



STA3318 Series, StellarMini™ 180 W, Ku-Band, Antenna Mount TWTA

The STA3318 range of Ku-Band TWT amplifiers from Spacepath Communications provide over 150 W 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.

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

OPTIONS

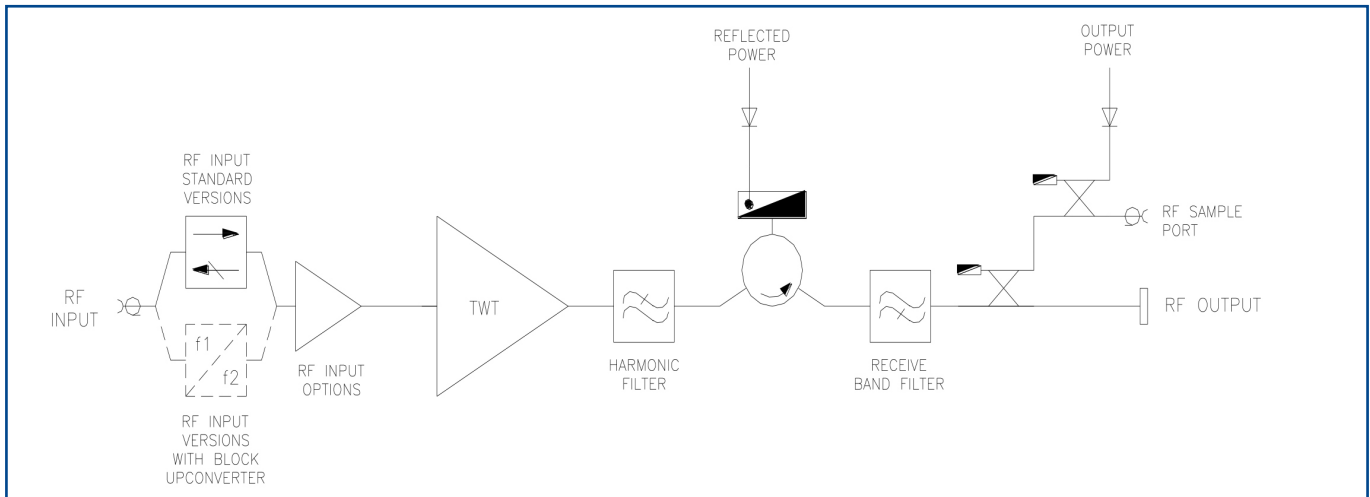
- Gain control
- L-band block upconverter
- Break-out link for upconverter

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
- RoHS compliant
- CE compliant

BLOCK DIAGRAM



PERFORMANCE (Without Upconverter)

Frequency range:		
standard – KU1	13.75 to 14.5	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
SSG $P_{rated} - 10$ dB (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	0.1	dB/MHz max
Gain stability 24hrs (constant drive, temperature and load)	0.5	dB max
Gain stability over full operating temperature..	2.0	dB max
Intermodulation (two equal carriers) with total output = $P_{rated} - 7$ dB:		
options A, D	-23	dBc max
performance with harmonic output	-60	dBc max
AM to PM conversion at $P_{rated} - 6$ dB	2.5	%/dB
Noise power:		
transmit band	-70	dBW/4 kHz max
receive band, 10.95 – 12.75 GHz - standard	-150	dBW/4 kHz max
Residual AM:		
< 10 kHz	-50	dBc max
10 kHz < $f < 500$ kHz	$-20(1.5 + \log f)$	dBc max
> 500 kHz	-85	dBc max
Group delay:		
linear	0.01	ns/MHz
parabolic	0.005	ns/MHz ²
ripple	1.0	ns p-p
Phase noise:		
continuous.....	10 dB lower than IESS phase noise profile	
AC fundamental	-50	dBc
sum of all spurs	-47	dBc
Input VSWR (operating)	1.3:1	max
Output VSWR (non-operating)	1.3:1	max
Load VSWR, no damage	2.0:1	max

ELECTRICAL

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

MECHANICAL

Weight	9.0 kg (19.8 lb) typ
Dimensions	see outline
Cooling	integral forced-air

CONNECTORS

RF input	N-type female
RF output	PBR120 with 6-32 UNC 2B threaded holes
RF sample port	N-type female
Prime power	Amphenol T3110-000
Control interface	62GB-12E-18-32-PN

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

ENVIRONMENTAL

The amplifier complies with EU Directive 2002/95/EC, the RoHS 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 Spacepath Communications or their distributors for disposal information.

Operating temperature	-40 to +55	°C
Derating	2 °C/300 m above sea level (3.6 °F/1000 ft)	
Solar gain	1120	W/m ²
Storage temperature	40 to +85	°C
Relative humidity (condensing)	100	%
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	

For operation outside these parameters, refer to Spacepath Communications for guidance.

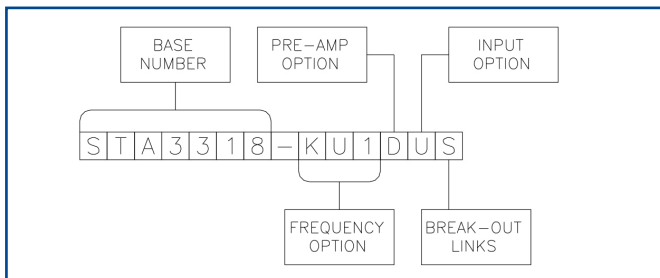
CONTROLS

TYPE	FUNCTION	
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 Summary Fault Redundancy Fault 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 Elapsed Hours
INTERFACES: Serial User*	RS-422/485 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:



(Consult Spacepath Communications for availability of options).

Frequency Options

The STA3318 is offered in two frequency bands:

KU1 - 13.75 – 14.50 GHz

KU3 - 14.00 – 14.50 GHz (upconverter option only)

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 Option

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.
- **N6143 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 Spacepath Communications.

***Note:** Existing controllers may require software upgrade.

PERFORMANCE WITH INTEGRAL BLOCK UP CONVERTER

Output frequency range:			
option KU1	13.75 to 14.5	GHz	
option KU3	14.0 to 14.5	GHz	
L-band input:			
frequency range option KU1	950 to 1700	MHz	
frequency range option KU3	950 to 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 (D option)	61*	dB	min
SSG P _{rated} -10 dB (D option)	66*	dB	min
Attenuation range (D option)	25	dB	min
Gain variation:			
full band	4.0	dB	max
over any 40 MHz band	1.5	dB	max
slope	0.08	dB/MHz	max
Gain stability 24hrs (constant drive, temperature and load)			
	0.5	dB	max
Gain stability over full operating temperature... 2.0 dB max			
Intermodulation (two equal carriers) with total output = P _{rated} -4 dB:			
options A, D	-23	dBc	max
Harmonic output	-60	dBc	max
AM to PM conversion at P _{rated} -6 dB	2.5	%/dB	
Noise power:			
transmit band	-70	dBW/4 kHz	max
receive band (10.95 - 12.75 GHz)	-150	dBW/4 kHz	max
Residual AM >100 kHz from carrier	60	dBc	max
Group delay:			
linear	0.01	ns/MHz	
parabolic	0.005	ns/MHz ²	
ripple	0.5	ns	p-p

Phase noise:		
continuous.....	meets IESS phase noise profile	
AC fundamental	-50	dBc
sum of all spurs	-47	dBc
Input VSWR (non-operating)	1.6:1	max
Output VSWR (non-operating)	1.3:1	max
Load VSWR, no damage	2.0:1	max

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

CE CERTIFIED

EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC

EMC:	Emissions	EN61000-6-3:2001 CFR45 Part 15B AUS/NZ 4251.1
	Immunity	EN61000-6-2:2001

SAFETY

NRTL Listed to	ANSI/UL 60950-1-2007 and CAN/CAS-C22.2 No 60950-1-07
IECCB Certified to	IEC 60950-1Ed2-2005

HEALTH AND SAFETY HAZARDS

Stellar satellite amplifiers are safe to handle and operate provided that the relevant precautions are observed.

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.

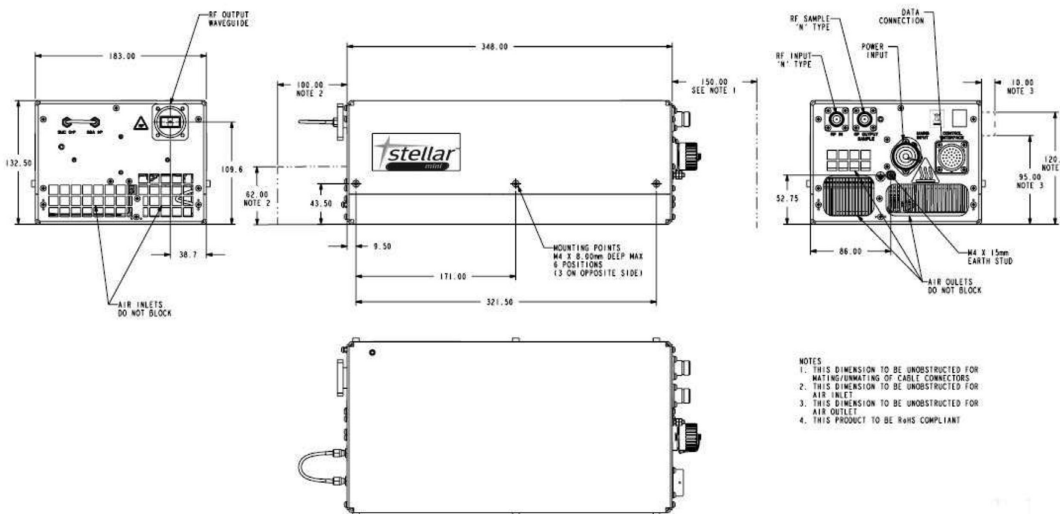
RF Radiation

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 Spacepath Communications regarding the disposal of damaged or life-expired tubes.

OUTLINE



Packed Gross Weight & Dimension
9.80kg 57x33x29cm

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