DATA SHEET

Opti Max™ Optical Node Series

OM6000™

1.2 GHz 4x4 HFC Segmentable Node

FEATURES

- Supports 1.2 GHz Downstream and 204 MHz Upstream bandpass for DOCSIS® 3.1 migration
- Integrated segmentation switches simplify future node upgrades
- Select optical module compatibility with Opti Max OM2741, Opti Max OM4100™, and Opti Max OM4120™ nodes leverages sparing and training
- 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™ HFC 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 out to 1.2 GHz while allowing the upstream to expand to 204 MHz. Optimized for operation in today's complex, segmented HFC networks, the OM6000's modular design easily supports future network migration to PON or Remote PHY/CCAP networks. It is the perfect platform for supporting future network growth and services.

Multi-Architecture Compatibility

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.

Integrated Switchable Segmentation

By coupling best in class RF and optical performance, the OM6000 provides operators with a unique opportunity to easily grow in parallel with today's bandwidth hungry networks. The OM6000's simplified switchable segmentation feature provides seamless transition from the basic unsegmented configuration to a fully segmented node with minimal effort. In addition, the node also features local segmentation switches that support future segmentation without having to add additional configuration modules or RF cables. Instead, a technician can enable new segments by simply adding a transmitter or receiver as required. By reducing the requirement for additional configuration modules and minimizing maintenance time, the OM6000 provides a lower total cost of ownership for the MSO.

Enhanced Usability

The OM6000 node incorporates many new features that enhance usability. Its high-capacity power supply modules, for example, incorporate blind mate and hot swappable features without the need for additional cables or plugs. A single power supply module allows complete station operation; if operators require power redundancy, however, they can install a second load sharing power supply to handle the complete node payload if a loss of primary power occurs.

The OM6000 also features an optical fiber tray that is designed to handle the most complicated fiber mating applications. The fiber tray also supports placement of standard optical passive cassettes, which helps keep the fiber storage area clean and simplifies node segmentation in multiwavelength network configurations.

The OM6000 maintains a consistent cable placement across the hinge area from the lid to the base. The enhanced cable spine cleanly 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; operators can deploy the OM6000 in a basic 1x1 configuration and then easily migrate to 2x2 and 4x4 segmentation via switchable segmentation as their networks expand. While most 4x4 segmentable optical nodes would be fully saturated once they have been deployed in a 4x4 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 SG4 auxiliary slots can be used for future applications.

Compatibility

The OM6000 features select optical modules that are compatible with the OM41 and OM2741 series 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 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

RELATED PRODUCTS

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

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	-6.0 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	18.0 ± 1.0 dB (54–1218 MHz) 17.5 ± 1.0 dB (85–1218 MHz) 17.2 ± 1.0 dB (102–1218 MHz) 14.8 ± 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
Mixed Analog/Digital Distortions[5, 6, 7, 8]	
Reference Level[10]	57/39 dBmV @ 1218/55 MHz (virtual)
CTN	60 dB
CTB	72 dBc
CSO	70 dBc
CIN	57 dB
MER	45 dB
BER	< $1x10^{-6}$
All Digital Distortions[5, 6, 7, 9]	
Reference Level[10]	51/33 dBmV @ 1218/55 MHz (actual)
CTN	60 dB
CIN	55 dB
MER	48 dB
BER	< $1x10^{-6}$
Return Path	
Optical Transmitter	
Optical Wavelength	CWDM/DWDM
Optical Connector Type	SC/APC
Optical Test Point	1 ± 10% Volt/mW
RF	
Operational Bandwidth[1]	5 to 42/65/85/204 MHz
Flatness[2]	± 1.0 dB
Output Linear Tilt	0 ± 1.0 dB
RF Test Points[3]	-20 ± 1.0 dB
RF Port 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
With 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

SPECIFICATIONS

Characteristics	Specification
Return Path Continued	
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)
Power Requirements	
AC Input Voltage	42–90 VAC
AC Input Frequency Range	50/60 Hz
Hum Modulation[5, 17]	-60 dBc
Power Supply Spurious[5]	-64 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.
1.2 GHz Linear Equalizers, **1510053-0xx**** **xx = 02–12 (2–12 dB)	Factory Installed in 4 RF modules. 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 passband 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 operating temperature range.
6. Distortion values listed are for the node only. These values should be combined with transmitter values to determine link performance. CTN represents worst case analog reference over all input ranges for entire RF section of 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. 30 analog NTSC channels from 55.25 MHz to 253.25 MHz, 160 digital NTSC channels from 261 MHz to 1218 MHz, 6 dB below analog. 57 dBmV (virtual) output at 1218 MHz, 18 dB virtual tilt from 54 to 1218 MHz. Reference input level is 0 dBm, 3% OMI.
9. 2 QAM channels replaced with analog channels @ analog/virtual levels to facilitate CTN/CIN measurements.
10. For channel loading up to 1.2 GHz and 18 dB of output tilt, the maximum virtual output level @ 1.2 GHz is 58 dBmV. For channel loading up to 1 GHz and 18 dB of tilt, the maximum virtual output level @ 1 GHz is 60 dBmV.
11. Return loss is 15 dB from 5 to 15 MHz when ICS is installed in the node.
12. At 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. Max total current applied.

A Fiber Deep version of the OM6000 is available. The Fiber Deep node has a maximum virtual RF port output of 64 dBmV at 1.2 GHz.
Specifications are compliant with the applicable, recommended ANSI/SCTE test methods.
All specifications are stated as worst-case over temperature unless otherwise noted.

Contact Customer Care for product information and sales:

- United States: 866-36-ARRIS
- International: +1-678-473-5656

COMMSCOPE®

Note: Specifications are subject to change without notice.

1514412 _OM6000 1.2 GHz 4x4 Segmentable HFC Node_RevB