Ultralinear 500W Ka-Band Antenna Mount HPA

The STA5550P Ka series HPA provides ultra linear, high efficiency performance in a compact, lightweight, rugged, weatherproof, antenna mount enclosure. The advanced packaging and cooling techniques enable the unit to operate in extreme environmental conditions from direct rain to direct sunlight. The amplifiers can be simply deployed anywhere in the world, are user-friendly and incorporate a comprehensive remote control facility as standard, including SNMP V3 and a feature-rich web user interface, alongside RS485, and RS232.

The HPA incorporates a high efficiency multi-collector TWT powered by an advanced power supply built on over 30 years of experience in the design and manufacture of satellite amplifiers.

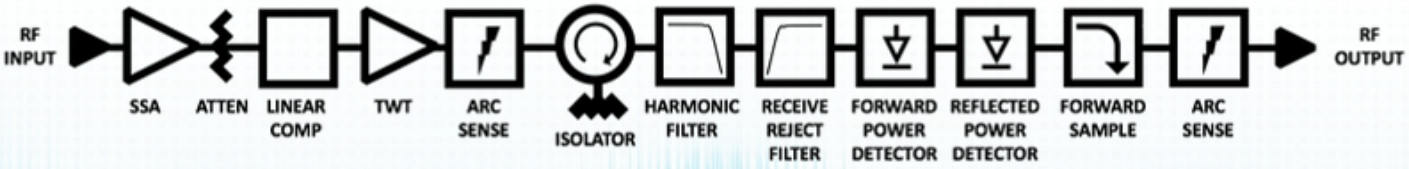
The company's products have an enviable reputation for performance, robust quality and reliable service. The STA5550P Ka is available with a wide range of options and accessories, backed by worldwide technical support.

Features

- Advanced cooling design enables operation at +60°C and in direct sunlight
- Weatherproof antenna mount construction allows exposed mounting
- Ethernet/SMP/Webpage GUI interfaces
- Broadband – high efficiency operation
- Uplink Power Control
- Wide input voltage range - can operate from mains supplies worldwide
- Redundant control - contains control and drive circuits for 1:1 redundancy
- Stand-alone setting - automatically sequences to transmit mode
- Wide range of accessories including: Controllers, waveguide networks, cable assemblies



Block Diagram



RF Performance		
Frequency range*		KA1: 27.5 - 30.0 GHz KA2: 27.0 - 30.0 GHz KA3: 28.0 - 30.0 GHz KA4: 30.0 - 31.0 GHz KA5: 29.0 - 30.0 GHz KA6: 27.5 - 31.0 GHz
Bandwidth		2500 MHz
Output Power (for load VSWR ≤ 1.5:1)	TWT Power	PEAK: 57.0 dBm (500 W) CW: 56.0 dBm (400 W) / 55.4 dBm (350 W) / 54.8 dBm (300 W)
	Rated CW (flange)	55.3 dBm (340 W) typical / 54.6 dBm (290 W) typical / 53.9 dBm (250 W) typical
	Linear, P_{LIN}	52.2 dBm (166 W)
Gain		≥ 70 dB
Gain Variation, 250 MHz, ΔG_{250MHz}		≤ 1.0 dB peak-peak
Gain Variation, 1000 MHz, $\Delta G_{1000MHz}$		≤ 2.5 dB peak-peak
Slope, ΔG_{SLOPE}		± 0.04 dB/MHz max
Gain Stability vs. Time		± 0.25 dB max / 24hrs @ constant drive and temperature
Gain Stability vs. Temperature		± 1.0 dB max / 24hrs @ constant drive and frequency
Adjustment range, G_{ADJ}		30.0 dB typical
Adjustment step size		0.1 dB
AM/PM		≤ 1.5°/dB @ $P_O \leq P_{LIN}$ - 1dB
Noise Power Ratio (NPR)		≤ -19 dBc @ $P_O \leq P_{LIN}$ - 1dB
Inter-modulations (IMD) 2-tone		≤ -28 dBc @ $P_O \leq P_{LIN}$ - 1dB
Spectral Re-growth (SR)		≤ -30 dBc @ $P_O \leq P_{LIN}$ - 1dB
Noise power	Transmit band	≤ –70 dBW/4 kHz
	Receive band	≤ –150 dBW/4 kHz (≤ 21.2 GHz)
Spurious @ $P_O \leq$ 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		10dB below IESS requirement ≤ -50 dBc max, AC fundamental ≤ -47 dBc max, 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
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

Note: Peak/output power and frequency range must be selected at time of purchase, as these options are TWT dependent and cannot be changed in the field.

Electrical	
Full Load Current	6.8 A max @ 100 VAC
AC Input Voltage	200-240 VAC ± 10%, single phase 50-60 Hz ± 5%
Power consumption	1050 VA typical 1350 VA maximum
Power factor	0.98 typical 0.96 minimum

Physical	
Dimensions (request outline)	52 cm deep x 26 cm width x 26 cm height
Weight	21 kg typical
Cooling	Integral forced-air
RF Input	WR-34 (Optional WR-28)
RF Output	WR-34 (Optional WR-28)
RF Sample port	2.9mm SMA Female
AC Input	Amphenol C016 20C003 200 12
Ethernet	RJF71B (IP67 RJ45 Connector)
M&C Connector	PT07E18-32S (MS3114E-18-32S)

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
Solar Gain	1120 2/m^2

Note 1: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.
Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.

ETL Systems Ltd, Coldwell Radio Station,
Madley, Hereford, England HR2 9NE
info@etlsystems.com
+44 (0)1981 259020