



ETL Systems

Excelling in RF Engineering

Model Number:
ALT-C303-2U-x5x5 chassis

Alto series 2+1 Redundant Amplifier

with variable gain & solid state switching (50Ω system)

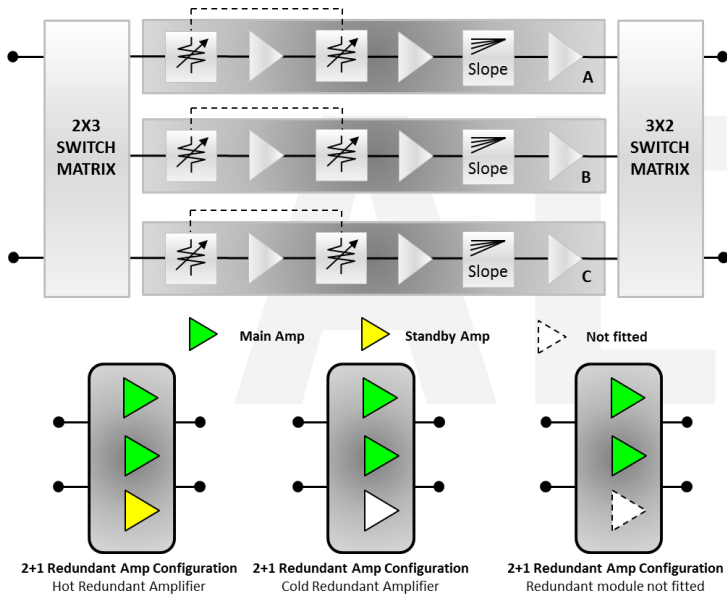
The Alto series of amplifiers provide excellent RF performance with a wide range of functionality, in a compact chassis. They are designed with hot swap amplifier modules to enhance resilience and flexibility.

Other options in the Alto range: The Alto amplifier range is also available with additional features such as LNB Powering, 10MHz and DC pass, Auto Gain Control and other redundancy configurations.

Typical applications:

- Compensation for passive splitters/combiners and cable loss
- General satcoms – teleports, video head-ends, TVRO

Chassis



Redundancy configuration 2+1

Redundancy



Resilience from dual redundant hot-swap power supplies & hot-swap amplifier modules



Remote control & monitoring via RJ45 Ethernet port with SNMP & web browser interface



Local control & monitoring via front panel push buttons & display



Amplifier Module Options



850 - 2150 MHz L-Band operating frequency range



Variable gain & slope compensation to balance input signals



Low Noise options for prime signal quality



High Linearity options ensures overall RF gain signal performance is optimised





Chassis - Specification

Model Numbers	ALT-C303-2U -x5x5		
Dimensions	2U high x 350mm deep x 19" wide		
Capacity / Redundancy	3 modules: 2+1 redundancy		
Impedance & RF Connectors	50 Ω BNC / SMA / N-type		
Weight / Colour	5.1 kg	White 00-E-55 semi-gloss	
AC Power	85-264Vac 50/60 Hz, Fused 2A		
PSU	Hot-swap, dual redundant, Diode OR		
Power Consumption	< 50W steady state, all modules fitted. Total AC input.		
Local control & monitoring	Via front panel LCD and keypad		
Remote control & monitoring	Ethernet via RJ45, 10BaseT/100BaseTx, ETL TCP/IP protocol, SNMP & web browser interface		
Monitoring	Amplifier bias voltages, amplifier supply voltages, temperature monitoring & PSU status		
Operating Modes	Amplifier Tracking ON - Amplifier gain & slope control is common to both modules in the chassis	Amplifier Tracking OFF: Each amplifier can be independently set by operator selected slope & gain setting	Redundancy: Redundant amplifier can be set as hot or cold standby amplifier
MTBF	119,714 hours		
Temperature / Humidity	Operating: 0 to 55 °C	Storage: -20 to +75 °C Indoor use only	20% to 90% non-condensing, relative humidity

Amplifier Module Options - RF Parameters

Amp Module Model Numbers		ALT-R-L1-006		ALT-R-L1-008		ALT-R-L1-012		ALT-R-L1-020		ALT-R-L1-023		ALT-R-L1-032	
Input & output RF detection													
Low Noise													
High Linearity													
LNB Power								✓					
10 MHz Pass													
Frequency Range (MHz)		850-2150		850-2150		850-2150		850-2150		850-2150		850-2150	
Gain (dB)	Maximum	32.00	±1.5	22.00	±1.5	40.00	±2	32.00	±1.5	40.00	±2	40.00	±2
	Minimum	2.00	±1.5	-1.00	±1.5	10.00	±2	2.00	±1.5	10.00	±2	10.00	±2
Gain Flatness (dB) pk-pk	full band	±	1.00	±	1.25	±	1.25	±	1.00	±	1.50	±	1.25
	36 MHz	±	0.25	±	0.25	±	0.25	±	0.25	±	0.25	±	0.35
Gain Steps (dB)		0.50	±0.1	0.50	±0.1	1.00	±0.15	0.50	±0.1	0.20	±0.1	1.00	±0.15
Input Return Loss (dB)	Typical	13.00		16.00		16.00		13.00		16.00		16.00	
	Minimum	9.00		11.00		10.00		9.00		12.00		12.00	
Output Return Loss (dB)	Typical	13.00		13.00		16.00		13.00		16.00		16.00	
	Minimum	9.00		9.00		10.00		9.00		12.00		12.00	
Slope Control (dB)	Range	0 to 5.00		0 to 5.00		0 to 5.00		0 to 5.00		N/A -3.00		0 to 5.00	
	Steps	1.00	±0.25	1.00	±0.25	1.00	±0.25	1.00	±0.25	N/A		1.00	±0.25
Noise Figure (dB) (@ max gain)	Typical	12.50		13.50		12.50		12.50		5.30		8.00	
	Maximum	14.50		15.50		14.50		14.50		7.30		10.00	
1dB GCP (dBm) (@ max gain)	Typical	13.5		19.5		15.5		13.5		20.5		23.0	
	Minimum	11.5		17.5		13.5		11.5		13.5		21.0	
OIP3 (dBm) (@ max gain)	Typical	26.5		32.5		35.5		26.5		33.5		36.0	
	Minimum	23.5		29.5		32.5		23.5		30.5		32.0	
OIP2 (dBm) (@ max gain)	Typical	40.5		50.5		46.5		40.5		33.5		46.0	
	Minimum	38.5		48.5		44.5		38.5		36.5		40.0	
Isolation (dB)	Typical	60.00		60.00		60.00		60.00		60.00		60.00	
	Minimum	50.00		50.00		50.00		50.00		50.00		50.00	
Max total RF i/p power (dBm)		20.00		20.00		20.00		20.00		20.00		20.00	



Amplifier Module Options - RF Parameters											
Amp Module Model Numbers		ALT-R-L1-038		ALT-R-L1-078		ALT-R-L1-087		ALT-R-L1-097		ALT-R-S3-092	
Input & output RF detection		✓									
Low Noise								✓		✓	
High Linearity		✓								✓	
LNB Power											
10 MHz Pass				✓							
Frequency Range (MHz)		850-2150		850-2150		850-2150		850-2150		850-2450	
Gain (dB)	Maximum	40.00	±2	22.00	±1.5	40.00	±2	40.00	±2	44.00	±2
	Minimum	10.00	±2	-1.00	±1.5	-10.00	±2	10.00	±2	10.00	±2
Gain Flatness (dB) pk-pk	full band	±	1.50	±	1.25	±	1.50	±	1.50	±	1.0
	36 MHz	±	0.20	±	0.25	±	0.20	±	0.20	±	0.2
Gain Steps (dB)		0.5	±0.1	0.50	±0.1	0.20	±1.0	0.20	±0.1	0.25	±0.2
Input Return Loss (dB)	Typical	16.00		16.00		16.00		16.00		20.00	
	Minimum	10.00		11.00		12.00		12.00		16.00	
Output Return Loss (dB)	Typical	16.00		13.00		16.00		16.00		20.00	
	Minimum	10.00		9.00		12.00		12.00		16.00	
Slope Control (dB)	Range	0 to 5.00		0 to 5.00		N/A		N/A	-3.00	0 to 9	
	Steps	1.00	±0.25	1.00		N/A		N/A		1 ± 0.5	
Noise Figure (dB) (@ max gain)	Typical	8.50		13.50		6.00		6.00		2.5	
	Maximum	10.50		15.50		8.00		8.00		3.1	
1dB GCP (dBm) (@ max gain)	Typical	23.0		19.5		23.0		23.0		25.0	
	Minimum	21.0		17.5		21.0		21.0		22.0	
OIP3 (dBm) (@ max gain)	Typical	36.0		32.5		36.0		36.0		38.0	
	Minimum	32.0		29.5		32.0		32.0		33.0	
OIP2 (dBm) (@ max gain)	Typical	46.0		50.5		46.0		46.0		60.0	
	Minimum	40.0		48.5		40.0		40.0		50.0	
Isolation (dB)	Typical	60.00		60.00		60.00		60.00		50.0	
	Minimum	50.00		50.00		50.00		50.00		45.0	
Max total RF i/p power (dBm)		18.00		20.00		20.00		20.00		20.00	