

Communications & Power Industries - Microwave Power Module

The PTX8808/PTX8811 MPM integrates a High power Ka Band Helix mini Travelling Wave Tube (TWT) with a matched high density switch mode power supply to produce a single “drop-in” microwave amplifier unit.

Integration of the TWT and the Power supply simplifies the system designer’s task by eliminating high voltage TWT interconnections (and their associated safety and reliability hazards). Integration further reduces the overall system size, simplifying the integration task.

In addition, replacing a separate TWT and power supply with one MPM simplifies the logistics task in terms of maintainability and spares holding.

The MPM is factory adjusted to optimise TWT performance. No user adjustments are required, simplifying replacement and reducing replacement times in the field.

The MPM can be configured to incorporate a variety of TWT models, allowing the user to specify different duty, frequency duty, frequency and peak power parameters.

A control interface is incorporated which allows remote operation and status monitoring. Internal diagnostic outputs and indicators are also available for BIT purposes.



The PTX8808/PTX8811 MPM integrates a High power Ka Band Helix mini “Travelling Wave Tube (TWT)

FEATURES:

- In addition to very small size and light weight, the unit features excellent thermal management. High electrical efficiency; requires minimum cooling, and provides high reliability service over a wide temperature range.

BENEFITS:

- By virtue of the fully encapsulated high voltage section, the unit can operate at high altitudes and high humidity environments, making it easy to integrate into a variety of platforms.

APPLICATIONS:

- These High Power Amplifier Modules are fully tested to agreed acceptance test procedures before shipment, meeting the demands of high performance Electronic Warfare and Radar systems. .

Specification



RF Characteristics

Frequency Range and Saturated Output Power	(See Figure)	Delay from trailing edge of grid window pulse to full RF cutoff	500 ms maximum
Input drive for Power	0 dBm ± 1 dBm	Maximum spurious FM measured in a 100 Hz bandwidth	-40 dBc spurious *
Noise Power Density (Beam ON)	-20 dBm/MHz (typical)	Input VSWR	2.0:1 maximum
Noise Power Density (Beam OFF)	-40 dBm/MHz (max)	Output VSWR	2.5:1 maximum
Second Harmonic	- 90 dBm/MHz	Max Rated RF input power	+2dBm
Duty Cycle	≤ -8 dBc		
Pulse Width	100% maximum	Prime Power Requirement	
Pulse Repetition Frequency	1.0 to ∞μs	Prime Power	270V
Delay from leading edge of grid window pulse to full RF out	20 kHz maximum	Power Consumption	1,000 W maximum
	500 ns maximum	RF Efficiency	25% typical

*(typical, measured under CW conditions)

Connectors

Primary Power Input Connector	D38999 to MIL-DTL-38999 series 3)
Control and Monitoring Connector	D38999 to MIL-DTL-38999 series 3)
RF Input Connector	2.92 mm Precision Coaxial
RF Reverse Power Connector	2.92 mm Precision Coaxial
RF Output Connector	WR28

Grid Window Input Pulse

Input level to hold TWT ON	+3.5 V to +15 V into 150 Ohms
Input to Hold TWT OFF	<0.8 V into 150 Ohms
Pulse Width:	Minimum 500 ns Maximum CW

Control and Monitoring

Control Inputs (<0.8 V Low, + 5 V to +15 V)	Standby (low)/ Operate (high)
Status Outputs	Warm up (low = true) HV On (high = true) Fault (low = true)

Beam and Body (Helix) Current Monitors

Cathode Voltage Monitor

Fault Protection

Peak and Average Beam and Helix Trips, Prime Power Fault Protection, TWT and Power Supply Thermal Protection. Duty Cycle and Pulse Width Limiting available for pulsed units.

The TWT is protected against Power Supply Faults and operation is inhibited if the correct Electrode Voltages are not present.

Automatic Restart	Auto-reset after fault.
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Warm-up Time	180 to 195 seconds
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Mechanical

Mechanical Outline	450 x 224 x 59.5 mm
Weight	8.5 kg maximum
Orientation	Any
Finish	Electroless Nickel
Markings/Labels	Type Number Model Number Serial Number Connector Ident Hazard Warningr
Cooling	Conduction

Environmental

Operating Temperature -40°C to +60°C

(Hotspot)

Altitude (Operating) 0 - 5,000 ft

(Higher altitudes available on request)

Vibration 5 g rms, 5 - 2000 Hz

(Operating - 3 axes)

Shock (3 axes) 6 g, 11 ms half sine

Humidity 95%

(Non Condensing)

Storage Temperature -40°C to +71°C



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For more detailed information, please refer to the corresponding TMD technical description if one has been published, or contact TMD. Specifications may change without notice as a result of additional data or product refinement. Please contact TMD before using this information for system design.

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