DATA SHEET

Optical Node Series (NC)

DT4600N

204 MHz Digital RF Return Transceiver,
Dual RF Inputs, Selectable Bandwidth Ranges

FEATURES

- Partners with Headend Digital RF Return Receivers to operate in user selectable RF bandwidth ranges of 5–204 MHz or 5–100 MHz
- Single channel “1-fer” or dual channel “2-fer” links, user selectable
- Pluggable SFP optical transceiver options on 1310 nm, 1550 nm, 1 of 15 CWDM wavelengths, or 1 of 40 DWDM wavelengths
- Opti-Trace® local configuration and remote management
- Compatible with current CH3000 and CHP digital return platforms
- Designed for use in NC2000, NC4000®, OM4120® Nodes, and VHub Platforms

The DT4600N Digital RF Return Transceiver is CommScope’s sixth generation Universal Digital Return Platform digitizing either one or two independent RF return path signals from two separate analog inputs. The module’s optical transmit/receive port accommodates a single plug-in transceiver conforming to the Small Form Factor Pluggable (SFP) form factor for ultimate flexibility and affordability. 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). There are three data rate options of 2.125, 4.250, or 10.3125 Gbps with their selection being dependent upon bandwidth requirements and transceiver configuration.

The DT4600N features user selectable operating modes of 5–204 MHz or 5–100 MHz (covering 5–65, 5–85 MHz etc.) RF return bandwidths. Either range can be operated as a single channel “1-fer” or a two channel “2-fer” return path. For 5–204 MHz range, a Headend CH3000 chassis based DR3600N Return Receiver is required. For the 5–100 MHz range, a DR3600N or DR3450N Return Receiver can be used. The DT4600N (100 MHz mode) also supports RF Returns to CHP Chassis based CHP-D2RRX-85-AA-S Receivers.

Mode selection is achieved via a simple front panel push button switch, or by using Opti-Trace CMS management software. In “2-fer” mode, two discrete return channels are independently digitized with the two data streams being transmitted on a single wavelength by the SFP optical transceiver.

At the headend the digital DR3xxx RF Return Receiver separates and decodes the two channels. Each channel is routed through a discrete RF return output. This maximizes fiber-efficiency with up to 80 returns on a single fiber. CommScope digital return products enable existing optical nodes to be fully segmented, with each RF input port treated as a discrete return, maximizing the available bandwidth per user while at the same time conserving the cable operators’ investment in the fiber network.

The DT4600N is designed as a plug-in module for CommScope NC/NH2000 and NC/NH4000 Node and Virtual Hub (VHub)/ Universal (UVHub) remote outside plant platforms. The DT4600N module also installs in a CommScope OM4120 Node platform. This inter-platform connectivity permits upstream RF return feeds to CHP Chassis based CHP-D2RRX-85-AA-S Receivers, or to CH3000 Chassis based DR3600N (204 MHz) or DR3450N RF Receivers, from either NC/NH Node/VHub or OM4120 based remote platforms.

In-field installation of the DT4600N in the OM4120 node housing requires purchase of an OM41XDUP00E-1XN1X0000 upgrade kit, which includes a “deep cavity” housing lid, lid adapter plate and motherboard, 1.2 GHz AR4214E Receiver, cable bundle, and PS4201 150-watt power supply.

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 +60°C (-40° to 140°F) node ambient				
Storage Temperature Range	-40° to +85°C (-40° to 185°F)				
Humidity	5% to 95% non-condensing				
Power Requirement					
Input Voltage	24 V_{DC} nominal from node resident power supply				
Module Power Consumption	11.2W max (not including SFP)				
SFP Power Consumption, max	2.8 W (TTD4580)				
General					
	Hot plug-in/out				
Optical Interface Connectors	LC/UPC Duplex on the SFP transceiver				
Optical Transmission Bit Rates	2.125 Gbps, 4.250 Gbps, or 10 Gbps depending on mode selection and SFP installed				
Number of RF Channels	1 or 2, user selectable using mode select switch or using Opti-Trace software				
Mode Selection	Via push button located on top of the module or using Opti-Trace software				
RF Path and Distortions (Each Channel)					
Frequency Response	± 0.5 dB (5–100 MHz), ± 1 dB (5–204 MHz)				
Slope, 5–100 MHz	1 ± 0.5 dB into DR3450N				
Input Return Loss, min	16 dB min				
Level Stability	± 0.5 dB				
RF Path Loading	**5–100 MHz[1]**			**5–204 MHz[2]**	
	10B “1-fer”	“2-fer”	12B “1-fer”[4]	“1-fer”[3]	“2-fer”[3]
SFP Data Rate (Gbps)	2.125	4.250	4.250	10.3125	10.3125
Isolation Between Channels (in dB), (Includes Rx)	> 50	> 50	> 50	> 45	> 45
Input Nominal (dBmV/Hz)	-63 > 40 dB NPR	-63 > 40 dB NPR	-63 > 40 dB NPR	-60 > 40 dB NPR	-60 > 40 dB NPR
Dynamic Range (in dB)	> 11 @ 40 dB NPR	> 11 @ 40 dB NPR	> 10 @ 47 dB NPR	> 13[5] @ 40 dB NPR	> 11 @ 40 dB NPR
Peak NPR (in dB)	47	47	49	43	43
Optical					
	The DT4600N-200 can be populated with a variety of SFP (plug-in) transceivers supports 2.125, 4.250, and 10 Gbps data rates. The data rate is a function of the user selected mode and return bandwidth. Please contact CommScope Sales to review the available SFP transceivers for your application.				
LED Indicators					
Operating Mode	N: Normal; E: Enhanced[4], user selectable manually on module 99 or 204; Upstream bandwidth 5–100 MHz or 5–204 MHz, user selectable, either CMS or manually on module 1 or 2: Single (“1-fer”) or 2 channel (“2-fer”), user selectable, either CMS or manually on module				
SFP Status	Tx; Green LED ON = OK, Off = faulty SFP or unit not powered Rx; Green LED ON = Signal good, Off = LOS Green LED Blinking = excessive BER (Bit Error Rates)				

NOTES:

1. 5–100 MHz operation requires a DR3600N or DR3450N in the headend.
2. 5–204 MHz operation requires a DR3600N in the headend.
3. 5–204 MHz operation in “1-fer” or “2-fer” mode always requires a 10 Gbps SFP.
4. 5–100 MHz (for example 5–85 MHz) supports DT4600N Transmission to CHP-D2RRX-85-AA-S Return Receiver. DT4600N “E” Mode must be selected.
5. 5–204 MHz operation in “1-fer” dynamic range in NC4000H4/H5 nodes > 11 dB

ORDERING INFORMATION

Model Name	Description
DT4600N-200-00	Universal Digital Transceiver supplied with 5–100 MHz and 5–204 MHz firmware pre-loaded, user selectable.
OM41XDUP00E-1XN1X0000	In-field OM4120 upgrade kit, which includes a “deep cavity” housing lid, lid adapter plate and motherboard, 1.2 GHz AR4214E Receiver, cable bundle, and PS4201 150-Watt power supply. See Technical Manual #1511597 Revision E or later for installation details.

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

RELATED PRODUCTS

DR3600N-00	DR3450N, CHP-D2RRX-85-AA-S
NC2000, NC4000 Nodes	OM4120 Node
SFP Optical Transceivers	Optical Passives

Contact Customer Care for product information and sales:

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Note: Specifications are subject to change without notice.

1513808_RevD_DT4600-Univ-Dual-RF-Input-Transceiver