CPI 2.5 kW SuperLinear® Modular TWTA

X-Band

Built for Satellite Communications Uplink Applications

Provides 2500 watts of peak power in a compact, 9 RU package, digital ready, for satellite uplink service in X-band. Designed to operate at up to 1110 watts linear power for multicarrier links.

CPI 2500 W X-band SuperLinear TWTA, Model TL25XK

Efficient and Reliable

CPI SuperLinear® TWTAs are among the most power efficient in the industry. Employs an ultra-high efficiency dual-depressed collector helix traveling wave tube, backed by many years of field-proven experience in commercial and military applications. This amplifier is optimized for maximum efficiency at linear output operating levels.

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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 with easily field-swappable components. Built-in fault diagnostic capability for easy maintainability in the field.

OPTIONS:

- Remote control panel
- Serial interface
- Redundant and hybrid power combined systems
- Integral linearizer
- Integral block upconverter (BUC) - contact CPI for specifications.
- External receive band reject filter

Quality Management System - ISO 9001:2015

CE

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 40 years of satellite communications experience, and CPI's worldwide 24-hour customer support network that includes more than 20 regional factory service centers.

Specification	Model TL25XK
Output Frequency	7.9 to 8.4 GHz
Output Power (min.) TWT Peak Power Flange Peak Power CW Power at Flange Max. CW Power at Flange	 2500 W (63.98 dBm) min. 2220 W (63.45 dBm) min. 1110 W (60.45 dBm) min. 1250 W (60.97 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	70 dB min.
RF Level Adjust Range	0 to 30 dB (via PIN diode attenuator) typ, 0.25 dB steps
Gain Stability	±0.25 dB/24 hour max,max. at constant drive and temperature, after 30 minute warmup
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	2.0:1 for full spec. compliance; 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	6.0º/dB max; with optional linearizer, can be tuned to 2.0˚/dB max.
Harmonic Outputs	-65 dBc max.
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	-23.5 dBc max. at 400 W total output power (-25 dBc max. at 1110 W total output power with linearizer option)
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 1110 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	0ºC to +50ºC operating; -54ºC to +71ºC 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-112G waveguide flange, grooved, threaded, UNF 2B 10-32; RF output monitor: Type N Female
M&C Interface	RS-232 and RS-422/485 (4-wire) (Ethernet optional)
Weight and Dimensions	165 lbs (74.8 kg) max. / 19 W x 15.75 H x 24 D inches (483 W x 400 H x 610 D mm)

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