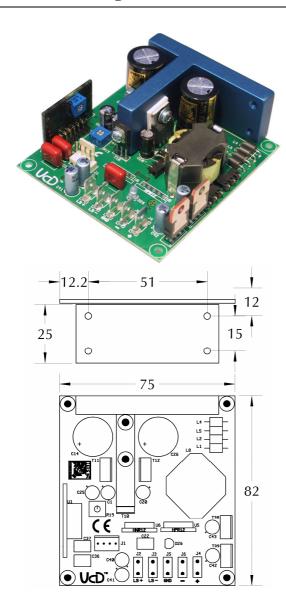


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High Grade Audio Power Amplifier Module



Highlights

- Flat, fully load-independent frequency response
- Low output impedance
- Very low, frequency-independent THD
- Very low noise
- Fully passive loop control
- Consistent top performer in listening trials

Features

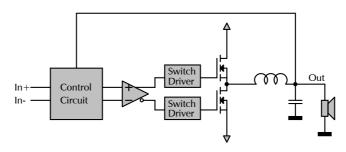
- Runs on unregulated +/- rails
- Pop-free start and stop control
- Differential audio input
- No compromise components
- LM4562 buffer OpAmp
- HxR12 ready
- Improved on-board buffer supply
- Overcurrent and overvoltage protection
- Weight: 160gms (5.5oz.)

Applications

- Monitor loudspeakers for recording and mastering studios
- Audiophile power amplifiers for professional and consumer use
- Public Address systems
- Home theatre systems
- Active loudspeakers

Description

The UcD400™ amplifier module is a self-contained high-performance class D amplifier intended for a wide range of audio applications, ranging from Public Address systems to ultrahigh-fidelity replay systems for studio and home use. Chief distinguishing features are flat frequency response irrespective of load impedance, nearly frequency-independent distortion behaviour and very low radiated and conducted EMI. Control is based on a phase-shift controlled self-oscillating loop taking feedback only at the speaker output.







Performance data

Power supply = \pm /-65V, Load= \pm 0, MBW= \pm 40kHz, unless otherwise noted

Item	Symbol	Min	Тур	Max	Unit	Notes
Output Power	P _R	400	-	-	W	THD=1%
Distortion	THD+N	-	0.01	0.05	%	20Hz <f<20khz.< td=""></f<20khz.<>
						Pout <p<sub>R/2</p<sub>
		-	-	0.004	%	20Hz <f<20khz< td=""></f<20khz<>
						Pout=1W
Output noise	U _N	-	30μ	35μ	V	Unwtd, 20Hz-20kHz
Output Impedance	Z _{out}	-	-	20m	Ω	f<1kHz
		-	-	150m	Ω	f<20kHz
Power Bandwidth	PBW		20-35k		Hz	
Frequency Response		10	-	50k	Hz	+0/-3dB. All loads.
Voltage Gain	A_{\vee}	25.5	26	26.5	dB	
Supply Ripple	PSRR		65		dB	Either rail, all frequencies.
Rejection						
Efficiency	η		92		%	Full power
Idle Losses	P_0		8		W	
Standby Current	I _{STBY}		10m		Α	
Current Limit			20		Α	Stop mode after limiting
						40ms

Absolute maximum ratings

Correct operation at these limits is not guaranteed. Operation beyond these limits may result in irreversible damage

	<u> </u>					
ltem	Symbol	Rating	Unit	Notes		
Power supply voltage	V _B	+/-75	V	Unit shuts down when either rail exceeds 68V		
Peak output current	I _{OUT.P}	21	Α	Unit current-limits at 20A		
Input voltage	V _{IN}	+/-12	V	Either input referred to ground		
Air Temperature	T _{AMB}	65	°C			
Heat-sink	T _{SINK}	90	°C	User to select heat sink to insure this		
temperature				condition under most adverse use case		

Recommended Operating Conditions

Item	Symbol	Min	Тур	Max	Unit	Notes
Power supply voltage	V _B	45 ¹⁾	57	65 ²⁾	V	
Load impedance	Z _{LOAD}	1			Ω	
Source impedance	Z _{SRC}			7k	Ω	Differential. Corresponds to 3dB noise increase.
Effective power supply storage capacitance	C _{SUP}	4700μ			F	Per rail, per attached amplifier. 4Ω load presumed.

¹⁾Unit shuts down when either rail drops below 30V.

²⁾Unit shuts down when either rail exceeds 68V.





Connections

J1: Input and ON/OFF control

Connector type: 4-pin MOLEX® KK® series.

Pin	Function
1	Noninverting Audio Input
2	GND
3	Inverting Audio Input
4	ON/OFF control 1)

¹⁾ During initial power up this pin is disabled for a period of 1.5s. Unlike previous UcD400 models there is no delay after enabling the amplifier.

Input Characteristics

ltem	Symbol	Min	Тур	Max	Unit	Notes
Input Impedance	Z _{IN}		100k		Ω	Either input to ground
Common Mode	CMRR		75		dB	All frequencies
Rejection Ratio						
Control voltage on				3	V	
pin 4, amplifier ON						
Control voltage on		12			V	Internally pulled up to 15V
pin 4, amplifier OFF						

Note: It is recommended to use an open collector output to control the on/off pin.

J2: Loudspeaker output (hot)

Connector type: 1/4" FASTON® tab.

J3: Loudspeaker output (cold)

Connector type: 1/4" FASTON® tab.

Internally connected to GND. Note: This is the feedback reference. For best performance, do not use another ground connection for the loudspeaker.

J4: Positive power supply connection, +VB

Connector type: 1/4" FASTON® tab.

J5: Power supply ground connection, GND

Connector type: 1/4" FASTON® tab.

J6: Negative power supply connection, -VB

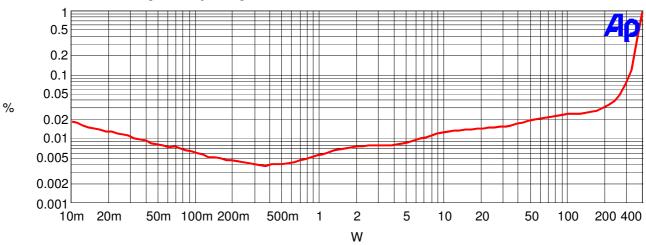
Connector type: 1/4" FASTON® tab.



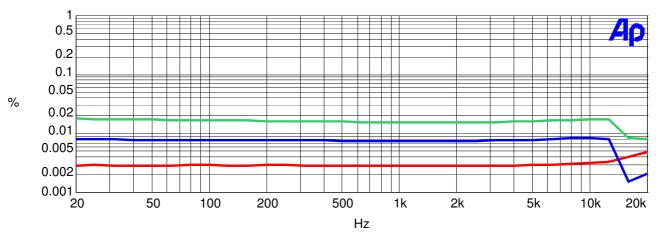


Typical Performance Graphs

THD vs. Power (1kHz, 4Ω)

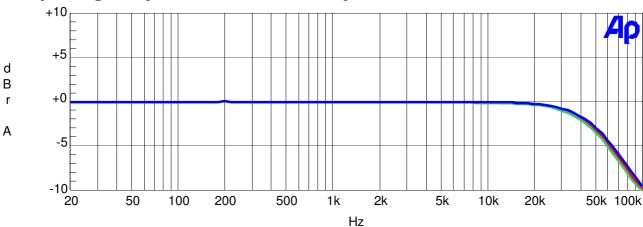


THD vs. Frequency (8Ù)



From top to bottom: 40W, 10W, 1W

Frequency Response (4 Ω , 8 Ω and open circuit)

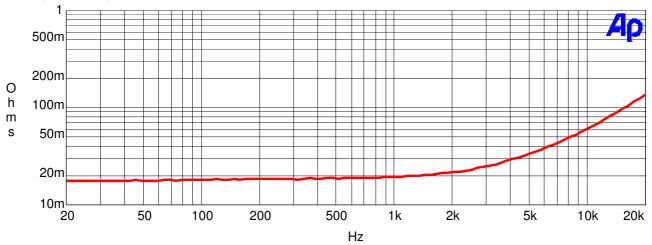


From top to bottom: open circuit, 8Ω , 4Ω





Output Impedance



19+20kHz IMD (10W, 4 ohms)

