

FEATURES

- Ultralinear
- Lightweight
- High Efficiency



STA3150Ka Series 250W Antenna Mount HPA

The STA3150Ka 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 RS485 and Ethernet options.

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 STA3150Ka is available with a wide range of options and accessories, backed by worldwide technical support.

Options

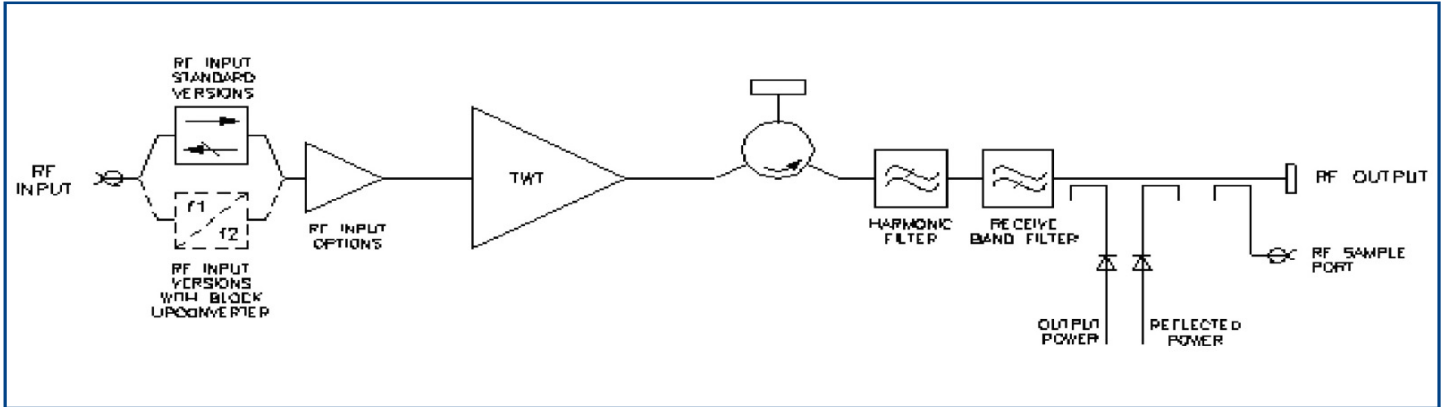
- Integral solid-state amplifier (SSA)
- L-Band block upconverter
- Gain control (requires SSA)
- Linearizer

Features

- Advanced cooling design enables operation at +55°C and in direct sunlight
- Weatherproof antenna mount construction allows exposed mounting

- CE compliant
- 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



PERFORMANCE (Without Upconverter)

Frequency range:

Standard - KA1.....	27.5 to 30	GHz
Optional KA2.....	30 to 31	GHz
Other bands available within 27.5 - 31GHz		

Output Power:

TWT output flange (peak).....	200	W min
TWT rated output (CW).....	150	W min
HPA rated output flange (CW).....	130	W min

Linear Power @ Flange:

with linearizer (Plin).....	120	W min
without linearizer.....	50	W typ

Gain:

At rated power (C option).....	45	dB min
At rated power (A,D, Z option).....	70	dB min
SSG P rated -10dB (C option).....	50	dB min
SSG P rated - 10dB (A,D,Z option).....	75	dB min
Attenuation range (D,Z option).....	25	dB min

Gain Variation:

Over any 1GHz.....	2.5	dB max
Over any 80 MHz band.....	1.0	dB max
Slope.....	0.08	dB/MHz max

Gain stability 24hrs (constant drive, temperature and load).....

0.5	dB max
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Gain stability over full operating temperature.....

2.0	dB max
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Intermodulation (two equal carriers) with output =Plin relative to total power.....

-25	dBc max
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Harmonic output.....

-60	dBc max
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AM to PM conversion at P rated -6dB.....

2.5	°/dB
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Noise Power:

Transmit band.....	-70	dBW/4 kHz max
Receive band (below 21.2GHz).....	-150	dBW/4 kHz max

Residual AM:

<10kHz.....	-50	dBc max
10kHz < f < 500kHz.....	-20 (1.5 + log f)	dBc max
>500kHz.....	-85	dBc max

Group delay:

Linear.....	0.01	ns/MHz
Parabolic.....	0.005	ns/MHz ²
Ripple.....	0.5	ns p-p

Phase Noise:

Continuous.....	10dB lower than IESS phase noise profile	
AC fundamental.....	-50	dBc max
Sum of all spurs.....	-47	dBc max

Input VSWR (operating).....

1.3:1	max
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Output VSWR (non-operating).....

1.3:1	max
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Load VSWR, no damage.....

2.0:1	max
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ELECTRICAL

Prime power.....	single phase, line-neutral or line-line
Voltage.....	90 to 264 V
Frequency.....	47 to 63 Hz
Power requirement.....	750 VA max
Power factor.....	0.95 min

MECHANICAL

Weight.....	13.6.Kg (30lb)	typ
Dimensions.....	see outline	
Cooling.....	integral forced-air	

CONNECTORS

RF input.....	K-type female
RF output.....	WR-28G with 4-40 UNC 2B threaded holes
RF Sample port.....	K-type female
Prime Power.....	ITT Cannon-CGL02A20-3P-E1B-B
Control interface.....	62GB-12E-2041-PN

Note: Mating connectors for the mains supply and control interface are supplied.

ENVIRONMENTAL

For operation outside these parameters, refer to Stellar Satcom for guidance.

Operating temperature (see note 1).....	-40 to +55	°C
Derating.....	2 °C/300 m above sea level	(3.6 °F/1000ft)
Solar gain.....	1120	W/m ²
Storage temperature.....	-50 to +80	°C
Relative humidity (condensing).....	100	%

Altitude:

Operating.....	4.5 Km (15,000 ft)	max
Non-operating.....	12 Km (40,000 ft)	max

Vibration.....BS EN 60068-2-64 test Fh, transportation

Shock.....IEC Publication 68-2-27 Part 2 test Ea, 25g

EMC:

EN61000-6-3:2001 (Emissions)
EN61000-6-2:2001 (Immunity)
FCC CFR47 Part 15B

CE CERTIFIED

EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC

NOTES

- +55 °C applies when the input supply voltage is between 180 and 265 V. Below 180 V, the maximum operating temperature is +50 °C
- Safety applies for operating altitude up

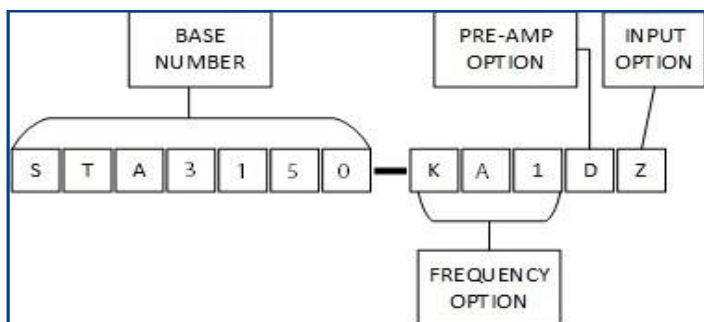
CONTROLS

Type	Function
REMOTE CONTROL	Off Standby Transmit RF inhibit Off Warm-up Standby Transmit Fault Summary Reflected Power External interlock TWT too hot Mean Helix Current Peak Helix Current High Power Alarm* Low Power Alarm*
REMOTE STATUS/MONITOR	High Power Alarm Set* Low Power Alarm Set* Auto Redundancy Control* RF Switch Control* Gain Control* (when fitted) Output Power Monitor* Reflected Power Monitor* Helix Current Monitor* Helix Voltage* Collector Voltages* Heater Voltage* Heater Current* Elapsed Hours*
INTERFACES Serial User	RS-422/485, Optional Ethernet Dry Relay Contact
Other Features	Auxiliary Output Voltage Redundant system & waveguide switch drive 'Stand Alone' setting for automatic power up

Note: Controls/Monitoring marked * are only available via Serial Interface

OPTIONS

Extensive options are offered with the STA3150Ka and include: integral pre-amplifiers, gain control, linearizers and block upconverters. The options are defined by adding to the base number as shown below:



(Consult Stellar Satcom for availability of options)

Frequency Options

The STA3150 is offered in 0.5 GHz and 1GHz bands within 27.5-31 GHz. Other bandwidths or dual band operation on request.

Pre-Amp Option

The pre-amp option can be selected from any of the following:

- AN - Integral solid-state amplifier (typical SSG 78 dB)
 - DN- As option 'A' but includes an attenuator to provide 25 dB (min) of gain control
 - ZN - Integral linearizer that improves the linearity of the HPA, providing a C/I of typically -26 dBc at Plin. The linearizer also incorporates the pre-amp and gain control options.
- (Consult Stellar Satcom for availability)

Input Option

Note: The Upconverter requires the inclusion of either the 'DN' or 'ZN' options. (Consult Stellar Satcom for availability)

ACCESSORIES

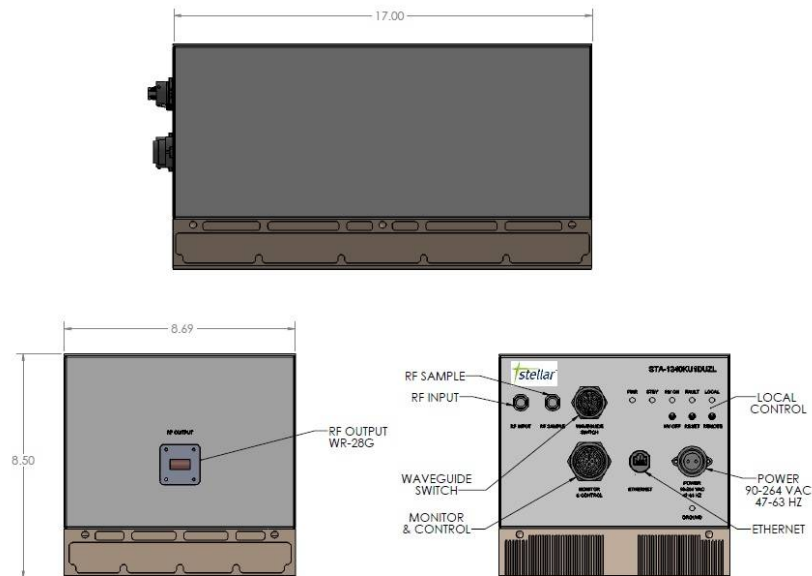
The STA3150Ka is supplied with an operation manual, prime power connector mating part, interface connector mating part.

For more information on accessories, contact Stellar Satcom.

PERFORMANCE WITH INTEGRAL BLOCK UPCONVERTER

Output frequency range: Option DU1.....29-30	GHz	Group Delay: Linear.....0.01 ns/MHz
L-Band input: Frequency range option DU1....950 to 1950	MHz	Parabolic.....0.005 ns/MHz ²
Level.....10 dBm	max	Ripple.....0.5 ns/p-p
LO frequency: Option DU1.....28.05	GHz	Phase noise: Continuous.....meets IESS phase noise profile
External reference (see note): Frequency.....10	MHz	AC Fundamental.....-50 dBc
Level.....-3 to +7	dBm	Sum of all spurs.....-47 dBc
Impedance.....50	Ω	Input VSWR (non-operating).....1.6:1 max
Output power: TWT output flange.....200	W min	Output VSWR (non-operating).....1.3:1 max
TWT output CW.....150	W min	Load VSWR, no damage.....2.0:1 max
HPA rated output.....130	W min	
Gain: At rated power (DN,ZN option).....70	dB min	Note: The BUC can be operated without the external reference, typical frequency stability ±0.25 ppm.
SSG Prated -10dB (DN, ZN option).....75	dB min	
Attenuation range (DN, ZN option).....30	dB min	HEALTH AND SAFETY HAZARDS
Gain Variation: Any 1GHz.....0.3	dB max	Stellar satellite amplifiers are safe to handle and operate provided that the relevant precautions are observed.
Over any 40 MHz band.....1.2	dB max	SpacePath Communications does not accept responsibility for damage or injury resulting from the use of electronic devices it produces.
Slope.....0.08	dB/MHz .max	
Gain Stability 24hrs constant drive, temperature and load.....0.5	dBm	High Voltage
Gain stability over full operating temperature..2.0	dB max	Dangerous voltages are present within the TWT amplifier when operating normally. However, the equipment is designed so that personnel cannot come into contact with high voltage circuits unless covers are removed.
Intermodulation (two equal carriers) with total output = Plin: Relative to sum of two equal carriers.....-25	dBc max	
Harmonic output.....-60	dBc max	RF Radiation
AM to PM conversion at Plin.....2.5	°/dB	All RF connectors must be correctly fitted before operation.
Noise Power: Transmit band.....-70	dBW/4 KHz max	Beryllia
Receive band (10.95-12.75GHz).....-150	dBW/4 KHz max	The TWT in the amplifier contains Beryllium Oxide ceramic parts. These are not accessible unless the TWT casing is damaged. Consult SpacePath Communications regarding the disposal of damaged or life expired tubes.
Residual AM >100MHz from Carrier.....-60	dBc max	

Outline



Whilst Stellar Satcom has taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. Stellar Satcom accepts no liability beyond the set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein.