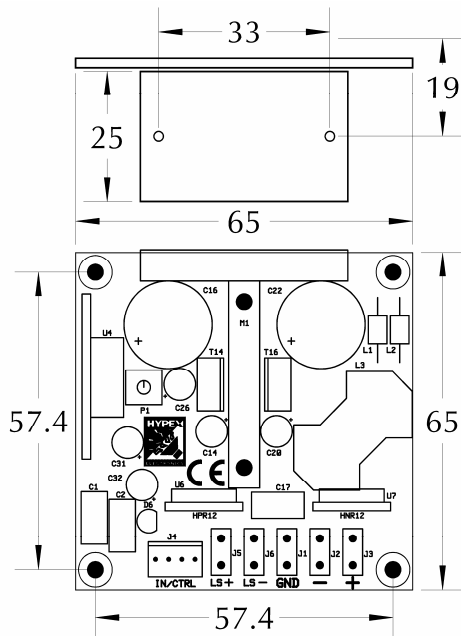
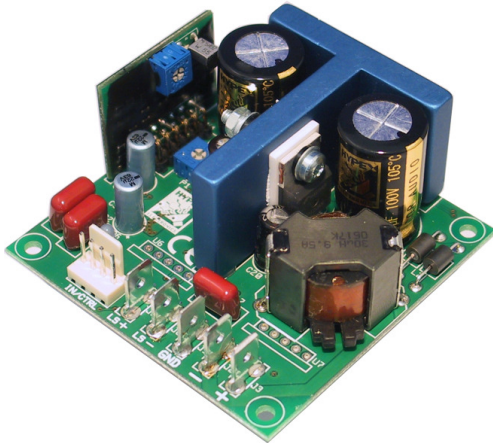


## High Grade Audio Power Amplifier Module



### 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

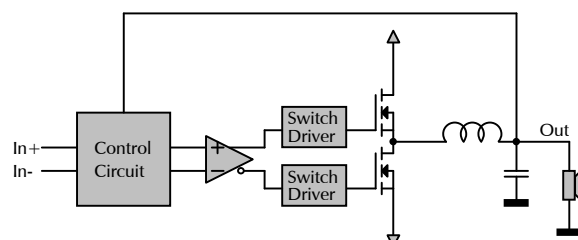
- Runs on unregulated +/- rails
- Pop-free start and stop control
- Differential audio input
- No compromise components
- LM4562 buffer OpAmp
- HxR12 ready
- Improved on-board buffer supply
- Overcurrent and overvoltage protection
- Weight: 90gms (3.1oz.)

### 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 UcD180HG™ 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 = +/-45V, Load=4Ω, MBW=40kHz, unless otherwise noted

Item	Symbol	Min	Typ	Max	Unit	Notes
Output Power	$P_R$	180	-	-	W	THD=1%
Distortion	THD+N	-	0.1	0.15	%	20Hz<f<20kHz. $P_{out}<P_R/2$
		-	0.008	0.01	%	20Hz<f<20kHz. $P_{out}=1W$
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	$A_V$	25.5	26	26.5	dB	
Supply Ripple Rejection	PSRR		65		dB	Either rail, all frequencies
Efficiency	$\eta$		92		%	Full power
Idle Losses	$P_0$		4		W	
Standby Current	$I_{STBY}$		10m		A	
Current Limit			10		A	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

Item	Symbol	Rating	Unit	Notes
Power supply voltage	$V_B$	+/-50	V	Unit shuts down when either rail exceeds 52V
Peak output current	$I_{OUT,P}$	10	A	Unit current-limits at 10A
Input voltage	$V_{IN}$	+/-12	V	Either input referred to ground
Air Temperature	$T_{AMB}$	65	°C	
Heat-sink temperature	$T_{SINK}$	90	°C	User to select heat sink to insure this condition under most adverse use case

## Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit	Notes
Power supply voltage	$V_B$	30 <sup>1)</sup>	45	50 <sup>2)</sup>	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.

<sup>1)</sup> Unit shuts down when either rail drops below 25V.

<sup>2)</sup> Unit shuts down when either rail exceeds 52V.



## Connections

### J4: 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 <sup>1)</sup>

<sup>1)</sup> During initial power up this pin is disabled for a period of 1.5s. Unlike previous UcD180 models there is no delay after enabling the amplifier.

### Input Characteristics

Item	Symbol	Min	Typ	Max	Unit	Notes
Input Impedance	$Z_{IN}$		100k		$\Omega$	Either input to ground
Common Mode Rejection Ratio	CMRR		75		dB	All frequencies
Control voltage on pin 4, amplifier ON				3	V	
Control voltage on pin 4, amplifier OFF		12			V	Internally pulled up to 12V

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

### J5: Loudspeaker output (hot)

Connector type: 1/4" FASTON® tab.

### J6: 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.

### J3: Positive power supply connection, +VB

Connector type: 1/4" FASTON® tab.

### J2: Power supply ground connection, GND

Connector type: 1/4" FASTON® tab.

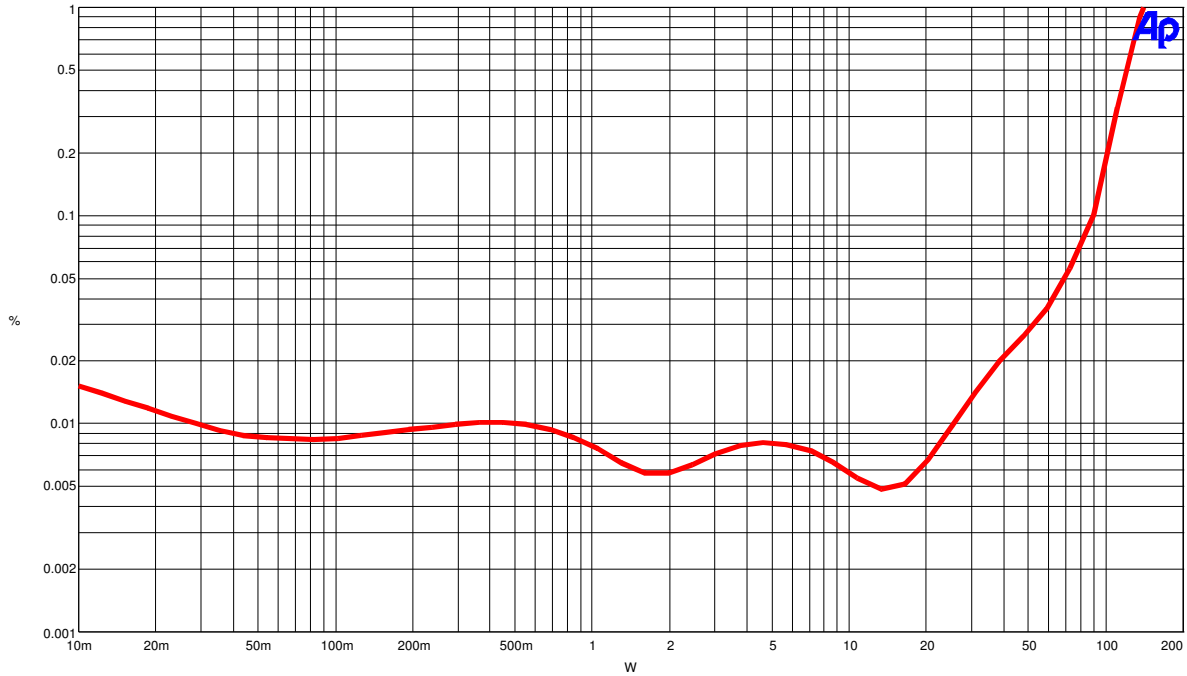
### J1: Negative power supply connection, -VB

Connector type: 1/4" FASTON® tab.

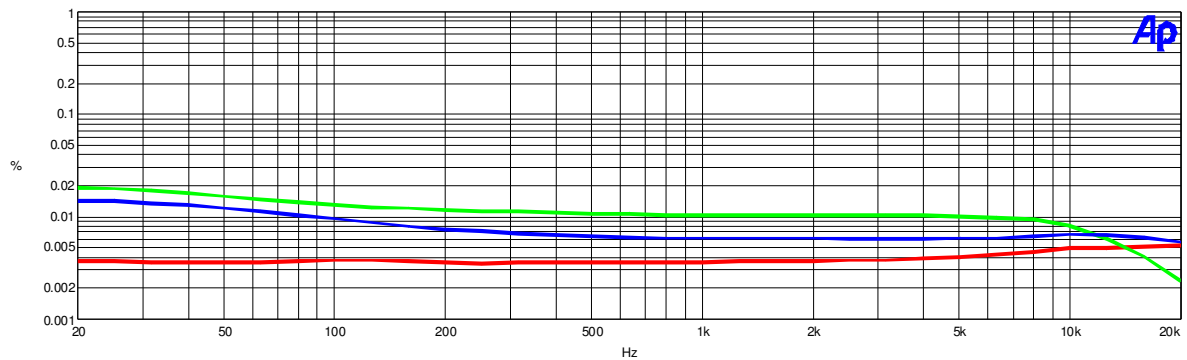


## Typical Performance Graphs

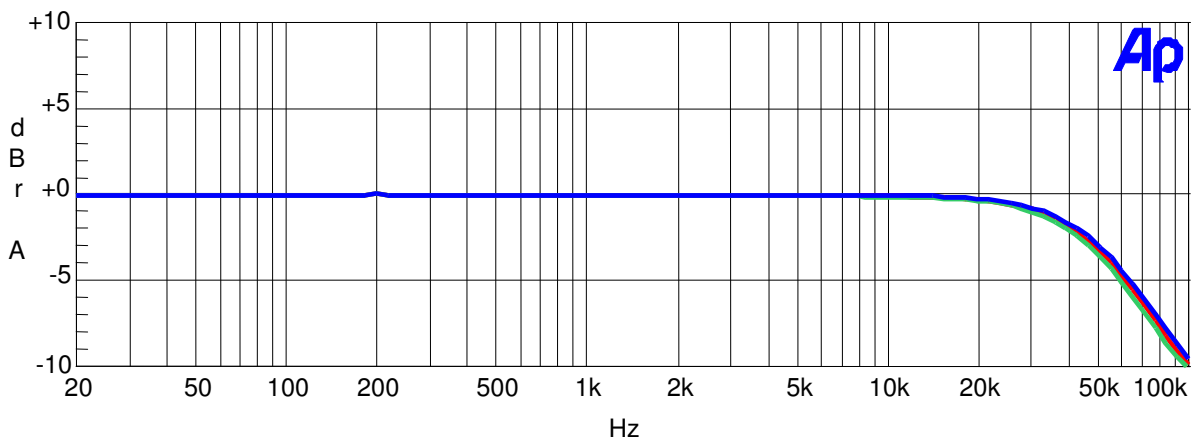
### THD vs. Power (1kHz, 4Ω)



### THD vs. Frequency (8Ω)



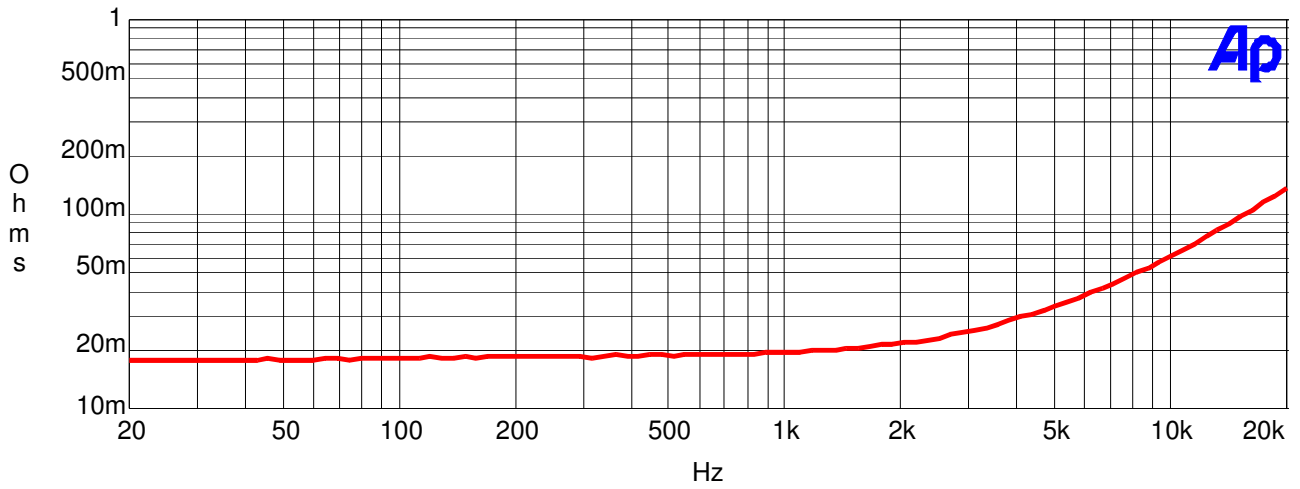
From top to bottom: 40W, 10W, 1W Frequency Response (4Ω, 8Ω and open circuit)



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



### Output Impedance



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

