

CPI 2.25 kW TWT Amplifier for Satellite Communications

C-Band

The T22CI

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 5.85 - 6.65 GHz frequency band (other frequencies available). 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 C-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.

satcom products

811 Hansen Way
P.O. Box 51625, Palo Alto, CA 94303

tel: +1 (650) 846-3803
fax: +1 (650) 424-1744

e-mail: satcommarketing@cpil.com
www.cpii.com/satcom



C-Band

2.25 kW Compact TWT A

OPTIONS & COMPANION PRODUCTS:

- *Integral Linearizer*
- *Remote Control Panel*
- *Redundant and Power Combined Subsystems*
- *Preliminary Option: Extended Frequency (5.850 - 6.725 GHz, 5.725 - 6.525 GHz or 5.850 - 7.075 GHz)*
- *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 see TD-140 for details

SPECIFICATIONS, T22CI

Electrical

Frequency	5.85 - 6.65 GHz
Output Power	
TWT CW power	2250 W min. (63.54 dBm)
Flange CW power	2000 W min. (63.00 dBm)
Bandwidth	800 MHz (1225 MHz optional)
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 40MHz with linearizer option; 3.0 dB pk-pk max. across 800 MHz; 4.0 dB pk-pk max. across 800 MHz with linearizer option
Input/Output VSWR	1.3:1 max.
Load VSWR	1.7:1 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	-150 dBW/4 kHz from 3.4 to 4.2 GHz -65 dBW/4 kHz from 4.2 to 12.0 GHz -60 dBW/4 kHz from 4.2 to 12.0 GHz with linearizer option -110 dBW/4 kHz from 12.0 to 40.0 GHz
Intermodulation ²	
with two equal carriers	-23 dBc max, 5.850 - 6.425 GHz at 400 W without linearizer (-25 dBc max. at 890 W with linearizer); -22 dBc max. 6.425 - 6.650 GHz at 400 W without linearizer (-24 dBc max. at 890 W with linearizer)

Electrical (continued)

Group Delay	0.02 ns/MHz linear (in any 40 MHz band) 0.002 ns/MHz ² parabolic 0.5 ns pk-pk ripple max.
Primary Power ³	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 137 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.

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.

²For wideband HPA (to 7.075 GHz), intermods at 400 W are -23 dBc below 6.425 GHz and -21 dBc above 6.425 GHz, and at 890 W with linearizer are -25 dBc below 6.425 GHz and -23 dBc above 6.425 GHz.

³AC current harmonic content: less than 20%, primarily fifth and seventh harmonics. Harmonics must be considered when choosing UPS sources.



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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