EMPOWER
RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

2066 – BBS3K4AUT

500 – 1000 MHz / 1000 Watts

The BBS3K4AUT (SKU 2066) is suitable for octave bandwidth high power CW, modulated, and pulse applications. This amplifier utilizes 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. The amplifier and optional switch filter bank are constructed within one single 5RU drawer including the forced air-cooling. The system comes standard to operate from 180-260VAC single phase or optionally can be ordered with a three phase AC supply.

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 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state linear design
- Suitable for CW, AM, FM and pulse (Consult factory for other modulation types)
- Compact Modular design
- 50 ohm input/output impedance
- Built in Control, Monitoring and Protection functions
- High reliability and ruggedness
- Optional harmonic and spurious suppression via internal switched filter bank (quoted separately)

ELECTRICAL SPECIFICATIONS over temperature conditions (-10 to +50ºC)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	500		1000	MHz
Power Output CW *(Note 1)*	P_{SAT}	1000			Watt
Power Output @ 1dB Gain Compression *(Note 2)*	P_{1dB}	800			Watt
Power Gain @ 1dB Gain Compression	G_{1dB}	60			dB
Input Power for Rated P_{SAT}	P_{IN}		0		dBm
Gain Flatness / Leveled ALC	ΔG			±2/±1.0	dB
Gain Adjustment Range	VVA	15			dB
Input Return Loss	S_{11}			-10	dB
Noise Figure @ maximum gain	NF		10	15	dB
Third Order Intercept Point 2-Tone @ 54dBm/Tone, 1MHz Spacing	IM3	-20			dBc
Harmonics @ P_{OUT} = 800W (without Harmonic Suppression Filters)	2^{ND}			-15	dBc
	3^{RD}			-12	
Spurious Signals	Spur			-60	dBc
Operating Voltage – (1-phase)	V_{AC}	180	220	260	Volt
Operating Voltage – (3-phase)	V_{AC}		208		Volt
Power Consumption @ 1000W CW	P_D			5000	Watt

Notes: *1. CW measurement performed in MGC Mode (Manual Gain Control).*

2. P1dB measurement performed with CCDF method, IS-95, 1MHz BW.

MECHANICAL SPECIFICATIONS

Parameter	Value	Units
Dimensions W x H x D	17.5 x 8.75 x 22	Inch
Weight (Without Harmonic Suppression Filters)	92	Pound
RF Connectors Input/Output	Input: Type-N, Female Output: Type-7/16-DIN, Female (optional Type-SC, Female)	-
RF Sample	Type-SMA, Female	-
Blanking Input	Type-BNC, Female	-
Cooling	Built in forced-air cooling system	-

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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	Specifications	Unit
Input Overdrive	+10 dBm	Max
VSWR protection at P_{OUT} = 1000W	At 3:1 or higher – PA backs off output power to a safe operating level – no system shutdown, "On Air" time is maximized	-
Thermal – Graceful Degradation	Ambient 50ºC	Min
Default Data Recovery	Factory Default Calibration Recovery	

OPTIONAL HARMONIC FILTERS: (Configurable per Customer Requirement. Example shown below):

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	Band 1	500		700	MHz
	Band 2	700		1000	
Harmonics @ Rated P_{SAT}	2^{ND}			-60	dBc
	3^{RD}			-60	

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 (default) RS-422 (optional)	Serial management of device / local operator access	D-Sub 9-position Male

SYSTEM I/O CONNECTOR – 14-pin

Pin #	Description	Specifications
1	FWD TP	Forward detected power (analog voltage: 0 – 5 Volt)
2	REV TP	Reverse detected power (analog voltage: 0 – 5 Volt)
3	Summary Fault	Summary Fault: Active TTL Logic Low (≤0.7V) = Fault (*Internally Pulled-High*)
4	VVA control	Gain control/Monitor: Analog Voltage Range 0-5V Gain Control: 0V= Max. Attenuator, 5V= Min. Attenuator
5	Shutdown	Amplifier Disable: TTL Logic Low (≤0.7V) (*Internally Pulled-High*)
6	Aux P/S TP	+12.0V_{DC} ±2V (resettable 0.5amp fuse)
7	Main P/S TP	+44.0V_{DC} ±4.8V (resettable 0.5amp fuse)
8	GND	Ground
9	Open drain control	Site management utility (reserved)
10	Open drain control	Site management utility (reserved)
11	Open drain control	Site management utility (reserved)
12	Digital I/O (configurable)	Site management utility (reserved)
13	Digital I/O (configurable)	Site management utility (reserved)
14	GND	Ground

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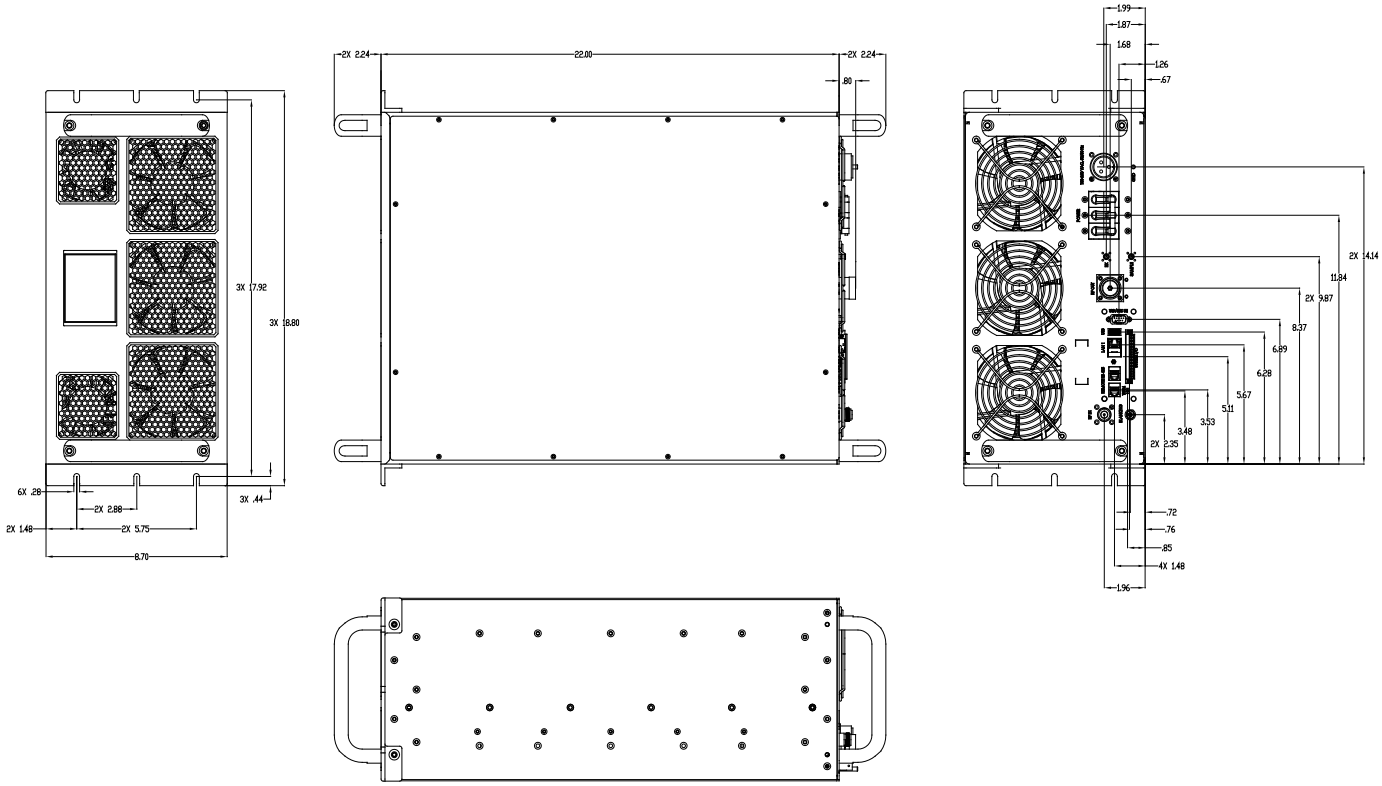
OUTLINE DRAWING



Note – Outline includes internal optional filter bank (Quoted Separately)