

SuperLinear® HPA Built for Satellite Communications Uplink Applications

Provides up to 552 watts of linear power in a rugged and compact weatherproof package, digital ready, for satellite uplinks from 17.3 to 18.4 GHz.

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. Serial 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.



CPI 1.25 kW DBS-band SuperLinear outdoor TWTA, liquid-cooled, model TL12DO-L1

OPTIONS:

- Remote control panel
- Redundant and hybrid power combined systems
- Integral 1:1 or 1:2 switch control and drive
- Integral linearizer
- Integral block upconverter (BUC) - contact CPI for specifications
- TWT LifeExtender/LifePredictor substantially extends TWT life
- Serial interface (Ethernet standard)
- Air cooling (please see CPI data sheet MKT-354)

Quality Management System - ISO 9001:2015



Worldwide Support

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

Specifications		CPI Model TL12DO-L1 1250 W DBS-Band Liquid-Cooled Amplifier
ELECTRICAL SPECIFICATIONS		
Frequency	17.3 to 18.4 GHz	
Output Power (min.)	1250 watts (60.97 dBm) min.	
TWT Peak Power	1100 watts (60.42 dBm) min.	
Flange Peak Power	552 watts (57.42 dBm) min.	
Guaranteed min. CW power	600 watts (57.78 dBm) max.	
Maximum CW power		
Bandwidth	1100 MHz	
Gain	70 dB min.	
Gain Stability	±0.25 dB/24 hours max. (after 30 minute warmup); ±0.75 dB over any 10°C	
RF Level Adjust Range	30 dB typ. in 0.1 dB steps	
Small Signal Gain Slope	±0.04 dB/MHz max.	
Small Signal Gain Variation	1.0 dB pk-pk max. across any 80 MHz segment; 3.0 dB pk-pk max. across 1100 MHz (4.0 dB pk-pk across 1100 MHz with linearizer option)	
Input VSWR	1.3:1 max.	
Output VSWR	1.3:1 max.	
Load VSWR	2.0:1 max. continuous operation; 1.5:1 full spec compliance; any value for operation without damage	
Phase Noise	12 dB below IESS-308/309 mask; -47 dBc AC Fundamental; -50 dBc Sum of Spurs (130 Hz to 1 MHz)	
AM/PM Conversion	2.5°/dB for a single carrier at 7 dB backoff from rated peak power (at 3 dB backoff with optional linearizer)	
Harmonic Output	-60 dBc at rated power, second and third harmonics	
Spurious Output	-60 dBc max.	
Noise Density (at max. gain)	<-150 dBW/4 kHz, 10.00 - 12.75 GHz; <-70 dBW/4 kHz, transmit band with linearizer; <-105 dBW/4 kHz, 18.9 to 20.0 GHz	
Group Delay	0.02 ns/MHz linear max, 0.002 ns/MHz ² parabolic max, 1.5 ns pk-pk ripple max. in any 80 MHz band	
Prime Power	208 to 240 VAC single phase, ±10%; 47-63 Hz	
Power Consumption	3.1 kVA max; 2.8 kVA typ.	
Power Factor	0.95 min.	
LINEAR PERFORMANCE		
Intermodulation with linearizer	-25 dBc with respect to each of two carriers at 440 W (56.43 dBm) output power, from 17.3 to 18.4 GHz; -26 dBc with respect to the sum of both carriers at 550 W (57.40 dBm) output power, from 17.3 to 18.4 GHz	
Noise Power Ratio	-19 dBc @440 watts output power (56.43 dBm), with linearizer option.	
Spectral Regrowth	30 dBc at 1x symbol rate with linearizer, at 3 dB backoff from rated flange peak power	
MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS		
Ambient Temperature	-40°C to +60°C operating out of direct sunlight, -40°C to +55°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	20 g _{peak} , 11 ms 1/2 sine; 2.1 grms, 5 to 500 Hz (non-operational)	
Heat Dissipation	2000 W typ.	
Cooling	Liquid cooled: 1 gallon per minute of water, 60°C max. at inlet	
M&C Port	Ethernet Interface (RS-422/485 Serial optional)	
RF Input/Output Connections	Input: Type SMA female; Output: WR-62 waveguide flange, grooved, threaded with UNC 2B 6-32	
RF Output Monitor	Type SMA female	
Dimensions	12.75 x 10.06 x 22.25 in. (324 x 255 x 566 mm)	
Weight	72 lbs (32.7 kg) with no options	



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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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