



XPA-175/-200

## 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 intermodulation 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.

## 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.

## Remote Control

The remote control interface is selectable between EIA-232 and EIA-485, as well as full Ethernet including Telnet, SNMP and pre-loaded HTML GUI. All configuration control, status retrieval, and adjustments are available as simple ASCII commands through the serial interface or through the front panel menu. As a cost option, the remote control command structure can be customized in order to accommodate existing network control software.

## Specifications

### Output

Frequency	7.9 to 8.4 GHz
Power	
XPA-175	52.2 dBm min. @ 1 dB compression
XPA-200	53.0 dBm min. @ 1 dB compression
Mute	-60 dB
Impedance	50 $\Omega$
VSWR	1.25:1 maximum
Connector	CPR-112G waveguide

### Gain

Linear	
XPA-175	62.0 dB min., 65 dB typical
XPA-200	62.0 dB min., 67 dB typical
Adjust	
XPA-175/200	20 dB in 0.25 dB steps
Full Band	
XPA-175/200	$\pm 0.75$ dB
Per 40 MHz	
XPA-175/200	$\pm 0.25$ dB

### Third Order Inter-Modulation

Intercept	
XPA-175/200	+60.5 dBm min., 62.0 typical
Products	
XPA-175/200	-30 dBc typical, -25 dBc max. @ 3 dB total backoff (two tone, $\Delta f$ +1MHz)

### AM to PM Conversion

2.0° typical, 3.0 max. at rated output

### Group Delay (per 40 MHz)

Linear	$\pm 0.03$ ns/MHz
Parabolic	$\pm 0.003$ ns/MHz <sup>2</sup>
Ripple	1.0 ns peak to peak

### Spurious

Carrier Related	-65 dBc
Line Related	
XPA-175/200	-50 dBc

### Input

Level	
Impedance	50 $\Omega$
Noise Figure	
XPA-175/200	10 dB typical, 15 dB max.
VSWR	1.25:1 maximum
Connector	Type N

### Phase Noise (dBc/Hz) (with optional internal BUC and reference)

	Typical dBc/Hz	Spec dBc/Hz
Offset = 100 Hz	-78	-72
1 KHz	-87	-84
10 KHz	-104	-97
100 KHz	-114	-107
1 MHz	-132	-115

### Front Panel

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

### Remote Control

Com Port	EIA-485 or EIA-232, RJ-45 for Ethernet
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	(height x width x depth)
XPA-175	11" x 19" x 24" (27 x 48 x 61 cm)
XPA-200	12" x 19" x 24" (31 x 48 x 61 cm)
Weight	
XPA-200	100 lbs (45 kg)

### Environmental

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

### Power Requirements

Standard	
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-175/200	1800 W



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