

Color TouchscreenTunes Ka-Band TWTA

This rack-mountable, 700-W pulsed power amplifier includes a modern touchscreen interface for local control of signals from 34.5 to 35.5 GHz.

Traveling-wave-tube amplifiers (TWTAs) are physically large, but still unmatched in terms of high output power at microwave frequencies. While acknowledged as a mature active-device technology, the model dB-3860-01 Ka-band TWTA from dB Control (www.dBControl.com) adds a bit of “modernization” with microprocessor-based control circuitry and a front-panel color-touchscreen interface to simplify operator control. The rugged high-power amplifier provides minimum pulsed output power of 700 W from 34.5 to 35.5 GHz with at least 60-dB gain across the 1-GHz output bandwidth.

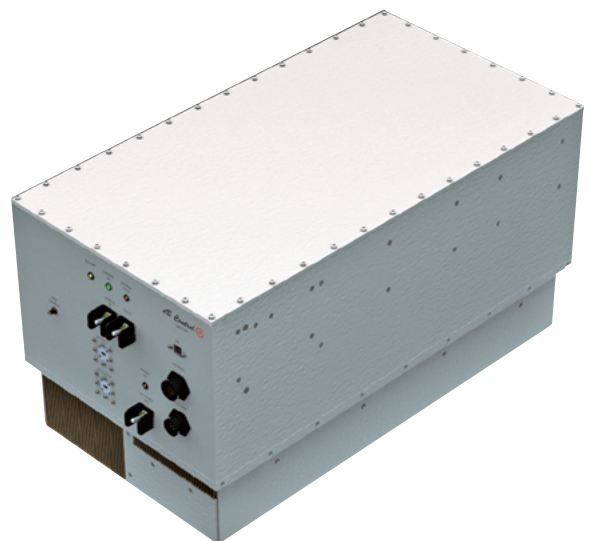
The model dB-3860-01 Ka-band TWTA (*Fig. 1*) is well-equipped to handle applications in radar, electronic-warfare (EW) simulators, and test-and-measurement systems. Based on a wideband periodic-permanent-magnet (PPM)-focused, conduction-cooled TWT, it is designed to amplify pulsed signals at pulse widths from 0.2 to 20.0 μ s and duty cycles to 10% at maximum pulse repetition frequencies (PRFs) to 25 kHz. It features excellent spectral purity, with harmonic performance of -30 dBc or better and spurious levels of -50 dBc or better.

The color-touchscreen interface works with an embedded microprocessor to provide straightforward local control of the Ka-band TWTA as well as coordinate protection functions and provide status reports and indication. TWTA protection includes overtemperature, helix overcurrent, and cathode overvoltage protection.

When remote control is preferred, as in an automatic-test-equipment (ATE) application, the model dB-3860-01 TWTA



1. Model dB-3860-01 is a pulsed Ka-band TWTA with color-touchscreen local-control interface.



2. Model dB-3709i is an outdoor hub-mount pulsed TWTA capable of delivering 700-W output power from 34.5 to 35.5 GHz.

is equipped with an RS-485 interface. However, other digital-control interfaces, such as Ethernet, RS-232, and RS-422 interfaces, as well as custom interfaces, are available.

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The rugged TWTA comes in a standard 19-in. rack-mount configuration with integral forced-air cooling system. It is equipped with WR-28 waveguide input and output connectors and a female Type K coaxial output connector for sampling and measurement purposes. The amplifier is built to withstand unfavorable impedance-match conditions, rated for a maximum input VSWR of 2.0:1 across the operating frequency range. The amplifier is geared to meet its rated performance specifications in terms of power and gain for a maximum load VSWR of 1.30:1, and can withstand load mismatches as high as 2.0:1 without damage.

The pulsed Ka-band power amplifier is designed for use with three-phase, 115/200-V ac prime power. It weighs 100 lb. and measures 24.5 × 19.0 × 7.0 in. The amplifier is built for

operating temperatures from –20°C to +55°C and can operate at altitudes to 10,000 ft.

For those who prefer this level of pulsed amplification in a hub-mount, outdoor package, the firm also offers its model dB-3709i Ka-band TWTA with 700-W minimum peak output power from 34.5 to 35.5 GHz (*Fig. 2*). It's built around a PPM-focused, conduction-cooled TWT and handles similar pulse types and duty cycles while delivering at least 60-dB gain across the 1-GHz bandwidth. For remote control, it also provides a standard RS-485 interface and is available with Ethernet, RS-232, RS-422, and custom control interfaces.

The model dB-3709i, which measures 26 × 14 × 14 in. and weighs 110 lb., features WR-28 input and output waveguide flanges and a type K output sample connector. It is rated for operating temperatures from –30°C to +55°C and operating altitudes to 15,000 ft.

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