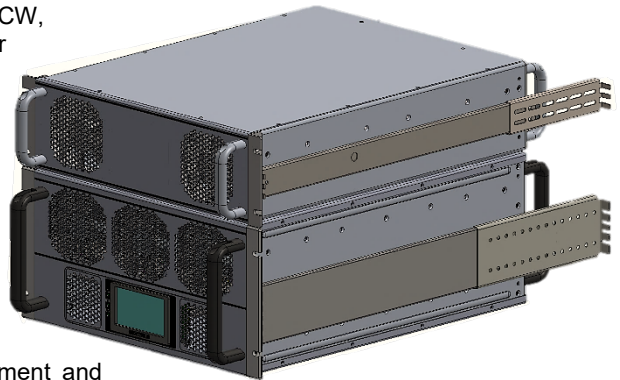


Solid State Broadband High Power Amplifier

2233
500 - 2500 MHz / 500 Watts

The 2233 is a high power amplifier suitable for octave bandwidth, CW, modulated, and pulse applications or with a band specific high-power harmonic suppression filter bank. This amplifier utilizes high power GaN on SiC devices that provide wide frequency response, high gain, high peak power capability, and low distortions. Exceptional performance, long-term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, and all qualified components. The system is constructed with two drawers: a single 5RU amplifier drawer and a single 3RU filter drawer. The system operates from 28VDC, but other input voltage options are available; 180-260 single phase or three phase.



The amplifier includes a built-in control and monitoring system, with protection functions which preserve high availability. Remote management and diagnostics are via an embedded web server allowing network managed site status and control simply by connecting the unit's Ethernet port to a LAN. Using a web browser and the unit's IP address (IPV4) allows ease of access with the benefit of multi-level security. The control system core runs an embedded OS (Linux), has a built-in non-volatile memory for event recording and factory setup recovery features. The extended memory option allows storage of control parameters and event logs.

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

- Solid-state class AB compact modular design
- Suitable for CW, AM, FM, Pulse and some linear applications (Consult factory for other modulation types)
- Embedded directional coupler – Eliminates the need for external component
- 50 ohm input/output impedance
- Built-in Control, Monitoring and Protection functions
- High reliability and ruggedness

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	Band A	500		700	MHz
	Band B	700		1000	
	Band C	1000		1600	
	Band D	1600		2500	
Power Output CW <i>Note 1</i>	P _{SAT}	500			Watt
Power Gain @ 1dB Gain Compression	G _{1dB}	60			dB
Input Power for Rated P _{SAT}	P _{IN}		-1		dBm
Input Power Range	P _{IN}	-5.0		+3.0	dBm
Gain Flatness / Leveled ALC	ΔG			±3.5/±1.0	dB
Gain Adjustment Range @ P _{IN} = -30dBm	VVA	20			dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ maximum gain	NF		20	25	dB
Third Order Intermodulation Distortion 2-Tone @ 51dBm/Tone, 1MHz Spacing	IM3	-20			dBc
Harmonics @ P _{OUT} = 500W (with optional harmonic filter bank)*	2 ND /3 RD		-20/-19	-10/-13	dBc
	*2 ND - 5 TH			-60	
Spurious Signals	Spur			-60	dBc
Operating Voltage	V _{DC}	24	28	32	Volt
Power Consumption @ 500W CW	P _D			4000	VA

Notes:

1. CW measurement performed in MGC Mode (Manual Gain Control), Power de-rating with harmonic filter bank, 0.7-1.0dB.
2. P1dB measurement is performed with AM 80% depth of modulation, 1kHz modulation signal.

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MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions W x H x D (excludes connectors, handles and brackets)	17 x 14 x 22 (5RU + 3RU)	Inch
Weight	~120	Pound
RF Connectors Input/Output	Input: N-type, Female Output: N-type, Female, (Optional 7/16-DIN, Female)	RF IN RF OUT
RF Sample Connectors	SMA, Female	Forward / Reverse
Blanking/Gating Input Connector	BNC, Female	Blanking
Cooling	Built-in forced air-cooling system – front to rear	Airflow Direction

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	%
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	At 3:1 – PA backs-off output power to a safe operating level – no system shutdown, “On Air” time is maximized	-
Thermal – Graceful Degradation	Ambient +40°C	Min
Default Data Recovery	Factory Default Calibration Recovery	

COMMUNICATION INTERFACES:

Function	Utility	Connector
Ethernet	Network management of device / web interface	RJ45
USB	Mass storage / Expansion Bus	USB 1.x/2.0 compatible
RS232, default [RS422 factory configurable]	Serial management of device / local operator access	D-Sub 9-position Male

AVAILABLE OPTIONS

2233-xxx
-001 28VDC, MIL-STD Circ/Conn, w/ optional HRF, Rear RF Connectors
-002 28VDC, MIL-STD Circular Connector, Rear RF Connectors
<i>Contact us for other available option.</i>
Standard Features:
-LCD Control, Ethernet & Serial Comm
-RF Sample Ports: Forward & Reverse, SMA Female
-Blanking/Gating Port: BNC Female
-Rack Slides, Handles and Rack mount Brackets

Notional Block Diagram

