

2.25 kW TWT Amplifier

Compact

Provides 2250 watts of CW power in a compact nine rack-unit package, digital ready, for wide-band, 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 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.

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.

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



Model T22XI

2.25 kW TWT amplifier for satellite communications

OPTIONS

- Integral Linearizer
- Remote Control Panel
- Redundant and Power Combined Subsystems
- External Receive Band Reject Filter
- Integral L-Band Block Upconverter
- Ethernet Interface
- Note: This data sheet does not provide specifications for when the BUC option is included. Please contact CPI for details.



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2.25 kW TWT Amplifier

Specification	Model T22XI
Output Frequency	7.9 - 8.4 GHz
Output Power TWT CW power Flange CW power	2250 W min. (63.54 dBm) 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 temperature
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
VSWR (Input/Output/Load)	1.31:1 max/1.3:1 max/2.0:1 max. for full spec compliance; any value without damage
Phase Noise ¹	10 dB below IESS-308/309 phase noise profile; -50 dBc AC fundamentals related; -47 dBc sum of spurs
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	-25 dBc max. at 350 W without linearizer (-25 dBc max. at 1000 W with linearizer), with two equal carriers
Group Delay	In any 40 MHz band: 0.02 ns/MHz linear max; 0.002 ns/MHz ² parabolic max; 0.5 ns pk-pk ripple max.
Primary Power ²	All ratings are ± 10%, 47-63 Hz 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
Ambient Temperature	-10° to +50° operating; -54 to +71° non-operating
Relative Humidity	95%, non-condensing
Altitude	10,000 ft. with standard adiabatic derating of 2°C/1000 ft. or 6.5°C/km operating; 50,000 ft. (15,240 m) 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 (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 Connections	Input: Type N Female; Output: CPR112 waveguide flange, grooved, threaded UNC 2B 8-32
RF Power Monitors	Type N Female
Dimensions and Weight	19 x 15.75 x 24 in. (483 x 400 x 610 mm); 155 lbs (70.5 kg) max.

¹Prime 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.

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