



## 4000TP8G12

- Pulse Amplifier
- M1-M12
- 4000 Watts
- 8GHz-12GHz

### Features

The Model 4000TP8G12 is a self-contained, forced air cooled, broadband traveling wave tube (TWT) microwave amplifier designed for pulse applications at low to moderate duty factors where instantaneous bandwidth and high gain are required. A reliable TWT provides a conservative 4200 watts minimum peak 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 port, auto sleep, plus monitoring of TWT helix current, cathode voltage, collector

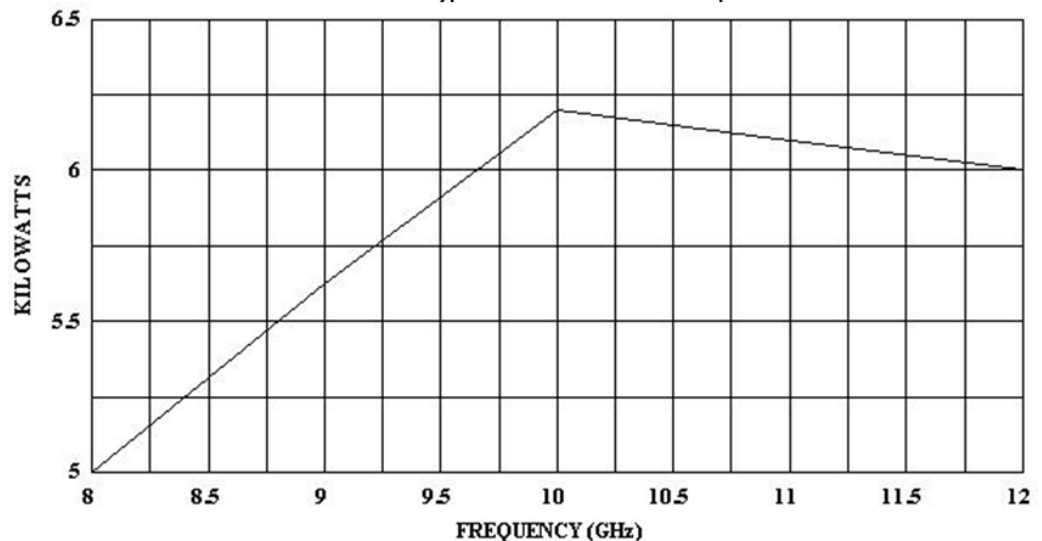
voltage, heater current, heater voltage, baseplate temperature and cabinet temperature. Modular design of the power supply and RF components allow for easy access and repair. Use of switching mode power supplies results in significant weight reduction.

Housed in a stylish contemporary cabinet, the amplifier 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.

See Model Configurations for alternative prime power, packaging, and special features.

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.

4000TP8G12 Typical Peak Pulse Power Output



AR RF/Microwave  
Instrumentation  
160 Schoolhouse Rd  
Souderton, PA 18964  
215-723-8181

For an applications engineer call: 800.933.8181

[www.arworld.us](http://www.arworld.us)



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## Specifications

**POWER (Fundamental), Peak Pulse, @ Output:** Nominal, 5500 watts; Minimum, 4.2 kWatts

**FLATNESS:** ±10 dB maximum

**FREQUENCY RESPONSE:** 8-12 GHz

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

**GAIN (at maximum setting):** 66 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 1000 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. See S2M special option, if applicable.

**NOISE POWER DENSITY:**

(pulse on) Minus 57 dBm/Hz maximum;  
 Minus 59 dBm/Hz typical  
 (pulse off) Minus 140 dBm/Hz (typical)

**HARMONIC DISTORTION:** Minus 10 dBc maximum

**PRIMARY POWER:** See Model Configurations

## Model Configurations

- E** Must select one enclosure type from the following [E1 or E2 or E2S]:
- E1** with removable outer enclosure, size 19.8 x 10.5 x 27 in., 51 x 27 x 69 cm, weight 165 lbs, 7, kg.
- E2** without outer enclosure, for rack mounting, size 19 x 8.72(5U) x 27 in, 51 x 22(5U) x 69 cm. weight of E1 less 30 lbs, 14 kg.
- E2S** without outer enclosure, for rack mounting with slides installed, size 19 x 8.72(5U) x 27 in, 51 x 22(5U) x 69 cm, weight of E2 plus 5 lbs, 2kg.
- E3H** Handles: Front pull handles installed
- P** Must select one primary power from the following [P1 or P2]
- P1** 208 VAC ± 10% three phase 50/60 Hz 3.0 KVA maximum
- P2** 190-260 VAC single phase 50/60 Hz 3.0 KVA maximum
- S** May select a special feature (extra cost) from the following [S1R or S2M]:
- S1R** Reflected power sample port, type N female connector on rear panel. Forward and reflected sample port calibration data supplied on disk in Excel format at 51 points, evenly spaced over specified frequency response.
- S2M** **Special Mismatch Tolerance Operation:** Amplifier will permit up to 2kW reflected power at maximum 8µs pulse width and .8% duty, without VSWR trip or fold-back. Exceeding 2kW reflected power will cause the unit to truncate pulse within 2µs. For pulses beyond 8µs, exceeding 1kW will cause the unit to truncate the pulse. If exceeding .8% duty with reflected power exceeding 1kW, the amplifier will truncate the pulse

**PULSE CAPABILITY:**

Pulse Width 0.07 – 50 microseconds.  
 Pulse Rate (PRF) 100 kHz maximum  
 Duty Cycle 4% maximum.  
 RF Rise and Fall 35 ns max (10% to 90%).  
 Delay 300 ns maximum from pulse input to RF 90%  
 Pulse Width Distortion ±30 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

**CONNECTORS:**

RF input: Type N female, rear panel  
 RF output: Type WR90 waveguide flange, rear panel  
 RF output forward and reflected sample ports: Type N female, rear panel  
 Pulse input: Type BNC female, rear panel  
 GPIB: IEEE-488 female, rear panel  
 Interlock: DB-15 female, rear panel

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

**SIZE and WEIGHT:** See Model Configurations

**EXPORT CLASSIFICATION:** 3A999.d

within 2µs. The amplifier will continue to truncate pulses until reflected power dissipates from outside source. Operation with truncated pulses for >250ms will result in latched "Truncated Pulse Fold Back" displayed on screen and over the remote interface, including an audible alarm. Operation with truncated pulses for 5 to 10 seconds will cause "Over Reverse" fault and a shutdown of high voltage and the amplifier.

Model	Features		
	E	P	S
4000TP8G12	E1	P2	-
M1	E2	P2	-
M2	E2S	P2	-
M3	E1	P1	-
M4	E2	P1	-
M5	E2S, E3H	P1	-
M6	E1	P2	S1R
M7	E2	P2	S1R
M8	E2S, E3H	P2	S1R
M9	E1	P1	S1R
M10	E2	P1	S1R
M11	E2S, E3H	P1	S1R
M12	E1	P1	S2M