DATA SHEET

Opti Max™ Optical Node Series

OM6000™

1.2 GHz Fiber Deep Segmentable Node

FEATURES

- Accommodates advanced Fiber Deep architectures
- Supports 1.2 GHz Downstream and up to 204 MHz Upstream for DOCSIS® 3.1 migration
- Select optical module compatibility with Opti Max OM2741, Opti Max OM4100™, and Opti Max OM4120™ nodes leverages sparing and training
- Up to 2x2 segmentable with real estate and power budget to grow into tomorrow's advanced network architectures
- 10 application module slots for expansion into next generation network topologies
- SFP-based 85 MHz digital return supports service group aggregation and digital element monitoring for legacy CHP and CH3 digital return receivers

The CommScope Opti Max™ OM6000™ modular optical node is the latest innovation in network technology for operators seeking to maximize and protect their infrastructure investments. With provisions for ten optics modules in the lid and four RF modules in the base, the OM6000 easily scales from its most basic version without any loss of initial investment.

The OM6000 supports full DOCSIS 3.1 capability with downstream operation to 1.2 GHz while allowing the upstream to expand to 204 MHz, providing the network performance needed to support future services. The node is optimized for operation in today's complex high RF output and performance fiber deep networks. Its modular design easily supports future network migration to PON or Remote PHY/CCAP networks, making the OM6000 the perfect platform for future network growth and investment protection.

Network Flexibility

The OM6000 features a wide range of return transmitter wavelengths to support various fiber applications. A full suite of cost-effective analog CWDM and DWDM DFB analog transmitters rated to 204 MHz facilitate fundamental node segmentation. The OM6000 also has an advanced 85 MHz Digital Return transmitter option that utilizes 1X or 2X Time Domain Multiplexing (TDM) and pluggable Small Form Pluggable (SFP) optics to maximize segmentation and wavelength management. Digital transmitters that support CHP and CH3 headend optics platforms are also available. This advanced digital return system effectively leverages digital receiver and CMTS assets by fully supporting digital service group aggregations of up to four nodes in a daisy chain.

Service Group Segmentation

By coupling best in class RF and optical performance with technician friendly ergonomics, the OM6000 provides operators with a unique opportunity to easily grow with the needs of today's bandwidth hungry networks. The OM6000 allows simplistic migration from a basic non-segmented configuration to a 2x2 segmented node with minimal effort. The configuration modules support future service group reductions with a simple module upgrade and the placement of an additional receiver as required.

Enhanced Usability

The OM6000 node incorporates many new features that enhance usability. Power supply modules incorporate blind mate and hot swappable features without the need for additional cables or connections. In addition, a single power supply module is fully capable of powering the entire node without the need for a second supply. A second power supply is required only when redundancy is required.

The optical fiber tray is designed to handle the high volume of fiber required to support today's multiwavelength architectures. The fiber tray supports placement of standard optical passive cassettes keeping the fiber storage area clean and simplifying node segmentation in multiwavelength deployments.

The OM6000 maintains a consistent cable placement across the hinge area from the lid to the base. The enhanced cable spine effectively manages this transition, eliminating outages caused by accidental fiber/cable pinching during closure.

Optional ingress control switches incorporate local control for verification of ingress migration into the node. A technician can easily activate the switches while on site and pinpoint the specific input affecting service for rapid ingress mitigation. This allows technicians to quickly identify and troubleshoot ingress without the need for complex test equipment or monitoring systems.

Scalability

The OM6000 node is highly scalable to meet the growing needs of today's demanding network designs. Operators can deploy the OM6000 in a basic 1x1 configuration and then easily migrate to 2x2 segmentation as their networks expand. While most segmentable optical nodes would maximize their available optical module real estate once they have been deployed in a fully segmented configuration, the OM6000 still has the capacity to seamlessly add Ethernet or PON services via 10 total application module slots and 2 auxiliary SG4 style slots. The additional optical module capacity allows the node to grow well beyond the coax infrastructure of today. Next generation transport optics technologies will be supported as well as opportunities to increase revenues via targeted business services.

Compatibility

The OM6000 features select optical modules that are compatible with OM4100, OM4120, and OM2741 nodes such as transmitters, EDFAs, optical switches, and future next generation module development. This compatibility reduces service times and the need for technician training on additional optics module setup. This also allows MSOs to select other nodes in the CommScope family, depending on the application, without the penalty of increased part numbers, complex inventory, and additional training.

1.2 GHZ PLATFORM COMPATIBILITY

Platform	OM41 Series	OM274 Series
Common CWDM and DWDM Analog Return, Digital Return, and SFPs	Yes	Yes
RF Amplifier Module	No	No
FLM PON Extender Module	Yes	Yes
EDFA Optical Amplifier	Yes	Yes
Optical Switch	Yes	Yes
Optical Passives	Yes	Yes

SPECIFICATIONS

Characteristics	Specification
Physical	
Dimensions	23.6 L x 11.0 W x 12.2 D
Weight	< 50 lbs
Housing Ports	6
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%–95% non-condensing
Forward Path	
Optical Receiver	
Optical Wavelength	1260 to 1620 nm
Optical Input Power Range, continuous	-8.0 to +1.0 dBm
Optical Connector Type	SC/APC
Optical Test Point	1 ± 10% Volt/mW
RF	
Operational Bandwidth[1]	54/85/102/258 to 1218 MHz
Flatness[2]	± 1.0 dB
Output Linear Tilt	22.0 ± 1.0 dB (54–1218 MHz) 21.3 ± 1.0 dB (85–1218 MHz) 21.0 ± 1.0 dB (102–1218 MHz) 18.1 ± 1.0 dB (258–1218 MHz)
RF Test Points[3]	-20 ± 1.0 dB
RF Impedance	75 Ω
RF Return Loss[4]	16 dB
Port to Port Isolation	-70 dB, 54 MHz to 552 MHz -60 dB, 552 MHz to 1218 MHz
All Digital Distortion[5, 6, 7, 8, 10]	
Reference Level[9]	58/36 dBmV @ 1218/55 MHz (Actual)
CTN	55 dB
CIN	50 dB
MER	38 dB
BER	< $1x10^{-6}$
Return Path	
RF	
Operational Bandwidth[1]	5 to 42/65/85/204 MHz
Flatness[2]	± 1.0 dB
Gain Slope	0 ± 1.0 dB
RF Test Points[3]	-20 ± 0.75 dB
RF Impedance	75 Ω
RF Return Loss[4, 11]	16 dB
RF Path Loss[12]	0 ± 1.0 dB
With ICS (-6 dB)	6 ± 1.0 dB
Without ICS (Off)[13]	31 dB
Port to Port Isolation	-60 dB
Nominal Return Input Level	12 dBmV/6 MHz; 5-42 MHz 10 dBmV/6 MHz; 5-65 MHz 8 dBmV/6 MHz; 5–85 MHz 5 dBmV/6 MHz; 5-204 MHz
Transmitter Output Power	
Analog CWDM	3 ± 0.4 dBm
Analog DWDM	7 ± 0.4 dBm
DWDM SFP	+3 to +7 dBm
CWDM SFP	0 to +5 dBm
1310 nm SFP	-8 to -1 dBm
Distortion Performance	
NPR Analog CWDM[5, 14]	40/11 dB (5–85 MHz) 40/8 dB (5–204 MHz)
NPR Analog DWDM[5, 15]	40/11 dB (5–85 MHz) 40/8 dB (5–204 MHz)
NPR 2x85 MHz Digital Return[5, 16]	40/20 dB (5–85 MHz)

SPECIFICATIONS

Characteristics	Specification
Power Requirements	
AC Input Voltage	42–90 VAC
AC Input Frequency Range	50/60 Hz
Power Supply Spurious[5]	-60 dBc
Hum Modulation[5, 17]	-60 dBc
AC Bypass Current[18]	15 A
Required Accessories	
RF Pads **NPB-xx0*** *xx = 00–20 (0–20 dB)	Factory Installed in 4 RF modules and as required in optional optical modules. One per receiver module and one per analog transmitter module. Not required for digital return setup. Customer can modify in 1 dB steps as required when purchased as an accessory item.
Linear Equalizers **1510053-0xx**** **xx = 02–12 (2–12 dB)	Factory Installed in 4 locations. Customer can modify in 1 dB steps as required when purchased as an accessory items.

NOTES:

1. The band edges are configurable based on the diplex filter option installed.
2. Measured with respect to tilt over the operating band of the node.
3. Measured with respect to the associated node port.
4. Measured at the node RF input and output port over the specified passband.
5. Over the operating temperature range.
6. Distortion values are listed for the node only. These values should be combined with transmitter values to determine link performance. CTN represents worse case analog reference over all input range for the entire RF section of the node, optics module/photodiode excluded.
7. J.83 Annex B, 5.360537 MS/s; 6 MHz/channel. Near noise correction applied to compensate for source MER contribution.
8. 2 QAM channels replaced with analog channels @ analog/virtual levels to facilitate CTN/CIN measurements.
9. For channel loading up to 1.2 GHz and 22 dB of output tilt, the maximum virtual output level @ 1.2 GHz is 64 dBmV. For channel loading up to 1 GHz and 18 dB of tilt, the maximum virtual output level @ 1 GHz is 60 dBmV.
10. Typical performance for the optical node over the specified operational temperature range. The optical node performance must be combined with the optical link to achieve an end-to-end performance.
11. Return loss is 15 dB from 5–15 MHz when ICS is installed in the node.
12. @ 25°C. Gain measured across bandwidth.
13. Measured from 5–42 MHz only regardless of band split.
14. The link consists of 20 km of SMF 28 fiber, plus passive loss sufficient to obtain an optical input power of 6 dBm at the test receiver. The test receiver should have minimal contribution.
15. The link consists of 40 km of SMF 28 fiber, plus passive loss sufficient to obtain an optical input power of -6 dBm at the test receiver.
16. Measured with minimum attenuator setting in Tx and Rx. Specified link for 1310 nm SFP is 10 km fiber. Specified link for CWDM SFP is 50 km fiber, 26 dB link budget. Specified link for DWDM SFP is 80 km fiber, 29 dB link budget. Node measured in 2X configuration, de-rate by 3 dB for 1X configuration.
17. Measured from 0–15A, de-rate to 55 dBc from 5 to 10 MHz.
18. Maximum total current applied.

Specifications are compliant with the applicable, recommended ANSI/SCTE test methods.
All specifications are stated as worst-case over temperature unless otherwise noted.

RELATED PRODUCTS

CHP Max5000® Headend Optics	DT7/OM6 Series Digital Return Transmitters
CH3 Headend Optics	Remote PHY Device (RPD)
CHP Digital Receiver	CH3 DR3450 Digital Receiver

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Note: Specifications are subject to change without notice.

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