Amplifiers

Model 498

Features:

- 10 kW typical pulse, 1 - 6 GHz
- Class AB design
- Full VSWR tolerant
- Degradation Mode
- Built-in fault monitoring, logging and protection
- Touch screen display
- Forward and reverse power monitoring
- VSWR monitor with user settable limit
- User settable ALC
- Remote control: Ethernet, USB, GPIB, fiber-optic serial, RS-232
- Modular design for easy maintenance and service
- CE & RoHS Compliant
- High Efficiency

Applications:

- EMC Test applications
- EW Communication/Test/Jamming
- RADAR simulation
- Science

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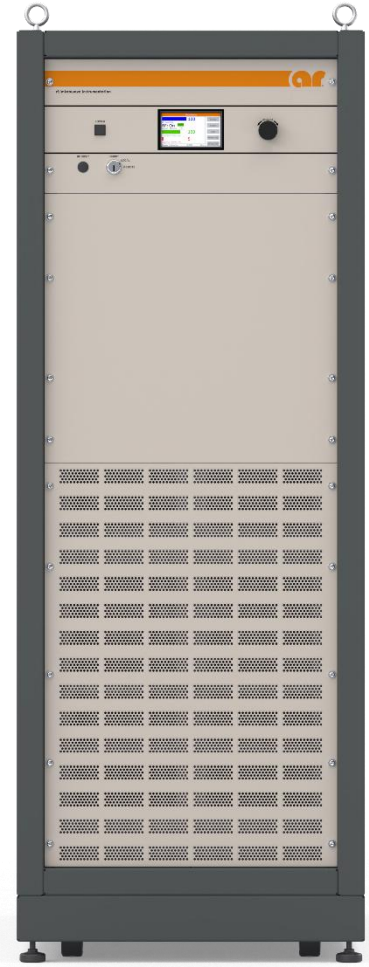
ISO 9001:2015 Certified
ISO 17025 :2017 Accredited

The Model 498 is a solid-state, Class AB design, self-contained, air-cooled, broadband power amplifier designed for pulse applications at low duty factors where instantaneous bandwidth and high gain are required. It will provide 10 kilowatts (typical) across its operating bandwidth of 1.0 – 6.0 GHz.

The Model M498 is equipped with a Digital Control Panel (DCP) which provides both local and remote control of the amplifier. The DCP uses a color LCD touch screen and a single rotary knob to offer status reporting and control capability. The display provides Forward Power and Reflected Power values plus amplifier status. Special features include a gain control and RF output level protection.

Protection is provided from various failure conditions including over-temperature and power supply faults. A front panel display indicates the operational status and fault conditions. All amplifier control functions and status indications are available remotely in GPIB/IEEE-488 format, RS-232 serial and Ethernet. The bus interface connector is located on the back panel and positive control of local or remote operation is assured by a keylock on the front panel of the amplifier.

The export classification for this equipment is 3A999.d. These commodities, technology or software are controlled for export in accordance with the U.S. Export Administration Regulations. Diversion contrary to U.S. law is prohibited.



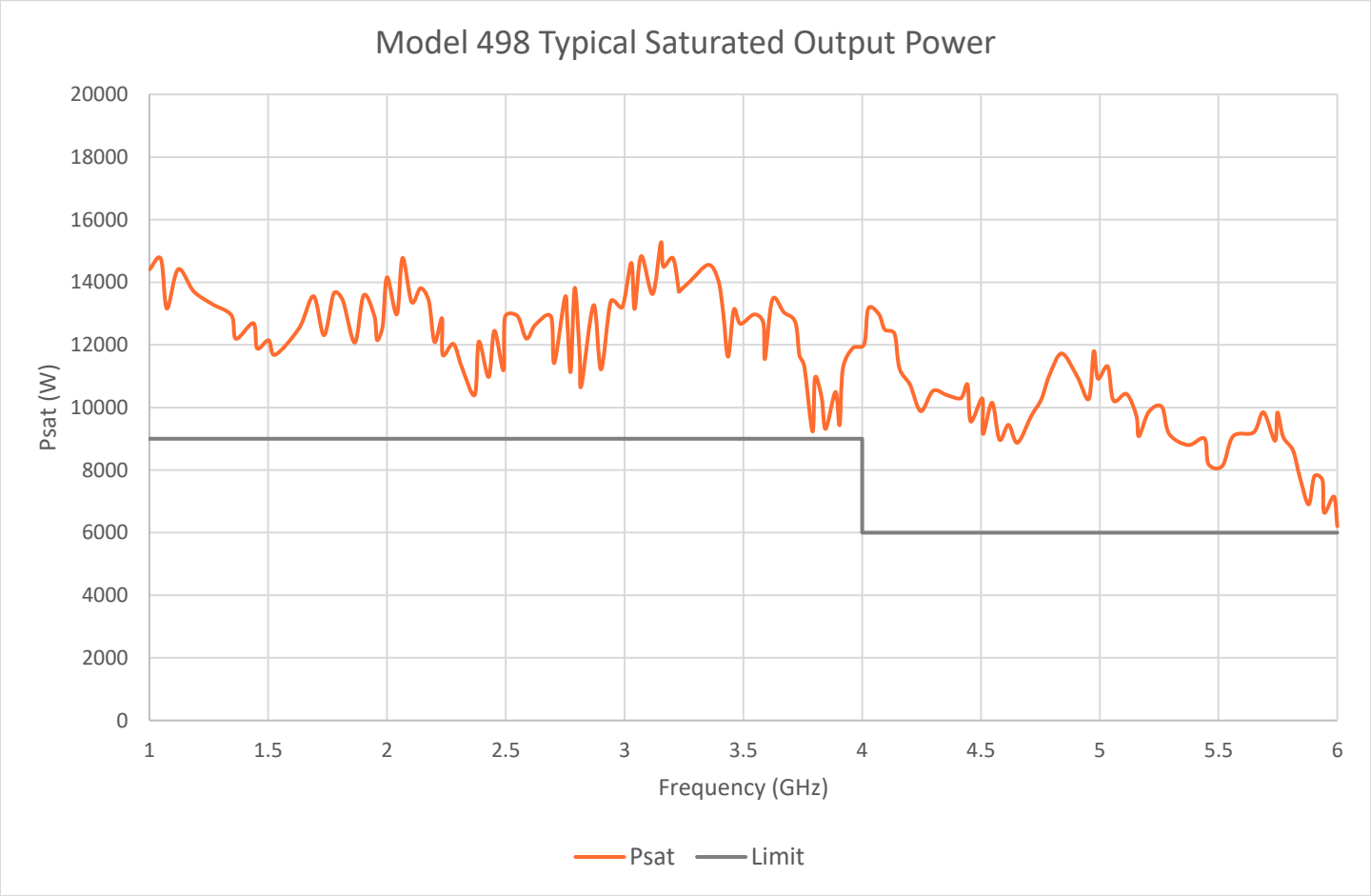
Electrical Specifications					
Parameter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**Unit**
Rated Power Output (1.0 – 4.0 GHz) @ 10% DC – 100 us PW	Psat	9	10	>15	kW
Rated Power Output (4.0 – 6.0 GHz) @ 10% DC – 100 us PW		6	8	>11	kW
Input for Rated Output	Pin			1	mW
				0	dBm
Operating Frequency	BW	1.0		6.0	GHz
Gain (Small Signal)		77	80	82	dB
Gain Reduction Adjustment (when below compression)		20			dB
Flatness (@ rated power)	ΔGP		±1	±2	dB
Input Impedance	Z in		50		Ohm
			1.5:1	≤2.0:1	VSWR
Output Impedance	Z out		50		Ohm
Noise Figure	NF	6	7	≤8	dB
Harmonic Distortion @ rated power	H2, H3		-22	-17	dBc
Spurious				≤-60	dBc
Power Consumption at 10% duty cycle	PD	11	12	13.5	kVA
Modulation	AM, FM or Pulse				

Pulse Capability	
Parameter	**Value**
Pulse Width	100 µs maximum
Pulse Rate	1 kHz maximum
Duty Cycle	10% maximum
RF Rise and Fall	30 ns maximum (10 - 90 %) (Internal RF switch)
Delay	2.5 µs min. from pulse input to RF 90%
Pulse Width Distortion	±25 ns maximum (difference between Pulse input gate and RF pulse)
Pulse Off Isolation	60 dB minimum
Pulse Trigger	+5 V nominal / +3 to 6 V, 50 Ohm input

Absolute Maximum Rating **Exceeding any of the limits listed here may result in permanent damage to the device.**				
Parameter	**Minimum**	**Typical**	**Maximum**	**Unit**
RF Drive		0	+13	dBm
RF Load		1:1	3:1	VSWR
RF Load Reflected Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry up to 2.5 kW reflected Power. Alarm and protection when reflected power is > 2.5 kW (VSWR ≥3:1)			25	%
AC Power (single phase)	200		240	VAC
AC Power	47	60	63	Hz
Ambient Temperature	+5	+25	+40	°C
Storage Temperature	-20		+50	°C
Altitude			1000	M
Shock/Vibration	Normal Truck Transport			

Mechanical Specifications		
Parameters	**Typical**	**Unit**
Amplifier Dimensions (W x H x D) (W x H x D) **(1 x 19”40U Rack)**	57.4 x 177.8 x 95.5	cm
	22.6 x 70.0 x 37.6	in
Weight	660	kg
	1455	lb
Cooling	Forced air (self-contained fans)	
Acoustical Noise Measured @ 1 Meter	65 (typical)	dBA

Connector Interfaces	
Function	**Type**
RF Input	Rear Panel N-female, (50 Ω)
RF Output	Raer panel 7-16 DIN female, (50 Ω)
RF Sample	N, female, rear (50 Ω) (67dB typical) (option front)
Pulse Input	BNC, rear
IEEE-488	24-pin
RS-232	9 pin subminiature D
Ethernet	RJ-45
RS-232 (fiber optic)	ST
USB 2.0 Type B	Type B
Interlock	15-pin subminiature D

Regulatory Compliance	
Type	**Standard**
EMC	EN 61326-1
Safety	UL 61010-1
	CAN/CSA C22.2 #61010-1
	CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
Export	3A999.d

Power Graph