



Alto series 1:1 Redundant Amplifier with variable gain (50Ω system)

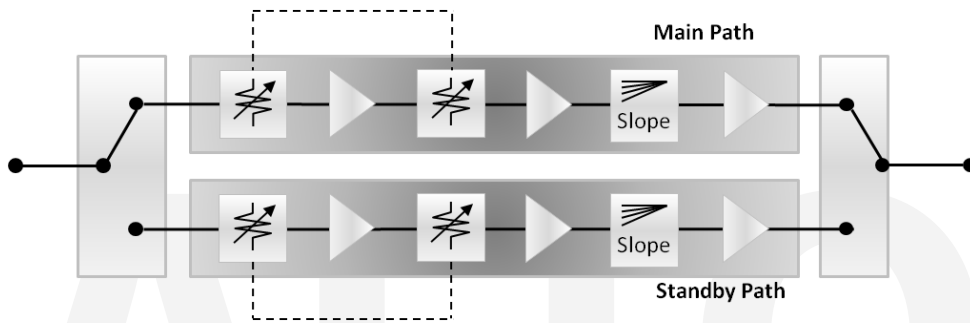
The Alto series of amplifiers provide excellent RF performance with a wide range of functionality, in a compact chassis. They are designed with hot swap amplifier modules to enhance resilience and flexibility.

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 1:1 Redundancy



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-C320-1U



Rear Panel - Model ALT-C320-1U

Amplifier Module Options



IF & L-band (850 - 2150MHz & 50 - 200MHz) operating frequency range options



Low Noise options for prime signal quality



Variable gain & slope compensation to balance input signals



High Linearity options ensures overall RF gain signal performance is optimised



Chassis - Specification

| | | | |
|-----------------------------|--|--|---|
| Model Numbers | ALT-C320-1U-x5x5 | | |
| Dimensions | 1U high x 450mm deep x 19" wide | | |
| Capacity | 2 modules: 1:1 redundancy with single input & single output | | |
| Impedance & RF Connectors | 50 Ω BNC / SMA / N-type | | |
| Weight / Colour | 5 kg | White 00-E-55 semi-gloss | |
| PSU / Power | Hot-swap, (from front panel) dual redundant, Diode OR | 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 |
| Operating Modes | 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 | | |
| 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-L1-020 | ALT-R-L1-021 | ALT-R-L1-032 | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|
| 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 | 850-2150 | |
| Gain (dB) | Maximum | 37.00 ±1.5 | 27.00 ±1.5 | 45.00 ±2 | 45.00 ±2 | 39.00 ±2 | 37.00 ±1.5 | 36.00 ±2.0 | 45.00 ±1.5 |
| | Minimum | 7.00 ±1.5 | 4.00 ±1.5 | 15.00 ±2 | 15.00 ±2 | 9.00 ±2 | 7.00 ±1.5 | 9.00 ±2.0 | 15.00 ±1.5 |
| Gain Flatness (dB) pk-pk | full band | ± 1.00 | ± 1.25 | ± 1.25 | ± 1.75 | ± 1.25 | ± 1.00 | ± 1.00 | ± 1.25 |
| | 36 MHz | ± 0.25 | ± 0.25 | ± 0.25 | ± 0.35 | ± 0.35 | ± 0.25 | ± 0.20 | ± 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 | 0.50 ±0.1 | 0.50 ±0.1 | 1.00 ±0.15 | |
| Input Return Loss (dB) | Typical | 14.00 | 17.00 | 17.00 | 17.00 | 17.00 | 14.00 | 19.00 | 17.00 |
| | Minimum | 10.00 | 12.00 | 11.00 | 11.00 | 11.00 | 10.00 | 16.00 | 11.00 |
| Output Return Loss (dB) | Typical | 14.00 | 14.00 | 17.00 | 14.00 | 17.00 | 14.00 | 17.00 | 14.00 |
| | Minimum | 10.00 | 10.00 | 11.00 | 11.00 | 11.00 | 10.00 | 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 | 0 to 7.00 | N/A N/A | 0 to 8.00 |
| | Steps | 1.00 ±0.25 | 1.00 ±0.25 | 1.00 ±0.25 | 1.00 ±0.25 | N/A | 1.00 ±0.25 | N/A N/A | 1.00 ±0.25 |
| Noise Figure (dB) @ max gain | Typical | 9.50 | 10.50 | 9.50 | 5.00 | 8.50 | 9.50 | 8.5 | 5.00 |
| | Maximum | 11.00 | 12.00 | 11.00 | 7.00 | 10.50 | 11.0 | 10.00 | 6.50 |
| 1dB GCP (dBm) @ max gain | Typical | 16.5 | 22.5 | 18.5 | 29.5 | 30.0 | 16.5 | 29.50 | 26.5 |
| | Minimum | 14.5 | 20.5 | 16.5 | 27.5 | 28.0 | 14.5 | 28.50 | 24.5 |
| OIP3 (dBm) @ max gain | Typical | 27.5 | 35.5 | 38.5 | 39.5 | 37.5 | 27.5 | 40.50 | 38.5 |
| | Minimum | 24.5 | 32.5 | 35.5 | 36.5 | 34.5 | 24.5 | 37.50 | 35.5 |
| OIP2 (dBm) @ max gain | Typical | 43.5 | 45.5 | 49.5 | 51.5 | N/A | 43.5 | 59.50 | 47.5 |
| | Minimum | 39.5 | 41.5 | 45.5 | 47.5 | N/A | 39.5 | 55.50 | 43.5 |
| Isolation (dB) | Typical | 60.00 | 60.00 | 60.00 | 60.00 | 80.00 | 60.00 | 60.00 | 60.00 |
| | Minimum | 50.00 | 50.00 | 50.00 | 50.00 | 60.00 | 50.00 | 50.00 | 50.00 |
| Max total RF i/p power (dBm) damage level, not operational | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | |





Chassis - Specification

| | | | |
|-----------------------------|--|--|---|
| Model Numbers | ALT-C320-1U-x5x5 | | |
| Dimensions | 1U high x 450mm deep x 19" wide | | |
| Capacity | 2 modules: 1:1 redundancy with single input & single output | | |
| Impedance & RF Connectors | 50 Ω BNC / SMA / N-type | | |
| Weight / Colour | 5 kg | White 00-E-55 semi-gloss | |
| PSU / Power | Hot-swap, (from front panel) dual redundant, Diode OR | 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 | | |
| 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-L1-038 | ALT-R-L1-075 | ALT-R-L1-079 | ALT-R-L1-087 | ALT-R-L1-097 | 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 ±2 | 45.00 ±2 | 37.00 ±1.5 | 45.00 ±2 | 45.00 ±2 | 44.00 ±2 |
| | Minimum | 15.00 ±2 | 15.00 ±2 | 7.00 ±1.5 | -5 ±2 | 15.00 ±2 | 9.00 ±2 |
| Gain Flatness (dB) pk-pk | full band | ± 1.50 | ± 1.60 | ± 1.35 | ± 1.35 | ± 1.35 | ± 1.35 |
| | 36 MHz | ± 0.20 | ± 0.30 | ± 0.20 | ± 0.20 | ± 0.20 | ± 0.20 |
| Gain Steps (dB) | 0.50 ±0.1 | 0.50 ±0.15 | 0.50 ±0.1 | 0.20 ±0.1 | 0.20 ±0.1 | 1.00 ±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 | 13.00 | 13.00 | 13.00 |
| Output Return Loss (dB) | Typical | 17.00 | 17.00 | 17.00 | 17.00 | 17.00 | 15.00 |
| | Minimum | 11.00 | 11.00 | 11.00 | 13.00 | 13.00 | 13.00 |
| Slope Control (dB) | Range | 0 to 8.00 | 0 to 7.00 | 0 to 8.00 | N/A | N/A | 0 to 10.00 |
| | Steps | 1.00 ±0.25 | 1.00 ±0.25 | 1.00 ±0.25 | N/A | N/A | 1.00 ±0.5 |
| Noise Figure (dB) @ max gain | Typical | 6.00 | 5.00 | 6.00 | 3.00 | 3.00 | 3.00 |
| | Maximum | 7.50 | 7.00 | 7.50 | 3.60 | 3.60 | 4.00 |
| 1dB GCP (dBm) @ max gain | Typical | 26.5 | 32.5 | 26.5 | 22.5 | 22.5 | 17.5 |
| | Minimum | 24.5 | 30.5 | 23.5 | 19.5 | 19.5 | 14.5 |
| OIP3 (dBm) @ max gain | Typical | 37.5 | 42.5 | 38.5 | 34.5 | 34.5 | 37.5 |
| | Minimum | 34.5 | 38.5 | 35.5 | 31.5 | 31.5 | 32.5 |
| OIP2 (dBm) @ max gain | Typical | 46.5 | 59.5 | N/A | 39.5 | 39.5 | 42.5 |
| | Minimum | 43.5 | 53.5 | N/A | 35.5 | 35.5 | 37.5 |
| Isolation (dB) | Typical | 60.00 | 60.00 | 60.00 | 50.00 | 50.00 | 60.00 |
| | Minimum | 50.00 | 50.00 | 50.00 | 45.00 | 45.00 | 50.00 |
| Max total RF i/p power (dBm) damage level, not operational | 16.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | |

