

dB-4507 TWT Amplifier



1kW CW
7.5 – 18 GHz



The dB-4507 power-combined TWT Amplifier (TWTA) uses four wideband, periodic permanent magnet (PPM)-focused, conduction-cooled TWTs to amplify CW, AM, FM or pulse-modulated signals. Compared to a single TWT approach, the dB-4507 provides higher saturated output power and improved harmonic performance. dB Control minimizes losses from power combining by carefully matching the TWTs and other RF components for amplitude and phase over the entire frequency range.

The dB-4507 provides superior reliability, as all high-voltage power supplies are designed and manufactured in-house. In addition, dB Control utilizes the proprietary transformer fabrication, encapsulation and high-voltage component potting techniques it has developed specifically for demanding military applications.

The power supply section of the dB-4507 employs a modular architecture and low-noise power supply topology using high-efficiency solid state power-conversion circuits. An embedded microcontroller provides the interface, control and protection functions, as well as extensive fault diagnostics and status indication.

With only one RF input and one RF output (similar to single TWT configurations), the dB-4507 is extremely easy to operate; no RF switches are required.

Features

- 7.5 to 18 GHz, 1 kW CW
- Very low phase noise and spurious
- Excellent amplitude and phase stability
- High efficiency
- Qualified for military airborne applications

Applications

- Test and measurement
- RFI/EMI/EMC testing
- Antenna pattern and radar cross-section measurements
- Electronic countermeasures (ECM)
- Electronic warfare (EW) simulation

dB-4507 TWT Amplifier Specifications

Reliability by Design®

Electrical

Frequency Range	7.5 GHz to 18 GHz, instantaneous bandwidth
Power Output	1000W CW min.
RF Input for Rated Output Power	0 dBm (1 milliwatt)
Gain at Rated Power	60 dB min.
RF Gain Adjustment Range	30 dB continuous min.
Harmonics	-20 dBc max.
Spurious	-50 dBc
Input/Output VSWR	2.0:1 max.
Load VSWR	1.5:1 max. for full specification compliance 2.5:1 max. no damage
Prime Power	208 VAC, 3-Phase, 50/60 Hz
Power Consumption	8 kVA max.
Amplifier Protection	TWT Over-Temperature, Helix Over-Current, Arc Protection, Cathode Over-Voltage, High Reflected RF Power (VSWR), Power Supply Over-Temperature
Front Panel Digital Display	Forward and Reflected Power, Equipment Status, Faults
RF Sample	-60 dBc
Instrument Control	Local or remote
Front Panel Controls	Power On, Operate/Standby, Local/Remote
Optional Protocols	RS232, RS422, RS485, Ethernet or custom protocols

Mechanical

Connectors:	
RF Input	Type N (F)
RF Output	WRD-750 Flange
RF Sample	SMA
Remote Control	Typical: RS232, Ethernet
Input Power	MS Type (Mating Connector Supplied)
Connector Interlock	DB-9 (F)
Size	26" (W) x 64" (H) x 34" (D) max.
Weight	550 lbs max.
Cooling	Built-In forced air

Environmental

Operating Temperature	-10° C to +50° C, ambient
Operating Altitude	Up to 10,000 feet above mean sea level
Humidity	Up to 95% RH non-condensing

Options

- Lifting hooks, Castors

Specifications subject to change without notice.

About dB Control

Established in 1990, dB Control Corp., a subsidiary of the Electronic Technologies Group (ETG) of HEICO Corp., supplies mission-critical, often sole-source, products worldwide to military organizations, as well as to major defense contractors and commercial manufacturers. dB Control designs and manufactures reliable high-power TWT Amplifiers (TWTAs), microwave power modules (MPMs), transmitters and power supplies with modulators for radar, electronic countermeasures (ECM) and data link applications. The company's high-power amplifiers use solid state, as well as vacuum electron devices and cover the 1 to 50 GHz frequency range. The modularity of dB Control's designs enables rapid configuration of custom products for a variety of platforms, including ground-based and high-altitude military manned and unmanned aircraft. dB Control has an outstanding record of successfully repairing, refurbishing and replacing tightly packaged high-voltage transformers, assemblies and power supplies. The company offers specialized contract manufacturing, transformer winding and testing, full vacuum encapsulation, pressure cure, conformal coating and repair depot services from its modern 52,100-square-foot facilities in Fremont, California. www.dBControl.com

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