

operation manual

audient

ASP 131/231



ASP231 Dual 31 Band Graphic Processor

ASP131 Single 31 Band Graphic Processor

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Thank you for selecting an ASP Series graphic processor for your application.

We have designed these processors to provide you with the best possible tool to deal with today's demanding equalisation requirements.

We have taken a great deal of pride and care in the manufacture of this equipment so that it will provide consistent and reliable performance.

Please take a little time to study the contents of this manual so that you can be sure of getting the best performance from this equipment.

David Dearden
Designer.

1.0 UNPACKING

Your ASP Series Graphic Processor has been carefully and meticulously tested and inspected before despatch.

After unpacking the unit please check for any signs of transit damage. If any signs of mishandling are found please notify the carrier and your dealer immediately.

You may wish to retain the packing for use if the equipment is re-shipped at any time.

Your ASP Series Graphic Processor box should contain a power cord and a small pack of spare fuses along with this manual.

2.0 SAFETY

IMPORTANT SAFETY INSTRUCTIONS

Please read all of these instructions and save them for later reference before attempting to connect your unit to the AC power source.

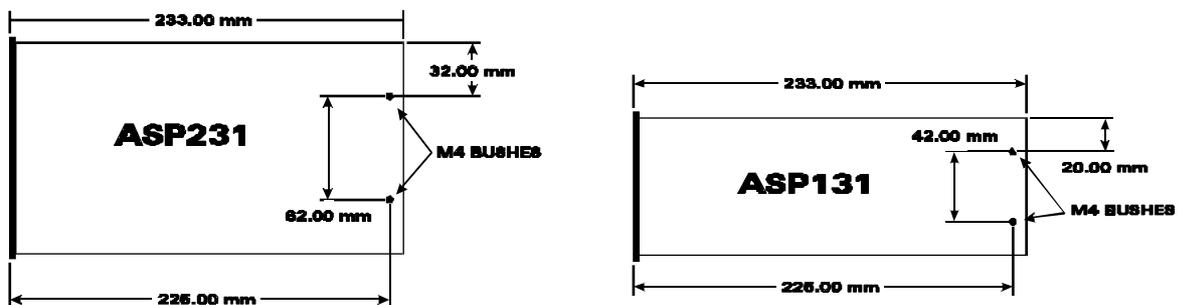
To prevent electrical shock and fire hazard follow all the warnings and instructions marked on the ASP131 and ASP231.

- This unit is connected via its power cord to the mains safety earth.
NEVER OPERATE THE UNIT WITH THIS EARTH CONNECTION REMOVED
- Check that the correct operating voltage has been set for your AC mains supply
- Check that the fuse fitted is the correct type for the mains voltage selected
- Always replace fuse with the correct type
- Do not expose the unit to rain or moisture
- Do not expose the unit to excessive heat
- Always ensure adequate ventilation if the unit is installed in a rack
- Do not remove the covers from the unit. There are no user serviceable parts enclosed and all servicing should be referred to a qualified technician

3.0 MECHANICAL INSTALLATION

The ASP131 and ASP231 are housed respectively in standard 2U (89mm) and 3U (133mm) high steel chassis. Both chassis are 233 mm deep.

The units are provided with rear support mounting points and to avoid reliability degradation these or some other form of rear support must be used when the units are installed in transportable systems.



Care should be taken not to obstruct the unit’s ventilation holes and adequate air flow must be provided within rack cases to prevent the unit from over-heating.

The front panel of the ASP131/231 Series features a rugged under-surface printed polycarbonate overlay. Exposure to direct sunlight for extended periods should be avoided as this can have a detrimental effect on the overlay panel and on the control knobs.

4.00 CONNECTIONS & INTERFACES

4.10 Mains power supply

4.11 Voltages

The ASP131/231 Series features an external mains voltage selector. Switched to the 230v position the unit will operate without performance degradation from 210v to 250v. In the 115v setting it will accept from 105v to 125v. Do not attempt to operate the unit outside the ranges defined above.

For 100v operation please contact your dealer.

4.12 Fuses

Please note that the fuse ratings for the two voltage ranges are different – T250mA for the 230v setting and T500mA for the 115v setting. The mains fuse is very unlikely to fail under normal use and caution should be exercised if a failure should occur. Check the mains voltage setting, condition of the mains cord and the integrity of the mains supply before replacing the fuse.

4.13 Safety earth

As detailed in section 2.00 the **ASP131/231 Series processors must always be connected to a safety earth and under no circumstances should this connection be lifted.** If system ground loop problems are encountered please refer to the next section on audio interfaces.

4.20 Audio interfaces.

The ASP131/231 processors have been designed and developed to provide highly robust system integration interfaces, allowing worry-free system hook-up under the most demanding situations.

Inputs and outputs are implemented using advanced electronically balanced topologies and are fitted with extensive RFI rejection networks. Inputs will accept levels up to +22dBu and the high current output drivers are able to drive up to +20dBu into loads as low as 200 ohms and up to +22dBu into >600 ohm bridging loads.

All signal interfaces are also fully protected against accidental misuse eg by the connection of phantom powered cables.

The ASP131/231 is fitted with fail-safe by-pass relays. These automatically by-pass the unit if power fails. They are also used to provide a delayed turn-on feature which maintains the unit in bypass mode for a short period after power is applied, eliminating switch-on transients.

4.21 Pin conventions

Signal interfaces are provided on both metal shell locking XLR and Klippon/Pheonix type connectors. The shells of all XLRs together with Pins 1 are connected to the chassis safety ground. XLR Pin 2 is designated as signal positive and pin 3 as signal negative although a Pin 3 hot wiring convention will not cause any problems so long as inputs and outputs are wired similarly.

4.21 Pin conventions continued

To unbalance the outputs of the ASP131/231 either Pin 3 or Pin 2 (depending on the wiring convention used) should be connected to Pin 1 at the output of the processor. Similarly, inputs from unbalanced sources should be connected via twin screened cables with either the Pin 3 or Pin 2 connection tied to the screen at the unbalanced source.

4.22 Screen connections

In order to maintain optimum EMC performance it is important that screens are connected properly at both ends of cable runs. In this way the electro-magnetic shield provided by the equipment chassis and the cable screens will be optimised to reject interference. It is recommended that only high quality braided screen cables are used to avoid compromising EMC performance.

4.23 Ground lift

There can be situations where it is impossible to correctly isolate all screen and signal connections and ground loop problems can result. To help alleviate this problem a Signal ground lift switch has been provided to disconnect the signal ground directly from the safety ground. This switch is on the rear of the rack chassis.

With the Signal ground lift switch depressed the internal signal ground/0v is connected to the safety ground via a 100 ohm resistor in parallel with a 47nF capacitor. This removes the low frequency ground loop while still maintaining a low impedance path to safety earth for high frequency interference (RFI).

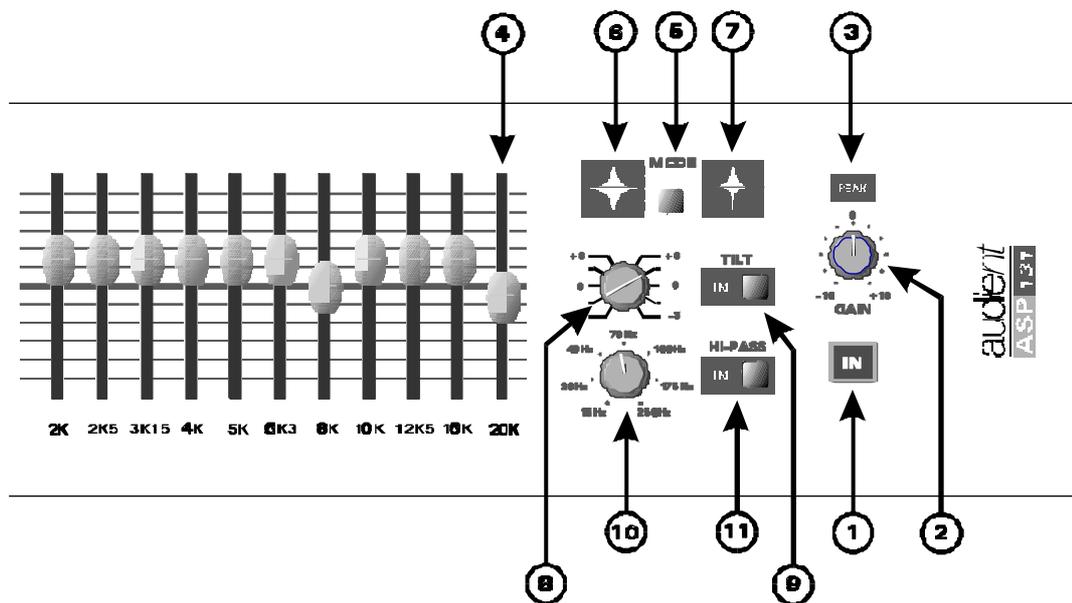
4.24 Transformers

Optional input and output isolating transformers may be specified for the ASP131/231 Series for situations where a fully floating interface is a necessity.

5.00 FUNCTIONS & CONTROLS

The ASP131/231 Series Graphic Processors have a number of innovative control features. The function of these and the more familiar controls is described in this section. An overview of the use of the processor is provided in the next section *Using the ASP131/231*.

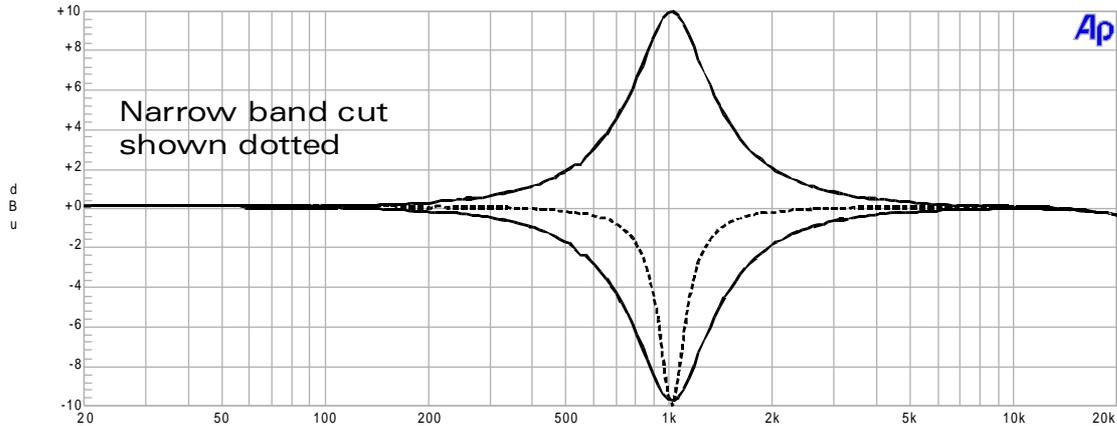
5.10 Front panel functions



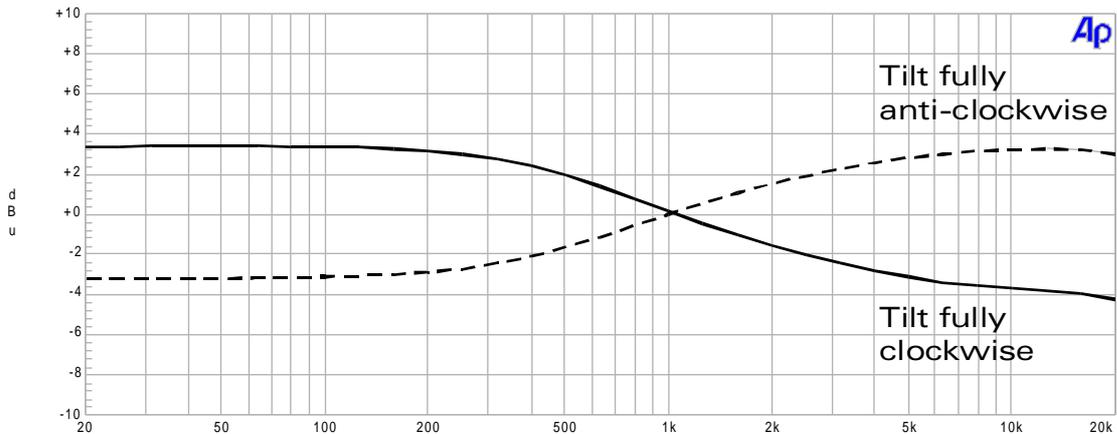
- 1 Equaliser **IN** switch. Depress to switch all equaliser sections including TILT and HI PASS *if these are enabled* and the 31 band filter section into circuit. Release to bypass.
- 2 Input **GAIN** trim with +/- 10dB range and centre detented unity position. Controls gain with equalisers both in & out of circuit.
- 3 **PEAK** illuminates at +16dBu as an advanced warning of overload. The peak detect circuit monitors levels both before and after the equaliser sections.
- 4 **BOOST/CUT** control provides +/- 10dB of boost and cut at the centre frequency shown on the illuminated display immediately below the fader. The fader has a centre detent with an electrical centre tap to ensure a flat response in the centre position and minimise noise contribution from unused filter sections.
- 5 In the released position the **MODE** switch sets the 31 filter sections to normal wide mode operation. The 'normal' icon (6) is illuminated. This mode is best used for general sweetening and offers optimised combining and reciprocal boost/cut characteristics.

5.10 Front panel functions - continued

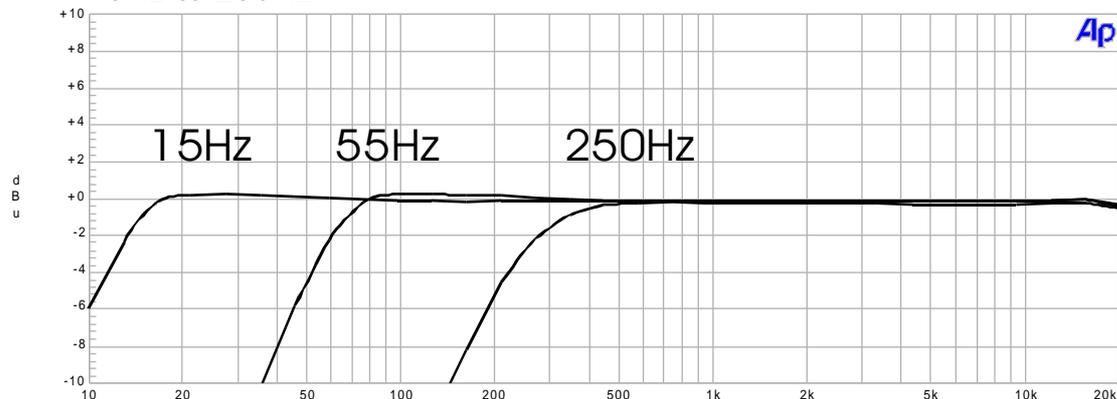
- 6 For 'notching out' feedback and room modes depress the **MODE** switch to select 'narrow' mode confirmed by the 'narrow' icon (7) illuminating. This provides a narrow band notch characteristic to allow a selected frequency band to be attenuated with minimum effect on the overall program balance. Boost characteristic remains the same as 'normal' mode.



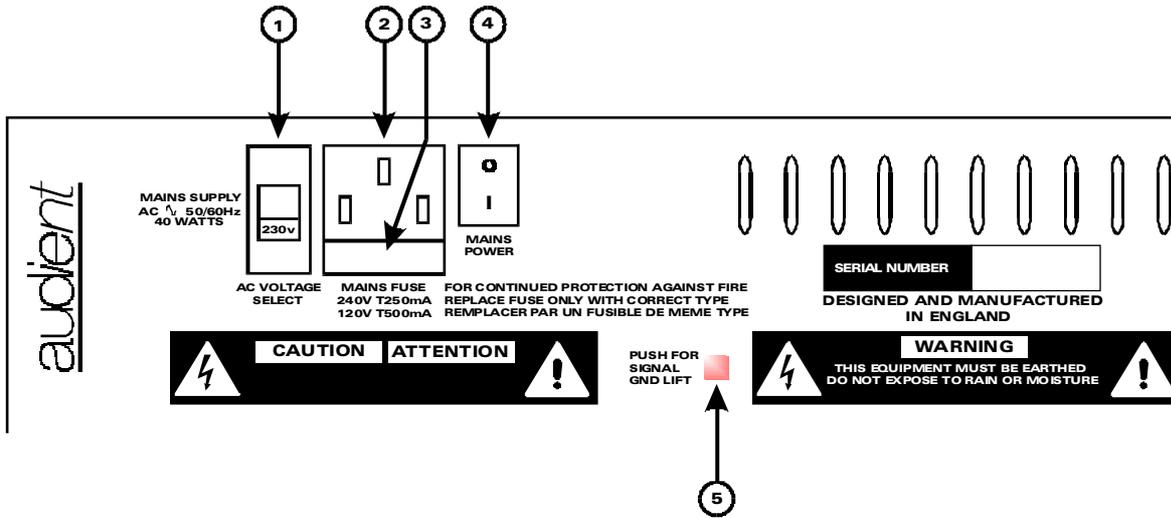
- 8 The **TILT** control and its associated in/out switch and legend (9) *tilts* the overall response by +/- 3dB around 1KHz providing a rapid method for making overall system balance adjustments eg to compensate for venue population.



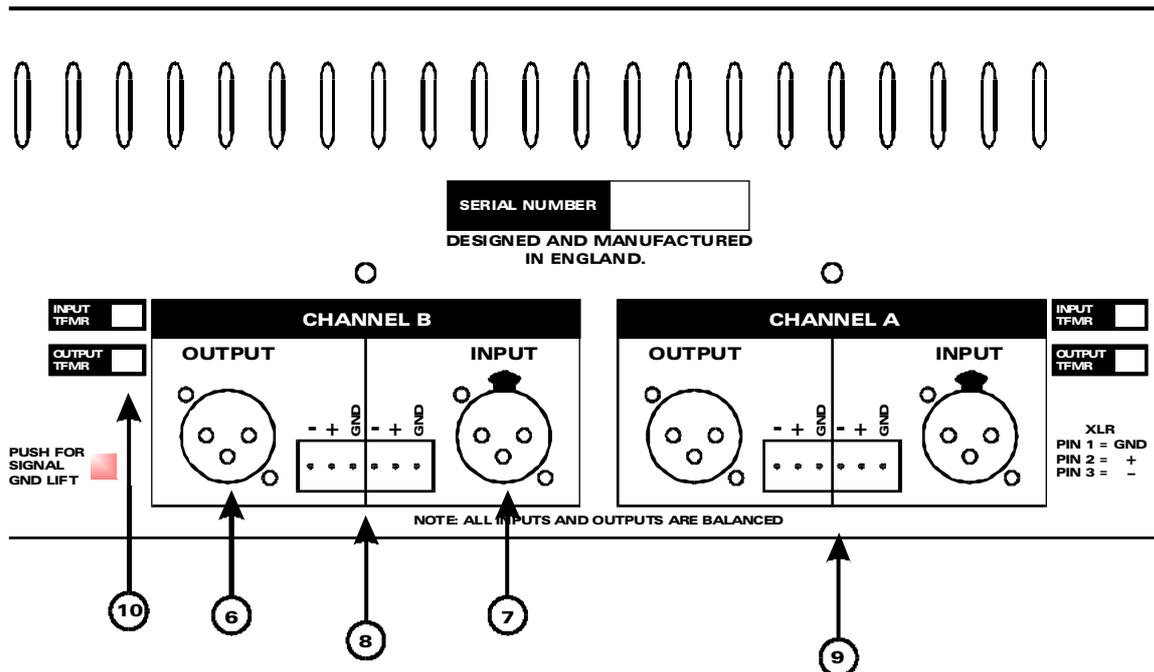
- 10 The **Hi-Pass** control and its associated in/out switch and legend (11) provides a 12dB/octave filter with a variable operating frequency from 15Hz to 250Hz



5.20 Rear panel functions



- 1 **AC input voltage selector** for either 230v or 115v nominal input voltages.
- 2 **IEC inlet**
- 3 **Fuse drawer** for 20mm T250 mA for 230v setting and T500 mA for 115v setting. Always replace the fuse with the correct type for continued protection.
- 4 **Mains on/off switch**
- 5 Depress the **Signal Ground lift switch** to lift the audio 0v connection from safety earth. Note that a 100 ohm resistor and parallel 47N capacitor are wired across this switch to maintain a low impedance to ground at high frequencies with the switch depressed.



5.20 Rear panel functions - continued

- 6 **Electronically balanced output** capable of driving up to +22 dBu into loads of 600 ohms and over.

Pin connections are: PIN 1 = GND/CHASSIS
 PIN 2 = Signal +
 PIN 3 = Signal -

- 7 **Electronically balanced input** will accept up to +22dBu with an input impedance of >10kohms.

Pin connections are: PIN 1 = GND/CHASSIS
 PIN 2 = Signal +
 PIN 3 = Signal -

- 8 The balanced inputs and outputs are also available on **Klippon/Phoenix** type connectors for easy installation into pre-wired systems.

- 9 On the dual channel ASP 231, **Channel B connections** use the lower section of the front panel controls and Channel A the top section.

- 10 Optional input and output transformers are available for the ASP131/231 Series. When these have been fitted the appropriate box z should be marked.

6.00 USING THE ASP131/231

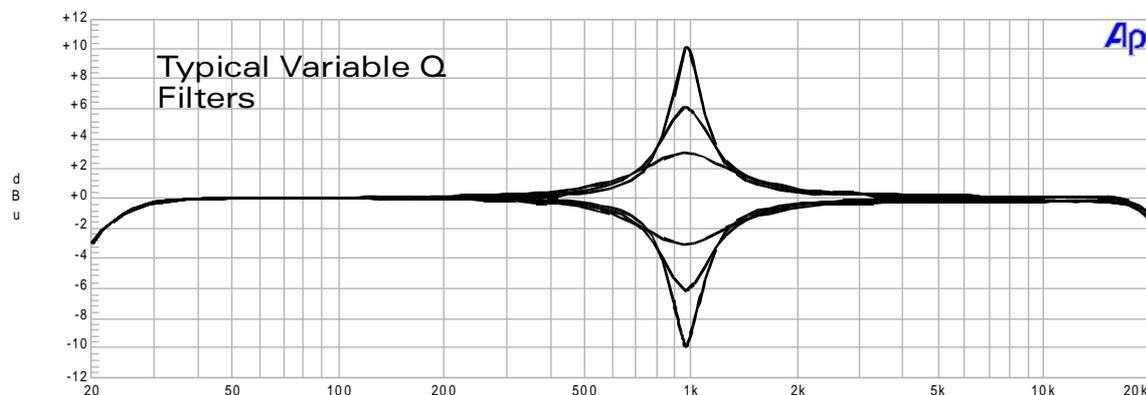
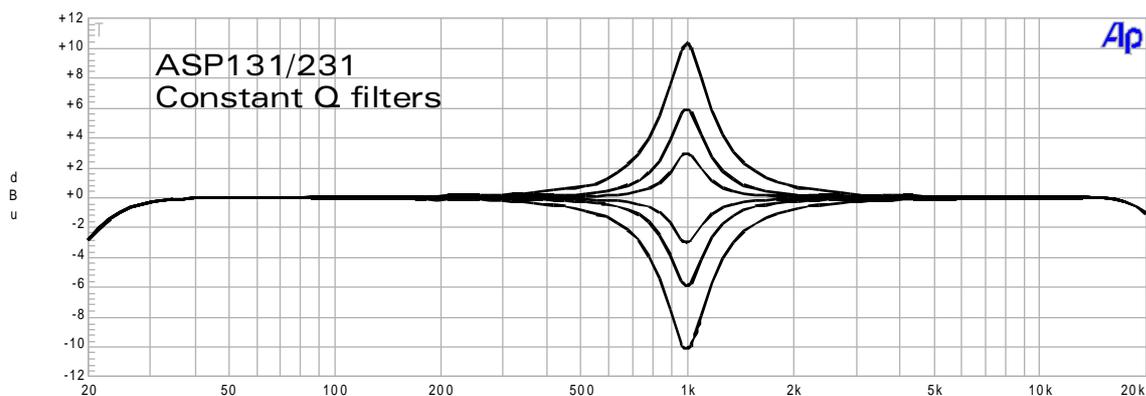
The ASP131/231 Graphic Processors have a wide variety of applications for both creative and corrective equalisation.

The use of equalisation is a highly complex subject and this section does not attempt to deal with the topic in depth but rather highlights the advanced features of the ASP131/231 Series and how they can be used to create a uniquely powerful signal processing tool. *(For a detailed discussion of equalisation, Don and Caroline Davis' book Sound System Engineering – ISBN 0-240-80305-1 is recommended).*

6.10 Constant Q Filters

Many conventional graphic equalisers use variable Q filter stages. With these, the shape or Q of the filter varies with the amount of boost or cut applied. At low boost/cut values the Q will be quite low resulting in a very broad portion of the audio band being affected by each boost/cut control. Adjustment therefore becomes very imprecise. On the other hand when typically more than 5 or 6dB of boost or cut are applied the Q of these filters will become very high resulting in poor filter combining and a very unnatural and peaky overall response.

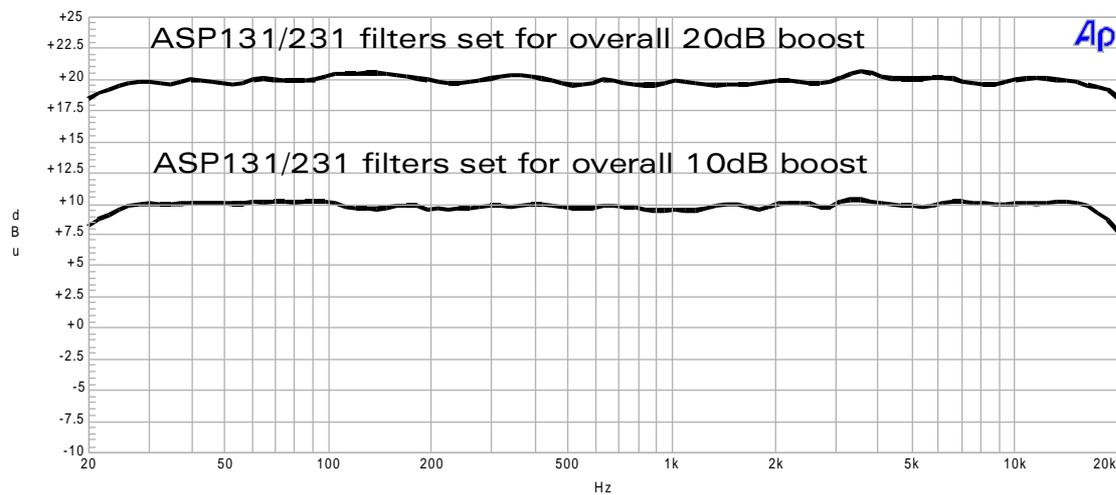
The ASP131/231 on the other hand uses an advanced constant Q filter topology guaranteeing consistent control no matter how much or how little boost/cut is applied. This approach makes system equalisation more straight forward and in severe conditions, when large amounts of boost/cut are unavoidable, delivers a more natural sounding result.



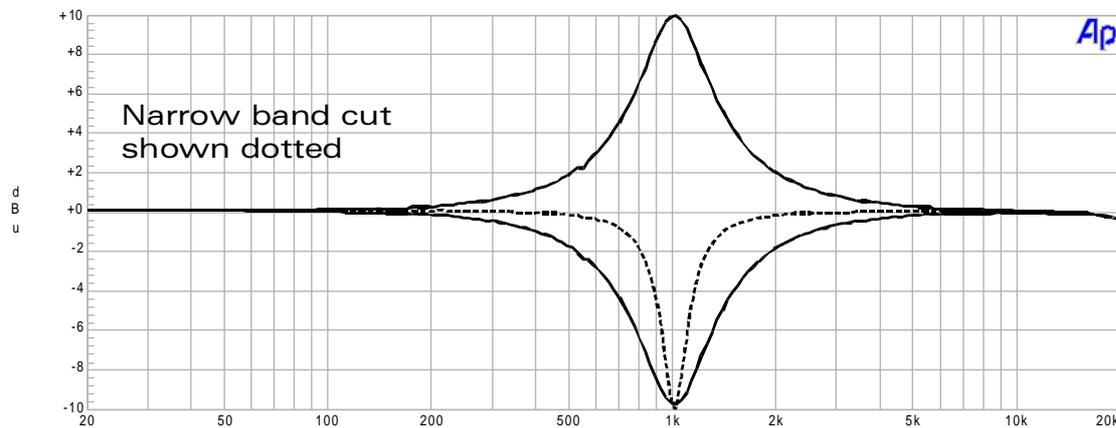
6.20 Dual operating modes

Generally speaking a moderately broad (medium Q) filter with good combining characteristics is the best tool with which to carry out general sweetening and system voicing. When it comes to dealing with room modes and feedback a narrow band attenuating filter will enable problem frequency bands to be treated with the minimum effect on the overall system balance.

The ASP131/231 Series processors address both of these divergent requirements. Normal mode operation (see 5.10/6) provides reciprocal filter responses with a wide Q of 2.5 giving excellent combining characteristics (even at high gains) ideally suited to general EQ treatment.



By depressing the Mode switch (see section 5.10/5) the equaliser is set to provide a narrow band cut characteristic with a Q of 8.5 - equivalent to a 1/6th octave bandwidth. This setting is ideal for 'notching out' feedback and room modes with the minimum effect on overall system balance. In this mode the boost response remains the same as in normal mode allowing general treatment with smooth combining to be performed at the same time.



6.30 Tilt

Graphic equalisation although powerful can be cumbersome in some situations.

Very often small overall system response changes need to be implemented, for example to enhance intelligibility, to provide a more natural balance or to compensate for audience size and humidity changes. These can be intensely tedious and time consuming tasks on a conventional graphic.

The ASP131/231 provides a simple but highly effective feature to deal with this type of situation.

The Tilt control (see section 5.10/8) allows gentle 'tilting' of the entire audio band either lifting high frequencies and cutting low frequencies or vice versa. By using this control the overall system balance can be optimised with one operation rather than by having to make small adjustments to many of the individual filter boost/cut controls.

6.40 Hi Pass Filter

This control provides very precise control of the LF response extension. It can be used to improve intelligibility in vocal only systems or to improve system head-room by reducing LF power usage.

7.00 OPTIONS

7.1 Input transformer - Part number IPTMR-ASP1

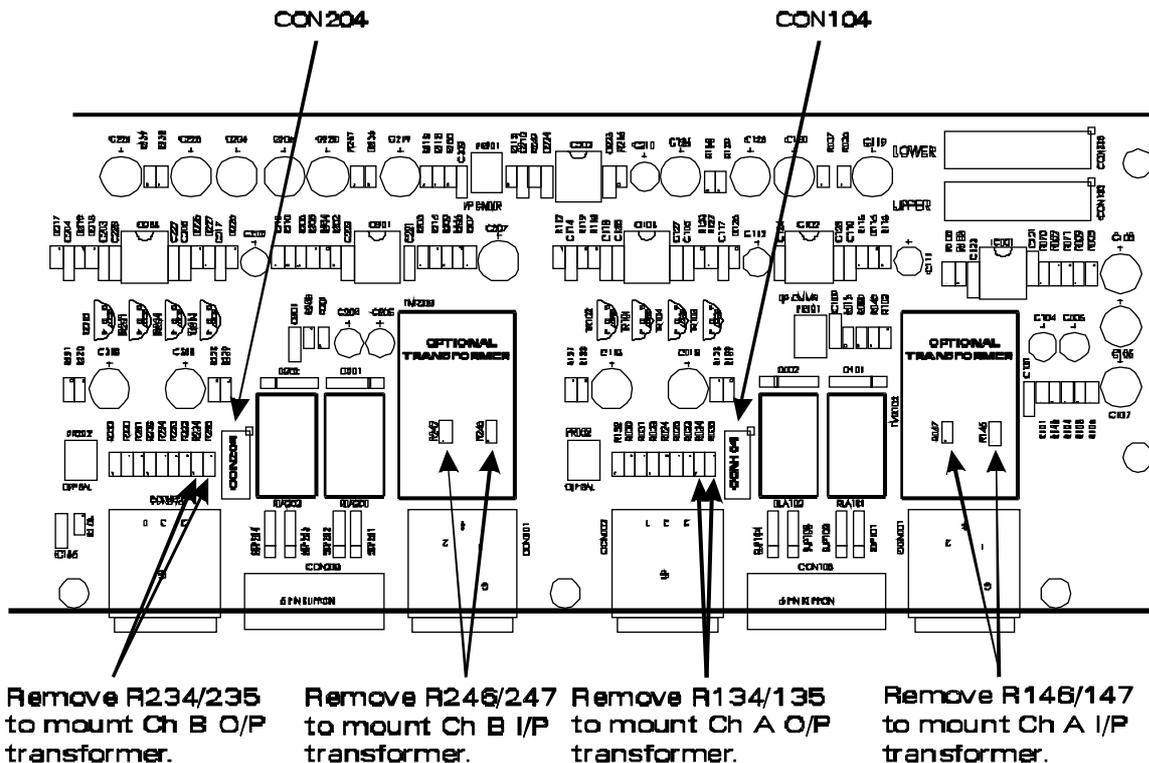
Optional input transformers (one per channel) may be mounted directly to the I/O PCB (PC20100).

Zero ohm links R146/147 (ASP131 and ASP231 channel A) and R246/247 (ASP231 channel B) should be removed from the PCB before the transformers are installed.

7.2 Output transformer - Part number OPTMR-ASP1

The optional output transformer (one per channel) is a toroidal type and mounts onto the rear of the chassis linking to the I/O PCB (PC20100) via 6 way connectors which are already installed on the PCB. CON104 is used for channel A and CON204 for channel B.

Zero ohm links R134/135 (ASP131 and ASP231 channel A) and R234/235 (ASP231 channel B) should be removed from the PCB before the transformers are installed.



The factory fitment of transformers will be designated by check marks in the relevant boxes on the rear of the chassis.

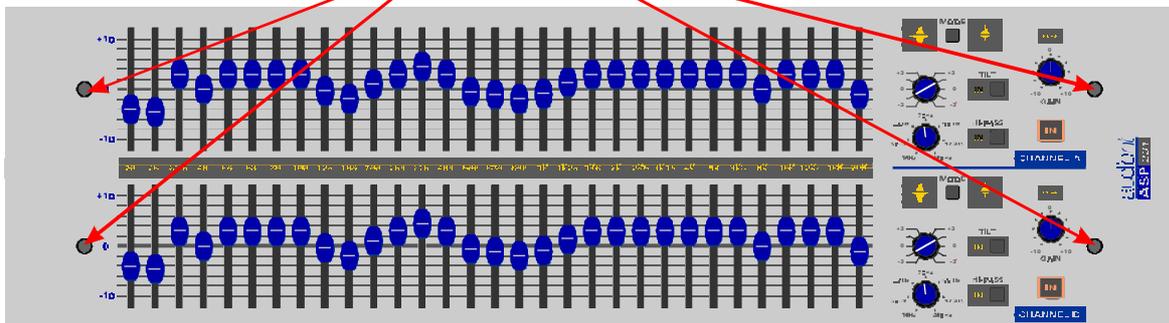
7.3 Security covers – Part number: SCVR – ASP131
SCVR – ASP231

Security covers are easily mounted to the existing front panel bushes with the M3 socket-head screws and mounting pillars (2 per 131 and 4 per 231) supplied with the cover kit.

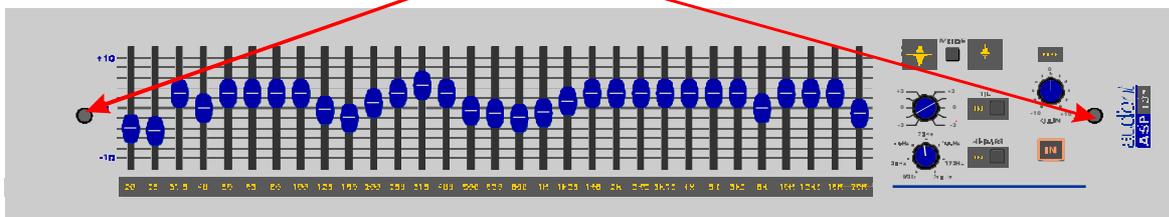
After unpacking the security cover remove the hexagonal mounting pillars that are attached to the inside of the cover and screw these into the mounting bushes on the ASP131/231 front panel. The position of these mounting bushes is shown below.

The security cover may now be attached to the front panel using the captive M3 socket-head screws already fitted to the cover.

Security cover mounting bushes



Security cover mounting bushes



8.00 SPECIFICATIONS

Inputs

Electronically balanced enhanced CMRR

Impedance >10k ohms
 Maximum input +22dBu
 Common mode rejection >70dB 10Hz-22kHz
 (Typically >85dB @ 1kHz)
 Gain adjust +/- 10dB

Outputs

Electronically balanced high current

Impedance <50 ohms
 Maximum output +22dBu into bridging loads > 600 ohms
 +20dBu into any load >200 ohms

System specifications
 (EQ in & flat)

Frequency response +/- 0.3dB 10Hz – 22kHz
 Distortion @ +4dBu <0.005% 10Hz – 22kHz
 (Typically 0.003% at 1kHz)
 System noise <-92dBu 20Hz – 22kHz
 Channel separation > -80dB @ 1kHz

Equaliser section

Equaliser Filters 31 Multiple feedback constant Q dual mode
 Nominal boost/cut 10dB
 Hi-Pass filter 12dB/octave Butterworth
 Sweepable 15Hz to 250Hz

Power

Voltage Selectable 230v/115v +/- 10%
 50/60Hz
 Consumption 40VA

Dimensions

ASP131 482x89x233mm
 ASP231 482x132x233mm

Weight

	Nett	Shipping
ASP131	2.4 kg	3.5 kg
ASP231	6.2 kg	7.3 kg

9.00 WARRANTY

Your ASP131/231 Series Graphic Processor comes with a manufacturers warranty for one year from the date of despatch to the end user.

The warranty covers faults due to defective materials used in manufacture and faulty workmanship only.

During this warranty period Audient will repair or at its discretion replace the faulty unit provided it is returned carriage paid to an authorised Audient service centre.

We will not provide warranty repair if in our opinion the fault has resulted from unauthorised modification, misuse, negligence, act of God or accident.

We accept a liability to repair or replace your ASP131/231 as described above. We do not accept any additional liability.

This warranty does not affect any legal rights you may have against the person who supplied this product – it is additional to those rights