



# Alto series 1+1 Redundant Amplifier with variable gain & slope compensation module options (50Ω system)

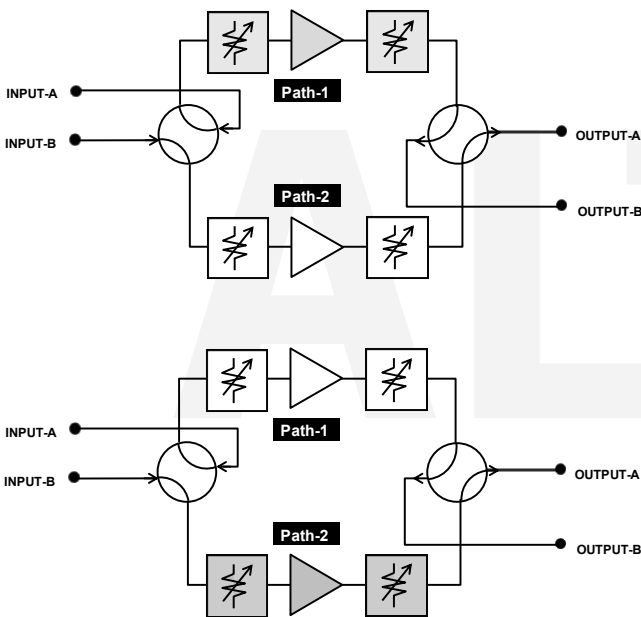
The Alto series of amplifiers provide excellent RF performance with a wide range of functionality, in a compact chassis. They are designed with hot swap amplifier modules to enhance resilience and flexibility.

**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 1+1**  
Redundancy or 2 channel amplifier with 2 input & 2 output ports

**Resilience** from dual redundant hot-swap power supplies, hot-swap amplifier & forced air cooling tray modules

**Remote control & monitoring** via RJ45 Ethernet port and D-type serial port with SNMP & web browser interface

**Local control & monitoring** via front panel push buttons & display



Front Panel - Model ALT-C318-1U



Rear Panel - Model ALT-C318-1U

## 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



**RF detection** on inputs & outputs



Chassis - Specification			
Model Numbers	ALT-C318-1U-x5x5		
Dimensions	1U high x 450mm deep x 19" wide		
Capacity	2 modules: 1+1 redundant or 2 channel amplifier with 2 input & 2 output ports		
Impedance & RF Connectors	50 Ω BNC / SMA / N-type		
Weight / Colour	5 kg	White 00-E-55 semi-gloss	
PSU	Hot-swap, (from front panel) dual redundant, Diode OR		
PSU Power	85-264Vac 50/60 Hz, Fused 2A		
AC Consumption	< 100W steady state, all modules fitted. Total AC input.		
Local control & monitoring	LCD and keypad - via front panel		
Remote control & monitoring	Ethernet via RJ45, 10BaseT/100BaseTx, ETL TCP/IP protocol, SNMP & web browser interface / 9 pin D-type port for dry contact alarms , RS232 & RS485		
Monitoring	Amplifier bias voltages - voltage to each amplifier stage within the amplifier modules is continuously monitored	Amplifier supply voltages - supply from PSU to each amplifier module is continuously monitored	Temperature monitoring - each amplifier module, CPU board & equipment chassis PSU status - each PSU is individually monitored & reported
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	>120,000 hours - chassis with all electronics excluding hot swap PSUs & fan tray.		> 150 hours each amplifier module
Temperature / Humidity	Operating: 0 to 45 °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-L1-019	ALT-R-F2-013	ALT-R-L1-021	ALT-R-L1-020	
Input & output RF detection								
Low Noise								
High Linearity				✓	✓	✓		
Frequency Range (MHz)	850-2150	850-2150	850-2150	850-2150	50-200	850-2150	850-2150	
Gain (dB)	Maximum	37.00 ±1.5	27.00 ±1.5	45.00 ±2	45.00 ±2	39.00 ±2	36.00 ±1.5	37.00 ±1.5
	Minimum	7.00 ±1.5	4.00 ±1.5	15.00 ±2	15.00 ±2	9.00 ±2	9.00 ±1.5	7.00 ±1.5
Gain Flatness (dB) pk-pk	full band	± 1.00	± 1.25	± 1.25	± 1.75	± 1.00	± 1.00	± 1.00
	36 MHz	± 0.25	± 0.25	± 0.25	± 0.35	± 0.35	± 0.20	± 0.25
Gain Steps (dB)	0.50 ±0.1	0.50 ±0.1	1.00 ±0.15	1.00 ±0.15	1.00 ±0.15	0.50 ±0.1	0.50 ±0.1	
Input Return Loss (dB)	Typical	14.00	17.00	17.00	17.00	19.00	14.00	
	Minimum	10.00	12.00	11.00	11.00	16.00	10.00	
Output Return Loss (dB)	Typical	14.00	14.00	17.00	14.00	17.00	14.00	
	Minimum	10.00	10.00	11.00	11.00	11.00	10.00	
Slope Control (dB)	Range	0 to 7.00	0 to 7.00	0 to 7.00	0 to 7.00	N/A	0 to 7.00	
	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	9.50	10.5	9.5	5.0	8.5	9.50	
	Maximum	11.0	12.0	11.0	7.0	10.5	11.0	
1dB GCP (dBm) (@ max gain)	Typical	16.5	22.5	18.5	29.5	30.0	16.5	
	Minimum	14.5	20.5	16.5	27.5	28.0	14.5	
OIP3 (dBm) (@ max gain)	Typical	27.5	35.5	38.5	39.5	37.5	27.5	
	Minimum	24.5	32.5	35.5	36.5	34.5	24.5	
OIP2 (dBm) (@ max gain)	Typical	43.5	45.5	49.5	51.5	N/A	43.5	
	Minimum	39.5	41.5	45.5	47.5	N/A	39.5	
Isolation (dB)	Typical	60.00	60.00	60.00	60.00	80.00	60.00	
	Minimum	50.00	50.00	50.00	50.00	60.00	50.00	
Max total RF i/p power (dBm) damage level, not operational	20.00	20.00	20.00	20.50	20.50	20.50	20.00	

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Amplifier Module Options - RF Parameters							
Amp Module Model Numbers		ALT-R-L1-032	ALT-R-L1-038	ALT-R-L1-043	ALT-R-L1-075	ALT-R-L1-079	ALT-R-S6-090
Input & output RF detection			✓			✓	
Low Noise						✓	✓
High Linearity			✓		✓	✓	✓
Frequency Range (MHz)		850-2150	850-2150	850-2150	850-2150	850-2150	850-3150
Gain (dB)	Maximum	45.00 ±1.5	45.00 ±2	40.00 ±1.5	45.00 ±2	37.00 ±1.5	44.00 ±2
	Minimum	15.00 ±1.5	15.00 ±2	10.00 ±1.5	15.00 ±2	7.00 ±1.5	9.00 ±2
Gain Flatness (dB) pk-pk	full band	± 1.25	± 1.50	± 1.50	± 1.75	± 1.50	± 1.50
	36 MHz	± 0.35	± 0.20	± 0.35	± 0.30	± 0.20	± 0.20
Gain Steps (dB)		1.00 ±0.15	0.50 ±0.1	0.50 ±0.15	0.50 ±0.15	0.50 ±0.1	0.50 ±0.25
Input Return Loss (dB)	Typical	17.00	17.00	17.00	17.00	17.00	15.00
	Minimum	11.00	11.00	11.00	11.00	11.00	13.00
Output Return Loss (dB)	Typical	14.00	17.00	17.00	17.00	17.00	15.00
	Minimum	11.00	11.00	11.00	11.00	11.00	13.00
Slope Control (dB)	Range	0 to 7.00	0 to 7.00	0 to 5.00	0 to 6.00	0 to 7.00	0 to 9
	Steps	1.00 ±0.5	1.00 ±0.25	1.00 ±0.5	1.00 ±0.25	1.00 ±0.25	1.00 ±0.5
Noise Figure (dB) (@ max gain)	Typical	5.0	6.0	5.0	5.0	6.0	3.0
	Maximum	6.5	7.5	6.5	7.0	7.5	4.0
1dB GCP (dBm) (@ max gain)	Typical	26.5	26.5	24.5	32.5	26.5	17.5
	Minimum	24.5	24.5	22.5	30.5	23.5	14.5
OIP3 (dBm) (@ max gain)	Typical	38.5	37.5	36.5	42.5	38.5	37.5
	Minimum	35.5	34.5	33.5	38.5	35.5	34.5
OIP2 (dBm) (@ max gain)	Typical	47.5	46.5	43.5	59.5	N/A	42.5
	Minimum	43.5	43.5	39.5	53.5	N/A	37.5
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) damage level, not operational		20.50	16.50	20.50	20.50	20.50	20.50

