



RSSLNA1:2-C & Ex-C

Redundant C & Ex-C Band 1:2 LNA System - Description

General Description:

The Orbital LNA redundant switch system is designed to minimize system outage using dual waveguide – coaxial switches to provide a spare LNA in the event of a failure. Various configurations of systems are available utilizing field proven, high performance L, S (L and S band systems are all coaxial), C, Extended C, X & Ku band LNAs in 1:1 & 1:2 configurations.

The outdoor unit:

Features a slim, streamline outdoor unit mounted on a 19" rail for easy installation. Mounted LNAs allow easy swap out using industry standard LNAs.

The indoor unit:

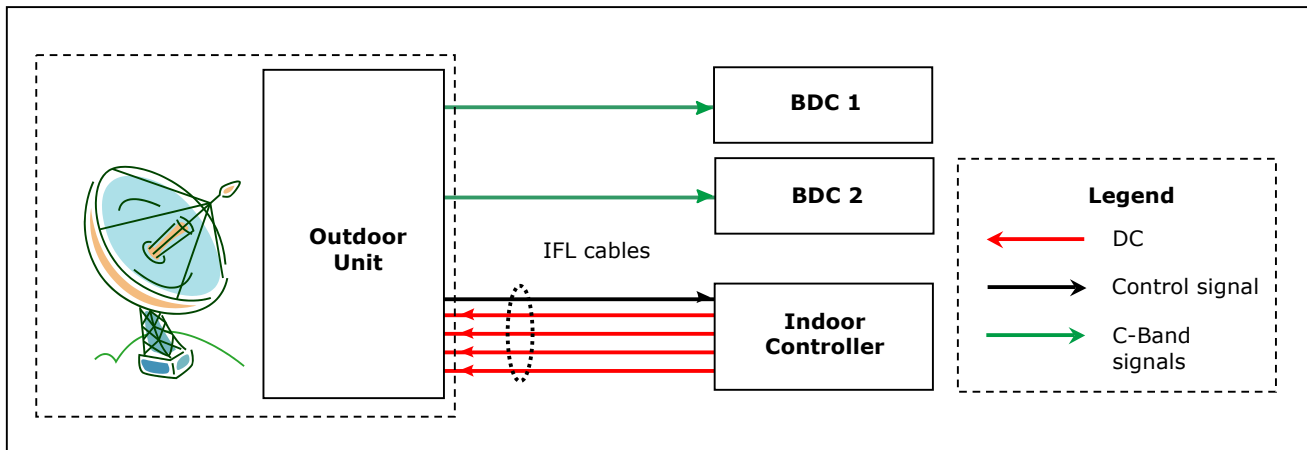
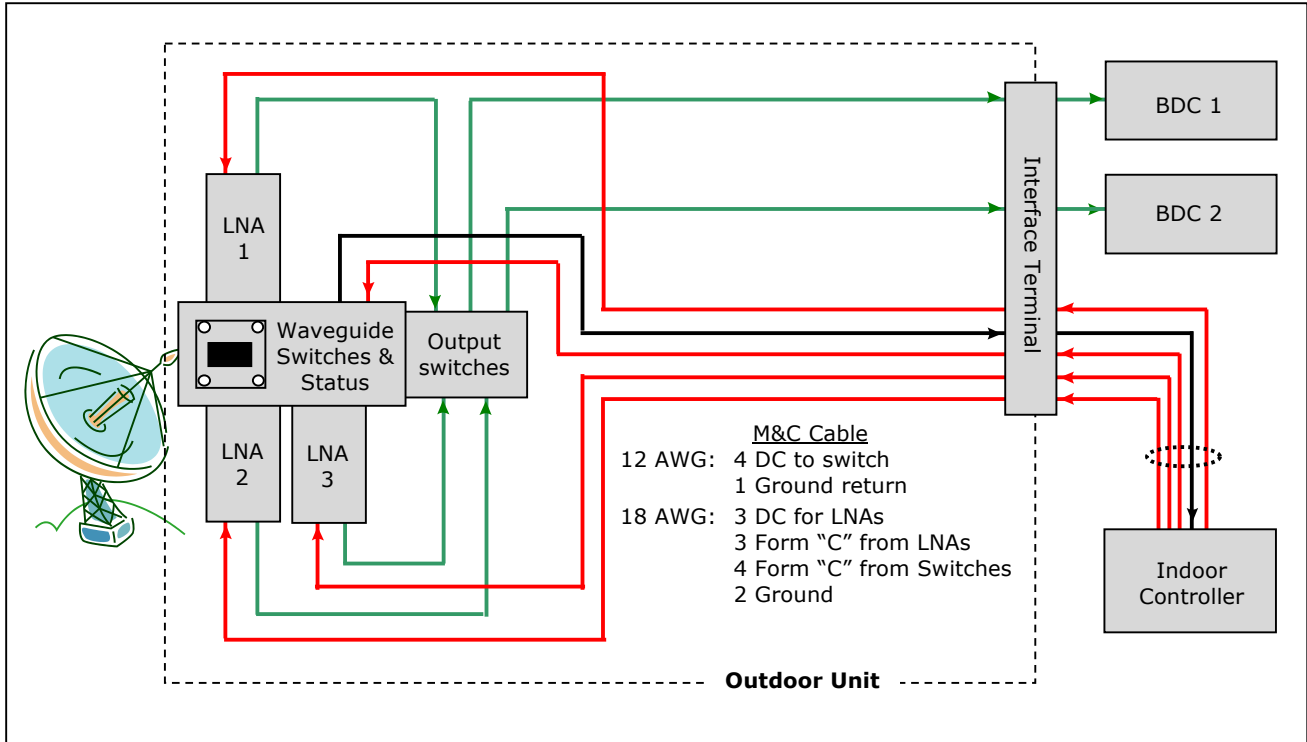
Is a 1RU-19" with a simple LED display to quickly observe the LNA status, and control buttons to make any required changes to the system quickly and efficiently. LNA redundancy is automatic (current sensing) or can be manually selected. Power supply redundancy is built in & automatic. Remote M&C is through serial port RS232 standard & optionally through Ethernet. There is also a Parallel control interface for status output & to take external control inputs.

Options:

The outdoor unit can be made available with the following options

- Transmit Reject Filter
- Offline Input & Output
- Input Waveguide/Coaxial Test couplers
- Output coaxial Test couplers
- Custom configurations
- M&C via Ethernet

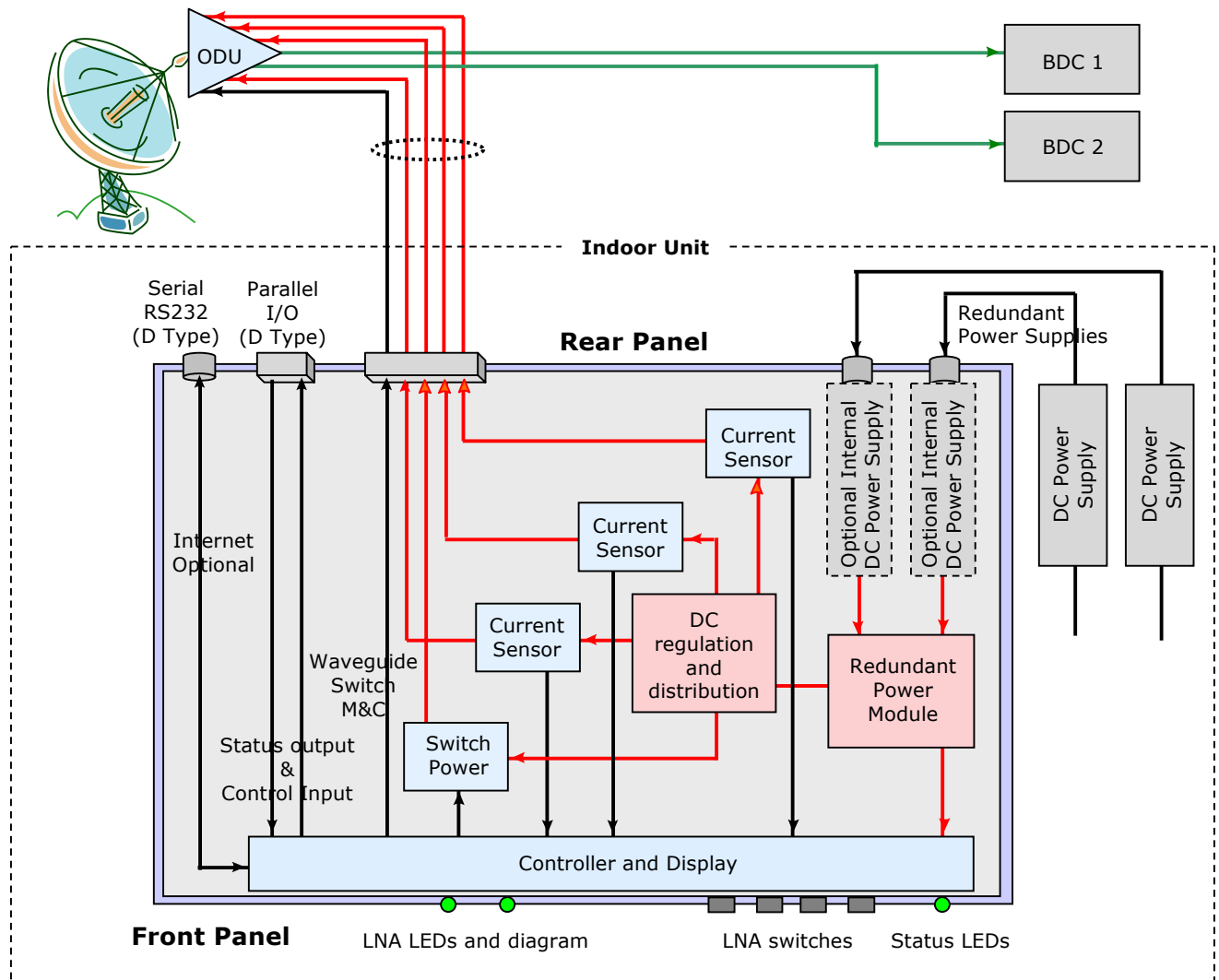
Redundant C & Ex-C Band 1:2 LNA system - ODU



Orbital ODU Features:

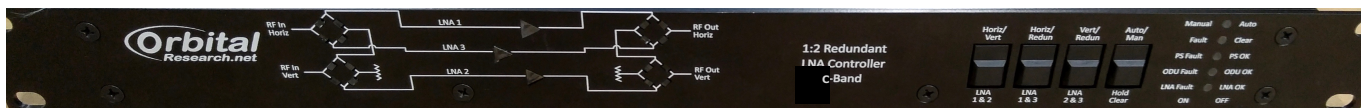
- Uses standard LNAs from any manufacturer. LNAs can be included and tested in the system
- The Outdoor Unit is mounted on one rail.
- Both IDU and ODU are pre-assembled. Just connect the cables and waveguide. Mount the ODU, and plug the redundant power supplies in.

Redundant C & Ex-C Band 1:2 LNA system - IDU



Orbital IDU Features:

- 1 unit high chassis. Simple LED display for monitoring. No cumbersome LCD menu to work through
- Two power supplies are outside controller for easy replacement if faulty. Optionally, the power supplies can be placed inside the chassis.
- Unit automatically detects faults. Global power supplies to use anywhere in the world.
- Manual or automatic switching between LNAs.
- C, Ku and Ka-Band versions also available
- 1:1 versions available
- LNB versions also available



Cloud Based Remote User Interface Features:

- Direct mimic of physical front panel.
- Shows status in real time with near instantaneous status updates and control functionality.
- Additional statistics and diagnostics available.
- Works with standard web browsers – no need for complicated proprietary MAC systems
- Can easily be integrated into existing network monitoring infrastructure
- Top level map can show summary status of multiple systems in a network
- System automatically connects to the Cloud Server through an Ethernet connection and the Internet

The screenshot shows a web browser window at satsilvertip.tel.ca/dashboard. The main content area is titled "Orbital 1" and features a schematic diagram of a satellite system with two circular components and connecting lines. Below the diagram are three panels: "Buttons" with LNB1, LNB2, AutoMan, and Clear buttons; "Faults" with indicators for Auto, Fault, PS Fault, ODU Err, and No Lock, along with Manual, Clear, PS OK, ODU OK, and LNB OK options; and "Status" showing a green "Online" indicator and "Last Received: 4/26/2013 5:19:44 PM". A "Change Device" dropdown menu is also visible.

The screenshot shows the "Network" page of the web interface. It features a world map with two green location pins. A data popup window is open over the second pin, displaying the following information:

- Device Name: Orbital 2
- Unit ID: 1
- Latitude: 51.5171
- Longitude: 0.1062
- Temperature: 19.2 °C
- u1_status: OK
- u2_status: OK
- sw1_pos: B
- sw2_pos: NC
- u1_cur: 0.17 A
- u2_cur: 0.16 A
- ps1_volts: 1.97 V
- ps2_volts: 13.68 V
- Last Reading: 2013-02-08 17:43:42

The map includes various geographical labels such as "Gulf of Alaska", "Hudson Bay", "Atlantic Ocean", and "Indian Ocean". The interface includes a navigation menu at the top with "Dashboard", "Network", "Configuration", "Reports", and "Statistics", and a "Log Out" button.

RSSLNA12-C & Ex-C LNA Redundant system - Specifications

ELECTRICAL

INPUT (Outdoor unit)

Interface: CPR-229
 LNA Frequency Range: 3.4 to 4.2 GHz (Option 1)
 3.4 to 4.8 GHz (Option 2)
 Noise Temperature: 35 K (LNA)
 VSWR Input: dependent on LNA manufacturer
 Input Cross Guide Coupler: -30 dB

OUTPUT (Outdoor unit)

Interface: N, F, or SMA
 Gain: 60 dB min. @ +25°C
 Gain Flatness (Full Band): 3.0 dB
 Compression: +10 dBm min
 Input Voltage range: +12 to +24 VDC
 Group Delay: Linear: 0.02 ns/MHz
 Parabolic: 0.003 ns/MHz² max
 Ripple: 0.3 ns peak to peak max
 Length 50 meters

Interface Cable:

POWER (Indoor controller)

Voltage: 87 - 265 VAC
 Frequency: 47 - 63 Hz
 Dual A/c Redundant Inbuilt power supply
 Size 19 inch Rack
 Filtering: Transient, over & reverse voltage protected

General Description:

The Orbital LNA redundant switch features a slim, streamline outdoor unit mounted on a 19" rail for easy installation. Mounted LNAs allow easy swap out using industry standard LNAs.

The indoor unit is 1RU-19" with a simple LED display to quickly observe the LNA status, and control buttons to make any required changes to the system quickly and efficiently. LNA redundancy is automatic (current sensing) or manually selected. Power supply redundancy is automatic. Remote M&C through ethernet.

Orbital Design:

As always, Orbital products are simple, market focused designs of an open architecture type to allow for custom requirements. The redundant switch uses Orbital modules to allow for custom features required by the customer. The indoor controller's front panel is a universal design that allows for customer feature changes.

MONITOR AND CONTROL

Controller monitors unit current. Alarm is generated if current goes outside of the allowed tolerance window.

<u>Push Buttons</u>	<u>LEDs</u>
Chain A Toggle	Automatic / Manual
Chain B Toggle	Summary Fault / Clear
Automatic/Manual	PS Fault / Clear
Alarm Reset	ODU Fault / Clear
	LNA Fault / Clear

MECHANICAL

	<u>Outdoor Unit</u>	<u>Indoor Unit</u>
Weight:	TBD	TBD
Overall Dimensions:	TBD	19" x 1.75" x 20" max (standard 19" rackmountable)
Input Connector:	CPR-229	F, N or SMA
Output Connector:	F, N or SMA	F, N or SMA

ENVIRONMENTAL

	<u>Outdoor Unit</u>	<u>Indoor Unit</u>
Operating Temp:	-40 to +60°C	0 to +55°C
Relative Humidity:	<100%	<95% non-condensing

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