

Solid State High Power Amplifier

2254
2900 – 3500 MHz / 15kW_{PK} Pulsed

The 2254 is comprised of multi-drawer integrated subsystems to produce a minimum output of 15kW peak pulsed power. The amplifier subsystem features multiple 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. Each drawer is constructed within single drawer including the integral forced air-cooling fans. The system comes standard to operate from 180-260VAC three phase AC source.

The amplifier system includes a built-in control and monitoring system, with protection functions, which preserve maximum output availability and reliability. Remote management and diagnostics are via the Ethernet port to a LAN with either 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.

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 class AB design
- Suitable for instantaneous pulse operation over the operating band.
- Compact Modular design and scalable architecture
- 50 ohm input/output impedance
- Built-in Control, Monitoring and Protection functions
- High reliability and ruggedness



ELECTRICAL SPECIFICATIONS over temperature conditions (0 to +50°C)

Parameter	Symbol	Min	Typical	Max	Unit
Operating Frequency	BW	2900		3500	MHz
Power Output – Peak Pulse ^{NOTE*}	P _{SAT_PK}	15			kW
Pulse Width @ Duty Cycle 20%	P _{WIDTH}	2		500	µSec
Duty Cycle	DC	0.5	15	20	%
Pulse Repetition Rate Frequency	PRF	0.5		25	kHz
Power Gain @ Rated Peak P _{OUT}	G _{PK}	72	75		dB
Pulse Droop @ 500µSec Pulse Width	P _{DROOP}		1.2	1.5	dB
Modulated Pulse Rise/Fall Time (10% to 90%)	T _{RISE} /T _{FALL}		70/70	150/150	nSec
Input Power for rated output power	P _{IN}		-5	0	dBm
Input Return Loss	S ₁₁			-10	dB
Intra Pulse Noise (100 Hertz away from carrier)	-			-60	dBc/Hz
Inter Pulse Noise	-			-100	dBm/MHz
Harmonics @ P _{OUT} = 15kW _{PK}	2 nd			-25	dBc
	3 rd			-30	
Spurious Signals	Spur			-60	dBc
Operating Voltage @ 3-phase (Line-to-Line)	V _{AC}	180	208	260	Volt
Power Consumption @ 20%DC, P _{OUT} = 15kW _{PK}	P _D			15	kVA

Note: * >50°C ambient, the output power derates per device junction temperature.

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MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Overall Dimension W x H x D (excludes connectors, handles and brackets)	22 x 33.25 x 40 (19RU height, no rack/cabinet)	Inch
Total Weight	~400	Pound
RF Connectors Input/Output	Input: N-Type Female / Output: WR-284	RF INPUT RF OUTPUT
RF Sample Connectors	N-type, 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 _C	-10		+50 ^{NOTE 1}	°C
Non-operating Temperature	T _{STG}	-35		+75	°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				

PROTECTIONS

Parameter	Specification	Remark
Input Overdrive	≥10 dBm – Shutdown	-
Load VSWR Protection	The unit disables the RF when reverse power exceeds the safe level @ all load phase & amplitude	-
Thermal Shutdown	Baseplate ≥90 °C	-
Default Data Recovery	Factory Default Calibration Recovery	-

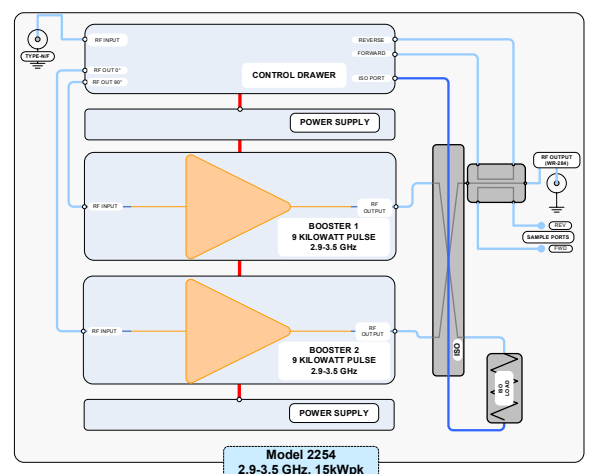
COMMUNICATION INTERFACES:

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

Available Options

2254-00X
-001 208 VAC, 3-phase-Delta, 47-63 Hz, Rear RF Connectors
-002 208 VAC, 3-phase-Delta, 47-63 Hz, Rear RF Connectors, 3100-3500 MHz
Contact us for other available options; sales@empowerrf.com
Standard Feature:
-LCD Control, Ethernet
-Sample Port: N-type-F [Forward & Reverse]
-Blanking/Gating Port: BNC-F
-Rack Slides, Handles and Rackmount Brackets

NOTIONAL BLOCK DIAGRAM

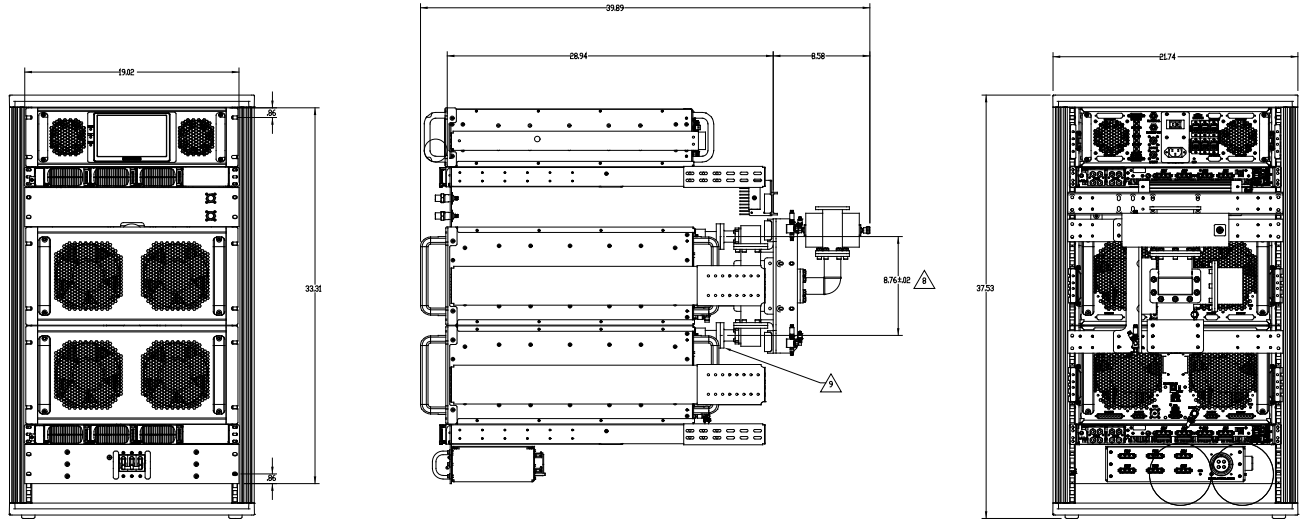


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MECHANICAL OUTLINE



PARTIAL SUPPRESSED RACK VIEW

