400 Watt Ku-Band Rack Mount High Power Amplifier

FEATURES

- *Compact 3RU chassis*
- *Extended frequency bands available*
- *Menu driven front panel display and control*
- *1:1, 1:2, 1:N redundancy*
- *Optional integrated linearizer*

The **XTRD-400K** is a highly efficient rack mountable traveling wave tube amplifier (TWTA) designed for fixed and mobile uplink applications. The unit includes RF gain control, a solid state pre-amplifier, RF filters, cooling, and monitoring and control (M&C) systems. Rack space is conserved because the amplifier occupies only 3 rack units (5¼ inches) of a standard 19-inch rack cabinet. Nominal weight is 56 pounds.

The unit features a menu driven front panel display and RS-232/422/485 serial port interfaces for complete computer control. RF, traveling wave tube, and default parameters are easily monitored on the four line front panel display. Gain control is provided via the front panel or through the serial interface.

The **XTRD-400K** incorporates high efficiency, dual stage collector TWTs. Reliability is enhanced because both prime power consumption and internal operating temperatures are reduced for both the linear and saturated modes of operation. Power factor correction circuitry is also included which minimizes line current distortion and reduces the required Volt-Amps input. The automatic features of the high frequency resonant conversion power supply include quick recovery from prime power outages and mulitiple helix fault resets (three fault cycles.) Depending upon user requirements these amplifiers can be configured for either single thread or redundant system operation.

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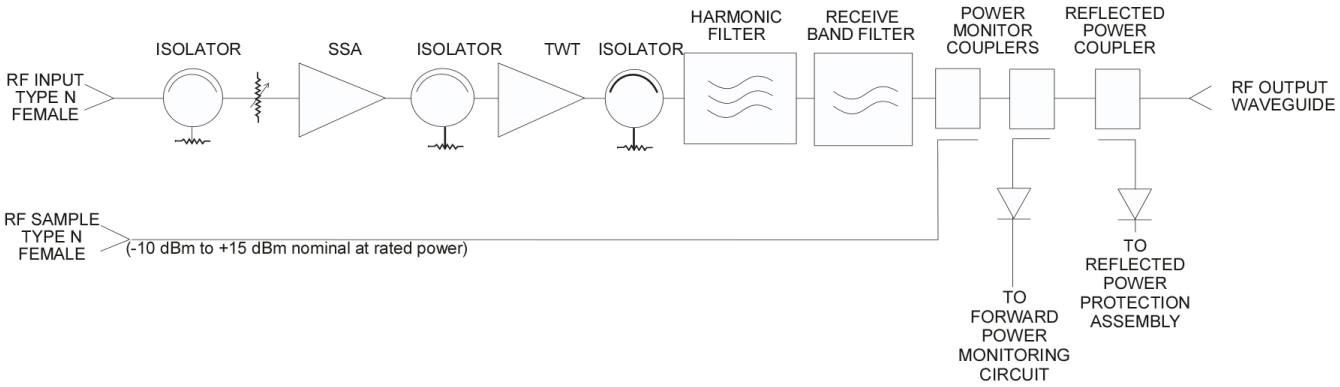
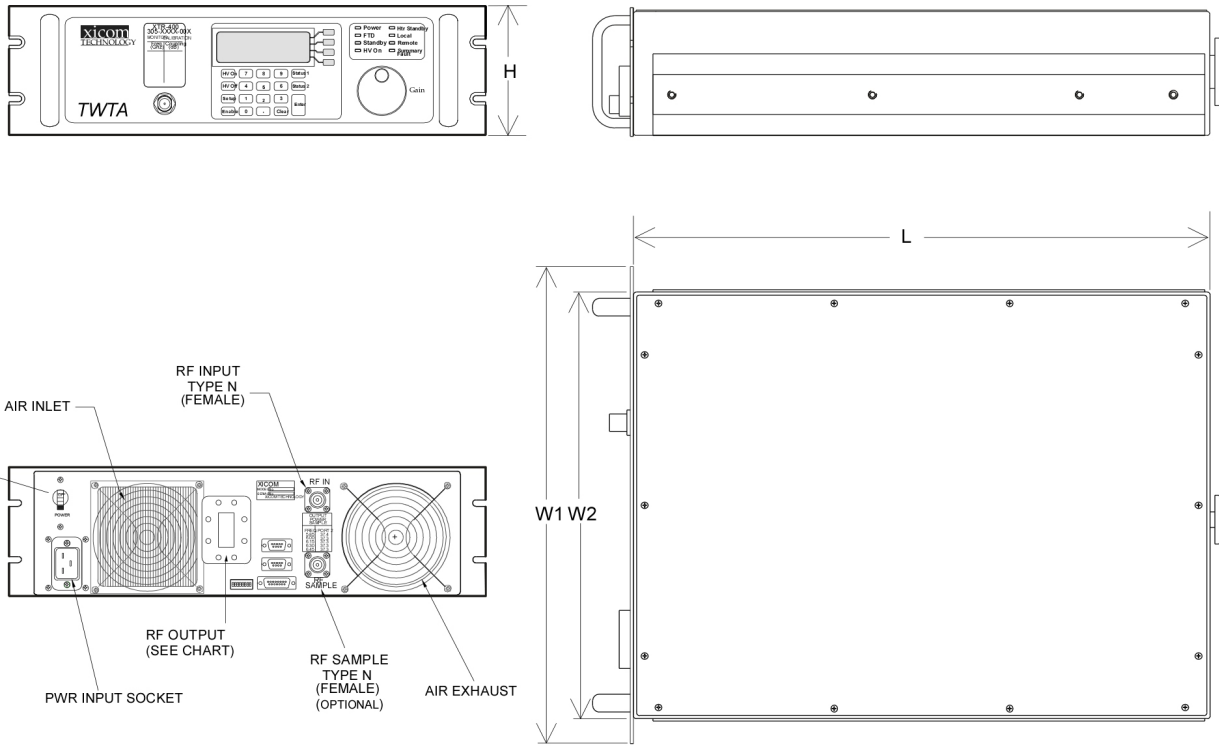
PERFORMANCE SPECIFICATION

Parameters	XTRD-400K
FREQUENCY RANGE (extended frequency coverage available)	13.75 to 14.5 GHz (12.75 to 14.5 GHz)
OUTPUT POWER	
Traveling Wave Tube	400 W
Rated Power @ Amplifier Flange (minimum)	350 W
GAIN	
Large Signal (minimum)	70 dB
Small Signal (minimum)	75 dB
Attenuator Range (continuous)	25 dB
Maximum SSG Variation Over:	
Any Narrow Band	1.0 dB per 80 MHz
Full Band	2.5 dB/750 MHz
Slope (maximum)	± 0.02 dB/MHz
Stability, 24 hr. (maximum)	± 0.25 dB
Stability, Temperature (maximum)	± 1.0 dB over temperature range at any frequency
INTERMODULATION (maximum) with two equal carriers	-18 dBc @ 4 dB total output power backoff from rated power
HARMONIC OUTPUT (maximum)	-60 dBc
AM/PM CONVERSION (maximum)	2.5 deg/dB at 6 dB below rated power
NOISE POWER (maximum)	
Transmit Band	-70 dBW/4 kHz
Receive Band	-150 dBW/4 kHz 10.95 to 12.75 GHz
GROUP DELAY (maximum)	
Bandwidth	Any 80 MHz
Linear	0.01 nS/MHz
Parabolic	0.001 nS/MH^2
Ripple	0.5 nS/Pk-Pk
RESIDUAL AM NOISE (maximum)	-50 dBc to 10 kHz -20 (1.5 + logf) dBc to 500 kHz -85 dBc above 500 kHz
PHASE NOISE (maximum)	12 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc
VSWR	
Input (maximum)	1.3:1
Output (maximum)	1.3:1

BLOCK DIAGRAM



OUTLINE DRAWING



RF OUTPUT (WAVEGUIDE FLANGE)
Ku-BAND-WR-75

DIMENSIONS		
	inches	centimeters
W1	17.00	43.18
W2	19.00	48.26
L	23.00	58.42
H	5.22	13.26

Nominal Weight = 56 lbs (25.4 kg)

PRIME POWER

90 to 264 VAC
47 to 63 Hz, Single Phase
1400 VA Maximum, 1300 VA Typical
0.95 Minimum Prime Power Factor

CE

ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-10°C to +50°C (2°C/1000 Feet Derating)
HUMIDITY	Up to 95% Noncondensing
ALTITUDE	10,000 Feet MSL (maximum)
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air

INTERFACE

	Type	Function	
CONTROLS	LOCAL	Local/Remote	AC Power On/OFF
	LOCAL AND REMOTE	Gain	High Voltage ON/OFF
		Min/Max Power Alarm/Fault	Audio Alarm ON/OFF
		Reflected Power Alarm/Fault	Units (Watts, dBm, dBW)
		Fault Reset	Lamp Test
		Heater Standby ON/OFF	
STATUS	FRONT PANEL LEDs	Standby	Power
		Local	Remote
		Summary Fault	High Voltage ON/OFF
		Heater Time Out (FTD)	Heater Standby
	FRONT PANEL DIGITAL DISPLAY	Power Out	Beam Hours
		Reflected Power	Helix Current
		TWT Temperature	Helix Voltage
		Heater Hours	Faults: High VSWR High Voltage Helix Current TWT Temperature
	DRY FORM-C RELAY CONTACTS (2)	Summary Fault	
COMPUTER SERIAL PORT	HARDWARE INTERFACE	Two Ports: RS-232 & RS-422/RS-485	
	XICOM COMMAND SET	ASCII Commands	
	RF SAMPLE PORT COUPLING	-37 dB Nominal	

OPTIONS

- Extended Frequency Coverage
- 1:1, 1:2, 1:N Redundancy
- Variable Phase Combined
- Integrated Linearizer
- Block Upconverter

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