XT-400DB C-Band, Ku-Band Dual-Band Antenna Mount Amplifiers

- **325 Watts, C-Band**
  325 Watts, Ku-Band
- **No Shelter Required**
- **Short Waveguide Run**
- **Power Factor Corrected**
- **High Efficiency Dual-Stage TWTs**

The XT-400DB series are compact self-contained antenna mountable power amplifiers designed for low cost installation and long life. The XT-400DB series design eliminates the need for an amplifier shelter as well as a long waveguide run between the amplifier and the antenna feed horn; for example, an antenna mounted 350 Watt amplifier with its shorter waveguide run will often deliver EIRP comparable to a 600 Watt rack mounted HPA. RF filters, cooling, and monitoring & control systems are all self-contained within the HPA. These features provide high reliability, low maintenance costs, and low replacement costs.

The XT-400DB series incorporates high efficiency, dual-stage collector TWTs. Some of the benefits of this type of TWT are: reduced prime power consumption, lower internal operating temperatures, and reliability enhancement. These benefits are obtained for both the linear and saturated modes of operation. One of the features of the XT-400DB series is incorporation of power factor correction circuitry that minimizes line current distortion and reduces the required volt-amps. The combination of power factor correction and high efficiency TWTs reduces input Volt-Amps by 45% when compared to equivalent amplifiers. A high frequency resonant conversion power supply is used that accepts a wide range of prime power (100 to 260 VAC). The automatic features of the power supply include quick recovery from prime power outages and multiple helix fault resets (three fault cycles).

A complete monitoring & control system is built into the unit. Ten status and fault monitors are provided for external monitoring.

The XT-400DB series can be configured for single thread, redundant, phase combined, or linearized operation.

A remote external controller is available to operate the HPA from a user selected location. Mounting brackets can be supplied to mount the HPA to most popular antennas.

3550 Bassett Street • Santa Clara, CA • 95054
Tel: (408) 213-3000 • Fax: (408) 213-3001
www.xicomtech.com

PERFORMANCE SPECIFICATIONS

Parameter	C-Band, XT-400DB	Ku-Band, XT-400DB
FREQUENCY RANGE	5.850 to 6.425 GHz	14.0 to 14.5 GHz
OUTPUT POWER		
Traveling Wave Tube	325 W	325 W
Rated Power @ Amplifier Flange	290 W	290 W
GAIN		
Large Signal, minimum	65 dB	65 dB
Small Signal, minimum	70 dB	70 dB
Maximum SSG Variation Over:		
Any Narrow Band	1.5 dB 40 MHz	1.3 dB 40 MHz
Full Band	2.5 dB	2.5 dB/500 MHz
Slope, maximum	±0.04 dB/MHz	±0.04 dB/MHz
Stability, 24 Hr maximum	± 0.25 dB	± 0.25 dB
Stability, Temperature	± 1.0 dB maximum over temperature range at any frequency	
INTERMODULATION with two equal signals	-17 dBc maximum with two equal carriers at 4 dB total output backoff	
HARMONIC OUTPUT, maximum	0 dBc @ 49 dBm	-12 dBc
AM/PM CONVERSION, maximum	2.5 deg/dB at 6 dB below rated power	
NOISE POWER, maximum		
Transmit Band	- 64 dBW/4 kHz	- 64 dBW/4 kHz
Receive Band	- 64 dBW/4 kHz 3.7 to 4.2 GHz	- 64 dBW/4 kHz 10.95 to 12.75 GHz
GROUP DELAY, maximum		
Bandwidth	Any 40 MHz	Any 80 MHz
Linear	0.01 nS/MHz	0.01 nS/MHz
Parabolic	0.005 nS/MHz^2	0.005 nS/MHz^2
Ripple	0.5 nS/Pk-Pk	0.5 nS/Pk-Pk
RESIDUAL AM NOISE, maximum	- 50 dBc to 10 kHz - 20 (1.5 + logf) dBc 10 to 500 kHz - 85 dBc above 500 kHz	
PHASE NOISE, maximum	10 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc	
VSWR		
Input, maximum	1.3:1	1.3:1
Output, maximum	2.2:1	2.2:1

PRIME POWER

100-260 VAC

47 to 63 Hz, single phase

1950 VA Maximum

0.95 Minimum Prime Power Factor

CE COMPLIANT

OPTIONS

Detected RF
Remote External Controller
Gain Control
Serial or Discrete Interface
Extended Frequency Coverage
1:1. 1:2, 1:N Redundancy
Variable Phase Power Combining
Integrated Linearizers

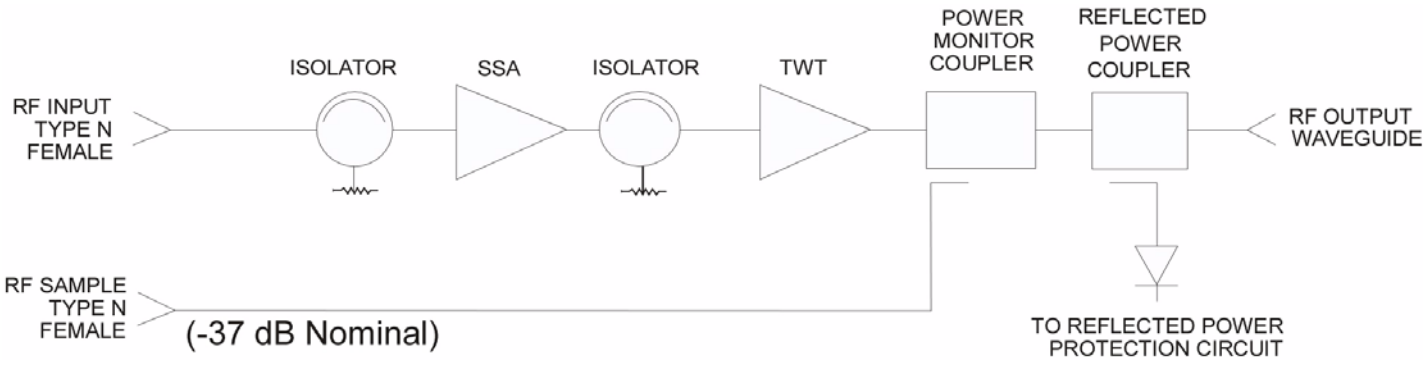
ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50° C to + 70° C
OPERATING TEMPERATURE RANGE	-40° C to +50° C
HUMIDITY	Up to 100% Condensing
ALTITUDE	10,000 feet MSL maximum
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air

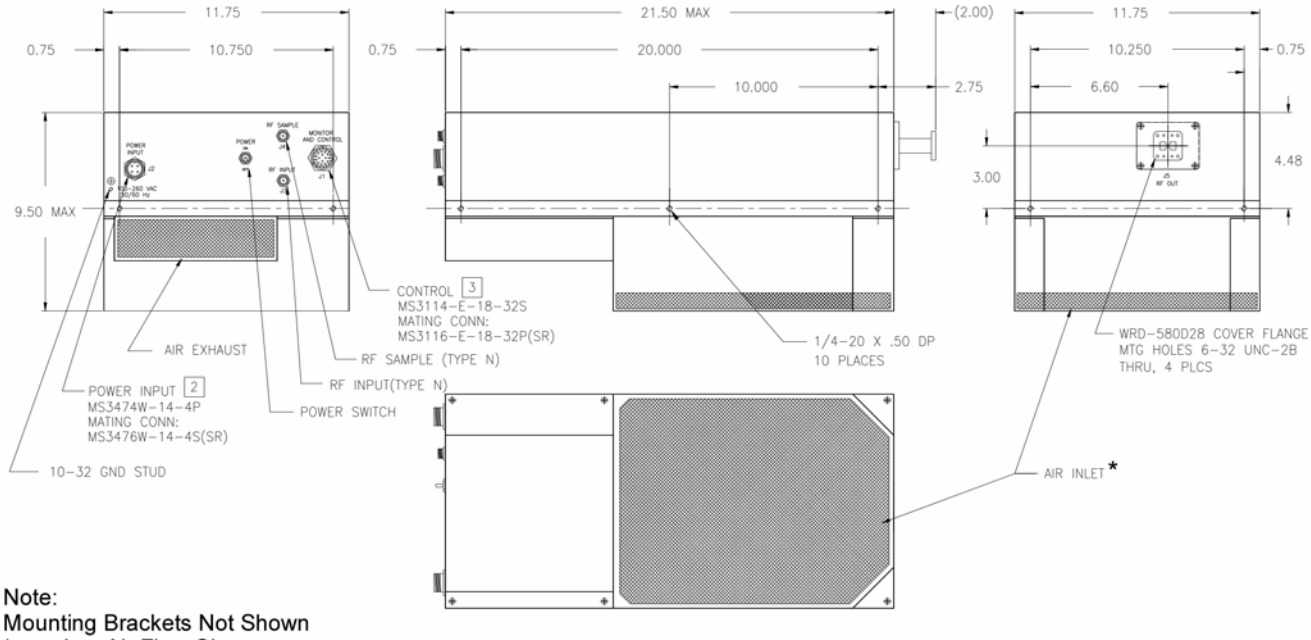
INTERFACE

TYPE	FUNCTION		
CONTROLS	HV ON	Heater Standby	Fault Reset
	Power ON		
	Note: Heater Standby reduces the TWT heater voltage for situations where the high voltage is off for extended periods.		
MONITORS - DIGITAL	High Voltage ON	Heater Time Out (FTD)	Standby
	Helix Current/Arc Fault	Helix Current Latched Fault	Fan Fault
	Summary Fault	High Voltage Fault	
MONITORS - ANALOG	Helix Current (2 mA/V)	Cathode Voltage)1000:1 V/V)	+15 VDC (100 MA max)
	TWT Temperature	RF Output Power (optional)	+24 VDC (100 MA max)

Block Diagram



Outline Drawing



Note:
Mounting Brackets Not Shown
* requires Air Flow Clearance

Typical Weight: 56 lbs (25.4 kg)

Document # 805-1121-001 06/10/2004
XT-400DB REV 1

3550 Bassett Street • Santa Clara, CA • 95054
Tel: (408) 213-3000 • Fax: (408) 213-3001
www.xicomtech.com