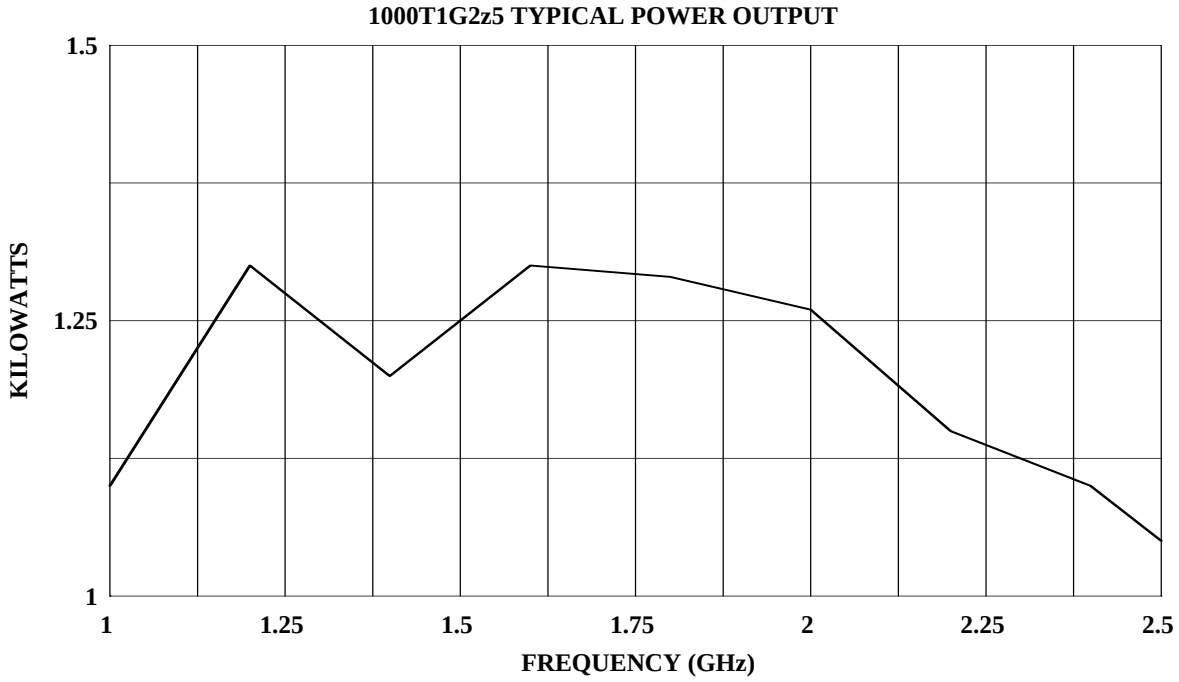
Model 1000T1G2z5
M1 through M15
1000 Watts CW
1GHz–2.5GHz

The Model 1000T1G2z5 is a self contained, forced air cooled, broadband traveling wave tube (TWT) microwave amplifier designed for applications where instantaneous bandwidth, high gain and high power output are required. A reliable TWT provides a conservative 1000 watts minimum at the amplifier output connector over most of the frequency range. Stated power specifications are at the fundamental frequency.

The amplifier's front panel digital display shows forward and reflected output 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 reflected power warning and remote. Standard features include a built-in IEEE-488 (GPIB) interface, 0dBm input, VSWR protection, gain control, RF output sample ports, 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.

The Model 1000T1G2z5 provides readily available RF power for a variety of applications in Test and Measurement, (including EMC RF susceptibility testing), Industrial and University Research and Development, and Service applications.

Refer to the Model Configurations for package, prime power selection, and special features.



SPECIFICATIONS, MODEL 1000T1G2z5

POWER (fundamental), CW, @ OUTPUT CONNECTOR	
Nominal	1100 watts
Minimum	1000 watts
FLATNESS	±15 dB maximum, ±8 dB maximum at rated power
With SP1 Option	±8 dB maximum, ±2 dB maximum at rated power
FREQUENCY RESPONSE	1 - 2.5 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 2.0:1 maximum
OUTPUT IMPEDANCE	50 ohms, VSWR 2.5:1 typical
MISMATCH TOLERANCE	Output power foldback protection at reflected power exceeding 200 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.
MODULATION CAPABILITY	Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal. AM peak envelope power limited to specified power.
NOISE POWER DENSITY	Minus 70 dBm/Hz (maximum) Minus 80 dBm/Hz (typical)
HARMONIC DISTORTION	Minus 0 dBc maximum, minus 3 dBc typical
With SP1, SP2 or S2K Option	Minus 20 dBc maximum, minus 26 dBc typical
PRIMARY POWER	See Model Configurations
CONNECTORS	
RF input	Type N female on rear panel
RF output	Type 7-16 DIN female on rear panel
RF output with SP1, SP2 or S2K option	Type 7/8 EIA
RF output sample ports (forward and reflected)	Type N 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.
SIZE (W x H x D)	50.8 x 64.28 x 83.48 cm, 20 x 25.3 x 32.87 in
With SP1 option	81.3 x 198.1 x 106.7 cm, 32 x 78 x 42 in
With SP2 option	61 x 151.1 x 84.1 cm, 24 x 59.5 x 33.1 in
WEIGHT (approximate)	130 kg, 290 lbs.
With SP1 option	432kg, 950 lbs
With SP2 option	204kg, 450 lbs
EXPORT CLASSIFICATION	ITAR (International Traffic in Arms Regulations). This equipment and its accompanying data must not be transferred to a foreign person/entity without proper authorization of the U.S. Government.

MODEL CONFIGURATIONS, 1000T1G2z5

E **Package Alternatives.** May select an alternative from the following [E1C or (E1C and E2S) and/or E3H]:

E1C **Cabinet**: Without outer enclosure, two subassemblies. 48.26 x 22.2(5U) x 65.1 cm, 19 x 8.75(5U) x 25.62 in and 48.26 x 39.9 (9U) x 76.45 cm, 19 x 15.7(9U) x 30.1 in. Subtract approximately 14 kg, 30 lbs, for removal of outer enclosure.

E2S **Slides**: slides installed, add approximately 2 kg, 5 lbs.

E3H **Handles**: Front pull handles installed.

P **Prime Power:** Must select one primary power from the following [P1 or P2]

P1 **208V, US:** 208 ±10% VAC, 3 phase, delta (4 wire) 50/60 Hz, 8 KVA maximum

P2 **400V, Europe:** 360-435 VAC, 3 phase, WYE (5 wire) 50/60 Hz, 8KVA maximum. CE marked to comply with EMC European Directive 89/336/EEC for operation inside a shielded room.

S **Special Features:** May select a special feature (extra cost) from the following [S1F and/or S2R and/or S3C and/or S4C or SP1]

S1F **Front panel connectors:** Input, output, forward and reflected power sample ports on front panel, not on rear panel.

S2R **Remote interface:** RS-232 serial, DB-9 female connector on rear panel. Replaces built-in IEEE-488 GPIB interface.

S3C **Connector:** RF output connector 1 5/8 EIA on rear panel.

S4C **Covers**: RF connectors have protective metal covers

SP1 **Special Package:** 7/8 inch EIA flange output connector, output to control external RF switches for sub-band selection, increased rack height by 17.5 inches to accommodate customer supplied equipment, six 110 VAC outlets when powered by a 3-phase 208 VAC WYE power source, and larger casters on a modified base. Provided with a switched filter assembly with 7/8 EIA flange output, controlled through the TWTA, which can be mounted on the rear of the unit. This provides reduced harmonic levels of minus 20 dBc maximum at 800 watts fundamental power when used with the TWTA and properly configured in one of two frequency bands. Includes special testing required by Sandia National Laboratories to demonstrate 700 watts output power at 2.6:1 VSWR load mismatch. Also included are front panel switches sealed from dust.

SP2 Unit supplied in a 30U wheeled rack. Includes dual harmonic band-pass filters and switch kit mounted to the RF chassis in the rack. Switch kit allows user to select an appropriate filter band, high or low, via the TWTA front panel. Insertion loss of filter/switch kit is maximum .5 dB. Output power at fundamental of 900 watts, typical. 7/8" EIA output connector on rear panel. Includes 360-435VAC 3 phase WYE (5 wire) prime power ("P2" power option).

S2K **Filters:** Supplied with two externally-mountable band-pass harmonic filters and a switch kit that allows user to select an appropriate filter band, high or low, via this TWTA. Insertion loss of filter/switch kit is maximum .5 dB. Output power at fundamental of 900 watts, typical. Dimensions and enclosures are for TWTA's only without kits and filters.

S3R **Remote Interface:** Change remote interface from standard IEEE-488 GPIB to Ethernet.

	Features		
Model Number	**E**	**P**	**S**
1000T1G2z5	Base model	P1	–
M1	E1C	P1	–
M2	E3H	P1	–
M3	E1C & E3H	P1	–
M4	E1C & E2S	P1	–
M5	E1C & E2S & E3H	P1	–
M6	–	P2	–
M7	E1C	P2	–
M8	E3H	P2	–
M9	E1C & E3H	P2	–
M10	E1C & E2S	P2	–
M11	E1C & E2S & E3H	P2	–
M12	–	–	SP1
M13	–	P1	S1F
M14	E1C, E2S, E3H	P1	S3R
M15	–	–	SP2

Example: Model 1000T1G2z5M2 would have option E3H front pull handles installed, and prime power 208 VAC.
*All models with an enclosure are mounted with E2S option.