

# LPA01

## Laboratory power amplifiers

# LPA400



### Features:

- DC accurate and wide bandwidth
- Switch selectable coupling options: AC, AC+DC or AC with reduced DC.
- Switch selectable precision gain settings.
- Switch selectable bandwidth.
- High slew rate.
- 1A Peak output current @ up to  $\pm 14V$  peak (LPA01).
- $\pm 400V$  peak, 50mA rms (LPA400).
- $\pm 180V$  peak, 100mA rms (LPA400B).
- Unconditionally stable into any load.
- Isolated from ground to prevent earth loops.
- Robust metal enclosure
- Will fit underneath QuanteQ or Vektor to boost output capability.

LPA01 & LPA400 are the first in a range of amplifiers developed to provide high accuracy amplification in an industrial or laboratory environment.

LPA01: High frequency, high current testing of wound components.  
High frequency excitation of servos and actuators up to 1A.

LPA400: High voltage, high frequency calibration.  
Driving high voltage actuators (e.g. piezo) up to  $\pm 400V$ .



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The LPA range of power amplifiers from N4L are robust and reliable for use in a variety of industrial and laboratory applications. Designed originally for use with the PSM\* range Phase Sensitive Multimeters, they can also be used anywhere where there is a need to boost a signal either in voltage or current. They combine dc accuracy with wide bandwidth to faithfully reproduce complex waveforms, driving loads that may be capacitive, inductive or resistive.

Optionally, the dc component can be eliminated with ac coupling, or can be reduced with ac+(dc) coupling. To limit high frequency noise, the input bandwidth can be reduced with a linear phase, 2<sup>nd</sup> order, low pass filter for low frequency applications.

The amplifier gain is selectable from three precision gain settings.

## Specifications:

Parameter	LPA 01	LPA400A	LPA400B	Units
Input connector	isolated BNC	isolated BNC	isolated BNC	
Input impedance	10k	10k	10k	Ω
Peak input voltage	±12 (±14)*	±8	±3.6	V
Input common mode range	±40	±40	±40	V
Input offset voltage	5	5	5	mV (max)
	1.5	1.5	1.5	mV (typ)
Input coupling	ac, ac+dc, ac+(dc)	ac, ac+dc, ac+(dc)	ac, ac+dc, ac+(dc)	
AC coupling filter -3dB	16	16	16	Hz
(dc) gain factor	0.1	0.1	0.1	
Full power bandwidth	1M @ 24V pk-pk	100k @ 800V pk-pk 1MHz @ 80V pk-pk	200k @ 360V pk-pk 1MHz @ 80V pk-pk	Hz
Low bandwidth -3dB	80k	80k	80k	Hz
Low bandwidth filter attenuation	40	40	40	dB/decade
Low bandwidth filter type	linear phase	linear phase	linear phase	
Gain options	x1, x4, x10	x50, x200, x500	x50, x200, x500	
Low frequency gain accuracy	0.2*	0.1	0.1	%
Output connector	isolated BNC	isolated BNC	isolated BNC	
Continuous output current	0.7	0.05	0.1	A rms
Peak output current	1	0.075	0.15	A pk
Peak output voltage	±12 (±14)*	±400	±180	V
Slew rate (Typical)	600	350	350	V/us
Operating temperature range	0 - 40	0 - 40	0 - 40	°C
Size	8.5 x 15 x 25	8.5 x 15 x 25	8.5 x 15 x 25	cm
Weight	2	2.5	2.5	kg (approx)
Power source	90 – 265 Vrms @ 47 – 63 Hz	230V±10%, 50Hz (UK) 115V±10%, 60Hz (USA)	230V±10%, 50Hz (UK) 115V±10%, 60Hz (USA)	
Power consumption	40	45	45	VA (max)

**\*THE LPA01 CAN OPERATE AT PEAK INPUT AND OUTPUT VOLTAGES OF UP TO +/- 14V.  
ABOVE +/- 12V THE LOW FREQUENCY GAIN ACCURACY IS AS FOLLOWS:  
x1 GAIN: 1%      x4 GAIN: 3%      x10 GAIN: 5%**

### Notes:

All specifications at 230V, 50Hz, 23°C unless otherwise stated.

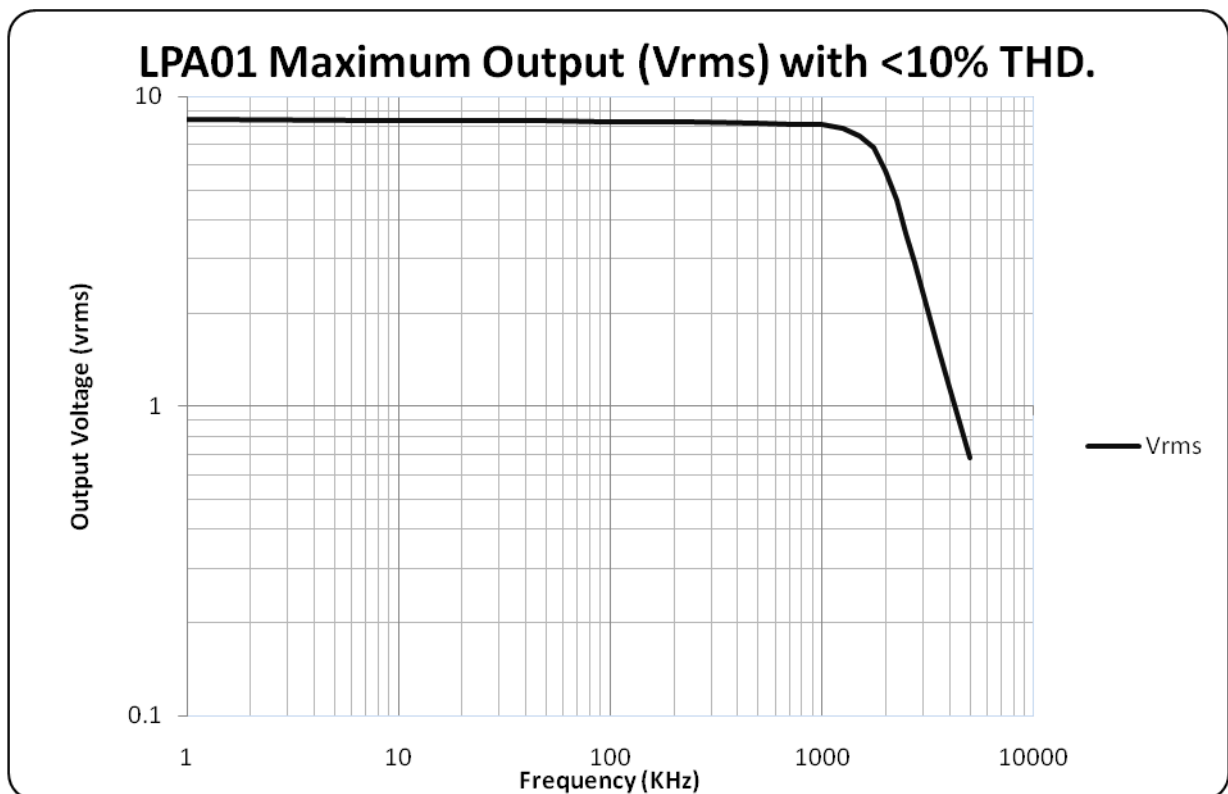
All specifications are typical values unless otherwise stated

These specifications are quoted in good faith, but Newtons4th Ltd reserves the right to amend any specification at any time without notice.

# Total Harmonic Distortion:

For frequencies up to 1MHz, Total Harmonic Distortion is typically less than 0.6%.

This graph demonstrates the effect of Total Harmonic Distortion on the Maximum Output Voltage of the LPA01 amplifier at higher frequency levels up to 5MHz.



The PSM range includes the PSM1700, PSM1735, PSM2200 and PSM2201 that incorporate gain/phase analysis, LCR meter, phase angle voltmeter, wideband true rms meter, Power analyser, harmonic analyser and more.

The LPA range is designed & manufactured in the UK by Newtons4th Ltd.



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