



## STR2275 Series, 750W, X-Band, Rack Mount TWTA

The new generation of STR Series rack mount TWTA's provide an easy to operate, colour touch screen interface with a multi-functional selector wheel. The colour touch screen 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 touch screen. 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 STR2275 is available with a wide range of options and accessories, backed by worldwide technical support.

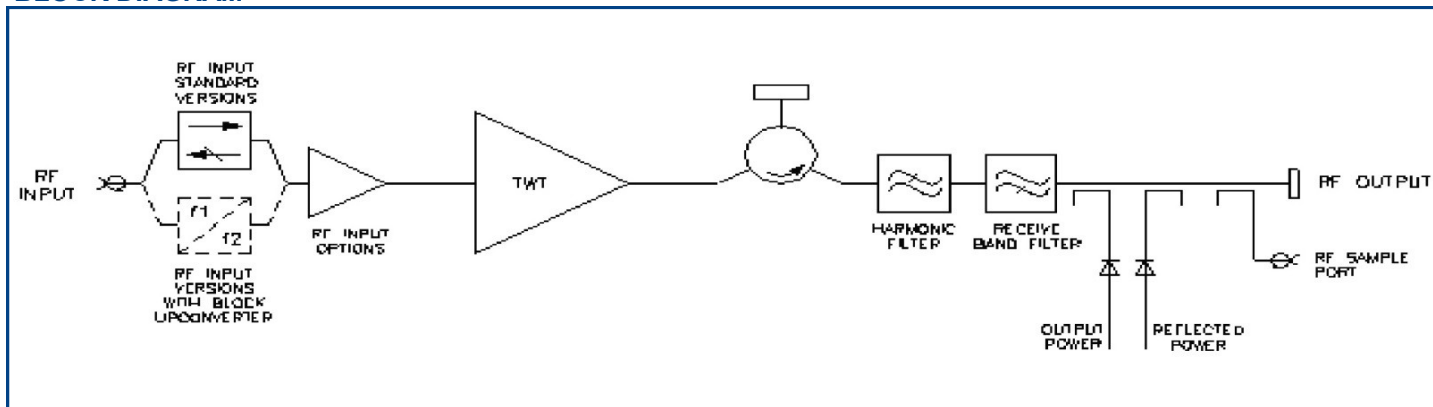
### Options

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

### Features

- Compact 4RU enclosure
- Touch screen control
- Ethernet interface
- Remote diagnostics
- Forward and reverse power monitoring
- TWTA performance Data and Event logging

## BLOCK DIAGRAM



### PERFORMANCE (Without Upconverter)

Frequency range:		
Standard - XX1.....	7.90 to 8.4	GHz
Output Power:		
TWT output flange (peak).....	750	W min
HPA rated output (CW).....	650	W min
Gain:		
At rated power (A,D, Z option).....	70	dB min
SSG P rated - 10dB (A,D,Z option).....	75	dB min
Attenuation range (D,Z option).....	25	dB min
Gain Variation:		
Full Band.....	2.5	dB max
Over any 40 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 = P rated -4dB:		
Options A, D.....	-18	dBc max
Performance with linearised option, Z.....	-24	dBc max
Harmonic output.....	-60	dBc max
AM to PM conversion at P rated -6dB.....	2.5	%/dB
Noise Power:		
Transmit band.....	-70	dBW/4 kHz max
Receive band (7.25 - 7.75GHz).....	-70	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 <sup>2</sup>
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
Output VSWR (non-operating).....	1.3:1	max
Load VSWR, no damage.....	2.0:1	max

### ELECTRICAL

Prime power .....	single phase
Voltage.....	180 to 265 V
Frequency.....	47 to 63 Hz
Power requirement.....	2600 VA max
Power factor.....	0.95 min

### MECHANICAL

Weight.....	34Kg (75lb) typ
Dimensions.....	see outline
Cooling.....	integral forced-air

### CONNECTORS

RF input.....	N-type female
RF output.....	CPR112G with 8-32 UNC 2B threaded holes
RF Sample port.....	N-type female
Prime Power.....	C20 Male IEC

**Note:** Mating connector for the mains supply is included.

### ENVIRONMENTAL

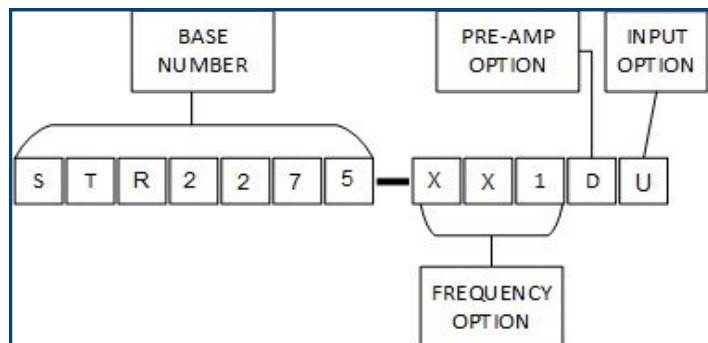
For operation outside these parameters, refer to SpacePath Communications for guidance.	
Operating temperature (see note 1).....	-40 to +55 °C
Derating.....	2 °C/300 m above sea level (3.6 °F/1000ft)
Storage temperature.....	-40 to +80 °C
Relative humidity (condensing).....	100 %
Altitude:	
Operating.....	4.5 Km (15,000 ft) max
Non-operating.....	12 Km (40,000 ft) max
Vibration.....	BS EN 600668-2-64 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	
Acoustic Noise.....	68 dBA typ
Heat Dissipation.....	1500W to duct 350W to room

## CONTROLS

Type	Function
<b>REMOTE CONTROL</b>	Off Standby Transmit RF inhibit
<b>REMOTE STATUS/MONITOR</b>	High Power Alarm Set Low Power Alarm Set Auto Redundancy Control RF Switch Control Gain Control (when fitted)
<b>INTERFACES</b>	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
<b>Other Features</b>	Output Power Monitor Reflected Power Monitor Helix Current Monitor Helix Voltage Collector Voltages Heater Voltage Heater Current Elapsed Hours
	RS-422/485 / Ethernet Dry Relay Contact
	Auxiliary Output Voltage Redundant system & waveguide switch drive

## OPTIONS

Extensive options are offered with the STR2275 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 STR2275 is offered in three frequency bands:  
 XXI - 7.90 - 8.40 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
- 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 STR2275 can be offered with an L-Band Block Upconverter. Specify:  
 N - Standard RF  
 U - L to X-Band Block Upconverter (see page 4)

### Note:

The upconverter requires the inclusion of the 'D' or 'Z' options. (Consult Spacepath Communications for availability)

For more information contact Spacepath Communications.

**PERFORMANCE WITH INTEGRAL BLOCK UPCONVERTER**

Output frequency range:  
 Option XX1.....7.90 to 8.40

L-Band input:  
 Frequency range .....950 to 1450  
 Level.....10 dBm

LO frequency.....6.95

External reference (see note):  
 Frequency.....10  
 Level.....-3 to +7  
 Impedance.....50

Output power:  
 TWT output flange.....750  
 HPA rated output.....650

Gain:  
 At rated power (D option).....70  
 SSG Prated -10dB (D option).....75  
 Attenuation range (D option).....25

Gain Variation:  
 Full band.....4.0  
 Over any 40 MHz band.....1.5  
 Slope.....0.08

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 -4dB:  
 Options C,A,D.....-18  
 Performance with linearised option Z.....-24

Harmonic output.....-60

AM to PM conversion at Prated -6dB.....2.5

Noise Power:  
 Transmit band.....-70  
 Receive band (3.2-4.2GHz).....-70

Residual AM >100MHz from Carrier.....-60

Group Delay:  
 GHz Linear.....0.01 ns/MHz  
 Parabolic.....0.005 ns/MHz<sup>2</sup>  
 MHz Ripple.....0.5 ns/p-p

Phase noise:  
 GHz Continuous.....meets IESS phase noise profile  
 AC Fundamental.....-50 dBc  
 Mhz 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

W min  
 W min

**Note:** The BUC can be operated without the external reference, typical frequency stability ±0.25 ppm.

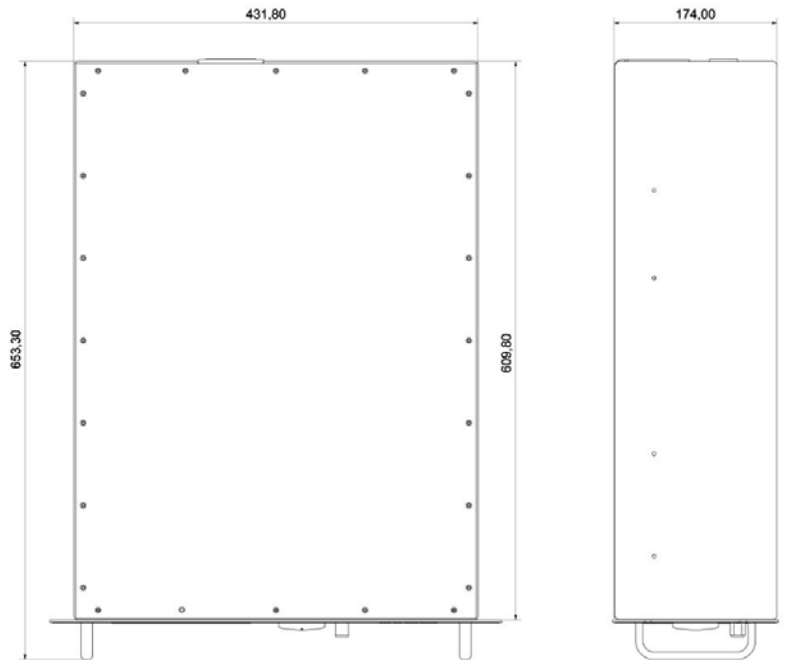
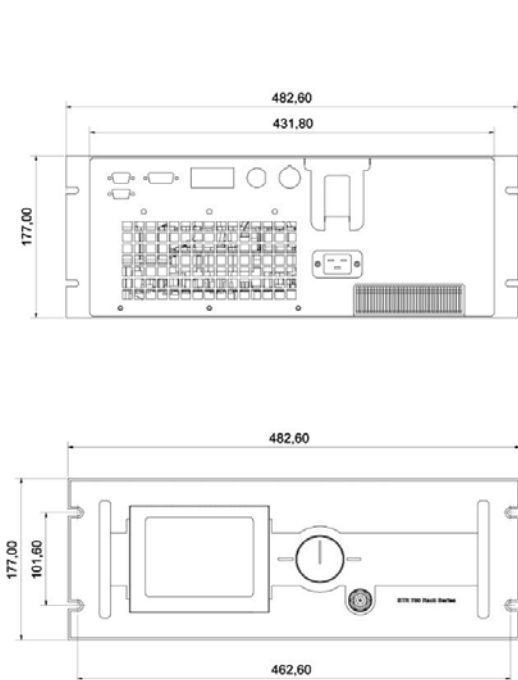
**HEALTH AND SAFETY HAZARDS**  
 Stellar satellite amplifiers are safe to handle and operate provided that the relevant precautions are observed. Spacepath Communications does not accept responsibility for damage or injury resulting from the use of electronic devices it produces.

**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.

dB min  
 dB min  
 dB min  
 dB max  
 dB max  
 dB/MHz max  
 dBm  
 dB max  
 dBc max  
 dBc max  
 dBc max  
 °/dB  
 dBW/4 KHz max  
 dBW/4 KHz max  
 dBc max



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