# Optical Node Series (NC)

## OR4216R

### 2x8 Port Optical RFoG Diplexer/Return Receiver

## FEATURES


- Enables flexible deployments of ARRIS OBI-free RFoG Digital Return technology applications
- Supports 2x64 (128) SDU homes on 1550 nm downstream and 2x64 homes on 1610 nm returns using external 1x8 splitters
- Up to 75% OBI reduction over traditional unmitigated architectures in SDU applications
- Complete OBI elimination in MDU architectures
- Compact 2-slot plug-in module for NH4000 Universal VHub (UVHub) series platform enables 384 SDU homes passed from a single UVHub
- 5–204 MHz “Full Band” return bandwidth with specific band limits set using UVHub plug-in RF filter/combiners
- Return path optical input level and RF output level attenuation
- Two SC/APC forward path BC input connectors, each supporting eight access network ports
- Passes all ARRIS narrowcast and full spectrum transmitter wavelengths (ITU 59-16)
- Optional 10G/10G, 10/1G, and 1G/1G EPON pass-through
- Opti-Trace® CMS, EMS, and OTS monitoring and alarm management

## PRODUCT OVERVIEW

The ARRIS OR4216R RFoG Diplexer/Return Receiver enables simplified low cost forward/return path segmentation installations supporting optimized downstream bandwidth on 1550 nm and OBI-free return path operation on 1610 nm to an optimal number of SDU or MDU subscriber homes. The OR4216R in combination with the NH4000 Universal VHub come together to provide a high density of homes passed, offering support of 3x128 forward (384 SDU homes) and 3x128 return paths, using external 1x8 splitters.

The device offers a wide forward optical transmission window that passes all ARRIS narrowcast and full spectrum transmitter wavelengths ITU 16-62 (1525-1565 nm).

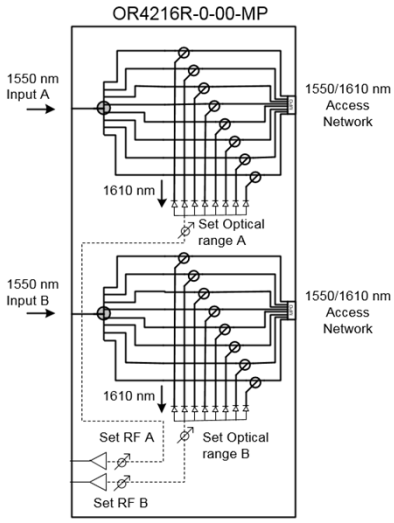
Within the device, each of the two 1550 nm broadcast inputs are split into eight access paths that are output from the device via MPO connectors feeding their respective access networks, creating two independent one x eight (2x1x8) networks with RF returns. In SDU applications, each of the 16 outputs is intended to drive an external 8-way splitter, enabling this architecture to offer up to 75 percent reduction in OBI over traditional 32-way split architectures (75% reduction represents an 8-way split versus a traditional 32-way split into the same OR4216R receiver port).

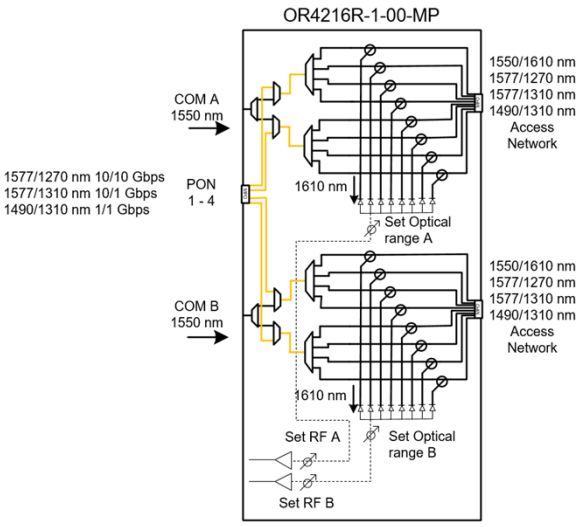
In the return direction each of the access paths incorporates a diplexer that filters the upstream 1610 nm return signals to feed optical-to-electrical (O-E) converters that combine the eight return path groups into two independent RF signals, then sending them to two SMB connectors (A and B) on the underside of the unit. The two RF return signals are routed through the UVHub into the VT4250N or DT4250N Digital Return Transceiver for electrical-to optical (E-O) conversion and transmission to the Headend or Hub Digital Return Receiver. The OR4216R supports a “full-range” return 5-204 MHz passband, and the common 5-42, 5-65, or 5-85 MHz return passband ranges are managed using external plug-in filters installed in UVHub between the OR4216R Receiver and the Return Transceiver. The OR4216R supports manual optical input level adjustment and RF output level attenuation for each of the two RF return paths, providing support for a wide optical input range of the combined return signals in order to provide the correct input level into the Return Transceiver.

For MDU applications, each of the two eight-port groups of the OR4216R feed to and accept input from 16 single R-ONUs, such as the ARRIS CP85xxU RFoG ONU. When each R-ONU supports an MDU distribution of 16 coax feeds, 256 subscriber homes are supported with two 128 home OBI-free returns. The NH4000-UVP UVHub accommodates OR4216R modules and associated digital EDFAs and digital return transceivers to support 512 MDU subscriber homes.

For applications where PON architecture support is required or planned, a 10G/1G PON injection option is available. The OR4216R seamlessly facilitates the delivery of 10/10 Gbps EPON over 1577/1270 nm, 10/1 Gbps over 1577/1310 nm, or 1/1 Gbps EPON over 1490/1310 nm downstream/upstream on the same access network, extending both RFoG and PON capabilities to a common distribution. Each broadcast network group of eight feeds two groups of four PON pass-throughs. The PON injection ports on the OR4216R offer segmentation installations down to 64 homes passed. This integrated RFPON approach delivers multiple FTTx segmentation solutions to leverage existing plant and equipment, while the OR4216R high density optical diplexer/receiver module simplifies these designs. The module’s compact design, with MPO connectors, minimizes fiber splices, fiber jumpers, and associated losses.

## OR4216R Signal Flows




## SPECIFICATIONS

| Characteristics | Specification |
|---|---|
| **Physical** | |
| Dimensions | 4.0” D x 4.5” W x 2.0” H (10.2 cm x 11.4 cm x 5.1 cm) |
| Weight | < 2.0 lbs |
| **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 |
| **Power Requirements** | |
| 24 $V_{DC}$ | Supplied by the node power supply |
| Power consumption, max | 7.5 W |
| **General** | |
| Hot plug-in/out | Yes |
| Rotary Switches (2) | Set the optical input range for Group A and B optical receivers |
| DIP Switches (2) | RF Attenuation for Groups A and B RF Returns |
| **Connectors** | |
| SC/APC (2) BC in | 1550 nm Broadcast inputs |
| Access MPO (2) | Broadcast out/in for eight 1550 nm and 1610 nm subscriber-side access ports |
| PON in/out MPO (1) | 10/10, 10/1, 1/1 Gbps EPON input/outputs (-1 PON version only) |
| Return path | Two RF return signals output through underside SMB connectors (one SMB per each group of 8 Access lines) |
| Micro USB | Firmware Load/Upgrade (Future) |
| **Optical** | |
| BC INP to Access Network Passband | 1260 - 1592 nm |
| Insertion loss, max | 12 dB for no PON (-0-00 model); 12.3 dB for PON (-1-00 model) |
| Access Network to RF O/E Passband | 1600 - 1620 nm upstream |
| Optical input range | +3 to -10 dBm |
| Optical input power monitoring accuracy | ± 1 dB |
| Isolation between two receivers | 70 dB |
| **Electrical, Return RF** | |
| Passband | 5–204 MHz; Standard 5–42, 5–65, and 5–85 MHz ranges determined by using external plug-in filters |
| Optical input level (into RF post amplifier) | Manually set from +3 to -10 dBm in 1 dBm increments. A and B group rotary switches |
| RF output level | 22 dBmV/ch, manually adjustable from 0 to 22 dB in 1 dB increments. A and B group DIP switches |
| **Local Test and LED Indicators** | |
| Optical level test points | None |
| Power LED | Green = 24 VDC is present |
| Status A and Status B | Green = Indicates access group is working correctly |
| US ACT A and B/Upstream Activity A and B | Blue = R-ONU activity received on at least one access receiver port |

## ORDERING INFORMATION

| Model Name | Description |
|---|---|
| OR4216R-0-01-00-MP | RFoG Diplexer/Return Receiver, 16 optical network ports (in two groups of eight), two RF outputs, 22 dBmV RF output level, MPO Access Connectors |
| OR4216R-1-01-00-MP | RFoG Diplexer/Return Receiver, 16 optical network ports (in two groups of eight), two RF outputs, 22 dBmV RF output level, 10G/1G PON Injection, and MPO Access Connectors |

## RELATED PRODUCTS

| | |
|---|---|
| NH4000-UVP1/UVP2 UVHub | VT4250N Monitoring Transceiver |
| DT4250N RF Return Transceiver | CP85xxU MDU R-ONU |

# Customer Care

Contact Customer Care for product information and sales:

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09/2018 ECO-14553