

2.5 kW SuperLinear® TWT Amplifier

Compact

Provides 2500 watts of equivalent linear power (1110 watts operating) in a compact, nine rack-unit package, digital ready, for wideband, single- and multi-carrier satellite service in the 7.9 – 8.4 GHz frequency band. Designed to operate at up to 1250 watts CW power for multi-carrier uplinks. Ideal for transportable and fixed earth station applications where space and prime power are at a premium. 30% smaller than traditional HPAs.

Efficient and Reliable

CPI SuperLinear® TWTAs are among the most power efficient in the industry. This amplifier is optimized for maximum efficiency at linear output operating levels.

Simple to Operate

User-friendly microprocessor-controlled logic with integrated computer interface, digital metering, pin diode attenuation, optional integrated linearizer for improved intermodulation performance, and BUC option for use with L-band modems.

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 2004/108/EC 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 TL25XI

2500 watt X-band SuperLinear® TWTA for **satellite uplink** applications

OPTIONS

- Remote control panel
- Redundant and power combined sub-systems
- Integrated 1:1 switch control and drive
- L-band block upconverter (BUC) - contact CPI for specifications
- Integral linearizer
- External receive band reject filter
- Ethernet interface



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
website: www.cpii.com/satcom

2.5 kW X-Band SuperLinear® TWT Amplifier

Specification	Model TL25XI
Output Frequency	7.9 to 8.4 GHz
Output Power (min.) TWT Peak Power Flange Peak Power Guaranteed CW Power at Flange Maximum CW Power at Flange	2500 W (63.98 dBm) min. 2220 W (63.45 dBm) min. 1110 W (60.45 dBm) min. 1395 W (61.45 dBm) max.
Note on Output Power	This amplifier guarantees 1110 W of CW power at the flange. The peak power specifications are provided so that desired backoff may be more easily calculated.
Gain	75 dB min. at rated output power; 78 dB min. at small signal
RF Level Adjust Range	0 to 30 dB (via PIN diode attenuator) typ, 0.1 dB steps
Gain Stability Over temp, constant drive	±0.25 dB/24 hour max,max. at constant drive and temperature, after 30 minute warmup ±1.0 dB typ. over operating temperature range
Small Signal Gain Slope	0.035 dB/MHz max.
Small Signal Gain Variation	0.5 dB pk-pk max. across any 40 MHz; 3.0 dB pk-pk max. across the 500 MHz band (4.0 dB pk-pk with optional linearizer)
Input/Output VSWR	1.25:1 max.
Load VSWR	1.5:1 for full spec. compliance; 2.0:1 max. continuous; any value operation without damage
Phase Noise	10 dB below IESS-308/309 phase noise profile; -50 dBc AC fundamentals related; -47 dBc sum of spurs; Prime power AC line unbalance not to exceed 3%. Excess imbalance may cause an increase in residual RF noise (AM, FM and PM). Phase noise increase is typically 2.5 dB/% imbalance.
AM/PM Conversion	6.0°/dB max; with optional linearizer, can be tuned to 2.0°/dB max.
Harmonic Outputs	-65 dBc max. (RF); -60 dBc max. (IF)
Noise Density	<-130 dBW/4 kHz from 3.4 to 4.2 GHz; <-65 dBW/4 kHz from 4.2 to 12 GHz (<-60 dBW/4 kHz passband with linearizer option); -110 dBW/4 kHz from 12.0 to 40.0 GHz
Intermodulation - with respect to the sum of 2 equal carriers 5 MHz apart	-25 dBc max. at rated power (1110 W) with optional linearizer; -25 dBc max. at output level of 400 W output power without linearizer
Group Delay	0.01 ns/MHz linear max; 0.002 ns/MHz ² parabolic max; 0.5 ns pk-pk ripple max.
Primary Power	Voltage: Three phase with neutral and ground, 208 VAC ±10% with or without neutral OR 380 to 415 VAC; Frequency: 47-63 Hz ±10% five wire; AC current harmonic content: less than 20%, primarily fifth and seventh harmonics. Harmonics must be considered when choosing UPS sources.
Power Consumption	5.5 kW max; 4.9 kW typ. at 1000 W output power; 4.2 kW typ. at 800 W output power 3.3 kW typ. at 200 W output power 2.8 kW typ. at 100 W output power
Power Factor	0.95 min; 0.99 typ.
Ambient Temperature	0°C to +50°C operating; -54°C to +71°C non-operating
Relative Humidity	95% non-condensing
Altitude	10,000 ft. with standard adiabatic derating of 2°C/1000 ft. operating; 50,000 ft. non-operating
Shock and Vibration	Designed for normal transportation environment per Section 514.4 MIL-STD-810E. Designed to withstand 20g at 11 ms (1/2 sine pulse) in non-operating condition
Cooling	Forced air with integral blower. Maximum external pressure loss allowable: 0.25 inch water gauge.
Connections	RF Input: Type N Female; RF output: CPR-112 waveguide flange, grooved, threaded, UNC 2B 8-32; RF output monitor: Type N Female
M&C Interface	RS-232 and RS-422/485 (4-wire) (Ethernet optional)
Weight and Dimensions	155 lbs (70.5 kg) max. / 19 W x 15.75 H x 24 D inches (483 W x 400 H x 610 D mm)