm low impedance operation.

IMPORTANT: Remove the speaker connector link if operating the amplifier in 4 Ohm operation.

NOTE: Only one output type should be used at a time.

3 RS232 Communications Port

The RS232 port is designed to be connected to an external control system or to a remote PC. Using an RS232 converter (not supplied), connect to this port to communicate with the amplifier from the PC software application or via serial commands. The PC software application allows for real time monitoring and configuration of the amplifier.

Consult the Software Control Over RS232 setup section of this manual for further details of this control.

4 External Mute, Standby and Fault

External Mute

Connect this input to ground (GND) to mute amplifier channels.

Consult the **External Mute** section of this manual for further detail of this control.

Standby

Connect this input to ground (GND) to enable standby mode.

Consult the **Standby Input** section of this manual for further detail of this control.

Fault

This active low output indicates a fault in the amplifier. There are two possible faults that can be indicated:

- The amplifier has gone into thermal shutdown due to a measured high temperature
- The amplifier has detected an overload condition on the speaker terminals

Consult the **Fault** section of this manual for further detail of this control.

5 Input Channel Clip LEDs

The input channel clip LEDs are used to indicate that the input signal is being clipped. If the input is clipping, reduce the signal by turning the attenuation pot counter-clockwise (when viewed from rear) until the clip LED ever so slightly turns on with an input source present.

The input source should be representative of the audio that will be used in the system on a daily basis.



6 Input Signal Attenuation Pot

The fully clockwise position (when viewed from rear) of the input signal attenuation pot provides no attenuation (ie 0 dB). Turning the pot counter clockwise provides a logarithmic attenuation all the way to -128 dB.

7 Phoenix Balanced Input

A balanced male 3-pin (3.81mm) Phoenix type connector is provided on each input channel.

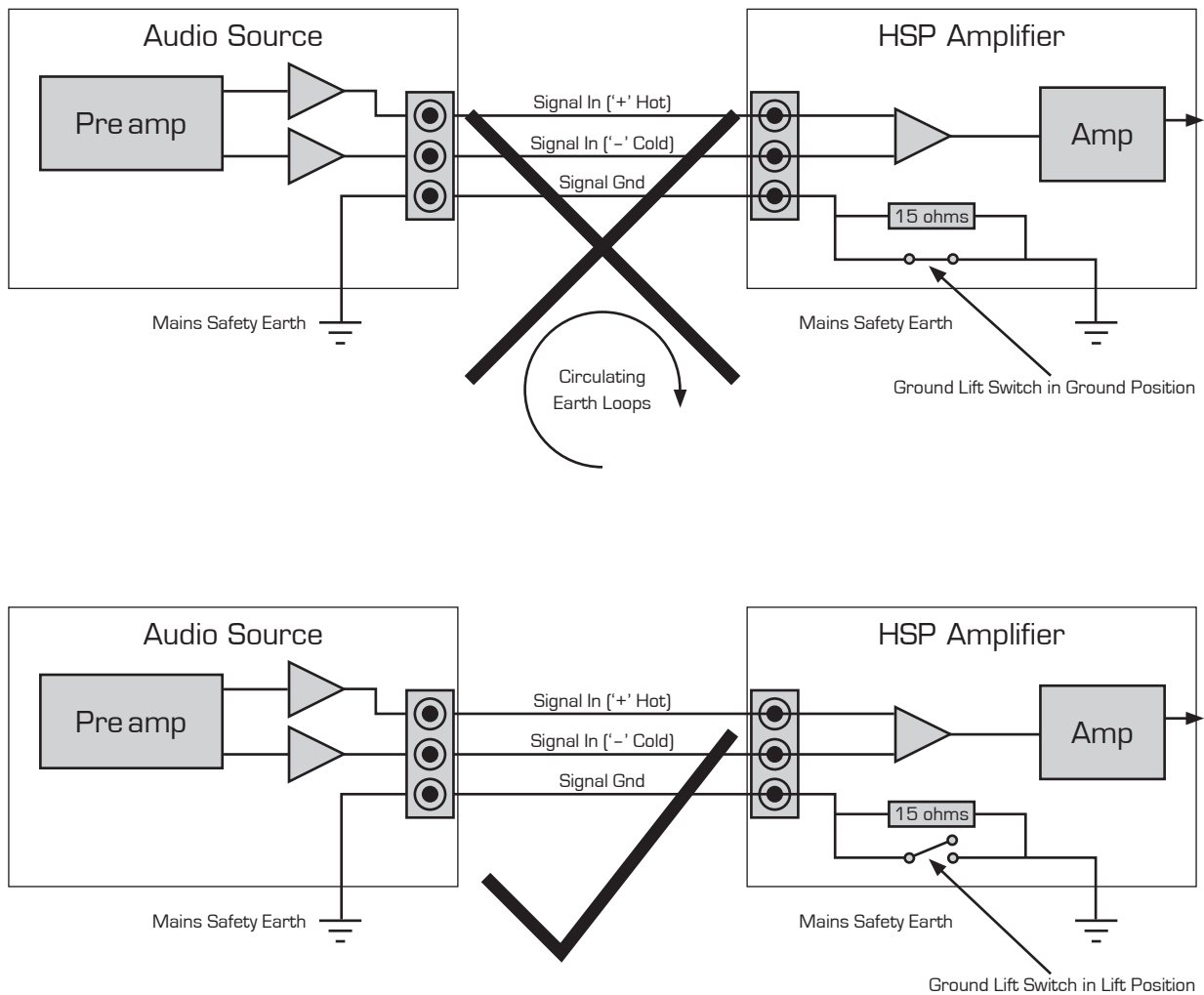
Consult the Balanced Input Wiring section of this manual for further detail of this control.

8 Ground Lift

Use the DIP switches to control the grounding of the audio inputs. The switch for the given channel is pushed down to connect the input signal ground with the mains safety ground. The piano DIP switch is in the lift position (ie up) when the input ground needs to be lifted from the mains safety ground to prevent circulating earth loops.

If at anytime a hum or unwanted noise is experienced then the input should be configured so that the input signal ground is lifted from the mains safety earth. This minimises the circulating ground loop current by adding in an impedance which results in significantly less loop voltage drop being amplified by the amplifier.

Refer to diagram below which illustrates the above concept:





SOFTWARE SETUP

Supported Operating Systems

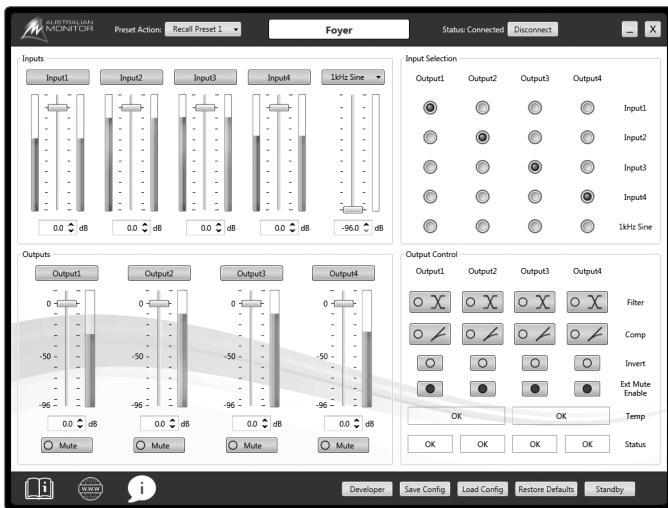
- Windows 10
- Windows 8
- Windows 7 (32/64 bit)
- Windows XP (32/64 bit)

Software Download Procedure

- 1 Navigate to: <http://www.australianmonitor.com.au/resources/>
Type the product name into the search box as follows (for example):
HS120P
- 2 Select the latest version of the HSP Control Software Installer VX.X.0
- 3 Navigate to your downloads folder and double click on the installer to run
- 4 Plug in a USB/RS232 cable to the HSP power amplifier and turn the amplifier on
- 5 Launch the HSP Control Software and connect to the amplifier

Software Control Over USB

- 1 Turn on the power to the HSP unit by pushing the front panel switch up.
- 2 Plug in the supplied USB cable to the HSP front panel and PC.
- 3 Open the software application HSP Control Software VX.X.X.
- 4 Upon successful connection the main application window will look like the image below. (Note: The number of channels displayed will depend on the HSP model):



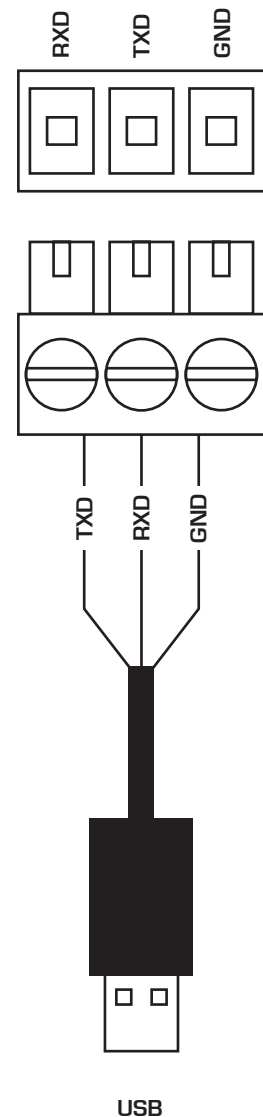
Software Control Over RS232

The RS232 control port works in two ways

- 1 As an alternative control port to the front panel USB for longer distance control using the PC application.
- 2 To interface to an external control system using serial commands. i.e. Not using the PC application but directly controlling the unit and sending discrete commands.

RS232 Connection Setup

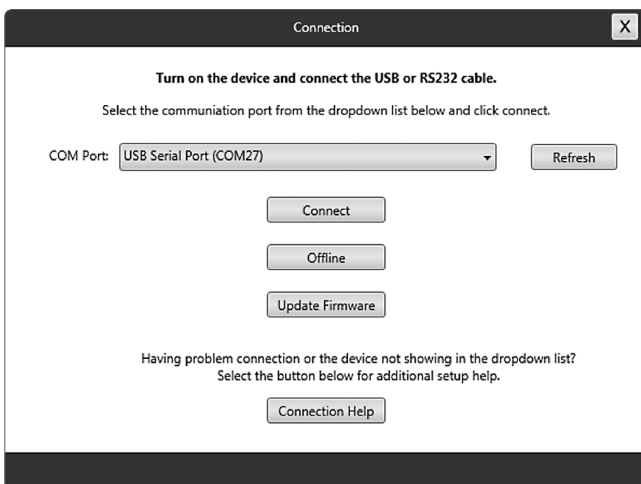
TXD	Transmit OUT of amplifier. Connect to RECEIVE of remote control system
RXD	Receive IN to amplifier. Connect to TRANSMIT of remote control system
COM Port Settings	Baud 115200, Data 8, Stop 1, Parity None, Flow None



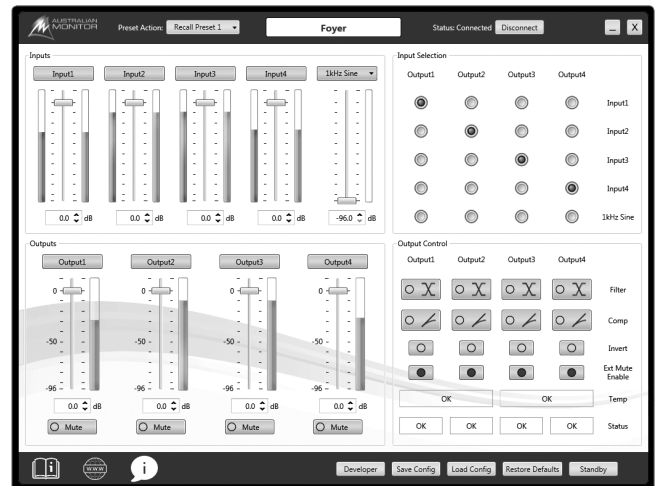


RS232 using the PC application

- 1 Most modern PC's require a USB to RS232 converter for RS232 operation. A suggested RS232 to USB converter is the FTDI (USB-RS232-WE-1800-BT_5.0) which can be sourced through most online electronic component stores.
- 2 Wire up the USB to RS232 converter like the image at left [see page 8] using the supplied green 3-way Phoenix connector. Note it's important that the RXD and TXD of the HSP pins must join to the TXD and RXD of the converter respectively.
- 3 Turn on the power to the HSP unit by pushing the front panel switch up.
- 4 Plug in the supplied RS232 cable to the rear of the HSP unit and USB port to the PC.
- 5 Make sure the driver for the RS232 to USB converter cable has installed correctly. This can be checked by opening windows device manager. To do this select (Start -> System -> Device Manager) and then make sure there are no devices marked as inactive due to a missing driver.
- 6 Double click on the installed application HSP Control Software VX.X.X.
- 7 Select the USB to RS232 converter manufacturer from the dropdown menu. Note: if using the FTDI cable that is suggested above it will display as (USB Serial Port (COMXX)) where COMXX will display the COM port number chosen by the PC. See image below:



- 8 Upon successful connection the main application window will look like the image below (Note: The number of channels displayed will depend on the HSP model):



RS232 using an external control system

- 1 Connect the external control system to the RS232 port of the amplifier.
- 2 Configure the RS232 port settings as per the setup information above
- 3 Referring to the serial command section, send and receive commands using the external control system.

Example command to enter standby:

set device mode standby true



SOFTWARE SETUP (CONT)

Software Developer Mode

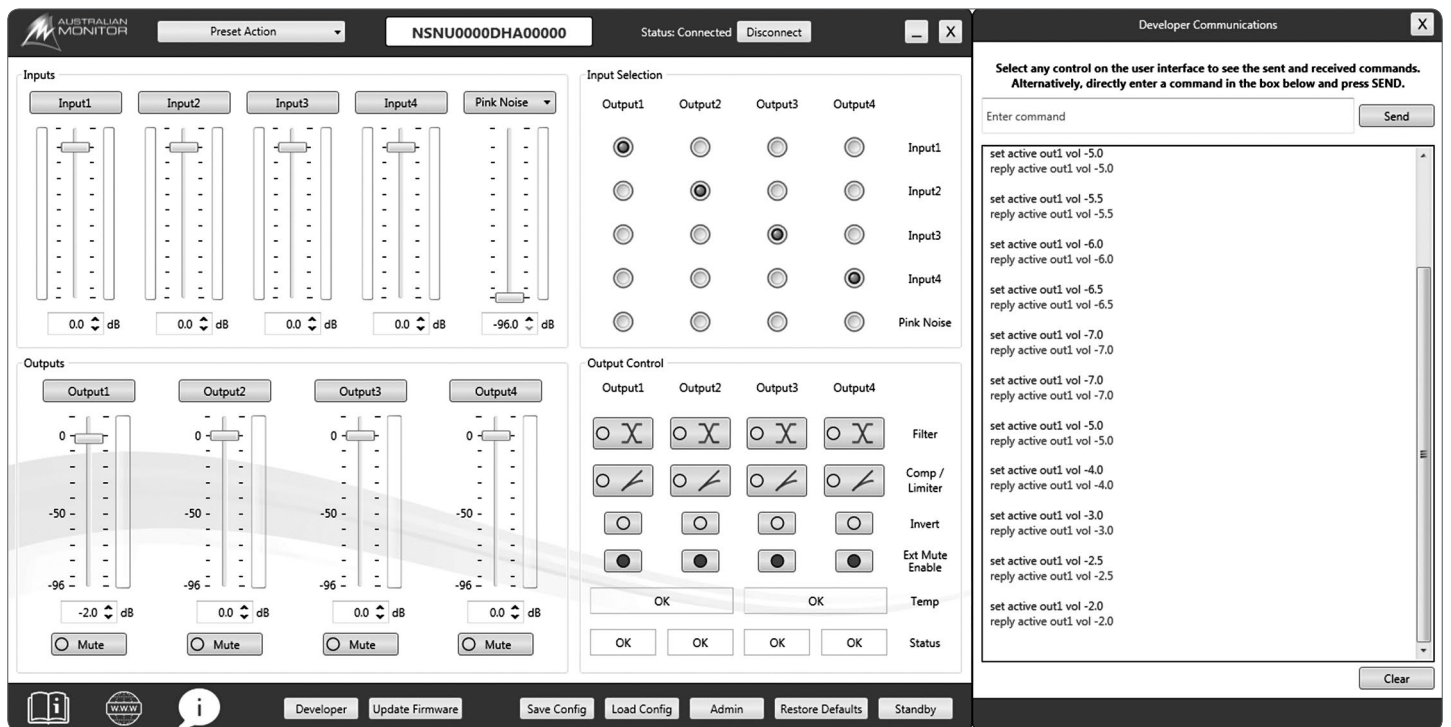
A highly recommended method to easily understand the commands being sent and received by the amplifier is to turn on "Developer" mode on the PC application. This will open a second window that displays the commands being sent and received when the user interacts with the PC application. These commands can then be copied to an external control application without requiring a detailed understanding of the communication protocol.

NOTE: The "Developer" window is NOT supported in offline mode. You must be connected to an amplifier

Select the "Developer" mode button shown below



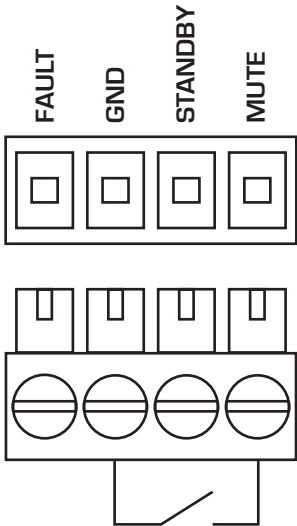
Interact with the application to see commands being printed to the "Developer" window





External Mute

The external mute functionality is activated using the supplied 4-way Phoenix connector. Simply connect the MUTE to GND to mute channels of the amplifier. See connection diagram listed below for a simple connection:



The PC application includes toggle buttons to select which amplifier channels are muted using the external mute trigger. Select or deselect the channels required in the application.

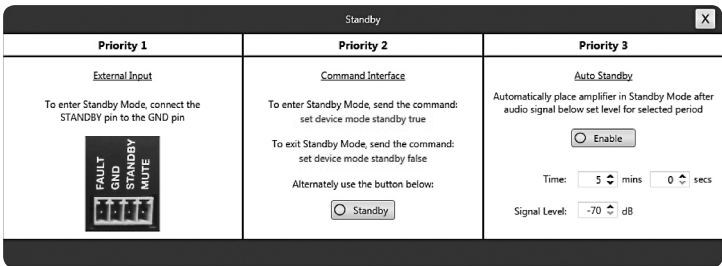


*4 channel product shown

Standby

The amplifier has three ways to enter or exit standby in the following priority: Priority 1 – External Input
 Priority 2 – Command Interface
 Priority 3 – Auto standby

- If priority 1 is released when the Command interface is enabled you will NOT exit standby. You must explicitly send a standby exit command.
- If Priority 1 and/or 2 is enabled and then consequently disabled the unit will always exit standby irrespective of priority 3 settings. However, if priority 3 is enabled it will then re-enter standby after the preset time has elapsed.



Password Protection

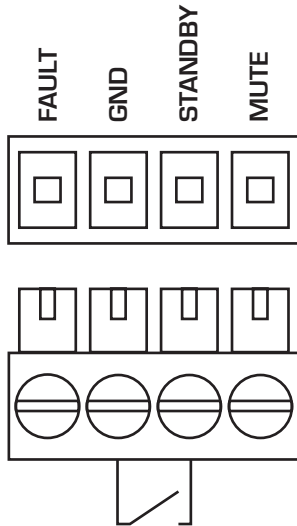
To enable password protection on the amplifier, press on the Admin button on the main window, then click Enable to turn on the password protection functionality.

The default username and password are: Username – admin
 Password – admin



Priority 1 – External Input

The standby function is activated using the supplied 4-way Phoenix connector. Simply connect the STANDBY to GND to put the amplifier into standby mode. See connection diagram listed below:



Priority 2 – Command Interface

Send the following command using RS232

To enter standby: **set device mode standby true**

To exit standby: **set device mode standby false**

You can also enable/disable the software standby using the PC application.

Open the standby dialog box by selecting the “Standby” button and then select the Standby button under the priority 2 section.

Priority 3 – Auto standby

The amplifier can enter and exit standby based on the presence of audio on any input. (Note: All input channels are summed together for detection)

Open the standby dialog box in the PC application by selecting the “Standby” button and set the time and audio threshold under the priority 3 section.

Fault

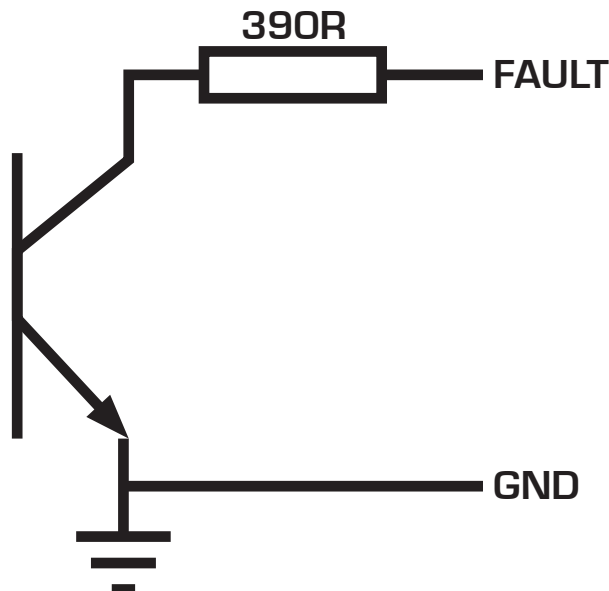
The FAULT output will be set low (0V) under the following conditions:

- The amplifier has gone into thermal shutdown due to a measured high temperature
- The amplifier has detected an overload condition on the speaker terminals

The FAULT output is located on the rear of the HSP unit. Connect the FAULT and GND connection to any external control solution to read this signal.

The FAULT output is an open collector output with a 390R current limiting resistor in series.

Maximum voltage relative to GND	35V
Maximum current	100mA





Power Requirements

Power consumption for your model of the HSP series amplifier is indicated on the rear panel for 1/8th output power.

Ensure that your mains voltage is the same as the rear panel mains voltage marker (+/- 10%).

Mounting

The HSP series amplifiers are one or two rack units high (1U) (2U) and will fit a standard EIA 19" or rack.

Typically amplifiers may be stacked directly on top of each other with no need for spacing between units, unless installed in high ambient temperature environments where a single rack unit space between amplifiers will assist cooling further.

Cooling

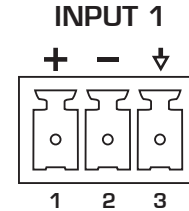
The HS120P is convection cooled and does not require any special consideration.

The HS250P, HS2120P, HS2250P, HS4120P and HS4250P amplifiers are cooled by axial fans which draw air inside the amplifier and expel the heated air outside the amplifier. These amplifiers offer variable speed fans which run at half speed up to full speed when the internal heatsink temperature increases.

An unrestricted airflow into and out from the amplifier must be provided. Any restriction of the air flow will cause heat to build up within the unit and possibly force the unit into its thermal shutdown mode.

If the amplifiers are to be operated in an environment where the airflow is restricted such as sealed racks, cooling should be supplemented by extra cooling fans to evacuate the heated air and aid the flow of cool air through the unit.

Balanced Input Wiring



IMPORTANT: Do not directly connect pin 3 on the amplifier's input to the amplifier's chassis, speaker ground or power ground!

⚡ WARNING: Input signal ground should NOT be used as a safety ground (earth).

The balanced input to the amplifier is 3-pin configuration and requires all three pins to be connected. Only high quality twin-core shielded cable should be used.

Pin 1 is the left most pin when viewed from the back of product.

Pin 1 = Hot (non-inverting or in phase)

Pin 2 = Cold (inverting or reverse phase)

Pin 3 = Signal Ground

When wiring from an unbalanced source you must ensure that pin 2 is connected to pin 3 (Signal Ground), either by linking the pins in the input connector or by the source equipment's output wiring.

When wiring for an unbalanced source:

Pin 1 = Hot (non-inverting or in phase)

Pin 2 = Signal Ground

Pin 3 = Signal Ground

Output Wiring

When wiring to your speakers always use the largest gauge wire your connector will accept. The longer the speaker lead the greater the losses which will result in reduced power and less damping at the load. We recommend using a heavy duty, two core flex (four core flex if bi-amping) 10 to 12 gauge (2mm² to 2.5mm² or 50/0.25 or equivalent) as a minimum.



INSTALLATION (CONT)

Speaker Outputs

The amplifier output has a 6 pin output screw terminal with a pre-fitted link between the 40hm and the high impedance output.

70V

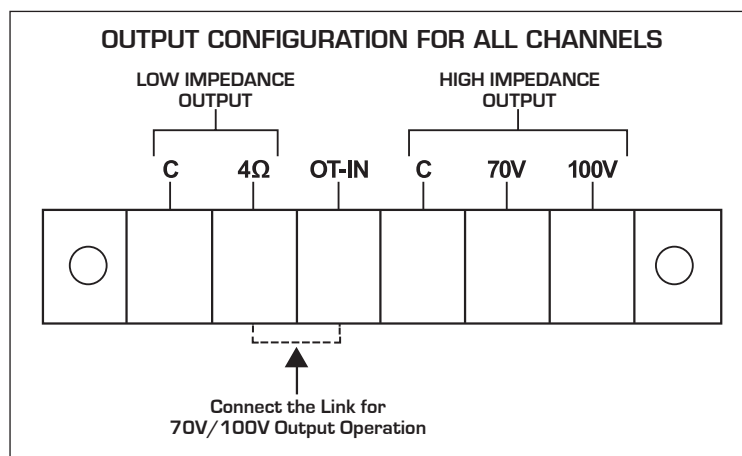
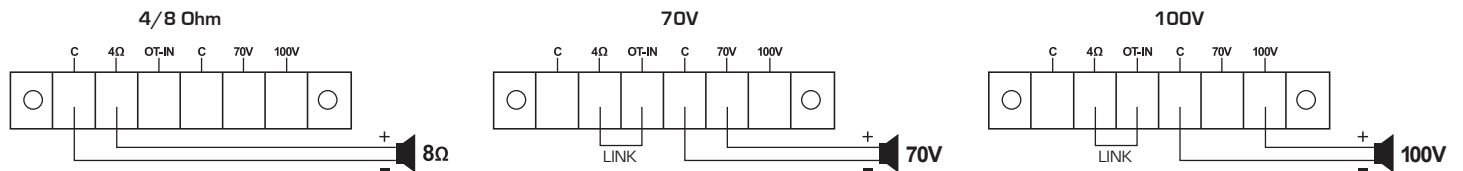
- Fit the link between 4Ω and the OT-IN. (This connects the amplifier output to the input of the 70/100V transformer)
- Connect your speaker to the HIGH IMPEDANCE OUTPUT 'C' and '70V' connections

100V

- Fit the link between 4Ω and the OT-IN. (This connects the amplifier output to the input of the 70/100V transformer)
- Connect your speaker to the HIGH IMPEDANCE OUTPUT 'C' and '100V' connections

4Ω or 8Ω operation

- Remove the link between 4Ω and the OT-IN
- Connect your speaker to the LOW IMPEDANCE OUTPUT 'C' and '4Ω' connections





Hum Problems

Most equipment is designed for minimum hum when used under ideal conditions. When connected to other equipment, and to a safety earth in an electrically noisy environment, problems may occur.

The three "E"s of hum and hum related noise which can plague your audio system are:

- a) Earth loops
- b) Electromagnetic radiation
- c) Electrostatic radiation

Earth loops can arise from the interfacing of the various pieces of equipment and their connections to various safety earths.

This is by far the most common cause of hum, and it occurs when source equipment and the amplifier are plugged into different points along the safety earth where the safety earth wiring has a current flowing through it. The current flowing through the wire produces a voltage drop due to the wire's resistance. This voltage difference between the amp earth and source equipment earth appears to the amplifier's input as a signal and is amplified as hum. There are three things you can do to avoid earth loop problems:

- Ensure the mains power for the audio system is "quiet" i.e. without equipment on it such as air-conditioning, refrigeration or lighting which may generate noise in the earth circuit.
- Ensure all equipment within the system shares a common ground/ safety earth point. This will reduce the possibility of circulating earth currents, as the equipment will be referenced to the same ground potential.
- Ensure that balanced signal leads connecting to the amplifier are connected to earth at one end only.

Electrostatic radiation capacitively couples to system elements, causing an interference voltage that mainly affects higher impedance paths, such as amplifier inputs. The source is generally a nearby high voltage, such as a mains

lead or a speaker lead. The problem can usually be reduced by moving the offending lead away, or by providing additional electrostatic shielding (i.e. an earthed conductor which forms a barrier to the field).

Electromagnetic radiation induces interference currents into system elements that mainly effect lower impedance paths. Radio transmitters or stray magnetic fields from mains transformers are often the cause of this problem. It is generally more difficult to eliminate this kind of interference, but again, moving the source away or providing a magnetic shield (i.e. a steel shield) should help.

IMPORTANT: All signal source equipment should be adequately earthed. This not only ensures your safety but everybody else's as well. Faults can and do occur in mains connected equipment where the chassis can become "live" if it is not properly earthed. In these instances, the fault in a "floating" (ungrounded) piece of equipment will look for the shortest path to ground, which could possibly be your amplifier's input. If the fault current is large enough, it will destroy the input to your amplifier and look for the next available path, which may be you!

Before making any connections to your HSP Series amplifier, observe the following:

- Ensure the mains voltage supply matches the label on the rear panel of your amplifier (+/- 10%).
- Ensure that the power switch is OFF.
- Ensure that all system grounds (earth) are connected from a common point. Avoid powering equipment within a system from multiple power sources that may be separated by large distances.
- Check the continuity of all interconnecting leads to your amplifier; ensure that there are no open or short circuited conductors.
- Ensure that the power handling of your load (speakers) can adequately cope with the power output of the amplifier.

Powering Up

REMEMBER: The amplifier should be the last piece of equipment that you turn on and the first piece of equipment that you turn off.

Sensitivity

The input sensitivity of your HSP amplifier when the attenuation pot is at maximum position (fully clockwise) is nominally:

1Vrms for rated power into a 4 Ohm load

Each channel of your HSP amplifier has a nominal balanced input impedance of 20kOhms (@1kHz) and should not present a difficult load for any signal source.

Your signal source (i.e. the equipment feeding signal to the amplifier) should have an output impedance of 600 Ohms or lower to avoid unwanted high frequency loss in the cabling.



Fault Finding

Status Indicator

If the blue STATUS LED is flashing instead of remaining on then a specific system state is being displayed. See the table below on the meaning and of the system state.

The status LED should indicate the following:

LED	Meaning	Indication
Blue On	Normal Operation	LED solid on. Indicates that device is powered and that no faults exist.
Blue Slow Flash	Standby Mode	Flash LED: On for 50ms, Off for 4s
Blue Flash	Error Mode	LED Off for 2s followed by a flash count of the error code, On for 300ms, Off for 300ms. Multiple errors will be indicated in consecutive error sequences. Refer to table below for list of error codes.

The list of error codes is:

Error Code	STATUS LED error flash count
Configuration error	1
Nor Flash image failure	2
Nor Flash read / write failure	3
Power Amplifier initialization failure	4
DSP failure	5
Bootloader failure	6

Protect Indicator

The following table indicates the meaning of each protection mode:

LED	Meaning	Resolution
Yellow flashing	Amplifier temperature warm	None required
Yellow on	Amplifier temperature hot	None required
Red flashing	Amplifier over temperature*	The amplifier has shutdown. It will automatically restart once it has cooled down
Red on	Amplifier protect	Check the speakers connected to the amplifier are correctly wired. Power cycle the unit and retry.

* In the advent of a thermal overload, the internal operating temperature of the amplifier has exceeded a safe level of operation. The fan will continue to run and once the amplifier has cooled it will return to normal operation.

Signal Indicator

The following table indicates the meaning of each signal mode:

LED	Meaning	Resolution
Green on	Audio signal present	None required
Green off	No audio signal present	Increase the input audio level
Green flashing	Amplifier channel is set to mute	Unmute the channel using the PC application



Maintenance

- Only competent or qualified persons should attempt any service or maintenance of your amplifier.
- Your HSP amplifier will need minimal maintenance.
- No internal adjustments need to be made to the unit to maintain optimum performance.
- To provide years of unhindered operation we suggest a maintenance inspection be carried out on annually.

Fire Regulation Compliance

This amplifier is not certified to fire regulations standards such as EN 54-16.



SPECIFICATIONS

Model	HS120P	HS250P	HS2120P	HS2250P	HS4120P	HS4250P	Conditions/Comments
Topology	Class-D	Class-D	Class-D	Class-D	Class-D	Class-D	
Channels	1	1	2	2	4	4	
Power Output (per channel)							
4Ω	136W	260W	136W	259W	135W	242W	1kHz. 1%THD. -10W/+30W, CEA-2006, one channel driven
70V	124W	244W	124W	245W	123W	243W	1kHz. 1%THD. -10W/+30W, CEA-2006, one channel driven
100V	131W	256W	131W	257W	130W	242W	1kHz. 1%THD. -10W/+30W, CEA-2006, one channel driven
Maximum Output Level (dBV/Vrms)	27dBV (22.4Vrms)	30dBV (31.6Vrms)	27dBV (22.4Vrms)	30dBV (31.6Vrms)	27dBV (22.4Vrms)	30dBV (31.6Vrms)	20Hz - 20kHz, <1%THD, 4Ω
System Gain	27dB	30dB	27dB	30dB	27dB	30dB	
Frequency Response 4Ω	20Hz - 20kHz	20Hz - 20kHz	20Hz - 20kHz	20Hz - 20kHz	20Hz - 20kHz	20Hz - 20kHz	3dB below clipping, +0/-3dB.±5Hz
Frequency Response 70V	100Hz - 16kHz	100Hz - 16kHz	100Hz - 16kHz	100Hz - 16kHz	100Hz - 16kHz	100Hz - 16kHz	3dB below clipping, +0/-3dB.±5Hz Low Frequency ±2kHz High Frequency
Frequency Response 100V	100Hz - 16kHz	100Hz - 16kHz	100Hz - 16kHz	100Hz - 16kHz	100Hz - 16kHz	100Hz - 16kHz	3dB below clipping, +0/-3dB.±5Hz Low Frequency ±2kHz High Frequency
Signal to Noise Ratio	> 94dB	> 96dB	> 96dB	> 97dB	> 92dB	> 91dB	Max Output, 1kHz, 20kHz BW, A-Weighted
THD+N. 4Ω. 1kHz	< 0.2%	< 0.2%	< 0.2%	< 0.2%	< 0.2%	< 0.25%	3dB below clipping, 1kHz. 20kHz BW, Unity Gain, A-Weighted
THD+N. 4Ω. 20Hz - 20kHz	< 0.2%	< 0.2%	< 0.2%	< 0.2%	< 0.2%	< 0.3%	3dB below clipping, 20Hz - 20kHz. 20kHz BW, Unity Gain, A-Weighted
THD+N. 70V. 1kHz	< 0.2%	< 0.2%	< 0.2%	< 0.3%	< 0.2%	< 0.25%	3dB below clipping, 1kHz. 20kHz BW, Unity Gain, A-Weighted
THD+N. 70V. 20Hz - 20kHz	< 0.2%	< 0.2%	< 0.2%	< 0.3%	< 0.2%	< 0.3%	3dB below clipping, 100Hz - 16kHz. 16kHz BW, Unity Gain
THD+N. 100V. 1kHz	< 0.2%	< 0.2%	< 0.2%	< 0.3%	< 0.2%	< 0.3%	3dB below clipping, 1kHz. 20kHz BW, Unity Gain, A-Weighted
THD+N. 100V. 20Hz - 20kHz	< 0.2%	< 0.2%	< 0.2%	< 0.3%	< 0.2%	< 0.3%	3dB below clipping, 100Hz - 16kHz. 16kHz BW, Unity Gain
Intermodulation distortion - SMPTE. 4Ω	0.09%	0.39%	0.06%	0.59%	0.10%	0.40%	60Hz/7kHz, 4:1, 3dB below clipping
Intermodulation distortion - ITU-R (CCIF). 4Ω	0.24%	0.48%	0.40%	0.30%	0.30%	0.46%	19kHz/20kHz, 1:1, 3dB below clipping
Damping Factor 4Ω	> 30	> 30	> 30	> 30	> 30	> 30	20Hz - 1kHz
DC output offset	< 30 mV	< 30 mV	< 30 mV	< 30 mV	< 30 mV	< 30 mV	
Channel Separation (channel-to-channel) 4Ω	NA	NA	-74dB -56dB	-72dB -60dB	-69dB -59dB	-60dB -58dB	Max Output, one channel driven 20Hz - 1kHz 1kHz - 20kHz
Channel Separation (channel-to-channel) 70V/100V	NA	NA	-80dB -57dB	-72dB -60dB	-68dB -56dB	-63dB -61dB	Max Output, one channel driven 100Hz - 1kHz 1kHz - 16kHz



Model	HS120P	HS250P	HS2120P	HS2250P	HS4120P	HS4250P	Conditions/Comments
Input/Outputs							
Audio Input	Balanced Phoenix Input per channel						
Data/Control	USB Mini Type B. RS232 (TX,RX,GND). 3 pin 3.81mm Euroblock connector. Logic (Fault, Mute, Standby, GND). 4 pin 3.81mm Euroblock connector. Ground Lift.						
Speaker Output	6 pin Screw Terminal per channel						
Sensitivity							
Audio Input Sensitivity	1Vrms					Input Level potentiometer set to Max, Unity Gain	
Audio Input Maximum Level	10Vrms					Input Level potentiometer set 20dB below Max level, Unity Gain	
Input Level Adjustment (rear panel)	From -inf to 0dB					Unity Gain	
DSP							
	Input channel selector Input volume control per channel High or Low pass filter Compressor/Limiter Output volume control per channel Mute Invert Input and output level meters Internal Tone Generator Internal Pink Noise Generator						
Miscellaneous							
Input Impedance	20k Ω 10k Ω					Balanced, line-to-line Unbalanced, lint-to-GND	
Input CMRR	> 55dB					20Hz - 20kHz	
Input Signal Detection Threshold	-80dBV						
LED Status	Signal - Green Clip - Red Protect - Yellow Status - Blue						
Overload Protection	Temperature, Over/Under Voltage, Short						
Power Requirements							
AC Input	220-240Vac, 50-60Hz	100-240Vac, 50-60Hz	100-240Vac, 50-60Hz	100-240Vac, 50-60Hz	100-240Vac, 50-60Hz	100-240Vac, 50-60Hz	$\pm 10\%$
AC Power Factor	>0.55	>0.96	>0.97	>0.97	>0.96	>0.95	Max Output, 1kHz, 230Vac
AC Input Connector	IEC 60320-C14						
AC Mains Fuse	T3.15AL 250V	T5AL 250V	T5AL 250V	T6.3AL 250V	T6.3AL 250V	T8AL 250V	
Maximum Inrush Current	60A	70A	70A	70A	70A	70A	230VAC, 50Hz



SPECIFICATIONS (CONT)

Model	HS120P	HS250P	HS2120P	HS2250P	HS4120P	HS4250P	Conditions/Comments
RMS Current Draw							
Standby	0.08A	0.154A	0.138A	0.190A	0.185A	0.2A	230Vac, 50Hz, 100V Output, 1kHz, Sine
Idle	0.112A	0.187A	0.173A	0.207A	0.226A	0.247A	230Vac, 50Hz, 100V Output, 1kHz, Sine
1/8th Power	0.255A	0.337A	0.315A	0.535A	0.569A	1.006A	230Vac, 50Hz, 100V Output, 1kHz, Sine
1/3 Power	0.510A	0.603A	0.580A	1.107A	1.137A	2.18A	230Vac, 50Hz, 100V Output, 1kHz, Sine
Full Power	1.257A	1.341A	1.478A	2.50A	2.33A	3.80A	230Vac, 50Hz, 100V Output, 1kHz, Sine
Power Consumption							
Standby	6W	14W	12W	17W	16W	25W	230Vac, 50Hz, 100V Output, 1kHz Sine
Idle	12W	19W	17W	23W	29W	37W	230Vac, 50Hz, 100V Output, 1kHz Sine
1/8th Power	34W	65W	62W	114W	122W	213W	230Vac, 50Hz, 100V Output, 1kHz Sine
1/3 Power	69W	136W	132W	257W	263W	498W	230Vac, 50Hz, 100V Output, 1kHz, Sine
Full Power	174W	319W	358W	589W	554W	896W	230Vac, 50Hz, 100V Output, 1kHz, Sine HS120P = 1 x 115W, HS250P = 1 x 217W, HS2120P = 2 x 120W, HS2250P = 2 x 192W, HS4120P = 4 x 90W, HS4250P = 4 x 150W
Efficiency							
1/8th Power	68%	68%	67%	69%	65%	71%	230Vac, 50Hz, 100V Output
1/3 Power	70%	71%	70%	71%	68%	72%	230Vac, 50Hz, 100V Output
Full Power	71%	72%	70%	68%	69%	70%	230Vac, 50Hz, 100V Output HS120P = 1 x 115W, HS250P = 1 x 217W, HS2120P = 2 x 120W, HS2250P = 2 x 192W, HS4120P = 4 x 90W, HS4250P = 4 x 150W
Thermal Dissipation							
Standby	20	48	39	58	55	85	Excludes Load Power (1W = 3.412BTU/Hr)
Idle	41	65	59	78	99	126	Excludes Load Power (1W = 3.412BTU/Hr)
1/8th Power	101	191	183	326	356	602	Excludes Load Power (1W = 3.412BTU/Hr)
1/3 Power	195	381	370	710	737	1366	Excludes Load Power (1W = 3.412BTU/Hr)
Full Power	474	838	981	1510	1410	2057	Excludes Load Power (1W = 3.412BTU/Hr)



Model	HS120P	HS250P	HS2120P	HS2250P	HS4120P	HS4250P	Conditions/Comments
Weights & Dimensions							
Product Dimensions W x D x H (with rack ears)	483mm x 325mm x 44.5mm (19.0" x 12.8" x 1.75")						
Product Dimensions W x D x H (without rack ears)	435mm x 325mm x 44.5mm (17.13" x 12.8" x 1.75")			435mm x 389mm x 89mm (17.13" x 15.32" x 3.50")			
Shipping Dimensions W x D x H	525mm x 425mm x 120mm (20.7 x 16.7" x 4.7")			546mm x 491mm x 197mm (21.5" x 19.3" x 7.8")			
Net Weight	5.0 Kg (11.02 lbs)	6.4 Kg (14.11 lbs)	7.2 Kg (15.87 lbs)	9.0 Kg (19.84 lbs)	14.0 Kg (30.86 lbs)	16.0 Kg (35.27 lbs)	
Shipping Weight	8.0 Kg (17.7 lbs)	9.0 Kg (19.9 lbs)	9.8 Kg (21.7 lbs)	11.2 Kg (24.7 lbs)	15.6 Kg (34.5 lbs)	18.6 Kg (41.1 lbs)	
Mounting	1 RU			2RU			
Operating Temperature	0°C to 40°C (95% RH)						
Cooling system	Convection cooled	Fan assisted convection cooling					
Fan Noise	Not Applicable		60dBA			Noise measured at 20cm from fan intake	
Finish	Powder coated steel						
Colour	Black						
Accessories	IEC Mains cable. Rubber Feet x 4, 1x3 euroblock socket per channel, One 1x3 and One 1x 4 euroblock socket, Rack mount support						
Approvals	CE, IEC, RCM						
Supported Operating Systems	Windows 10, Windows 8, Windows 7 (32/64), Windows XP (32/64)						



SERIAL COMMAND PROTOCOL

Serial Command Message Format

Message Format						
operation	section	group	param	sub	ssub	value

- Operation is “get”, “set” or “reply”
- Supported content for section, group, param, sub, ssub and value message fields are as per the Australian Monitor Interface Protocol Specification.
- Message fields operation, section, group & param are mandatory, sub & ssub fields are optional.
- Value field applies only to “set” & “reply” operations.
- Wildcard “all” is available for message fields param, sub or ssub to provide access to first-level object members only.
- Message fields are separated with a space character (0x20 in hex).
- Message is terminated with a carriage return character (0x0D in hex).
- For “reply” operation, in case of failure, value field will contain the text “error”.
- For “reply” operation, in case of success, value field will contain the requested/updated item.

Example Commands

	operation	section	group	param	sub	ssub	value
Set input 1 volume of preset 1 to -20dB	set	preset1	in1	vol			-20.0
	reply	preset1	in1	vol			-20.0
Set output 1 volume to -40dB	set	active	out1	vol			-40
	reply	active	out1	vol			-40
Mute output 4	set	active	out4	mute			true
	reply	active	out4	mute			true
Set output 1 to use input 4 source	set	active	mixout1in4	source			true
	reply	active	mixout1in4	source			true
Get the fault status of output 3 amplifier	get	active	out3	amp	status	fault	
	reply	active	out3	amp	status	fault	false
Save current configuration to preset 1	set	device	preset	save			1
	reply	device	preset	save			1
Recall preset 1	set	device	preset	recall			1
	reply	device	preset	recall			1
Enter standby mode	set	device	mode	standby			true
	reply	device	mode	standby			true
Get product serial number	get	device	version	serial			
	reply	device	version	serial			NSNU1807DJA00001
Set input 1 volume of preset 1 to -20dB	set	preset1	in1	vol			-20.0
	reply	preset1	in1	vol			-20.0
Set the username to “admin”	set	device	security	user1	name		admin
	reply	device	security	user1	name		admin
Log in with username and password “admin”	set	device	security	login			admin,admin
	reply	device	security	login			admin,admin
Reset the device	set	device	mode	reset			true
	reply	device	mode	reset			true



section	device	group	param	sub	ssub	Value Type	Value Range	Description	Comment	Operation Permission:	
										No access <u>Secure</u> Admin	Unsecure <u>set</u> get
		version				object		Device Section		-	-
			serial			string		Serial Number		N	U
			hardware			unsigned 8-bit number	1..32	Hardware ID	PCB ID	N	U
			amp			unsigned 8-bit number	1..32	Amplifier ID	PCB ID	N	U
			app			array[3], unsigned 8-bit number	0..255	Application firmware version	format: major.minor.build	N	U
			boot			array[3], unsigned 8-bit number	0..255	Bootloader firmware version	format: major.minor.build	N	U
			dsp			array[3], unsigned 8-bit number	0..255	DSP firmware version	format: major.minor.build	N	U
			json			array[3], unsigned 8-bit number	0..255	JSON Interface Protocol Specification version	format: major.minor.build	N	U
		config				object		Configuration Group		-	-
			name			string	32 bytes, UTF-8	Device name	default to serial number, no space or comma in name	S	S
			numinput			unsigned 8-bit number	0..255	Total Number of inputs		N	S
			numoutput			unsigned 8-bit number	0..255	Total Number of outputs		N	S
			numfilterout			unsigned 8-bit number	0..255	Number of filters per output		N	S
			numpreset			unsigned 8-bit number	0..255	Number of Presets		N	S
			numuser			unsigned 8-bit number	0..255	Number of Security Users		N	S
		mode				object		Mode Group		-	-
			reset			bool	true/false	Reset device action flag	reset action will disconnect communication	S	N
			factory			char	a, c, p	Factory Reset device action: all, current config, presets	reset action will disconnect communication	S	S
			standby			bool	true/false	Standby mode action flag	enter / exit Standby Mode	S	S
			autostandby			bool	true/false	Auto standby mode action flag	enable / disable Auto Standby Mode	S	S
			autotime			unsigned 16-bit number	0..65535 s	Auto standby time		S	S
			autolevel			signed 8-bit number	-128dB..12dB	Auto standby threshold level		S	S
			softstart			unsigned 8-bit number	0..255 s	Audio soft start period	output volumes ramp up over soft start period after power up or exit standby	S	S



SERIAL COMMAND PROTOCOL (CONT)

section	group	param	sub	ssub	Value Type	Value Range	Description	Comment	Operation Permission:	
									<u>No</u> access <u>Un</u> secure	<u>Secure</u> <u>Admin</u> get
		status			object		Device Mode Status information		-	-
			standby		bool	true/false	Standby mode status flag	Standby Mode may have multiple triggers	N	S
	preset				object		Preset Group		-	-
		save			unsigned 8-bit number	1..numpreset	Save active audio configuration to Preset		S	N
		recall			unsigned 8-bit number	1..numpreset	Recall audio configuration from Preset		S	N
		nameX			string	32 bytes, UTF-8	Preset name where X = 1..numpreset	No space or comma in name	S	S
	security				object		Security Group		-	-
		enable			bool	true/false	Security enable flag	default: false	A	U
		login			array[2], string	32 bytes, UTF-8	Login array	No space or comma in username or password. Format: username;password	U	N
		userX			object		User X where X = 1..numuser		-	-
			id		unsigned 8-bit number	1..numuser	User ID index		N	A
			name		string	32 bytes, UTF-8	Username	default: admin	A	A
			password		string	32 bytes, UTF-8	Password	default: admin	A	A
			admin		bool	true/false	Admin permission flag		A	A
			timeout		unsigned 16-bit number	10..65535 s	Login active time period		A	A
active					object		Active Audio Processing Section		-	-
	inX				object		Config for Input X where X = 1..numinput		-	-
					unsigned 8-bit number	1..numinput	Input ID index		N	S
					string	32 bytes, UTF-8	Input name	No space or comma in name	S	S
		mode			char	m, l, p, s, 3, n, w, t	Input mode: mic, line, paging, stereo, MP, pink noise, white noise, test tone		S	S
		vol			float (32-bit) number	-128.0dB..127.0dB	Volume		S	S
			up		float (32-bit) number	0.0dB..127.0dB	Increase volume by specified value		S	N
			down		float (32-bit) number	0.0dB..127.0dB	Decrease volume by specified value		S	N
		freq			unsigned 16-bit number	1Hz..20kHz	Frequency (mode = t)	Sine wave test tone frequency	S	S
			status		object		Input Status information		-	-

SERIAL COMMAND PROTOCOL (CONT)



section	group	param	sub	ssub	Value Type	Value Range	Description	Comment	Operation Permission:	
									Secure	Admin
			level1		signed 8-bit number	-128dB..127dB	Level in meter status		N	S
			level0		signed 8-bit number	-128dB..127dB	Level out meter status		N	S
	mixoutXinY				object		Mixer config for Output X Input Y where X = 1..numoutput, Y = 1..numinput		-	-
		idout			unsigned 8-bit number	1..numoutput	Output ID index		N	S
		idin			unsigned 8-bit number	1..numinput	Input ID index		N	S
		source			bool	true/false	Source select	Input source selection for Output (single Input selection, no mixing)	S	S
	outX				object		Config for Output X where X = 1..numoutput		-	-
		id			unsigned 8-bit number	1..numoutput	Output ID index		N	S
		name			string	32 bytes, UTF-8	Output name	No space or comma in name	S	S
		invert			bool	true/false	Invert enable flag		S	S
		mute			bool	true/false	Mute enable flag		S	S
		extmute			bool	true/false	External Mute Control enable flag	Enable/disable external mute control for this output	S	S
		vol			float (32-bit) number	-128.0dB..127.0dB	Volume		S	S
			up		float (32-bit) number	0.0dB..127.0dB	Increase volume by specified value		S	N
			down		float (32-bit) number	0.0dB..127.0dB	Decrease volume by specified value		S	N
		status			object		Input Status information		-	-
			level0		signed 8-bit number	-128dB..127dB	Level out meter status		N	S
		filterX			object		Filter X where X = 1..numfilterout		-	-
			id		unsigned 8-bit number	1..numfilter	Filter ID index		N	S
			enable		bool	true/false	Enable flag		S	S
			type		string	hp, lp	Filter type: hi-pass, all-pass	Two byte string	S	S
			freq		unsigned 16-bit number	1Hz..20kHz	Cut-off frequency		S	S
			gain		float (32-bit) number	-128.0dB..30.0dB	Gain (cut / boost)		S	S
			family		char	b, s, l	Filter family: butterworth, bessel, linkwitz-riley		S	S



SERIAL COMMAND PROTOCOL (CONT)

section	group	param	sub	ssub	Value Type	Value Range	Description	Comment	Operation Permission:	
									Secure	Admin
			slope		unsigned 8-bit number	6dB..48dB	Slope of filter in 6dB steps		S	S
		compressor			object		Compressor block		-	-
			enable		bool	true/false	Enable flag		S	S
			threshold		float (32-bit) number	-128.0dB..127.0dB	Threshold activation level		S	S
			makeup		float (32-bit) number	-12.0dB..12.0dB	Make-up compensation gain level (post compressor)		S	S
			ratio		float (32-bit) number	1.0..∞	Compression Ratio (X:1)	Compressor generally < 20:1. Limiter generally ∞:1	S	S
			knee		unsigned 8-bit number	0dB..255dB	Knee width (in steps of 6dB)	Limiter has hard knee (0dB width)	S	S
			attack		unsigned 16-bit number	1ms..5s	Attack time (ms)	Limiter has zero attack time	S	S
			hold		unsigned 16-bit number	1ms..5s	Hold Time (ms)		S	S
			release		unsigned 16-bit number	1ms..5s	Release Time (ms)		S	S
			status		object		Status information		-	-
				level	signed 8-bit number	-128dB..127dB	Level in meter status		N	S
				level	signed 8-bit number	-128dB..127dB	Level out meter status		N	S
		amp			object		Amplifier Status Information		-	-
			status		object		Status information		-	-
			tempwarm		bool	true/false	Thermal warm level warning		N	S
			tempnot		bool	true/false	Thermal hot level warning		N	S
			standby		bool	true/false	Standby status		N	S
			overtemp		bool	true/false	Overtemperature Shutdown status		N	S
			overload		bool	true/false	Overload Shutdown status		N	S
			fault		bool	true/false	Startup fault status		N	S
			reset		bool	true/false	Reset status		N	S
			mute		bool	true/false	Mute status		N	S
			astatus		array[], bool		Status information	Status information returning only boolean values	N	S
presetX					object		Preset Audio Processing Section where X = 1..numpreset		-	-
	...						as per active section above, no status fields		-	-



ENGINEERED BY AUSTRALIAN MONITOR

Address: 1 Clyde St, Silverwater NSW 2128 Australia.

Website: www.australianmonitor.com.au

International enquiries email: international@australianmonitor.com.au

ABN 35 007 573 417