

## SERVICE INFORMATION

# AMC+250 MIXER AMPLIFIER

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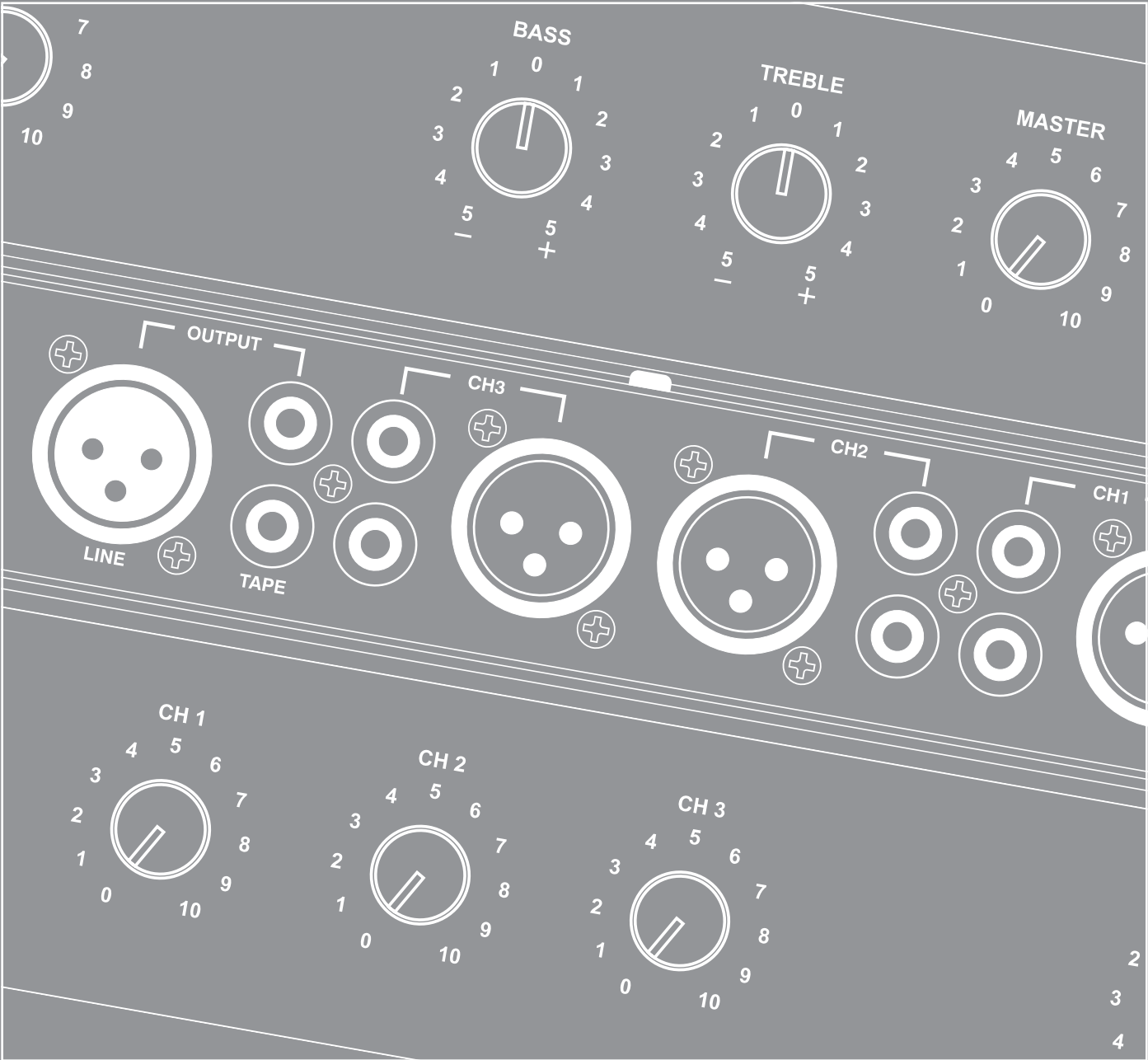
TEST PROCEDURE

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# AMC+ SERIES

## 30W/60W/120W/250W MIXER AMPLIFIERS INSTALLATION AND OPERATION MANUAL





## IMPORTANT SAFETY INFORMATION



1. Save the carton and packing material even if the equipment has arrived in good condition. Should you ever need to ship the unit, use only the original factory packing.
2. Read all documentation before operating your equipment. Retain all documentation for future reference.
3. Follow all instructions printed on unit chassis for proper operation.
4. Do not spill water or other liquids into or on the unit, or operate the unit while standing in liquid.
5. Make sure power outlets conform to the power requirements listed on the back of the unit.
6. Do not use the unit if the electrical power cord is frayed or broken. The power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
7. Always operate the unit with the AC ground wire connected to the electrical system ground. Precautions should be taken so that the means of grounding of a piece of equipment is not defeated.
8. Mains voltage must be correct and the same as that printed on the rear of the unit. Damage caused by connection to improper AC voltage is not covered by any warranty.
9. Have gain controls on amplifiers turned down during power-up to prevent speaker damage if there are high signal levels at the inputs.
10. Power down and disconnect units from mains voltage before making connections.
11. Never hold a power switch in the "ON" position if it won't stay there itself!
12. Do not use the unit near stoves, heat registers, radiators, or other heat producing devices.
13. Do not block fan intake or exhaust ports. Do not operate equipment on a surface or in an environment which may impede the normal flow of air around the unit, such as a bed, rug, weathersheet, carpet, or completely enclosed rack. If the unit is used in an extremely dusty or smoky environment, the unit should be periodically "blown free" of foreign matter.
14. Do not remove the cover. Removing the cover will expose you to potentially dangerous voltages. There are no user serviceable parts inside.
15. Do not drive the inputs with a signal level greater than that required to drive equipment to full output.
16. Do not connect the inputs / outputs of amplifiers or consoles to any other voltage source, such as a battery, mains source, or power supply, regardless of whether the amplifier or console is turned on or off.
17. Do not run the output of any amplifier channel back into another channel's input. Do not parallel- or series-connect an amplifier output with any other amplifier output. Australian Monitor Inc is not responsible for damage to loudspeakers for any reason.
18. Do not ground any red ("hot") terminal. Never connect a "hot" (red) output to ground or to another "hot" (red) output!
19. Non-use periods. The power cord of equipment should be unplugged from the outlet when left unused for a long period of time.
20. Service Information Equipment should be serviced by qualified service personnel when:
  - A. The power supply cord or the plug has been damaged.
  - B. Objects have fallen, or liquid has been spilled into the equipment
  - C. The equipment has been exposed to rain
  - D. The equipment does not appear to operate normally, or exhibits a marked change in performance
  - E. The equipment has been dropped, or the enclosure damaged.

The Australian Monitor AMC+ series of amplifiers takes the heritage and reliability of our famous AMIS series amplifiers and integrates these features into low cost amplifiers for applications where reliability is everything, but the more elaborate features of our AMIS series are not required.

Available in 30, 60, 120 and 250 watt versions, the AMC+ series are 2 RU mixer amplifiers, featuring 70/100 volt line and 4 ohm outputs, and 4 universal mic/line inputs.

Master volume and overall treble and bass controls are provided, along with Vox triggered muting (defeatable), giving channel 1 priority over inputs 2, 3 and 4. There is also the facility to add a tone generator card.

The Australian Monitor AMC+ series gives the contractor a low cost alternative in applications that are price sensitive, but still require a high quality of sound reproduction and reliability.

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 Copyright 1st Apr 2005  
 Rev A: 1st Apr 2005  
 Rev B: 6th Jun 2006  
 Rev C: 26th May 2008



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operational and maintenance (servicing) instructions in the literature accompanying the appliance.

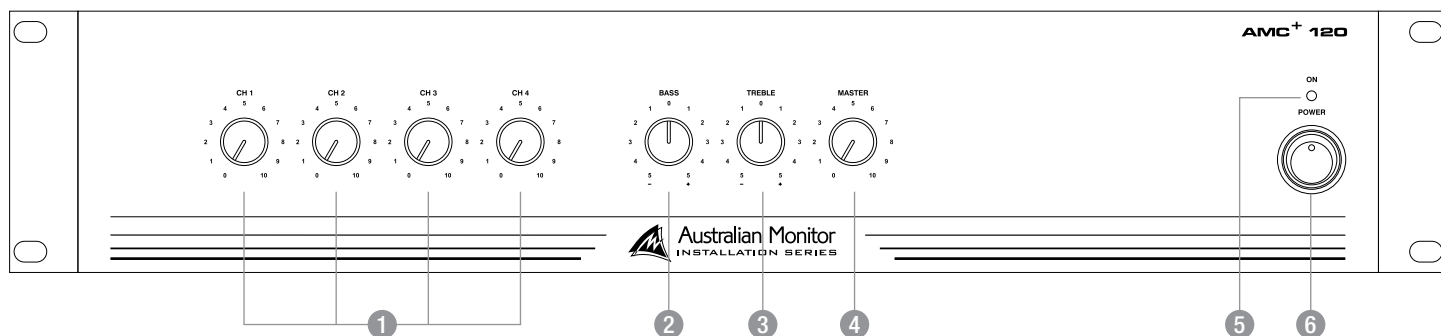
**Caution:**

To prevent electric shock do not use this (polarised) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure. To prevent electric shock, match wide blade of plug to wide slot, fully insert.

**WARNING!**

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

## FRONT PANEL



### 1 CH 1–4

These control the levels for each channel input.

### 2 Bass

There is 12dB of cut and boost at 100Hz.

### 3 Treble

There is 9dB of cut and boost at 10kHz.

### 4 Master

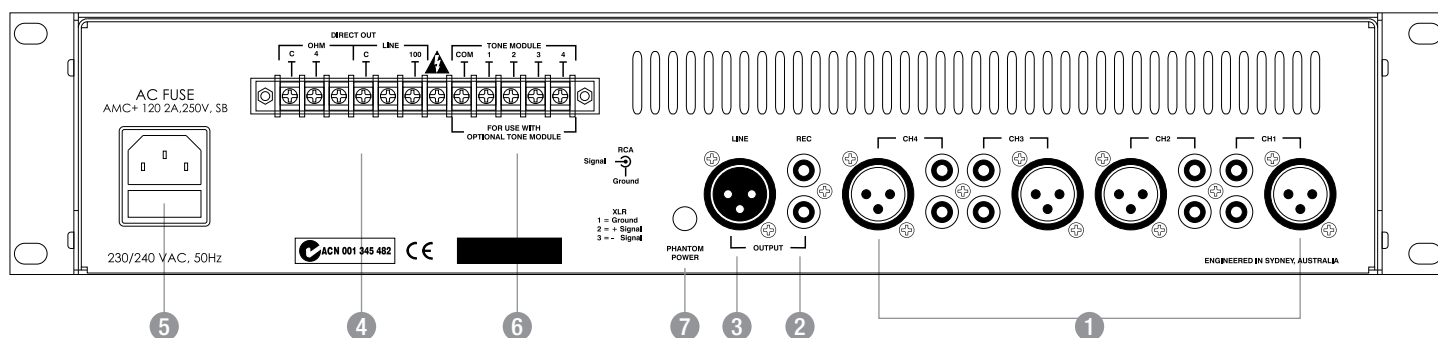
This controls the overall mixed output level.

### 5 On

This LED indicates the unit is powered “on”.

### 6 Power

This switch switches power on or off the mains. The up position is on.



**1 CH 1-4**

Each channel input section has two inputs: XLR input – This is a balanced microphone input. It has an input sensitivity of 1mV. RCA input – This is an unbalanced line level input. It has an input sensitivity of 150mV. The two RCA sockets are summed to mono internally.

**2 REC Output**

The REC output is on unbalanced RCA connectors. The output level is 150mV into 10kohm at rated output. The output is dual mono.

The REC output is not affected by the MASTER volume control or the BASS and TREBLE controls.

The REC output does not receive the tone signal if the optional tone generator module is installed.

**3 Line Output**

The LINE output is on a balanced XLR connector. The output level is 0.775V into 1k at rated output.

**Note:** When wiring the LINE output as unbalanced, Pin2 should be wired as hot and Pin1 should be wired as ground/shield. Do not wire Pin3.

**4 Direct Out**

The speaker connections are on the 12 pole terminal strip. There is a low impedance output (OHM) and a distributed line voltage output (LINE). 70V out is available on 115V models. 100V out is available on 230V/240V models.

**Minimum Impedance**

	AMC+30	AMC+60	AMC+120	AMC+250
<b>Distributed Line Output</b>				
70V (115V version)	166ohm	83ohm	41ohm	20ohm
100V (230/240V version)	333ohm	166ohm	83ohm	40ohm
<b>Low Impedance Output</b>				
(both versions)	4ohm	4ohm	4ohm	4ohm

**Note:** Only connect one output – either Distributed Line or Low Impedance per channel. Do not connect LowZ and 70/100V at the same time.

The output strip comes fitted with a touch-proof cover held in place by two M3 machine screws with flat and spring washers.

**5 IEC Mains Input Socket**

This is a standard IEC 3 pin socket. It accepts a standard IEC mains cable, provided. The fuse draw at 5 contains the mains fuse and a spare. The mains fuse is a time lag (slow blow) HRC 20mm x 5mm ceramic type fuse.

The ratings are:	AMC+30	AMC+60	AMC+120	AMC+250
230V/240V model	0.5A	1.6A	2A	2.15A
115V model	1A	3.15A	4A	6.3A

**!** Always replace the fuse with one of the same value and type.

**⚡ Note:** Always disconnect power to the amplifier before replacing fuses.

**6 (Optional) Tone Module**

These terminals are for use with an optional tone module (not supplied). Use Australian Monitor ATC5488 module.

**7 Phantom Power**

12V phantom power is available for condenser or electret microphones on the XLR input when this switch is pushed in.

# INSTALLATION

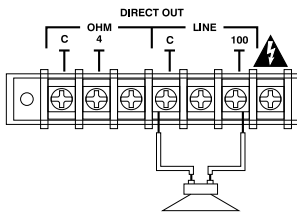
## Mounting

When rack mounting, it is advisable to allow 1 rack space above and below the amplifier. When multiple amplifiers are mounted in a rack, exhaust fans should be used on the rack. Airflow for cooling the AMC30, AMC60 and AMC120 is by convection from bottom to top. Airflow for cooling the AMC250 is by fan from front to side.

## Direct Output

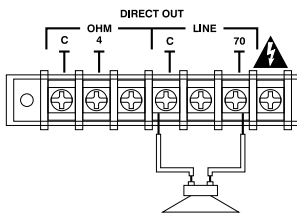
The output terminal strip accepts wire sizes from 16-22AWG (1.5mm<sup>2</sup> – 0.35mm<sup>2</sup>) or spade lugs. The following table should be used as a guideline for cable sizes. Regulations in your area may require different gauged wire and should be checked before using.

Output	Distance	Wire Size			
		AMC+30	AMC+60	AMC+120	AMC+250
100V	Up to 50m	AWG26(0.12mm <sup>2</sup> )	AWG26(0.12mm <sup>2</sup> )	AWG24(0.2mm <sup>2</sup> )	AWG22(0.35mm <sup>2</sup> )
	50m–200m	AWG24(0.2mm <sup>2</sup> )	AWG20(0.5mm <sup>2</sup> )	AWG18(0.75mm <sup>2</sup> )	AWG16(1.5mm <sup>2</sup> )
	Over 200m	AWG20(0.5mm <sup>2</sup> )	AWG18(0.75mm <sup>2</sup> )	AWG16(1.5mm <sup>2</sup> )	AWG13(2.5mm <sup>2</sup> )
70V	Up to 50m	AWG26(0.12mm <sup>2</sup> )	AWG24(0.2mm <sup>2</sup> )	AWG22(0.35mm <sup>2</sup> )	AWG18(0.75mm <sup>2</sup> )
	50m–200m	AWG20(0.5mm <sup>2</sup> )	AWG18(0.75mm <sup>2</sup> )	AWG16(1.5mm <sup>2</sup> )	AWG13(2.5mm <sup>2</sup> )
	Over 200m	AWG18(0.75mm <sup>2</sup> )	AWG16(1.5mm <sup>2</sup> )	AWG13(2.5mm <sup>2</sup> )	AWG10(6.0mm <sup>2</sup> )
4 ohm	Up to 10m	AWG18(0.75mm <sup>2</sup> )	AWG18(0.75mm <sup>2</sup> )	AWG18(0.75mm <sup>2</sup> )	AWG18(0.75mm <sup>2</sup> )
	10m–30m	AWG13(2.5mm <sup>2</sup> )	AWG13(2.5mm <sup>2</sup> )	AWG13(2.5mm <sup>2</sup> )	AWG13(0.35mm <sup>2</sup> )
	Over 30m	Not Recommended	Not Recommended	Not Recommended	Not Recommended



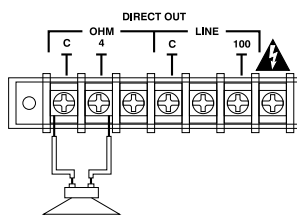
230/240V version

minimum total speaker impedance  
 AMC+30 333ohm AMC+60 166ohm AMC+120 83ohm AMC+250 40ohm



115V version

minimum total speaker impedance  
 AMC+30 166ohm AMC+60 83ohm AMC+120 41ohm AMC+250 20ohm



Both versions

minimum total speaker impedance  
 All models 4 ohm

**Note:** Only connect one output – either Distributed Line or Low Impedance.

### Line Output

The LINE output XLR can be used to connect up to 6 booster amplifiers. Balanced wiring (shielded pair cable) is recommended.

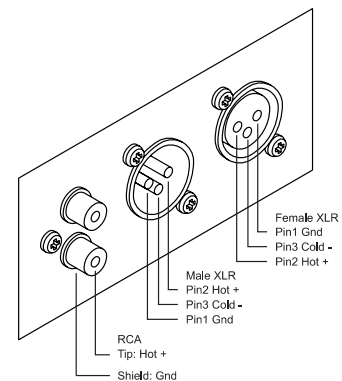
**Note:** When wiring the LINE output as unbalanced, Pin2 should be wired as hot and Pin1 should be wired as ground/shield. Do not wire Pin3.

### REC Output

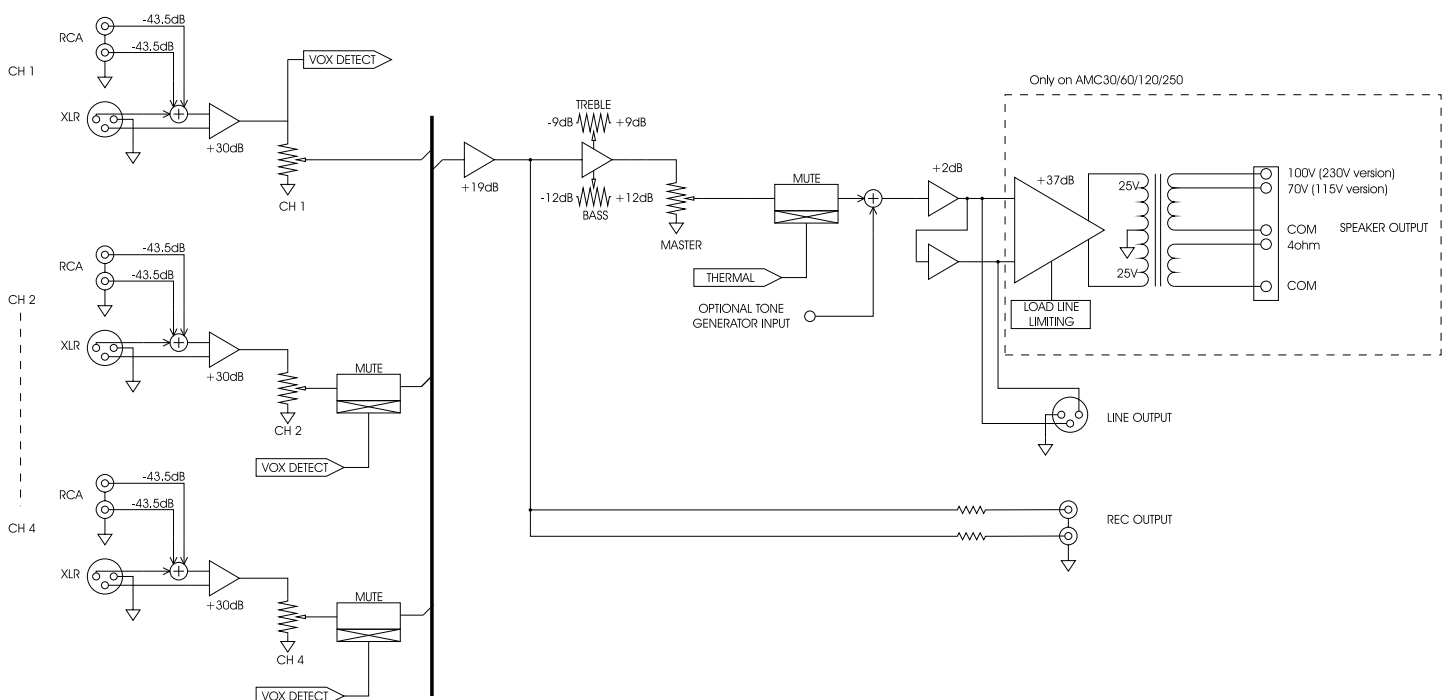
The REC output wiring should be kept as short as possible.

### Input Connections

For wiring balanced in, pin 2 is hot. Unbalanced wiring on the microphone inputs is not recommended. Balanced input wiring (shielded pair cable) is recommended. Unbalanced RCA wiring should be kept as short as possible.



Troubleshooting Guide		
Trouble	Likely Cause	Remedy
Power LED not on	Power not reaching amplifier	Check power switch is on Check mains connection Check mains fuse
Distorted sound	Output is short circuit Input is overloaded Output is being over driven Bass control is turned up	Check speaker loads for shorts Reduce input level at source Reduce volume levels on front panel Reduce Bass control level
No sound but amp is on	Volume controls down Amplifier has overheated (AMC+60, AMC+120 AMC+250 only) DC fuse(s) blown	Check volume controls Check for obstructions above and below Make sure the amplifier is well ventilated Refer product to local Australian Monitor dealer
No sound from channels 2 and 3	Priority function is being used	Remove signal (disconnect input) from channel 1 OR Disable priority function (see Internal Adjustments)
Tones do not sound when triggered	Tone generator module not installed	Purchase optional Tone generator module



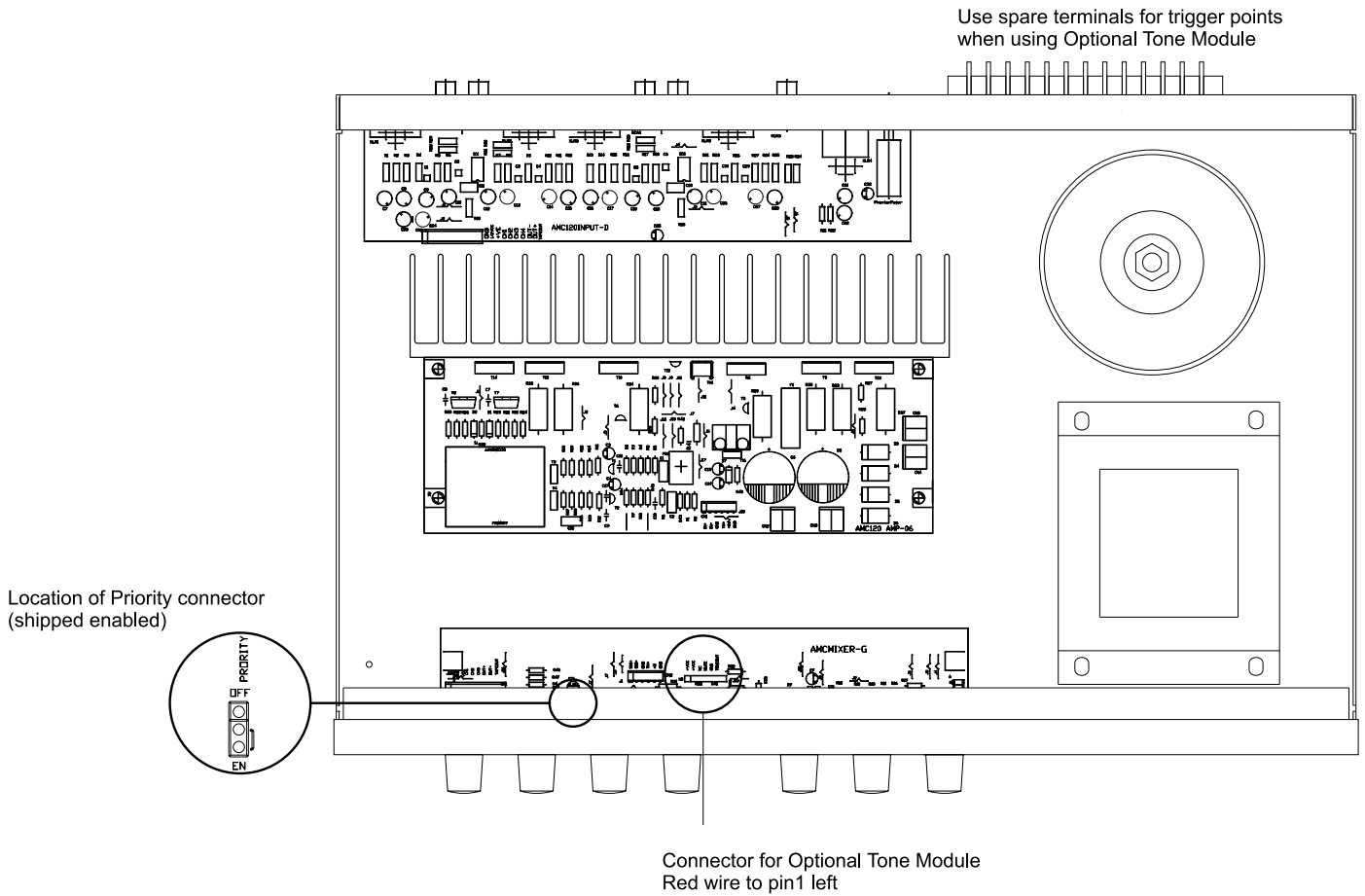


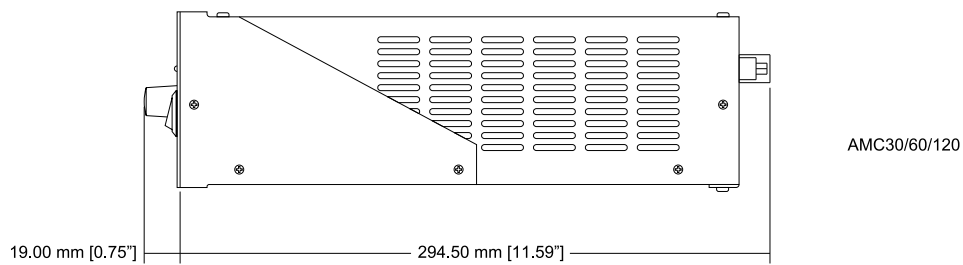
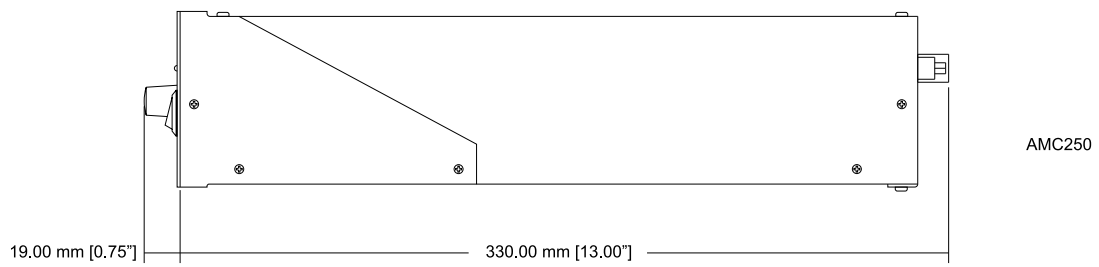
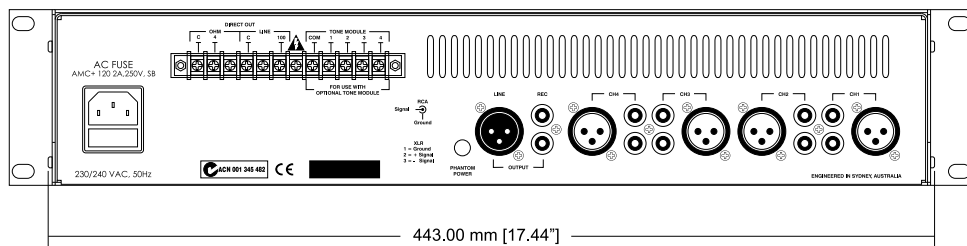
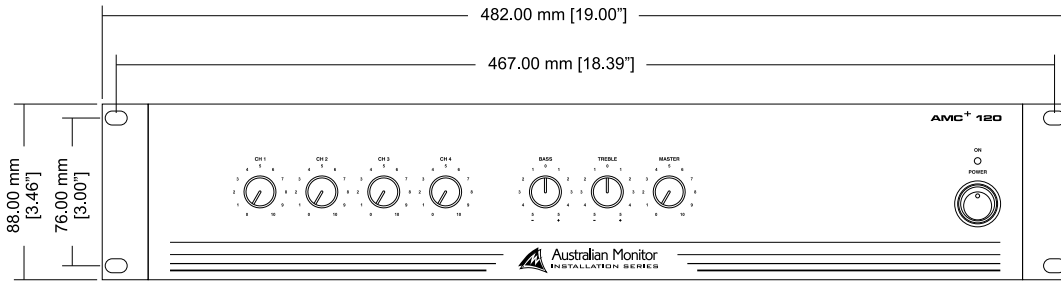
# FUNCTIONAL NOTES AND INTERNAL ADJUSTMENTS

## PRIORITY

Channel 1 will mute channels 2, 3 and 4. This will only occur when signal appears on channel 1, irrespective of the channel volume control.

Priority can be disabled. (See below). The release time is approx. 3 secs and is NOT adjustable. The mute depth is approx. 40dB and is not adjustable.





## SPECIFICATIONS

	AMC+ 30	AMC+ 60	AMC+ 120	AMC+ 250
<b>POWER OUTPUT (0.5%THD, 1KHZ)</b>	30W	60W	120W	250W
<b>S/N RATIO</b>	> 75dBr	> 75dBr	> 80dBr	>85dBr
<b>POWER BANDWIDTH (-3dB +1dB)</b>	85Hz-15kHz	75Hz-15kHz	75Hz-15kHz	30Hz-20kHz
<b>FUSES</b>				
MAINS (115V)	1.0A	3.15A	4A	6.3A
MAINS (230/240V)	0.5A	1.6A	2A	3.15A
DC	1.6A (x2)	4A	8A	10A (x2)
<b>OUTPUT REGULATION</b>	96%	93%	93%	90%
<b>SIZE (WXHxD)</b>	482 x 88 x 190mm 19" x 3.5" x 7.5"	482 x 88 x 281mm 19" x 3.5" x 11.1"	482 x 88 x 281mm 19" x 3.5" x 11.1"	482 x 88 x 384mm 19" x 3.5" x 15.1"
<b>NET WEIGHT</b>	6.0kg 13.2lb	8.5kg 18.7lb	10.5kg 23.1lb	11.5kg 25.3lb
<b>SHIPPING WEIGHT</b>	7.5kg 16.5lb	10.5kg 23.1lb	12.5kg 27.6lb	14kg 30.8lb
<b>SHIPPING DIMENSIONS (WXHxD)</b>	510 x 145 x 297mm 20.1" x 5.7" x 11.7"	525 x 175 x 385mm 20.7" x 6.9" x 15.2"	525 x 175 x 385mm 20.7" x 6.9" x 15.2"	525 x 185 x 470mm 20.7" x 7.3" x 18.5"
<b>MAINS CURRENT DRAW (240V)</b>				
FULL POWER	0.35A	0.66A	1.20A	2.53A
1/3 POWER	0.23A	0.44A	0.80A	1.61A
1/8 POWER	0.17A	0.32A	0.55A	1.10
IDLE	0.08A	0.13A	0.15A	0.15A
<b>MAINS CURRENT DRAW (115V)</b>				
FULL POWER	0.73A	1.38A	2.50A	5.28A
1/3 POWER	0.48A	0.92A	1.67A	3.36A
1/8 POWER	0.35A	0.67A	1.15A	2.30A
IDLE	0.17A	0.27A	0.31A	0.31A
<b>THERMAL OUTPUT (W)</b>				
FULL POWER	38W	67W	128W	259W
1/3 POWER	33W	63W	118W	231W
1/8 POWER	26W	51W	91W	168W
IDLE	11W	19W	26W	26W
<b>THERMAL OUTPUT (BTU/HR)</b>				
FULL POWER	130	229	437	884
1/3 POWER	113	215	403	788
1/8 POWER	90	172	311	573
IDLE	38	65	89	89

*\*1/3 and 1/8 power levels relate to voltage changes, not load changes.*

## COMMON TO ALL MODELS

<b>THD (1KHz, -1dB)</b>		Better than 0.5%
<b>MIC INPUT</b>	SENSITIVITY	1mV @ 200ohm
	IMPEDANCE	1k3 ohm
	HEADROOM	77mV (37dB)
<b>AUX INPUT</b>	SENSITIVITY	0.5V+/@100kohm
	IMPEDANCE	>200kohm
	HEADROOM	> 15V (>30dB)
<b>TONE CONTROL</b>	BASS @ 100HZ	+/- 12 dB
	TREBLE @ 10KHZ	+/- 9 dB
<b>LINE OUT</b>	NOMINAL OUTPUT	0.775V @ 1kohm
	OUTPUT IMPEDANCE	100ohm
<b>REC OUT</b>	NOMINAL OUTPUT	250mV @ 10kohm
	OUTPUT IMPEDANCE	1kohm

## AUSTRALIA AND NEW ZEALAND

[www.australianmonitor.com.au](http://www.australianmonitor.com.au)

### SYDNEY

(NSW & ACT SALES)

1 Clyde Street  
Silverwater  
NSW 2128  
Private Bag 149  
Silverwater NSW 1811  
Phone: (02) 9647 1411  
Fax: (02) 9648 3698  
Email:  
[nsw@audiotelex.com.au](mailto:nsw@audiotelex.com.au)

### MELBOURNE

(VIC & TAS SALES)

22/277  
Middleborough Road  
Box Hill VIC 3128  
PO Box 151 Blackburn  
South VIC 3130  
Phone: (03) 9890 7477  
Fax: (03) 9890 7977  
Email:  
[vic@audiotelex.com.au](mailto:vic@audiotelex.com.au)

### BRISBANE

(QLD SALES)

42 Commercial Road  
Fortitude Valley  
QLD 4006  
PO Box 2578 Fortitude  
Valley BC QLD 4006  
Phone: (07) 3852 1312  
Fax: (07) 3252 1237  
Email:  
[qld@audiotelex.com.au](mailto:qld@audiotelex.com.au)

### ADELAIDE

(SA & NT SALES)

31 Walsh Street  
Thebarton  
SA 5031  
PO Box 157  
Hindmarsh SA 5007  
Phone: (08) 8352 4444  
Fax: (08) 8352 4488  
Email:  
[sa@audiotelex.com.au](mailto:sa@audiotelex.com.au)

### PERTH

(WA SALES)

3/11 Howe Street  
Osborne Park WA 6017  
PO Box 1281  
Osborne Park BC  
WA 6916  
Phone: (08) 9204 0200  
Fax: (08) 9244 3783  
Email:  
[wa@audiotelex.com.au](mailto:wa@audiotelex.com.au)

### AUCKLAND

(NZ SALES)

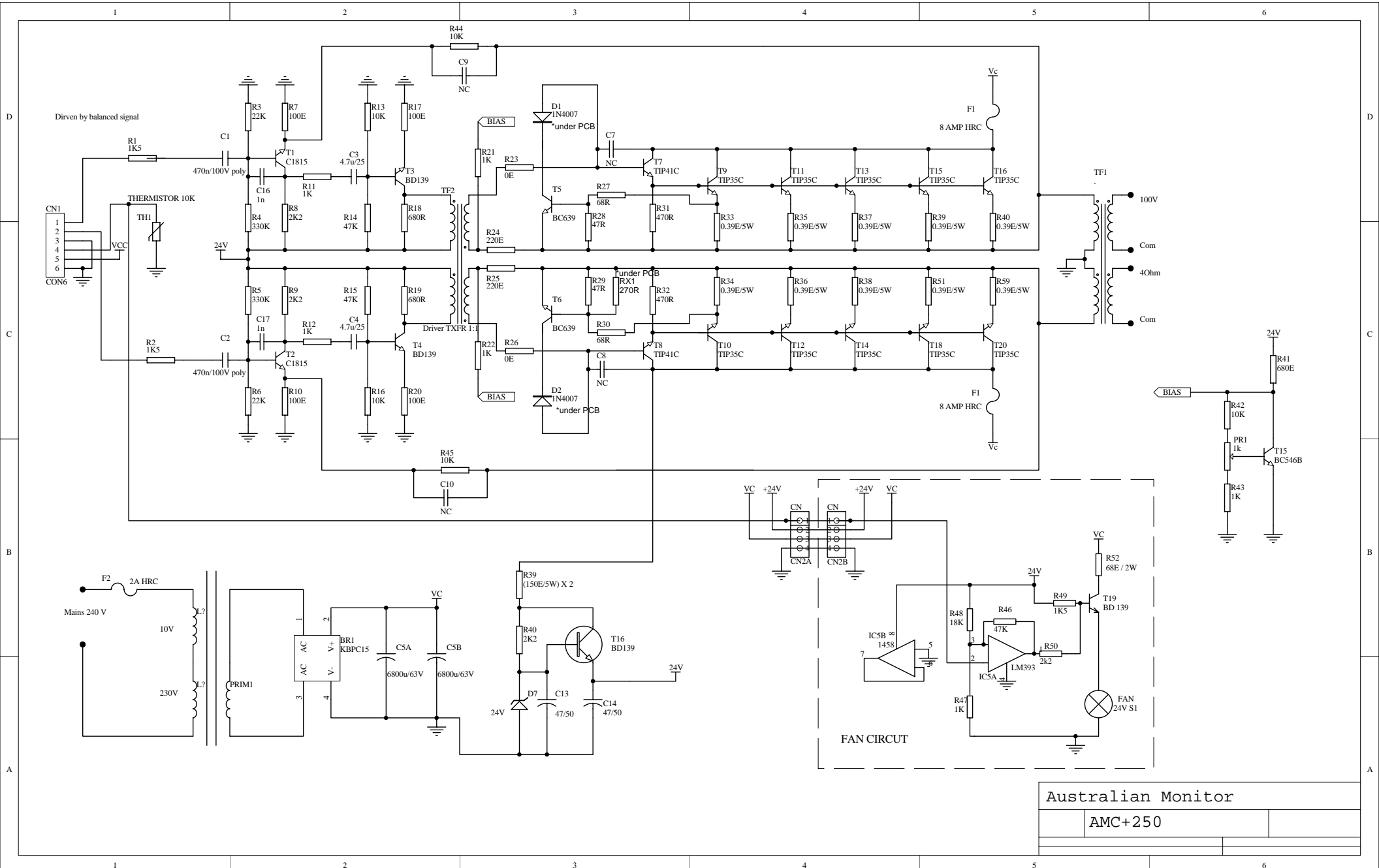
9C Piermark Drive  
Albany 0752  
New Zealand  
PO Box 300-512  
Albany 0752  
Phone: (09) 415 9426  
Fax: (09) 415 9864  
Email:  
[sales@audiotelex.co.nz](mailto:sales@audiotelex.co.nz)

## EUROPE / ASIA / MIDDLE EAST

[www.australianmonitor.com.au](http://www.australianmonitor.com.au)

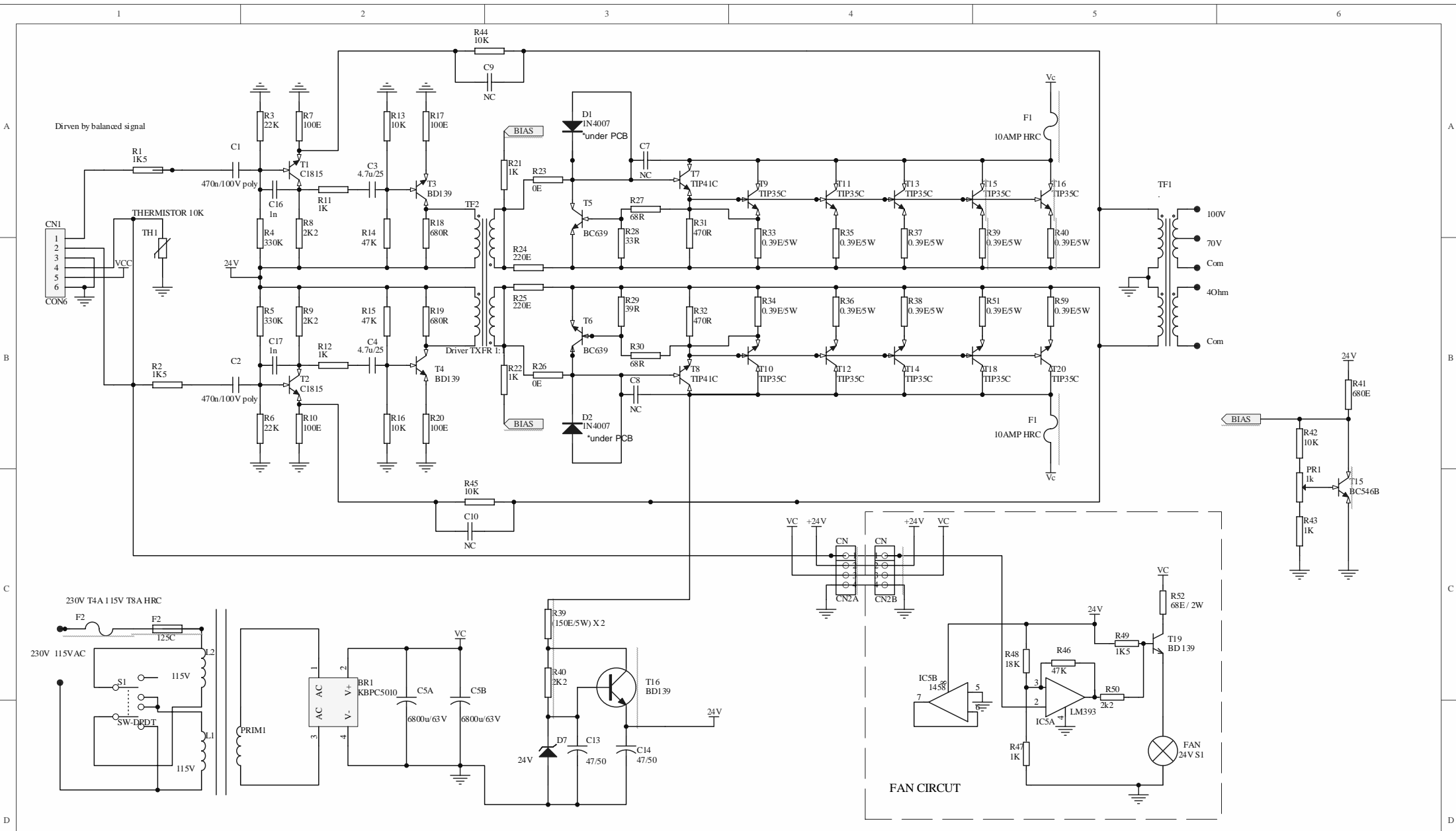
### INTERNATIONAL SALES

1 Clyde Street Silverwater NSW 2128 Australia  
Private Bag 149 Silverwater NSW 1811  
Phone: + 61 2 9647 1411  
Fax: + 61 2 9748 2537  
Email: [international@audiotelex.com.au](mailto:international@audiotelex.com.au)

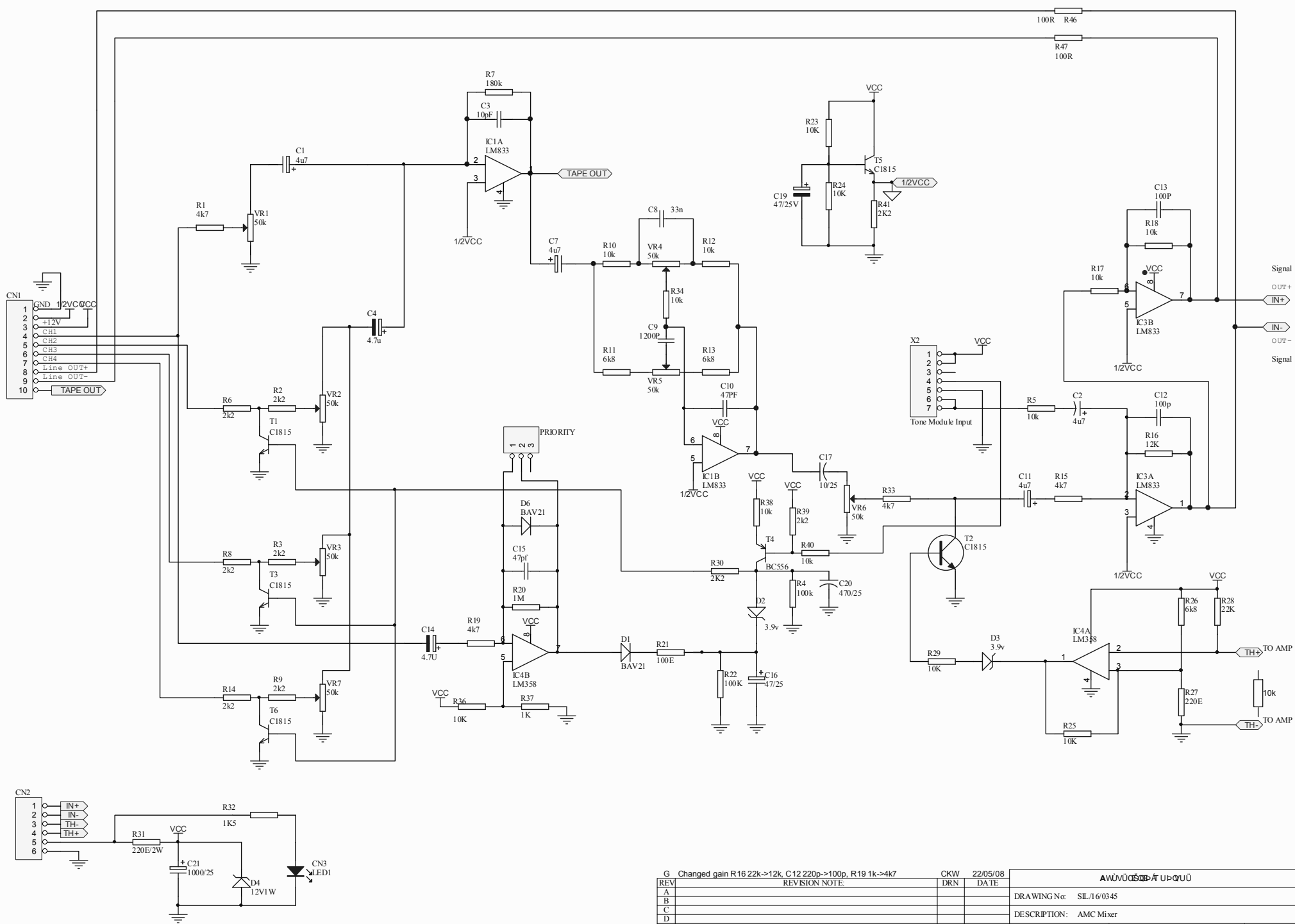


Australian Monitor

AMC+250

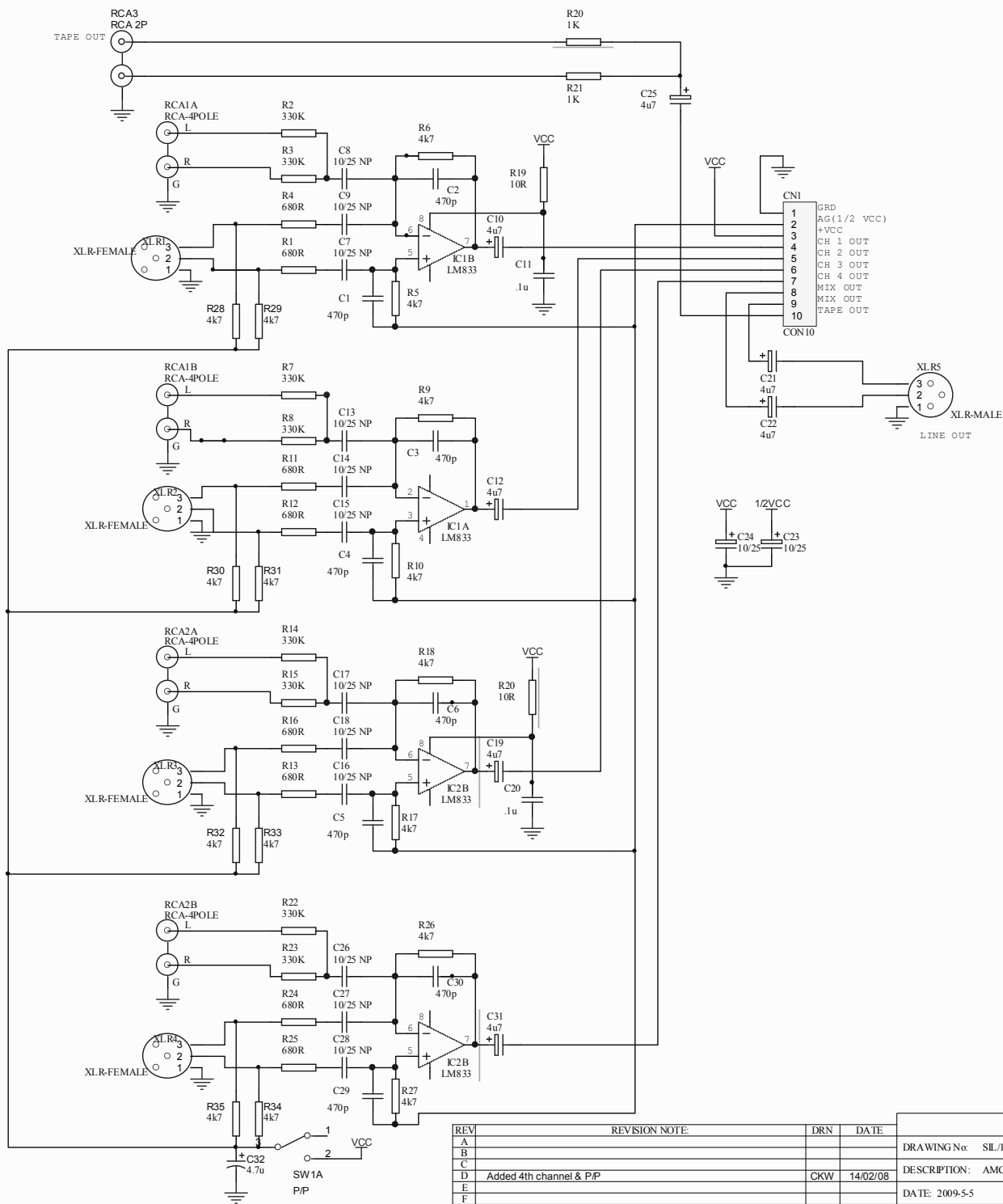


Title		
AMC 250 AMP -02		
Size	Number	Revision
B		
Date:	4/23/2012	Sheet of 1 of 1
File:	\\...AMC250 250P.SCH	Drawn By: DERICK

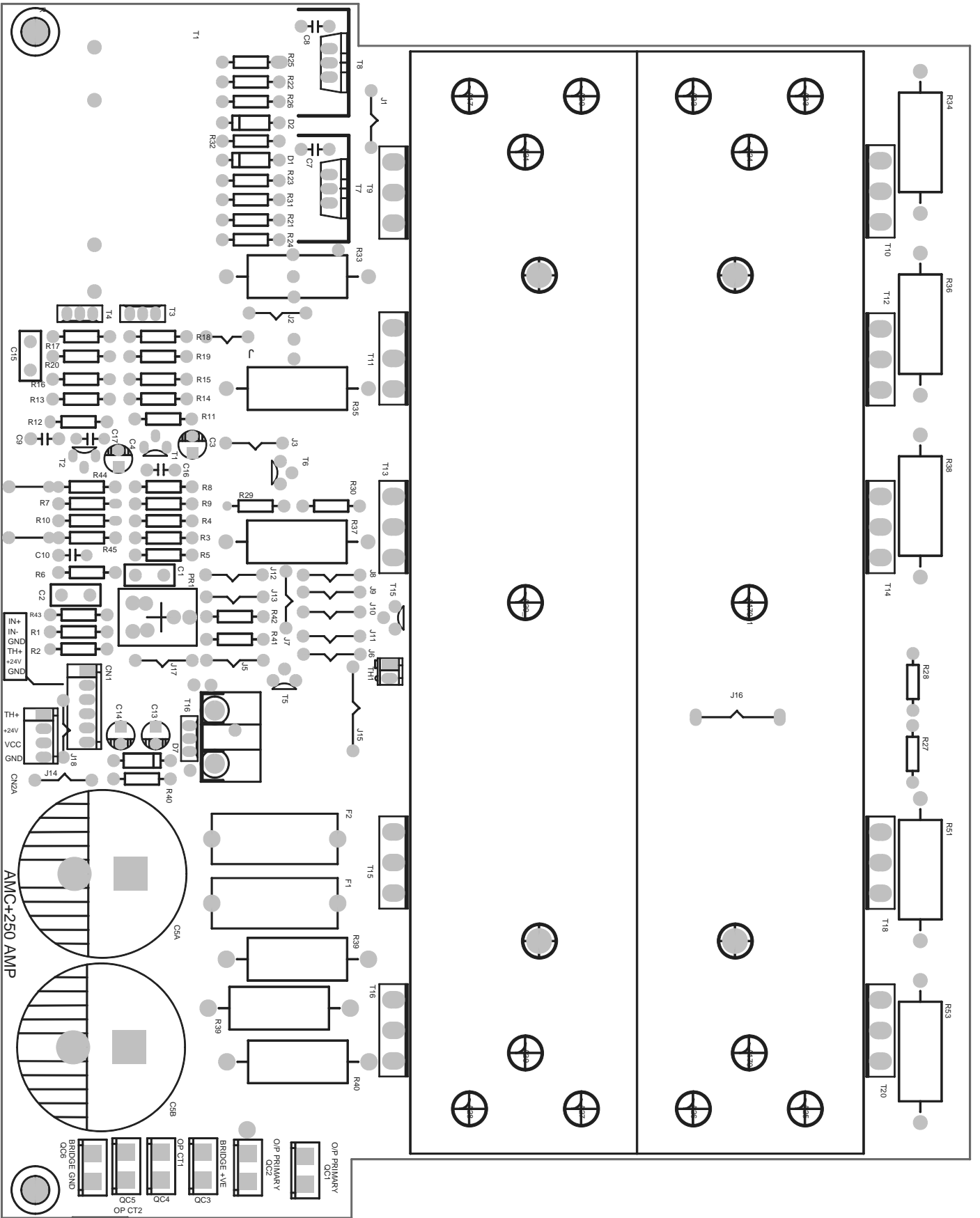


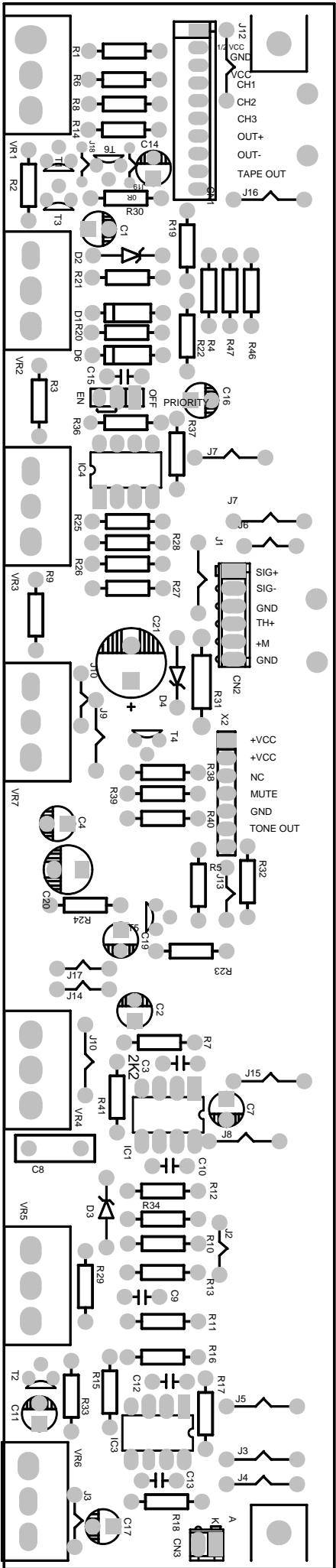
G Changed gain R16 22k->12k, C12 220p->100p, R19 1k->4k7		CKW	22/05/08	AWUVUCS-AT UP-QUU	
REV	REVISION NOTE:		DRN	DATE	
A				DRAWING No: SIL/16/0345	
B				DESCRIPTION: AMC Mixer	
C				DATE: 2009-5-5	
D				DRAWN BY:	
E				SHEET 1 of 1	
F	Changed to 4 channels		CKW	15/02/08	

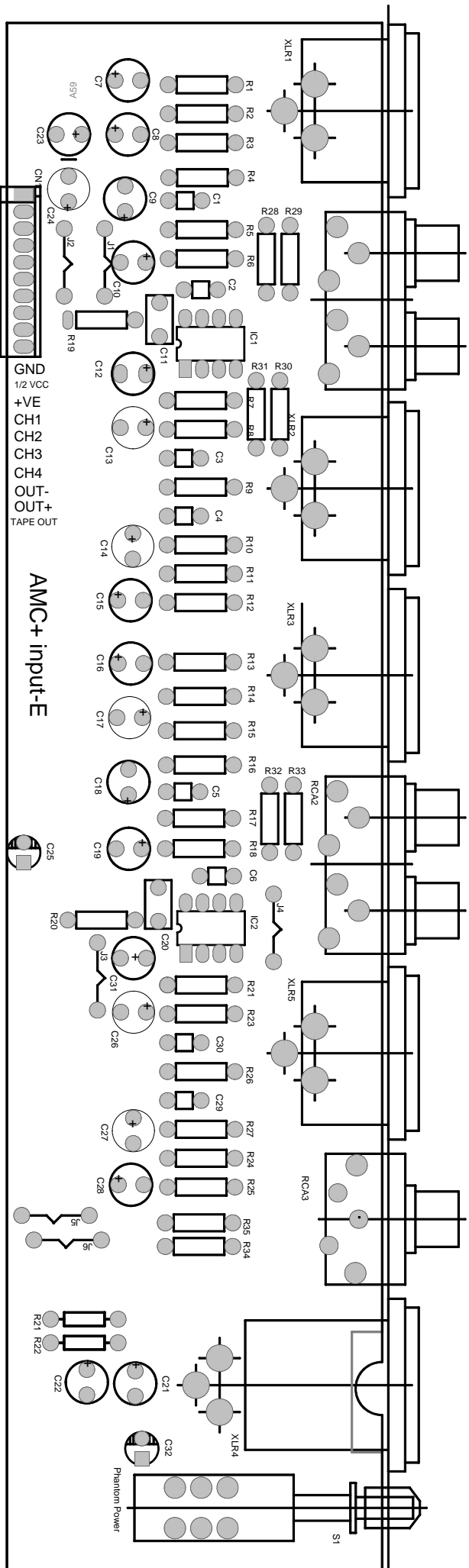




REV	REVISION NOTE	DRN	DATE	AUUVUOSB-ATUPQUU	
A				DRAWING No	SIL/16/0339
B				DESCRIPTION:	AMC 120/60/30 MIC INPUT
C				DATE:	2009-5-5
D	Added 4th channel & P/P	CKW	14/02/08	DRAWN BY:	
E					
F					







# TEST PROCEDURE 5062-1

MODEL: AMC250

Rev A 6/10/06 Original

Rev B 11/10/06 Changes

Rev C 30/11/07 New format

Rev D 27/11/08 Correct AC fuse value

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## Outline

1. Physical checks
2. Set up amplifier for test
  - 2.1. Fuse check
  - 2.2. Connections
  - 2.3. Reset controls
3. Power up
  - 3.1. Voltages
  - 3.2. Bias setup
4. Initial AC Checks
  - 4.1. Signal check and gain of amp
  - 4.2. Emitter current check
  - 4.3. Inputs
  - 4.4. Outputs
  - 4.5. Phantom power
5. THD
6. Sensitivity
  - 6.1. Mic inputs
  - 6.2. AUX inputs
7. Bandwidth
8. Bass/Treble
9. Phase
10. Priority check
11. Current Limit
12. Noise floor / SNR
13. Fan/Thermal check
14. Final check for damage
15. Factory setting
16. Listening Test
  - 16.1. Switch on thump
  - 16.2. Audio quality
  - 16.3. Priority
  - 16.4. Current Limit

## VISUAL INSPECTION STAGE

### 1. Physical checks

- All screws for tightness (esp. bridge rectifier and transistor bolts), referring to the torque setting of the manufacturing tools
- Capacitors for polarity
- Earth connection for good contact, using multimeter (XLR GND to AC earth)
- Power transistors for shorts to heat sink using a multimeter
- All wiring points for good contacts (soldering and crimping)

## PRETESTING

### PRE TESTING SETUP REQUIREMENT

- a) Oscilloscope
- b) Variac
- c) Multimeter
- d) Load [4ohm]
- e) Signal generator
- f) Phantom power jig

### 2. Set up amplifier for test :

#### 2.1. Fuse check

- 2 x AC fuses (3.15A), 20x5mm
- 2 x DC fuses (10A), 20x5mm

#### 2.2. Connections

Connect amplifier to:

Variac (0Vac)

Signal generator (mic1, no signal)

Resistive load (4ohm on 4ohm terminal) with meters/oscilloscope

#### 2.3. Reset controls:

All volume controls to minimum

Bass/treble control to centre

Phantom power switch to off

PR1 (preset) on the amplifier PCB CCW

### 3. Power up :

Turn on power switch and adjust voltage to 230VAC. Watch current meter for excess current draw.

**(P/F)** Current shall not exceed 0.5Aac.

#### 3.1. Voltages

Measure the following DC voltages with a multimeter referenced to mains safety earth or the chassis.

**(P/F)**

	Pass Range
DC power supply	47.5VDC - 50.5VDC
Input PCB rail (ICp8)	11.0.0VDC – 13.0VDC
Input PCB ½rail (ICp1)	5.0VDC – 6.0VDC
Input PCB gnd (ICp4)	-0.1VDC – +0.1VDC

#### 3.2. Bias setup

Put a multimeter across an emitter resistor.

**(P/F)** Slowly adjust the preset PR1 so that you get 4.5mVDC (+/-0.5mVDC) reading.

Check Quiescent Voltage across all Emitter resistors.

**(P/F)** The emitter resistor voltages shall be 4.5mVDC (+/-2.0mVDC).

[Setup for next test]

#### 4. Initial AC Checks :

##### 4.1. Signal check and gain of amp

Setup

Signal generator = 1mVAC, 1kHz

Signal in = Ch1 XLR

All channel pots = min (CCW)

Bass/Treble = centre

Master pot = max (CW)

Output metering = 4ohm out

Load = 4ohm

Procedure

Turn up Ch1 volume control to full. Watch for irregularities with output.

**(P/F)** Output voltage shall be 31.6VAC +/-2VAC.

##### 4.2. Emitter current check

Setup

Signal generator = 1mVAC, 1kHz

Ch1 pot = max (CW)

Ch2-4 pot = min (CCW)

Bass/Treble = centre

Master pot = max (CCW)

Output metering = 4ohm out

Load = 4ohm

Procedure

Set output to 22VAC using master volume control. Check voltage across emitter resistors of power devices.

**(P/F)** Voltage shall be between 300mVDC – 400mVDC.

[Setup for next test] Reset Ch1 volume pot to min. Set master volume to max.

##### 4.3. Inputs

Setup

Signal generator = 1mVAC, 1kHz

Signal in = Ch1 XLR

All channel pots = min (CCW)

Bass/Treble = centre

Master pot = max (CW)

Output metering = 4ohm out

Load = 4ohm

Procedure

Check the output for all XLR input channels. Watch for irregularities with output while turning up each channel volume pot.

[Setup for next test] Set the signal generator to give 31.6V on output.

#### 4.4. Outputs

##### Setup

Signal generator = ~1mVAC adjusted for 31.6V out with pots max, 1kHz  
Signal in = Ch4 XLR  
Channel pots = max (CW)  
Bass/Treble = centre  
Master pot = max (CW)  
Output metering = 4ohm out  
Load = 4ohm

##### Procedure

Using a multimeter check the following:

**(P/F)**

	Pass Range
100V line	90VAC – 110VAC
Tape output – left	200mVAC – 300mVAC
Tape output – right	200mVAC – 300mVAC
Line output	0.65VAC – 0.80VAC

Measure on the terminal block, RCA connector both left and right and XLR connector between pins 2 and 3.

[Setup for next test] Remove input signal.

#### 4.5. Phantom power

##### Setup

Signal in = none  
Channel pot = max (CW)  
Bass/Treble = centre  
Master pot = max (CW)  
Output metering = 4ohm output terminals  
Load = 4ohm

##### Procedure

Set phantom switch to on. Measure the DC voltage on Ch1 XLR input pins 2 and 3 ref to pin 1.

**(P/F)** The reading shall be 12.0VDC +/-1.0VDC.

Using the phantom power LED jig connect to XLR in.  
Set the phantom power switch to off

**(P/F)** The LED shall be off.

Switch the phantom power on.

**(P/F)** The LED shall be on.

Repeat for each channel.

[Setup for next test] Connect signal to Ch1 XLR.

Remove all inputs and connections. Attach tested tag. Turn all volume pots to min.



# FINAL TESTING

## REQUIREMENTS FOR FINAL TESTING:

- a) Neutrik
- b) Load 40ohm
- c) Multimeter
- d) Oscilloscope
- e) Microphone
- f) Variac

### 5. THD

#### Setup

Signal generator = 1mVAC, 1kHz  
Signal in = Ch1 XLR  
Channel pot = min (CCW)  
Bass/Treble = centre  
Master pot = min (CW)  
Output metering = 100Vout  
Load = 40ohm

#### Procedure

Set master pot to max. Turn up Ch1 pot to 70VAC (+/-1.0VAC) on output. Measure THD.

**(P/F)** Reading shall be < 0.5%.

Values to be recorded:

		Value	Pass Range
5.	THD		0% – 0.5%

### 6. Sensitivity

#### 6.1. Mic inputs

##### Setup

Signal generator = 1mVAC, 1kHz  
Signal in = Ch1 XLR  
Ch1 pot = somewhere  
Ch2-4 pots = min (CCW)  
Bass/Treble = centre  
Master pot = max (CW)  
Output metering = 100Vout  
Load = 40ohm

##### Procedure

Set channel pot to max.

**(P/F)** The output reading shall be 100VAC (+/- 5VAC).

Repeat for all channels.

[Setup for next test] Move the signal in back to channel 1 RCA. Set the signal generator to 0.5VAC

#### 6.2. AUX inputs

##### Setup

Signal generator = 0.5VAC, 1kHz  
Signal in = Ch1 RCA  
Channel pot = max (CW)

Bass/Treble = centre  
 Master pot = max (CW)  
 Output metering = 100Vout  
 Load = 40ohm

Procedure

Measure the 100V line output.

**(P/F)** The output readings shall be 100VAC (+/- 5VAC).

Repeat for all channels.

**7. Bandwidth**

Setup

Signal generator = 0.5VAC, 1kHz  
 Signal in = Ch4 RCA  
 Channel pot = max (CW)  
 Bass/Treble = centre  
 Master pot = max (CW)  
 Output metering = 100Vout  
 Load = 40ohm

Procedure

Set the channel 4 volume pot so the output is 70VAC. Adjust the frequency on the signal generator down till the output is 50VAC.

**(P/F)** The frequency shall be between 20Hz – 30Hz.

Adjust the frequency on the signal generator up till the output is 50VAC.

**(P/F)** The frequency shall be between 20kHz – 40kHz.

Values to be recorded

		Value	Pass Range
7a.	Bandwidth - low		20Hz - 30Hz
7b.	Bandwidth - high		20kHz - 40kHz

[Setup for next test] Set the frequency back to 1kHz.

**8. Bass/Treble**

Setup

Signal generator = 0.5VAC, 1kHz  
 Signal in = Ch4 RCA  
 Ch1-3 pot = max (CW)  
 Ch4 pot = somewhere  
 Bass/Treble = centre  
 Master pot = max (CW)  
 Output metering = 100Vout  
 Load = 40ohm

Procedure

Set the frequency to 100Hz. Set the channel 4 volume so the output is 15VAC. Set the bass pot to max (CW).

**(P/F)** The output reading shall be between 60VAC-70VAC.

Set the bass pot to min (CCW).

**(P/F)** The output reading shall be between 3VAC-4.5VAC.

Reset the bass pot to centre. Set the frequency to 10kHz. Set the treble pot to max (CW).

**(P/F)** The output reading shall be between 42VAC-50VAC.

Set the treble pot to min (CCW).

**(P/F)** The output reading shall be between 4VAC-6VAC.

[Setup for next test] Reset the treble pot to centre. Reset Ch4 pot to max (CW). Move signal in to Ch1 RCA.

## 9. Phase

### Setup

Signal generator = 0.5VAC, 1kHz

Signal in = Ch1 RCA

All channel pots = max (CW)

Bass/Treble = centre

Master pot = max (CW)

Output metering = 100Vout

Load = 40ohm

### Procedure

Attach channel 2 of the CRO to the input. Make sure the CRO is being triggered by the input. Look at each output on channel 1 of the CRO. The CRO ground should be connected to the common both for the low impedance outputs and the line outputs.

**(P/F)** The signals on the CRO shall be in phase for all outputs (100V, 4ohm).

## 10. Priority check

### Setup

Signal generator = 0.5VAC, 1kHz

Signal in = Ch4 RCA

Ch pots = max (CW)

Bass/Treble = centre

Master pot = max (CW)

Output metering = 100Vout

Load = 40ohm

### Procedure

Plug a microphone into input 1 and oscillator to input 4. Turn channel 1 pot to min (CCW). Speak into the microphone.

**(P/F)** The output shall drop in level to < 10VAC.

Stop speaking and disconnect mic.

**(P/F)** The output shall return to 100VAC +/-10VAC in <10sec (Mental count is acceptable).

Speak into the microphone. The output shall drop in level to < 10VAC. Keep speaking. Set the Disable/Enable link to disable.

**(P/F)** The output shall return to 100VAC +/-10VAC in <10sec (Mental count is acceptable) while you are still speaking.

Insert Disable/Enable link to ENABLE.

[Setup for next test] Set master to min (CCW). Set ch1 to max.

## 11. Current Limit

### Setup

Signal generator = 0.5VAC, 1kHz  
Signal in = Ch4 RCA  
Ch pots = max (CW)  
Bass/Treble = centre  
Master pot = min (CCW)  
Output metering = 100Vout  
Load = 40ohm

### Procedure

Change the load to 20ohms. Increase the signal such that at ~65VAC you can see the overload protection coming on with a rounding of the sine wave. If it is there then reduce the voltage to 30VAC out. Switch off the unit and connect a shorting link to the 100V output. Switch the unit on.

**(P/F)** The mains current shall be  $< 3.5A_{ac}$ .

Leave the unit shorted for ~10sec. Release the shorting link and check for the output.

**(P/F)** The output shall be reading 30VAC +/-1V.

[Setup for next test] Change the load back to 80ohm. Set all volume pots to centre. Remove the signal from Ch4.

## 12. Noise floor / SNR

### Setup

Signal in = none  
Ch pots = centre  
Bass/Treble = centre  
Master pot = centre  
Output metering = 100Vout  
Load = 40ohm

### Procedure

Put dummy lid on. Check for Hum & Noise.

**(P/F)** The output shall be reading  $< 6mV_{AC}$  (-85dBr ref 100V).

-----  
Values to be recorded

		Value	Pass Range
12.	Noise floor		0mV – 6mV

-----

Set Ch1 volume to max. Set master volume to max. Connect signal to Ch1 RCA.

## 13. Fan/Thermal check

### Setup

Signal generator = 0.5VAC, 1kHz  
Signal in = Ch1 RCA  
Ch1 pot = max (CW)  
Ch2-4 pot = centre  
Bass/Treble = centre  
Master pot = max (CW)  
Output metering = 100Vout  
Load = 40ohm

### Procedure

Adjust channel 1 volume pot to an output reading of 70VAC. Connect a thermometer to the temperature sensor. Wait the unit to heat up. A heat gun may be used to speed up the heating of the heatsink.

**(P/F)** the fan shall switch on between 50degC - 70degC.

Stall the fan and wait for the unit to heat some more.

**(P/F)** The output shall mute to < 10V at a temp between 90–105degC

-----  
Values to be recorded

		Value	Pass Range
13a.	Fan turn on		50degC – 70degC
13b.	Thermal cutout		90degC – 105degC

-----

#### **14. Final check for damage**

Disconnect from test bench and inspect for scratches on external paint.

#### **15. Factory setting**

Set up the unit for default factory setting as below:

Links:

a) VOX Muting : Enable

Pot positions:

a) Channel volume : min

b) Master volume : min

c) Bass/Treble : centre

Attach tested sticker.

# LISTENING TEST

## REQUIREMENTS FOR LISTENING TEST SETUP:

- a) CD Player
- b) Speaker
- c) Microphone

### **16. Listening Test**

Connect amplifier to the setup

Keep all pots full, tone at center.

#### **16.1. Switch on thump**

Switch on the set and check for any ON Thump. Ensure unit does not thump. Check that no low frequencies are audible. Make all channel pots minimum.

#### **16.2. Audio quality**

Check CD Player (AUX) output for all channels and tone control for all channels.

#### **16.3. Priority**

Check Priority function : CH 1 over CH 2, 3 & 4

#### **16.4. Current Limit**

Short the output with signal ON. Signal should mute and return back.

---

## Pass/Fail Summary

### 1. Physical checks

### 2. Set up amplifier for test :

#### 2.1. Fuse check

#### 2.2. Connections

#### 2.3. Reset controls:

### 3. Power up :

(P/F) Current shall not exceed 0.5Aac.

#### 3.1. Voltages

(P/F)

	Pass Range
DC power supply	47.5VDC - 50.5VDC
Input PCB rail (p8)	11.0VDC – 13.0VDC
Input PCB ½ rail (p1)	5.0VDC – 6.0VDC
Input PCB ground (p4)	-0.1VDC – 0.1VDC

#### 3.2. Bias setup

(P/F) Slowly adjust the preset PR1 so that you get 4.5mVDC (+/-0.5mVDC)

(P/F) The emitter resistor voltages shall be 4.5mVDC (+/-2.0mVDC).

### 4. Initial AC Checks :

#### 4.1. Signal check and gain of amp

(P/F) The output shall be 15.5VAC +/- 2VAC.

#### 4.2. Emitter current check

(P/F) Voltage shall be between 300mVDC – 400mVDC.

#### 4.3. Inputs

#### 4.4. Outputs

(P/F)

	Pass Range
100V line	90VAC – 110VAC
Tape output – left	200mVAC – 300mVAC
Tape output – right	200mVAC – 300mVAC
Line output	0.65VAC – 0.80VAC

#### 4.5. Phantom power

(P/F) The reading shall be 12.0VDC +/-1.0VDC.

(P/F) The LED shall be off.

(P/F) The LED shall be on.

### 5. THD

(P/F) Reading shall be < 0.5%.

### 6. Sensitivity

#### 6.1. Mic inputs

(P/F) The output reading shall be 100VAC (+/- 5VAC).

#### 6.2. AUX inputs

(P/F) The output readings shall be 100VAC (+/- 5VAC).

### 7. Bandwidth

(P/F) The frequency shall be between 20Hz – 30Hz.

(P/F) The frequency shall be between 20kHz – 40kHz.

### 8. Bass/Treble

(P/F) The output reading shall be between 60VAC-70VAC.

(P/F) The output reading shall be between 3VAC-4.5VAC.

(P/F) The output reading shall be between 42VAC-50VAC.

(P/F) The output reading shall be between 4VAC-6VAC.

### 9. Phase

(P/F) The signals on the CRO shall be in phase for all outputs (100V, 4ohm).

### 10. Priority check

(P/F) The output shall drop in level to < 10VAC.

(P/F) The output shall return to 100VAC +/-10VAC in <10sec (Mental count is acceptable).

*(P/F)* The output shall return to 100VAC +/-10VAC in <10sec (Mental count is acceptable) while you are still speaking.

**11. Current Limit**

*(P/F)* The mains current shall be < 3.5Aac.

*(P/F)* The output shall be reading 30VAC +/-1V.

**12. Noise floor / SNR**

*(P/F)* The output shall be reading < 6mVAC (-85dB<sub>r</sub> ref 100V).

**13. Fan/Thermal check**

*(P/F)* the fan shall switch on between 50degC - 70degC.

*(P/F)* The output shall mute to < 10V at a temp between 90–105degC



	<b><u>AMC+ Parts</u></b>	
<b><u>Circuit boards</u></b>	<b><u>Part Number</u></b>	<b><u>Factory code</u></b>
Input board	AMC+IB	
Mixer board	AMC+120MB	B06044
AMC+30 output board	AMC+30OPB	B03048
AMC+60 output board	AMC+60OPB	B06047
AMC120+ mixer board	AMC+120MB	B06044
AMC+120 output board	AMC+120OPB	B012046
AMC+250 output board	AMC+250OPB	BR025001
<b><u>Transformers</u></b>		
AMC+30 mains transformer	AMC+30TX	BR030123
AMC+30 output transformer	AMC+30OT	BR030124
AMC+60 mains transformer	AMC+60TX	BD6041
AMC+60 output transformer	AMC+60OT	BD060127
AMC+120 mains transformer	AMC+120PTX	BD0642
AMC+120 drive transformer	BR0120036	BR0120036
AMC+120 output transformer	AMC+120OT	BR0120125
AMC+250 mains transformer	AMC+250TX	BR0250140
AMC+250 output transformer	AMC+250OT	BR0250141
AMC+250 drive transformer	BR0120036	BR0120036

### Outline

The AMC+250 mixer amplifier and AMC+250P booster amplifier have experienced a higher than acceptable incidences of mains fuse failures at turn on.

### Known Issue

Mains fuse failure.

### Details

The cause of the issue has been identified as the mains fuse used in production being of a rating that is too low for use in areas that encounter elevated mains voltages.

### Solution

The problem can easily be rectified by placing the existing mains fuse as follows:

- 115V Operation: T8A 250V slow-blow ceramic HRC type M205 fuse (20 x 5mm).
- 230V Operation: T4A 250V slow-blow ceramic HRC type M205 fuse (20 x 5mm).

### Procedure

1. Remove the mains lead from the amplifier.
2. Remove the fuse holder drawer that is part of the IEC mains input socket.
3. Remove the two existing fuses (one of these is a spare fuse).
4. Install two M205 size fuses as per the operating voltage above.
5. Reinstall the drawer.

# Australian Monitor Service Bulletin

## AMC+ Mixer and Booster Amplifiers

### Mains Fuses



20 February 2012

### Applicable Models

This bulletin applies to AMC+30, AMC+60, AMC+120 and AMC+250 Mixer Amplifiers and the AMC+120P, AMC+1202P and AMC+250P Booster Amplifiers manufactured prior to 2012.

### Known Issue

The AMC+ range of mixer amplifiers and AMC+ booster amplifier have experienced a higher than acceptable incidences of mains fuse failures at turn on.

### Details

AMC+ products manufactured prior to 2012 are fitted with inferior Chinese fuses.

### Solution

The problem can easily be rectified by placing the existing mains fuse with name brand quality fuses available from Element14 as follows:

Model	115V Operation (North America)		230V Operation (Australia/Europe)	
	Fuse Rating	Element14	Fuse Rating	Element 14
AMC+30	T1A	1123115	T500mA	1123121
AMC+60	T3.15A	1123119	T1.6A	1123113
AMC+120	T4A	1123120	T2A	1123118
AMC+120P				
AMC+250	T8A	1123125	T4A	1123120
AMC+250P				
AMC+1202P				

All fuses are Cooper Bussman 250VAC rated, slow-blow ceramic HRC type M205 cartridge.

All future production models will be fitted with these fuses.

### Procedure

1. Remove the mains lead from the amplifier.
2. Remove the fuse holder drawer that is part of the IEC mains input socket.
3. Remove the two existing fuses (one of these is a spare fuse).
4. Install two M205 size fuses as per the operating voltage above.
5. Reinstall the drawer.

# Australian Monitor Service Bulletin

## AMC+250 Mixer Amplifier

## AMC+250P Booster Amplifier



9 March 2012

### Applicable Models

This bulletin applies to AMC+250 and AMC+250P models manufactured prior to March 2012.

### For Information Only

This bulletin is intended for service technicians only and is to be applied when replacing failed bridge rectifiers.

This bulletin does not apply to functional units.

### Known Issue

A small number of bridge rectifier failures at power on have been observed.

### Details

It is believed that RoHS compliant 35A bridge rectifiers are not as reliable as the earlier non-RoHS equivalents.

We have decided to increase the rating from 35A to 50A to provide additional headroom under turn on conditions.

### Solution

When replacing a failed bridge rectifier (BR1), substitute the original 35A bridge with a 50A model as indicated in the table below.

		Model	VRRM	I(AV)	Terminals
✘	Original Part	KBPC3510	1000V	35A	0.25" FASTON terminals
✔	Replacement Part	KBPC5010	1000V	50A	0.25" FASTON terminals

### Notes

- All models manufactured March 2012 or later are fitted with the 50A replacement part.