

Features

- Ethernet
- Web Page
- RS-232 / RS-485
- Beacon receiver interface
- Integrated redundancy, 3 switches
- Data & Event Logger
- Selectable discrete interfaces
 - Interlock, RF inhibit, Fault
- RF arc protection
- Reflected power protection
- Thermal protection
- Air filter
- Waveguide quick connect



The PA20-Ka500 series power amplifiers provide the best in class Size, Weight and Power performance of any SATCOM outdoor power amplifier. These amplifiers are designed to optimize linear power performance and minimize power consumption, making them the most efficient linear power amplifiers available. The carbon footprint of a PA20-Ka500 is driven by the high efficiency power conversion of the traveling wave tube; an unmatched technology for power conversion.

The PA20-Ka500 series power amplifiers are designed for global use. The reduced size and weight is user friendly for shipping and installation.

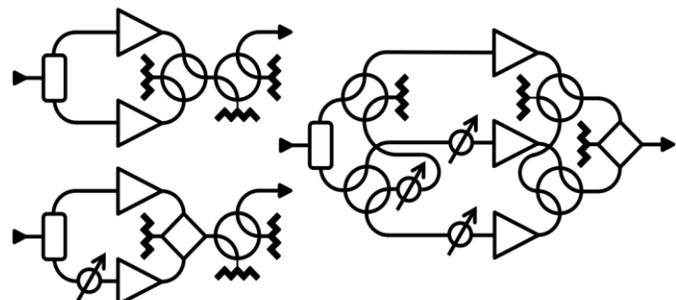
Reliability is built-in. Designs are qualified and all products are manufactured in the USA under very stringent standards for quality and workmanship.

The PA20-Ka500 amplifier's internal monitor & control system provides

Ethernet connectivity with plug and play web page interface for out of the box use. Additionally, each amplifier includes a detailed system configuration interface for custom integration, as well as, multiple serial interfaces and multiple configurable discrete interfaces.

The PA20-Ka500 series power amplifiers are equipped with internal redundancy control, eliminating the need for external controllers. Systems can be configured for redundancy, power combining and combinations of these. Custom configurations with up to 3 switches can be managed over addressable Ethernet on a local area network.

Redundant and Phase Combined Systems



RF Performance:

Frequency	27.5 – 30.0 GHz
Bandwidth	2500 MHz
Output Power	(for load VSWR ≤ 1.5:1)
TWT Power, PEAK (P _{TWT-PK})	57.0 dBm (500 W) typical
Rated (P _{RATED}) (PA flange)	56.4 dBm (440 W)
Maximum Linear (MLP), P _{MLP}	53.4 dBm (220 W) w/linearizers 49.4 dBm (87 W) w/o linearizers

Gain

Rated, G _{RATED}	≥ 70 dB w/linearizer ≥ 70 dB w/o linearizer
Linear, G _{LIN}	≥ 70 dB ≤ G _{LIN} ≤ 75 dB
Variation, 60 MHz, ΔG _{60MHz}	≤ 0.8 dB peak-peak
Variation, 500 MHz, ΔG _{500MHz}	≤ 1.0 dB peak-peak
Variation, 1000 MHz, ΔG _{1000MHz}	≤ 2.5 dB peak-peak
Slope, ΔG _{SLOPE}	± 0.04 dB/MHz
Gain Stability vs. Time @ constant drive & temp	± 0.25 dB/24 hours
Gain Stability vs. Temperature @ constant drive & frequency	± 1.0 dB
Adjustment range, G _{ADJ}	30.0 dB typical
Adjustment step size	0.1 dB

Linearity

AM/PM @ P _O ≤ MLP	≤ 2.0°/dB
Inter-modulations (IMD) 2-tone	≤ -24 dBc @ P _O ≤ MLP
2-tone w/linearizer	≤ -28 dBc @ P _O ≤ MLP – 1 dB
Spectral Re-growth (SR)	≤ -30 dBc @ P _O ≤ MLP – 1 dB
Noise Power Ratio (NPR)	≤ -20 dBc @ P _O ≤ MLP – 1.5 dB

Input VSWR (Return Loss)	≤ 1.3:1 (17.7 dB)
Output VSWR (Return Loss)	≤ 1.3:1 (17.7 dB)
Load VSWR (no damage)	≤ 2.0:1 (9.5 dB)
Harmonic 2 nd & 3 rd	≤ -60 dBc

Noise Power

Transmit Band (T _x)	≤ -70 dBW/4KHz
Receive Band (R _x)	≤ -150 dBW/4KHz (≤ 21.2 GHz)

Spurious @ P _O ≤ MLP	≤ -60 dBc
Residual AM	≤ -50 dBc, f < 10KHz ≤ -20(1.5+LOG(frequency KHz)) dBc, f = 10KHz to 500KHz ≤ -85 dBc >500KHz
Phase Noise	10 dB below IESS requirement ≤ -50 dBc, AC fundamental ≤ -47 dBc, Sum of all spurs

Group Delay (any 80 MHz)

Linear	0.01 nsec/MHz, max
Parabolic	0.005 nsec/MHz ² , max
Ripple	0.5 nsec/Peak-Peak, max

Prime Power:

AC Input Voltage	100-240~VAC, single phase 90-264~VAC maximum range 50-60 Hz ± 5%
Full Load Current	17.8 A max @ 90 VAC
Power Consumption	1400 VA typical 1600 VA maximum
Power Factor	0.99 typical 0.97 minimum

Environmental:

Ambient Temperature	-40°C to +60°C
Relative Humidity	100% condensing
Altitude	12,000 ft. with standard adiabatic de- rating of 2°C/1000 ft., operating 50,000 ft., non-operating
Shock	15 g peak, 11mSec, 1/2 sine
Vibration	3.2 g rms, 10-500 Hz
Acoustic Noise	65 dBA @ ≥3 ft. from amplifier

Mechanical:

Dimensions	Request outline at sales@tango-wave.com
Length	20.0 inches (50.8 cm)
Width	10.0 inches (25.4 cm)
Height	10.0 inches (25.4 cm)
Weight	44 pounds (20 kg) typical
Cooling	
Forced Air	225 cfm (380 m ³ /hr) typical
Thermal Load	3750 BTU/hour typical 5450 BTU/hour maximum

Connectors

RF Input	WR-34
RF Output	WR-34
RF Output Sample	Type K(f), 50 ohm
AC Input	Amphenol C016 20C003 200 12
Ethernet	RJF71B
M&C Connector	PT07E18-32S (MS-3118-32S)
Auxiliary Connector	PT07E18-32SW (MS-3118-32SW)

Options:

Ka2730	27.0 – 30.0 GHz (R _x ≤ 21.2 GHz)
Ka2731	27.0 – 31.0 GHz (R _x ≤ 21.2 GHz)
Ka2830	28.0 – 30.0 GHz (R _x ≤ 21.2 GHz)
Ka3031	30.0 – 31.0 GHz (R _x ≤ 21.2 GHz)
SSA01	Remove linearizer, replace with SSA driver
BUC10	Integrated block up-converter with reference
WR-28-ADPT	RF Output – WR-34-to-WR-28 adapter
QDC34	Waveguide quick connector, WR-34
QDC28	Waveguide quick connector, WR-28 adapter