

# COPLEY MODEL 261HC

# HIGH POWER AMPLIFIER CHARACTERISTICS

Specifications typical at 25°C with forced air at TBD fpm, HV = +330 V. Current mode load = 1.0 mH + 100 mΩ.

Model	Current Mode						
	Output ( $\pm$ A Peak)			Pulse Duration / Off time (ms)			
261HC	$\infty$ (DC)	500/500	100/100	100/200	100/1000	20/300	20/1000
	45	65	65	80	100	150	175

## PEAK CURRENT SHUTDOWN

190

## INPUT LIMITER

Current Mode

Adjustable

$\pm 4$  to  $\pm 175$  A

## SATURATION RESISTANCE

0.08  $\Omega$

## GAIN

Current Mode

Voltage Mode

Adjustable with programmable span

1 to 30 A/V

10 to 50 V/V

## OUTPUT OFFSET

Current Mode Span

Voltage Mode Span

$\pm 25$  mA, adjustable to zero

180 mA

TBD

## INPUT CHARACTERISTICS

Main Input 1

Impedance

Max Input Voltage

Common Mode Rejection

Input 2

Gain

Differential

100 k $\Omega$  minimum

$\pm 20$  V Either input or differential

70 dB min, from DC to 360 Hz

Same as Input 1

Programmable

## DC OUTPUT RESISTANCE

Current Mode

4000  $\Omega$

## LOAD

Current Mode

Adaptable Range

1000  $\mu$ H + 100 m $\Omega$ , 0.047  $\mu$ F each side to ground

40  $\mu$ H to 40 H, 0.2  $\Omega$  to Open

## CURRENT MODE RESPONSE

Small Signal Bandwidth

-3 dB @ 4 kHz (typical)

## CURRENT SETTling TIME

Time Reference

Input Ramp Slope

Ramp 0 to  $\pm 150$  A

End of input ramp

$\pm 150$ A/300  $\mu$ sec

100  $\mu$ sec to within 1.5 A, 1%

250  $\mu$ sec to within 300 mA, 0.2%

Ramp  $\pm 150$  A to 0 A

100  $\mu$ sec to within 1.5 A, 1%

250  $\mu$ sec to within 300 mA, 0.2%

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<b>VOLTAGE MODE RESPONSE</b>	Flat to DC
Power Bandwidth	DC to TBD kHz, -1 dB
Load Resistance	5 Ω
Small Signal	-1 dB @ TBD kHz
	-3 dB @ TBD kHz
Open Load	+0.5, -3 dB from DC to TBD kHz
<b>TOTAL HARMONIC DISTORTION</b>	
Current Mode	200 Hz, 45A RMS, 0.2% max
Load	1000μH + 100 mΩ
<b>DC DRIFT</b>	After 1 hour
Current Mode Offset	1 mA/°C
Self Heating Drift, 0 to ±50A	10 mA/10 min
Scale Factor	60 ppm/°C
<b>SWITCHING FREQUENCY</b>	51 kHz
Synchronization	Input or output
<b>NOISE OUTPUT</b>	
Current Mode	
10 Hz to 10 kHz	0.3 mA RMS
10 Hz to 500 Hz	0.2 mA RMS; see Note 1
<b>RIPPLE NOISE OUTPUT</b>	51 kHz
Each Side to Ground	5 V RMS max, same phase
160 V Output, Differential	5 V RMS max
Current, 0 V Output	0.8 mA /L RMS
Current, 160 V Output	8 mA/L RMS where L = load inductance in mH
<b>NOISE/ RIPPLE OUTPUT</b>	
Differential	0.01Hz to 5 Hz <200μArms
	5Hz to 10Khz <350-30*f μArms (f in Hz)
	>10Hz <5*f μArms
Each Side ref. to Ground	5 V RMS max, each output
Output, Differential	5 V RMS max, at 160Vdc output
<b>DC POWER SUPPLY SENSITIVITY</b>	
Current Mode	0.2 mA/V max
<b>CURRENT MONITOR</b>	±1 V/20A ±1%
Source Resistance	0.1 Ω
<b>VOLTAGE MONITOR</b>	±1 V/40 V ±1%
Source Resistance	940 Ω
<b>PROGRAMMING HEADER</b>	Sets gain and response for specific load
Accessibility	Removable D connector Header
<b>SWITCHES</b>	RESET, rear panel

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**LOAD PROTECTION**

Voltage or Current	Adjustable input limiter
Soft start	
Shutdown	Current vs time All four bridge arms open
Diode Clamps	To +HV and ground

**AMPLIFIER PROTECTION**

Overload	Input limiter
Current vs Time	Shutdown
Each Heat Sink Temp	Shutdown 60 °C
Overvoltage Shutdown	373 V
Undervoltage Shutdown	97 V

**5 V CMOS STATUS OUTPUTS**

+5V	Fault is Low
CHANNEL ON	HV>100V
NORMAL	Amplifier enabled and operating
FAULT	Amplifier operates if enabled
DC	Inverted normal
HOT	One or more DC voltages out of range
OVER-CURRENT	Heat sink over-temperature
MODULE 1	Too much current for too long
Maximum Current Output	Module 1 fault ±10 mA

**SYNCHRONIZING I/O (51kHz)**

Rear D connector

**REAR PANEL LED**

NORMAL

**POWER REQUIREMENTS**

High Voltage Supply	+100 V to +330 V
Current	See Note 1
Quiescent Current	.4 A
Internal Capacitance	5090 μF

**THERMAL REQUIREMENTS**

Power Dissipation at 45 A RMS	500 W
Peak Dissipation at 175 A	3100 W
Forced Air Cooling 1800 fpm	-20 °C to +35°C
Storage	-30 °C to +85 °C

**MECHANICAL**

Size	18.8" L x 9.44" H x 5.1" D 47.75cm L x 24 cm H x 13cm D
Fins & Air Flow	Horizontal
Weight	22lb, 10 kg

**NOTES** 1. Current required to supply load  $I^2R$  losses plus amplifier losses.