# CPI 2.25 kW Rack-Mount TWTA

**C-Band**

## Built for Satellite Communications Uplink Applications

Provides 2250 watts of CW power in a compact nine rack-unit package, digital ready, for wideband, single and multi-carrier satellite service in C-band.

CPI 2250 W C-band rack-mount TWTA, Model T22CI

### Cost Effective and Efficient

Employs a high-efficiency dual-depressed collector helix traveling wave tube backed by many years of field-proven experience in airborne and military applications. Collector design optimized for cool operation. The amplifier is well-suited for transportable and fixed earth stations where prime power is limited.

### Reliable

Designed and built to survive in extremely adverse environmental conditions. Its CAN-Bus architecture improves reliability and noise immunity. CPI's optional LifeExtender technology significantly increases TWT lifetime.

### 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 C-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.

### FEATURES

- Integral linearizer
- Ethernet interface

### OPTIONS

- Remote control panel
- Redundant and hybrid power combined systems
- Integrated 1:1 switch control and drive
- Integral block upconverter (BUC): Contact CPI for specifications.
- LifeExtender/LifePredictor technology to significantly extend TWT lifespan
- Receive band reject filter

Quality Management System - ISO 9001:2015

CE

### 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

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

| Specification | CPI Model T22CI, 2.25 kW C-band Rack-Mount TWTA |
|---|---|
| Output Frequency | 5.85 to 6.65 GHz or 5.850 to 6.725 GHz |
| Output Power (min.)<br>TWT CW Power<br>Flange CW Power | <br>2250 W (63.54 dBm) min.<br>2000 W (63.00 dBm) min. |
| Instantaneous Bandwidth | 800 MHz (1225 MHz optional) |
| Gain | 75 dB min. at rated power, 78 dB min. at small signal |
| RF Level Adjust Range | 0 to 30 dB (via PIN diode attenuator) typ, 0.1 dB steps |
| Gain Stability<br>Over temp, constant drive | ±0.25 dB/24 hour max,max. at constant drive and temperature, after 30 minute warmup<br>±1.0 dB typ. over operating temperature range |
| Small Signal Gain Slope | ±0.02 dB/MHz max. |
| Small Signal Gain Variation | 1.0 dB pk-pk max. over any 40 MHz<br>4.0 dB pk-pk max. across 800 MHz |
| Input/Output VSWR | 1.25:1 max. |
| Load VSWR | 1.7:1 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;<br>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°/dB max. |
| Harmonic Outputs | -60 dBc max. |
| Noise Density | <-150 dBW/4 kHz from 3.7 to 4.2 GHz;<br><-60 dBW/4 kHz passband from 4.2 to 12 GHz<br>-110 dBW/4 kHz from 12.0 to 40.0 GHz |
| Intermodulation - with respect to each of two equal carriers 5 MHz apart | -25 dBc max., 5.850 – 6.425 GHz at 890 W output power;<br>-24 dBc max., 6.425 – 6.650 GHz (or to 6.725 GHz) at 890 W output power |
| Group Delay | 0.01 ns/MHz linear max; 0.001 ns/MHz$^2$ parabolic max; 0.5 ns pk-pk ripple max. |
| Primary Power | All ratings are ±10%, 47-63 Hz, 5-wire, 3-phase with neutral and ground:<br>200 to 240 VAC (with or w/o neutral), or 380 to 415 VAC.<br>AC current harmonic content: less than 20%, primarily fifth and seventh harmonics.<br>Harmonics must be considered when choosing UPS sources. |
| Power Consumption | 7.0 kVA max;<br>6.7 kVA typ. at 2000 W output power;<br>3.9 kVA typ. at 400 W output power;<br>2.9 kVA typ. at 0 W at DC |
| Power Factor | 0.90 min; 0.95 typ. |
| Ambient Temperature | -10˚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-137G waveguide flange, grooved, threaded, UNF 2B 10-32;<br>RF output monitor: Type N Female |
| M&C Interface | RS-232 and RS-422/485 (4-wire) (Ethernet optional) |
| Weight and Dimensions | 155 lbs (70.5 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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