

Features

- 1270 nm to 1610 nm
- -20°C to +50°C Operating Temperature Range
- 1+1 and N+1 Redundancy Architectures
- Hot Swappable
- Module is Controllable and Monitored via SNMP/Web/GUI
- Occupies one of sixteen module slots in J3U chassis

Options

- Extended Operating Temperature Range, -20°C to +60°C

Applications

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

J3U Optical Redundancy Modules

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. Optical (and RF) diversity/redundancy modules make up the basic building blocks of varied system level redundant architectures. The standard optical interface is LC/APC.

Basic building blocks include 1:2 (and 1:4) splitters (DOTS), 2:1 switches (DORW), and 2:2 switches (DODC), and hybrid combinations of these (DOTB, DORB). A DOTS (1:2 splitter) on the transmitter side may be paired with a DORW (2:1 switch) on the receiver side to configure a 1+1 redundant passive fiber optic link. DOTB (2:2 switch + 1:2 splitter/switch) modules on the transmitter side may be used together with DORB (2:1 switch + 2:2 switch) modules on the receiver side, to configure N+1 redundant architectures. In N+1 architectures, the transmitter and receiver ends of the fiber link 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 Optical switching.

Optical 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](#)).

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	-
Optical Input Power	P_{in}	-	-	+10	dBmO	-
Unpackaged Weight	-	-	-	510	g	-
Relative Humidity	RH	20	-	90	%	-
Altitude	-	-	-	10,000	MASL	-

Optical Characteristics - DOTS

Parameter	Symbol	Min	Typical	Max	Units	Notes
Wavelength	λ	1270	-	1610	nm	
Insertion Loss	G	-	-	4.2	dB	1
		-		7.3		2
Insertion Loss Uniformity	GU	-	-	0.8	dB	1
		-		1.0		2
Directivity	-	-	55	-	dB	-
Polarization Dependent Loss	PDL	-	-	0.1	dB	-
Optical Connector	-		SC/APC ³			3
			LC/APC ⁴			4

¹ 1:2 split

² 1:4 split

³ SC/APC on common port (TBD)

⁴ LC/APC on channel port

Optical Characteristics - DORW, DODC, DOTB, DORB

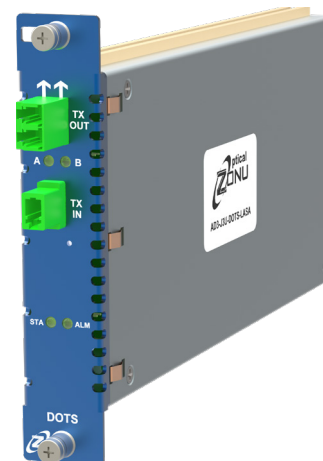
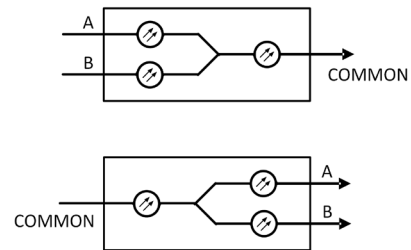
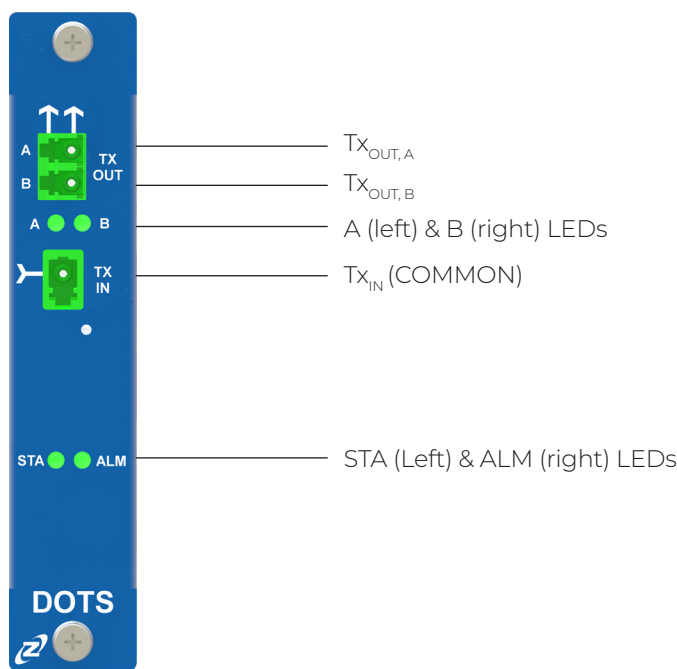
Parameter	Symbol	Min	Typical	Max	Units	Notes
Wavelength	λ	1270	-	1610	nm	-
Insertion Loss	G	-	-	1.2	dB	-
Insertion Loss Uniformity (Normal)	GU_{normal}	-	30	-	dB	-
Insertion Loss Uniformity (Crossed)	$GU_{crossed}$	-	40	-	dB	-
Directivity	-	-	55	-	dB	-
Polarization Dependent Loss	PDL	-	-	0.1	dB	-
Optical Connector	-		LC/APC			-

The AD3-J3U-DOTS is a 1:2 passive optical splitter. This module may be used to split an optical signal from a single fiber optic transmitter, to two redundant optical links. The splitter may also be reversed to combine two optical signals onto a COMMON output. The combiner may be used at the optical outputs of fiber transmitters or to combine optical inputs at fiber receivers. Optical wavelengths must be spaced appropriately. Contact Optical Zonu.

LED Definitions - AD3-J3U-DOTS 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 (unused)
YELLOW	Auto-Disabled	-	(A) 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	-
RED (blinking)	Core Alarm, and/or Flash Write Error	Core Alarm, and/or Flash Write Error	-

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

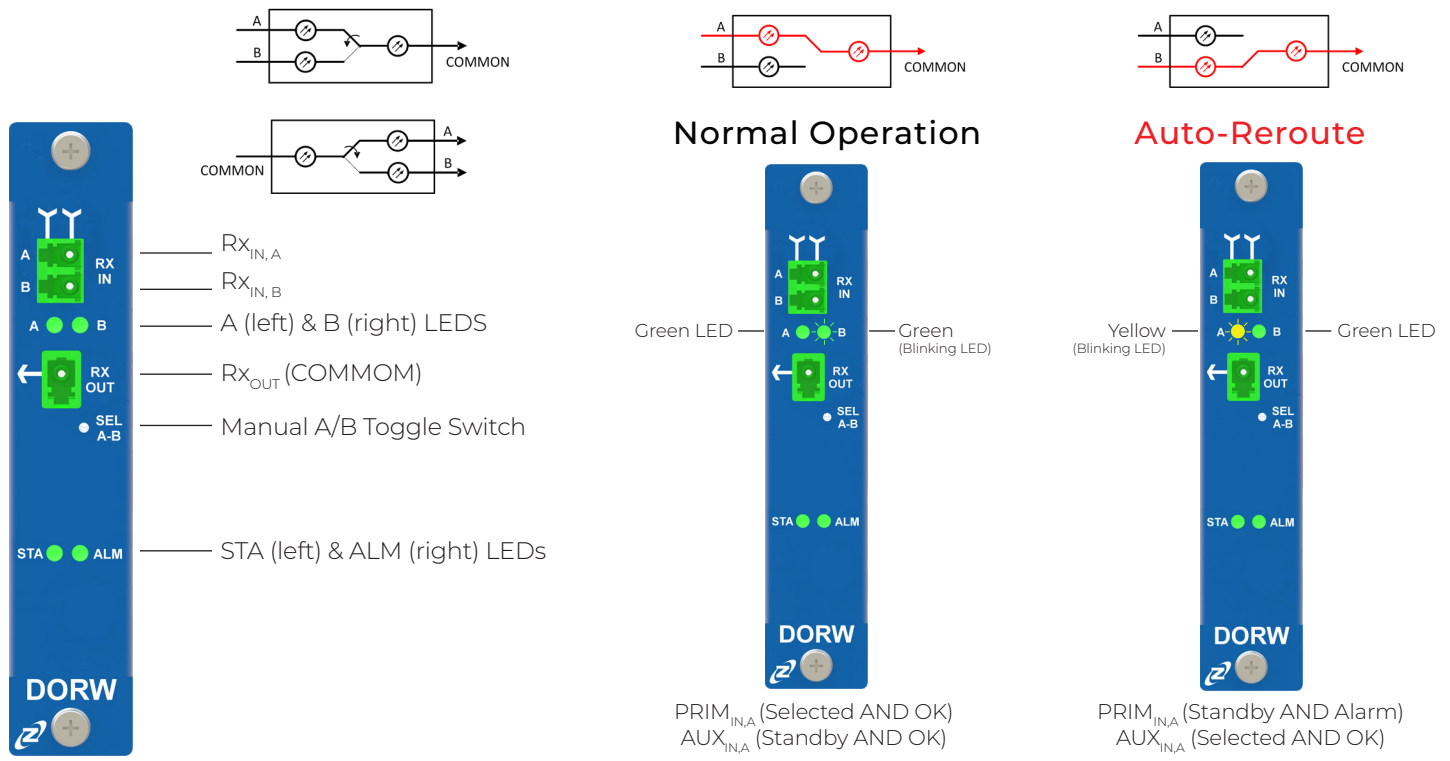


The AD3-J3U-DORW is a 2:1 optical switch. This module may be used to select a receiver optical input from one of two fiber optic transmitters. The switch module may also be reversed to route a COMMON optical input to one of two optical outputs. Contact Optical Zonu.

LED Definitions – AD3-J3U-DORW 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

Front Panel Features – AD3-J3U-DORW Switch

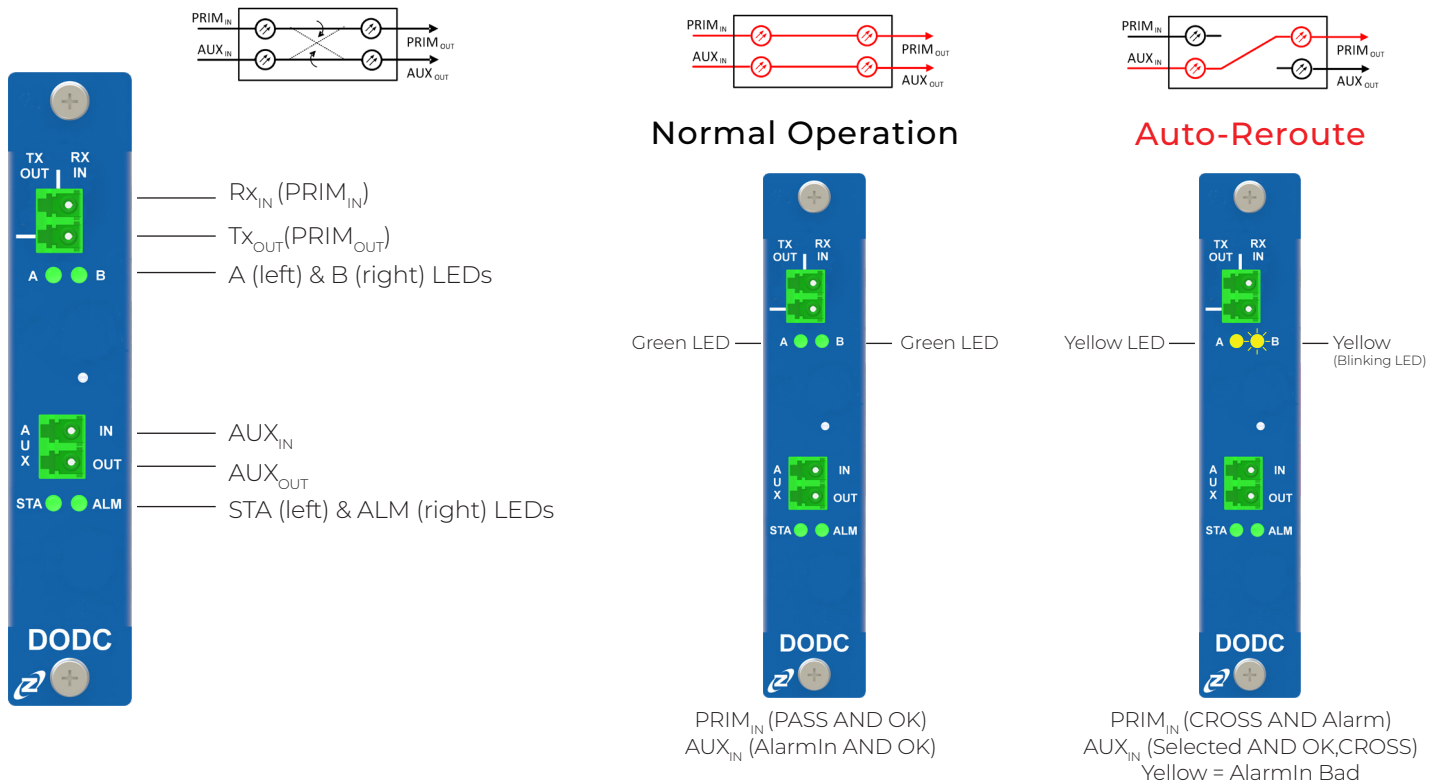


The AD3-J3U-DODC is a 2:2 optical switch. The switch has two states. The two optical inputs may be routed directly to two optical outputs. Alternately, the two optical inputs may crossover to the two optical outputs.

LED Definitions - AD3-J3U-DODC Switch, AD3-J3U-DOTB Switch

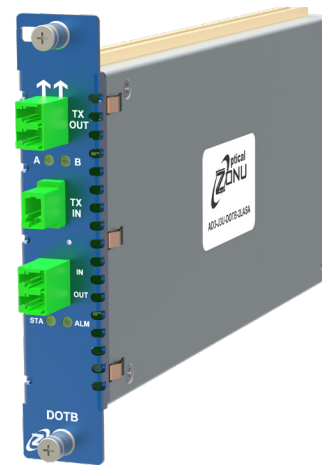
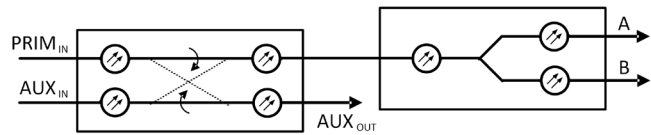
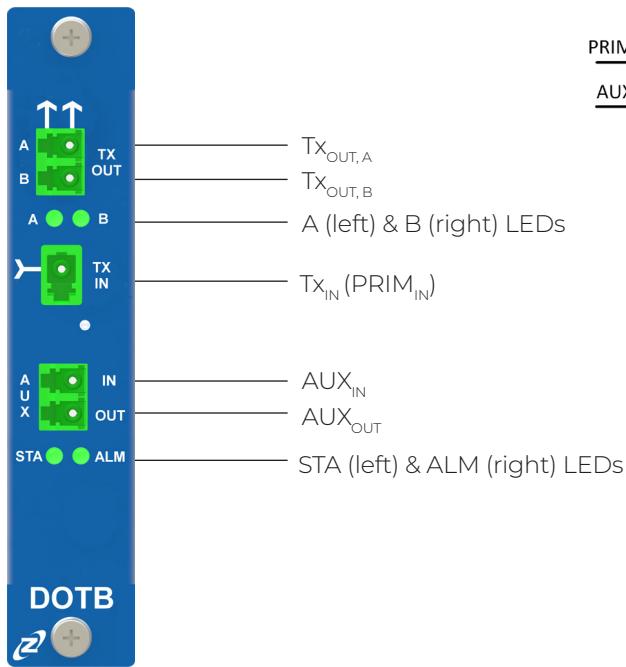
LED State	Condition - STA LED	Condition - ALM LED	Condition - A/B LED
OFF	Module Not Powered	Module Not Powered	Module Not Powered
GREEN	Auto-Enabled	Normal Operation	(A) Pass(Auto) (B) AlarmOkay(L)
GREEN (blinking)	-	-	(B) Pass(Manual)
YELLOW	Auto-Disabled	-	(B) Cross(Auto)
YELLOW (blinking)	Manual Mode Override	Supply Current High Warning, and/or Supply Voltage Warning, and/or PCB Temperature Warning	(B) Cross(Manual) (A) AlarmBad(L)
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	-
RED (blinking)	Core Alarm, and/or Flash Write Error	Core Alarm, and/or Flash Write Error	-

Front Panel Features - AD3-J3U-DODC Switch



The AD3-J3U-DOTB is a combination of the 2:2 DODC cascaded with the 1:2 DOTS splitter. This module may be used on the fiber transmitter side to implement N+1 equipment redundant transport systems that also contain redundant passive fiber links between transmitter and receivers.

Front Panel Features - AD3-J3U-DOTB Switch



The AD3-J3U-DORB is a combination of the 2:1 DORW switch cascaded with the 2:2 DODC switch. This module may be used on the fiber receiver side to implement N+1 equipment redundant transport systems that also contain redundant passive fiber links between transmitters and receivers.

LED Definitions - AD3-J3U-DORB 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) (B) SelectA AND OK
GREEN (blinking)	-	-	(A) Pass(Manual) (B) SelectB AND OK
YELLOW	Auto-Disabled	-	(A) Cross(Auto) (B) Rx_LOS-A
YELLOW (blinking)	Manual Mode Override	Supply Current High Warning, and/or Supply Voltage Warning, and/or PCB Temperature Warning	(A) Cross(Manual) (B) Rx_LOS-B
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) Selected (A/B) - Rx_LOS
RED (blinking)	Core Alarm, and/or Flash Write Error	Core Alarm, and/or Flash Write Error	(A) Pass AND AlarmIn

Front Panel Features - AD3-J3U-DORB Switch

Normal Operation

Auto-Reroute

Green LED — Green LED

Yellow LED — Yellow (Blinking LED)

DORB

PRIM_{OUT} (PASS AND OK)
AUX_{OUT} (AlarmIn AND OK)

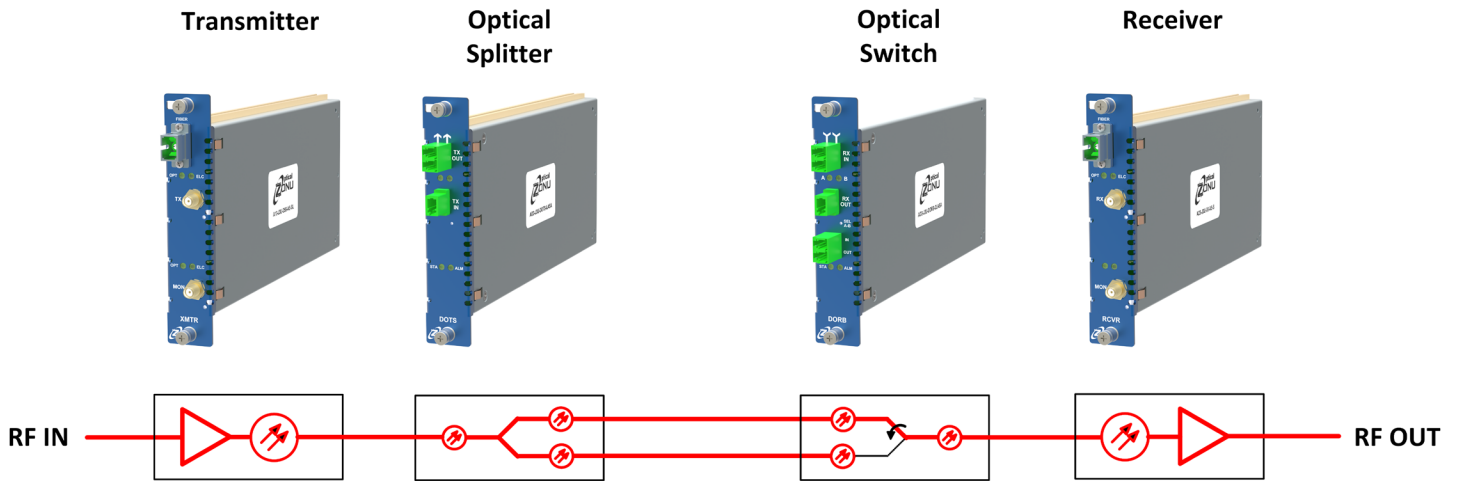
PRIM_{OUT} (CROSS AND Alarm)
AUX_{OUT} (Selected AND OK,CROSS)
Yellow = AlarmIn Bad

Labels for front panel features:

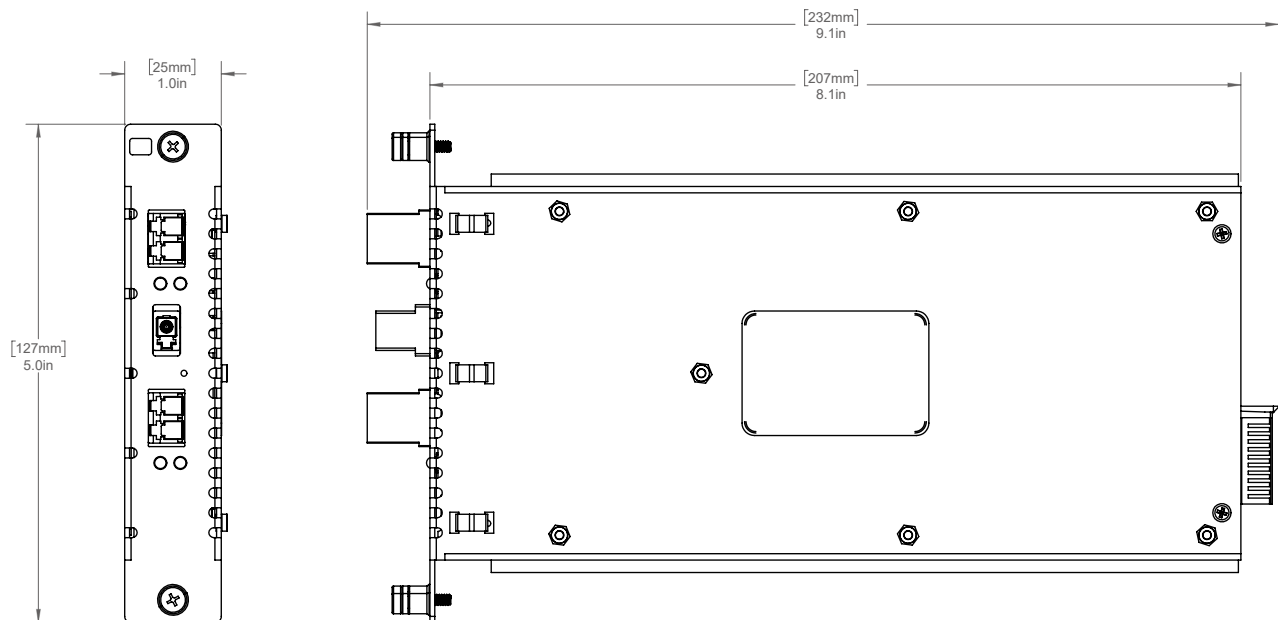
- RX_{IN,A}
- RX_{IN,B}
- A (left) & B (right) LEDs
- RX_{OUT} (PRIM_{OUT})
- SEL A-B (Manual A/B Toggle Switch)
- AUX_{IN}
- AUX_{OUT}
- STA (left) & ALM (right) LEDs

Typical Redundancy Architectures (Dual Fiber)

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



Mechanical Outline

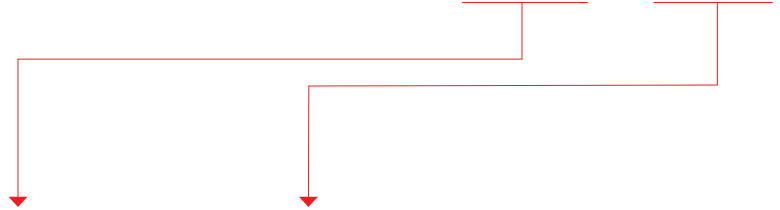


Note: DOTS and DORW models omit the bottom dual-LC/APC connector. DODC model omits the middle LC/APC connector.

Ordering Information

PART NUMBERS

AD3 - J3U - DXXX - XXX



OTS - Splitter

3LA - DORW, DOTS (1:2), 3 X LC/APC

ORW - 2:1 Switch

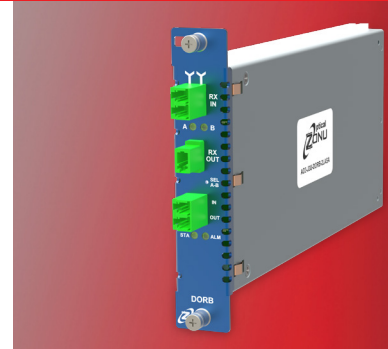
4LA - DODC, 4 X LC/APC

ODC - 2:2 Switch

5LA - DORB, DOTB, DOTS (1:4), 5 X LC/APC

OTB - 2:2 Switch + 1:2 Splitter

ORB - 2:1 Switch + 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 Switch, 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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