

**Typical applications:** 

Compensation for

passive splitters / combiners & cable loss

General satcoms –

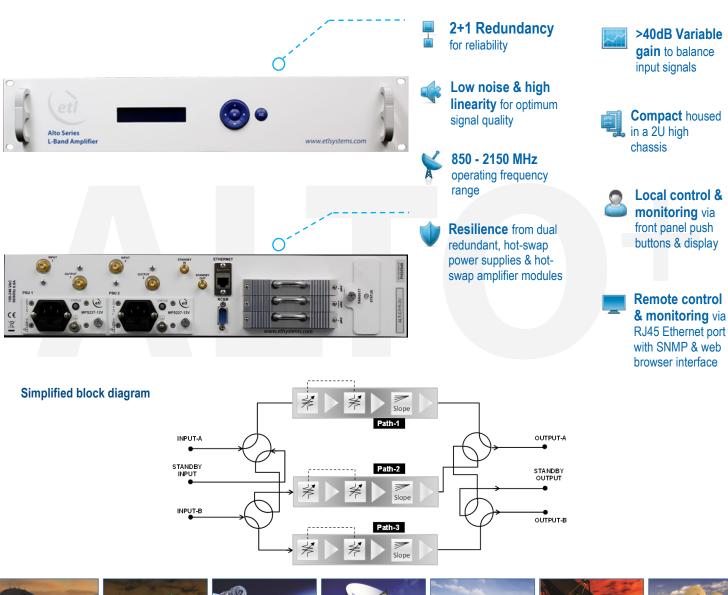
ends, TVRO

teleports, video head-

## 2+1 Redundant Alto Amplifier with high linearity & low noise settings & variable gain

Model 25703 is part of the Alto plus amplifier range. It can be operated in one of three modes:

- Optimum Noise: Maintains the lowest noise figure across the dynamic range.
- Optimum Linearity: Maintains the optimum 1dB GCP, OIP3 and OIP2 across the dynamic range.
- Optimum Compromise: Provides the best trade off by maintaining low noise figure at low signal levels (high gain settings) and optimum linearity at high signal levels (lower gain settings).







## Technical specifications and operating parameters

Steps Fine Control 0.2 ± 0.05 dB combined to give 30 dB gain control range in 0.2 of steps.   Input Return Loss Typical 21 dB   Minimum 15 dB   Output Return Loss Typical   Minimum 14 dB   Reverse Gain <-40 dB typical   Noise Figure Typical   Minimum 3.5 dB   At maximum gain setting & at room temperature 20°C.   1dB GCP Typical			RF Parameters		
Redundancy2+1 redundancyFrequency Range850-2150 MHz (L-band)RF Convectors50Ω SMA50Ω SMA50Ω BNCGainMaximum $44 \pm 2 dB$ $50\Omega BNC$ GainMaximum $-6 \pm 2 dB$ $44 \pm 2 dB$ B50-2150MHz $\pm 1.25 dB$ $\pm 0.2 dB$ Flatness850-2150MHz $\pm 0.75 dB 2$ channels set to same gainGain Tracking Cain/Time Value $\pm 0.15 dB$ over 24 hours at spot frequency at a given temperatureGain/Time Stability $\pm 0.15 dB$ over 24 hours at spot frequency at a given temperatureGain/StepsNominal $1 \pm 0.15 dB$ Fine ControlNominal control steps & fine control steps can be combined to give 30 dB gain control range in 0.2 or steps.Input Return LossTypical $21 dB$ MinimumNominal control steps & fine control range in 0.2 or steps.Output Return LossTypical $2.40 dB$ typical $21 dB$ At maximum gain setting & at room temperatureNoise FigureTypical $2.8 dB$ Minimum $At maximum gain setting & at room temperature20^{\circ}C.NoiseFigureTypical2.3 dBAt maximum gain setting & at room temperature20^{\circ}C.$	Spec Version		2.0		
Frequency Range850-2150 MHz (L-band)RF Connectors50 $\Omega$ SMA50 $\Omega$ N-type50 $\Omega$ BNCGainMaximum44 ± 2 dBGainMaximum-6 ± 2 dBFlatness850-2150MHz±1.25 dBFlatness850-2150MHz±1.25 dBGain Tracking±0.75 dB 2 channels set to same gainGain/Time Stability±0.15 dB over 24 hours at spot frequency at a given temperatureGainNominal1 ± 0.15 dBStepsFine Control0.2 ± 0.05 dBInput Return LossTypical21 dBOutputt Return LossTypical21 dBNoiseTypical2.1 dBFigureTypical2.8 dBMinimum14 dBNoiseTypical2.8 dBFigureTypical2.8 dBMinimum3.5 dBAt maximum gain setting & at room temperature 20°C.	Capacity		3 inputs, 3 outputs		
$ \begin{array}{c c c c c c c } \hline RF \ Connectors & 50\Omega \ SMA & 50\Omega \ N-type & 50\Omega \ BNC \\ \hline \\ $	Redundancy		2+1 redundancy		
GainMaximum $44 \pm 2  dB$ GainMinimum $-6 \pm 2  dB$ Flatness $850-2150 MHz$ $\pm 1.25  dB$ Any 40MHz $\pm 0.75  dB  2$ channels set to same gainGain Tracking $\pm 0.15  dB$ over 24 hours at spot frequency at a given temperatureGain/Time Stability $\pm 0.15  dB$ Nominal control steps & fine control steps can be combined to give 30 dB gain control range in 0.2 combined to give 30 dB gain cont	Frequency Range		850-2150 MHz (L-band)		
Gain   Minimum   -6 ± 2 dB     Flatness   850-2150MHz   ±1.25 dB     Any 40MHz   ±0.2 dB     Gain Tracking   ±0.75 dB 2 channels set to same gain     Gain/Time Stability   ±0.15 dB over 24 hours at spot frequency at a given temperature     Gain/Steps   Nominal   1 ± 0.15 dB     Nominal   1 ± 0.15 dB   Nominal control steps & fine control steps a fine control steps a fine control steps a fine control range in 0.2 combined to give 30 dB gain control range in 0.2 co	RF Conne	ectors	50Ω SMA 50Ω N-type 50Ω BNC		
Minimum   -6 ± 2 dB     Flatness   850-2150MHz   ±1.25 dB     Any 40MHz   ±0.2 dB     Gain Tracking   ±0.75 dB 2 channels set to same gain     Gain/Time Stability   ±0.15 dB over 24 hours at spot frequency at a given temperature     Gain Steps   Nominal   1 ± 0.15 dB     Nominal   1 ± 0.15 dB   Nominal control steps & fine control steps a fine control steps a fine control steps a fine control range in 0.2 d     Input Return Loss   Typical   21 dB     Output Return Loss   Typical   21 dB     Minimum   15 dB   21 dB     Reverse Gain   <-40 dB typical   21 dB     Noise Figure   Typical   2.8 dB   At maximum gain setting & at room temperature 20°C.     Typical   2.8 dB   At maximum gain setting & at room temperature 20°C.	Gain		44 ± 2 dB		
Flatness   Any 40MHz   ±0.2 dB     Gain Tracking   ±0.75 dB 2 channels set to same gain     Gain/Time Stability   ±0.15 dB over 24 hours at spot frequency at a given temperature     Gain Steps   Nominal   1 ± 0.15 dB     Fine Control   0.2 ± 0.05 dB   Nominal control steps & fine control steps an be combined to give 30 dB gain control range in 0.2 control steps.     Input Return Loss   Typical   21 dB     Output Return Loss   Typical   21 dB     Ninimum   15 dB   21 dB     Reverse Gain   <-40 dB typical   21 dB     Noise Figure   Typical   2.8 dB   At maximum gain setting & at room temperature 20°C.     1dB GCP   Typical   2.3 dB   At maximum gain setting & at room temperature 20°C.			-6 ± 2 dB		
Any 40MHz ±0.2 dB   Gain Tracking ±0.75 dB 2 channels set to same gain   Gain/Time Stability ±0.15 dB over 24 hours at spot frequency at a given temperature   Gain Steps Nominal 1 ± 0.15 dB   Nominal Return Loss Nominal 1 ± 0.15 dB   Minimum 0.2 ± 0.05 dB Nominal control steps & fine control steps at fine control at the file control at the file control steps at file contr	Flatage	850-2150MHz	±1.25 dB		
Gain/Time Stability   ±0.15 dB over 24 hours at spot frequency at a given temperature     Gain Steps   Nominal   1 ± 0.15 dB   Nominal control steps & fine control steps can be combined to give 30 dB gain control range in 0.2 c steps.     Input Return Loss   Typical   21 dB     Minimum   15 dB     Output Return Edition   Typical   21 dB     Nominal control steps & fine control steps at room temperature   14 dB     Noise Figure   Typical   2.8 dB     Minimum   3.5 dB   At maximum gain setting & at room temperature 20°C.			±0.2 dB		
Nominal 1 ± 0.15 dB Nominal control steps & fine control steps can be combined to give 30 dB gain control range in 0.2 of steps.   Input Return Loss Typical 21 dB   Output Return Loss Typical 21 dB   Minimum 15 dB   Nominal control steps & fine control steps can be combined to give 30 dB gain control range in 0.2 of steps.   Input Return Loss Typical 21 dB   Minimum 15 dB   Output Return Loss Typical 21 dB   Minimum 14 dB   Reverse Gain <-40 dB typical	Gain Tracking		$\pm 0.75$ dB <sub>2</sub> channels set to same gain		
Gain Steps Fine Control 0.2 ± 0.05 dB Interformation register and combined to give 30 dB gain control range in 0.2 d steps.   Input Return Loss Typical 21 dB   Output Return Loss Typical 21 dB   Minimum 15 dB   Output Return Loss Typical 21 dB   Minimum 14 dB   Reverse Gain <-40 dB typical	Gain/Time Stability		$\pm 0.15~\text{dB}$ over 24 hours at spot frequency at a given temperature		at a given temperature
Steps Fine Control 0.2 ± 0.05 dB steps.   Input Return Loss Typical 21 dB   Minimum 15 dB   Output Return Loss Typical 21 dB   Minimum 15 dB   Minimum 14 dB   Reverse Gain <-40 dB typical   Noise Figure Typical 2.8 dB   Minimum 3.5 dB   At maximum gain setting & at room temperature 20°C.		Nominal	1 ± 0.15 dB	Nominal control steps & fine control steps can be combined to give 30 dB gain control range in 0.2 dB steps.	
Return Loss Minimum 15 dB   Output Return Loss Typical 21 dB   Minimum 14 dB   Reverse Gain <-40 dB typical   Noise Figure Typical 2.8 dB   Minimum 3.5 dB At maximum gain setting & at room temperature 20°C.   1dB GCP Typical 23 dB		Fine Control	$0.2 \pm 0.05 \text{ dB}$		
Loss Minimum 15 dB   Output Return Loss Typical 21 dB   Minimum 14 dB   Reverse Gain <-40 dB typical		Typical	21 dB		
Return Loss Image: Main and			15 dB		
Loss Minimum 14 dB   Reverse Gain <-40 dB typical   Noise Figure Typical 2.8 dB   Minimum 3.5 dB   Typical 23 dB   At maximum gain setting & at room temperature 20°C.			21 dB		
Typical     2.8 dB     At maximum gain setting & at room temperature 20°C.       Figure     Minimum     3.5 dB     At maximum gain setting & at room temperature 20°C.       1dB GCP     Typical     23 dB     At maximum gain setting & at room temperature 20°C.			14 dB		
Noise At maximum gain setting & at room temperature   Figure Minimum 3.5 dB   1dB CCP Typical 23 dB	Reverse Gain		<-40 dB typical		
Typical Typical 23 dB   At maximum gain setting & at room temperature	Noise	Typical	2.8 dB	At maximum gain setting & at room temperature, 20°C.	
1dB CCP At maximum gain setting & at room temperature	Figure	Minimum	3.5 dB		
		Typical	23 dB	At maximum gain setting & at room temperature, 20°C.	
Minimum 19 dB 20°C.	TOB GUP	Minimum	19 dB		
Typical 23 dB 3rd order intercept point, output power.	OIP3	Typical	23 dB	3rd order intercept point, output power. At max gain setting.	
Minimum 19 dB At max gain setting.		Minimum	19 dB		
Typical 53 dB 2nd order intercept point, output power.	OIP2	Typical	53 dB	2nd order intercept point, output power. At max gain setting	
		Minimum	45 dB		
Isolation >50 dB Isolation between the amplifier modules when both are set to the same gain setting.	Isolation		>50 dB		
Spurii <-85 dBm Signal independent	Spurii		<-85 dBm	Signal i	ndependent
Chassis MTBF >120,000 hrs			>120,000 hrs		
AMP MTBF >150,000 hrs	AMP MTBF		>150,000 hrs		

Power			
PSU Power	85-264Vac 50-60Hz	Fused 2A	
AC Consumption	<100W	Total AC, steady state.	
PSU	Dual redundant	Hot swap	

Environmental		
Operating temperature	0 to 45°C Nominal -10 to 50°C Extended (optional)	
Location	Indoor use only	
Storage temperature	-20°C to +75°C	
Humidity (RH)	20 to 90% non-condensing	
Altitude	Operational -10,000 ft Storage - 30,000 ft Above Mean Sea Level	
Max input level	+20 dBm	

System Control				
Local Control	Via Front Panel LCD and Keypad.			
Remote Control & Monitoring	RJ45 Ethernet port 10BaseT/100 BaseTx ETL protocol over TCP; SNMP; Built-in Web Server.			
Amplifier Bias Voltages	Voltage to each amplifier stage within the amplifier modules is continuously monitored.			
Amplifier Supply Voltages	Supply from PSU to each amp is continuously monitored.			
Temperature Monitoring	Each amplifier module: CPU module & Chassis			
PSU Status	Each PSU individually monitored & reported			

Amplifier Tracking ON	Amplifier gain and slope control is common to all modules in the chassis.	Allows virtually instantaneous switch over because the redundant amp modules have the same gain and slope setting as those of the main amps.	
Amplifier Tracking OFF	Each amplifier can be independently set by operator selected slope and gain setting.	Redundant amplifier is set to same settings as that of the replaced amplifier prior to switch over. Switch over time 10-30ms.	
Optimum Noise	Maintains optimum NF across the dynamic range.		
Best Linearity	Maintains optimum 1dB GCP, OIP3 & OIP2 across dynamic range.	Factory default mode is best compromise. Either	
Best Compromise	Provides best NF at high gain (low signal) and best linearity at low gain (high signal levels).	one of these 3 modes is user selectable.	

Physical		
Dimensions	2U high x 450mm deep x 19" wide	
Weight	7.5 kg	
Colour	White 00-E-55 semi-gloss	

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