



STR1340 Series, 400W, Ku-Band, Rack Mount TWTA

The new generation of STR Series rack mount TWTA's provide an easy to operate, colour touchscreen interface with a multi-functional selector wheel. The colour touchscreen display provides clear, easy to read status of the amplifier's operation, including: RF output power monitoring, heater, helix monitoring, & TWT temperature. Set up screens are intuitive and simple to manage and the touch panel allows full local control and monitoring of all amplifier parameters, including automatic level control, system event logging and graphical trend analysis. Remote control operation can be made via RS485 or through an Ethernet interface, and a web page interface is also available. If a redundancy system is required, this can be set up and controlled via the touchscreen. Changes to operating parameters can be locked and password protected if required.

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 STR1340 is available with a wide range of options and accessories, backed by worldwide technical support.

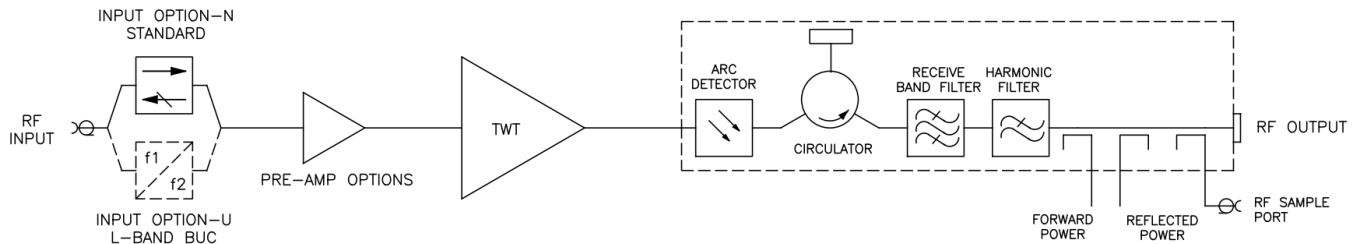
OPTIONS

- Integral solid-state amplifier (SSA)
- L-Band Block upconverter
- 10MHz reference
- Lineariser
- Redundant system control
- Quick connect waveguide options

FEATURES

- Touchscreen control
- Ethernet interface
- Remote diagnostics
- Forward and reverse power monitoring
- TWTA performance Data and Event logging
- Built-in redundancy control
- Waveguide arc detection

BLOCK DIAGRAM



PERFORMANCE (Without Upconverter)

Frequency range:

KU1	13.75 to 14.50 GHz
KU2	12.75 to 14.50 GHz
KU3	13.75 to 14.80 GHz
KU4	12.75 to 13.25 GHz
KU6	12.75 to 14.80 GHz

Output power:

TWT output flange	400 W min
HPA rated output	350 W min

Gain:

at rated power (C option)	45 dB min
at rated power (A, D, Z option)	73 dB min
SSG Prated -10 dB (C option)	50 dB min
SSG Prated -10 dB (A, D, Z option)	78 dB min
Attenuation range (D, Z option)	25 dB min

Gain variation:

full band	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

Gain stability over full operating temperature..... 2.0 dB max

Intermodulation (two equal carriers)

with total output = Prated -4 dB:

options A, D	-18 dBc max
performance with linearised option, Z	-24 dBc max
Harmonic output	-60 dBc max
AM to PM conversion at Prated -6 dB	2.5 °/dB

Noise power:

transmit band

10.95 – 12.75 GHz - standard

10.70 – 11.70 GHz - extended

Residual AM:

<10 kHz

10 kHz < f < 500 kHz

>500 kHz

Group delay:

linear

parabolic

ripple

Phase noise:

continuous

AC fundamental

sum of all spurs

Input VSWR (operating)

Output VSWR (non-operating)

Load VSWR, no damage

Voltage.....

ELECTRICAL

Prime power single phase, line-neutral or line-line

Frequency 47 to 63 Hz

Power requirement 1350 VA max

Power factor 0.95 min

MECHANICAL

Weight 25.0 kg (55 lb) typ

Dimensions see outline

Cooling integral forced-air

CONNECTORS

RF input N-type female

RF output WR75 with 6-32 UNC 2B threaded holes

RF sample port N-type female

Prime power IEC 60320

Control interface 15way D-type female

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

ENVIRONMENTAL

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

Operating temperature (see note 1)

Derating 2 °C/300 m above sea level
(3.6 °F/1000 ft)

Storage temperature

Relative humidity (condensing)

Altitude:

operating

non-operating

Vibration BS EN 60068-2-64 test Fh, Transportation

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

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

1. +55 °C applies when the input supply voltage is between 180 and 265 V. Below 180 V, the maximum operating temperature is +50 °C.

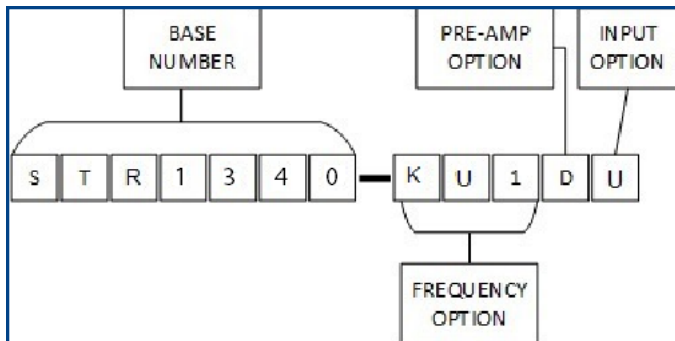
2. Safety applies for operating altitude up.

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 Arc Fault
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	RS-422/485 / Ethernet Dry Relay Contact
Other Features	Auxiliary Output Voltage Redundant system & waveguide switch drive

OPTIONS

Extensive options are offered with the STR1340 and include; integral pre-amplifiers, gain control, linearisers 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 STR1340 is offered in a number of frequency bands:

- KU1 - 13.75 – 14.50 GHz
- KU2 - 12.75 – 14.50 GHz
- KU3 - 13.75 – 14.80 GHz
- KU4 - 12.75 – 14.80 GHz
- KU5 - 12.75 – 14.50 GHz (BUC 12.75-13.25/13.75-14.50GHz)
- KU6 - 12.75 – 14.80 GHz
- KU7 - 12.75 – 14.80 GHz (BUC 14.30-14.80GHz)

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
- Z - Integral lineariser that improves the linearity of the HPA, providing a C/I of typically -26 dBc at 4dB OPBO. The lineariser also incorporates the pre-amp and gain control options.
(Consult SpacePath Communications for availability)

Input Option

The STR1340 can be offered with an L-Band Block Upconverter.

Specify:

- N - Standard RF
- U - L to Ku-Band Block Upconverter (see page 4)

Note:

The upconverter requires the inclusion of the 'D' and 'Z' option. (Consult SpacePath Communications for availability)

For more information contact SpacePath Communications.

PERFORMANCE WITH INTEGRAL BLOCK UPCONVERTER

Output frequency range:	
option KU1	13.75 to 14.5
option KU5	12.75 to 14.5
L-band input:	
frequency range option KU1	950 to 1700
frequency range option KU5	950 to 1700
frequency range option KU7	950 to 1700
level	10
LO frequency:	
option KU1	12.8
option KU5	13.05
option KU7	13.35
External reference (see note):	
frequency	10
level	-3 to +7
impedance	50
Output power:	
TWT output flange	400
HPA rated output	350
Gain:	
at rated power (D, Z option)	70
SSG Prated -10 dB (D, Z option)	75
Attenuation range (D, Z option)	25
Gain variation:	
full band	4.0
over any 40 MHz band	1.5
slope	0.08 dB/MHz max
Gain stability 24hrs (constant drive, temperature and load).....	0.5
Gain stability over full operating temperature.....	2.0
Intermodulation (two equal carriers) with total output = Prated -4 dB:	
options C, A, D	-18
performance with linearised option, Z	-24
Harmonic output	-60
AM to PM conversion at Prated -6 dB	2.5
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
GHz Group delay:		
GHz linear	0.01	ns/MHz
parabolic	0.005	ns/MHz ²
MHz ripple	0.5	ns p-p
MHz Phase noise:		
Continuous	meets IESS phase noise profile	
dBm max AC fundamental	-50	dBc
Sum of all spurs	-47	dBc
GHz Input VSWR (non-operating)	1.6:1	max
GHz Output VSWR (non-operating)	1.3:1	max
GHz Load VSWR, no damage	2.0:1	max
Note: the BUC can be operated without the external reference, typical frequency stability ±0.25 ppm.		

HEALTH AND SAFETY HAZARDS

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

High Voltage

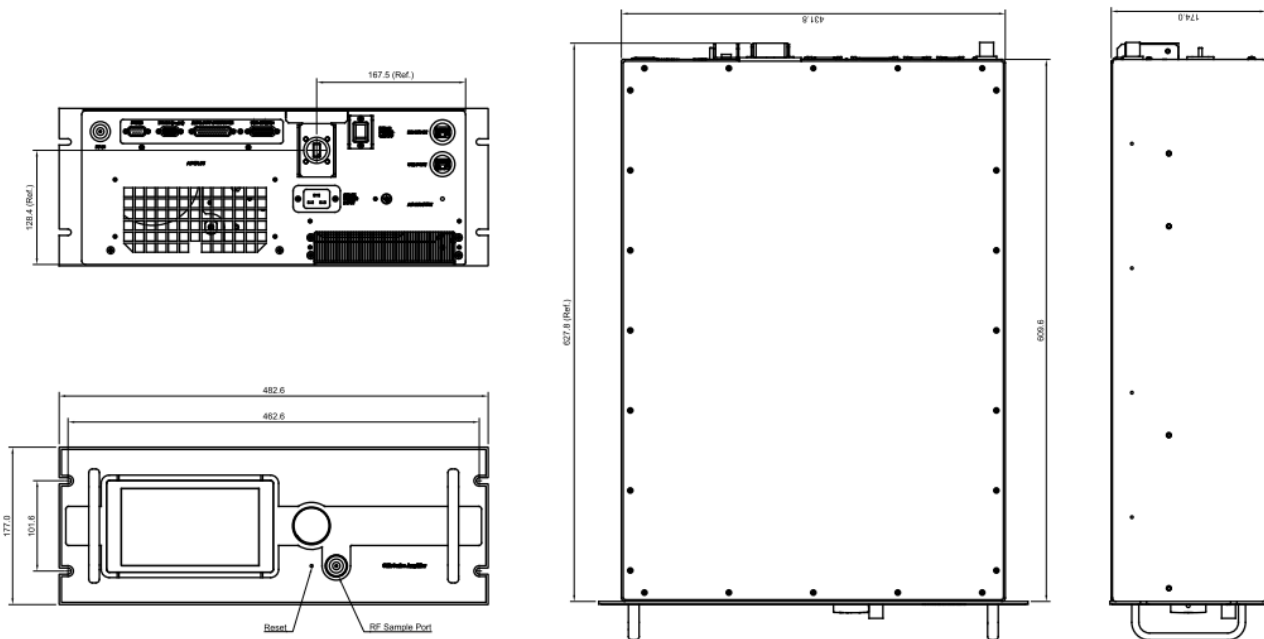
Dangerous voltages are present within the TWT amplifier when operating normally. However, the equipment is designed so that personnel cannot come into contact with high voltage circuits unless covers are removed.

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 SpacePath Communications regarding the disposal of damaged or life expired tubes.



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