DATA SHEET

Opti Max® Optical Node Series

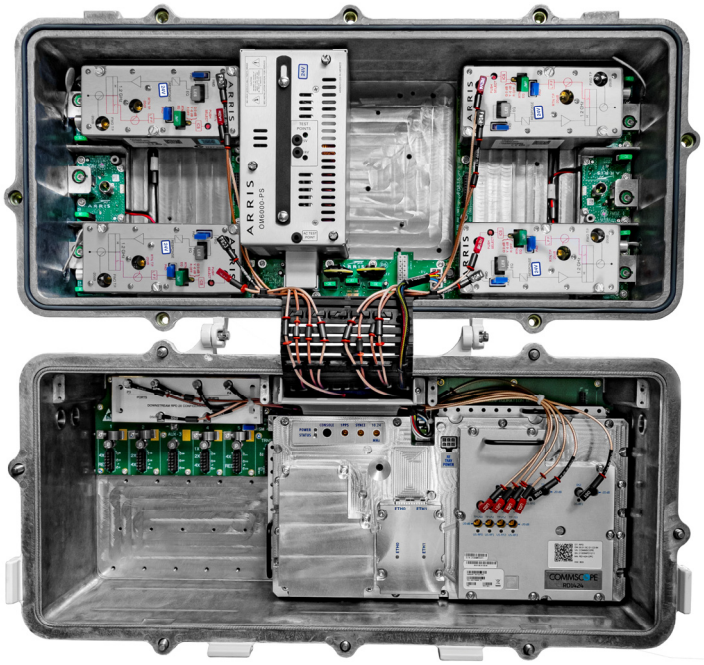
RD1424 2x4 Remote PHY Device (RPD)

for OM6000® 1.2 GHz HFC Nodes

FEATURES

- Industry leading RF output capability of 57 dBmV at 1.2 GHz
- Supports 1.2 GHz Downstream and 204 MHz Upstream bandpass for DOCSIS® 3.1 migration
- Seamlessly upgrade from traditional optics to distributed access architectures (DAA)
- Monitoring options available with ingress control switch remote functionality
- Enhances plant performance
- Maximizes fiber utilization and reach
- Improves headend density and power efficiency
- Simplifies plant maintenance via digital optics

The RD1424 Remote PHY Device (RPD) is a key component in CommScope's Distributed Access Architecture (DAA) portfolio, which can provide significant operational benefits—including increased bandwidth capacity, improved fiber efficiencies (wavelengths and distance), simplified plant operations with digital optics, and decreased loads on facility space and power systems—by extending the digital portion of the headend or hub to the node and placing the digital/RF interface at the optical/coax boundary. The RD1424 works in conjunction with the CCAP Core to extend the PHY layer from the CCAP into an Opti Max OM6000 HFC node. MAC processing, provisioning, and monitoring functions remain in the headend. The RD1424 provides full spectrum support for digital broadcast TV, VoD, and DOCSIS 3.0 and DOCSIS 3.1, as well as strategic alignment with future NFV/SDN/FTTx systems.



RD1424 Module Operation

The RD1424 takes the place of traditional optics modules, such as downstream receivers and upstream transmitters, inside the node. The RD1424 operates with a standard output level and tilt that can be attenuated by installing RF attenuator pads and equalizers, respectively, in the node's RF modules. Output levels and tilt can also be adjusted remotely from the headend. The RPD module's channel configuration is received from the CCAP Core in the headend; no manual configuration of the module is necessary after it is optically linked to the headend. The RD1424, configured as two virtual 1x2 RPDs, supports 2x4 operation with two downstream segments and four upstream segments for HFC applications.

The RD1424 has an internal power hold-up feature that safeguards against RPD reboots due to short-interval network power interruptions. The power hold-up feature provides more than 500 ms of power to sustain the RD1424 during occasional network power disruptions to ensure system reliability.

Network Flexibility

Today's technologies are developing at a rapid pace, which is why it is more important than ever for products to be flexible enough to support next-generation technologies, such as DAA, without major forklift. Keeping these concerns in mind, the OM6000 node allows operators to transition seamlessly from traditional node-based analog/digital optical delivery to a DAA architecture by using the OM6000 chassis as a base and leveraging current network assets. When operators are ready to transition to DAA, the node's modular design allows them to upgrade previously deployed OM6000 nodes to support R-PHY delivery by simply removing the node's existing receivers and transmitters and replacing them with the appropriate RPD module. The ease and simplicity of transitioning the OM6000 to support DAA operation provides operators with several benefits, including a cost-effective roadmap for upgrading their current network assets and the ability to future-proof today's purchases for long term use.

Flexible Powering Options

The need to utilize all RF outputs may not fit every node placement requirement. The OM6000's modular RF base design allows operators to target and remove one or more of the node's four RF modules to save power while operating the node. If necessary, operators can easily reintroduce these same modules to support future service group requirements.

Additionally, the OM6000 node features optional, fully redundant powering via a second power supply module, which can be added to provide backup to the main power supply module. This redundancy is fully load sharing during normal operation. Each power supply can support the entire node in case the other fails.

Small Form-Factor Pluggable (SFPs)

CommScope offers temperature-hardened, high-speed 10 Gbps SFP+ modules for the RD1424. These SFP modules are carefully chosen by our design teams to ensure end-to-end performance and stability. Available in CWDM and DWDM 40 ITU wavelengths, CommScope SFP+ modules support link lengths of up to 40 km or 80 km; operators can choose the SFP+ modules that support their network design. Rigorously tested, SFP+ modules are designed to withstand the increased thermal profile of the OM6000 while providing long-term performance in the field. The modules provide both design flexibility and the ability to maximize wavelength aggregation, making them the ideal choice to guarantee the RD1424's link performance across a wide range of outdoor temperatures.

SPECIFICATIONS

Characteristics	Specification
Physical	
Dimensions	23.6 in L x 11.0 in W x 12.2 in H
Weight	< 55 lb
Environmental	
Operating Temperature Range	-40° to +60°C (-40° to 140°F)
Storage Temperature Range	-40° to +85°C (-40° to 185°F)
Humidity	5% to 95% non-condensing
General	
Service Group Configurations	2 DS-SG x 4 US-SG
CIN Connectivity	Dual 10 GbE SFP+
Channel Capacity	
Downstream	Up to 6 OFDM channels (up to 192 MHz wide each) and 160 Annex B SC-QAM channels per downstream port
Upstream	Up to 2 OFDMA channels (up to 95 MHz wide each) and 12 SC-QAM channels per upstream port
Set Top Box Out-of-Band (OOB)	SCTE 55-1 SCTE 55-2
CW Tone Generation	AGC, Alignment, Leakage Detection (up to 8 dedicated leakage detection and 6 non-dedicated tones to be used for alignment, AGC, and legacy leakage tone)
High Speed Data	DOCSIS 3.0, DOCSIS 3.1
Video	Broadcast Video, Narrowcast Video
Designed for Compliance to CableLabs® MHAv2 Standards	CM-SP-R-PHY Remote PHY Specification CM-SP-R-DEPI Remote Downstream External PHY Interface Specification CM-SP-R-UEPI Remote Upstream External PHY Interface Specification CM-SP-GCP Generic Control Plane Specification CM-SP-R-DTI Remote DOCSIS Timing Interface Specification CM-SP-R-OOB Remote Out-of-Band Specification CM-SP-R-OSSI Remote PHY OSS Interface Specification CM-SP-DRFI Appendix D
RF (Node with RPD)	
Downstream Operational Bandwidth	54–1218 MHz/85–1218 MHz/102–1218 MHz/258–1218 MHz
Upstream Operational Bandwidth	5–42 MHz/5–65 MHz/5–85 MHz/5–204 MHz
Output Level	51/33 dBmV @ 1218/55 MHz (actual) 57/39 dBmV @ 1218/55 MHz (virtual)
Output Linear Tilt	18 dB (54 to 1218 MHz)
RF Port Impedance	75 Ω
RF Return Loss	16 dB typical
Test Points	-20 dB
Powering (Node with RPD)	
Power	< 140 W AC
AC Input Voltage	44–90 V AC
Power Supply Spurious	-60 dBc
Hum Modulation	-60 dBc
AC Bypass Current[1]	15 A
RD1424 Power Hold-up	
Input Charging Time	60 sec typical
Hold-up Duration	500 msec min

NOTE:
1. Maximum total current applied.

RELATED PRODUCTS

OM6000® Fiber Deep Node	OM6000® HFC Node (Standard Configurations)
CHP Max5000® Optics	Headend and Field Passives
1310/CWDM/DWDM SFP+	Installation Services

ORDERING INFORMATION

Part Number	Description
	Factory Configured RPD Node Options
OM6H85YSN-2XR4X1424M	1.2 GHz HFC OM6000 node with RD1424 Remote PHY Device (RPD), 2 DS-SG x 4 US-SG, No Console Port, 85/102 MHz Split, Downstream RPD 2X Configuration Module, Remote Device Interface Module (RDIM)
	RD1424 Upgrade Kits
1001586	RD1424 Remote PHY Device (RPD), 2 DS-SG x 4 US-SG, No Console Port, Downstream RPD 2X Configuration Module, Remote Device Interface Module (RDIM), Two Downstream RF Cables, Four Upstream RF Cables
	OM6000 RD1424 2x4 Cable Kit
1510390-002	OM6000 RD1424 2x4 Coaxial Cable Kit, Two Downstream RF Cables, Four Upstream RF Cables, Power Supply Cable
	Local Injection Upgrade Kit
1510385-010	Includes parts to upgrade five RD1424 OM6000 nodes for local injection. The kit includes five Downstream RPD 2X Configuration Modules with Local Injection Connectors and five local injection cables
	Power Supply Modules
1510056-001	OM6 24 V HFC Power Supply Module
	RF Modules
1510055-020	OM6 1.2 GHz, 42/54 MHz Split, 24 V, with Return EQ Support and Ingress Control Switch
1510055-024	OM6 1.2 GHz, 65/85 MHz Split, 24 V, with Return EQ Support and Ingress Control Switch
1510055-028	OM6 1.2 GHz, 85/102 MHz Split, 24 V, with Return EQ Support and Ingress Control Switch
1510055-032	OM6 1.2 GHz, 204/258 MHz Split, 24 V, with Return EQ Support and Ingress Control Switch
	SFP+ Optics
TTA1310-TL10	10 Gbps 10 km 1310 nm Transceiver, -40° to +95°C (-40° to +203°F) operating temperature range
TTB1550-TLxx (xx = 40 or 80)	10 Gbps 1550 nm Transceiver, Fiber Distances of 40 km or 80 km Supported, -40° to +95°C (-40° to +203°F) operating temperature range
TTC-xxxx-TL40 (xxxx = wavelength)	10 Gbps 40 km CWDM Transceiver, 8 Wavelengths Supported (1470 nm to 1610 nm), -40° to +95°C (-40° to +203°F) operating temperature range
TTCxxxx-TL80 (xxxx = wavelength)	10 Gbps 80 km CWDM Transceiver, 8 Wavelengths Supported (1470 nm to 1610 nm) -40° to +95°C (-40° to +203°F) operating temperature range
TTD4540-xx-PI (xx = 20–59)	10 Gbps 40 km DWDM Transceiver, 40 Wavelengths Supported (ITU Channels 20–59) -40° to +95°C (-40° to +203°F) operating temperature range
TTD4580-xx-PI (xx = 20–59)	10 Gbps 80 km DWDM Transceiver, 40 Wavelengths Supported (ITU Channels 20–59) -40° to +95°C (-40° to +203°F) operating temperature range
	PADs/Equalizers
1510053-0xx (xx = 01–12)	1.4” Linear Equalizer, 1.2 GHz, 01 dB through 12 dB
NPB-xx0 (xx = 00–20)	1.4” Attenuator, 00 dB through 20 dB
REQC-42-xx (xx = 02–11)	1.4” Cable Equalizer, 42 MHz, 02 dB through 11 dB
REQC-65-xx (xx = 02–11)	1.4” Cable Equalizer, 65 MHz, 02 dB through 11 dB
REQC-85-xx (xx = 02–11)	1.4” Cable Equalizer, 85 MHz, 02 dB through 11 dB
REQC-204-xx (xx = 02–11)	1.4” Cable Equalizer, 204 MHz, 02 dB through 11 dB
	Additional Accessories
1504945	F-male to SMB-female 75 ohm RG-179 6-L test point adapter

Contact Customer Care for product information and sales:

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Note: Specifications are subject to change without notice.

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