

# 600W Outdoor TWT High Power Amplifier for Military Satellite Communications

Tri-Band

## The TL06TO Series

600 Watt TWT High Power Amplifier  
— high efficiency in an environmentally sealed compact package designed for outdoor operation



### Plays in the Rain

Provides up to 600 watts of peak power in a rugged and compact weatherproof package, with a digital serial interface, for wideband, single- and multi-carrier satellite service in C, X and Ku-bands. Ideal for mobile and fixed earth station applications.

### Cost Effective and Efficient

Mounting at the antenna improves performance through minimized cable losses and saves cost in system design. Employs a high efficiency, multi-stage depressed collector helix traveling wave tube, enabling higher operating temperatures reducing operating costs.

### Reliable

Designed and built to survive in extremely adverse environmental conditions and features increased cooling margin for longer life.

### Simple to Operate

User-friendly microprocessor-controlled logic with integrated RS422/485 computer interface. Digital metering, optional pin diode attenuator and solid state IPA for higher gain.

### Easy to Maintain

Modular design and built-in fault diagnostic capability via remote monitor and control.

### Global Applications

Meets Electromagnetic Compatibility 89/336/EEC and Harmonic Standard EN-61000-3-2 to satisfy worldwide requirements.

### Worldwide Support

Backed by over two decades of satellite communications experience, and CPI's worldwide 24-hour customer support network that includes fourteen regional factory service centers.

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600W Outdoor TWT High Power Amplifier

## SPECIFICATIONS TL06TO 600 W Series

### Electrical

	C-Band	X-Band	Ku-Band
Frequency	5.850 - 6.425 GHz	7.9 - 8.4 GHz	13.75 - 14.50 GHz
Output Power, min.			
TWT, Peak	350 W (55.44 dBm)	600 W (57.78 dBm)	350 W (55.44 dBm)
TWT, Linear CW, No Linearizer	263 W (54.20 dBm)	140 W (51.50 dBm)	125 W (51.00 dBm)
TWT, Linear CW, X-band Linearizer	263 W (54.20 dBm)	380 W (55.80 dBm)	125 W (51.00 dBm)
TWT, Linear CW, X/Ku-band Lin.	263 W (54.20 dBm)	380 W (55.80 dBm)	275 W (54.40 dBm)
Flange, Lin. CW, No Linearizer	240 W (53.80 dBm)	125 W (50.97 dBm)	115 W (50.60 dBm)
Flange, Lin. CW, X-band Lin.	240 W (53.80 dBm)	300 W (54.80 dBm)	115 W (50.60 dBm)
Flange, Lin. CW, X/Ku-band Lin.	240 W (53.80 dBm)	300 W (54.80 dBm)	250 W (54.00 dBm)
Gain			
at rated linear power	70 dB min.	72 dB min.	72 dB min.
at small signal	73 dB min.	72 dB min.	75 dB min.
Small Signal Gain Slope	± 0.04 dB/MHz max.		
Small Signal Gain Variation	1.0 dB pk-pk (across any 40 MHz band) 2.5 dB pk-pk (across individual frequency band)		
Gain Stability (at constant drive and temperature)	± 0.25 dB/24 hours max.		
VSWR (Input/Output/Load)	1.3:1 max./1.3:1 max./2.0:1 max. - no degradation, infinite VSWR without damage		
Phase Noise	10 dB below MIL-STD-188-164 A mask		
AM/PM Conversion	2.0°/dB max. for a single carrier up to rated linear power		
Noise Power Density (at max. gain)			
Transmit Band	<-65 dBW/4 kHz	<-65 dBW/4 kHz	<-63 dBW/4 kHz
Receive Band	<-70 dBW/4 kHz, 3.4 - 4.2 GHz	<-60 dBW/4 kHz, 7.25 - 7.75 GHz	<-55 dBW/4 kHz, 10.95 - 12.75 GHz
Intermodulation (with two equal carriers)	-19 dBc at 4.5 dB OBO, -25 dBc at 7.5 dB OBO		
Spectral Regrowth	-26 dBc max. at 53.9 dBm	-30 dBc max. (at 3.5 dB OBO w/ linearizer) at 54.8 dBm	-26 dBc max. (at 3.5 dB OBO w/ linearizer) at 54.0 dBm
Group Delay			
Linear	0.01 nsec/MHz max.		
Parabolic	0.005 nsec/MHz sq. max.		
Ripple	0.5 nsec pk-pk max.		
Primary Power	108 - 264 VAC, single phase; 47-63 Hz		
Power Consumption	1900 VA typ./ 2000 VA max.		
Power Factor	0.95 min., meets requirements of Harmonics EMC Directive EN61000-3-2		

### Environmental

Ambient Temperature (operating)	-40°C to +60°C, including solar loading
Relative Humidity	100% condensing
Altitude	10,000 ft with standard adiabatic derating of 2°C/1000 ft
Shock and Vibration	20 g pk, 11 msec, 1/2 sine; 2.1 G rms, 5 to 500 Hz, per MIL-STD 810-E/F

### Mechanical

Cooling	Forced air with integral blower
RF Input Connection	Type N Female
RF Output Connection	WRD-580D28 waveguide flange, threaded 6-23 UNC-2B
RF Output Monitor	Type N Female
Dimensions (W x H x D)	12.5 x 6.75 x 30 inches (318 x 172 x 762 mm)
Weight	85 lbs (38.6 kg) typ.

### Heat and Acoustic

Heat Dissipation	1250 W max.
Acoustic	69 dBA typ. (as measured from 3 feet)

Mounting hardware is provided with each amplifier.

### OPTIONS:

- *Integrated Switch Control*
- *Redundant Switch Subsystems*
- *Integrated Linearizer: X-band or X/Ku-band*
- *1 RU Remote Control Panel*
- *Extended C-Band (5.85 - 6.65 GHz)*



KEEPING YOU ON THE AIR  
not up in the air

For more detailed information, please refer to the corresponding CPI Technical Description.

Note: Specifications may change without notice as a result of additional data or product refinement.

Please contact CPI before using this information for system design.



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