

Solid State Broadband High Power Amplifier

2240
5200 - 5900 MHz / 900 Watts Pulsed

The 2240 is suitable for pulse and CW application in the C-band frequency. 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 amplifier is constructed within one single 3RU drawer including the forced air-cooling. Available operating voltage configurations are single phase 100-240 VAC up to 400Hz and 28 VDC.



SKU#: 2240-001

The amplifier includes a built-in control and monitoring system, with protection functions which preserve maximum output availability. Remote management and diagnostics are via the Ethernet port to a LAN with either a Web browser or M2M (Machine-to-Machine) interface or using the Local Touchscreen panel. The control system runs an embedded OS (Linux), has a built-in non-volatile memory for factory setup recovery features.

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

- Solid-state Class AB, compact modular design
- Suitable for Pulse and CW applications
- 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 +50°C)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	5200		5900	MHz
Power Output – Peak Pulse ^{NOTE*}	P _{SAT_PK}	800	900		Watt
Power Output @ PW=2.1mSec, 20% duty Cycle	P _{SAT}		200		Watt
Pulse Width @ Duty Cycle = 20%	P _{WIDTH}	1		500	µSec
Duty Cycle	DC			20	%
Pulse Repetition Frequency	PRF			500	kHz
Power Gain @ Rated Peak P _{OUT}	G _P	65			dB
Pulse Droop @ 500 µSec Pulse Width	P _{DROOP}		1.2	1.5	dB
Modulated Pulse Rise/Fall Time (10/90%)	T _{RISE} /T _{FALL}		25 / 25	50 / 50	nSec
Input Power for Rated P _{SAT_PEAKE}	P _{IN}		-5	0	dBm
Input Return Loss	S ₁₁			-10	dB
NPO – Noise Power Output	Enable			-10	dBm/MHz
	Disable			-100	
Harmonics @ P _{OUT_PULSE} = 900W _{PK}	2 ND		-25		dBc
	3 RD		-30		
Spurious Signals	Spur			-60	dBc
Operating Voltage	V _{AC}	100		240	Volt
Power Consumption @ 900W _{PK}	P _D			1300	VA

NOTE: *LONG PULSE >2.1 milliseconds, 80 Watts output power

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions W x H x D (excludes connectors, handles and brackets)	17 x 5.25 x 22	Inch
Weight	65	Pound
RF Connectors Input/Output	Type-N, Female	RF IN RF OUT
RF Sample Connectors	Type-SMA, Female	FWD /REV
Blanking / Gating Input Connector	Type-BNC, Female	BLANKING
Cooling	Built-in forced air cooling system – (front to rear)	Airflow Direction

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ENVIRONMENTAL CHARACTERISTICS (Qualification Data available for review)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Ambient Temperature	T _A	-10		+50	°C
Non-operating Temperature	T _{STG}	-40		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Shock / Vibration - MIL-STD-810F Shock Method 516.5, Vibration Method 514.5	SH / VI				

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 Shutdown	Ambient 50°C	Min
Default Data Recovery	Factory Default Calibration Recovery	

COMMUNICATION INTERFACES

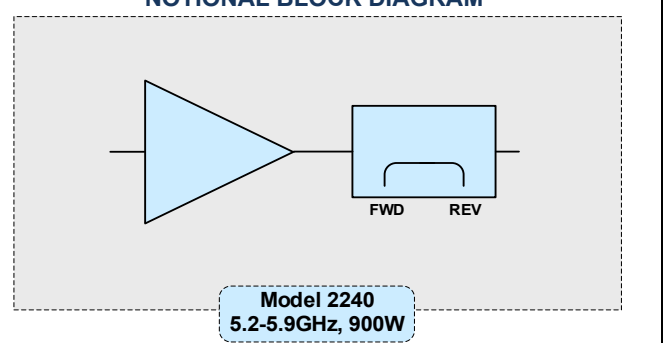
Function	Utility	Connector
Ethernet	Network management of device / web interface	RJ45
USB	Mass storage / Expansion Bus	USB 1.x/2.0 compatible
RS-232 standard RS-422 (factory configurable)	Serial management of device / local operator access	D-Sub 9-position Male

SYSTEM I/O INTERFACE – 14-Position

Pin #	Description	Specification
1	N/C	No Connection (reserved)
2	N/C	No Connection (reserved)
3	Summary Fault	Summary Fault: Active TTL Logic Low ($\leq 0.7V$), (<i>Internally Pulled-High</i>)
4	N/C	No Connections (reserved)
5	Shutdown	Amplifier Disable: TTL Logic Low ($\leq 0.7V$), (<i>Internally Pulled-High</i>)
6	Aux P/S Test Point	+12.0V _{DC} \pm 2.0V (resettable 0.5amp fuse)
7	Main P/S Test Point	+44.0V _{DC} \pm 4.8V (resettable 0.5amp fuse)
8	GND	Ground
9-11	Open drain control	Site management utility (reserved)
12&13	Digital I/O (configurable)	Site management utility (reserved)
14	GND	Ground

AVAILABLE OPTIONS

2240-xxx
-001 100-240VAC, 1-phase, 47-63 Hz, Rear RF Connectors
-002 TBD
-003 TBD
Contact us for other available options; sales@empowerrf.com
Standard Feature:
- LCD Control, Ethernet & Serial Comm.
-Main RF Connectors: Input & Output [Type-N, F]
-Sample Ports: SMA-F [Forward & Reverse]
-Blanking/Gating Port: BNC-F
-Rack Slides, Handles and Rackmount Bracket

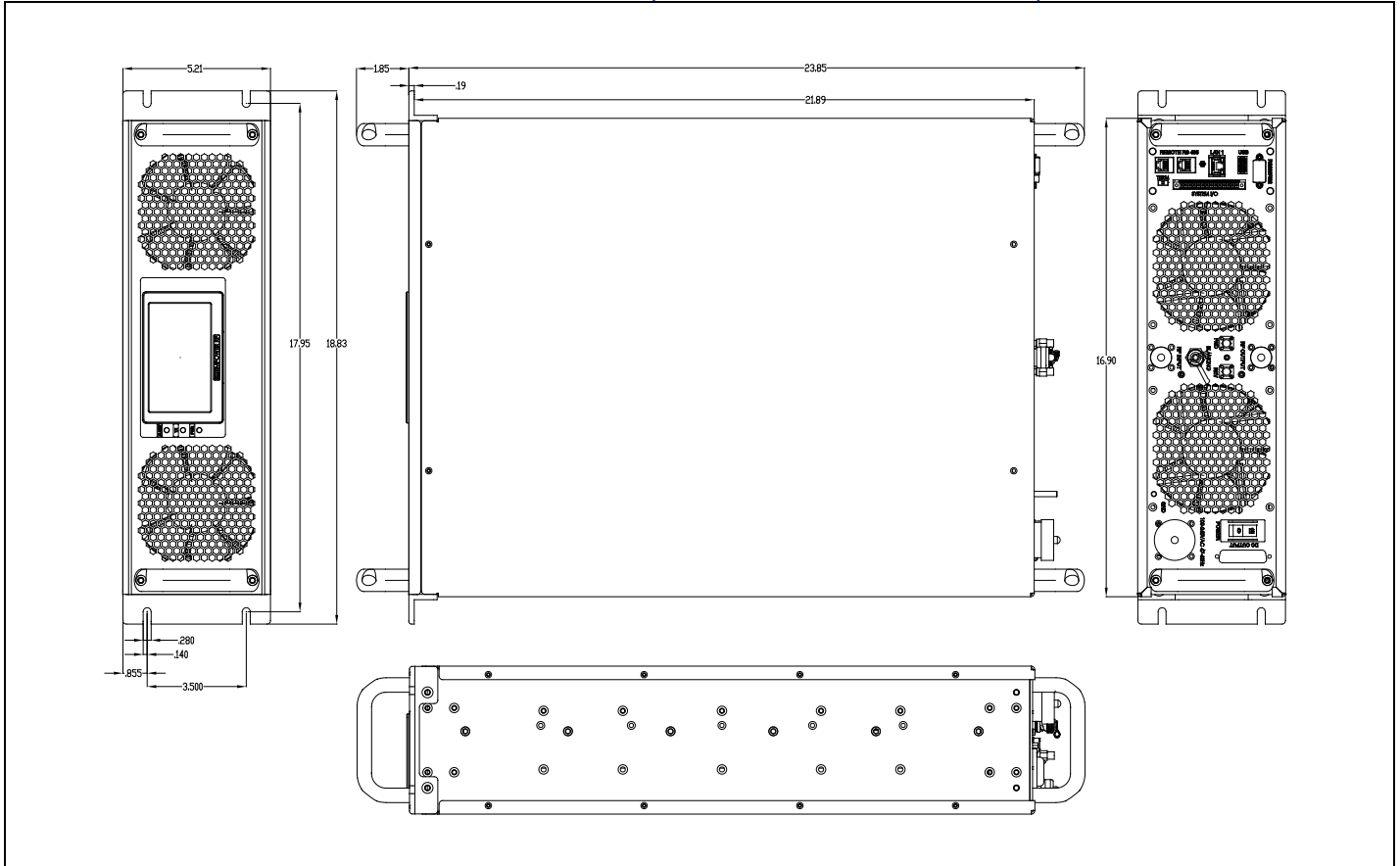
NOTIONAL BLOCK DIAGRAM


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MECHANICAL OUTLINE – (with LCD and Rear RF connectors)



**Front and Rear Views
With rear RF connectors**

