



160 School House Road, Souderton, PA 18964-9990 USA  
Phone 215-723-8181•FAX 215-723-5688

**MODEL 2000TP1G2A,  
M1  
1700 WATTS PULSE  
1 – 2.5 GHz**

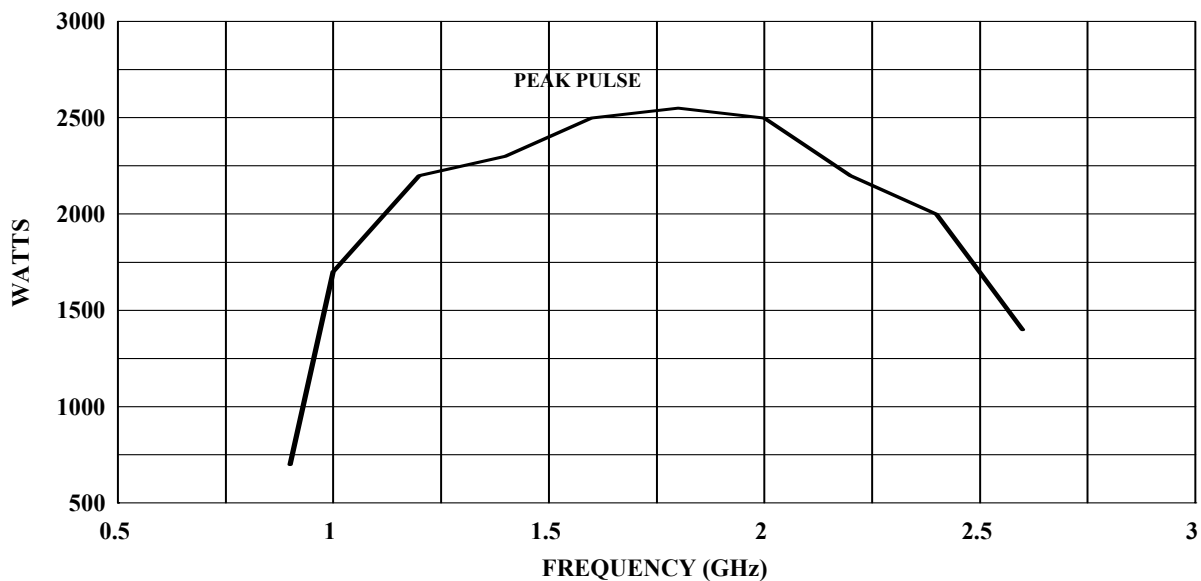
The Model 2000TP1G2A is a self contained, forced air cooled, broadband traveling wave tube (TWT) microwave amplifier designed for pulse applications at low to moderate duty factors where instantaneous bandwidth, reduced harmonics and high gain are required. A reliable TWT subsystem provides a conservative 1700 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 a switching mode power supply results in significant weight reduction.

Housed in a stylish contemporary cabinet, the Model 2000TP1G2A 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 external harmonic filters.

**2000TP1G2A TYPICAL POWER OUTPUT**



# SPECIFICATIONS

## Model 2000TP1G2A

**POWER (fundamental), PEAK PULSE, @ OUTPUT CONNECTOR**

Nominal ..... 2200 watts  
 Minimum ..... 1700 watts

FLATNESS.....  $\pm 10$  dB maximum, equalized for  
 $\pm 3$  dB maximum at rated power

FREQUENCY RESPONSE ..... 1 – 2.5 GHz instantaneously

INPUT FOR RATED OUTPUT ..... 1.0 milliwatt maximum

GAIN (at maximum setting)..... 62 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 power foldback protection at average reflected power exceeding 60 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)..... 100kHz 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 .....  $\pm 30$ ns max (50% point of output pulse width compared to 50% points of input pulse width).  
 Pulse Off Isolation..... 80dB minimum, 90dB typical

NOISE POWER DENSITY (pulse on) ..... Minus 90 dBm/Hz (maximum), minus 93 dBm/Hz (typical)  
 (pulse off) ..... Minus 140 dBm/Hz (typical)

HARMONIC DISTORTION..... Minus 15dBc maximum, Minus 18dBc 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 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..... See Model Configuration

SIZE (WxHxD)..... See Model Configuration. See Note 1.

*2000TP1G2A Model Configurations*

<i>Model Number</i>	<i>Description</i>	<i>Weight</i>	<i>Size (W x H x D) (Note 1)</i>
<i>2000TP1G2A</i>		<i>273 kg (600 lb)</i>	<i>56 x 160 x 82.3 cm 22.1 x 63 x 32.4 in</i>
<i>2000TP1G2AM1</i>	<i>Supplied with one TF type filter and switch kit to offer harmonics minus 25dBc maximum at the output of the kit. (See Note 2)</i>	<i>286 kg (630 lb)</i>	<i>56 x 160 x 82.3 cm 22.1 x 63 x 32.4 in</i>

*NOTE 1: Dimensions shown are for TWTA only, without kits and filters.*

*NOTE 2: TF type filters are externally mountable harmonic filters. Refer to filter TF type specification below. Also supplied with a switch kit that allows user to select an appropriate band, high (which bypasses filter) or low (which applies filter), via this TWTA. Insertion loss when used with filter is maximum 1.5 dB.*

**FILTER TYPE SPECIFICATIONS**

<b>Microwave Filter Model</b>	<b>For Use with AR TWTA Model</b>	<b>Pass Band (GHz)</b>	<b>Insertion Loss(dB max)</b>	<b>Reject Band (GHz)</b>	<b>Rejection (dB min)</b>	<b>Power (fundamental &amp; harmonic, watts, max)</b>	<b>Input Connector</b>	<b>Output connector</b>	<b>Size L x W x D (cm, in, typical)</b>	<b>Weight (kg, lbs typical)</b>	<b>Input VSWR in Pass band (typical)</b>	<b>Input VSWR in Reject band (typical)</b>
TF type filter 1	2000TP1G2A with N connector, requires one filter	1.0 - 1.6	0.5	2.0 - 5.0	25	150 & 10 average, 3000 & 200 peak	N male (or N female plus supplied adapter or short cable)	N female	15 x 8 x 18 6 x 3 x 7	4.5, 10	1.3:1	2.5:1