EMPOWER RF SYSTEMS

Solid State Broadband High Power Amplifier

2066 | 500 – 1000 MHz / 1000 Watts

The 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 is constructed within one single 5RU drawer including the forced air-cooling. Available operating voltage configurations are single-phase, three-phase AC up to 400 Hz.

SKU#: **2066-001**

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 linear compact modular design
- Suitable for CW, AM, FM and pulse (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
- 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 *Notes 1 & 3*	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
Small Signal Gain Flatness / Leveled ALC	ΔG			±3.0/±1.0	dB
Gain Adjustment Range @ P_{IN} = -30dBm	VVA	15			dB
Input Return Loss	S_{11}			-10	dB
Noise Figure @ maximum gain	NF		10	15	dB
Third Order Intermodulation Distortion 2-Tone @ 54dBm/Tone, 1MHz Spacing	IM3	-20			dBc
Harmonics @ P_{OUT} = 800W	2^{ND}			-15	dBc
	3^{RD}			-12	
Spurious Signals	Spur			-60	dBc
Operating Voltage	V_{AC}	180	220	260	Volt
Operating Voltage [3-ph, line to line]	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.
3. The front RF connectors option output power is less by up to 0.50 dB due to added insertion loss of the RF cable routed to the front panel.

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions W x H x D	17.5 x 8.75 x 22	Inch
Weight	92	Pound
RF Connectors Input/Output	Input: N-type, Female Output: 7/16-DIN, Female (opt. SC, Female)	RF INPUT RF OUTPUT
RF Sample Connectors	SMA, Female	FWD / REV
Blanking/Gating Input Connector	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}	-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 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	

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

SYSTEM I/O CONNECTOR – 14-pin

Pin #	Description	Specification
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	Reserved	No Connection
5	Shutdown	Amplifier Disable: TTL Logic Low (≤0.7V), (*Internally Pulled-High*)
6	Aux P/S TP	+12.0V_{DC} ±2.0V (resettable 0.5amp fuse)
7	Main P/S TP	+44.0V_{DC} ±4.8V (resettable 0.5amp fuse)
8	GND	Ground
9-13	Open drain control	Site management utility (reserved)
12&13	Digital I/O (configurable)	Site management utility (reserved)
14	GND	Ground

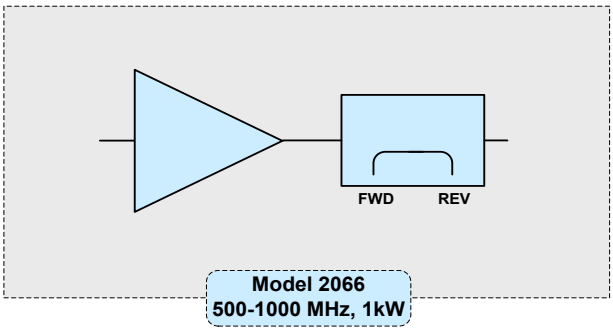
Available Options

2066-XXX
-001 180-260 VAC, 1-ph, 47-63 Hz, Rear RF Connectors
-003 180-260 VAC, 1-ph, 47-63 Hz, Front RF Connectors ***Note 3***
-004 28 VDC, Front RF Connectors ***Note 3***
-005 28 VDC, Rear RF Connectors
-006 208 VAC, 3ph/Delta, 47-63 Hz, Front RF Connectors ***Note 3***
-007 208 VAC, 3ph/Delta, 47-63 Hz, Rear RF Connectors
Contact us for other available options

Standard Feature:

-LCD Control, Ethernet & Serial Comm
*-Main RF Connectors: **Input** [N-type, F], **Output** [7/16-DIN, F]*
-RF Sample Ports: Forward & Reverse [SMA Female]
-Blanking/Gating Port: BNC Female
-Rack Slides, Handles and Rackmount Bracket

NOTIONAL BLOCK DIAGRAM



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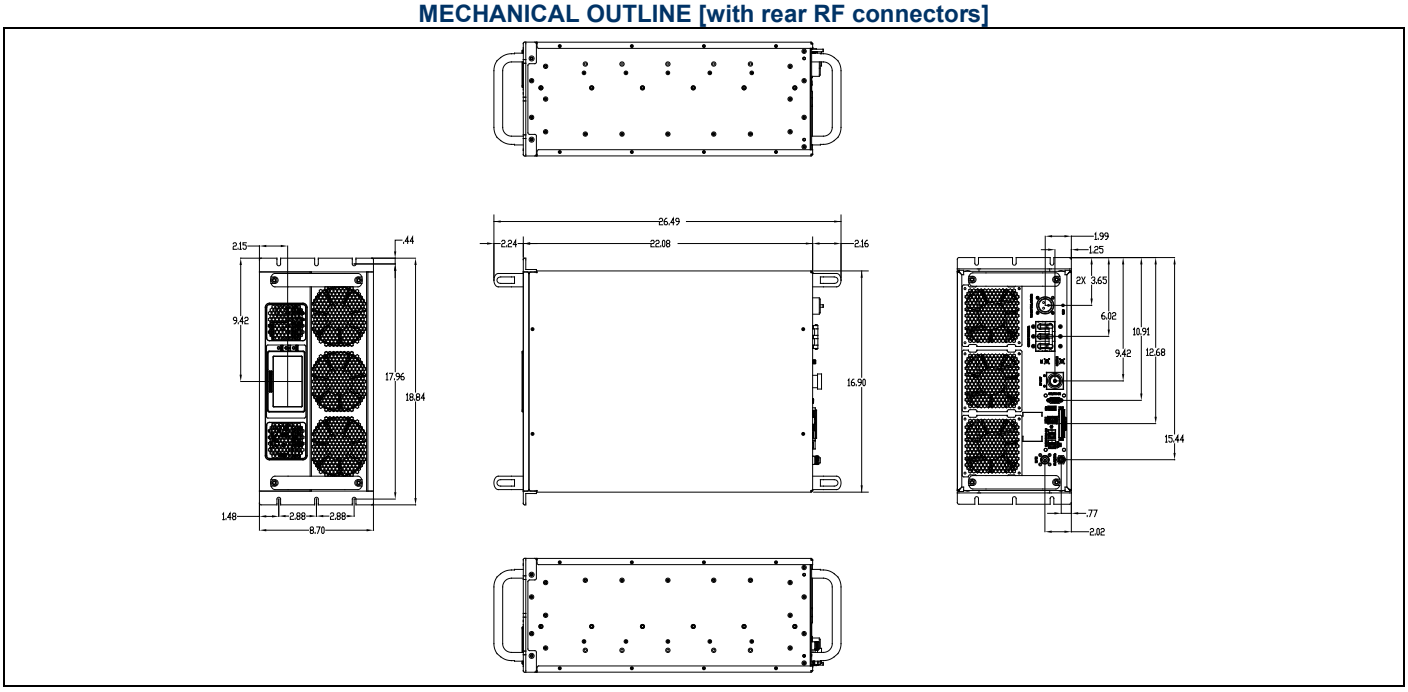
OPTIONAL HARMONIC FILTERS: (Internally Configurable per Customer Requirement)

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	

MECHANICAL OUTLINE [with rear RF connectors]



Front and Rear Views

With rear RF connectors	With front RF connectors