

## 250 W Outdoor TWT Power Amplifier for Satellite Communications

**Ka-Band**

### The T02KO Series

250 watt peak  
power TWT  
Amplifier—  
Environmentally  
sealed compact  
design for outdoor  
operation



### Plays in the Rain

Rugged, compact and lightweight amplifier designed for outdoor use.

### Efficient and Cost Effective

Mounting at the antenna improves performance through minimized cable losses and saves cost in system design. Employs a high efficiency helix traveling wave tube, reducing operating costs.

### Simple to Operate

User-friendly microprocessor-controlled logic with integrated RS422/485 computer interface. Digital metering is standard.

### Easy to Maintain

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

### Global Applications

Meets International Safety Standard EN-60215, Electromagnetic Compatibility 2004/108/EC and Harmonic Standard EN-61000-3-2 to satisfy worldwide requirements.

### Worldwide Support

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

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**250 W Outdoor TWT Power Amplifier**

## SPECIFICATIONS T02KO Series

### Electrical

Frequency	User-specified frequency range within the 27.5 to 31.0 GHz band, as limited by bandwidth capability of amplifier <sup>1</sup>
Output Power	250 W (53.98 dBm) peak
Average Power (TWT)	120 W (50.8 dBm) or 175 W (52.4 dBm)
CW Power (Flange)	100 W (50.0 dBm) or 145 W (51.6 dBm)
Bandwidth	1000 - 2500 MHz, depending on desired frequency range <sup>1</sup>
Gain	
at rated power	70 dB min.
at small signal	75 dB min. (see options for removal of SSIPA or for low noise option)
RF Level Adjust Range	0 to 25 dB
Attenuator Step Size	0.1 dB
Small Signal Gain Slope	±0.02 dB/MHz max.
Small Signal Gain Variation	1.0 dB pk-pk max. across any 40 MHz segment; 2.5 dB pk-pk max. across passband
Gain Stability (at constant drive and temperature)	± 0.25 dB/24 hours max. (after 30 minute warm-up) ±1.0 dB over temperature range
VSWR	
Input	1.3:1
Output	1.3:1
Load	1.5:1 max. full spec. compliance; 2.0:1 max. continuous; any value for operation without damage
Phase Noise	12 dB below IESS 308 continuous mask
AM/PM Conversion	2.5° /dB max. for a single carrier up to 6 dB OBO(1.0°/dB max. up to 3 dB OBO with optional linearizer)
Noise Power Density	<-150 dBW/4 kHz, below 21.2 GHz <-70 dBW/4 kHz, transmit band (see options for low noise, and note 2 for other options)
Noise Figure	10 dB max. (12 dB max. with linearizer)
Intermodulation	-23 dBc or better with 2 equal carriers at total power level 50 W or 72.5 W CW (100 W or 140 W with linearizer)
Group Delay	In any 40 MHz band
Linear	0.01 nsec/MHz max.
Parabolic	0.001 nsec/MHz sq. max.
Ripple	0.5 nsec pk-pk max.
Primary Power	100-240 VAC ±10%, single phase, 47-63 Hz
Power Consumption	800 VA max., 650 VA typ.
Power Factor	0.95 min.

### Environmental (operating)

Ambient Temperature	-40° to +60° C, with extra margin for solar loading
Relative Humidity	100% condensing
Altitude	10,000 ft with standard adiabatic derating of 2° C/1000 ft
Shock and Vibration	20 g pk, 11 msec, 1/2 sine / 2.1 g <sub>rms</sub> , 5 to 500 Hz

### Mechanical

Cooling	Forced air with integral blower
RF Input Connection	WR-28F
RF Output Connection	WR-34G (WR-28G optional)
RF Output Monitor	2.9 mm SMA Female
Dimensions (WxHxD)	10.25 x 9.5 x 20 inches (261 x 242 x 508 mm)
Weight	52 lbs. (23.6 kg) max.

### Heat and Acoustic

Heat Dissipation	500 W max.
Acoustic	65 dBA typ. (as measured at 3 feet from unit)

### OPTIONS:

- 1 RU Remote Control Panel
- Internal Switch Control and Drive
- Redundant or Power Combined Subsystems
- Integral Linearized Solid State IPA (LIPA)
- Integral Block Upconverter (see MKT-218 for specifications)
- Ethernet Interface
- Low Noise (Reduces Gain by 10 dB; Reduces NPD to -87 dBW/4 kHz)
- Remove SSIPA (Lowers Gain by 25 dB)

**Note 1. Please consult CPI representative to confirm that desired bandwidth is available over desired frequency range.**

**Note 2. Add 5 dBW/4 kHz for inclusion of BUC or linearizer. Add 5 dBW/4 kHz total for inclusion of both BUC and linearizer.**

**Mounting hardware is provided with each amplifier.**



For more detailed information, please refer to the corresponding CPI Technical Description.

Note: 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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