

XPA X-Band Solid State Indoor Power Amplifiers



XPA-90/175/200



XPA-150

APPLICATION

Each Comtech EF Data X-Band Power Amplifier (XPA) series Solid State Power Amplifier (SSPA) delivers its rated power, guaranteed, at the 1 dB compression point, to the transmit waveguide flange. It provides a cost effective and more reliable replacement for Transfer Wave Tube (TWT) amplifiers in X-Band terminals. Due to its small form factor, it also is ideal for the construction of small "flyaway" terminals, medium sized (equivalent to Intelsat F class) earth stations, and hub earth stations for small to medium size private networks or point-to-point links.

THE SOLID STATE ADVANTAGE

Each XPA series SSPA is constructed with highly reliable Gallium Arsenide Field Effect Transistors (GaAs FETs). With third order inter-modulation products from 4 to 6 dB better than TWT ratings, the Comtech EF Data unit replaces TWTs with saturated power levels of up to twice the XPA's rated output. The XPA SSPAs also provide a Mean Time Between Failures (MTBF) that is 4 to 5 times greater than the typical TWT MTBFs.

OPTION FREE

Comtech EF Data's XPA series of SSPAs come equipped with useful features that other manufacturers offer as options. Included in the base price are temperature compensation, sample ports, power monitor, and full remote monitor and control capabilities.

FUNCTIONAL DESCRIPTION

Each XPA series SSPA consists of a Comtech EF Data SSPA module with the Monitor/Control Processor (MCP), a field replaceable power supply, and a field replaceable fan assembly. The amplifier features a Comtech EF Data low loss combining technique and MCP based temperature versus gain compensation.

FIELD REPLACEABLE POWER SUPPLY

Recognizing that the MTBF limiting factor for almost all electronic equipment is the power supply, the XPA provides for easy field replacement. Simply disconnect the AC mains, release the clasps, and remove the supply from the SSPA module.

BUILT-IN REDUNDANCY CONTROLLER

Each Comtech EF Data XPA amplifier has the ability to function as a 1+1 or 1+2 redundancy controller in the backup mode. The optional redundancy configuration is implemented by attaching a ganged waveguide/coax transfer switch(es) to the input and output connectors of the amplifiers with a combination coaxial cable and waveguide kit. When the backup SSPA is commanded into the controller mode, it monitors the online SSPA(s) for faults. A faulted online unit may be disconnected and replaced without affecting the online power amplifier.

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Output

Frequency	7.9 to 8.4 GHz	
Power	XPA-90	49.5 dBm min @ 1 dB compression
	XPA-150	51.7 dBm min @ 1 dB compression
	XPA-175	52.2 dBm min @ 1 dB compression
	XPA-200	53.0 dBm min @ 1 dB compression
Mute	-60 dB	
Impedance	50Ω	
VSWR	1.25:1 maximum	
Connector	CPR-112G waveguide	

Gain

Linear	XPA-90	57.0 dB min, 60 dB typical
	XPA-150	60.0 dB ± 2.0 dB
	XPA-175	62.0 dB min, 65 dB typical
	XPA-200	62.0 dB min, 67 dB typical
Adjust	XPA-90/175/200	20 dB in 0.25 dB steps
	XPA-150	30 dB in 0.25 dB steps
Full Band Per 40 MHz	XPA-90/175/200	± 0.75 dB
	XPA-90/175/200	± 0.25 dB
Per 500 MHz Per Day	XPA-150	± 0.50 dB
	XPA-150	± 0.75 dB
Per Year +20 to +30°C	XPA-150	± 0.30 dB
	XPA-150	± 0.50 dB
+0 to +50°C	XPA-150	± 0.25 dB
	XPA-150	± 0.50 dB

Third Order Inter-Modulation

Intercept	XPA-90	+57.5 dBm min, 59.0 typical
	XPA-150/175/200	+60.5 dBm min, 62.0 typical
Products	XPA-90/175/200	-30 dBc typical, -25 dBc max @ 3 dB total backoff (two tone, Δ f+1MHz)
	XPA-150	-30 dBc typical @ SCL +45.7 dBm

AM to PM Conversion

2.0° typical, 3.0 max at rated output

Group Delay (per 40 MHz)

Linear	± 0.03 ns/MHz	
Parabolic	± 0.003 ns/MHz ²	
Ripple	1.0 ns peak to peak	

Spurious

Carrier Related	-65 dBc	
Line Related	XPA-90/175/200	-50 dBc
	XPA-150	-55dBc

Input

Level	XPA-150	-10 dBm typical
Impedance	50Ω	
Noise Figure	XPA-090/175/200	10 dB typical, 15 dB max
	XPA-150	13 dB typical, 15 dB max
VSWR	1.25:1 maximum	
Connector	Type N	

Front Panel

Display	20 x 2 LCD
Data Entry	Cursor control keypad
Output Sample	Type N, 50Ω, -40 dBc
Input Sample	Type N, 50Ω, -20 dBc

Remote Control

Com Port	EIA-485 or EIA-232
Protocol	Comtech ASCII or Emulation Mode

Alarms

Summary Fault	Form C
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LED

Power On	Green
Fault	Red
Stored Fault	Red
Tx On	Yellow
Online	Yellow
Remote	Yellow

Mechanical

Dimensions	XPA-90	9H x 19W x 24D inches (22H x 48W x 61D cm)
	XPA-150/175	11H x 19W x 24D inches (27H x 48W x 61D cm)
	XPA-200	12H x 19W x 24D (31H x 48W x 61D cm)
Weight	XPA-200	100 lbs (45 Kg)

Environmental

Temperature Operating	XPA-90	0 to 50°F (32 to 122°C)
	XPA-150/175	0 to 40°F (32 to 104°C) (Derate 2° C/1000ft AMSL)
Storage Humidity Operating	-40 to 70°F (-40 to 158°C)	
	10 to 95% Non-condensing	
Storage Altitude Operating	0 to 100% Non-condensing storage	
	XPA-150	15,000 ft. MSL
Storage Shock	XPA-150	50,000 ft. storage
	Normal commercial shipping and handling	

Power Requirements

Standard	XPA-90/150	90 to 135 VAC, 47 to 63 Hz (Auto-Select)
	XPA-175	180 to 270 VAC, 47 to 63 Hz
	XPA-200	100 to 140 (Special Order) or 180 to 270 VAC, 47 to 63 Hz, 2600 VA
	XPA-90	850W
	XPA-150/175/200	1800W

