

Solid State Broadband High Power Amplifier

2210
150 – 450 MHz / 12 kilowatts Peak

This system is comprised of two 5U solid state power amplifiers, two 1U AC/DC Power Converters and a 5U Control / Combining Interface Assembly all integrated to produce 12kW minimum peak, pulse power. Each amplifier subsystem employed in this system features multiple high power LDMOS 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. Each chassis included integral forced air-cooling fans. The system operates from 180-260VAC three phase AC sources.

The amplifier system includes a built-in control and monitoring system, with protection functions which preserve and maximize output capability. 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 multilevel security. The control system core supports hardware encryption, 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.

We are delivering more than just RF power, the next generation family of systems provide dynamic adjustments linked to the processing power and digital controls, which focus on maximizing system availability time as well as power output under ALL conditions.

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

- Solid-State LDMOS compact modular design
- Suitable for instantaneous pulse operation over the frequency band
- 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	150		450	MHz
Power Output Peak @ 20% DC	P _{SAT}	12			kW
Pulse Width	PW	0.002		2	mSec
Input Power for Rated P _{OUT-PK}	P _{IN}	-6		0	dBm
Duty Cycle	DC	1		20	%
Pulse Repetition Frequency	PRF			25	kHz
Power Gain @ Rated Peak P _{OUT}	G _{1dB}	73			dB
Pulse Droop @ 2mSec. 20% Duty Cycle	P _{DROOP}		0.7	1.0	dB
Modulated Pulse Rise/Fall Time	T _{R/F}		100/50	200/100	nSec
Input Return Loss	S ₁₁			-10	dB
Noise Power Output	Disabled			162	dBm/Hz
Harmonics @ P _{SAT} = 12kW _{PK}	2 ND		-34	-20	dBc
	3 RD		-20	-12	
Spurious Signals	Spur			-70	dBc
Operating Voltage [3-ph, line-to-line]	V _{AC}	180	208	260	Volt
Power Consumption @ 12kW _{PK}	P _D			8	kVA

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MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Power Supply 1 & 2 W x H x D	19 x 1.75 x 18	Inch
Controller / Combining Drawer W x H x D	19 x 8.75 x 22	
Booster 1 & 2 Drawer W x H x D	19 x 8.75 x 22	
Main Power Switch Breaker Panel	19 x 3.50 x 8.5	
Total System Dimensions W x H x D	19 x 33.25 x 22, (19RU total height)	
Weight	390	Pound
RF Connectors Input/Output	RF Input: N-type, Female RF Output: 7/16-DIN, Female	SYSTEM RF INPUT SYSTEM RF OUTPUT
RF Sample Connectors	SMA, Female	Forward / Reverse
Blanking/Gating 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 *		+50	°C
Non-operating Temperature *	T _{STG}	-20 *		+85	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F)	ALT			10,000	Feet
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 shutdown	+12 dBm	Max
Load VSWR Protection	The unit disables the RF when the reverse power exceeds safe level @ all load phase & amplitude	-
Thermal Shutdown	Baseplate >90°C	-
Default Data Recovery	Factory Default Calibration Recovery	

COMMUNICATION INTERFACES:

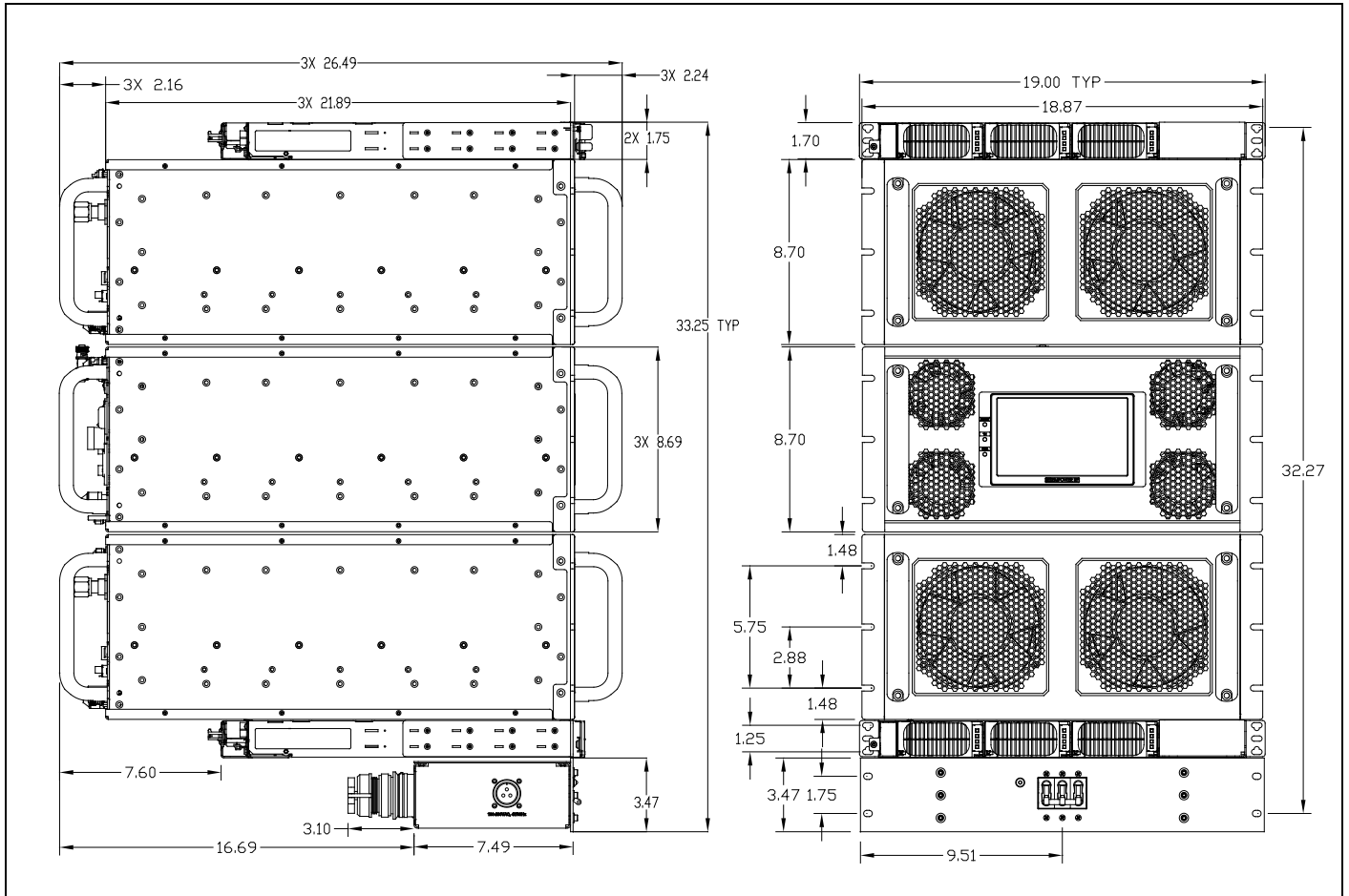
Function	Utility	Connector
Ethernet	Network management of device / web interface	RJ45

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SYSTEM OUTLINE



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SYSTEM OUTLINE (Rear View)

