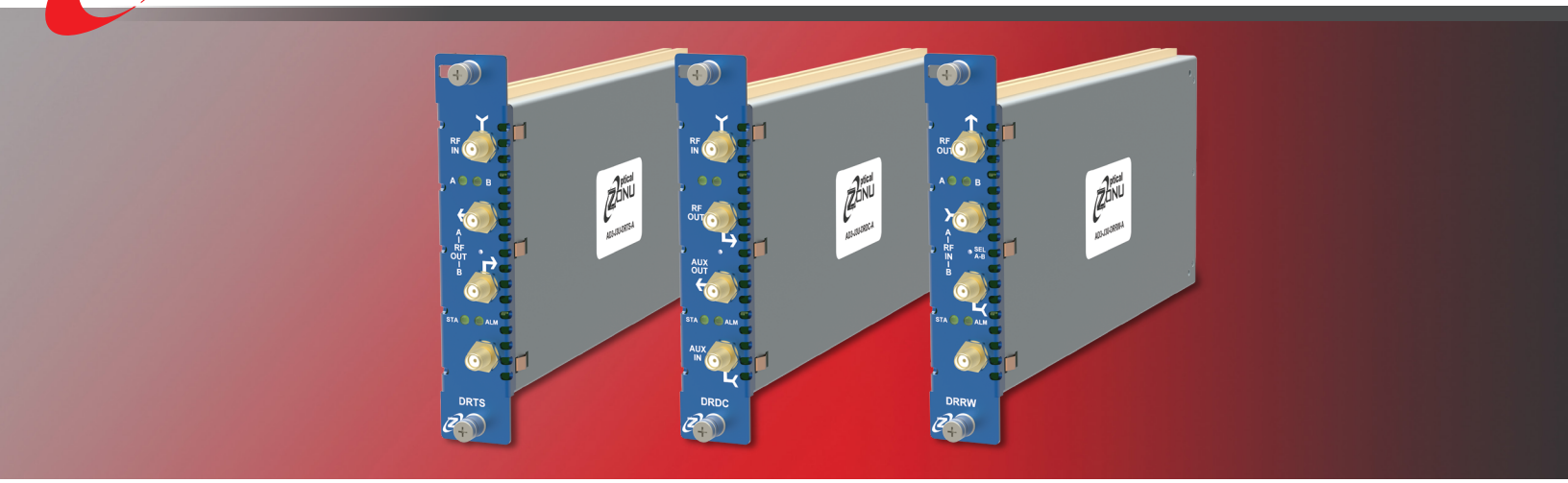

J3U RF Redundancy Modules

Features

- 30 MHz to 6 GHz
- -20°C to +50°C Operating Temperature Range
- Hot Swappable
- Module is Controllable and Monitored via SNMP/Web/GUI
- Occupies one of sixteen module slots in J3U chassis

Options

- Extended Low Frequency, 10 kHz
- Extended Operating Temperature Range, -20°C to +60°C

Applications

- RF Over Fiber Transport
- Teleport RF Signal Distribution
- Site Diversity
- N+1 Redundancy
- Satcom
- TVRO
- VSAT
- Phased Array Antenna Systems

Description

The highly configurable modules support N+1 redundancy. You can protect N Elements (Transmitters and/or Receivers and/or Fibers) by adding only one extra Element using multiple redundancy switching modules. The automatic recovery enables high reliability linkage, for example from a Command bunker to multiple Antennas. Since the switching configuration is complex, special attention must be made to proper design. Optical Zonu offers special engineering support in the design phase of a redundant system.

The J3U platform is a 19" 3RU chassis that accommodates 16 pluggable, hot swappable fiber optic RF signal transport and redundancy switching modules. RF (and optical) diversity/redundancy modules make up the basic building blocks of varied system level redundant architectures. The standard RF interface is 50Ω SMA (other impedance/connector options may be available, contact Optical Zonu).

Basic building blocks include 1:2 splitters (DRTS), 2:1 switches (DRRW), and 2:2 switches (DRDC). A DRTS (1:2 splitter) on the transmitter side may be paired with a DRRW (2:1 switch) on the receiver side to configure a 1+1 redundant fiber optic link. DRDC (2:2 switch) modules may be used together with optical switching modules to configure N+1 redundancy architectures. In N+1 architectures, the transmitter and receiver ends of the fiber links are isolated from each other and act independently in the event of a module failure. Monitors and alarms in the fiber optic transmitter and receiver modules drive the autonomous switching within the diversity modules. Switches may also be commanded to certain states via the Optical Zonu M&C system. The RF performance of the fiber optic links is maintained when incorporating the RF switching.

RF redundancy modules within the J3U platform may be monitored and controlled via SSH, Web UI, OZC GUI, and SNMP v2 and v3 (see JS14 Managed Switch datasheet).

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Absolute Maximum Ratings

Parameter	Symbol	Min	Typical	Max	Units	Notes
Operating Temperature	T_{op}	-20	-	50	°C	-
Storage Temperature	$T_{storage}$	-40		85	°C	-
DC Supply Voltage	V_{CC}	11.5	12	12.5	V	-
RF Input Power	P_{in}	-	-	+10	dBm	-
Unpackaged Weight	-	-	-	500	g	-
Relative Humidity	RH	20	-	90	%	-
Altitude	-	-	-	10,000	MASL	-

RF Characteristics - 3 GHz

Parameter	Symbol	Min	Typical	Max	Units	Notes
High Frequency Cutoff	f_{high}	-	3000	-	MHz	-
Low Frequency Cutoff	f_{low}	-	30	-	MHz	-
Frequency Response Flatness	S21	-	1	-	dB_{p-p}	-
Insertion Loss (DRTS)	G	-	3.5	-	dB	-
Insertion Loss (DRRW, DRDC)	G	-	1.5	-	dB	-
Input/Output Impedance	$Z_{in/out}$	-	50	-	Ω	1
Input/Output Return Loss	$RL_{in/out}$	-	12	-	dB	-
Isolation	-	-	30	-	dB	-

[1] 75W models are available. Contact Optical Zonu

RF Characteristics - 6 GHz

Parameter	Symbol	Min	Typical	Max	Units	Notes
High Frequency Cutoff	f_{high}	-	6000	-	MHz	-
Low Frequency Cutoff	f_{low}	-	30	-	MHz	-
Frequency Response Flatness	S21	-	2	-	dB_{p-p}	-
Insertion Loss (DRTS)	G	-	3.8	-	dB	-
Insertion Loss (DRRW, DRDC)	G	-	1.8	-	dB	-
Input/Output Impedance	$Z_{in/out}$	-	50	-	Ω	1
Input/Output Return Loss	$RL_{in/out}$	-	12	-	dB	-
Isolation	-	-	30	-	dB	-

[1] 75Ω models are available. Contact Optical Zonu

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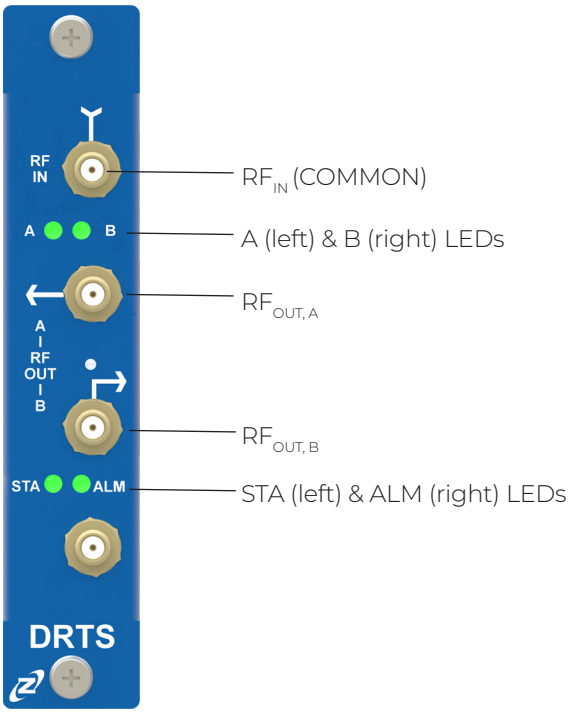
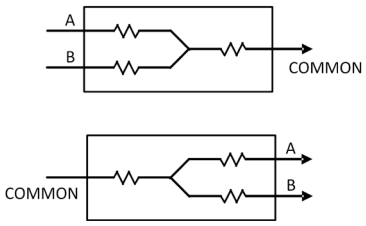
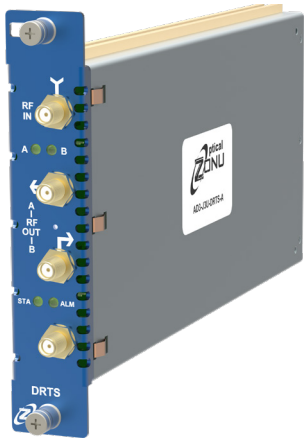
The AD3-J3U-DRTS is a 1 : 2 passive RF splitter. This module may be used to split an RF signal to two fiber optic transmitter, dual fiber, optical links. The splitter may be configured with an active RF gain element, contact Optical Zonu. The splitter may also be reversed to combine two RF signals onto a COMMON output. The combiner may be used at the RF input of a fiber optic transmitter or to combine the RF outputs of two fiber optic receivers.

Front Panel Features - AD3-J3U-DRTS Splitter/Combiner







LED Definitions - AD3-J3U-DRTS Splitter/Combiner

LED State	Condition - STA LED	Condition - ALM LED	Condition - A/B LED
OFF	Module Not Powered	Module Not Powered	Module Not Powered
GREEN	Auto-Enabled	Normal Operation	(A/B) Good
YELLOW	Auto-Disabled	-	(B) Alarmin = Active
YELLOW (blinking)	Manual Mode Override	Supply Current High Warning, and/or Supply Voltage Warning, and/or PCB Temperature Warning	-
RED	Switch Mismatch	Supply Current High Alarm, and/or Supply Voltage Alarm, and/or PCB Temperature Alarm, and/or Receiver Current Low/High Alarm, and/or RF Power High Alarm	(A/B) Rx_LOS
RED (blinking)	Core Alarm, and/or Flash Write Error	Core Alarm, and/or Flash Write Error	

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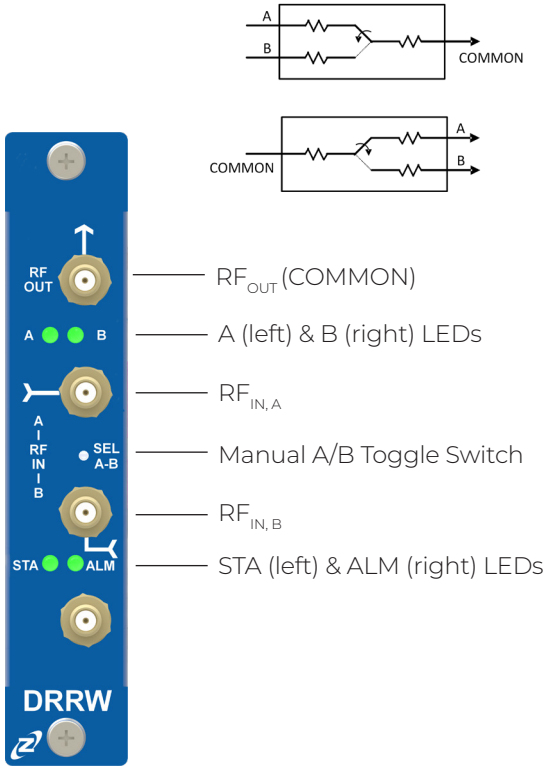
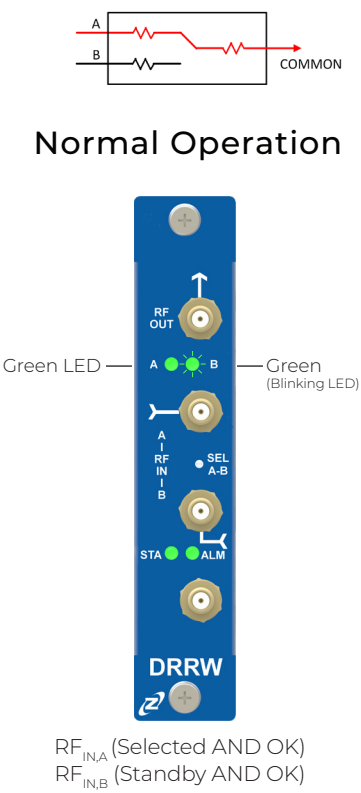
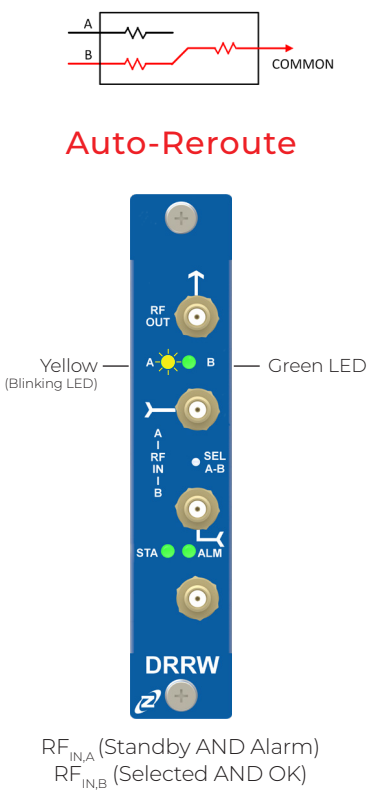
The AD3-J3U-DRRW is a 2 : 1 RF switch. This module may be used to select the RF output from one of two fiber optic receivers. The switch may be configured with an active RF gain element(s), contact Optical Zonu. The switch module may also be reversed to route a COMMON RF input to one of two outputs.

Front Panel Features - AD3-J3U-DRRW Switch







LED Definitions - AD3-J3U-DRRW Switch

LED State	Condition - STA LED	Condition - ALM LED	Condition - A/B LED
OFF	Module Not Powered	Module Not Powered	Module Not Powered
GREEN	Auto-Enabled	Normal Operation	Selected AND OK
GREEN (blinking)	-	-	Standby AND OK
YELLOW	Auto-Disabled	-	Selected AND (AlarmIn is Enabled)
YELLOW (blinking)	Manual Mode Override	Supply Current High Warning, and/or Supply Voltage Warning, and/or PCB Temperature Warning	Standby AND (AlarmIn is Enabled)
RED	Switch Mismatch	Supply Current High Alarm, and/or Supply Voltage Alarm, and/or PCB Temperature Alarm, and/or Receiver Current Low/High Alarm, and/or RF Power High Alarm	Standby AND Rx_LOS/Low, and/or Receiver Alarm
RED (blinking)	Core Alarm, and/or Flash Write Error	Core Alarm, and/or Flash Write Error	Selected AND Rx_LOS/Low, and/or Receiver Alarm

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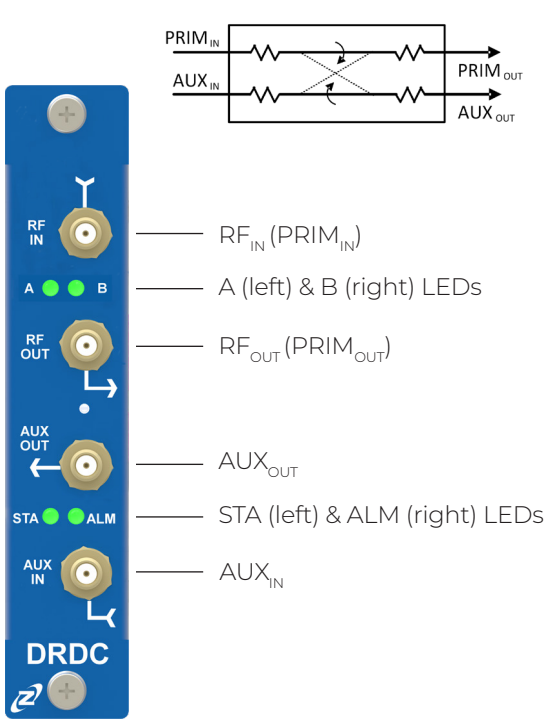
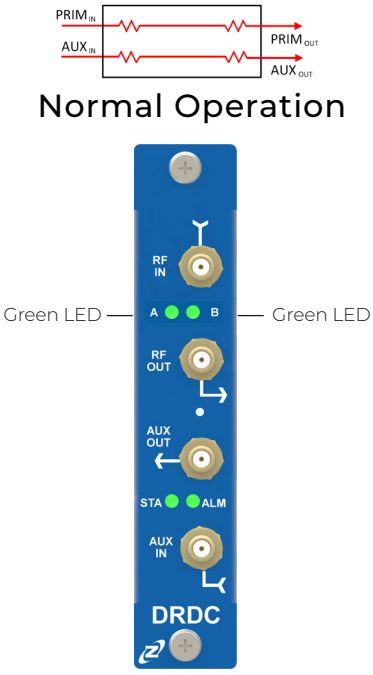
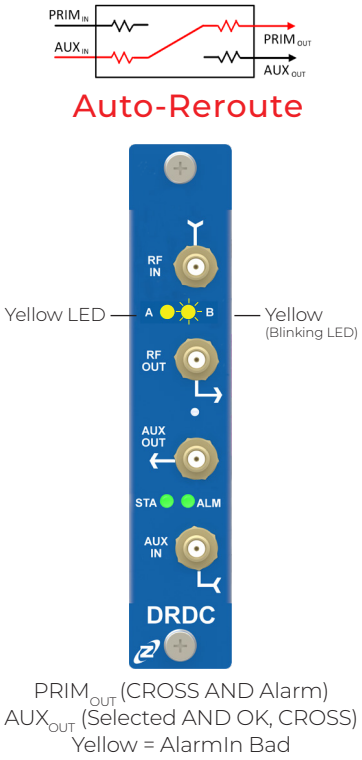
The AD3-J3U-DRDC is a 2 : 2 RF switch. The switch has two states. The normal operation links the RF to the Right (B unit). When an internal indication detects a problem with B, it automatically switches to A (unit to the Left) and signals an alarm when it is in AUX state. The two RF inputs may be routed directly to two RF outputs. Alternately, the two RF inputs may crossover to the two RF outputs. The switch may be configured with active gain element(s), contact Optical Zonu.

Front Panel Features - AD3-J3U-DRDC Switch







LED Definitions - AD3-J3U-DRDC Switch

LED State	Condition - STA LED	Condition - ALM LED	Condition - A/B LED
OFF	Module Not Powered	Module Not Powered	Module Not Powered
GREEN	Auto-Enabled	Normal Operation	(A) Pass (Auto), and/or (B) AlarmOkay (R)
GREEN (blinking)	-	-	(A) Pass (Manual)
YELLOW	Auto-Disabled	-	(A) Cross (Auto)
YELLOW (blinking)	Manual Mode Override	Supply Current High Warning, and/or Supply Voltage Warning, and/or PCB Temperature Warning	(A) Cross (Manual), and/or (B) Alarm Bad (R)
RED	Switch Mismatch	Supply Current High Alarm, and/or Supply Voltage Alarm, and/or PCB Temperature Alarm, and/or Receiver Current Low/High Alarm, and/or RF Power High Alarm	(B) Rx_LOS (active out only)
RED (blinking)	Core Alarm, and/or Flash Write Error	Core Alarm, and/or Flash Write Error	-

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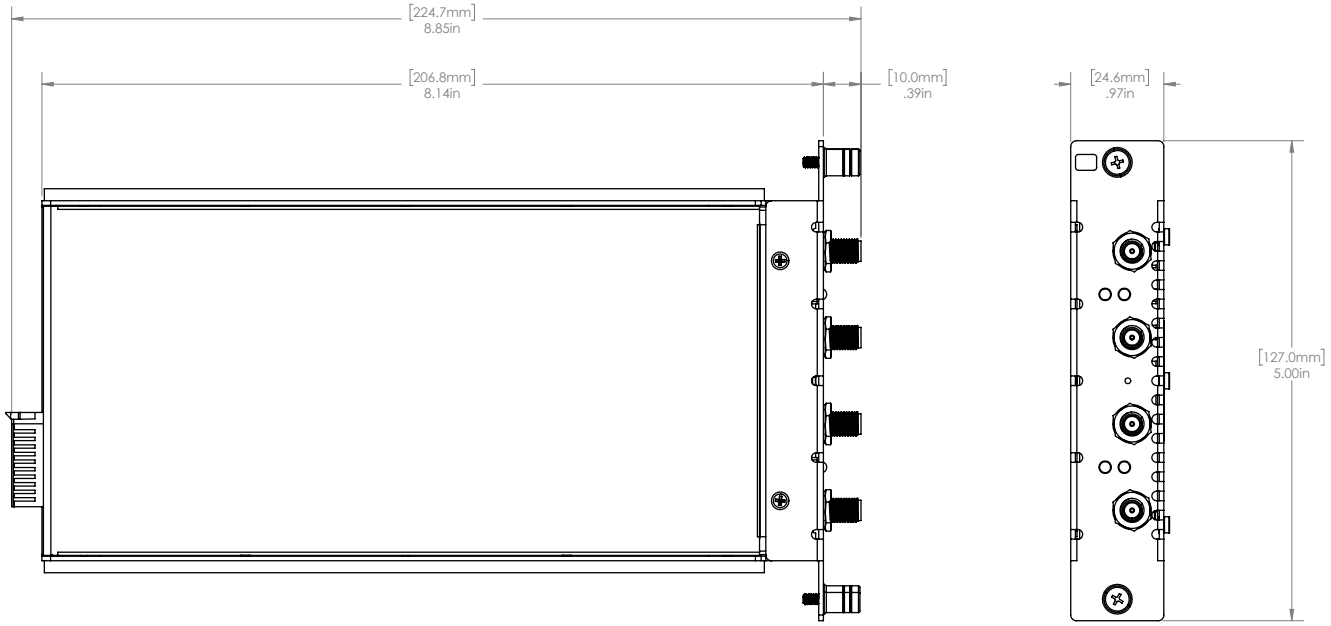
Typical Redundancy Architectures

For a detailed description of Optical Zonu J3U redundant architectures, please contact Optical Zonu.

Mechanical Outline



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Ordering Information

PART NUMBERS

AD3 - J3U - DXXX - X

RTS - 1:2 Splitter	**A** - 50Ω SMA
RRW - 2:1 Switch	**B** - 75Ω BNC
RDC - 2:2 Switch	

Related Products

- **J3U** Platform Overview
- **J3U Chassis**, Modular 19" 3RU, 16-Slot (front) + 5-Slot (back), Fan Cooled, AC and/or DC Power Supplies, Remote Access via HTTP, GUI, SNMP v2 and v3
- **J3U** Transmitter/Receiver/Transceiver Plug-in Modules (30 - 6000 MHz), optional Redundancy Architectures, CWDM, Remote Access via HTTP, Graphical User Interface, SNMP v2 and v3
- **J3U Optical Diversity** Modules, Splitter/Combiner, 1:2 Swich, 2:1 Switch, 2:2 Switch, N+1 Redundancy Architectures
- **JS14 Managed Switch** Plug-in Module, 5-Port Layer 2 Ethernet, SFP Optical Port with mOTDR, Hosts Web UI, GUI, SNMP v2 and v3 Agents

Additional Resources

- Standalone RF Over Fiber Modules
- RF Over Fiber Rack Mount Integrated Subsystems
- RF Over Fiber Rack Mount Modular Subsystems
- RF Over Fiber Applications
- 19" 3RU J3U Chassis

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