

1.25 kW Extended Band SuperLinear® TWT Amplifiers

Compact

Provides 1250 watts of peak power (540 watts operating) in a compact nine rack-unit package, digital ready, for wideband, single- and multi-carrier satellite service in the 12.75 to 14.50 GHz, 12.75 to 14.80 GHz or 13.75 to 14.80 GHz bands (Refer to document MKT-232 for standard 13.75 to 14.50 GHz TWTA). Designed for linear output up to 500 watts at the flange, with respect to each of two equal carriers, for multi-carrier uplinks. Ideal for transportable and fixed earth station applications where space and prime power are at a premium. 30% smaller than traditional HPAs and 50% more efficient than GaN SSPAs.

Efficient and Reliable

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

Simple to Operate

User-friendly microprocessor-controlled logic with integrated computer interface, digital metering, pin diode attenuation, optional integrated linearizer for improved intermodulation performance, and BUC option for use with L-band modems.

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 2004/108/EC and Harmonic Standard EN-61000-3-2 to satisfy worldwide requirements. CE certified.

Worldwide Support

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



Model TL12UI

1250 watt extended Ku-band SuperLinear® TWTAs for satellite uplink applications

OPTIONS

- Remote control panel
- Redundant and power combined sub-systems
- Integrated 1:1 switch control and drive
- L-band block upconverter (BUC) or dual-band BUC - contact CPI for specifications
- Integral linearizer
- External receive band reject filter
- Ethernet interface
- Extended frequency ranges
- TWT LifeExtender™/LifePredictor™
- Refer to MKT-232 for standard band product data sheet



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1.25 kW Extended Ku-Band SuperLinear® TWT Amplifiers

Specification	Model TL12UI		
Output Frequency	12.75 to 14.80 GHz	12.75 to 14.50 GHz	13.75 to 14.80 GHz
Output Power (min.) TWT Peak Power Flange Peak Power Guaranteed CW Power at Flange Maximum CW Power at Flange	1250 W (60.97 dBm) min. 1000 W (60.00 dBm) min. 540 W (57.33 dBm) min. 600 W (57.78 dBm) max.		
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 Over temp, constant drive	±0.25 dB/24 hour max,max. at constant drive and temperature, after 30 minute warmup ±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. over any 80 MHz (1.5 dB pk-pk max. with linearizer); 4.5 dB pk-pk max. across 2050 MHz (6.5 dB pk-pk max. with linearizer)	1.0 dB pk-pk max. over any 80 MHz (1.5 dB pk-pk max. with linearizer); 4.0 dB pk-pk max. across 1750 MHz (6.0 dB pk-pk max. with linearizer)	1.0 dB pk-pk max. over any 80 MHz (1.5 dB pk-pk max. with linearizer); 3.5 dB pk-pk max. across 1050 MHz (5.0 dB pk-pk max. with linearizer)
Input/Output VSWR	1.3:1 max.		
Load VSWR	1.5:1 for full spec. compliance; any value without damage; 2.0:1 continuous operation		
Phase Noise	12 dB below IESS-308/309 phase noise profile; -50 dBc AC fundamentals related; -47 dBc sum of spurs; Prime power AC line unbalance not to exceed 3%. Excess imbalance may cause an increase in residual RF noise (AM, FM and PM). Phase noise increase is typically 2.5 dB/% imbalance.		
AM/PM Conversion	6.0°/dB max for single carrier at 57 dBm output power with linearizer (at 54.5 dBm without linearizer)		
Harmonic Outputs	-60 dBc max.		
Noise Density	<-150 dBW/4 kHz from 10.0 to 12.7 GHz; <-70 dBW/4 kHz, transmit band <-105 dBW/4 kHz, 18 to 26 GHz; <-125 dBW/4 kHz, 26 to 40 GHz	<-150 dBW/4 kHz from 10.0 to 11.7 GHz; <-70 dBW/4 kHz, transmit band <-105 dBW/4 kHz, 18 to 26 GHz; <-125 dBW/4 kHz, 26 to 40 GHz	<-150 dBW/4 kHz from 10.0 to 12.7 GHz; <-70 dBW/4 kHz, transmit band <-105 dBW/4 kHz, 18 to 26 GHz; <-125 dBW/4 kHz, 26 to 40 GHz
Intermodulation - with respect to each of 2 equal carriers 5 MHz apart	-23 dBc max. with linearizer at 500 W total output power; -22 dBc without linearizer at 200 W total output power		
Group Delay	0.01 ns/MHz linear max; 0.001 ns/MHz ² parabolic max; 0.5 ns pk-pk ripple max.		
Primary Power	Voltage: Three phase with neutral and ground, 208 VAC ±10% with or without neutral OR 380 to 415 VAC; Frequency: 47-63 Hz ±10% five wire; AC current harmonic content: less than 20%, primarily fifth and seventh harmonics. Harmonics must be considered when choosing UPS sources.		
Power Consumption	2.3 kVA typ. at 540 W output power		
Power Factor	0.95 min; 0.99 typ.		
Ambient Temperature	-10°C to +50°C operating; -54°C to +71°C non-operating		
Relative Humidity	95% non-condensing		
Altitude	10,000 ft. with standard adiabatic derating of 2°C/1000 ft. operating; 50,000 ft. non-operating		
Shock and Vibration	Designed 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 condition		
Cooling	Forced air with integral blower. Maximum external pressure loss allowable: 0.25 inch water gauge.		
Connections	RF Input: Type N Female; RF output: WR75 waveguide flange, grooved, threaded, UNF 2B 10-32; RF output monitor: Type N Female		
M&C Interface	RS-232 and RS-422/485 (4-wire) (Ethernet optional)		
Weight and Dimensions	155 lbs (70.5 kg) max. / 19 W x 15.75 H x 24 D inches (483 W x 400 H x 610 D mm)		