CPI 2.25 kW X-Band TWT Amplifier

X-Band

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.

CPI 2250 W X-band TWTA, Model T22XI

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, integrated linearizer for improved intermodulation performance, and an optional BUC for use with X-band modems.

Easy to Maintain

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

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.

FEATURES

- Integral linearizer
- Ethernet interface

OPTIONS

- Remote control panel
- Serial interface
- Redundant and hybrid power combined systems
- Integral block upconverter (BUC): Contact CPI for specifications.
- External receive band reject filter
- LifeExtender/LifePredictor technology to significantly extend TWT lifespan

Quality Management System - ISO 9001:2015

CE

Worldwide Support

CPI satcom amplifiers are backed by over 40 years of satellite communications experience, and CPI's global customer support network, including regional service centers located worldwide.

Specification	CPI 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	1.0 dB pk-pk max. across any 40 MHz; 4.0 dB pk-pk max. across the 500 MHz band
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 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	2.5º/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	-25 dBc max. at 1000 W
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^2 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	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)
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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