



XPA-090/175/200



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 SSPA's 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-090 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 | 50 Ω |
| VSWR | 1.25:1 Maximum |
| Connector | CPR-112G Waveguide |

Gain

| | |
|--------------|--|
| Linear | XPA-090 57.0 dB min, 60 dB typ XPA-150 60.0 dB \pm 2.0 dB XPA-175 62.0 dB min, 65 dB typ XPA-200 62.0 dB min, 67 dB typ |
| Adjust | XPA-090/175/200 20 dB in 0.25 dB steps XPA-150 30 dB in 0.25 dB steps |
| Full Band | XPA-090/175/200 \pm 0.75 dB |
| Per 40 MHz | XPA-090/175/200 \pm 0.25 dB XPA-150 \pm 0.50 dB |
| Per 500 MHz | XPA-150 \pm 0.75 dB |
| Per Day | XPA-150 \pm 0.30 dB |
| Per Year | XPA-150 \pm 0.50 dB |
| +20 to +30°C | XPA-150 \pm 0.25 dB |
| +0 to +50°C | XPA-150 \pm 0.50 dB |

Third Order Inter-modulation

| | |
|-----------|---|
| Intercept | XPA-090 +57.5 dBm min, 59.0 typ XPA-150/175/200 +60.5 dBm min, 62.0 typ |
| Products | XPA-090/175/200 -30 dBc typ, -25 dBc max @ 3 dB total backoff (two tone, Δf = 1MHz) XPA-150 -30 dBc typ @ SCL +45.7 dBm |

AM To PM Conversion

2.0° typ, 3.0 max at rated output

Group Delay (per 40 MHz)

| | |
|-----------|---------------------------------|
| Linear | \pm 0.03 ns/MHz |
| Parabolic | \pm 0.003 ns/MHz ² |
| Ripple | 1.0 ns peak to peak |

Spurious

| | |
|-----------------|---|
| Carrier Related | -65 dBc |
| Line Related | XPA-090/175/200 -50 dBc XPA-150 -55dBc |

Input

| | |
|--------------|--|
| Level | XPA-150 -10 dBm typical |
| Impedance | 50 Ω |
| Noise Figure | XPA-090/175/200 10 dB typ, 15 dB max XPA-150 13 dB typ, 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, 50 Ω , -40 dBc |
| Input Sample | Type N, 50 Ω , -20 dBc |

Remote Control

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

Alarms

| | |
|---------------|--------|
| Summary Fault | Form C |
|---------------|--------|

LED

| | |
|--------------|--------|
| Power On | Green |
| Fault | Red |
| Stored Fault | Red |
| TX On | Yellow |
| Online | Yellow |
| Remote | Yellow |

Mechanical

| Dimensional | Inches | Centimeters |
|-------------|-----------------|-----------------|
| XPA-090 | 9H x 19W x 24D | 22H x 48W x 61D |
| XPA-150/175 | 11H x 19W x 24D | 27H x 48W x 61D |
| XPA-200 | 12H x 19W x 24D | 31H x 48W x 61D |
| Weight | Pounds | Kilograms |
| XPA-200 | 100 | 45 |

Environmental

| Temperature | Centigrade | Fahrenheit |
|-------------|--|-------------|
| XPA-090/200 | Operating 0 to 50° | 32 to 122° |
| XPA-150/175 | Operating 0 to 40° | 32 to 104° |
| | (Derate 2° C/1000ft AMSL) | |
| | Storage -40 to 70° | -40 to 158° |
| Humidity | 10 to 95% Non-condensing operating 0 to 100% Non-condensing storage | |
| Altitude | XPA-150 15,000 ft. MSL operating XPA-150 50,000 ft. storage | |
| Shock | Normal commercial shipping and handling | |

Power Requirements

| | |
|-----------------|--|
| Standard | |
| XPA-090/150 | 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 or 180 to 270 VAC, 47 to 63 Hz, 2600VA |
| XPA-090 | 850W |
| XPA-150/175/200 | 1800W |