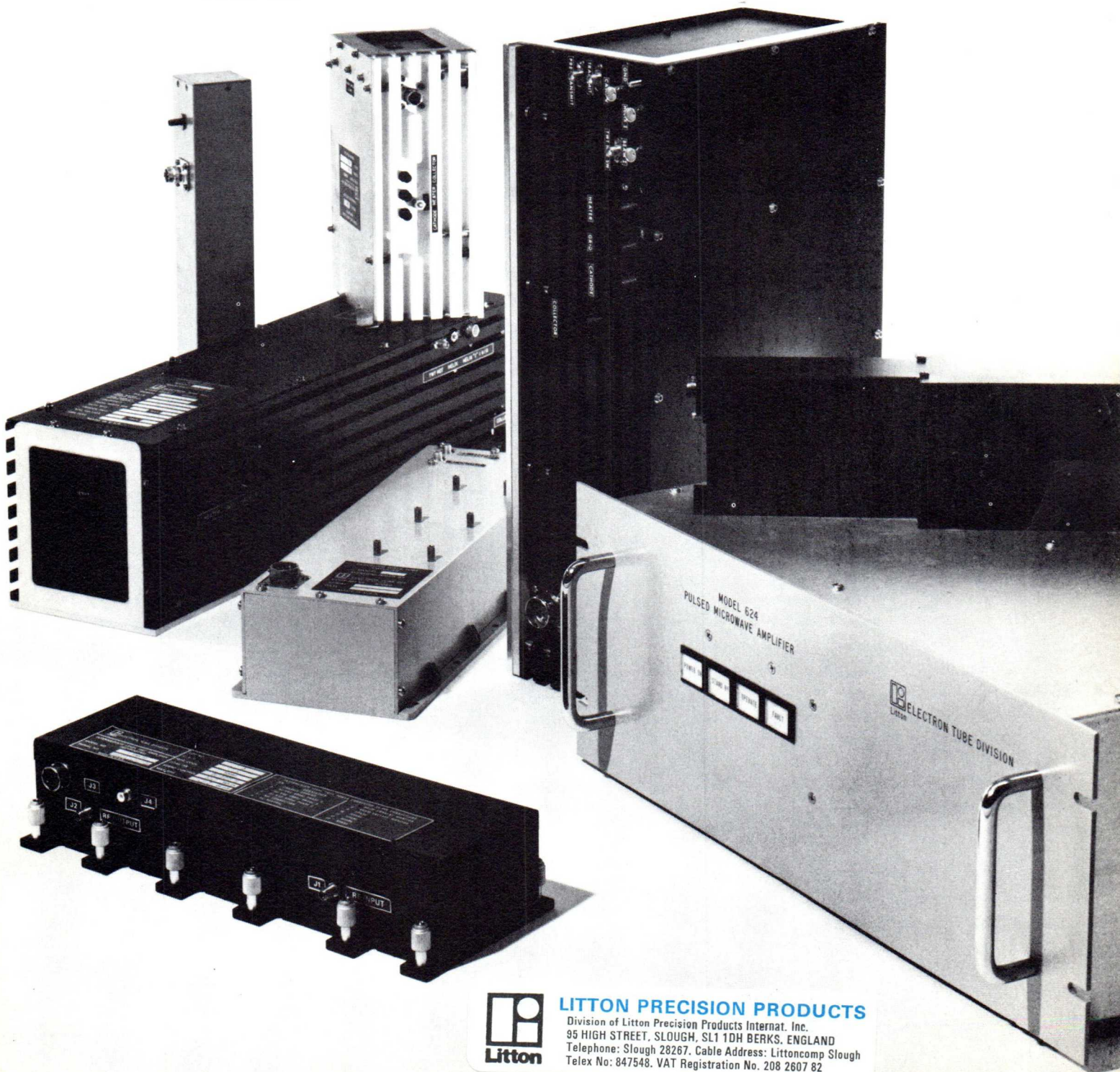


# Litton TWT Amplifiers and Sub-Systems

Available for a wide variety of applications such as radar, ECM, instrumentation, and transponders, Litton integrated TWT/power supply packages relieve interface problems which may occur when the tube and power supply are purchased separately. As a producer of both TWT's and power supplies, we understand the tube/equipment interface and offer single-source responsibility for the broad line of traveling wave tube amplifiers and sub-systems described in this brochure.



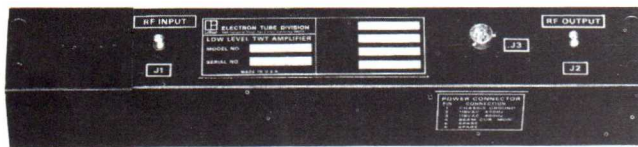
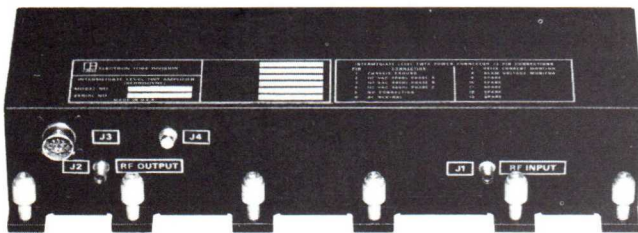
## LITTON PRECISION PRODUCTS

Division of Litton Precision Products Internat. Inc.  
95 HIGH STREET, SLOUGH, SL1 1DH BERKS. ENGLAND  
Telephone: Slough 28267. Cable Address: Littoncomp Slough  
Telex No: 847548. VAT Registration No. 208 2607 82

Litton traveling wave tube amplifiers are available in three families: Low Noise-Low Power; Medium Power; and High Power. In addition, we offer complete custom designed sub-systems which integrate the TWTA with input and output rf components, logic control, and status circuits for interface with your system. The features and characteristics of each product family are described on the following pages.

### Integral Low Noise-Low Power TWT Amplifiers

These integral TWT/power supply packages are available in a variety of standard configurations with frequency coverage from 2 to 18.5 GHz at power levels from milliwatts to one watt. Input options are



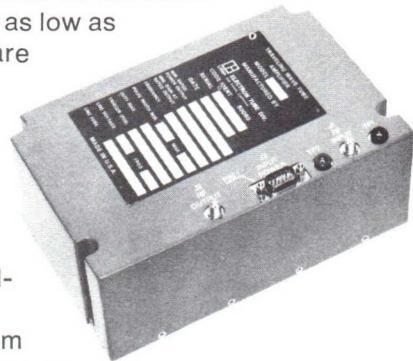
available for 60 or 400 Hz, 1 or 3 phase, or d.c. These high reliability amplifiers are suitable for use in extreme military environments, and many models have been manufactured in large quantities.

Litton also offers semi-standard units in the "standard specials" series which can be tailored to your requirements. These amplifiers use standard TWT and power supply designs as common building blocks in a 2½" x 3¾" x 14" package. They can be furnished in a variety of frequency ranges at power levels up to 1-2 watts. Blanking or serrodyne performance with built-in serrodyne amplifiers can also be provided.

For those systems manufacturers who wish to use their own power supply, but wish to avoid critical voltage adjustments of the multi-element low noise TWT gun, Litton offers TWT's with integral voltage divider circuitry. The customer furnished power supply provides filament voltage and high voltage only. Serrodyne or blanking leads can also be provided.

### Medium Power, CW TWTA's

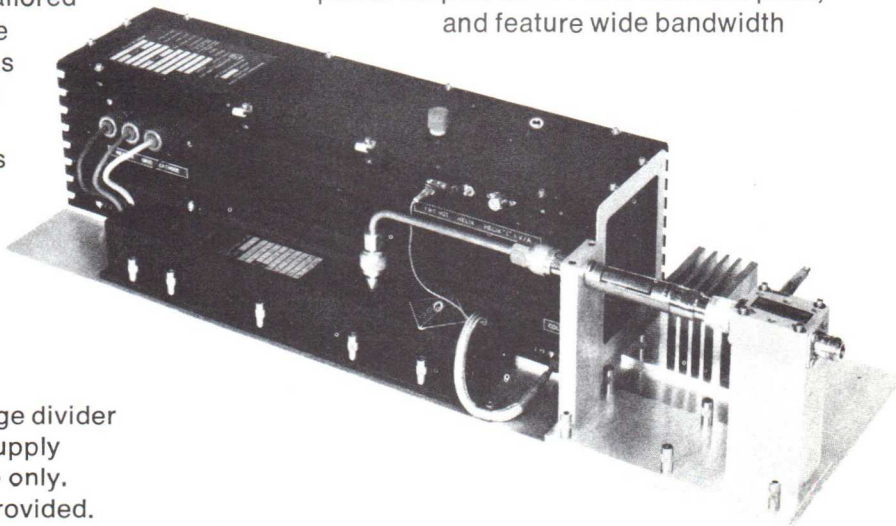
This family of TWTA's is available with power output from 5 to 35 watts, depending on the frequency and bandwidth required. The units are designed for use in airborne MIL environments, and feature package sizes as small as 120 cubic inches with weight as low as 8.5 pounds. They are available with full protection and monitoring, and can be provided with serrodyne and blanking capability, depending on the TWT used. Litton medium power, CW TWTA's can be supplied at most standard values of line voltage with 1 or 3 phase, 50, 60 or 400 Hz, or d.c. inputs.



### High Power, Pulse TWTA's

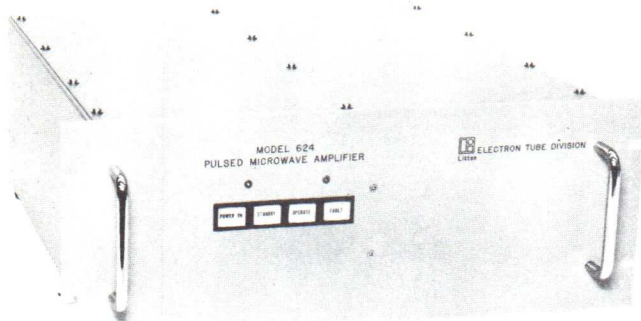
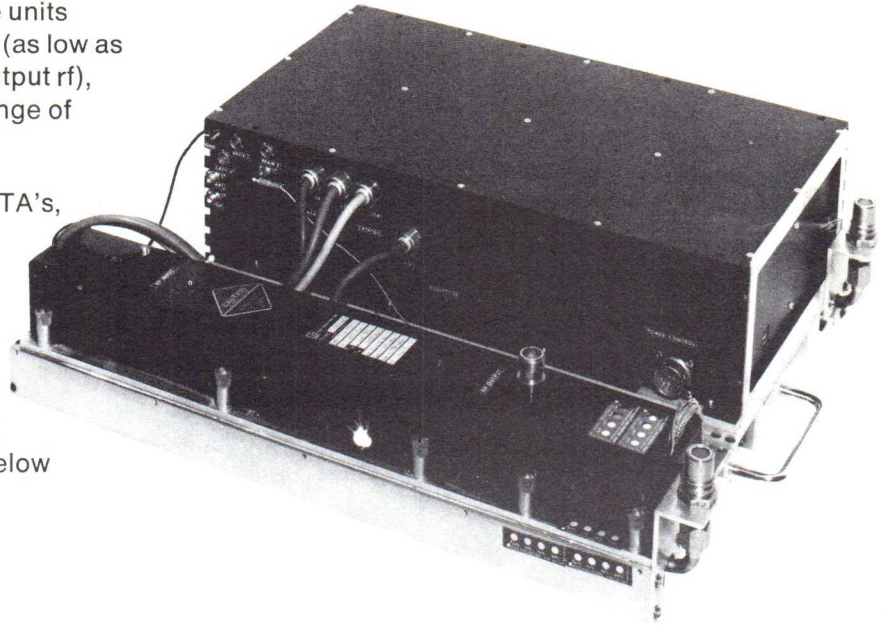
TWT amplifiers in this family are available for three distinct applications; electronic countermeasures, radar, and laboratory/commercial. Litton uses a specialized design for each application, rather than a single, compromise design which would provide less than optimum performance. Each design is compact, and provides efficient, reliable service including, in the case of the ECM and radar units, use under severe airborne environmental conditions. The power supplies are ideally suited for use with TWT's having single or multiple-stage depressed collectors for maximum efficiency.

ECM TWTA's, shown below, are available with power outputs from 1 to 2 kilowatts peak, and feature wide bandwidth

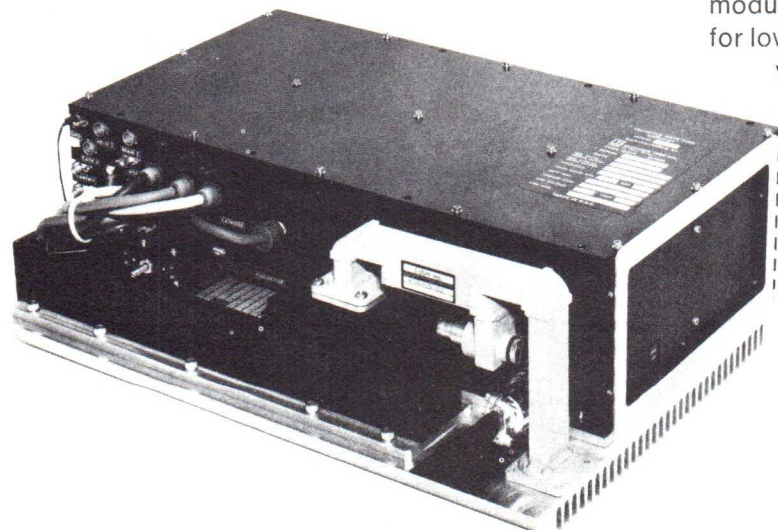


and a fast, versatile grid modulator. The units provide octave bandwidths, short delay (as low as 25 nanoseconds from input trigger to output rf), and the ability to operate over a wide range of pulse widths and PRF's.

**Radar TWTA's**—These narrow band TWTA's, shown at right, provide a power output up to 10 kilowatts, peak. Their primary application is for pulsed doppler radar systems where spectral purity is important. They offer high efficiency (up to 35% TWT efficiency with ring-loop TWT's) and low ripple levels which hold AM and FM noise to as much as 80 db below the central spectral line.



**Laboratory/Commercial Amplifiers** — For laboratory or other ground based applications, the M-624 amplifier series, above, provides 1 kilowatt minimum peak power output in discrete frequency ranges from .7 to 18.5 GHz.



## RF Amplifier Sub-systems

These rf amplifier sub-systems, shown below left, are designed for integration into your system to give you the benefits of improved reliability, lower cost, and freedom from interface problems. Of special benefit is our considerable experience in producing rf amplifier sub-systems, particularly those for low noise radar and data link transmitter sub-system applications.

Litton TWT amplifiers, at all power levels, can be combined in series or parallel to provide complete rf amplifier chains from milliwatts to kilowatts. All input/output status and control logic can be matched to your system needs. These sub-systems can be supplied as rf amplifier chains with rf monitoring and level controls as integrated units or as modules. Individual modules are field replaceable for low "mean time to repair." Self adjusting cathode voltage circuits are also offered to make TWT replacement and set-up quick and easy.

The above is a brief sketch of Litton Industries' capabilities in Traveling Wave Tube Amplifiers and Sub-systems. Specific data on selected models is available on request. Should you have a requirement for a TWTA with specifications other than those found here, please contact us. Our engineering staff would be pleased to recommend a unit which is tailored to your specific requirements.

## Sales/Marketing Offices

Main marketing offices and applications engineering services are located at 960 Industrial Road, San Carlos, California 94070. Phone (415) 591-8411 or TWX 910-376-4900. Regional Marketing Offices are listed below:

### EAST

1770 Walt Whitman Road  
Melville, L.I., New York 11746  
(516) 694-8300

### DISTRICT OF COLUMBIA

490 L'Enfant Plaza East, S.W.  
Suite 8206  
Washington, D.C. 20024  
(202) 554-2570

### SOUTH

P. O. Box 00  
Warner Robins, Georgia 31093  
(912) 923-3397

### MIDWEST

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Suite 270  
Dayton, Ohio 45432  
(513) 258-1243

### SOUTHWEST

11333 North Central Expressway  
Suite 211  
Dallas, Texas 75231  
(214) 369-2184

### WEST

960 Industrial Road  
San Carlos, California 94070  
(415) 591-8411

Sales outside the United States are handled through the following companies:

### LITTON PRECISION PRODUCTS INTERNATIONAL

58 Rue Pottier  
78150 Le Chesnay, France  
955.21.04

Oberföhringerstrasse 8  
8 Munich 80, West Germany  
(811) 980547

Via Arco 4  
I 20121 Milan, Italy  
(2) 89.33.62

95 High Street  
Slough, Buckinghamshire  
SL1 1DH, England  
Slough 28267

Fack  
S-100 51 Stockholm 28  
Sweden  
(8) 142345

Steenloperstraat 26  
Capelle a/d Yssel  
Holland  
(010) 50.39.02

Gubelstrasse 28  
8050 Zurich, Switzerland  
(051) 48.35.44

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(416) 889-7201

### WESTREX COMPANY, ORIENT

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Tokyo, Japan  
211-6791

### M. T. I. ENGINEERING, LTD.

182 Ben Yehuda Street  
Tel-Aviv, Israel  
03-236334



**ELECTRON TUBE DIVISION**

San Carlos, California