



## 20000TP8G12

- 20000 Watts Pulse
- 8–12GHz

### Features

The Model 20000TP8G12 is a self contained, forced air cooled, broadband traveling wave tube (TWT) microwave amplifier system designed for pulse applications at low to moderate duty factors where instantaneous bandwidth and high gain are required. Reliable TWT subsystems provide a conservative 20000 watts minimum RF pulse power at the amplifier output connector. Stated power specifications are at the fundamental frequency.

The amplifier's front panel digital display shows forward and reflected average power output or forward and reflected peak power, plus extensive system status information accessed through a series of menus via soft keys. Status indicators include power on, warm-up, standby, operate, faults, excess average or peak reflected power warning and remote. Standard features include a built-in IEEE-488 (GPIB) interface, 0dBm input, TTL Gating, VSWR protection, gain control, RF output sample ports, auto sleep, plus monitoring of TWT helix current, cathode voltage, collector voltage, heater current, heater voltage, baseplate temperature and cabinet temperature. Modular design of the power supply and RF com-

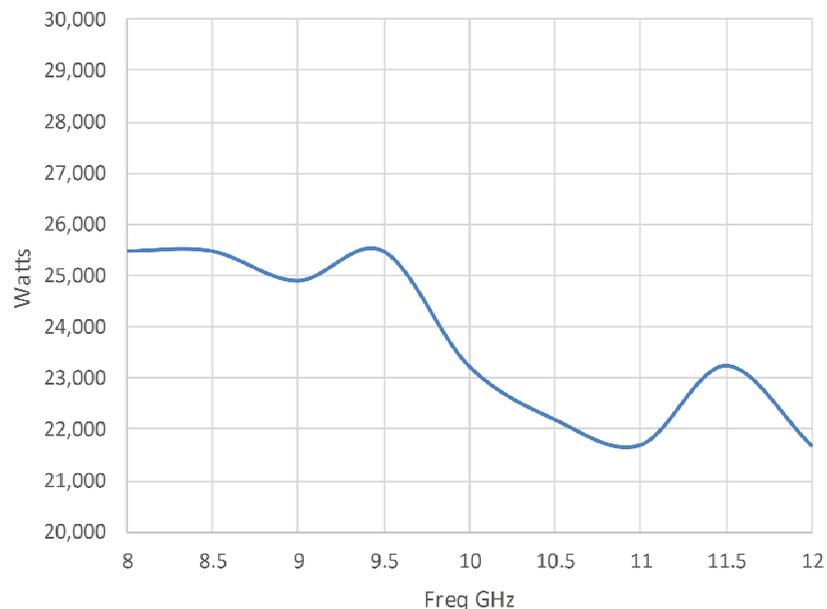
ponents allow for easy access and repair. Use of switching mode power supplies results in significant weight reduction.

The rated power is developed by efficiently power combining the outputs from six 6000 watt (nominal) pulse TWTs that are factory matched in gain and phase, resulting in an excellent combination of wide instantaneous bandwidth with improved harmonic levels. Amplifier includes wheels, leveling feet, and lifting hooks.

The Model 20000TP8G12 provides readily available pulsed RF power for a variety of applications in Test and Measurement, (including EMC RF pulse susceptibility testing), Industrial and University Research and Development, and Service applications. AR also offers a broad range of amplifiers for CW (Continuous Wave) applications.

The export classification for this equipment is 3A999.d. These commodities, technology or software are controlled for export in accordance with the U.S. Export Administration Regulations. Diversion contrary to U.S. law is prohibited.

20000TP8G12 Typical Power Output



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### Specifications

#### POWER (Fundamental), Pulse, @ Output:

Nominal 22,000 watts  
Minimum 20,000 watts

**FLATNESS:**  $\pm 10$  dB maximum,  $\pm 6$  dB at rated power

**FREQUENCY RESPONSE:** 8-12 GHz

**INPUT FOR RATED OUTPUT:** 1.0 milliwatt maximum

**GAIN (at maximum setting):** 73 dB minimum

**GAIN ADJUSTMENT (continuous range):** 35 dB minimum

**INPUT IMPEDANCE:** 50 ohms, VSWR 2.5:1 maximum

**OUTPUT IMPEDANCE:** 50 ohms, VSWR 2.5:1 typical

**MISMATCH TOLERANCE:** Output pulse width foldback protection at peak reflected power exceeding 5000 watts. Will operate without damage or oscillation with any magnitude and phase of source and load impedance. May oscillate with unshielded open due to coupling to input. Should not be tested with connector off.

#### PULSE CAPABILITY:

Pulse Width 0.1–40 microseconds  
Pulse Rate (PRF) 20 kHz maximum  
Duty Cycle 4% maximum.  
RF Rise and Fall 150 ns max (10% to 90%).  
Delay 500 ns maximum from pulse input to RF 90%

#### Pulse Width Distortion

$\pm 50$  ns maximum (50% points of output pulse width compared to 50% points of input pulse width)

#### Pulse Off Isolation

80 dB minimum, 90 dB typical

#### Pulse Input

TTL level, 50 ohm nominal termination

#### NOISE POWER DENSITY:

(pulse on) Minus 65 dBm/Hz (maximum);  
Minus 85 dBm/Hz (typical)  
(pulse off) Minus 140 dBm/Hz (typical)

**HARMONIC DISTORTION:** Minus 19 dBc maximum

**PRIMARY POWER:** 208VAC  $\pm 10\%$ , 3 phase, delta (4-wire), 50/60 Hz, 12 kVA maximum

#### CONNECTORS:

RF input Type N (f) on rear panel  
RF output Type WR-90 (f) on rear panel  
RF output sample ports (forward and reflected)  
Type N (f) on rear panel  
Pulse input Type BNC (f) on rear panel  
GPIB IEEE-488 (f) on rear panel  
Interlock DB-15 (f) on rear panel

**COOLING:** Forced air (self contained fans), air entry and exit in rear.

**SIZE (W x H x D):** 57.5 x 196 x 82.5 cm, 22.6 x 77.2 x 32.5 in

**WEIGHT (approximate):** 575 kg, 1250 lbs

**EXPORT CLASSIFICATION:** 3A999.d