CPI 2.25 kW TWT Amplifier
for Satellite Communications

X-Band

The T22XI

2.25 kW TWT Compact High Power Amplifier, features high efficiency, small size and integral computer interface.

Compact
Provides 2250 watts of CW power 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. 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
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 cool 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.

Global Applications
Meets International Safety Standard EN-60215 and EMC Standard 2004/108/EC to satisfy worldwide requirements.

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

Worldwide Support
Backed by over two decades of satellite communications experience, and CPI's worldwide 24-hour customer support network that includes twenty regional factory service centers.

Communications & Power Industries
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X-Band

2.25 kW Compact TWTA

OPTIONS & COMPANION PRODUCTS:

- *Integral Linearizer*
- *Remote Control Panel*
- *Redundant and Power Combined Subsystems*
- *External Receive Band Reject Filter*
- *Integral L-Band Block Upconverter (BUC)*
- *Ethernet Interface*

Note: This data sheet does not provide specifications for when the BUC option is included. Please contact CPI for details.

SPECIFICATIONS, T22XI

Electrical

Frequency	7.9 - 8.4 GHz
Output Power	
TWT CW power	2250 W min. (63.54 dBm)
Flange CW power	2000 W min. (63.00 dBm)
Bandwidth	500 MHz
Gain	70 dB min.
RF Level Adjust Range	30 dB typ.
Output Power Adjustability	±0.1 dB
Gain Stability	±0.25 dB/24 hr max. (at constant drive and temp.)
Small Signal Gain Slope	±0.02 dB/MHz max.
Small Signal Gain Variation	0.5 dB pk-pk max. over any 40 MHz; 1.0 dB pk-pk max. over any 40 MHz with linearizer option; 3.0 dB pk-pk max. across 500 MHz; 4.0 dB pk-pk max. across 500 MHz with linearizer option
Input/Output VSWR	1.3:1 max.
Load VSWR	2.0:1 max. for full spec compliance; any value without damage
Phase Noise[1]	
IESS-308/309	
phase noise continuous	10 dB below mask at -10 dB backof
AC fundamentals related	-50 dBc
Sum of spurs	-47 dBc
AM/PM Conversion	6°/dB max. With optional linearizer, can be tuned to 2.5°/dB max.
Noise Density	-90 dBW/4 kHz from 7.25 - 7.75 GHz; -65 dBW/4 kHz in passband; -60 dBW/4 kHz in passband with linearizer option
Intermodulation (with two equal carriers)	-25 dBc max at 350 W without linearizer (-25 dBc max. at 1000 W with linearizer)

Electrical (continued)

Group Delay (in any 40 MHz band)	0.02 ns/MHz linear 0.002 ns/MHz^2 parabolic 0.5 ns pk-pk ripple max.
Primary Power[2]	All ratings are ±10%, 47-63 Hz, 5-wire, 3-phase with neutral and ground 200 to 240 VAC (with or w/o neutral) 380 to 415 VAC
Power Factor	0.9 min.
Power Consumption	7.0 kVA max; 6.7 kVA typ. at 2000 W output power; 3.9 kVA typ. at 400 W output power; 2.9 kVA typ. at DC

Environmental

Ambient Temperature	-10° to +50°C operating -20° to +70°C non-operating
Relative Humidity	95% non-condensing
Altitude	Up to 10,000 ft (3000 m) with standard adiabatic derating of 2°/1000 ft.; 50,000 feet 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

Mechanical

Cooling (TWT)	Forced air with integral blower and power supply fan. Maximum external pressure loss allowable: 0.25 inch water gauge.
Serial Interface	RS-232 and RS-422/485 (4-wire) (Ethernet optional)
RF Input Connection	Type N female
RF Output Connection	CPR 112 F waveguide flange, grooved, threaded UNF 2B 10-32
RF Power Monitors	Type N female
Dimensions (W x H x D)	19 x 15.75 x 24 in. (483 x 400 x 610 mm)
Weight	155 lbs. (70.5 kg) max.

[1] 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.

[2] AC current harmonic content: less than 20%, primarily fifth and seventh harmonics. Harmonics must be considered when choosing UPS sources.

ISO 9001 Certificate Number: 30515

For more detailed information, please refer to the corresponding CPI Technical Description.

Note: *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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