SpacePath StellarMini™ 180W Ku-Band Antenna Mount TWTA

The STA3318 range of Ku-Band TWT amplifiers from SpacePath Communications provide over 150W of output power 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 deployed globally, are easy to integrate, user-friendly, and incorporate a comprehensive remote control facility as standard via an RS422/485 serial bus with Ethernet options.

The HPA incorporates a high efficiency dual collector TWT powered by a state-of-the-art power supply that further advances the company's reputation for robust, reliable product. In addition the circulator, receive band filter and harmonic filter are included as standard, eliminating the need for additional external components. With the internal Lineriser fitted, it offers twice the useable output power.

The STA3318 is available with a wide range of options and accessories, backed by round-the-clock, worldwide technical support.

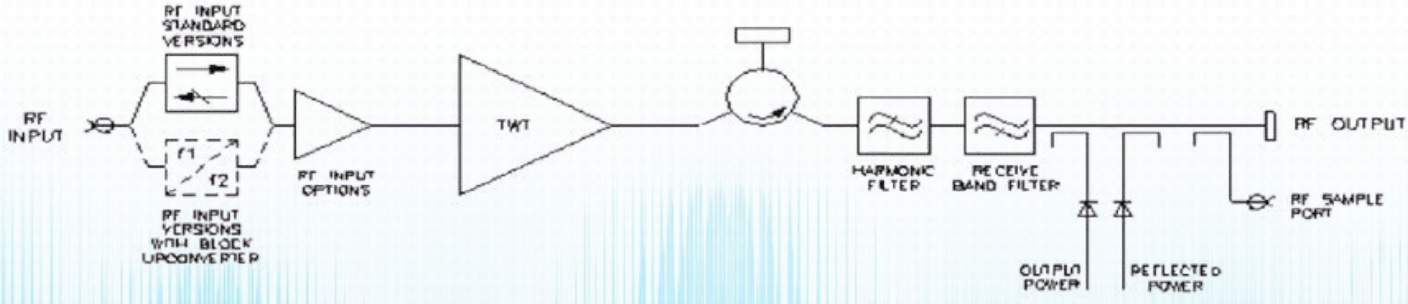
Features

- Lightweight and compact
- High operating temperature
- Circulator, receive band filter and harmonic filter included as standard
- Weatherproof antenna mount construction allows exposed mounting
- 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, ducting adaptor and cowl
- Round-the-clock hotline support

Options

- Gain control
- L-band block upconverter
- Break-out link for upconverter
- Internal Lineariser

Block Diagram



RF Performance (Without Upconverter)		
Frequency range		Standard - KU1: 13.75 – 14.5 GHz Extended - KU2: 12.75 – 14.5 GHz Extended - KU3: 13.75 – 14.8 GHz
Output Power	TWT output flange	175 W min
	HPA rated output	150 W min
Gain at rated power (A, D option)		61 dB min
Gain at SSG P«-10dB (A, D option)		66 dB min
Attenuation range (D option)		25 dB min
Gain Variation over any 80 MHz band		1.0 dB max
Slope, ΔG_{SLOPE}		0.1 dB/MHz max
Gain Stability vs. Time		0.5 dB max / 24hrs @ constant drive and temperature
Gain Stability vs. Temperature		2.0 dB max / 24hrs @ constant drive and frequency
Adjustment range, G_{ADJ}		30.0 dB typical
Adjustment step size		0.1 dB
AM/PM		≤ 2.5°/dB @ Prated-6 dB
Inter-modulations (IMD) 2 equal carriers 10MHz apart		≤ -18 dBc @ Prated-4 dB[1] ≤ -28 dBc @ Prated-4 dB[2]
Noise power	Transmit band	≤ –70 dBW/4 kHz
	Receive band	≤ –150 dBW/4 kHz (10.95 - 12.75 GHz - standard)
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		10dB below IESS requirement ≤ -50 dBc max, AC fundamental ≤ -47 dBc max, Sum of all spurs
Group Delay	Linear	0.01 nsec/MHz, max
	Parabolic	0.005 nsec/MHz^2, max
	Ripple	1.0 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 2nd & 3rd		-60 dBc max

1) No Linearizer 2) With Linearizer

Electrical	
Prime power	single phase, line-neutral or line-line
Voltage	99-265 V
Frequency	47-63 Hz
Power requirement	850 VA max
Power factor	0.95 min

Physical	
Dimensions (request outline)	58.8 cm deep x 25.4 cm width x 27.1 cm height
Weight	9KG (19.8 lb) typ
Cooling	Integral forced-air
RF Input	N-type female
RF Output	PBR120 with 6-32 UNC 2B threaded holes
RF Sample port	N-type female
AC Input	Amphenol T3110-000
Control interface	62GB-12E-18-32-PN

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

Environmental	
Operating temperature	-40˚C to +55˚C
Storage temperature	-40˚C to +85˚C
Derating	2°C/300m above sea level (3.5°F/1000ft)
Relative humidity	100% condensing
Altitude	operating: 4.5 km (15,000 ft) max non-operating: 12 km (40,000 ft) max
Vibration/shock	BS EN 60721-3-2 Level 2M3
Solar Gain	1120 W/m2

The amplifier complies with EU Directive 2002/95/EC, the RoHS dB max Directive, restricting the use of hazardous substances in electronic equipment.

The amplifier falls within the scope of EU Directive 2002/96/EC, the WEEE Directive, governing disposal at end of life. Users should contact ETL Systems or their distributors for disposal information.

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.

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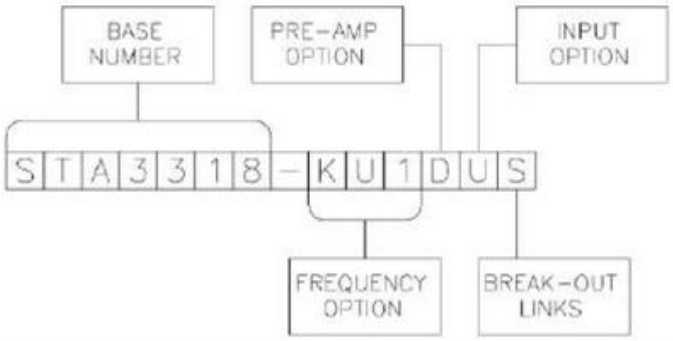
Controls		
Remote Control	Off Standby Transmit RF inhibit	High Power Alarm Set Low Power Alarm Set Auto Redundancy Control RF Switch Control Gain Control (when fitted)
Remote Status/Monitor	Off Warm-up Standby Transmit Fault Summary Reflected Power External interlock TWT too hot Mean Helix Current Peak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

*Note: User Interface provides: Transmit On/Off control, Status Outputs, Summary and Redundancy Fault Outputs.

Options
Extensive options are offered with the STA3318 and include: integral pre-amplifiers, gain control and block upconverters. The options are defined by adding to the base number as shown below:



Frequency Options
The STA3318 is offered in a number of frequency bands:
KU1 - 13.75 - 14.50 GHz
KU2 - 12.75 - 14.50 GHz
KU2 - 13.75 - 14.80 GHz

Pre-Amp Option
The pre-amp option can be selected from any of the following:
A - Integral solid-state amplifier (typical SSG 78 dB).
D - As option 'A' but includes an attenuator to provide 25 dB (min.) of gain control.

Input Options
The STA3318 can be offered with an L-Band Block Upconverter.
Specify:
N - Standard RF
U-L -Ku Band Upconverter (see page 4)
Note: the upconverter requires the inclusion of either the 'D' or 'Z' options. (Consult SpacePath Communications for availability).

Break-Out Links
Available only with the upconverter option, this enables bypassing of the upconverter and can be used for monitoring, set-up, redundant switching etc. Specify 'S' for Break-Out Links (leave blank if not required).

Accessories
The STA3318 is supplied with an operation manual, prime power connector mating part, interface connector mating part. Additional accessories include:

- N6081x-01 Series Control Unit

Provides basic control of single HPA.

- SPC1U01 1:1 Control Unit

Provides control of 2 HPAs in 1:1 switch configuration. (The waveguide switch network can also be supplied).

- Cable Assemblies

For connecting STA3318 to controllers and waveguide switches.

- DPP710351BA Transition

Provides an interface for ducting and cowl fitment.

- DPP710353BA Cowl

For more information on accessories, contact ETL Systems.

RF Performance with Integral Block Upconverter		
Frequency range		Option KU1: 13.75 – 14.5 GHz Option KU2: 12.75 – 14.5 GHz
L-band input		Option KU1: 950 - 1700 Mhz Option KU3: 950 - 1450 Mhz Level: 10 dBm max
LO frequency		Option KU1: 12.8 GHz Option KU3: 13.05 GHz
External reference		Frequency: 10 Mhz Level: -3 to +7 dBm Impedance: 50 Ω
Output Power	TWT output flange	175 W min
	HPA rated output	150 W min
Gain at rated power (A, D option)		61 dB min
Gain at SSG P«« -10dB (A, D option)		66 dB min
Attenuation range (D option)		25 dB min
Gain Variation		4.0 dB max over full band 1.5 dB max over any 80 MHz band
Slope, ΔG_{SLOPE}		0.08 dB/MHz max
Gain Stability vs. Time		0.5 dB max / 24hrs @ constant drive and temperature
Gain Stability vs. Temperature		2.0 dB max / 24hrs @ constant drive and frequency
AM/PM		≤ 2.5°/dB @ Prated-6 dB
Inter-modulations (IMD) 2 equal carriers 10MHz apart		options A, D: -23 dBc max
Noise power	Transmit band	≤ –70 dBW/4 kHz
	Receive band	≤ –150 dBW/4 kHz (10.95 - 12.75 GHz - standard)
Spurious @ P_O ≤ MLP		≤ -60 dBc
Residual AM > 100 kHz from carrier		-60 dBc max
Phase Noise		meets IESS requirement ≤ -50 dBc max, AC fundamental ≤ -47 dBc max, Sum of all spurs
Group Delay	Linear	0.01 nsec/MHz, max
	Parabolic	0.005 nsec/MHz^2, max
	Ripple	1.0 nsec/Peak-Peak, max
Input VSWR (non-operating)		1.6:1 max
Output VSWR (non-operating)		1.3:1 max
Load VSWR (no damage)		2.0:1 max
Harmonic 2nd & 3rd		-60 dBc max

*Note: For S-Link version, gain is decreased by 4 dB.

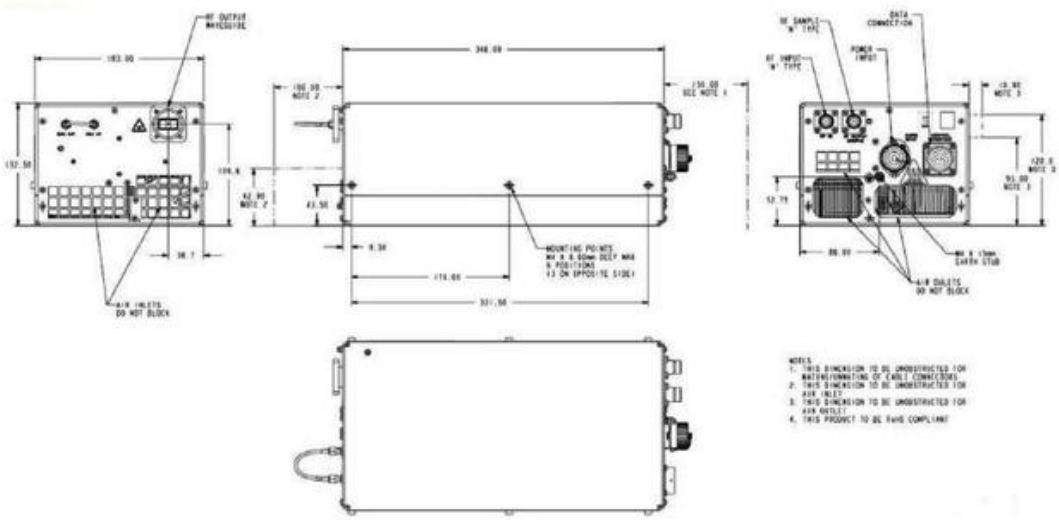
HEALTH AND SAFETY HAZARDS
Stellar satellite amplifiers are safe to handle and operate provided that the relevant precautions are observed. ETL Systems does not accept responsibility for damage or injury resulting from the use of electronic devices it produces.

High Voltage
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.

RF Radiation
All RF connectors must be correctly fitted before operation.

Beryllia
The TWT in the amplifier contains Beryllium Oxide ceramic parts. These are not accessible unless the TWT casing is damaged. Consult ETL Systems regarding the disposal of damaged or life expired tubes.

Features



Packed Gross Weight
& Dimension
9.80kg 57x33x29cm