Optical Node Series (NC)

VT4250N

Universal VHub Monitor/Manager and Digital Return Transceiver

FEATURES

- Designed for NH4000-UVP, NH4000-VHP, and NH4000-RFP/CNP platforms, providing integrated monitoring/management and digital RF return transceiver functions in a single-wide module
- Replaces OE4130S NH4000-VHP Monitoring/Management Module, supporting “no RF” applications
- Managed via the headend NI3030x Network Interface, or sends RF and monitoring data via the DR3450N, DR3600N, or legacy Return Receivers
- Operates in 5–50 MHz or 5–100 MHz RF Return bandwidth ranges
- User selectable single/dual “1-fer” or “2-fer” channel links
- Optical transmission at 1310 nm, 1550 nm, 1 of 15 CWDM, or 1 of 40 DWDM wavelengths
- Compatible with existing DT4250 digital return platform installations including cascaded or point to point applications
- Supports a variety of configurations including new and add-on to legacy DT4250 based NC4000 RFoG and Fiber Deep installations

PRODUCT OVERVIEW

The VT4250N transceiver is an integral component of ARRIS’s latest generation Digital Return Platform, enabling the monitoring and management of modules installed in the VHub/UVHub, while optionally providing the same digital return capabilities as the widely deployed ARRIS DT4250 return transceiver. With the RF mode “ON”, the VT4250N digitizes one or two discrete RF return path signals from separate inputs and transmits optically to the headend. The VT4250N optical transmit and receive ports are implemented with plug-in SFP transceivers for ultimate flexibility and affordability.

Conforming to the Small Form Factor Pluggable (SFP) Multisource Agreement, these state-of-the-art SFP transceivers are available in a variety of transmit/receive wavelengths including dedicated 1310 nm and 1550 nm, CWDM (15 wavelengths), and DWDM (40 wavelengths). The VT4250N supports three data rate options: 2.125, 3.1875, or 4.250 Gbps, with selection being dependent upon bandwidth and transceiver configuration. RF return bandwidths are 5–45 MHz, 5–65 MHz, and 5–85 MHz.

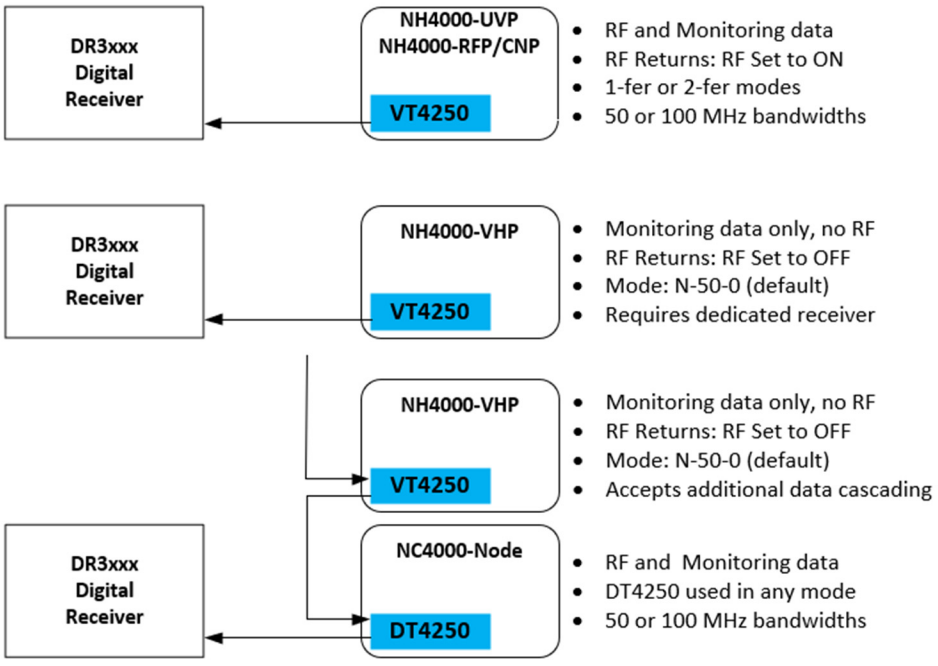
For RF return applications, the transceiver can operate in single channel ("1-fer") or in dual channel/dual segment ("2-fer") mode. A simple switch on the unit enables the operator to select the operating mode and bandwidth. In "2-fer" mode, two discrete return channels are independently digitized with the two data streams being transmitted by a single SFP optical transceiver on a single wavelength. At the headend or hub, the ARRIS DR3450N or DR3600N Digital Return Receiver separates and decodes the two channels and routes each through discrete RF return outputs. For monitoring, the VT4250N Transceiver combines the UVHub, VHub, or NC4000 node module monitoring information with the upstream RF data, which is separated by the Digital Receiver where it can be viewed through the CH3000 Opti-Trace® software. When using the NI3030 Network Interface controller in the headend, remote management/configuration of installed modules within the UVHub, VHub, or Node is supported.

The output from the VT4250 can be cascaded to a new or existing DT4250N module in a tandem or primary node, enabling remote monitoring of multiple nodes and VHubs/UVHubs with a single digital receiver, thus maximizing fiber-efficiency with up to 80 returns plus node monitoring and management on a single fiber. For non-RF/Fiber Deep applications where monitoring or management is needed, the VT4250 features a user settable "non-RF" mode that enables the transceiver to either cascade to an NC4000/DT4250 platform for communication of node data to the headend DR3450 Receiver, or otherwise communicate node data directly to the headend receiver. The device also supports legacy single-mode DR3xxx Receivers. "Monitoring Only" functionality is set by putting the device into the 50 MHz 0-fer (N-50-0) mode with no active return RF.

ARRIS digital return products enable existing optical nodes to be fully segmented, with each RF input port treated as a discrete network. This maximizes available bandwidth per user, while at the same time conserving the cable operators' investment in the fiber network.

The VT4250 can be used in NH4000-UVPx Universal VHubs, NH4000-VHP VHubs, and NH4000-RFP/CNP platforms, and in a variety of cascaded configurations.

The VT4250 must be installed in Slot A in every installation of any platform.



SPECIFICATIONS

Characteristics	Specification			
Physical				
Dimensions	4.0” L x 1.8” H x 2.3” W (10.2 cm x 4.6 cm x 5.8 cm)			
Weight	0.8 lbs (0.4 kg)			
	Micro USB port for firmware update and local management			
Environmental				
Operating Temperature Range	-40° to +85°C (-40° to 185°F)			
Storage Temperature Range	-40° to +85°C (-40° to 185°F)			
Humidity	5% to 95% non-condensing			
Power Requirement				
Input Voltage	24 V_{DC} (from node internal power supply)			
Module Power Consumption	4 W			
SFP Power Consumption (max)	2 W			
General				
	Hot plug-in/out			
Optical Interface Connectors	LC/UPC Duplex on the SFP transceiver			
Optical Transmission Bit Rates	2.125 Gbps or 4.250 Gbps depending on the configuration			
Number of RF Channels	1, 2, or RF Off (no RF, platform monitoring only). Manually selectable on module or using Opti-Trace CMS.			
Mode Selection	Via the on-board push-button on the module or using Opti-Trace CMS via micro-USB port			
RF Path and Distortions (each channel)				
Frequency Response	± 0.5 dB			
Input Return Loss (min)	16 dB			
Level Stability	± 0.5 dB			
RF Path Loading	**5–50 MHz**		**5–100 MHz**	
Operation Mode	“1-fer”	“2-fer”	“1-fer” [1]	“2-fer”
SFP Data Rate (Gbps)	2.125	2.125	2.125	4.250
Isolation between Channels (in dB), (Includes RX)	NA	> 60	> 55	> 55
Input Nominal dBmV/Hz	-60 > 47 dB NPR	-60 > 40 dB NPR	-63 > 40 dB NPR	-63 > 40 dB NPR
Dynamic Range (in dB)	> 11 @ 47 dB NPR	> 11 @ 40 dB NPR	> 11 @ 40 dB NPR	> 11 @ 40 dB NPR
Peak NPR (in dB)	54	49	48	48
Optical				
	The optical ports facility of the VT4250x-xx can be populated with a variety of SFP (plug-in) transceivers depending on the network application, supporting 2.125, 3.1875, and 4.250 Gbps data rates. The data rates depend on the configuration and specific RF Range selected. Please contact ARRIS Sales to review the available SFP transceivers and obtain the appropriate data sheets for the required application. Use a 4.250 Gbps SFP for the 3.1875 Gbps data rate.			
LED Indicators				
Operating Mode	N: Normal (E-Enhanced mode not available on VT4250)			
	50 or 99; Upstream bandwidth 5–50 or 5–100 MHz			
	1 or 2: Single (“1-fer”) or 2 channel (“2-fer”), user selectable. N-50-0 (RF Off) mode “1” and “2” LEDs will be dark (off) in the N-50-0 RF Off mode. N-50-0 setting is the factory default setting (device dependent).			
SFP Status	Tx; Green ON = OK, Off = faulty SFP or unit not powered			
	Rx; Green ON = Signal good, Off = LOS (Loss of Signal)			
	Blinking = excessive BER (Bit Error Rates)			

NOTE:
1. 100 MHz operation in 1-fer mode supports two (2) single returns, requires a second SFP (2.125 Gbps).
2. Use a 4.250 Gbps SFP for the 3.1875 Gbps data rate.

ORDERING INFORMATION

Model Name	Description
VT4250N-50-00	Monitoring and Control Module supplied with 5–50 MHz and 5–100 MHz firmware pre-loaded

NOTE:
SFP modules must be ordered separately. Please contact ARRIS Sales to review the available SFP transceivers and obtain the appropriate data sheets for the required application.

RELATED PRODUCTS

NH4000-UVP1/UVP2 UVHub	DT4250N, DT4600N Universal Digital Return Transceivers
NH4000 VHP, NH4000-RFP/CNP, NC4000	DR3xxx Digital RF Return Receivers
OR4xxx RF Return Receivers	SFP Transceivers

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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