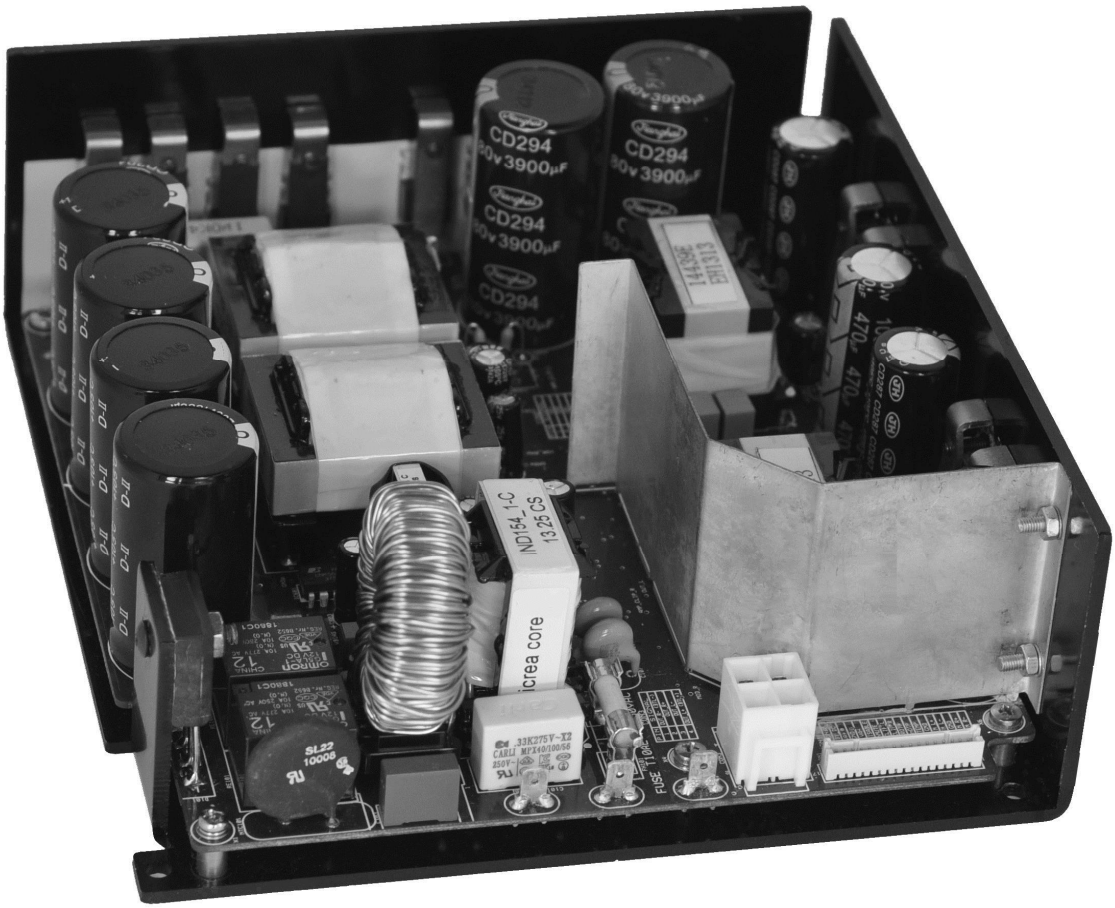
ANAVIEW

A MEMBER OF THE ETAL GROUP

PRODUCT SPECIFICATION
AMPLIFIER MODULE
AMS1000-2600



FEATURE LIST

- 2x500W into 2Ω @ 1% THD.
- 900W BTL into 4Ω @ 1% THD.
- Patented AMS (Adaptive Modulation Servo) amplifier technology.
- Almost flat THD versus frequency plot.
- 115dB dynamic range.
- Automatic voltage doubler for universal mains.
- Meets EuP and EnergyStar requirements.
- UL recognized
- CE approved
- +/- 17V DC AUX outputs
- AUX output for hanger channel

Article Number:	PDS AMS1000	*Prepared:*	PB
Document Date:	2013-06-17	*Verified:*	MC
Current Revision no.:	D	*Approved:*	MC
Current Revision Date:	2014-05-23	*Page Number:*	1 of 37

SCOPE

These technical specifications describes the functionalities and features of the Anaview amplifier module AMS1000-2600, an integrated audio solution combining high-end amplifier and power supply technology, capable of delivering 2x500W into 2Ω @1%THD, 2x300W into 4Ω @1%THD or 1x900W into 4Ω bridged. Short term RMS power 1000Wrms into 4Ω. Typical applications are audio subwoofers, powered speakers and residential audio system.

DISCLAIMER

The data sheet contains specifications that may be subject to change without prior notice. Responsibility for verifying the performance, safety, reliability and compliance with legal standards of end products using this subassembly falls to the manufacturer of said end product.

ANAVIEW products are not authorized for use as critical components in life support devices or life support systems without the express written approval of the president of ETAL Group AB. As used herein:
1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labelling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

GENERAL

Environmental Conditions

Humidity	5 – 85% RH non condensing
Operating Temperature Ambient	0°C to +55°C
Storage Temperature	-40°C to +85°C

Regulations and compliances

EMC	Emission	Conducted Emission FCC 15V, Sec. 107 Class ”B” Radiated Emission FCC 15V, Sec. 109 Class ”B” Conducted Emission EN 55022 (2010) Class ”B” Telecom Conducted Emission EN 55022 (2010) Class ”B” Radiated Emission EN 55022 (2010) Class ”B” Power Line Harmonics EN 61000-3-2 (2006) + A1 (2009) + A2 (2009) Power Line Flicker EN 61000-3-3 (2008)	0.15 MHz – 30 MHz 30 MHz – 1 GHz 0.15 MHz – 30 MHz 0.15 MHz – 30 MHz 30 MHz – 1 GHz
	Immunity	ESD Immunity IEC 61000-4-2 (2008) Radio Frequency Immunity IEC 61000-4-3 (2006) + A1 (2007) + A2 (2010) Electrical Fast Transient Immunity IEC 61000-4-4 (2004) + A1 (2010) Surge Immunity IEC 61000-4-5 (2005) RF Common Mode Immunity IEC 61000-4-6 (2008) Power Frequency Magnetic Field IEC 61000-4-8 (2009) Voltage Dips and Short Interruptions IEC 61000-4-11 (2004)	Criterion B Criterion A Criterion B Criterion B Criterion A Criterion A Criterion B and C
Safety	LVD	IEC 60065:2001 + A1:2005 + A2:2010 EN 60065:2002 + A1:2006 + A11:2008 + A2:2010 + A12:2011 UL 60065 7th Ed. Revised 2012-09-21 CAN/CSA C22.2 No. 60065-03, 1st Ed., 2006-04 + A1:2006 + A2:2012	
Power Loss	EuP Energy Star	Designed to enable system compliance with: 2005/32/EC - 1275/2008: Standby/Off Mode Loss, Annex II Point 2 Energy Star - Consumer Audio Products, Phase II	

Miscellaneous Specifications

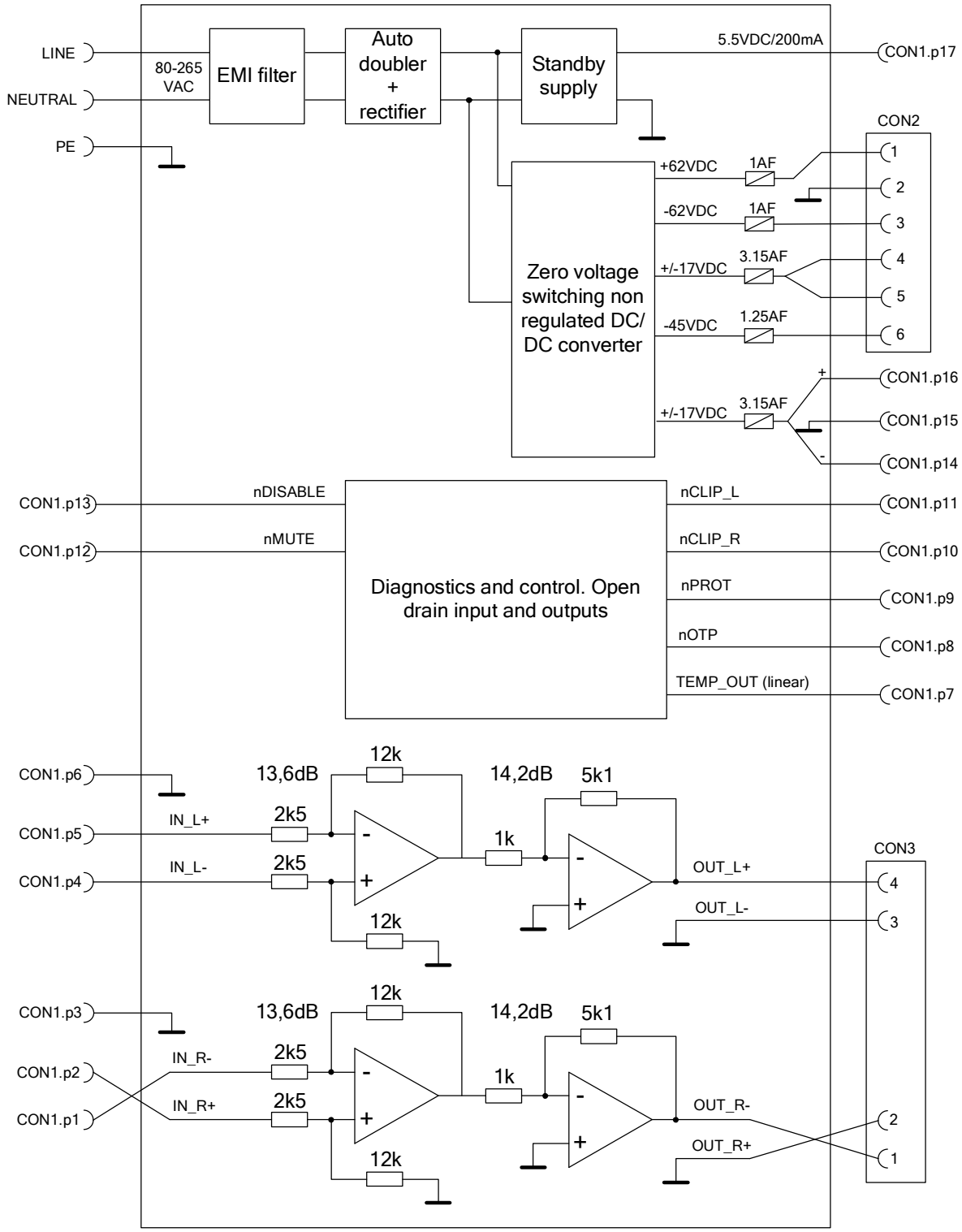
Cooling	Convection cooling
Mounting of the unit	See Figure 1 Board outline, dimensions and mounting holes (page 21).
IEC Protection Class	Class I
Efficiency	85% at 230Vac, 1KHz 1x1000W into 4Ω BTL
Idle power consumption	< 17.5W at 230VAC
Standby mode power consumption	0.5W typically when remote shut down by DISABLE input.
Manufacturing according to workmanship standard	IPC-A-610, Revision D, February 2005

Model selection chart/ordering information

Model	Accepts Hanger Module†	Application
AMS0100-2600	✓	Auto ranging 2-channel amplifier with 5.5V nominal standby supply meeting Energy Star/EuP and ability to power 3rd channel for 2.1 systems and BTL + SE systems ideal for 2-way LF/HF active speakers.

† Hanger Module Option – offers AUX VS+ and VS- high voltage rails to power an optional Hanger Module amplifier channel.

BLOCK DIAGRAM



Article Number:	PDS AMS1000	*Prepared:*	PB
Document Date:	2013-06-17	*Verified:*	MC
Current Revision no.:	D	*Approved:*	MC
Current Revision Date:	2014-05-23	*Page Number:*	5 of 37

MAINS VOLTAGE

Absolute maximum ratings

Parameter	Comment	Min	Max	Unit
Mains input voltage	The module automatically selects between 115/230V operation	75	264	VAC
Mains input freq.		45	63	Hz

Electrical specifications

Parameter	Comment	Min	Max	Unit
Recommended mains voltage range	For normal operation	90	240	VAC
Minimum mains starting voltage	Where all AUX supplies are available and amplifier is running.		90	VAC

AUDIO SPECIFICATIONS

Absolute maximum ratings

Parameter	Comment	Min	Max	Unit
Input signal single ended	Between IN_L+ and GND Between IN_L- and GND Between IN_R+ and GND Between IN_R- and GND	-	3	Vrms
Input signal balanced	Between IN_L+ and IN_L- Between IN_R+ and IN_R-	-	6	Vrms

Electrical specifications

Measured at 25°C ambient with no preheating unless otherwise specified

Parameter	Comment	Min	Typ	Max	Unit
Offset voltage	With open inputs		10		mV
Switching frequency	At idle with 4Ω load		370		kHz
Switching residual	At idle with 4Ω load		800		mVpk
Gain	At 1kHz with 4Ω load		27,5		dB
Idle noise	Unweighted with 4Ω load		60		µVrms
SNR 1W 4Ω	2.81Vrms/idle noise		93		dB
SNR 1W 2Ω	2.0Vrms/idle noise		90		dB
Dynamic range 4Ω	36Vrms/idle noise		115		dB
Common mode rejection	IN+ and IN- connected together. 100Hz signal applied to input. Rejection measured at the output.		38		dB

Input impedance single ended (*1)	Non symmetrical on positive and negative inputs	2.5		14.5	kΩ
Input impedance balanced (*1)	Non symmetrical on positive and negative inputs	1.37		14.5	kΩ
Upper bandwidth limit	Point of -3dB vs gain at 1kHz with 4Ω load		70		kHz
Gain deviation	From 20Hz to 20kHz			0.5	dB
Upper full power bandwidth (*2)	Level calibrated at 1% THD at 1kHz.		20		kHz
Lower bandwidth limit (*3)	Point of -3dB vs gain at 1kHz with 4Ω load		4		Hz
Recommended load impedance single ended	Recommended for optimized efficiency and audio performance	2		8	Ω
Recommended load impedance BTL	Recommended for optimized efficiency and audio performance	4		8	Ω
Output impedance @ 100Hz	Measuring output voltage while injecting 1Arms into output. 1mV=1mΩ		6		mΩ
Output impedance @ 20kHz	Measuring output voltage while injecting 1Arms into output. 1mV=1mΩ		13		mΩ

(*1) The input impedance on IN+ and IN- is not identical and also different between channels. See application notes below for more information.
(*2) Sustained operation at full power above this frequency may result in damage to the module.
(*3) Requires symmetrical loading and signal generation on both channels.

Power specifications SE operation

Maximum output current	Measured with one period of 100Hz sine wave		30		Apk
Maximum long term output power into 8Ω	Measured with both channels driven @ 1% THD+N		2x170		Wrms
Maximum long term output power into 4Ω	Measured with both channels driven @ 1% THD+N		2x300		Wrms
Maximum long term output power into 2Ω	Measured with both channels driven @ 1% THD+N		2x500		Wrms
Maximum infinite output power into 4Ω	Measured with both channels driven in 45°C ambient temperature.		2x100		Wrms
Maximum infinite output power into 2Ω	Measured with both channels driven in 45°C ambient temperature.		2x75		Wrms
FTC power rating into 8Ω	1 hour pre heating with 1/8 of specified power and subsequently 5 min. with specified power at 120/230Vac, 1kHz input, ambient		2x170		Wrms

	temp. 25°C still air. Open frame. Board mounted vertically.				
FTC power rating into 4Ω	1 hour pre heating with 1/8 of specified power and subsequently 5 min. with specified power at 120/230Vac, 1kHz input, ambient temp. 25°C still air. Open frame. Board mounted vertically.		2x300		Wrms
FTC power rating into 2Ω	1 hour pre heating with 1/8 of specified power and subsequently 5 min. with specified power at 120/230Vac, 1kHz input, ambient temp. 25°C still air. Open frame. Board mounted vertically.		2x250		Wrms
Max short term RMS power into 8Ω	500ms of 1kHz sine wave @ 1%THD. One channel.		180		Wrms
Max short term RMS power into 4Ω	500ms of 1kHz sine wave @ 1%THD. One channel.		360		Wrms
Max short term RMS power into 2Ω	500ms of 1kHz sine wave @ 1%THD. One channel.		680		Wrms

Power specifications BTL operation

Maximum long term output power into 8Ω	Measured during 30 second interval with 1% THD+N		580		Wrms
Maximum long term output power into 6Ω	Measured during a 30 second interval with 1% THD+N		720		Wrms
Maximum long term output power into 4Ω	Measured during a 30 second interval with 1% THD+N		900		Wrms
Maximum continuous output power into 8Ω	Measured in 45°C ambient temperature.		200		Wrms
Maximum continuous output power into 6Ω	Measured in 45°C ambient temperature.		170		Wrms
Maximum continuous output power into 4Ω	Measured in 45°C ambient temperature.		150		Wrms
FTC power rating into 8Ω	1 hour pre heating with 1/8 of specified power and subsequently 5 min. with specified power at 120/230Vac, 1kHz input, ambient temp. 25°C still air. Open frame. Board mounted vertically.		570		Wrms
FTC power rating into 6Ω	1 hour pre heating with 1/8 of specified power and subsequently 5 min. with specified power at 120/230Vac, 1kHz input, ambient temp. 25°C still air. Open frame. Board mounted vertically.		600		Wrms
FTC power rating into 4Ω	1 hour pre heating with 1/8 of specified power and subsequently 5 min. with specified power at 120/230Vac, 1kHz input, ambient temp. 25°C still air. Open frame.		500		Wrms

	Board mounted vertically.				
Max short term RMS power into 8Ω	500ms of 1kHz sine wave @ 1%THD.		590		Wrms
Max short term RMS power into 6Ω	500ms of 1kHz sine wave @ 1%THD.		740		Wrms
Max short term RMS power into 4Ω	500ms of 1kHz sine wave @ 1%THD.		1000		Wrms

DIAGNOSTIC SIGNALS

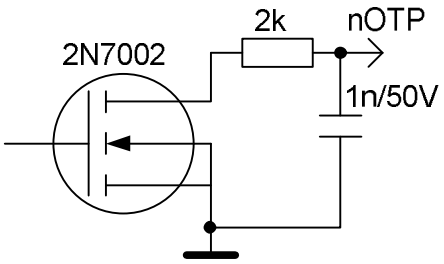
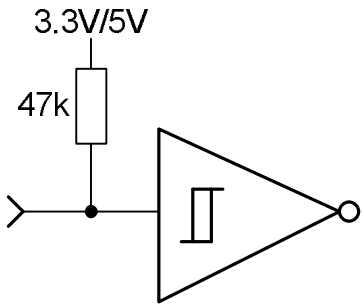
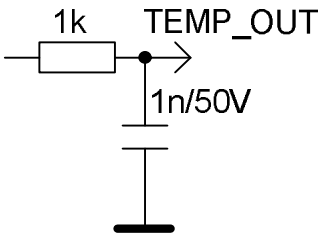
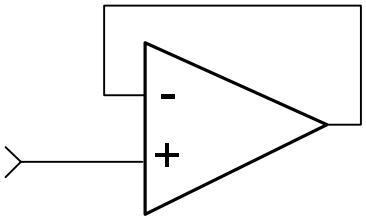
Diagnostics outputs	Output type	Voltage range		I Max cont.	Function
		Min	Max		
nPROT	Open drain with 2kohm in series(*1)	N/A	VA+(*3)	5mA	Signals during: - Over voltage shutdown - VA+/- fuse is blown - Startup until rails are OK
nCLIP_L	Open drain with 2kohm in series(*1)	N/A	VA+(*3)	5mA	Signals when the output generates >0,1%THD+N
nCLIP_R	Open drain with 2kohm in series(*1)	N/A	VA+(*3)	5mA	Signals when the output generates >0,1%THD+N
nOTP	Open drain with 2kohm in series(*1)	N/A	VA+(*3)	5mA	Signals when the hottest component reaches approx 110°C
TEMP_OUT	Linear(*2)	0.2V	3.0V	5mA	Displays the temperature of the hottest component inside AMS1000. Shut down is 2.86V.

(*1) Open drain outputs with 2kohm in series to limit the current.

(*2) The TEMP_OUT output is a linear signal with 1kohm in series to limit the current.

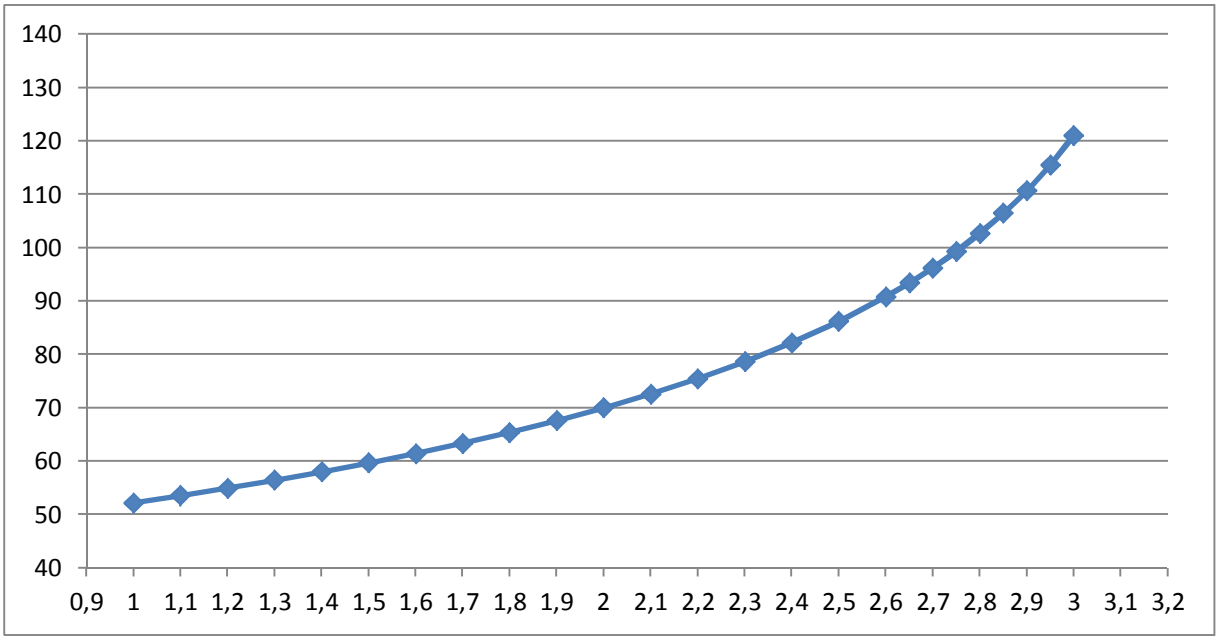
(*3) Recommended maximum voltage to which a pull up resistor should be connected.

Proposed interfaces

Diagnostics output	AMS1000 output circuit	Proposed interface
nPROT, nCLIP_L, nCLIP_R, nOTP. The MOSFET 2N7002 is turned on during the corresponding situations.		
TEMP_OUT This output shows the temperature of the hottest position inside the module. Internal supervision shuts down the amplifiers when this output reaches 2,87V which corresponds to 100°C.		

Temp out

The below graph shows how the output signal TEMP_OUT follows the hottest component in the AMS1000 module. X-axis is voltage and Y-axis is temperature in °C. 2.86V on TEMP_OUT signal is shut down threshold.



The temperature can also be described using the formula below

TEMP=(3428/LN(53532-(15851*TEMP_OUT)))-273,15

CONTROL INPUTS

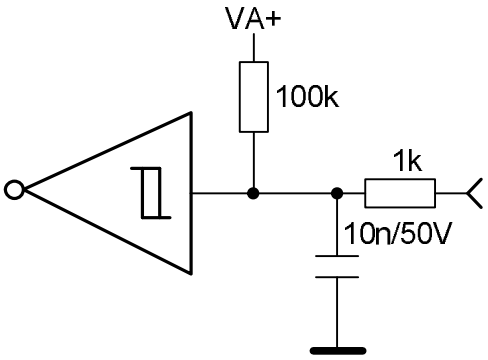
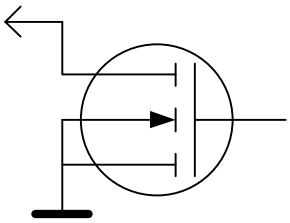
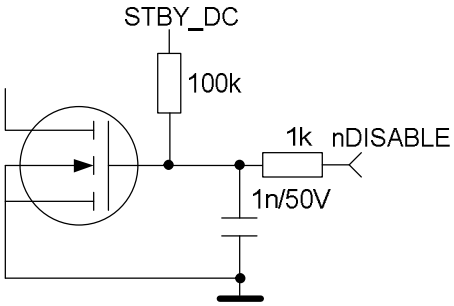
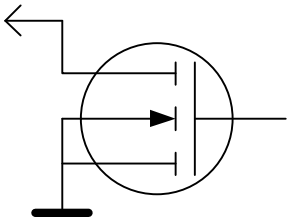
Absolute maximum ratings

Parameter	Comment	Min	Max	Unit
nDISABLE		0	VA+	V
nMUTE		0	VA+	V

Electrical specifications

Parameter	Comment	Min	Typ	Max	Unit
nDISABLE activation threshold	Threshold for disabling the AMS1000 module (active low)	1.0	2.0	2.75	V
nDISABLE deactivation threshold	Threshold for enabling the AMS1000 module	1.0	2.0	2.75	V
nDISABLE activation time	Time from setting nDISABLE low to amplifier stop		0.7		ms
nDISABLE deactivation time	Time from setting nDISABLE high to amplifier start		1500		ms
nMUTE activation threshold	Threshold for muting the AMS1000 module (active low). 30% of VA+.		0.3xVa+		V
nMUTE deactivation threshold	Threshold for unmuting the AMS1000 module. 70% of VA+.		0.7xVa+		V
nMUTE activation time	Time from setting nMUTE low to amplifier stop		1		ms
nMUTE deactivation time	Time from setting nMUTE high to amplifier start		8		ms

Proposed interfaces

Control signal	AMS1000 input circuit	Proposed interface
nMUTE When this input is pulled down the amplifiers are muted. The Schmitt trigger has CMOS thresholds and is supplied by VA+ meaning the "high to low" threshold is 70% of VA+ and the "low to high" threshold is 30% of VA+.		
nDISABLE The entire module is turned off and put in standby mode when this input is pulled down. During this state, only the STBY_DC output is available. The internal gate pull up resistor is pulled up to STBY_DC.		

AUXILIARY SUPPLIES

AUX outputs	Nom. Voltage	Voltage fluctuation		I Max cont.	Comments
		Min	Max		
STBY_DC output supply	+5.5V (*2)	+4.0V	+8.0V	200mA	25mA for <0.5W standby consumption
AUX output supply voltage VA+(*1)	+17V	+9V	+21V	600mA (*3)	Max capacitive load 330uF
AUX output supply voltage VA-(*1)	-17V	-9V	-21V	600mA (*3)	Max capacitive load 330uF
AUX output supply voltage VS+(*1)	-62V	-35V	+73V	1000mA (*4)	Only for supplying Anaview hanger modules
AUX output supply voltage VS-(*1)	+62V	-35V	+73V	1000mA (*4)	Only for supplying Anaview hanger modules
AUX output supply voltage VDR_RAW(*1)	-45V	-26V	-48V		Only for supplying Anaview hanger modules

(*1) The AMS1000-2600 AUX outputs are unregulated and vary with load and AC input voltage.

(*2) The standby voltage is only softly regulated and hence varies with the load current.

(*3) Maximum continuous output current on VA+ and VA- is in sum 600mA. This allows for any load combination between the two outputs in total giving 600mA, i.e at most 600mA on one and 0mA at the other. If these outputs are shorted a fuse (F201) blows and has to be replaced.

(*4) Maximum continuous output current on VS+ and VS- is fused to 1000mA each. These outputs should only be used to power a high frequency (>500Hz) 50W 4Ω hanger module.

POWER CONSUMPTION AND EFFICIENCY

Idle and standby consumption

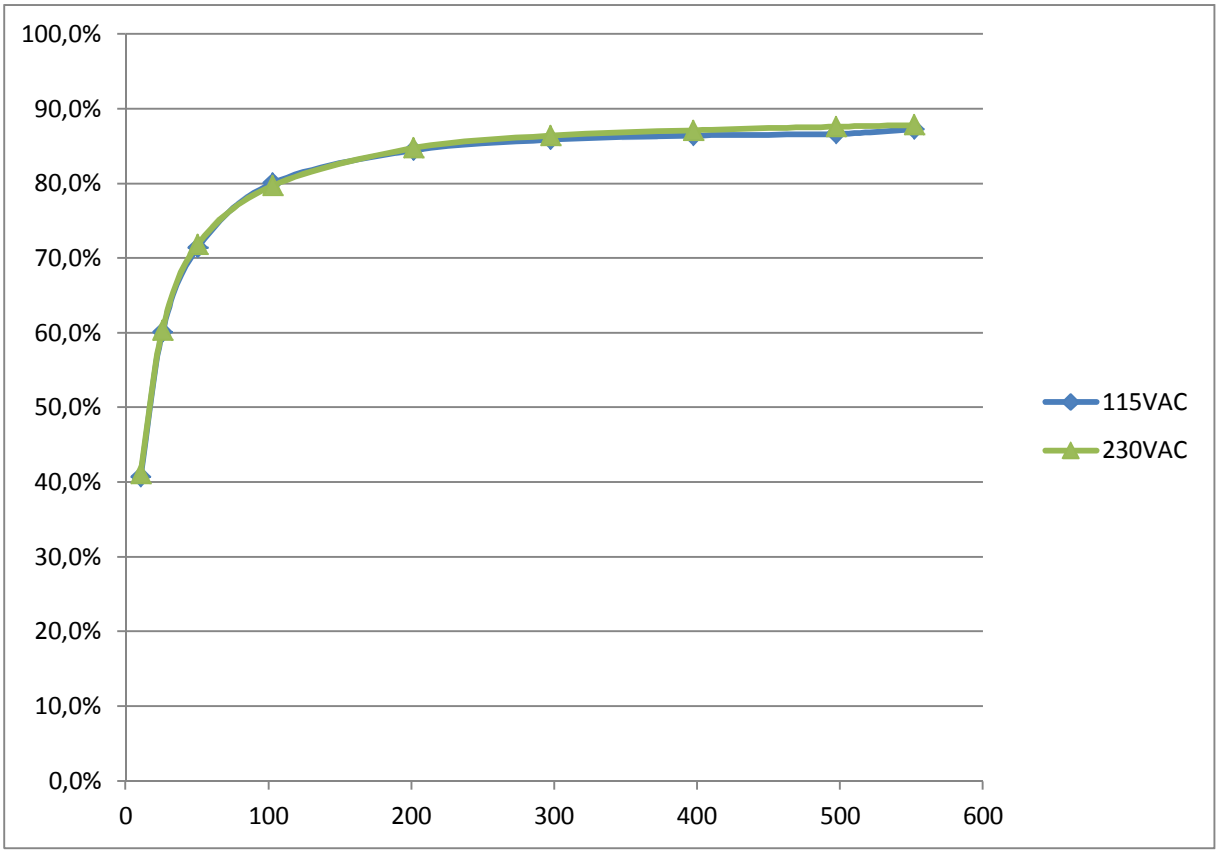
Parameter	Comment	Min	Typ	Max	Unit
Idle consumption at 230VAC	nMUTE and nDISABLE set high at 230VAC with no load on VA+/VA or STBY_DC		12.5		W
Idle consumption at 115VAC	nMUTE and nDISABLE set high at 115VAC with no load on VA+/VA or STBY_DC		13.3		W
Standby consumption at 230VAC, unloaded	nDISABLE set low at 230VAC with no load on STBY_DC		320		mW
Standby consumption at 115VAC, unloaded	nDISABLE set low at 115VAC with no load on STBY_DC		21		mW
Standby consumption at 230VAC, loaded	nDISABLE set low at 230VAC with 25mA load on STBY_DC		480		mW
Standby consumption at 115VAC, loaded	nDISABLE set low at 115VAC with 25mA load on STBY_DC		350		mW

Maximum load for EuP and Energy Star compliance

Compliance	Comment	STBY_DC	VA+/-	
EuP compliance	Maximum load to ensure <500mW standby consumption. Measured at 230VAC.	25	-	mA
Energy star	Maximum load (VA+ and VA- combined) to ensure <17.5W total idle consumption. Measured at 115/230VAC	25	100	mA

Efficiency

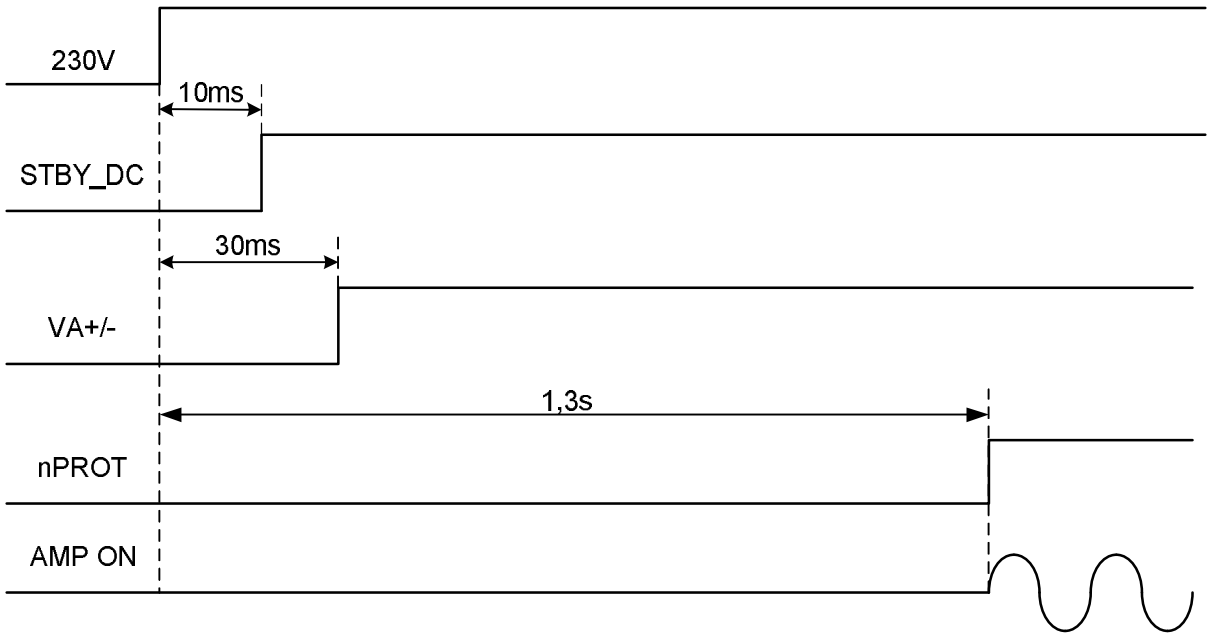
Into 4Ý at 230VAC and 115VAC



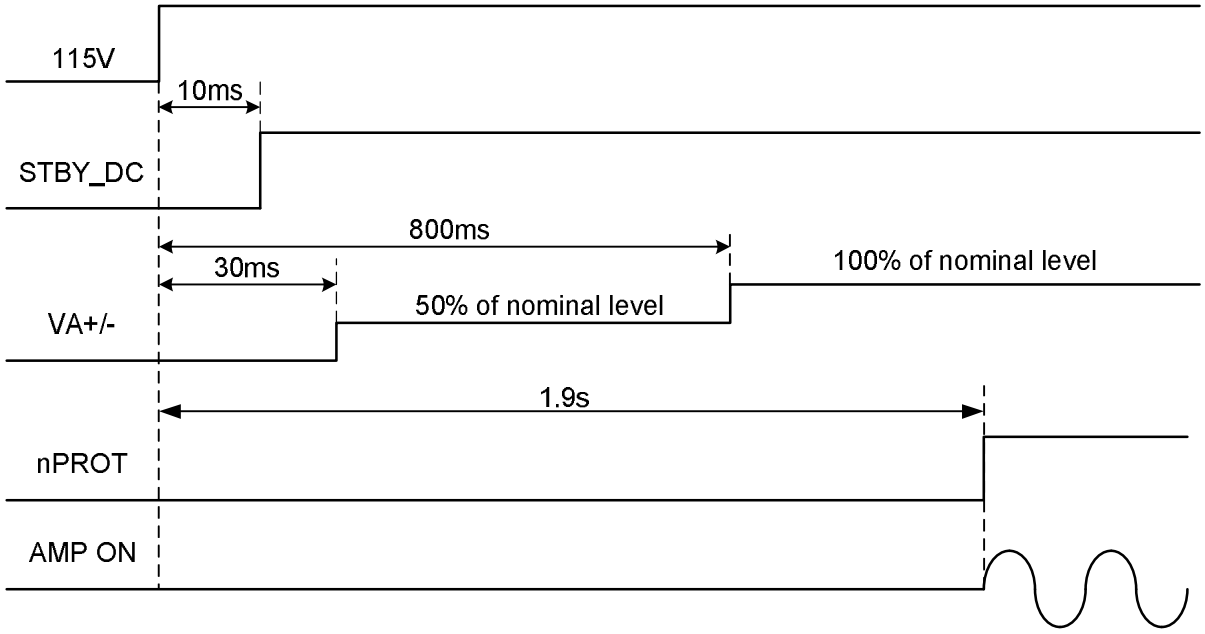
Efficiency vs total output power. No loads on STBY_DC or VA outputs. 2x4ohm loads.

TIMING CHARTS

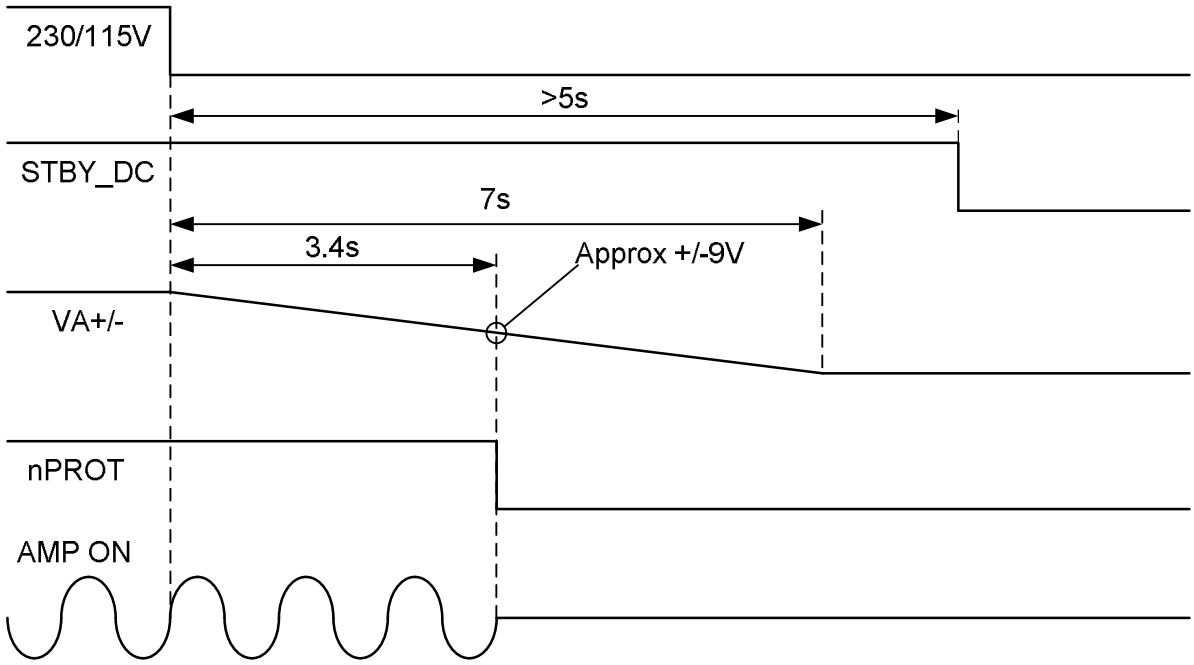
230V switch on



115V switch on

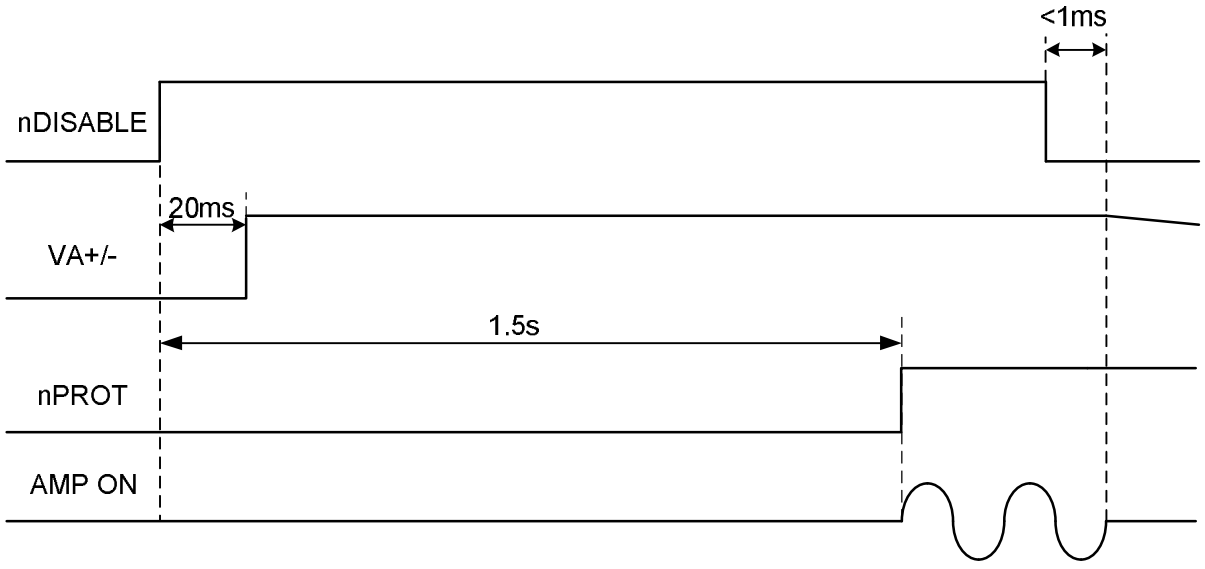


Mains switch off

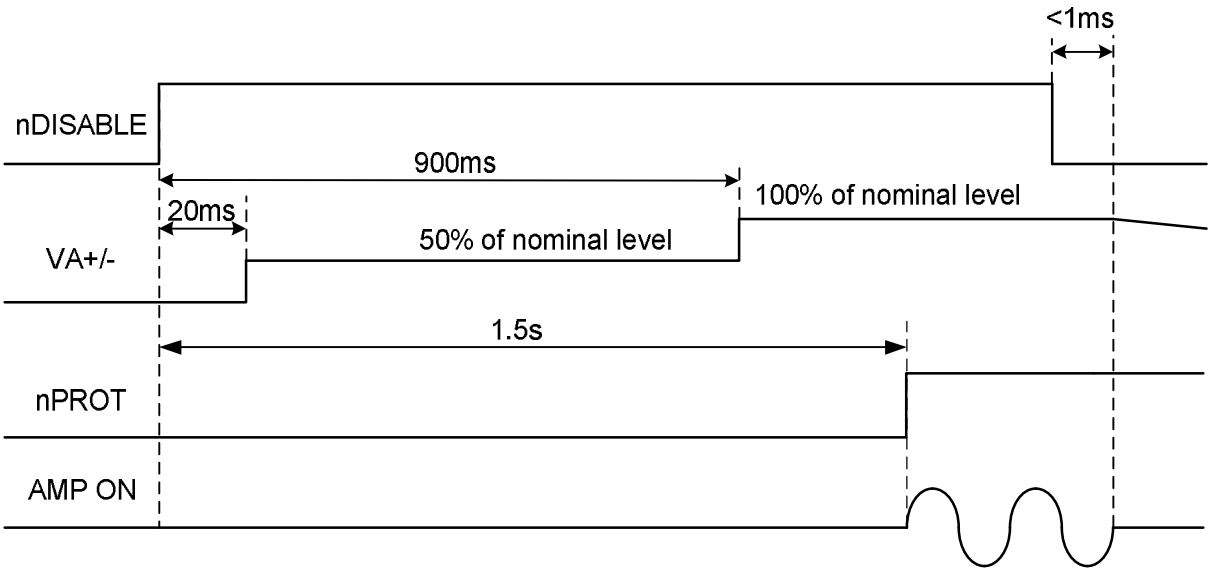


Note: Nominal load on VA+/- and STBY_DC

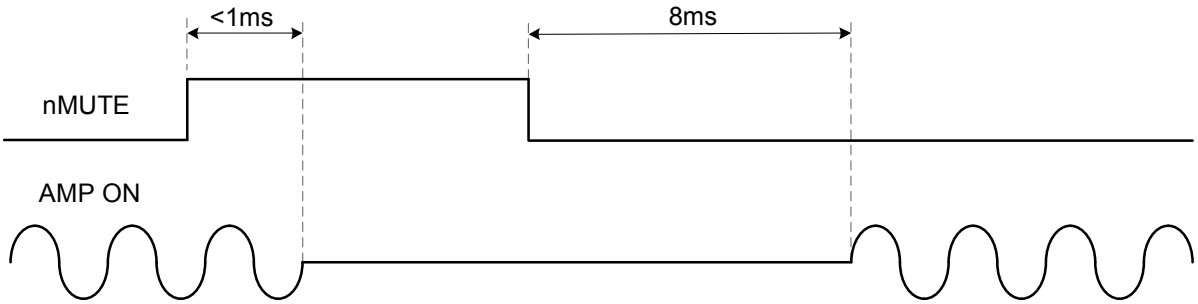
nDISABLE @ 230V



nDISABLE @ 115V



nMUTE



PROTECTION

Mains input fuse	T10AE Littelfuse 0215010.MXP
Auxiliary output fuse	F3.15A Littelfuse 37013150410
Over temperature protection	Amplifier shut down by over temperature. Threshold temperature : 102(min) – 107(typ) – 112(max)'C TEMP_OUT is 2.86V at shut down. Sensor connected to power FETs in amplifier channels, rectifier diodes in power supply and transformer in power supply. Separate over temp protection for power FETs in power supply shuts down at 102(min) – 107(typ) – 112(max)'C without displaying on TEMP_OUT.
Over voltage protection	Power shut down by over voltage on output voltage rail. This can occur during severe railpumping or a mains voltage above 264VAC.
Over current protection	Current limit threshold: 30Apk (0.5Ω load, 1kHz burst). Power shut down when over current limit persists.

CONNECTIONS

Connector	Connector type	Mating connector
CON1 (signal)	17 pin JST B17B-CZHK-B-1	JST 17CZ-6H Crimp terminal SCZH-002T-P0.5
CON2 (Vs/Va)	6 pin CVIlux CP3506P1V00	CVIlux CP3506S0010 Crimp terminal CVIlux CP35TN21PES
CON3 (speakers)	4 pin JST B04P-VL	JST VLP-04V Crimp terminal BVF-61T-P2.0
LINE	PCB terminal 4.8x0.8mm	
NEUTRAL	PCB terminal 4.8x0.8mm	
PE	PCB terminal 4.8x0.8mm	

Signal connector pinning (CON1)

1	**IN_R-**	Right audio channel negative input.
2	**IN_R+**	Right audio channel positive input.
3	**GNDs**	Secondary side ground
4	**IN_L-**	Left audio channel negative input.
5	**IN_L+**	Left audio channel positive input.
6	**GNDs**	Secondary side ground
7	**TEMP_OUT**	Linear temp output signal.
8	**nOTP**	Over temp shutdown output signal.
9	**nPROT**	PSU shutdown output signal.
10	**nCLIP_R**	Clip detect output signal.
11	**nCLIP_L**	Clip detect output signal.
12	**nMUTE**	Mute input signal.
13	**nDISABLE**	Standby mode activation signal.
14	**VA-**	AUX output voltage VA-
15	**GNDs**	Secondary side ground
16	**VA+**	AUX output voltage VA+
17	**STBY_DC**	AUX output voltage STBY_DC

Signal connector pinning (CON2)

1	**VS+**	VS+ with 1A fuse
2	**GND**	Secondary side ground
3	**VS-**	VS- with 1A fuse
4	**VA+**	VA+
5	**VA-**	VA-
6	**VDR_RAW**	Gate voltage referred to VS-

Speaker connector (CON3)

1	**OUT_R- (BTL -)**	Right audio channel negative output. Bridge tied load negative output.
2	**OUT_R+**	Right audio channel positive output.
3	**OUT_L-**	Left audio channel negative output.
4	**OUT_L+ (BTL+)**	Left audio channel positive output. Bridge tied load positive output.

Mains input (Line, Neutral, PE)

Line	**LINE**	Mains Line
Neutral	**NEUTRAL**	Mains Neutral
PE	**PE**	Secondary ground

MECHANICAL OUTLINE

Size (l x w x h)	180mmx166mmx63.5mm (heatsink dimensions)
Weight	1500g
Mounting hole dia.	4.3mm
Coloring, design and branding	AMS1000-2600, black PCB, black heatsink with Anaview logo.

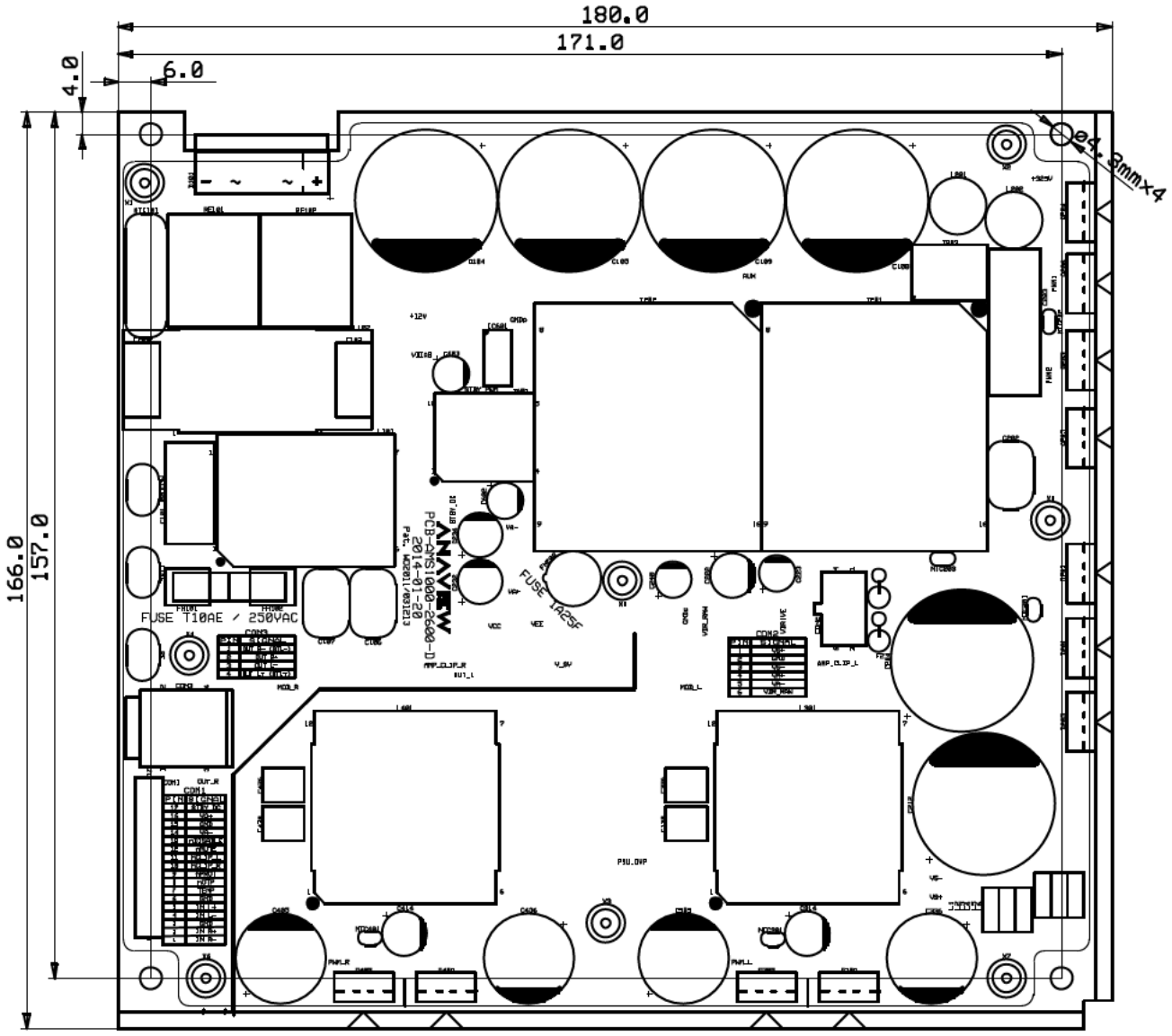


Figure 1. Mechanical outline, dimensions and mounting holes.

AUDIO MEASUREMENTS

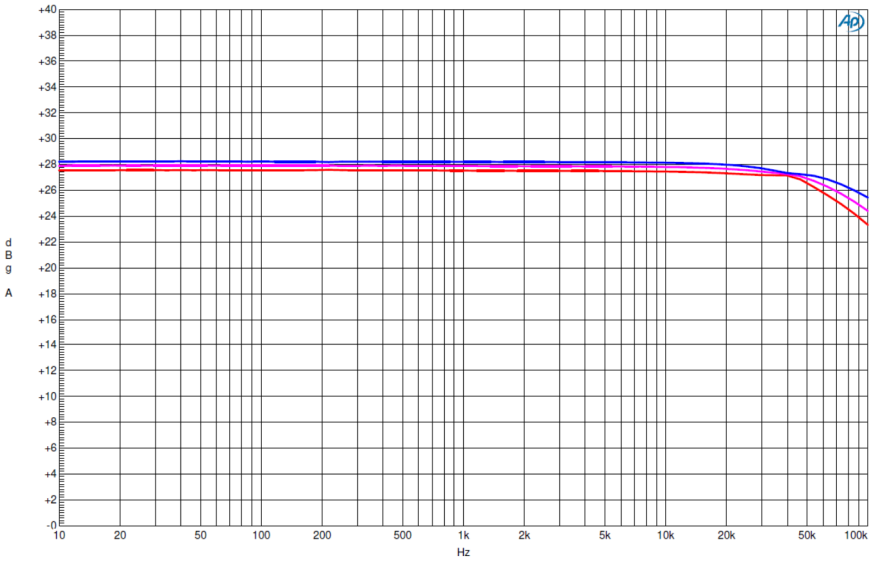


Figure 2. Frequency response 4Ω, 8Ω and open load SE.

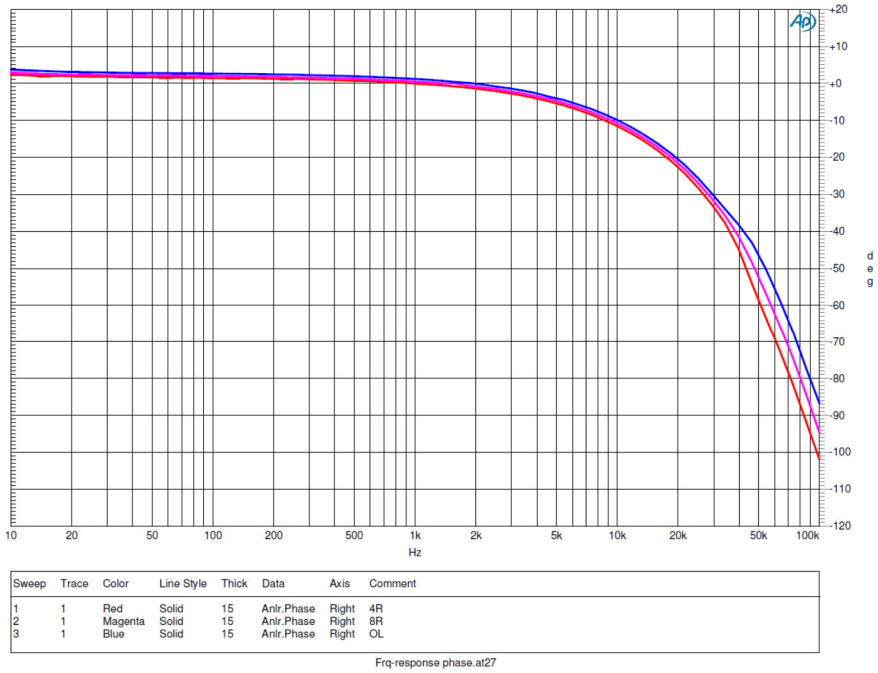


Figure 3. Phase response 4Ω, 8Ω and open load SE.

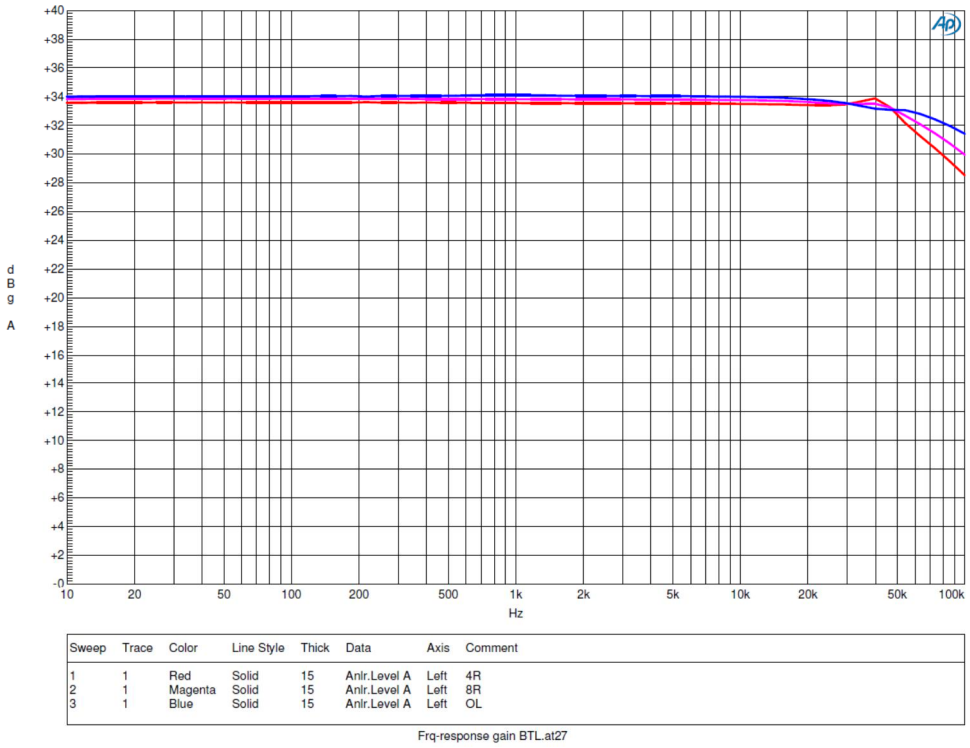


Figure 4. Frequency and phase response 4Ω, 8Ω and open load BTL**.**

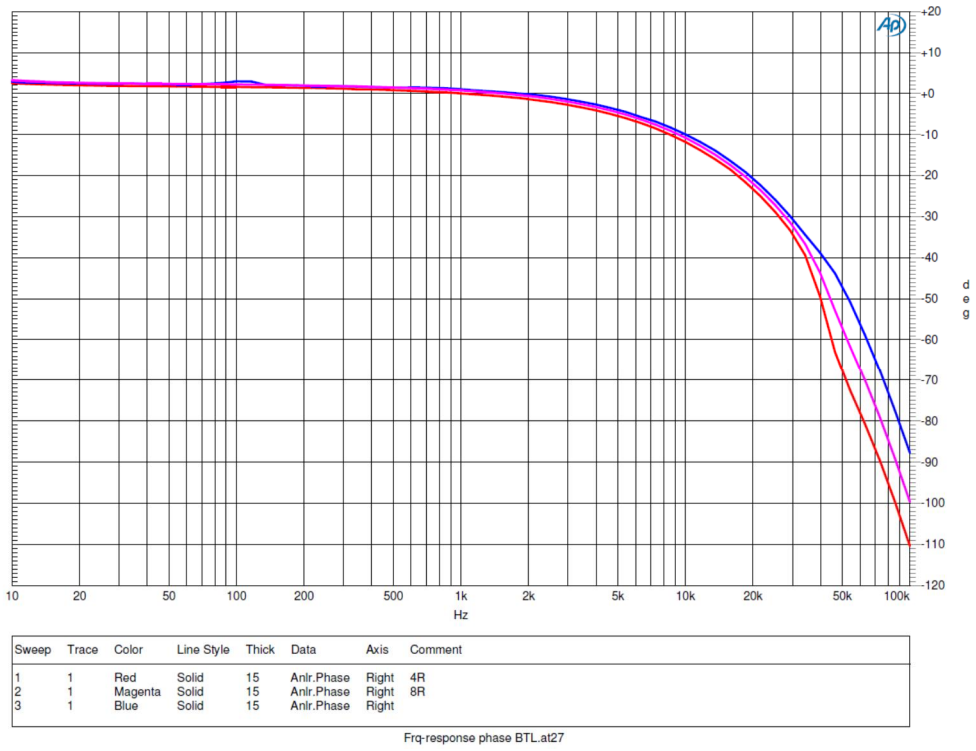
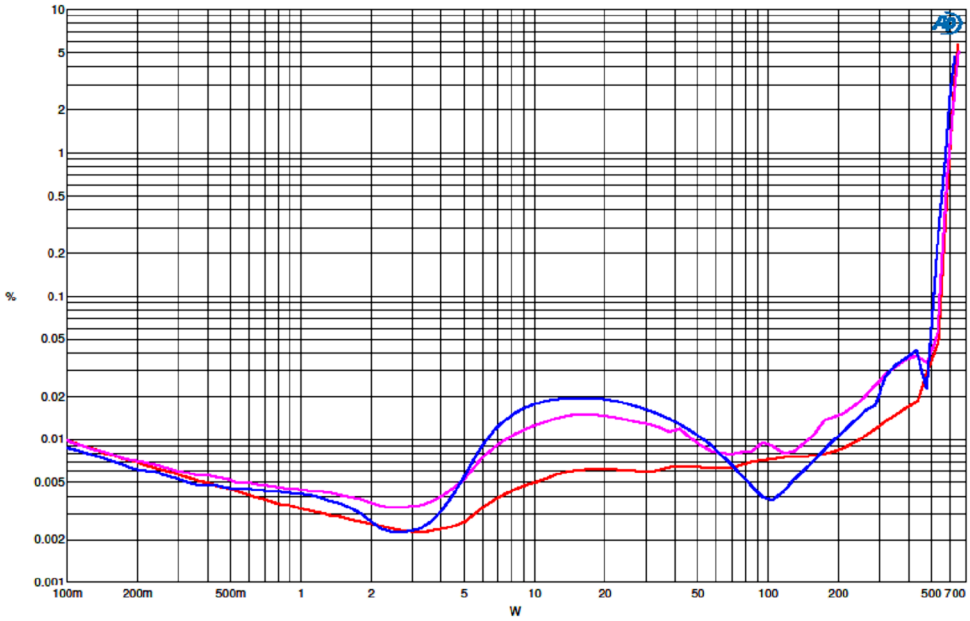


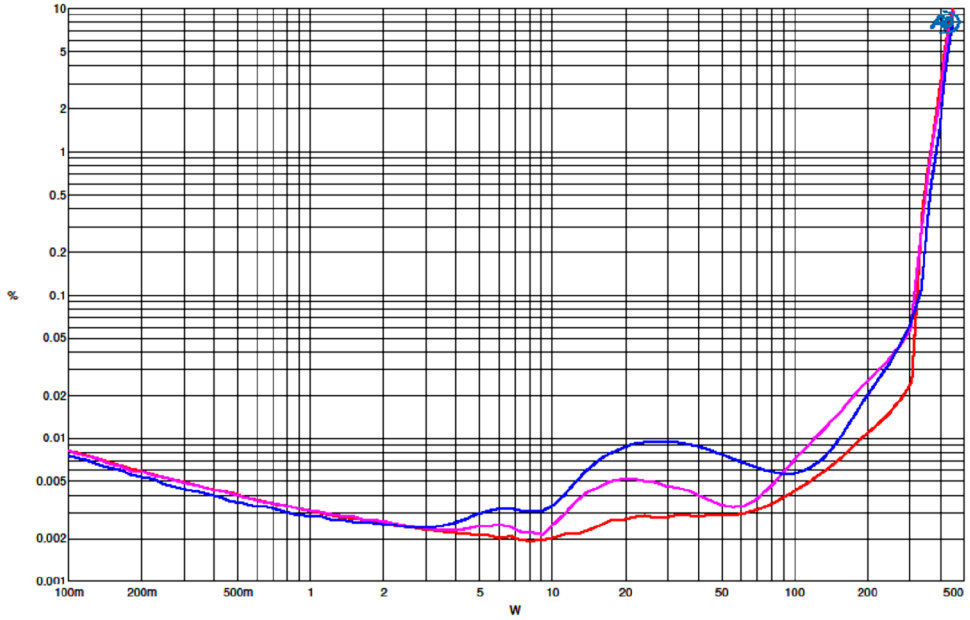
Figure 5. Frequency and phase response 4Ω, 8Ω and open load BTL**.**



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.THD+N Ratio	Left	2R SE 230VAC 2CHN 100Hz
2	1	Magenta	Solid	15	Anlr.THD+N Ratio	Left	2R SE 230VAC 2CHN 1kHz
3	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	2R SE 2230VAC 2CHN 6k6Hz

THDvsPW R 230VAC 2CHN 2RSE new R.at27

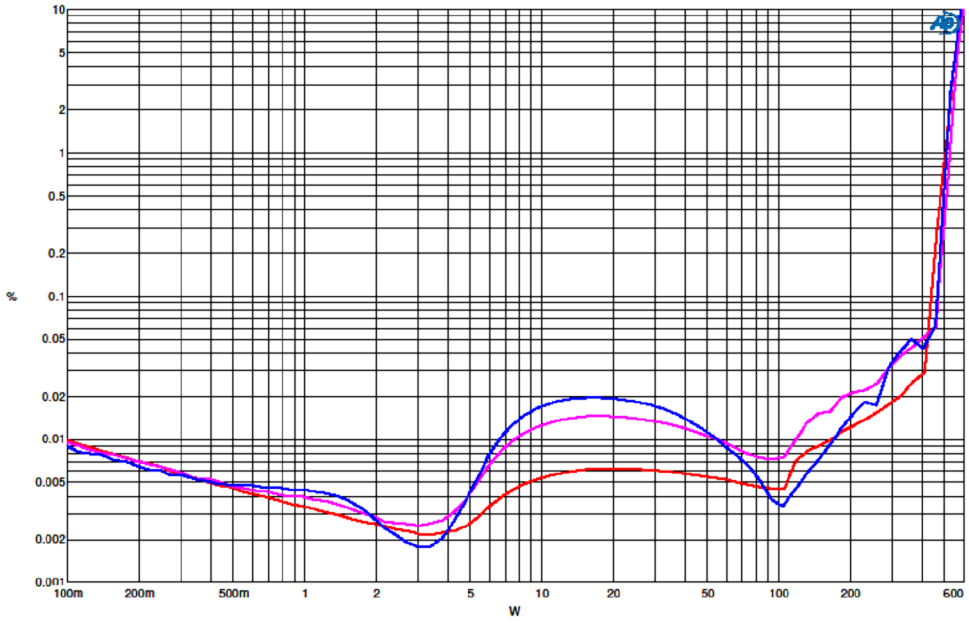
Figure 6. THD vs power 2Ω, 230VAC, both channels driven.



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.THD+N Ratio	Left	4R SE 230VAC 2CHN 100Hz
2	1	Magenta	Solid	15	Anlr.THD+N Ratio	Left	4R SE 230VAC 2CHN 1kHz
3	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	4R SE 230VAC 2CHN 6k6Hz

THDvsPW R 230VAC 2CHN 4RSE new R.at27

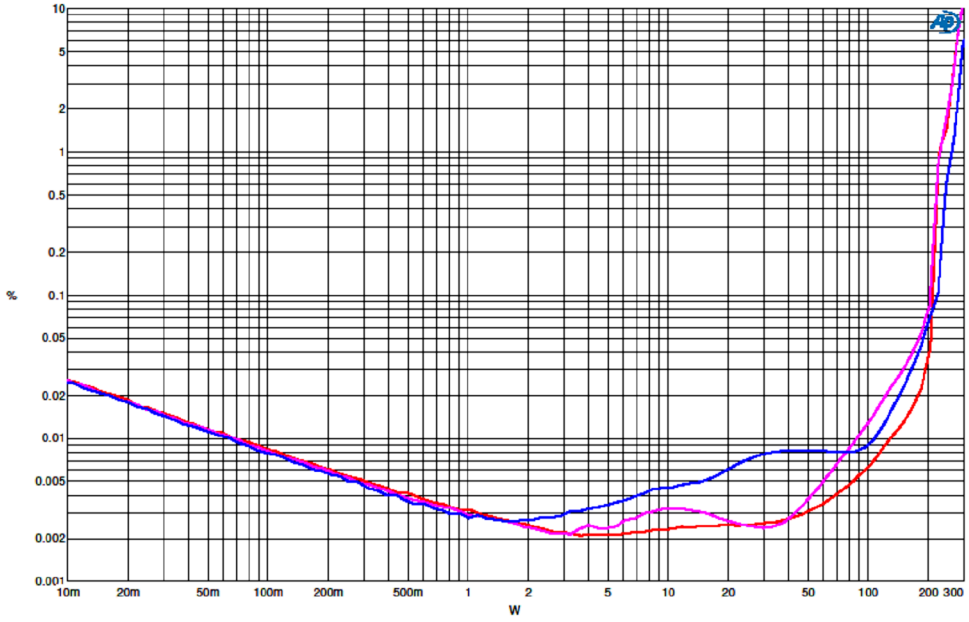
Figure 7. THD vs power 4Ω, 230VAC, both channels driven**.**



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.THD+N Ratio	Left	2R SE 115VAC 2CHN 100Hz
2	1	Magenta	Solid	15	Anlr.THD+N Ratio	Left	2R SE 115VAC 2CHN 1kHz
3	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	2R SE 115VAC 2CHN 6k6Hz

THDvsPW R 115VAC 2CHN 2RSE new R.at27

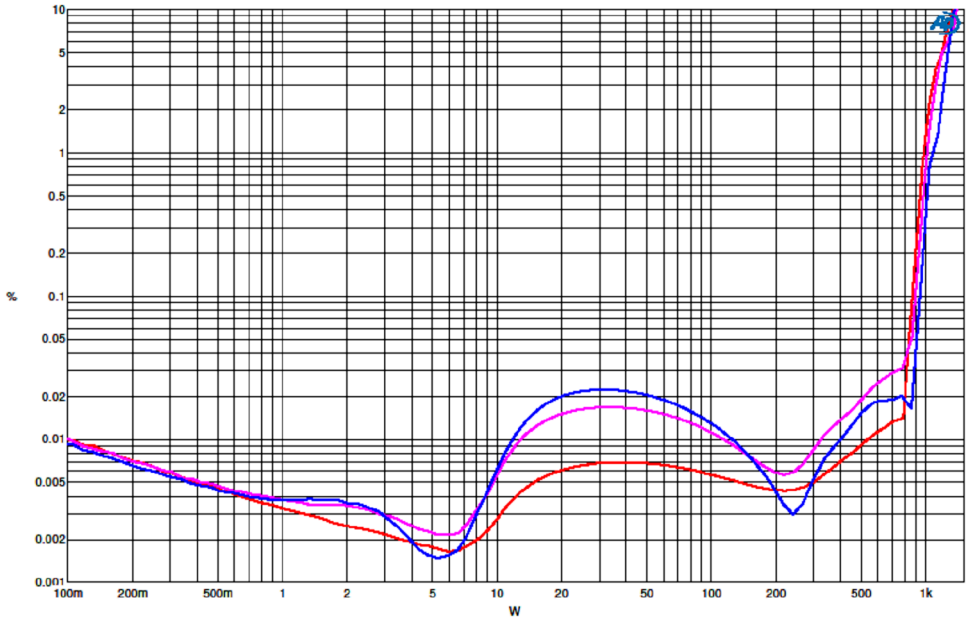
Figure 8. THD vs power, 2Ω, 115VAC, both channels driven**.**



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.THD+N Ratio	Left	6R SE 115VAC 2CHN 100Hz
2	1	Magenta	Solid	15	Anlr.THD+N Ratio	Left	6R SE 115VAC 2CHN 1kHz
3	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	6RE SE 115VAC 2CHN 6k6Hz

THDvsPW R 115VAC 2CHN 6RSE new R.at27

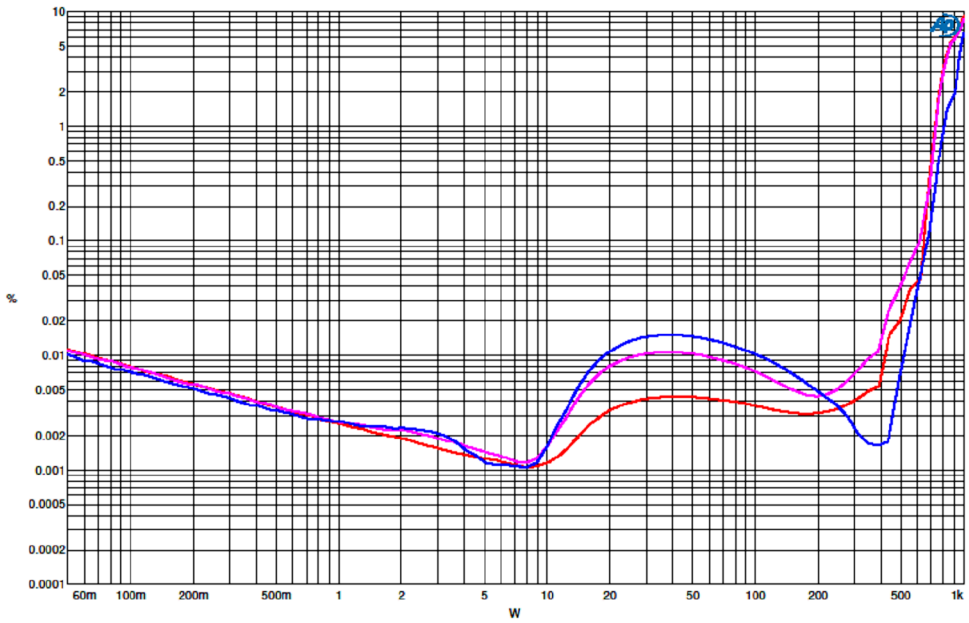
Figure 9. THD vs power, 6Ω, 115VAC, both channels driven**.**



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.THD+N Ratio	Left	4R BTL 230VAC 100Hz
2	1	Magenta	Solid	15	Anlr.THD+N Ratio	Left	4R BTL 230VAC 1kHz
3	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	4RE BTL 230VAC 6k6Hz

THDvsPWR 230VAC 4R BTL new R.at27

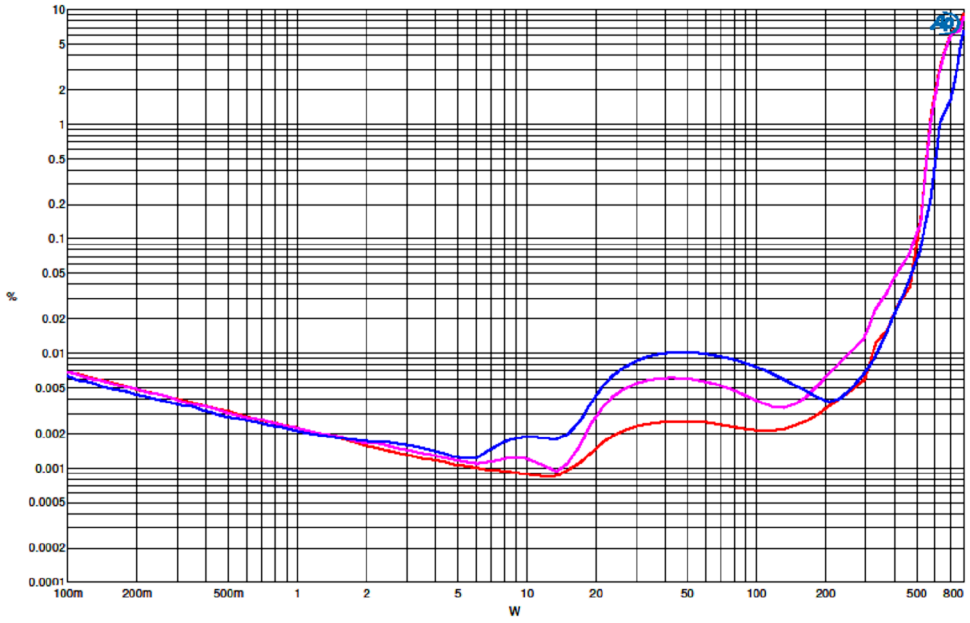
Figure 10. THD vs power, 4Ω, 230VAC, BTL.



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.THD+N Ratio	Left	6R BTL 230VAC 100Hz
2	1	Magenta	Solid	15	Anlr.THD+N Ratio	Left	6R BTL 230VAC 1kHz
3	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	6R BTL 230VAC 6k6Hz

THDvsPWR 230VAC 6R BTL new R.at27

Figure 11. THD vs power, 6Ω, 230VAC, BTL.



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.THD+N Ratio	Left	8R BTL 230VAC 100Hz
2	1	Magenta	Solid	15	Anlr.THD+N Ratio	Left	8R BTL 230VAC 1kHz
3	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	8R BTL 230VAC 6k6HZ

THDvsPWR 230VAC 8R BTL new R.at27

Figure 12. THD vs power, 8Ω BTL, 230VAC.

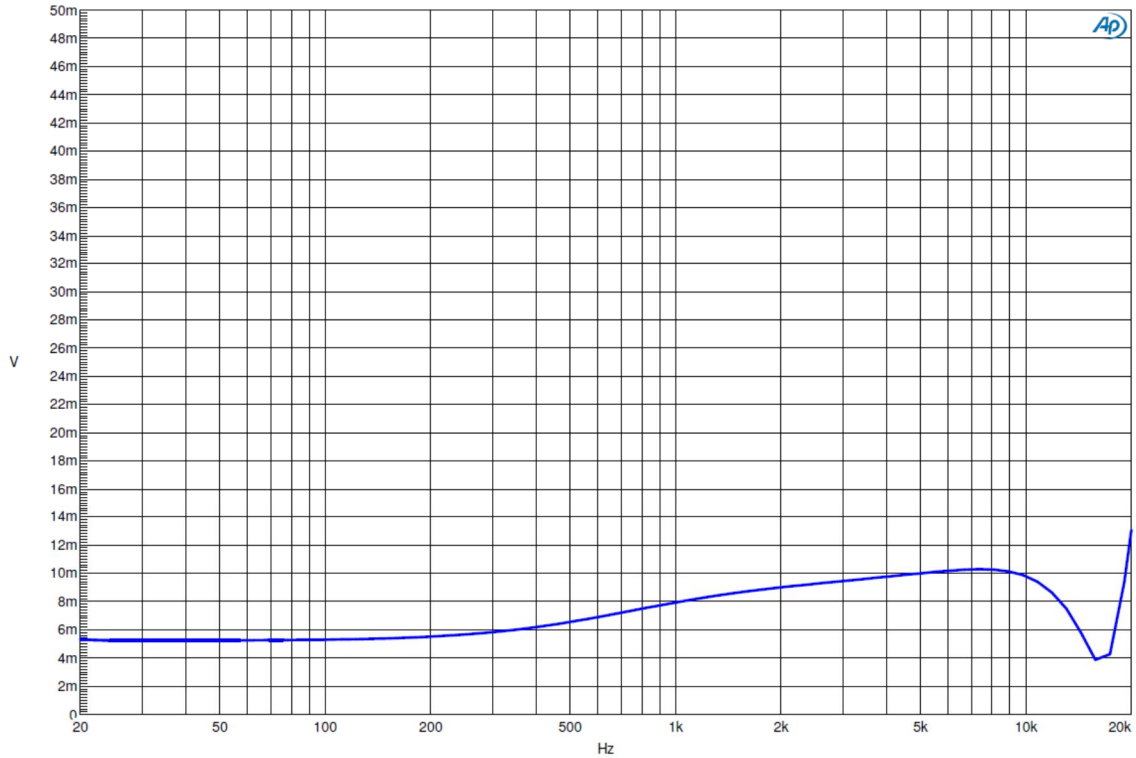
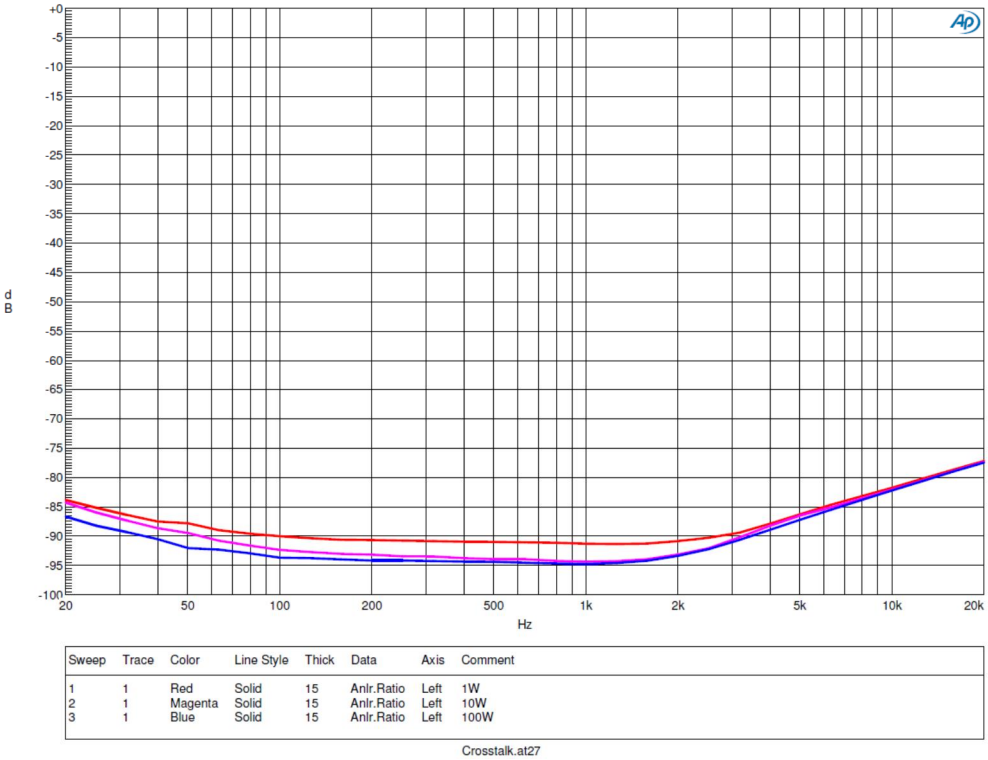
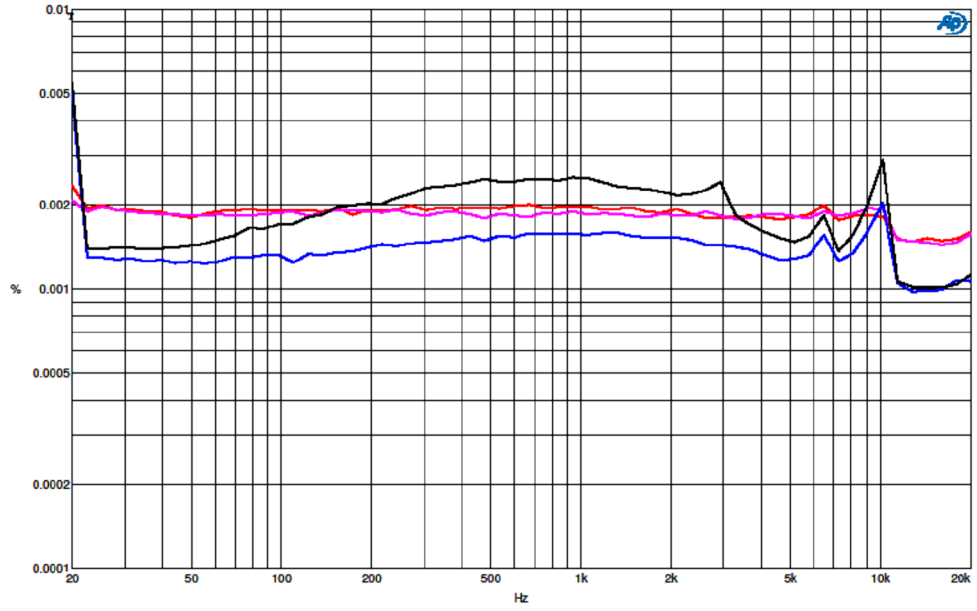


Figure 13. Output impedance 1mV=1mΩ.



Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.Ratio	Left	1W
2	1	Magenta	Solid	15	Anlr.Ratio	Left	10W
3	1	Blue	Solid	15	Anlr.Ratio	Left	100W

Figure 14. Crosstalk**.**



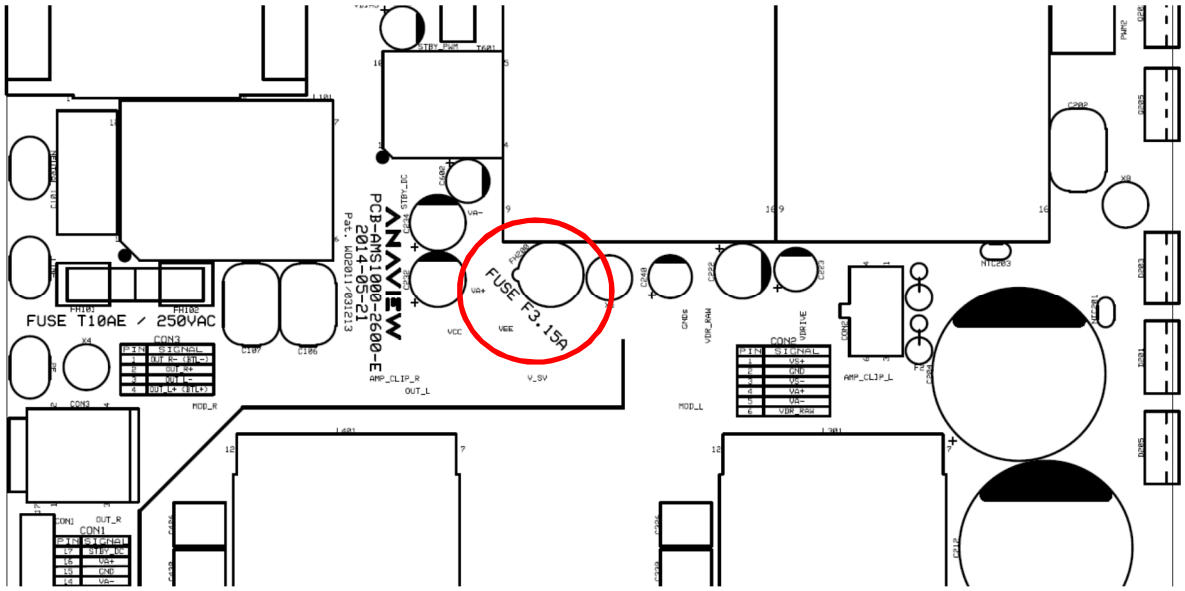
Sweep	Trace	Color	Line Style	Thick	Data	Axis	Comment
1	1	Red	Solid	15	Anlr.THD+N Ratio	Left	4R SE 700mW
2	1	Magenta	Solid	15	Anlr.THD+N Ratio	Left	8R SE 700mW
3	1	Blue	Solid	15	Anlr.THD+N Ratio	Left	8R BTL 2.8W
4	1	Black	Solid	15	Anlr.THD+N Ratio	Left	4R BTL 2.6W

Figure 13. THD vs frequency

INSTRUCTIONS

Replacing VA+/VA- fuse

The auxiliary supplies VA+/- are protected by a fuse. In case of overload this fuse will open and has to be replaced to get the supplies back.



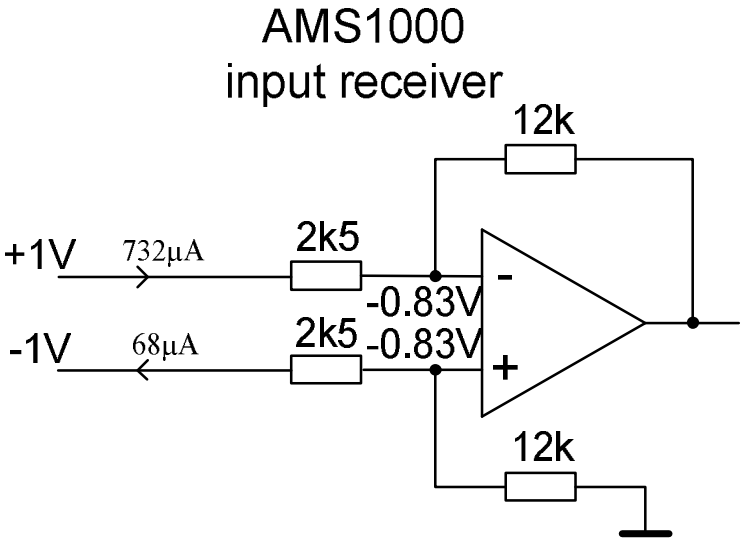
F201 is a 3.15A fast acting fuse from Littelfuse with article number 37013150410.

The maximum load on VA+/- can be seen in the table on page 15. The fuse value of F3.15A was choosen to tolerate the start-up charge energy of a capacitive load.

APPLICATION NOTES

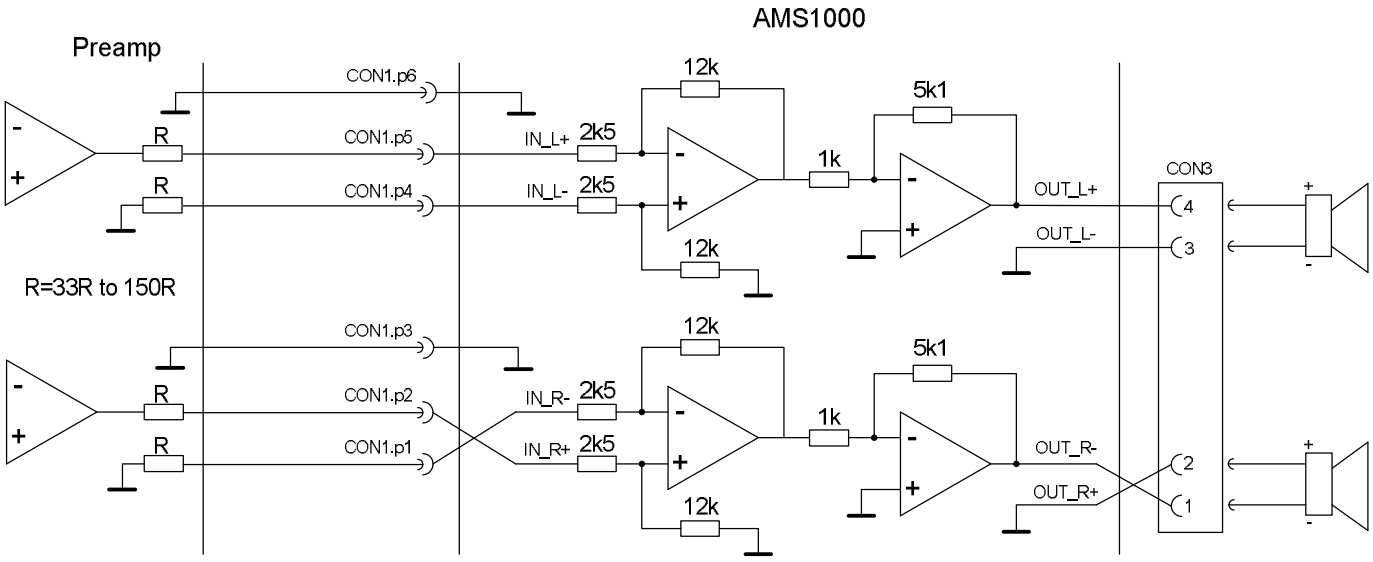
Optimizing input stage CMRR

This is simplified drawing of the input of AMS1000. It is a typical circuit used where the source impedance is well known and does not vary too much. Input current are calculated when a balanced signal is applied. As can be seen the input impedance is not the same on both inputs and depending on which type of signal is applied (single ended or balanced) the input impedance changes.



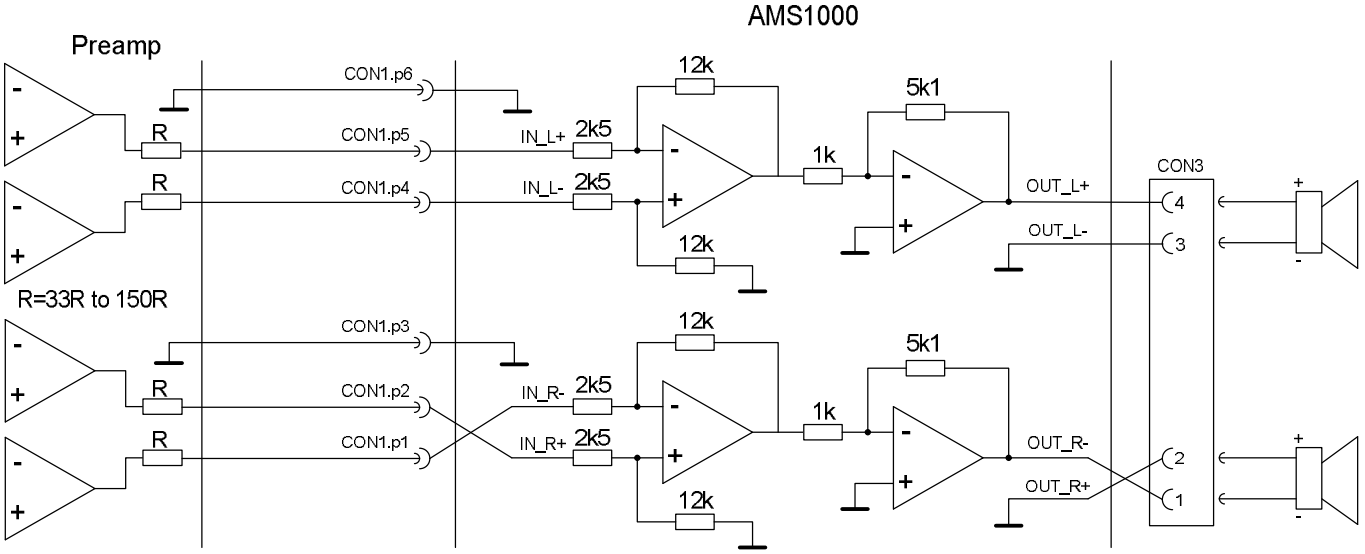
This is however not a problem as long as a few precautions are made. Common mode rejection CMRR will be significantly improved by having the same source resistance on both the inputs.

Below is shown a setup with an impedance balanced single ended source. This requires a balanced cable.

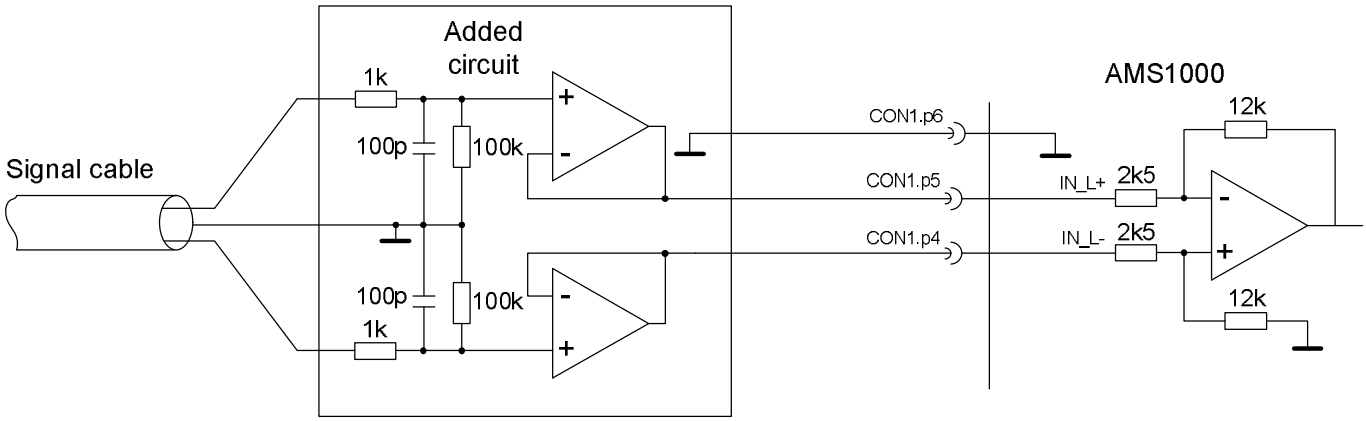


It is quite common to have a series resistance of 50ohm or more on the signal output so if the same resistance is placed in the opposite side of the signal of either sending or receiving side of the cable the CMRR rejection is intact.

If a balanced signal source is used the following setup applies.

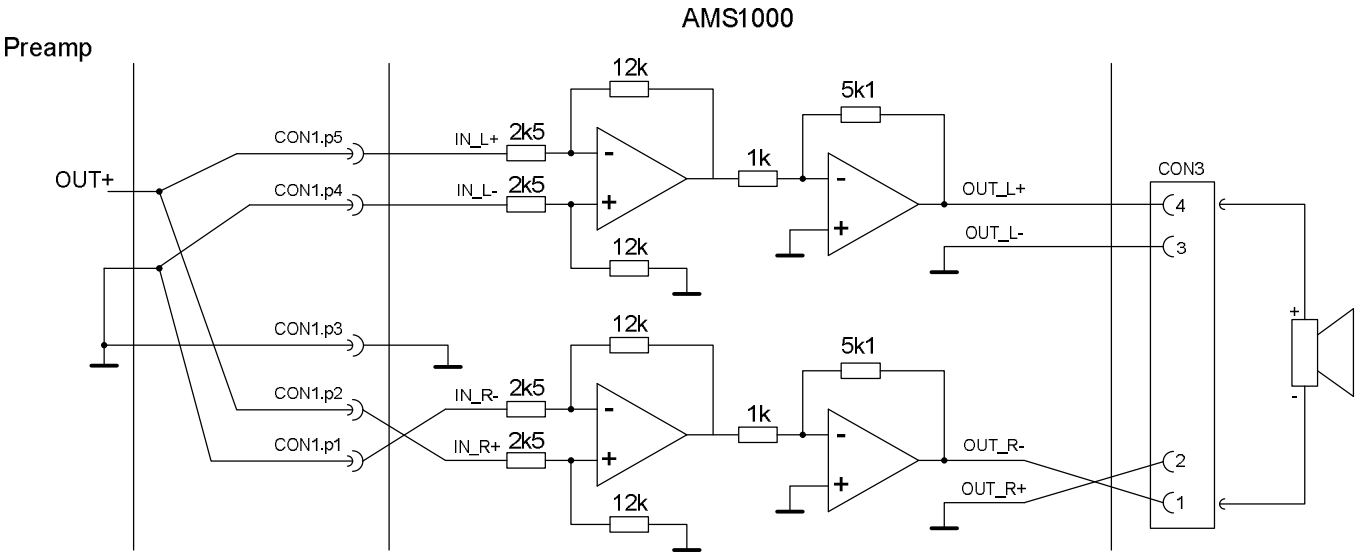


If long cables are used the cable impedance itself can contribute a lot to the series impedance and since that impedance is not very well defined (symmetrically) it can be an advantage to increase both the diff mode and common mode input impedance. In such a case an additional circuit as below can be added before the AMS module.

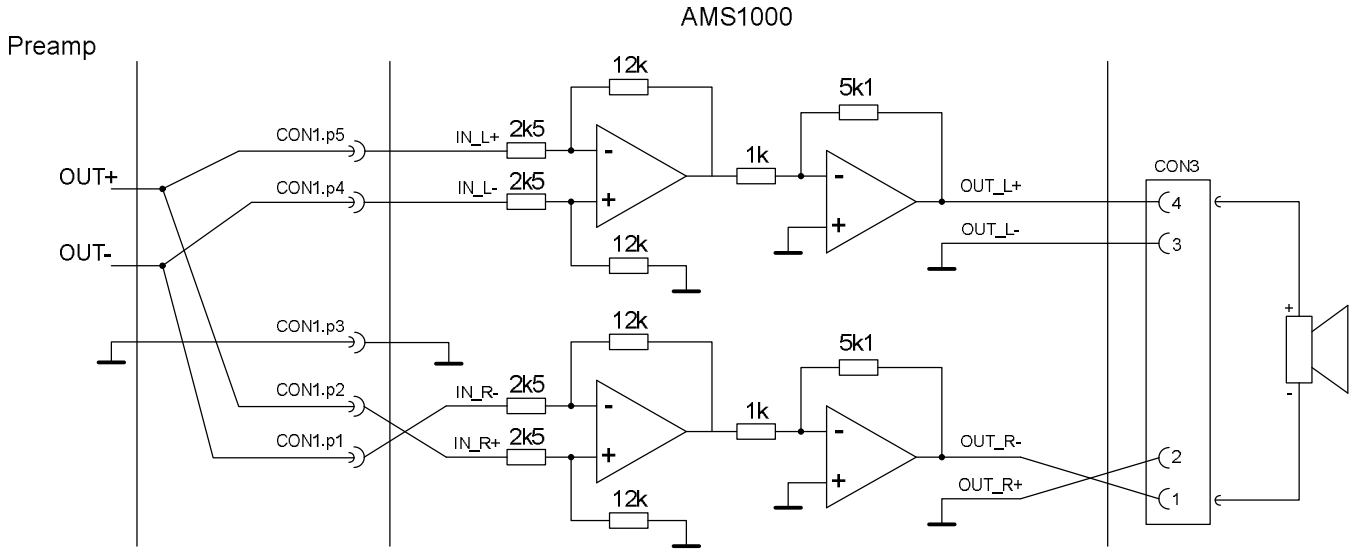


BTL setup

SE input signal



Balanced input signal



REVISION LOG

Rev.	Date	Item	Sign
PA1	2013-06-17	First draw	MD
PA2	2013-09-06	Updated measurements, cleanup	JN
PA3	2013-09-20	Preliminary release	PB
A	2013-10-03	- First official release - Updates and cleanup	JN
B	2013-10-29	- Revised contact information - Updated amplitude response graph - Changed maximum capacitive load to 330uF on VA+/- - Updated Safety Standards list	MC
PC1	2013-11-29	- Added values to TBD figures - Removed IP figures, encapsulation - Updated Emission and Immunity Standards list - Changed STBY_DC voltage and load range - Added Disclaimer	MC
PC2	2013-12-04	- Added model selection chart/ordering information - Added info about auxiliary supplies	PB
C	2014-01-23	- Increased STBY_DC max voltage to 8.0V - Added information about auxiliary output fuse - Replaced mechanical outline (figure 1) - Updated block diagram with auxiliary fuse info - Changed VA outputs to min 9.0V - Added info on replacing VA+/- fuse	PB JN
D	2014-05-23	- nDISABLE thresholds updated - Updated information about auxiliary output fuse - Changed PCB color to BLACK	PB MC

A MEMBER OF THE ETAL GROUP

ANAVIEW CONTACT INFORMATION

For further information about Anaview's products and technology please contact:
Email: info@anaview.com
Website: www.anaview.com

Anaview (Europe, APAC)
Södergatan 4
25225 Helsingborg
Sweden

Anaview (North America)
PO Box 459
Manasquan, NJ 08736
New Jersey
USA

Part of
ETAL Group AB
Fagerstagatan 3
SE-163 53 SPÅNGA
SWEDEN