750W X-Band Rack Mount TWTA

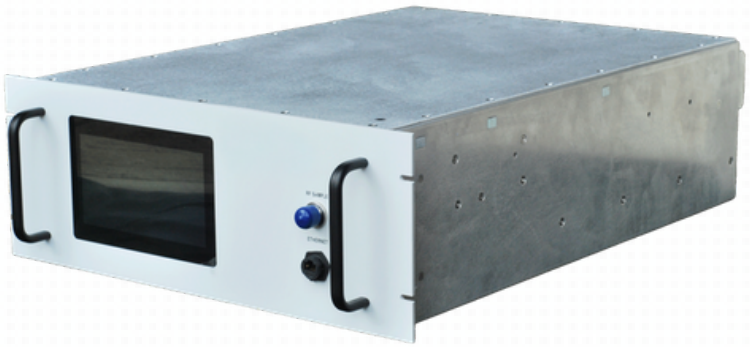
The new generation of STR Series rack mount TWTAs provide an easy to operate, colour touch screen interface with a multi-functional selector wheel. The colour touch screen display provides clear, easy to read status of the amplifier's operation, including: RF output power monitoring, heater, helix monitoring, & 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 round-the-clock, worldwide technical support.

Options

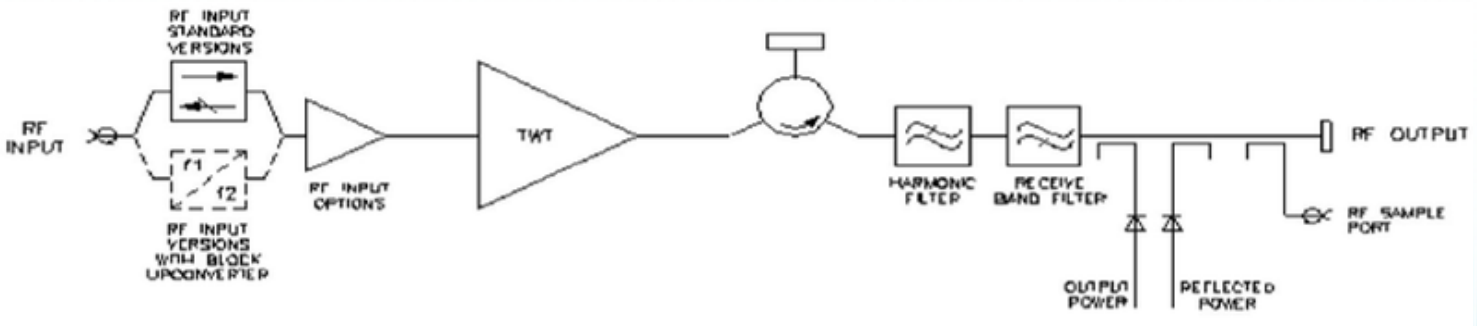
- Integral solid-state amplifier (SSA)
- L-Band Block upconverter
- 10MHz reference
- Lineariser
- Redundant system control
- Quick connect waveguide options



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 XX1		7.9 – 8.4 GHz	
Output Power	TWT output flange	750 W min	
	HPA rated output	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		0.5 dB max	@ constant drive, temperature and load
Gain stability		2.0 dB max	over full operating temperature
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 (7.25-7.75 GHz): -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	
Phase Noise		Continuous 10dB lower than IESS phase noise profile AC fundamental -50 dBc max Sum of all spurs -47 dBc max	
Group Delay	Linear	0.01 nsec/MHz, max	
	Parabolic	0.005 nsec/MHz^2, max	
	Ripple	0.5 nsec/Peak-Peak, 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

Physical	
Dimensions (outline below)	60.98 cm deep x 43.18 cm wide x 17.40 cm height
Weight	34Kg (75lb) typ
Cooling	integral forced-air
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 connectors for the mains supply are included.

Environmental	
Operating temperature	-40˚C to +55˚C
Derating	2 °C/300 m above sea level (3.6 °F/1000ft)
Storage temperature	-40 to +80 °C
Relative humidity (non-condensing)	100%
Altitude	Operating 4.5 Km (15,000 ft)max Non-operating 12 Km (40,000 ft)max
Shock	IEC Publication 68-2-27 Part 2 test Ea, 25g
Vibration	BS EN 600668-2-64 test Fh, transportation
Acoustic Noise	68 dBa typ
Heat Dissipation	1500W to duct, 350W to room
EMC	EN61000-6-3:2001 (Emissions) EN61000-6-2:2001 (Immunity) FCC CFR47 Part 15B

For operation outside these parameters, refer to ETL Systems for guidance.

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	

Options
Extensive options are offered with the STR2275 and include; integral pre-amplifiers, gain control, linearisers and block upconverters.

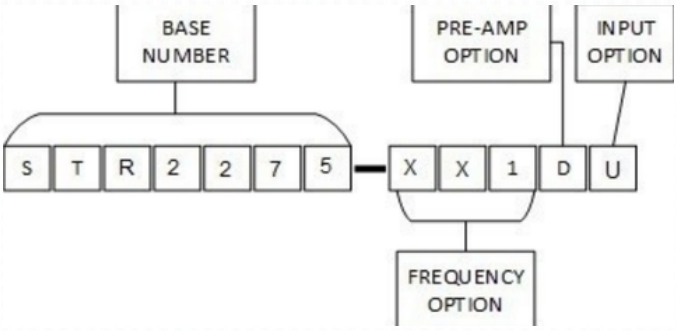
Frequency Options
The STR2275 is offered in one frequency band:
XX1-7.9-8.4 GHz

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 ETL Systems for availability)

Input Options
The STR2275 can be offered with an L-Band Block Upconverter.
Specify:
N - Standard RF
U - L to X-Band Block Upconverter (see page 5)

Note
The upconverter requires the inclusion of the 'D' and 'Z' option



Performance with Integral Block Upconverter	
Output frequency range	7.9 to 8.4GHz
L-Band input	Frequency range: 950 to 1450 MHz Level: 10 dBm max
LO frequency	6.95 GHz
External reference (see note):	Frequency 10 MHz Level -3 to +7 dBm Impedance 50 Ω
Output power	TWT output flange: 750W min HPA rated output: 650W min
Gain Variation	Full band: 4.0 dB max Over any 40 MHz band: 1.5 dB max
Phase Noise Continuous	meets IESS phase noise profile
Input VSWR (non-operating)	1.6:1 max

Note

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

Health and Safety Hazards

Our 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

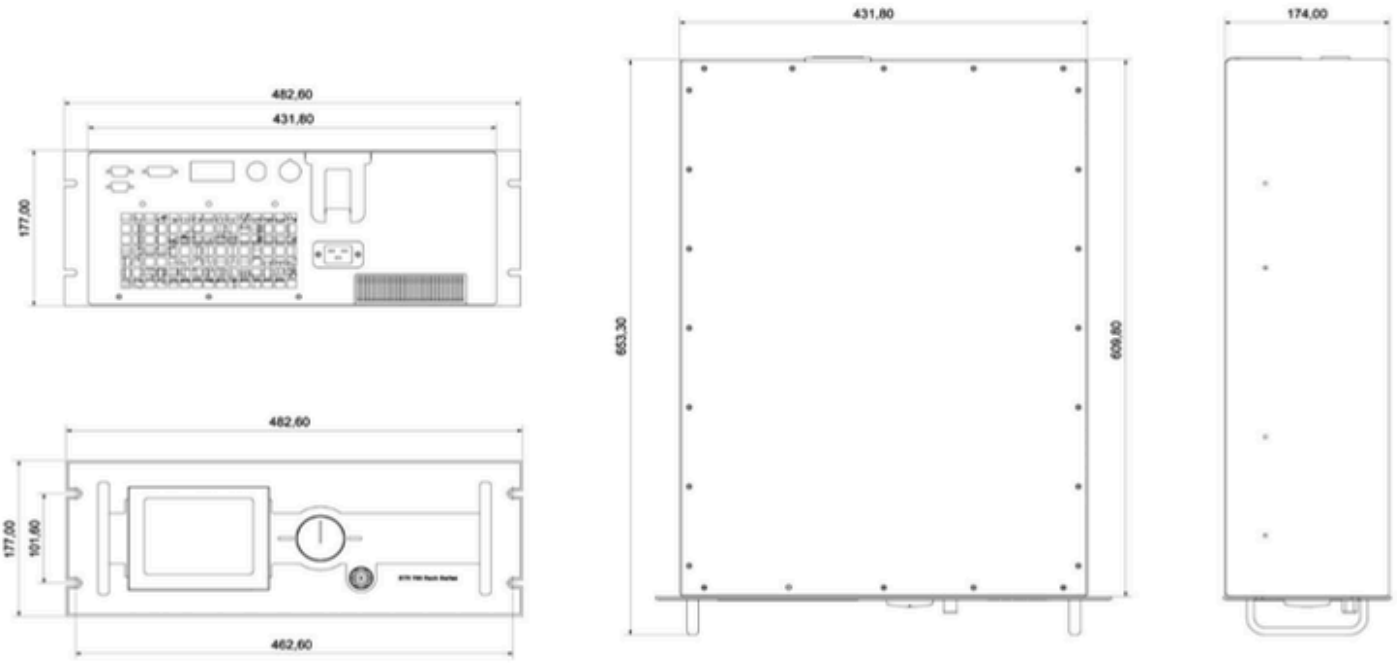
Dangerous voltages are present within the TWT amplifier when operating normally. However, the equipment is designed so that personnel cannot come into contact with high voltage circuits unless covers are removed.

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



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