

# 110 W Outdoor TWT Amplifier

## Plays in the Rain

Provides up to 110 watts of 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, dual-depressed collector helix traveling wave tube, reducing operating costs.

## Reliable

Designed and built to survive in extremely adverse environmental conditions and features increased cooling margin for longer life. **This amplifier is DSCS Certified.**

## 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.

## Meets Global Requirements

Meets International Safety Standard EN-60215, Electromagnetic Compatibility 2014/30/EU and Harmonic Standard EN-61000-3-2 to satisfy worldwide requirements. CE Marked.

## Worldwide Support

Backed by over three decades of satellite communications experience, and CPI's worldwide 24-hour customer support network that includes more than 20 regional factory service centers.



### Model T01TO

110 watt Tri-band outdoor TWT for satellite uplink applications

### OPTIONS

- Solid State IPA
- SSIPA with variable attenuator (provides RF Level Adjust range of 0 to 30 dB)
- 65°C ambient temperature operation
- Remote Control Panel
- Integral switch control and drive
- Redundant switch subsystems
- Forward detected RF output power over computer interface
- Extended Ku-band (13.75 to 14.50 GHz)
- Ethernet interface
- X/Ku-band Integral Linearizer



satcom products

811 Hansen Way, PO Box 51625  
Palo Alto, CA 94303 USA  
tel: +1 (650) 846-3803  
fax: +1 (650) 424-1744  
e-mail: [satcommarketing@cpii.com](mailto:satcommarketing@cpii.com)  
website: [www.cpii.com/satcom](http://www.cpii.com/satcom)

## 110 W Tri-band Outdoor TWT Amplifier

Specification	Model T01TO		
	C-BAND	X-BAND	Ku-BAND
Operating Band			
Frequency	5.85 to 6.425 GHz	7.9 to 8.4 GHz	14.0 to 14.5 GHz (13.75 to 14.50 GHz optional)
TWT Output Power	70 W (48.45 dBm)	110 W (50.41 dBm)	70 W (48.45 dBm)
Flange Output Power	60 W (47.78 dBm)	90 W (49.54 dBm)	60 W (47.78 dBm)
Gain at Rated Power	38 dB min. (68 dB with SSIPA)	41 dB min. (71 dB with SSIPA)	41 dB min. (71 dB with SSIPA)
Gain at Small Signal	43 dB min. (73 dB with SSIPA)	46 dB min. (71 dB with SSIPA)	46 dB min. (71 dB with SSIPA)
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 bands)		
RF Level Adjust Range	0 to 30 dB (via PIN diode attenuator) typ, 0.1 dB steps		
Gain Stability	±0.25 dB/24 hour max. at constant drive and temperature		
VSWR	1.3:1 max. output; 2.2:1 max. input; Load: 2.0:1 max, no degradation, infinite VSWR without damage		
Phase Noise	10 dB below IESS-308 continuous mask		
AM/PM Conversion	2.5°/dB max. for a single-carrier up to 6 dB OBO		
Noise Density	<-70 dBW/4 kHz max. in transmit and receive bands		
Group Delay (over 40 MHz)	0.01 ns/MHz linear max; 0.005 ns/MHz <sup>2</sup> parabolic max; 0.5 ns pk-pk ripple max.		
Intermodulation (with regard to the sum of two equal carriers)	-20 dBc max. @ 6 dB OBO	-22 dBc max. @ 6 dB OBO	-20 dBc max. @ 6 dB OBO
Noise Power Ratio	-15 dB max. @ 6 dB OBO; -10 dB max. @ 3dB OBO	-17 dBc max. @ 6 dB OBO; -17 dBc max. @ 3dB OBO with linearizer	-15 dBc max. @ 6 dB OBO -15 dBc max. @ 3 dB OBO with linearizer
Spectral Regrowth	-28 dB max. @ 6 dB OBO; -22 dB max. @ 3dB OBO	-30 dBc max. @ 6 dB OBO; -30 dBc max. @ 3dB OBO with linearizer	-28 dBc max. @ 6 dB OBO; -28 dBc max. @ 3dB OBO with linearizer
Primary Power	90 to 264 VAC, 47 to 63 Hz		
Power Consumption	510 VA max.		
Power Factor	0.95 min., meets requirements of Harmonics EMC Directive EN61000-3-2		
Ambient Temperature	-40°C to +55°C operating, including solar loading (to +65°C operating optional); -54°C to +71°C non-operating		
Relative Humidity	100% condensing		
Altitude	10,000 ft. with standard adiabatic derating of 2°C/1000 ft. operating; 50,000 ft. non-operating		
Shock and Vibration	20 G at 11 ms (1/2 sine pulse in non-operating condition); 2.1 g rms, 50 to 500 MHz		
Cooling	Forced Air with integral blower		
RF Input Connection	Type N Female		
RF Output Connection	WRD580D28 waveguide flange, threaded 6-23 UNC-2B		
RF Output Monitor	Type N Female		
M&C Interface	RS422/485 serial		
Dimensions, W x H x D	8.6 x 8.6 x 15.75 inches (219 x 219 x 400 mm)		
Weight	30 lbs (13.6 kg) excluding options		
Heat Dissipation	400 W typ.		
Acoustic noise	65 dBA (as measured at 3 ft.) nom.		