

175 W Outdoor TWT Power Amplifier for Satellite Communications

Ka-Band

The T01KO Series

175 Watt 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 (Ethernet optional). 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/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

175 W Outdoor TWT Power Amplifier

SPECIFICATIONS

175 W Ka-band Outdoor LPA

SPECIFICATIONS, T01KO Series

Electrical

Frequency	27.5 – 30.0 GHz or 30.0 – 31.0 GHz
Output Power	
TWT	175 W (52.4 dBm) min.
Flange	145 W (51.6 dBm) min.
Bandwidth	1000 or 2500 MHz, depending on selected frequency range
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
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	-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	-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 ² 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	800 VA max.
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
Weight	55 lbs (25 kg) with no options

OPTIONS:

- 1 RU Remote Control Panel
- Integral 1:1 Switch Control and Drive
- Redundant and Power Combined Subsystems
- Integral Linearized Solid State IPA
- Block Upconverter (refer to T01KO B-Series TWTA)
- Internal Filter (21.2 to 25 GHz)
- Other Frequency Ranges Within the Ka-band

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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