The Model 2000TP2G8B 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 2000 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, 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 a switching mode power supply results in significant weight reduction.

Housed in a stylish contemporary cabinet, the Model 2000TP2G8B 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 external harmonic filters.
SPECIFICATIONS

POWER (fundamental), PEAK PULSE, @ OUTPUT CONNECTOR
Nominal ...............................................................2200 watts
Minimum ...............................................................2000 watts

FLATNESS ..............................................................±13 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) ...........................................63 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.

PULSE CAPABILITY
Pulse Width ............................................................0.07 – 30 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% point 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 70 dBm/Hz (maximum), minus 72 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
                                                   1.2 KVA maximum

CONNECTORS
RF input .................................................................Type N female on rear panel
RF output .................................................................Type N female on rear panel
RF output 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.
MODEL CONFIGURATIONS

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

E1 Removable outer enclosure, size 50.3 x 25.4 x 82 cm (19.8 x 10 x 32 in). Add approximately 14 kg (30 lbs) to weight of E2.

E2 Without outer enclosure, size 48.3 x 22.2 x 69 cm (19 x 8.75 x 27 in). Weight approximately 39 kg (85 lbs).

E2S Enclosure removed for rack mounting; slides and front handles installed, same size as E2. Add approximately 2 kg (5 lbs) to weight of E2.

May select a special feature (extra cost) from the following [S2K]:

S2K Supplied with two TF-type externally-mountable harmonic filters and a switch kit that allows the 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 Specifications table below. Add filter weights, plus add 1 kg (2 lbs) for switch kit.

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<table>
<thead>
<tr>
<th>Model Number</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000TP2G8B</td>
<td>E</td>
</tr>
<tr>
<td>2000TP2G8B</td>
<td>S</td>
</tr>
<tr>
<td>2000TP2G8B</td>
<td>M1</td>
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<tr>
<td>2000TP2G8B</td>
<td>E2</td>
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<tr>
<td>2000TP2G8B</td>
<td>BM2</td>
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<tr>
<td>2000TP2G8B</td>
<td>E2S</td>
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<td>2000TP2G8B</td>
<td>BM3</td>
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<tr>
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<td>E1 S2K</td>
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<tr>
<td>2000TP2G8B</td>
<td>BM4</td>
</tr>
<tr>
<td>2000TP2G8B</td>
<td>BM5</td>
</tr>
</tbody>
</table>

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<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>2000TP2G8B 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>19 x 8 x 13 7.5 x 3 x 5</td>
<td>1, 2</td>
<td>1.3:1</td>
<td>2.5:1</td>
</tr>
<tr>
<td>filter 2</td>
<td></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>13 x 8 x 9 5 x 3 x 3.5</td>
<td>0.5, 1</td>
<td>1.3:1</td>
<td>2.5:1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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S2K – TF FILTER TYPE SPECIFICATIONS