



ETL Systems

New technologies
in RF distribution

Model Number:
ALT-C310-1U-x5x5 chassis

Alto series Dual 1+1 Redundant Amplifier with variable gain (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 Redundancy configurations up to 4+2.

Typical applications:

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

Chassis



Redundancy configuration Dual 1+1 Redundancy



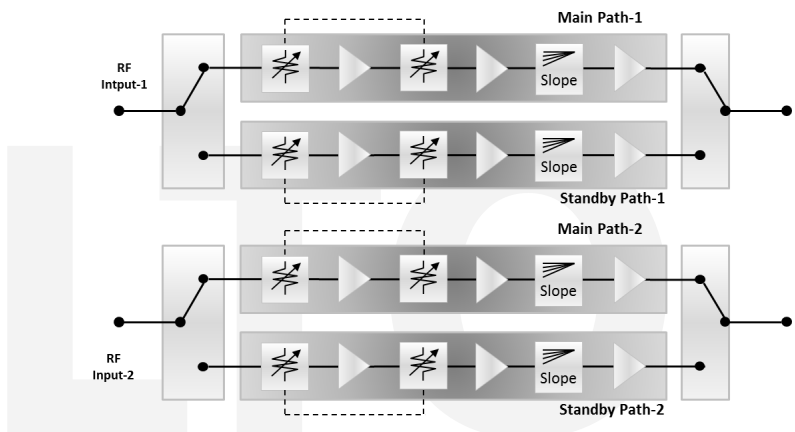
Resilience from dual redundant hot-swap power supplies & hot-swap amplifier modules



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



Local control & monitoring via front panel push buttons & display



Amplifier Module Options



IF & L-band (850 - 2550MHz & 50 - 200MHz) operating frequency range options



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

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Chassis - Specification

Model Numbers	ALT-C310-1U-x5x5	
Dimensions	1U high x 450mm deep x 19" wide	
Capacity	4 modules: Dual 1+1 redundancy	
Impedance & RF Connectors	50 Ω BNC / SMA / N-type	
Weight	5 kg	
Colour	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 all 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	Operating: 0 to 55 °C	Storage: -20 to +75 °C Indoor use only
Humidity	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-L1-019	ALT-R-F2-013	
Frequency Range (MHz)	850-2150	850-2150	850-2150	850-2150	50-200	
Gain (dB)	Maximum	37.00±1.5	27.00 ±1.5	45.00 ±2	45.00 ±2	39.00 ±2
	Minimum	7.00±1.5	4.00 ±1.5	15.00 ±2	15.00 ±2	9.00 ±2
Gain Flatness (dB) pk-pk	full band	±1.00	± 1.25	± 1.25	± 1.75	± 1.25
	36 MHz	±0.25	± 0.25	± 0.25	± 0.35	± 0.35
Gain Steps (dB)	0.50±0.1	0.50 ±0.1	1.00 ±0.15	1.00 ±0.15	1.00 ±0.15	
Input Return Loss (dB)	Typical	14.00	17.00	17.00	17.00	17.00
	Minimum	10.00	12.00	11.00	11.00	11.00
Output Return Loss (dB)	Typical	14.00	14.00	17.00	14.00	17.00
	Minimum	10.00	10.00	11.00	11.00	11.00
Slope Control (dB)	Range	0 to 7.00	0 to 7.00	0 to 7.00	0 to 7.00	N/A
	Steps	1.00±0.25	1.00 ±0.25	1.00 ±0.25	1.00 ±0.25	N/A
Noise Figure (dB) @ max gain	Typical	9.50	10.50	9.50	5.00	8.50
	Maximum	11.00	12.00	11.00	7.00	10.50
1dB GCP (dBm) @ max gain	Typical	16.5	22.5	18.5	29.5	30.0
	Minimum	14.5	20.5	16.5	27.5	28.0
OIP3 (dBm) @ max gain	Typical	27.5	35.5	38.5	39.5	47.5
	Minimum	24.5	32.5	35.5	36.5	34.5
OIP2 (dBm) @ max gain	Typical	43.5	45.5	49.5	51.5	N/A
	Minimum	39.5	41.5	45.5	47.5	N/A
Isolation (dB)	Typical	60.00	60.00	60.00	60.00	80.00
	Minimum	50.00	50.00	50.00	50.00	60.00
Max total RF i/p power (dBm)	20.00	20.00	20.00	20.00	20.00	





Amplifier Module Options - RF Parameters

Amp Module Model Numbers	ALT-R-L1-020	ALT-R-L1-021	ALT-R-L1-032	ALT-R-L1-038	ALT-R-S6-090	
Frequency Range (MHz)	850-2150	850-2150	850-2150	850-2150	850-3150	
Gain (dB)	Maximum	37.00±1.5	36.00 ±1.5	45.00 ±2	45.00 ±2	44.00 ±2
	Minimum	7.00±1.5	9.00 ±1.5	15.00 ±2	15.00 ±2	9.00 ±2
Gain Flatness (dB) pk-pk	full band	±1.00	± 1.00	± 1.25	± 1.50	± 1.35
	36 MHz	±0.25	± 0.20	± 0.35	± 0.20	± 0.20
Gain Steps (dB)	0.50±0.1	0.50 ±0.1	1.00 ±0.15	0.50 ±0.1	0.50 ±0.25	
Input Return Loss (dB)	Typical	14.00	19.00	17.00	17.00	15.00
	Minimum	10.00	16.00	13.00	11.00	13.00
Output Return Loss (dB)	Typical	14.00	17.00	17.00	17.00	15.00
	Minimum	10.00	11.00	13.00	11.00	13.00
Slope Control (dB)	Range	0 to 7.00	N/A N/A	0 to 8.00 0 to 8.00	0 to 8.00	0 to 10
	Steps	1.00 ±0.25	N/A N/A	1.00 ±0.25 1.00 ±0.25	1.00 ±0.25	1.00±0.5
Noise Figure (dB) @ max gain	Typical	9.50	8.50	5.00	6.00	3.00
	Maximum	11.00	10.00	6.50	7.50	4.00
1dB GCP (dBm) @ max gain	Typical	16.5	29.5	26.5	26.5	17.5
	Minimum	14.5	28.5	24.5	24.5	14.5
OIP3 (dBm) @ max gain	Typical	27.5	40.5	38.5	37.5	37.5
	Minimum	24.5	37.5	35.5	34.5	32.5
OIP2 (dBm) @ max gain	Typical	43.5	59.5	47.5	46.5	42.5
	Minimum	39.5	55.5	43.5	43.5	37.5
Isolation (dB)	Typical	60.00	60.00	60.00	60.00	60.00
	Minimum	50.00	50.00	50.00	50.00	50.00
Max total RF i/p power (dBm)	20.00	20.00	20.00	18.00	20.00	





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Amplifier Module Options - RF Parameters

Amp Module Model Numbers		ALT-R-L1-087		ALT-R-L1-097		ALT-R-L1-076	
Frequency Range (MHz)		850-2150		850-2150		850-2850	
Gain (dB)	Maximum	45.00	±2	45.00	±2	37.00	±2.0
	Minimum	-5.00	±2	15.00	±2	4.00	±2.0
Gain Flatness (dB) pk-pk	full band	±	1.35	±	1.35	±	1.35
	36 MHz	±	0.20	±	0.20	±	0.35
Gain Steps (dB)		0.20	±0.1	0.20	±0.1	0.50	±0.25
Input Return Loss (dB)	Typical	17.00		17.00		19.00	
	Minimum	13.00		13.00		15.00	
Output Return Loss (dB)	Typical	17.00		17.00		17.00	
	Minimum	13.00		13.00		13.00	
Slope Control (dB)	Range	N/A		N/A		0 to	10
	Steps	N/A		N/A		1.00	±0.5
Noise Figure (dB) @ max gain	Typical	3.00		3.00		3.50	
	Maximum	3.60		3.60		5.00	
1dB GCP (dBm) @ max gain	Typical	22.5		22.5		22.5	
	Minimum	19.5		19.5		19.5	
OIP3 (dBm) @ max gain	Typical	34.5		34.5		34.5	
	Minimum	31.5		31.5		31.5	
OIP2 (dBm) @ max gain	Typical	39.5		39.5		40.5	
	Minimum	35.5		35.5		37.5	
Isolation (dB)	Typical	50.00		50.00		60.00	
	Minimum	45.00		45.00		50.00	
Max total RF i/p power (dBm)		20.00		20.00		20.00	

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