

## Built for Satellite Communications Uplink Applications

Provides 2250 watts of CW power in a compact, 9 RU package, digital ready, for satellite uplink service in X-band. Provides 1000 watts of linear power for transportable and fixed multicarrier earth stations.

### Efficient and Reliable

Employs a high efficiency dual-depressed collector helix traveling wave tube backed by many years of field-proven experience in airborne and military applications. The collector design is optimized for cooler operation and full CW power.

### 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 X-band modems.

### Easy to Maintain

Modular design and built-in fault diagnostic capability with convenient and clearly visible indicators for easy maintainability in the field.



CPI 2250 W X-band TWTA,  
Model T22XI

### 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
- Ethernet interface

Quality Management  
System - ISO 9001:2015



### 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 T22XI 2250 W X-band TWTA
Output Frequency	7.9 to 8.4 GHz
Output Power (min.) TWT CW Power Flange CW Power	2250 W (63.54 dBm) min. 2000 W (63.00 dBm) min.
Bandwidth	500 MHz
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	±0.02 dB/MHz max.
Small Signal Gain Variation	0.5 dB pk-pk max. across any 40 MHz (1.0 dB pk-pk max. with linearizer option); 3.0 dB pk-pk max. across the 500 MHz band (4.0 dB pk-pk with optional linearizer)
Input/Output VSWR	1.3:1 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	6.0°/dB max; with optional linearizer, can be tuned to 2.5°/dB max.
Harmonic Output	-60 dBc max.
Noise Density	<-70 dBW/4 kHz in passband
Intermodulation - with respect to the sum of 2 equal carriers 5 MHz apart	-23 dBc at 400 W with no linearizer; -25 dBc at 1000 W with linearizer
Spectral Regrowth	-30 dBc at 1 symbol offset, 5.6 Msps, at 1000 W output power with linearizer
Group Delay	0.02 ns/MHz linear max; 0.002 ns/MHz <sup>2</sup> parabolic max; 0.5 ns pk-pk ripple max.
Primary Power	Voltage: Three phase with neutral and ground, 187 to 264 VAC ±10% OR 342 to 456 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	7.0 kW max.
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-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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For more detailed information, please refer to the corresponding CPI technical description if one has been published, or contact CPI. 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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