CPI 1.25 kW SuperLinear®
Liquid Cooled 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® TWTA 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.

OPTIONS:
- 1 RU remote control panel
- Serial interface
- Redundant and hybrid power combined systems
- Integrated 1:1 switch control and drive
- Integral linearizer
- Integral block upconverter (BUC)
- 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%


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.

www.cpii.com/satcom
## Specification

| CPI Model TL12UO-L1 Liquid Cooled 1.25 kW TWTA |
|---|---|---|
| **Output Frequency** | 13.75 to 14.50 GHz | 12.75 to 14.50 GHz | 13.75 to 14.80 GHz |
| **Output Power** | TWT Peak Power | 1250 W (60.97 dBm) min. | 1100 W (60.41 dBm) min. | 540 W (57.32 dBm) min. at the flange | 600 W (57.80 dBm) max. at the flange |
| **Flange Peak Power** | Guaranteed CW Power | | | |
| **Maximum CW Power** | | | |

### Note on Output Power
This amplifier guarantees 540 W of CW power at the flange. 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** | ±0.25 dB/24 hour max., max. at constant drive and temperature, after 30 minute warm-up |
|**Small Signal Gain Slope** | ±0.02 dB/MHz max. |
|**Small Signal Gain Variation** | 1.0 dB pk-pk max. across any 80 MHz, 3.0 dB pk-pk max. across 750 MHz, (4.0 dB pk-pk with optional linearizer) |

### Gain Stability
- **Over temp., constant drive**
  - ±1.0 dB typ. over operating temperature range

### Small Signal Gain Slope
- 1.0 dB pk-pk max. at the flange
- 600 W (57.80 dBm) max. at the flange

### 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
- 2.5%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
- 1.95 kVA typ. at 540 W output power; 1.1 kVA typ. at 100 W output power; 0.9 kVA typ. at 10 W output power

### Power Factor
- 0.95 min; 0.99 typ.

### Inrush Current
- 200% max.

### Ambient Temperature
- -40°C to +55°C in direct sunlight; -40°C to +60°C out of 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
- 20 g peak, 11 ms (1/2 sine pulse); 2.1 g rms, 5 to 500 MHz non-operating

### Cooling
- Liquid cooled: 1 gallon per minute of water, 60°C max. at inlet

### 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 10.06 x 22.25 inches (324 x 255 x 562 mm)

### Weight
- 72 lbs (32.7 kg) typ.

### Heat Dissipation
- 1350 watts typ. at 500 W output power

### Acoustic noise
- No cooling fan required

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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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