

**T&C**  
Power Conversion

**T&C POWER CONVERSION**

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# LA 25

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## LINEAR AMPLIFIER



## OPERATION MANUAL

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# Table Of Contents:

<u>Topic:</u>	<u>Page:</u>
• APPLICATIONS	3
• INSTALLATION	3
• SPECIFICATIONS	4
• OPERATION	5
• SAFETY	7
• WARRANTY	7
• SERVICE	8

## **Applications:**

The LA25 is a general-purpose, air-cooled amplifier suitable for a broad range of uses including:

- *Ultrasonic to UHF Power Delivery*
- *Optical and Laser Component Excitation*
- *RFI / EMI Susceptibility Testing*
- *Medical Applications*
- *Materials Testing*
- *Manufacturing Processes*

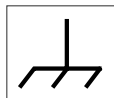
## **Installation:**

LA25 is designed for bench operation. To guarantee the best performance, make sure there is adequate clearance for the entrance of cooling air to the front of the unit as well as for the exhaust out the back of the unit. (6"min.)

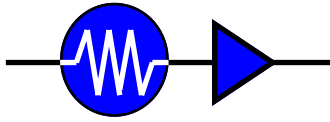
The LA25 is set for operation with a single phase, 50 to 60Hz. Unit does not require any special internal adjustments if operated within the specified voltage range. The LA25 can be operated from 100 to 120VAC and 200 to 240VAC without any adjustment.

### **Please check the following items before applying AC power to the LA25:**

- *Check Unit for any physical damage that could affect safety.*
- *Ensure the AC power cord is an IEC type with a 10 Amp or greater rating with a proper safety ground connection.*
- *Check that the AC power cord is plugged into a properly grounded outlet.*
- *Connect LA25 chassis to a proper safety ground. (Use Grounding Stud on rear panel) A green insulated 18-gauge wire or heavier, less than 50 feet in length, is recommended.*



9081 0026 Rev B1 - LA25 Manual



# LA 25 Specifications

<p><b>Class Of Operation</b> Class A</p> <p><b>Frequency Of Operation</b> 0.5 MHz to 500 MHz</p> <p><b>RF Power Output</b> 50 W saturated</p> <p><b>Small Signal Gain</b> 44 dB, ±1 dB typical, ±1.5 dB max</p> <p><b>RF Input Drive</b> Typically -20 dBm to +3 dBm, 20 mV to 325 mV rms</p> <p><b>Input Drive Source</b> Signal or function generator, analog computer input capable of up to 2 Vp-p @ 50 Ohm within amplifier output and bandwidth limits.</p>	<p><b>Input and Output Impedance</b> 50 Ohm</p> <p><b>Input VSWR</b> 2:1 max</p> <p><b>Output VSWR</b> 3:1 max</p> <p><b>Load Mismatch</b> All phase angles</p> <p><b>Harmonic Level @ 12.5 Watts</b> Better than - 30 dBc for all harmonics,</p> <p><b>RF Connectors</b> N Female: Front Panel</p> <p><b>Typical Third Order Intercept</b> +58 dBm</p>	<p><b>AC Power Source</b> 100 - 120 VAC, 200 - 240 VAC +/-10%, 50/60 Hz</p> <p><b>AC Power Connection</b> IEC Standard Power Entry</p> <p><b>Cooling</b> Forced air</p> <p><b>Dimensions</b> H 95mm x W 480 mm x L 420mm ( 3.75" x 19" x 16.5" )</p> <p><b>Weight</b> 7 kg, (15 lbs.)</p> <p><b>Mounting</b> Stand alone unit. Front Panel fits 19" Rack Mount, 3 Units high.</p> <p><b>Environmental conditions</b> <b>Temp:</b> 0° to 35° C ambient air <b>Humidity:</b> 80%</p>
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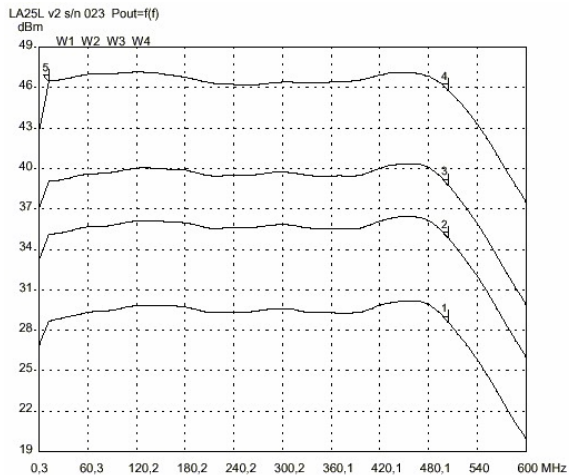
## **Operation:**

The LA25 is a bench top mounted laboratory amplifier with simple front panel features. On the left end of the front panel is the **AC line** power ON / OFF switch. This heavy-duty double pole switch connects and disconnects the hot and neutral power line connections. The amplifier is shipped from the factory internally wired for 100 to 120 and 200 to 240 VAC, 50 to 60 Hz.

The green indicator lamp shows that AC power is connected to the unit, the power switch is on and the DC power is available to the amplifier. The amplifier has 50-Ohm Type "N" radio frequency coaxial connectors on the front panel for easy connection of the input signal source and for the connection to the load. The user must make sure that connecting cables are 50-Ohm of a high quality type, especially for the output connection, so that power will not be reflected back to the amplifier due to an impedance mismatch.

In normal operation, the forward power is at maximum proportional to the signal applied to the input, while the reverse power is a relatively small portion of that power. Few loads are perfectly resistive and exactly 50 Ohms so some reflected power is typical. The opposite extreme, a faulty load (either open or shorted) results in significant reflected power near the level of the forward power

A wide area of ventilating holes serve as the air intake for ventilating the amplifier. Linear class "A" operation has low distortion benefits and necessitates removal of the heat generated by this bias mode. **The air intake must be kept clear of obstructions** as should the fan outflow at the rear of the unit. Allow a minimum of 6" clearance around all sides of the chassis.

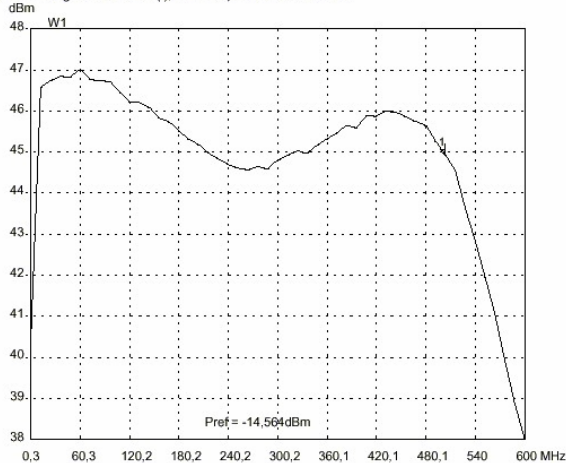


Date: 2004-May-31 Time: 08:58:00

MARKERS:

- 1 W1 X= 504.048 Y= 28.60229  
Pin=-17dBm
- 2 W2 X= 504.048 Y= 34.84266  
Pin=-10dBm
- 3 W3 X= 504.048 Y= 38.76461  
Pin=-6dBm
- 4 W4 X= 504.048 Y= 45.81412  
Pin=2.1dBm
- 5 W4 X= 12.294 Y= 46.4842  
Pin=2.1dBm

LA25L v2 egz23 Pout-1dB=f(f); 1dB compression characteristic

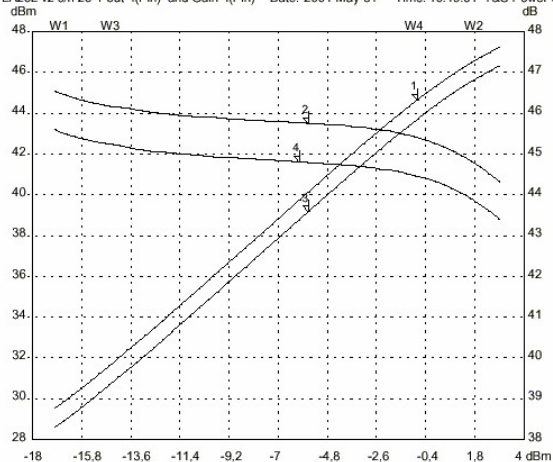


Date: 2004-May-31 Time: 08:55:37

MARKERS:

- 1 W1 X= 504.048 Y= 44.92397  
Pout-1dB=f(f) ; 1dB compression

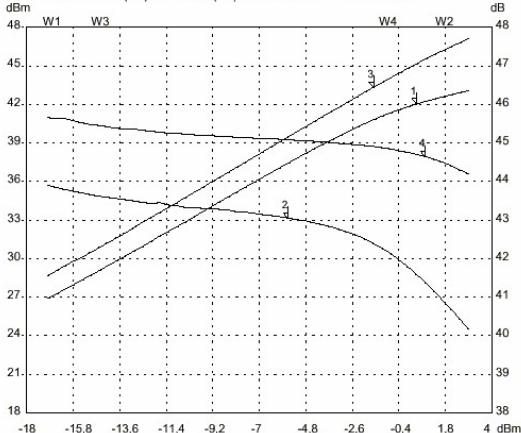
LA25L v2 s/n 23 Pout=f(Pin) and Gain=f(Pin) Date: 2004-May-31 Time: 10:19:51 T&C Power Conversion, Inc. Rochester, NY



MARKERS:

- 1 W1 X= -0.7600009 Y= 44.63958  
Pout for f=408MHz
- 2 W2 X= -5.632 Y= 45.75026  
Gain for f=408MHz
- 3 W3 X= -5.632 Y= 39.15844  
Pout for f=504MHz
- 4 W4 X= -6.038 Y= 44.80261  
Gain for f=504MHz

LA25L v2 s/n 23 Pout=f(Pin) and Gain=f(Pin) Date: 04-05-31 Time: 10:16:37



T&C Power Conversion, Inc. Rochester, NY, USA

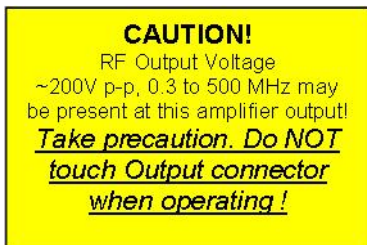
MARKERY:

- 1 W1 X= 0.4579995 Y= 42.02986  
Pout for f=0.3MHz
- 2 W2 X= -5.632 Y= 43.0503  
Gain for f=0.3MHz
- 3 W3 X= -1.572 Y= 43.3367  
Pout for f=12.3MHz
- 4 W4 X= 0.8639995 Y= 44.6477  
Gain for f=12.3MHz

## Safety:

***Do not operate this amplifier with the cover removed.*** Lethal voltages are present beneath the cover. The cover protects against **electrical shock** due to AC line voltage, high RF potential at the output connector, coupler and output connections. Also the DC supply produces high voltages in the conversion process and is capable of producing more than 25 Amps of current at nominal output voltage.

The cover is an integral part of the air ducting system that keeps components cool. Without the cover in place, insufficient air flows between and around the DC power supply and will cause overheating of the internal components.



This label should remain affixed to the front panel just below the RF output connector. Always connect the load to the RF output connector before connecting the RF input to the amplifier. This will ensure that high voltage at the center pin of the output type "N" connector will not be exposed. Take great care not to interchange the input and output cables.

Be sure the chassis is grounded to a reliable earth ground using the grounding stud provided on the rear panel. In addition, be sure the grounding wire remains connected securely between the cover of the chassis and the base of the chassis.



Wherever this label appears, refer to corresponding cautionary information in the operators manual.

## Warranty:

T & C Power Conversion warrants to the original purchaser for a period of one year from the date of delivery each instrument to be free from defects in materials and workmanship. For a period of one year, T & C will adjust, repair or replace defective parts, without charge to the original purchaser, so that the instrument performs according to its specifications.

If, in our opinion, the instrument has been damaged by accident, unreasonable use, buyer-supplied software or interfacing, improper site preparation and maintenance, or abnormal conditions of operation, repairs will be billed at standard rates. In this case, an estimate will be submitted before the work is started.

## **Service:**

All repairs should be referred to the factory. There are no user serviceable parts or adjustments internally. If repair should be needed, pack the unit in its original packing carton using the padding provided and ship the unit to:

Returns Department  
T & C Power Conversion Inc  
110 Halstead Street  
Rochester, NY 14610

Standard service for all out of warranty repairs will be billed at T&C's in-house standard repair rate. Call for current rates and turn-around time (585-482-5551). Factory repairs of repeat or related failures are warranted for 90 days.

### **Standard service includes:**

*Thorough evaluation by the T&C Engineering Department*

*Original top quality parts used*

*Repairs with standard factory procedures*

*12 hour burn-in to ensure reliability*

*Quality control audit*

*Calibration to meet current specifications*

*Latest upgrades available*