DATA SHEET

Opti Max™ Optical Node Series

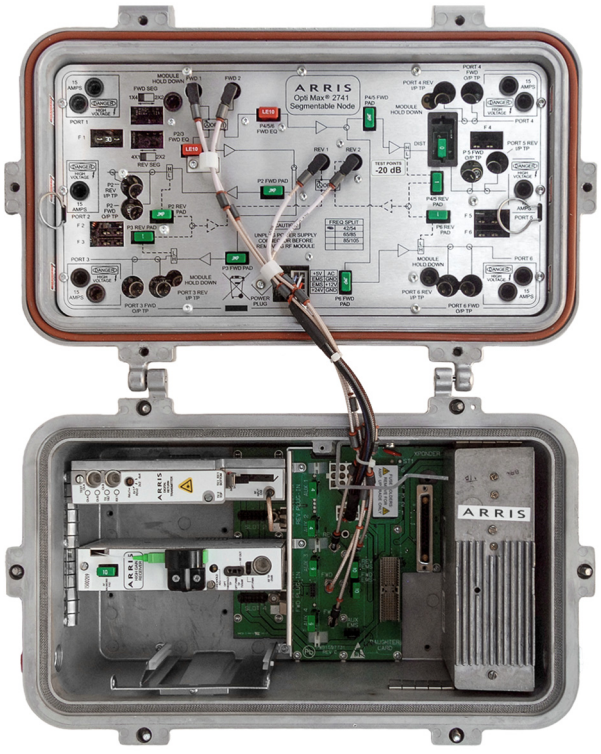
OM2741

2x2 Segmentable Node

FEATURES

- 1 GHz GaN technology delivers higher output and enhanced reliability for fiber deep designs
- Integrated segmentation switches simplify future node upgrades
- Shared optics modules, power supply, and accessories with OM4120™ node leverage sparing and training
- Supports CWDM, DWDM, and CORWave® multiwavelength technologies
- SFP based digital return expands upstream bandwidth and enables service group aggregation
- Lid upgrades enable amplifiers to be seamlessly converted to nodes for cost saving cascade reductions
- Integrated optical passive design for multiwavelength support and ease of installation

The CommScope Opti Max OM2741 provides cable operators with a compact, fiber deep solution to manage network growth. The node features integrated segmentation switches that allow future segmentation without any additional parts or expense. The technician can enable new segments by simply adding a transmitter or receiver as required, then flipping a switch to activate the new configuration. By reducing the requirement for additional configuration boards and minimizing maintenance time, the OM2741 provides a lower total cost of ownership for the MSO.



With its premium high-gain receiver and advanced, next-generation GaN hybrid technology, the OM2741 is appropriate for a variety of architectures. The node accepts modules and accessories common with the 4x4 fully segmentable OM4120, easing sparing requirements, reducing inventory, and simplifying deployment training.

As a cascade reduction tool, the OM2741 also supports optical upgrades for legacy products, including OM2700 and select Navicor nodes, Flex Net 700/800 series amplifiers, and Flex Max® 900 amplifiers. CORWave multiwavelength solutions are helping to evolve older networks by allowing operators to transmit additional content to existing master node locations. These new wavelengths are demuxed at the main node location and onto new fiber that is then pulled to the optimum amplifier location for conversion to an optical node. This method of enabling service group segmentation and capacity expansion helps reduce the overall cost of network upgrades, while also helping to extend fiber closer to the premise.

The OM2741 supports optional 85 MHz digital return path transceivers featuring pluggable SFPs. SFPs are available in 1310, 1550, CWDM, and DWDM technologies to tailor to any network requirement. Combined with the complementary CHP digital return receivers, digital return links allow increased distances in the return path and a wider range of operating temperature for better reliability.

OPTIONS

85 MHz Digital Return transmitter expands return path bandwidth using CWDM or DWDM SFP pluggable optics

The OM6 DTX Digital Return Transceiver provides service group aggregation capability, where a master node collects signals from up to 16 nodes for transport back to the optical headend

SPECIFICATIONS

Characteristics	Specification	
Physical		
Dimensions	15.9 in W x 10.6 in. H x 9.6 in. D (40.4 cm x 26.9 cm x 24.4 cm)	
Weight	27.4 lbs (12.4 kg)	
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	
Forward Path		
Optical		
Optical Input Wavelength	1290 to 1620 nm	
Optical Input Range[1]	-6 to +3 dBm	
Equivalent Input Noise	4.0 pA/Hz	
Optical Power Test Point, V/mW	1 ± 10%	
RF		
Operating Passband	54–1006 MHz or 102–1006 MHz	
Gain[2]	59.5 dB	
Output Level @ 1006 MHz, -3 dBm input, 3% OMI[3]	56 dBmV nom 59 dBmV max	
Level Stability	± 2.0 dB max	
Tilt[4]	17.0 ± 0.6 dB (54–1006 MHz) typical 16.0 ± 0.6 dB (102–1006 MHz) typical	
Flatness[5]	0.6 dB typical, ± 1.2 dB max	
Return Loss (All RF Ports)	16.0 dB min	
Port to Port Isolation (600 MHz/1002 MHz)	70/60 dB	
Test Point Loss	-20 ± 0.5 dB, F_{fwdmin} to 550 MHz -20 ± 0.75 dB, 551 MHz to 1006 MHz	
Forward Path Distortion, Mixed Analog/Digital Channels (30/124)[6, 7]		
Frequency	1006/870/550/54 MHz	1006/870/550/105 MHz
Carrier to Noise Ratio, 4 MHz, 0 dBm/3.5% OMI	58 dB	58 dB
Composite Triple Beat	77 -dBc	77 -dBc
CSO	64 -dBc	64 -dBc
Composite Intermodulation Noise CIN[8]	58 dB	58 dB

SPECIFICATIONS

Characteristics	Specification	
Forward Path Continued		
Forward Path Distortion, All Digital Channels[6,9]		
Frequency	1006/870/550/54 MHz	1006/870/550/105 MHz
Carrier to Noise Ratio, 4 MHz, 0 dBm/3.5% OMI	58 dB	58 dB
Composite Intermodulation Noise CIN[8]	58 dB	58 dB
Hum Modulation (Time Domain @ 15A)		
F_{fwdmin} to 750 MHz	60 dB	
751 to 1006 MHz	55 dB	
Return Path		
RF		
Operating Passband	5–42 MHz or 5–85 MHz	
Optimum RF Input Level	12 dBmV/6 MHz @ 5–42 MHz 9 dBmV/6 MHz @ 5–85 MHz	
Gain[10]	0 ± 1.0 dB	
Slope[11]	0 ± 0.75 dB	
Flatness[4]	0 ± 0.75 dB	
Return Loss (All RF Ports)	16.0 dB	
Port to Port Isolation	70 dB typical	
Test Point Loss	-20 ± 0.75 dB	
Hum Modulation, 15A	50 dB @ 5 to 10 MHz 60 dB @ 11 to F_{maxret} MHz	
Power Requirements		
Operating Input Voltage Range	43 to 90 VAC	
Power Passing	15 A	
Input Frequency	50/60 Hz	

NOTES:

1. Circuit resiliency to +5 dBm.
2. Minimum gain @ 1218 MHz with a 6 dB receiver attenuator.
3. At the nominal specified tilt, 59 dBmV (virtual) is the maximum recommended output operating level. QAM (actual) levels should be operated 6 dB lower.
4. Tilt measured using best fit (least squares) approximation.
5. Measured with respect to slope.
6. The distortion values listed are for the Node only. To obtain a particular link performance, combine the listed Node performance values with the applicable transmitter performance values.
7. The test load consists of 30 analog channels from 55.25 MHz to 253.25 MHz, plus 124 digital QAM channels from 261 MHz to 1006 MHz at a level 6 dB below the analog. The output level is 56 dBmV (virtual) at 1006 MHz, with 17 dB tilt from 54 MHz to 1218 MHz.
8. CIN (CCN) is measured by turning off the QAM channel under test and inserting a CW test signal at the corresponding Analog (Virtual) RF level in its place.
9. The test load consists of 154 digital QAM channels from 54 MHz to 1006 MHz. The output level is 50 dBmV (actual) at 1006 MHz, with 17 dB tilt from 54 MHz to 1006 MHz.
10. Measured at F_{maxret}
11. Measured from F_{minret} to F_{maxret} using best fit (least squares) approximation.

RELATED PRODUCTS

DT7/OM6 Digital Return Transmitters	Optical Patch Cords
SFPs	Optical Passives
Fiber Service Cable	Installation Services

SPECIFICATIONS COMBINED UPSTREAM RF AND OPTICAL PERFORMANCE

Characteristics	Specification
With Isolated 1310 nm, 1550 nm and CWDM DFB Analog Transmitter	
Transmitted Wavelength	1310 ± 20 nm 1550 ± 25 nm 1271 to 1611 ± 6.5 nm; 18 CWDM channels, 20 nm spacing
Optical Power	3 ± 1 dBm
Slope[1]	0 ± 1.0 dB
Flatness[2]	0 ± 1.0 dB
Optical Modulation Index[3]	10% per channel, typical
Link Level Stability	± 2 dB
NPR Dynamic Range, NPR > 35 dB[4, 5]	15 dB
BER Dynamic Range, BER < 1E-6[5, 6]	> 35 dB (16-QAM), > 25 dB (64-QAM)
With DWDM DFB Analog Transmitter	
Transmitted Wavelength	ITU Channels 20 to 62, ± 0.05 nm, 100 GHz spacing
Optical Power	7 ± 0.5 dBm
Slope[1]	0 ± 1.0 dB
Flatness[2]	0 ± 1.0 dB
Optical Modulation Index[3]	10% per channel, typical
Link Level Stability	± 1.5 dB
NPR Dynamic Range, NPR > 35 dB[5, 7]	15.0 dB
BER Dynamic Range, BER < 1E-6[5, 8]	> 34 dB (16-QAM), > 25 dB (64-QAM)
With DT7 Series Digital Transmitter	
Transmitted Wavelength	SFP dependent
Optical Power	SFP dependent
Optical Transmission Rate	4.25 GB/s
Link Gain	26.5 dB
Slope[1]	0 ± 1.0 dB
Flatness[2]	0 ± 1.0 dB
Link Level Stability	± 1.5 dB
NPR Dynamic Range, NPR > 40 dB[5]	20 dB (1-fer transmitter) 14 dB (2-fer transmitter)
BER Dynamic Range, BER < 1E-6[5]	32 dB (1-fer transmitter) 26 dB (2-fer transmitter)

NOTES:
1. Measured from F_{minret} to F_{maxret} using best fit (least squares) approximation.
2. Measured with respect to slope.
3. OMI/Channel measurement was obtained using 12 dBmV CW per channel loading.
4. All performance specifications measured over a 6 dB (pure glass) fiber link using 37 MHz Noise loading with an optical receiver causing no degradation to performance.
5. Subtract 3 dB for 5 to 85 MHz loading.
6. BER performance is measured with QAM loading over 6dB pure fiber link. All measurements are typical.
7. 40 km link + mux/demux. NPR dynamic range is tested with 37 MHz Noise loading.
8. 40 km link + mux/demux. BER dynamic range is tested with 16/64 QAM loading (6 channels).

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Note: Specifications are subject to change without notice.

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