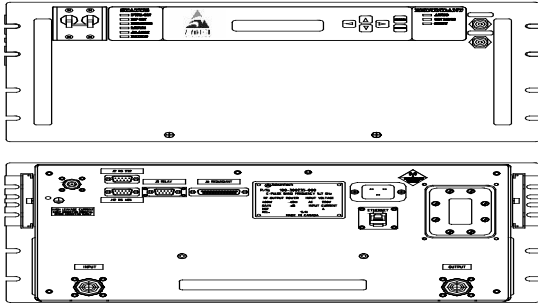


500W C-Band Rack-mount Dual Mode SSPA for Electron Accelerators – CW or Pulsed Mode

ABPA-C500

Designed for modern, high performance Electron Accelerator Facilities



Features

- Can operate in dual mode CW or Pulsed
- Exceptionally low Pulse -to -Pulse Jitter
- Integrated Oxygen Free Copper, High Pressure, Liquid Cooling System
- Low Noise Figure
- Continuous Temperature gain compensation , Zero gain step discontinuity
- Automatic over-temperature shutdown
- Automatic high reflected power shutdown
- Infinite VSWR protection
- Power factor correction
- CE Marking

Overview

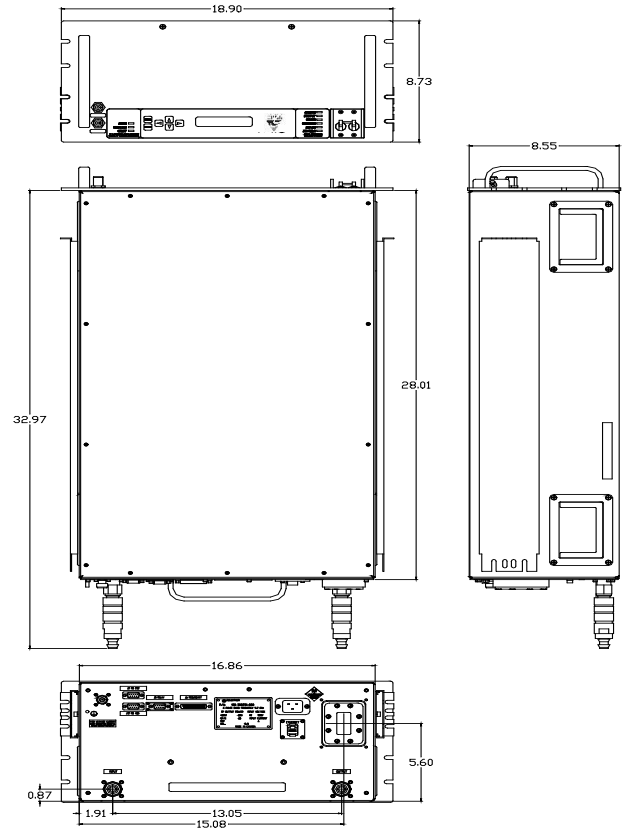
The ABPA-C500 is a rack-mount solid-state power amplifier (SSPAs), operating in C-Band frequency range of 5.712 GHz +/- 50 MHz. The amplifier is an integrated unit, complete with power supply and liquid cooling system. Intended for indoor operation, the amplifiers are of compact size and occupy five rack-mounting spaces (5 RU – 8.75”) of a standard 19-inch rack. Built-in microprocessor controller provides capability for serial port interfaces (RS485 or RS232) for remote monitoring and control.

Advantech’s SSPAs set the industry standard for linearity and operating efficiency. Built-in design features and assembly methods incorporated with efficient combining techniques result in the trouble-free operation of the amplifier.

Application

The featured SSPAs are designed for Electron Accelerator Scientific Facilities. The units are intended as drivers for Very High Power Magnetrons used inside the multistage acceleration section of the facility. The key parameter that enables this technology is the extreme low pulse-to-pulse jitter performance of these SSPAs.

The units can operate either in Pulse Mode, or Constant Wave (CW) The amplifiers are cooled using an advanced built in water cooling system, which is corrosion free in presence of high chemically aggressive cooling liquids, as typically used in Electron Accelerators.



Outline drawing

Accessories

- Redundancy Kit
- Shelf slides
- Remote M&C panel (Ethernet port optional)
- Other frequencies are available on request

Redundancy

With the addition of the appropriate waveguide and switch kit, the ABPA-C500 amplifiers can be easily converted for the operation in 1:1 redundant configuration without the use of any external controller. Full remote Monitor and Control of the redundant system is accessible via the serial port (RS-485).



500W C-Band Rack-mount Dual Mode SSPA for Electron Accelerators – CW or Pulsed Mode

Technical Specifications		500W	
Electrical Characteristics			
Pulse Mode Operation		Pulse Length- 3uS, Pulse Repetition : 100 Hz	
Pulse –to Pulse Jitter		< 100 ppm rms amplitude change pulse-to-pulse on flat top < 20 mdeg rms phase change pulse-to-pulse on flat top	
CW Mode			
Output power (Psat)		+57 dBm	
Output power (P1dB)		+56 dBm	
Power gain @ maximum gain setting		70 dB min	
Operating frequency range		5.712 GHz +/- 50 MHz	
Max input power without damage		+7 dBm	
Gain slope		0.6 dB max over 40 MHz	
Gain flatness over 100MHz		±0.5 dB	
Gain variation over temperature		±1.5 dB over full operating temperature range	
Gain variation over 24 hours		±0.25 dB max @ constant temperature & drive level	
Gain adjustment range		20 dB min. (0.1 dB resolution)	
Input return loss		18 dB	
Output return loss		19 dB	
Noise Figure		Less than 6 dB	
Spurious at rated power		-65 dBc, max	
Harmonics at rated power		-90 dBc, max	
AM/PM conversion at rated power		2.5°/dB max. at P1dB, 1°/dB max. at 3 dB back-off	
Third order IMD (2 tones 5 MHz apart)		-26 dBc max. at 3 dB total back-off from rated P1dB	
Group delay		Linear: 0.02 nsec/MHz max. Parabolic: 0.003 nsec/MHz ² max. Ripple: 1.0 nsec p-p max.	
Residual AM (F* - frequency in kHz)		0-10 kHz 10 kHz - 500 kHz 500 kHz - 1 MHz	-45 dBc -20 (1.25+log F*) dBc -80 dBc
Power Requirements			
AC input voltage		220 VAC	
Power consumption (nominal)		2000W	
Mechanical Characteristics			
Panel height		5 RU of 19" rack	
Weight		46 kg (101 lbs)	
Cooling system		Liquid Cooling, demineralized water, up to 10 Bar pressure	
Interfaces:	RF input N-Type (F) RF output CPR-137 contact Liquid cooling In/Out : ½ inch male thread, with quick connect self- closing coupling Type Swagelok SS-QC8-B-8MT	Redundancy D-sub 15S Serial Port D-sub 9S Discrete port D-sub 25S	AC Line IEC 309 inlet Output sample port N-Type (F)
Environmental Conditions			
Operating temperature:		0°C to +50°C	
Humidity		5%-95%, non-condensing	
Altitude		10,000' AMSL, de-rated 2°C/1,000' from AMSL	

Ref.: PB-ABPA-C500-18245

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