EMPOWER RF SYSTEMS

Solid State Broadband High Power Amplifier

2206 | 1000 - 2000 MHz / 2000 Watts Peak

The 2206 is a pulsed L band high power solid state power amplifier system suitable for octave bandwidth applications. This amplifier utilizes high power GaN on SiC devices that provide wide frequency response, high gain, high peak power capability, and low distortion. Exceptional performance, long-term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, fast input and output detectors and built-in DDC with exceptional VSWR protection. The amplifier architecture is based on Empowers proprietary scalable technology and consists of a 3RU controller with power supply and one 3RU RF power block and is air-cooled. In addition to scalability, this amplifiers is inherently rugged due to a design that virtually eliminates internal RF coaxial cables found in the typical RF/Microwave system amplifier.

With a proprietary scalable architecture this amplifier can be easily upgraded to our 4KW 2207 or 8KW 2208 by adding either two or four additional 3U power blocks and one combiner providing you with a cost effective upgrade path. For those who own two 2206's, only one additional combiner is needed to configure a 4KW system.

The amplifier comes standard with Manual Gain Control (MGC). The amplifier can be controlled via the LCD touch screen, peer to peer PC connection, or through LAN for remote monitoring, control, and diagnostics. The user GUI is easy to navigate and is accessed simply through your web browser with no software to install. The control system core runs an embedded OS (Linux) and has a built-in non-volatile memory for storing multiple user configurations.

Empower RF's ISO9001:2015 Quality Assurance Program assures consistent performance and the highest reliability.

- Blanking/Gating Input
- Solid-State GaN on SiC compact modular design
- Embedded directional coupler – Eliminates the need for external component
- Built-in Control, Monitoring and Protection functions
- High Reliability and Ruggedness
- A Member of our air-cooled Pulsed Scalable Family - 2206, 2207, 2208 (Call factory to learn more)

ELECTRICAL SPECIFICATIONS over temperature conditions (-10 to +40ºC)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency, Instantaneous bandwidth	BW	1000		2000	MHz
Power Output Peak	P_{PK}	2000			Watt
Pulse Width @ Duty Cycle 10% Max.	P_{WIDTH}	1.0		50	uS
Power Droop over 50uS pulse Width	P_{DROOP}			0.5	dB
Modulated Pulse Rise/ Fall Time (10% to 90%)	T_R/T_F			70/70	nS
Input Power for Rated P_{PK} 2KW	P_{IN}		0		dBm
Input Power Range	P_{IN}	-5.0		+5.0	dBm
Power Gain @ Rated P_{SAT}	G_P	63			dB
Gain Adjustment Range	VVA	20			dB
Gain Flatness / Leveled ALC	ΔG			±2.5 / ±1.0	dB
Gain Stability/24HR	$G_{STABILITY}$			±0.25	dB
Input Return Loss	S_{11}			-10	dB
Output Return Loss	S_{22}			-7.5	dB
NPO – Noise Power Output	Enabled			-10	dBm/MHz
	Disabled			-110	
Delay	Delay		400		nS
Spurious Signals	Spur			-60	dBc
Operating Voltage – (single-phase, 47-63Hz)	V_{AC}	180		260	Volt
Power Consumption @ P_{OUT} = 2000W_{PK}	P_D			1100	Watt

MECHANICAL SPECIFICATIONS

Parameter	Value	Units
Dimensions W x H x D (Excluding Brackets, Handles and Connectors)	17.5 x 10.5 x 22.0 3RU + 3RU	Inch
Weight	110	Pound
RF Connectors Input/Output (Rear Panel)	Input: N-type Female, Output: 7/16-DIN Female	RF INPUT/RF OUTPUT
Blanking/Gating Input Connector	BNC, Female	Blanking
Cooling (front to rear)	Built-in forced air-cooling system – front to rear	Airflow direction

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ENVIRONMENTAL CHARACTERISTICS

Parameter		Symbol	Min	Typ	Max	Unit
Operating Ambient Temperature *		T_A	-10 *		+40	°C
Non-operating Temperature *		T_{STG}	-20 *		+85	°C
Relative Humidity (non-condensing)		RH			95	%
Altitude	Operating	ALT			10,000	Feet
	Non-operating				40,000	
Shock / Vibration - MIL-STD-810F Shock Method 516.5, Vibration Method 514.5		SH / VI				

Note: [*] Consult Empower RF for application conditions below -10°C / -20°C temperatures (Operational / Non-operational).

PROTECTIONS

Parameter	Specification	Unit
Input Overdrive	+10 dBm	Max.
VSWR protection @ P_{OUT} = 2000W_{PK}	At 3:1 – PA backs-off peak output power to a safe operating level – no system shutdown, "On Air" time is maximized	-
Thermal – Graceful Degradation	Ambient +40ºC, Automatic Recovery	Min.
Duty Cycle Limit	10%	Max.
Default Data Recovery	Factory Default Calibration Recovery	

COMMUNICATION INTERFACES

Function	Utility	Connector
Ethernet	Network management of device / web interface	RJ45
RS232, default [RS422, factory configurable]	Serial management of device / local operator access	D-Sub 9-position Male

SYSTEM I/O CONNECTOR – 14-Position

Pin #	Description	Specification
1	FWD Test Point	Forward detected power (analog voltage: 0-5 Volt)
2	REV Test Point	Reverse detected power (analog voltage: 0-5 Volt)
3	Summary Fault	Summary Fault: Active TTL Logic Low (≤0.7V), (*Internally Pulled-High*)
4	Reserved	No Connection
5	Shutdown	Amplifier Disable: TTL Logic Low (≤0.7V), (*Internally Pulled-High*)
6	Aux P/S Test Point	+12.0V_{DC} ±2V (resettable 0.5amp fuse)
7	PSS Test Point	+44.0V_{DC} ±4.8V (resettable 0.5amp fuse)
8	GND	Ground
9-11	Open drain control	Site management utility (reserved)
10	Open drain control	Site management utility (reserved)
11	Open drain control	Site management utility (reserved)
12&12	Digital I/O (configurable)	Site management utility (reserved)
14	GND	Ground

Available Options

2206-001

Standard Features:
-LCD Control, Ethernet & Serial Comm.
-N-type Female Input & 7/16-DIN Female Output
-SMA Female RF Sample Ports, Forward & Reverse
-BNC Female Blanking/Gating Port
-Rack Slides, Handles and Rackmount Bracket

Single Phase 120VAC available however upgrade path to the 2207 or 2208 will require a power supply change.