# CPI 1.25 kW SuperLinear® Outdoor TWTA

**Ku-Band**

## Built for Satellite Communications Uplink Applications

Provides up to 540 watts of linear power (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® TWTAs 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. Optional LifeExtender™ significantly increases TWT lifetime.

### Simple to Operate

User-friendly microprocessor-controlled logic with integrated Ethernet computer interface. Digital metering, pin diode attenuation and optional integrated 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 1.25 kW Ku-band SuperLinear outdoor TWTA, Model TL12UO-A1

OPTIONS:

- 1 RU remote control panel
- Serial interface
- Redundant and power combined systems
- Integrated 1:1 switch control and drive
- Integral linearizer
- Integral block upconverter (BUC) - contact CPI for specs or ref. CPI doc. TD-190
- External receive band reject filter (increases loss by a minimum of 50 dB up to 11.7 GHz)
- TWT LifeExtender/LifePredictor extends TWT life by up to 50%
- Inlet air filter
- Liquid Cooling - contact CPI for specs or ref CPI doc. MKT-493

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

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 Communications & Power Industries

www.cpii.com/satcom

| Specification | CPI Model TL12UO-A1 1.25 kW TWTA | | | |
|---|---|---|---|---|
| **Output Frequency** | 13.75 to 14.50 GHz | 12.75 to 14.50 GHz | 13.75 to 14.80 GHz | 12.75 to 14.80 GHz |
| Output Power<br>TWT Peak Power<br>Flange Peak Power<br>Guaranteed CW Power<br>Maximum CW Power | 1250 W (60.97 dBm) min.<br>1100 W (60.41 dBm) min.<br>540 W (57.32 dBm) min. at the flange<br>600 W (57.80 dBm) max. at the flange | | | |
| Note on Output Power | This amplifier guarantees 540 W of CW power at the flange.<br>The peak power specifications are provided so that desired backoff may be more easily calculated. | | | |
| Gain | 70 dB min. | | | |
| 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. 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.<br>across any 80 MHz<br><br>3.0 dB pk-pk max.<br>across 750 MHz<br><br>(4.0 dB pk-pk<br>with optional linearizer) | 1.0 dB pk-pk max.<br>across any 80MHz<br><br>3.5 dB pk-pk max.<br>across 1750 MHz<br><br>(4.5 dB pk-pk<br>with optional linearizer) | 1.0 dB pk-pk max.<br>across any 80 MHz<br><br>3.5 dB pk-pk max.<br>across 1050MHz<br><br>(4.5 dB pk-pk<br>with optional linearizer) | 1.0 dB pk-pk max.<br>across any 80 MHz<br><br>4.0 dB pk-pk max.<br>across 2050MHz<br><br>(5.0 dB pk-pk<br>with optional linearizer |
| Input/Output VSWR | 1.3:1 max. | | | |
| Load VSWR | 2.0:1 continuous operation; 1.5:1 for full spec. compliance; any value operation without damage | | | |
| Phase Noise | 10 dB below IESS-308/309 phase noise profile | | | |
| AM/PM Conversion | 2.5O/dB max. for a single-carrier at 53.3 dBm output power (at 57.32 dBm with optional linearizer) | | | |
| Harmonic Output | -60 dBc at rated power, second and third harmonics | | | |
| Noise Density | <-70 dBW/4 kHz passband | | | |
| Intermodulation - with respect to each of 2 equal carriers 5 MHz apart | -25 dBc 270 watts output power; (-25 dBc at 540 watts output power with optional linearizer) | | | |
| Group Delay | 0.01 ns/MHz linear max; 0.001 ns/MHz2 parabolic max; 0.5 ns pk-pk ripple max. | | | |
| Primary Power | Voltage: Single phase, 208 - 240 VAC ±10%; Frequency: 47-63 Hz | | | |
| Power Consumption | 2.2 kVA typ. at 540 W output power; 1.35 kVA typ. at 100 W output power; 1.18 kVA typ. at 10 W output power | | | |
| Power Factor | 0.95 min; 0.99 typ. | | | |
| Inrush Current | 200% max. | | | |
| Ambient Temperature | -40ºC to +55ºC in direct sunlight; -40ºC to +60ºC out of direct sunlight; -54ºC to +71ºC non-operating | | | |
| Relative Humidity | 100% condensing | | | |
| Altitude | 10,000 ft. with standard adiabatic derating of 2ºC/1000 ft. operating; 50,000 ft. non-operating | | | |
| Shock and Vibration | 20 g peak, 11 ms (1/2 sine pulse); 2.1 g rms, 5 to 500 MHz non-operating | | | |
| Cooling | Forced air with integral blower | | | |
| Connections | RF Input: Type N Female; RF output: WR-75G waveguide flange; RF output monitor: Type N Female | | | |
| M&C Interface | RJ45 Ethernet, includes embedded GUI control; RS422/485, RS232 serial interface optional | | | |
| Dimensions, W x H x D | 12.75 x 11.5 x 22.25 inches (324 x 293 x 562 mm) | | | |
| Weight | 80 lbs (36 kg) typ. | | | |
| Heat Dissipation | 1600 watts typ. at 500 W output power | | | |
| Acoustic noise | 70 dBA (as measured at 3 ft.) nom. | | | |

Communications & Power Industries

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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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