

500 W Outdoor TWT Power Amplifier for Satellite Communications

Ka-Band

The T05KO Series

500 watt CW power
TWT Amplifier—
Environmentally sealed
compact design for
outdoor operation



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. Both single and multi-band BUCs are available. The multi-band BUC allows users to switch among two to four pre-selected frequency ranges up to 1 GHz bandwidth each.

Simple to Operate

User-friendly microprocessor-controlled logic with integrated Ethernet interface. Digital metering and TWT input drive monitoring are standard.

Rugged and Easy to Maintain

Built-in fault diagnostic via remote monitor and control. Easy access enclosure for improved serviceability. CAN-Bus architecture improves reliability and noise immunity.

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 twenty regional factory service centers.



Communications & Power Industries
satcom products

811 Hansen Way
P.O. Box 51625, Palo Alto, CA 94303

tel: +1 (650) 846-3803

fax: +1 (650) 424-1744

e-mail: satcommarketing@cpil.com
www.cpil.com/satcom

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SPECIFICATIONS, T05KO Series

Electrical

OPTIONS:

Frequency	27.5 – 30.0 GHz or 30.0 – 31.0 GHz (optional frequency ranges available within the 27.0 - 31.0 GHz frequency band; multi-band BUC option allows up to four different frequency ranges, each up to 1 GHz, contact CPI for specs)
Output Power	
TWT	500 W (57.00 dBm) min.
Flange	425 W (56.28 dBm) min. (415 W with optional harmonic filter)
Bandwidth	1000 or 2500 MHz, depending on selected frequency range
Gain	70 dB min. at rated power output; 70 dB typ. at small signal
Gain Stability	±0.25 dB/24hr max. (at constant drive and temp.), ±1.0 dB over temperature range
Small Signal Gain Slope	±0.04 dB/MHz max.
Small Signal Gain Variation	1.2 dB pk-pk max. across any 500 MHz segment; 2.5 dB pk-pk max. across any 1 GHz segment
RF Level Adjust Range	0 to 30 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	15 dB below IESS 308 continuous mask -47 dBc AC fundamental -50 dBc Sum of All Spurs
Spurious	-60 dBc max.
AM/PM Conversion	2.5°/dB max. for a single carrier up to 7 dB OBO (2.0°/dB max. up to 4 dB OBO with linearizer option)
Harmonic Output	-12 dBc max. at rated power (-60 dBc with harmonic filter option)
Noise Power 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)
Noise Power Ratio	-19 dB at 4 dB OBO (with linearizer option)

- *1 RU Remote Control Panel*
- *Internal Switch Control and Drive*
- *Redundant or Power Combined Subsystems*
- *Integral Linearizer*
- *Integral L-Band Block Upconverter (BUC)**
- *Multi-band L-Band Block Upconverter (BUC) - Contact CPI for specifications**
- *RS-422/485 serial interface*
- *MIL-STD 461 EMI External Filter*
- *Peak Power Option*
- *Harmonic Filter*
- *Receive Band Reject Filter*

* This data sheet does not provide amplifier specifications for when the BUC and/or the Harmonic Filter options are included. Consult CPI for details.

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 max.
Intermodulation	-25 dBc max. or better with respect to each carrier at total output power of 49.2 dBm (at 52.2 dBm with optional linearizer)
Primary Power	100-240 VAC ± 10% single phase, 47-63 Hz
Power Consumption	1400 VA max. 1200 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 g _{rms} , 5 to 500 Hz
Acoustic Noise	65 dBA typ. @ 3 ft. from amplifier
Heat Dissipation	950 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	Ethernet (RS422/485 optional)
RF Output Monitor	2.9 mm SMA Female
Dimensions (W x H x D)	10.25 x 10.5 x 22.25 in. (261 x 267 x 566 mm)
Weight	65 lbs (29.5 kg) with no options

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.

