

## Built for Satellite Communications Uplink Applications

Provides up to 200 watts of linear power at the flange (with linearizer) in a rugged and compact weatherproof package, digital ready, for satellite uplinks in the Ku-band frequency range. Ideal for transportable or fixed earth station applications.

### Cost Effective and Efficient

CPI SuperLinear® TWTA's are among the most power efficient in the industry. This amplifier is optimized for maximum efficiency at linear output operating levels.

### Reliable

Designed and built to survive in extremely adverse environmental conditions and features increased cooling margin for longer life. CAN-Bus architecture improves reliability and noise immunity.

### Simple to Operate

User-friendly microprocessor-controlled logic with integral Ethernet computer interface. Digital metering, pin diode attenuation and optional integral linearizer for improved intermodulation performance. SNMP (v1, v2, or v3) facilitates high level M&C integration.

### Easy to Maintain

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



CPI 400 W Ku-band SuperLinear outdoor TWTA, Model TL04UO

### OPTIONS:

- 1 RU remote control panel
- Redundant and hybrid power combined systems
- Integral linearizer
- Integral L-band block upconverter (BUC)
- External receive band reject filter (increases loss by a minimum of 50 dB up to 11.7 GHz)
- Integral 1:1 switch control and drive

Quality Management System - ISO 9001:2015



### 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 certified.

### 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.

Specification	CPI Model TL04UO, 400 W SuperLinear Ku-band TWTA
Input Frequency	With optional BUC only: 950 to 1450 MHz, or 950 to 1700 GHz. Please contact CPI if you desire a wideband BUC that covers the entire 12.75 to 14.50 GHz frequency range.
Output Frequency	14.00 to 14.50 GHz or 13.75 to 14.50 GHz (12.75 to 14.50 GHz optional)
Output Power (min.) TWT CW Power at Flange Max. CW Flange Power	400 watts (56.0 dBm) peak 200 W (53.0 dBm) min. 220 W (53.4 dBm)
Bandwidth	500 or 750 MHz (1750 MHz optional)
Gain	67 dB min. at rated power, 70 dB min. at small signal
Gain Stability	±0.25 dB/24 hours max. (at constant drive and temperature)
Small Signal Gain Slope	±0.02 dB/MHz max. (±0.04 dB/MHz max. with both BUC and linearizer options)
Small Signal Gain Variation	1.0 dB pk-pk max. across any 80 MHz band; 3.0 dB pk-pk max. across any 500 MHz
RF Level Adjust Range	30 dB typ.
Input VSWR	1.3:1 max. (1.5:1 max. with BUC option)
Output VSWR	2.0:1 max.
Load VSWR	2.0:1 max. continuous operation; any value for operation without damage
Phase Noise	10 dB below IESS-308/309; -42 dBc AC fundamental; -50 dBc sum of spurs (with optional BUC, 3 dB below IESS-308/309; -36 dBc AC fundamental; -42 dBc sum of spurs)
Spurious	-60 dBc max. at rated output
AM/PM Conversion	2.0°/dB max. up to 46 dBm output power (up to 53 dBm with optional linearizer)
Harmonic Output	-60 dBc at rated power
Noise Density (at max. gain)	<-150 dBW/4 kHz, 10.00 to 12.75 GHz; <-70 dBW/4 kHz, passband
Spectral Regrowth	-30 dBc max. @ 1.0 S.R. at 49 dBm output power (at 53 dBm output power with optional linearizer)
Intermodulation	-25 dBc max. with respect to the sum of both carriers at total output power of 100 W (at 200 W with optional linearizer)
Noise Power Ratio	19 dB at 49 dBm; 19 dB at 52 dBm with linearizer
Group Delay	0.01 ns/MHz linear max, 0.001 ns/MHz <sup>2</sup> parabolic max, 1.0 ns pk-pk ripple max. in any 40 MHz band
Prime Power	100 to 240 VAC +/-10% single phase, 47-63 Hz
Power Consumption	750 VA max. at 200 W output power
Power Factor	0.95 min.
Amplitude and Phase Linearity	Exceeds MIL-STD-188-164B
Ambient Temperature	Ambient Temperature -40°C to +60°C operating, plus solar loading; -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	20 g peak, 11 ms, 1/2 sine
Vibration	2.1 g <sub>rms</sub> , 5 to 500 Hz
Acoustic Noise	65 dBA at 3 feet from amplifier
Cooling	Forced air with integral blower
M&C Port	Ethernet interface
Input Connection	Type N female
RF Output Connection	WR75G waveguide flange, grooved with UNC 2B 6-32 threaded holes
RF Output Monitor	Type N Female
Dimensions	10.5 x 8.5 x 17.0 in. max. (267 x 216 x 432 mm)
Weight	32 lbs (14.6 kg) typ.



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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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