

Optical Node Series (NC)

OR4178H

RFPON Diplexer/Return Receiver
with 10/10, 10/1, 2/1, 1/1G EPON Insertion

FEATURES

- Enables deployments of extended reach Remote OLT RFoG plus PON (RFPON) applications
- Supports 10/10, 10/1, 2/1, or 1/1G EPON transmissions downstream/upstream
- Supports eight RF broadcast paths and injection/extraction of PON signals to/from eight access paths
- Compact 2-slot plug-in module for NC4000 and NC2000 series and VHub and Universal VHub platforms
- Passband options of 5–42 MHz, 5–65 MHz, or 5–85 MHz
- Adjustable RF return matching to digital return transceiver
- Passes ARRIS forward transmitter wavelengths ITU 17–62
- Local and remote status monitoring capability
- Low insertion loss
- Hot plug-in/out
- Compatible with ARRIS RFoG ONUs with PON passthrough



PRODUCT OVERVIEW

ARRIS's OR4178H RFPON Diplexer-Return Receiver is a double-wide plug-in module for NC4000 and NC2000 series Virtual and Universal Hubs. MPO connectors support eight 1550 nm forward signal broadcast inputs and injection/extraction of 1490/1310 nm, 1577/1270 nm, or 1577/1310 nm EPON signals. The converted 1610 nm RF return signals are output to a digital return transceiver through four SMB connectors located on the base of the unit. The unit supports 5–42, 5–65, or 5–85 MHz passband applications.

For the RFoG forward path, eight 1550 nm broadcast inputs are injected into the BC port and passed through the device for distribution to the access network. In the return path, optical diplexers separate the eight upstream 1610 nm RF signals and integrated analog receivers perform the optical-to-electrical (O/E) conversion. Following the O/E conversion of the RF return signals, matching and gain control of the RF signals can be manually adjusted with built-in attenuators. The resulting RF signals from these receivers can be combined and input to a VT/DT4250N Universal Digital Transceiver, where the signals are converted back to optical signals for transport back to the headend.

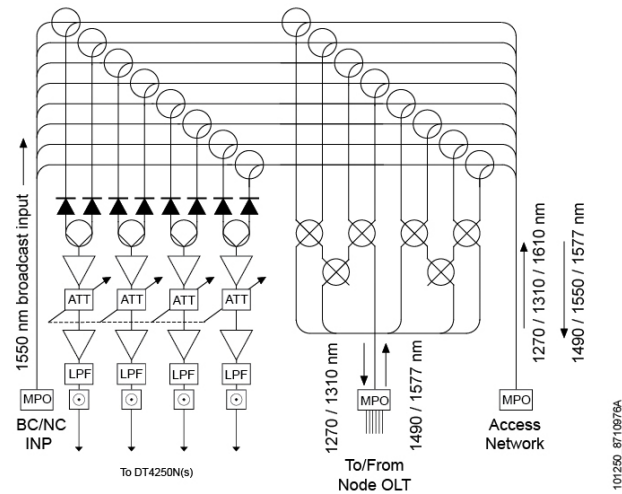
Per ITU definitions, the OR4178H seamlessly facilitates the injection and extraction of 10/10, 10/1, 2/1, and 10/1 Gbps EPON to and from the same access network. 1577/1270 nm (for 10/10 Gbps), 1577/1310 nm (for 10/1 Gbps), and 1490/1310 nm (for 2/1 and 1/1 Gbps) filters accommodate the EPON traffic from/to an XE4202 Node PON Remote OLT (R-OLT) module that is also housed within the NC/NH/VHUB platform.

This integrated RF plus PON approach provides FTtx solutions to leverage existing plant and equipment, while the OR4178H high density RFPON optical receiver module simplifies these designs and minimizes hardware and cost.

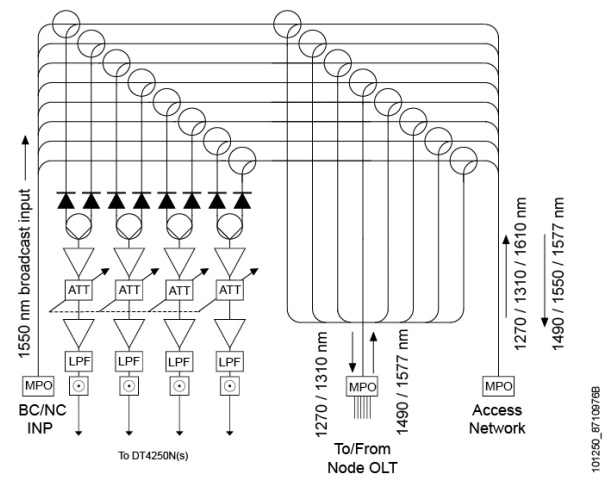
The OR4178H is available in two models:

- The -1 model that provides either 2:1 or 4:1 PON combining with the eight access paths
- The -2 model that provides a 1:1 (no combining) with the eight access paths

OR4178Hxy-z Signal Flows



2:1 or 4:1 PON Insertion (-1 model)



1:1 PON Insertion (-2 model)

SPECIFICATIONS

Characteristics	Specification
Physical	
Dimensions	4.0" D x 4.5" H x 2.0" W (10.2 cm x 11.4 cm x 5.1 cm)
Weight	2.0 lbs (0.91 kg)
Environmental	
Operating Temperature Range	-40° to +65°C (-40° to 149°F)
Storage Temperature Range	-40° to +85°C (-40° to 185°F)
Humidity	5% to 95% non-condensing
General	
Nominal wavelengths	RFoG: 1550 nm downstream/1610 nm upstream 1/1 and 2/1 Gbps Turbo PON: 1490 nm downstream/1310 nm upstream 10/1 Gbps PON: 1577 nm downstream/1310 nm upstream 10/10 Gbps PON: 1577 nm downstream/1270 nm upstream
Passband options	5-42, 5-65, or 5-85 MHz
Hot plug-in/out	
Power Requirements	
	700 mA at +5 V _{DC}
Power consumption, typical	3.5 W
Connectors	
Optical connectors	Broadcast input MPO for eight forward 1550 nm signal inputs R-OLT MPO for eight 1270/1310/1490/1577 nm connections to/from an XE4202M Node PON R-OLT module Access network MPO for eight 1270/1310/1490/1550/1577/1610 nm network outputs
Return path connectors	RF return signals output through four SMB connectors on the bottom of the unit
Optical	
BC INP to Access Network	
• Passband	1525 to 1565 nm
• Insertion loss, max	1.9 dB
• Isolation to O/E, min	50 dB
• Isolation to PON, min	60 dB
Access Network to RF O/E	
• Passband	1610 ± 10 nm
• Optical input range	-9.5 to -17 dBm
• Insertion loss, max	1.9 dB
• Isolation to BC INP, min	15 dB
• Isolation to PON, min	35 dB
Access Network to PON	
• Passband	1270 ± 10 nm 1310 ± 50 nm
• Isolation to BC INP, min	15 dB 15 dB
• Isolation to O/E, min	45 dB 45 dB
PON to Access Network	
• Passband	1490 ± 10 nm 1575 – 1580 nm
• Isolation to BC INP, min	60 dB 60 dB
• Isolation to O/E, min	60 dB 60 dB
Insertion Loss, max (Common) at 1310 MHz and 1490 MHz	
• 1 to 2 combining/splitting	5.3 dB (-1 model)
• 1 to 4 combining/splitting	8.6 dB (-1 model)
• 1 to 1 combining/splitting	1.7 dB (-2 model)
Electrical, Return RF	
Passband	5-42, 5-65, or 5-85 MHz
Frequency response	± 0.5 dB for 42 MHz, ± 0.75 dB for 65 MHz and 85 MHz
Output return loss, min	18 dB
Level stability	± 0.75 dB
Standard output level at min full gain	2.5 dBmV (with -16 dBm optical input, 1% OMI, 1310 nm)
Gain control range	0-15 dB (set with DIP switch; same for all paths)
Path-to-path isolation	45 dB
Local Test indicators	
Optical level test points	10 ± 1 V/mW
Dummy load indicator	Green LED

ORDERING INFORMATION

Part Numbers	Description
OR4178H-xy-z-MP	xy= Passband (MHz): (42 = 5-42 MHz, 65 = 5-65 MHz, 85 = 5-85 MHz) z = (1 = 2:1 or 4:1 PON insertion 2 = 1:1 PON insertion)

RELATED PRODUCTS

NC2000/NC4000	XE4202M 10G EPON R-OLT
TC4108-MP1M-US	VHub/UVHub
VT/DT4250N RF Return Transceiver	CP80/85X RFoG ONUs

Customer Care

Contact Customer Care for product information and sales:

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Note: Specifications are subject to change without notice.

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Nodes-OR4178H