The Model 1000TP2G8 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 subsystem provides a conservative 1000 watts minimum peak RF pulse power at the amplifier output connector. Stated power specifications are at 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, 0 dBm 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 a switching mode power supply results in significant weight reduction.

Housed in a stylish contemporary cabinet, the Model 1000TP2G8 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 packaging and special features.
Power (Fundamental), Peak Pulse, @ Output Connector

Nominal .......................................................... 1800 watts
Minimum .......................................................... 1000 watts

Flatness .............................................................. ±7 dB maximum, equalized for ±3 dB maximum at rated power

Frequency response .............................................. 2.5 – 7.5 GHz instantaneously

Input for rated output ............................................ 1.0 milliwatt maximum

Gain (at maximum setting) ....................................... 60 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 500 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 ....................................................... 0.07 – 100 microseconds.
Pulse Rate (PRF) .................................................. 100 kHz maximum
Duty Cycle .............................................................. 4% maximum.
RF Rise and Fall ................................................. 30 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

Noise Power Density
(pulse on) ............................................................ Minus 72 dBm/Hz (maximum), minus 74 dBm/Hz (typical)
(pulse off) ........................................................... Minus 140 dBm/Hz (typical)

Harmonic Distortion .............................................. Minus 0 dBc maximum, Minus 1.5 dBc typical

Primary Power .................................................... 190-260 VAC, single phase
................................................................. 50/60 Hz
................................................................. 1.5 KVA maximum

Connectors
RF input ............................................................ Type N female on rear panel
RF output ........................................................... Type N female on rear panel
RF output forward sample port ................................ Type N female on rear panel
Pulse input .......................................................... Type BNC female on rear panel
GPIB ............................................................... IEEE-488 female on rear panel
Interlock ............................................................. DB-15 female on rear panel

Cooling ............................................................... Forced air (self contained fans), air entry and exit in rear.

Weight and Size .................................................. See Model Configurations
MODEL CONFIGURATIONS

E  Must select one enclosure type from the following [E1 or E2 or E2S]:

E1  removable outer enclosure, size 19.8 x 10 x 27 in., 50.3 x 25.4 x 69 cm.

E2  without outer enclosure, size 19 x 8.75 x 27 in, 48.3 x 22.2 x 69 cm.

E2S  without outer enclosure; slides and front handles installed for rack mounting.

S  May select a special feature (extra cost) from the following [(S1R or S1F) and/or S2K] or S3E]

S1R  Reflected sample port on rear panel, type N female connector. Forward and reflected sample port calibration data supplied on disk in Excel format at 51 points, evenly spaced over the specified frequency range.

S1F  Reflected sample port on front panel, type N female connector. Input and forward sample port on front panel. Forward and reflected sample port calibration data supplied on disk in Excel format at 51 points, evenly spaced over the specified frequency range.

S2K  Supplied with two TF type externally mountable harmonic filters and a switch kit that allows user to select an appropriate filter band, high or low, via this TWTA. Insertion loss when used with filters is maximum 1.5 dB. See TF type Filter specification table below. Dimensions listed are for TWTA’s only without kits and filters.

S3E  Extended frequency range from 2.0 to 2.5 GHz and 7.5–8.0 GHz at minimum 500 watts pulse. Harmonics:

2–2.3 GHz, plus 4.5 dBc maximum
2.3–2.5 GHz, plus 1.5 dBc maximum
7.5–8.0 GHz, minus 1 dBc maximum

S2K – TF TYPE FILTER SPECIFICATIONS

<table>
<thead>
<tr>
<th>Microwave Filter Model</th>
<th>For Use with AR TWTA Model</th>
<th>Pass Band (GHz)</th>
<th>Insertion Loss (dB max)</th>
<th>Reject Band (GHz)</th>
<th>Rejection (dB min)</th>
<th>Power (fundamental &amp; harmonic, watts, max)</th>
<th>Input Connector</th>
<th>Output connector</th>
<th>Size L x W x D (cm, in max)</th>
<th>Weight (kg, lbs typical)</th>
<th>Input VSWR in Pass band (typical)</th>
<th>Input VSWR in Reject band (typical)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF type filter 1</td>
<td>1000TP2G8* with N connector, requires two filters</td>
<td>2.5–4.2</td>
<td>0.5</td>
<td>5.0–8.4</td>
<td>25</td>
<td>150 &amp; 100 average, 3000 &amp; 2000 peak</td>
<td>N male (or N female plus supplied adapter or short cable)</td>
<td>N female</td>
<td>15 x 4 x 14, 6.0 x 1.5 x 5.5</td>
<td>3.2, 7</td>
<td>1.3:1</td>
<td>2.5:1</td>
</tr>
<tr>
<td>filter 2</td>
<td>4.2–7.5</td>
<td>0.5</td>
<td>8.4–15</td>
<td>25</td>
<td>150 &amp; 100 average, 3000 &amp; 2000 peak</td>
<td>N female</td>
<td>15 x 2.5 x 14, 6.0 x 1.0 x 5.5</td>
<td>3.2, 7</td>
<td>1.3:1</td>
<td>2.5:1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not for use with feature S3E.