



ETL Systems

Excelling in RF Engineering

Model Number: ALT-C311-1U-x5x5 chassis
ALT-R-L1-006 / ALT-R-L1-008 / ALT-R-L1-012 /
ALT-R-F2-013 / ALT-R-L1-019 / ALT-R-L1-020 /
ALT-R-L1-021 / ALT-R-L1-023 / ALT-R-L1-028 /
ALT-R-L1-032 modules

Alto series 1+1 Redundant Amplifier with variable gain & LNB powering (50Ω system)

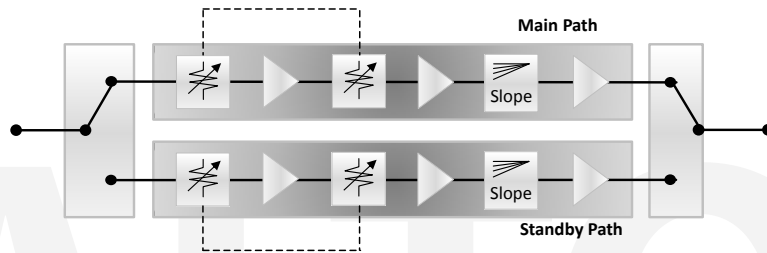
The Alto series of amplifiers provide excellent RF performance with a wide range of functionality, in a compact chassis. They are designed with hot swap amplifier modules to enhance resilience and flexibility.

Other options in the Alto range: The Alto amplifier range is also available with additional features such as 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 1+1 Redundancy



LNB Powering



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 - 2150MHz & 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



LNB Powering 18V module





Chassis - Specification	
Model Numbers	ALT-C311-1U -x5x5
Dimensions	1U high x 350mm deep x 19" wide
Capacity	2 modules: 1+1 redundancy
Impedance & RF Connectors	50 Ω BNC / SMA / N-type
Weight	5 kg
Colour	White 00-E-55 semi-gloss
LNB Powering	18V on/off
AC Power	85-264Vac 50/60 Hz, Fused 2A
PSU	Hot-swap, dual redundant, Diode OR
Power Consumption	< 100W 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-F2-013	ALT-R-L1-019	ALT-R-L1-020	ALT-R-L1-021	ALT-R-L1-023	ALT-R-L1-028	ALT-R-L1-032	
Frequency Range	850-2150 MHz (L-band)	850-2150 MHz (L-band)	850-2150 MHz (L-band)	50-200 MHz (IF)	850-2150 MHz (L-band)	850-2150 MHz (L-band)	850-2150 MHz (L-band)	850-2150 MHz (L-band)	850-2150 MHz (L-band)	850-2150 MHz (L-band)	
Gain	Maximum	35 ± 1.5 dB	27 ± 1.5 dB	45 ± 2 dB	39 ± 2 dB	45 ± 2 dB	35 ± 1.5 dB	36 ± 1.5 dB	47 ± 2 dB	41 ± 2 dB	45 ± 2 dB
	Minimum	5 ± 1.5 dB	4 ± 1.5 dB	15 ± 2 dB	9 ± 2 dB	15 ± 2 dB	5 ± 1.5 dB	9 ± 1.5 dB	17 ± 2 dB	11 ± 2 dB	15 ± 2 dB
Flatness	850-2150MHz	± 1 dB	± 1.25 dB	± 1.25 dB	± 1 dB	± 1.75 dB	± 1 dB	± 1 dB	± 1.5 dB	± 1.75 dB	± 1.25 dB
	Over 36MHz	± 0.25 dB	± 0.25 dB	± 0.25 dB	± 0.35 dB	± 0.35 dB	± 0.25 dB	± 0.20 dB	± 0.25 dB	± 0.25 dB	± 0.35 dB
Gain Steps	0.5 ± 0.1 dB	0.5 ± 0.1 dB	1 ± 0.15 dB	1 ± 0.15 dB	1 ± 0.15 dB	0.5 ± 0.1 dB	1 ± 0.1 dB	0.2 ± 0.1 dB	1 ± 0.2 dB	2 ± 0.15 dB	
Input Return Loss	Typical	14 dB	17 dB	17 dB	17 dB	17 dB	14 dB	19 dB	17 dB	17 dB	17 dB
	Minimum	10 dB	12 dB	11 dB	11 dB	11 dB	10 dB	16 dB	13 dB	13 dB	11 dB
Output Return Loss	Typical	14 dB	14 dB	17 dB	17 dB	14 dB	14 dB	17 dB	17 dB	17 dB	14 dB
	Minimum	10 dB	10 dB	11 dB	11 dB	11 dB	10 dB	11 dB	13 dB	13 dB	11 dB
Slope Control Range	Range: 0 to 7 dB Steps: 1 ± 0.5 dB	Range: 0 to 7 dB Steps: 1 ± 0.5 dB	Range: 0 to 7 dB Steps: 1 ± 0.5 dB	-	Range: 0 to 7 dB Steps: 1 ± 0.5 dB	Range: 0 to 7 dB Steps: 1 ± 0.5 dB	-	Range: 0 to 7 dB Steps: 1 ± 0.5 dB	Range: 0 to 7 dB Steps: 1 ± 0.5 dB	Range: 0 to 8 dB Steps: 1 ± 0.5 dB	
LNB Powering	-	-	-	-	-	18V	-	-	-	-	
Noise Figure	Typical	9.5 dB	10.5 dB	9.5 dB	4.5 dB	5 dB	9.5 dB	8.5 dB	2.3 dB	4.5 dB	5 dB
	Maximum	11 dB	12 dB	11 dB	6 dB	6.5 dB	11 dB	10 dBm	3.8 dB	6 dB	6.5 dBm
1dB GCP	Typical	15.5 dBm	22.5 dBm	18.5 dBm	30.5 dBm	29.5 dBm	15.5 dBm	29.5 dBm	24 dBm	26.5 dBm	26.5 dBm
	Minimum	13.5 dBm	20.5 dBm	16.5 dBm	29.5 dBm	27.5 dBm	13.5 dBm	28.5 dBm	22 dBm	24.5 dBm	24.5 dBm
OIP3	Typical	27.5 dBm	35.5 dBm	38.5 dBm	41.5 dBm	39.5 dBm	27.5 dBm	40.5 dBm	35.5 dBm	38.5 dBm	38.5 dBm
	Minimum	24.5 dBm	32.5 dBm	35.5 dBm	38.5 dBm	36.5 dBm	24.5 dBm	37.5 dBm	32.5 dBm	35.5 dBm	35.5 dBm
OIP2	Typical	43.5 dBm	45.5 dBm	49.5 dBm	N/A	51.5 dBm	43.5 dBm	59.5 dBm	46.5 dBm	47.5 dBm	47.5 dBm
	Minimum	39.5 dBm	41.5 dBm	45.5 dBm	N/A	47.5 dBm	39.5 dBm	55.5 dBm	42.5 dBm	43.5 dBm	43.5 dBm
Isolation	Typical	60 dB									
	Minimum	50 dB									
Max total RF i/p power	20 dBm damage level, not operational										

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