

# 250W CW Outdoor TWT Power Amplifier for Satellite Communications

**Ka-Band**

## The T03KO Series

250 watt CW  
Ka-band TWT  
Power Amplifiers—  
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 89/336/EEC 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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**Ka-Band**

**250W CW TWT Outdoor Power Amplifier**

## SPECIFICATIONS, Ka-band Outdoor LPA

### SPECIFICATIONS, T03KO Series

#### Electrical

Frequency	User-specified frequency range within the 27.5 to 31.0 GHz band, as limited by bandwidth specification ( <i>see note 1</i> )
Output Power	
TWT	250 W (54.0 dBm) min.
Flange	215 W (53.3 dBm) min.
Bandwidth	Up to 1000 or 2500 MHz, depending on desired frequency range ( <i>see note 1</i> )
Gain	70 dB min. at rated power output; 75 dB typ. at small signal (70 dB min. with optional linearizer)
Gain Stability	±0.25 dB/24hr max. (at constant drive and temp.), ±1.0 dB over temperature range
Small Signal Gain Slope	±0.025 dB/MHz max.
Small Signal Gain Variation	1.0 dB pk-pk across any 40 MHz segment; 2.5 dB pk-pk across 1000 MHz
RF Level Adjust Range	0 to 25 dB min.
Attenuator Step Size	0.1 dB
Input and Output VSWR	1.3:1 max.
Load VSWR	1.5:1 max. continuous operation; any value for operation without damage; 2.0:1 max continuous
Phase Noise	12 dB below IESS 308 continuous mask
Spurious Output	-60 dBc max.
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 linearizer option)
Residual AM	-50 dBc below 10 kHz -20 [1.5 + log F[kHz]] dBc, 10 kHz to 500 kHz -85 dBc, above 500 kHz
Harmonic Output	-12 dBc max. at rated power (-60 dBc with harmonic filter option)
Noise Density	<-150 dBW/4 kHz, below 21.2 GHz, <-115 dBW/12.5 MHz, below 21.2 GHz <-70 dBW/4 kHz max, transmit band (<-80 dBW/4 kHz typ. in transmit band) <-65 dBW/4 kHz max, transmit band with linearizer option
Noise Power Ratio	-12 dB at 7 dB OBO -18 dB at 4 dB OBO (with linearizer option)

#### Electrical (continued)

Group Delay (over any 40 MHz)	
Linear	0.01 nsec/MHz max.
Parabolic	0.001 nsec/MHz <sup>2</sup> max.
Ripple	0.5 nsec pk-pk typ, 1.5 nsec pk-pk max.
Intermodulation	-24 dBc max. or better with two equal carriers at total output flange power of 7 dB below rated single carrier output (at 4 dB below with optional linearizer)
Primary Power	100-240 VAC ± 10% single phase, 47-63 Hz
Power Consumption	780 VA typ.
Power Factor	0.95 min.

#### Environmental (Operating)

Ambient Temperature	-40°C to +50°C operating, in direct sunlight; -40°C to +55°C operating, out of direct sunlight; -54°C to +75°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	20 g pk, 11 ms, 1/2 sine
Vibration	2.1 grms, 5 to 500 Hz
Acoustic Noise	65 dBA typ. @ 3 ft. from amplifier
Heat Dissipation	825 W max.

#### Mechanical

Cooling	Forced air with integral blower
RF Input Connection	WR-28F (WR-34F optional)
RF Output Connection	WR-34G (WR-28G optional)
Remote Interface	RS422/485 and RS232 serial (Ethernet interface optional)
RF Output Monitor	2.9 mm SMA Female
Dimensions (W x H x D)	10.25 x 9.5 x 20.0 in. (261 x 242 x 508 mm) not including handle or connectors
Weight	55 lbs (25 kg) with no options

#### OPTIONS :

- 1 RU Remote Control Panel
- Internal Switch Control and Drive
- Redundant and Power Combined Subsystems
- Integral Linearized SSIPA
- Block Up Converter (BUC) - Refer to T03KO B-Series
- Ethernet Interface

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

**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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