

## For Satellite Communications Uplink Applications

Provides 400 watts of power in a rugged and compact weatherproof package, digital ready, for satellite uplinks from 7.9 to 8.4 GHz. Ideal for transportable or fixed earth station applications.

### Cost Effective and Efficient

Employs a high efficiency, dual-depressed collector helix traveling wave tube, reducing operating costs.

### Reliable

Designed and built to survive in extremely adverse environmental conditions. Optional +60°C operating temperature limit available.

### Simple to Operate

User friendly microprocessor-controlled logic with integrated RS422/485 interface. Digital metering, pin diode attenuation and optional integrated linearizer for improved intermodulation performance. Ethernet interface optional.

### Easy to Maintain

Modular design and built-in fault diagnostic capability via remote monitor and control.

### 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

Backed by over 40 years of satellite communications experience, and CPI's worldwide 24-hour customer support network that includes more than 20 regional factory service centers.



CPI 400 W X-band outdoor TWTA,  
Model T04XO

### OPTIONS:

- Remote control panel
- Ethernet interface
- Redundant and hybrid power combined systems
- Integral 1:1 switch control and drive
- Integral linearizer
- Integral block upconverter (BUC) - see CPI document TD-116 for specifications.
- Forward power detection
- Low Passive Intermodulation (Low PIM)
- Higher operating temperature limit (+60°C)
- Low gain option - remove IPA

Quality Management  
System - ISO 9001:2015



Specification	CPI Model T04XO 400 W X-Band Outdoor TWTA
Output Frequency	7.9 to 8.4 GHz
Output Power TWT Power Saturated (P <sub>sat</sub> , CW)	400 W (56.02 dBm) min. 350 W (55.44 dBm) min.
Gain	70 dB min. at rated power output (46 dB with low gain option); 75 dB min at small signal (49 dB with low gain option)
RF Level Adjust Range	0 to 30 dB (via PIN diode attenuator) typ, 0.1 dB steps
Gain Stability	±0.25 dB/24 hour max,max. at constant drive and temperature, after 30 minute warmup; ±0.75 dB typ over 10°C, constant drive
Small Signal Gain Slope	±0.02 dB/MHz max.
Small Signal Gain Variation	1.0 dB pk-pk across any 40 MHz band; 2.5 dB pk-pk max. across the 500 MHz segment (4.0 dB with linearizer option)
Input/Output VSWR	1.3:1 max. / 1.3:1 max.
Load VSWR	2.0:1 continuous operation; 1.5:1 full spec. compliance; any value operation without damage
Phase Noise	10 dB below IESS-308/309 phase noise profile; -42 dBc AC fundamentals; -47 dBc sum of spurs (130 Hz to 1 MHz)
AM/PM Conversion	2.5°/dB max. for a single-carrier at 7 dB below rated power (at 3 dB below rated power with linearizer)
Harmonic Output	-60 dBc at rated power
Noise Density, max.	<-70 dBW/4 kHz, passband; <-65 dBW/4 kHz, passband with optional linearizer; <-70 dBW/4 kHz, 7.25 to 7.75 GHz
Intermodulation - with respect to the sum of 2 equal carriers	-24 dBc max. at 7.5 dB backoff from rated output power; -25 dBc max. at 4.5 dB backoff from rated output power with optional linearizer, per MIL-STD-188-164B
Spectral Regrowth	-30 dBc, at 1 symbol rate away from carrier frequency, at 6 dB OBO (at 4 dB OBO with optional linearizer)
Group Delay	in any 80 MHz band: 0.01 ns/MHz linear max; 0.002 ns/MHz <sup>2</sup> parabolic max; 0.5 ns pk-pk ripple max.
Primary Power	Voltage: Single phase, 100 - 240 VAC ±10%; Frequency: 47-63 Hz
Power Consumption	1500 VA max; 1350 VA typ.
Power Factor	0.95 min; 0.99 typ.
Inrush Current	200% max.
Ambient Temperature	-40°C to +55°C operating in direct sunlight; -40°C to +60°C out of direct sunlight; optional -40°C to +60°C operating in direct sunlight; -54°C to +71°C non-operating
Relative Humidity	100% condensing
Altitude	10,000 ft. with standard adiabatic derating of 2°C/1000 ft. operating; 50,000 ft. non-operating
Shock and Vibration	Built 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 configuration.
Cooling	Forced air with integral blower
Connections	RF Input: Type N Female; RF output: CPR112 grooved w/g flange with threaded UNC 2B 10-32 holes
RF Output Monitor	Type N Female
M&C Interface	RS-422/485 and RS-232 serial interface (Ethernet optional)
Dimensions, W x H x D	10.25 x 10.50 x 20.5 inches (260 x 267 x 521 mm)
Weight	55 lbs (25.0 kg) typ.
Heat Dissipation	1100 watts typ.
Acoustic noise	65 dBA nom, as measured at 3 feet



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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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