

VSN200

2X2 SEGMENTABLE OPTICAL NODE, OPTICAL NODE SERIES



FEATURES

- 1 GHz GaN technology delivers higher output and enhanced reliability for fiber deep designs
- Integrated optics module switches simplify future node upgrades
- Shared optics modules and accessories with MBN100 node leverage sparing and training
- Supports CWDM, DWDM, and CORWave® multiwavelength technologies
- SFP based 85 MHz digital return expands upstream bandwidth
- Lid upgrades enable amplifiers to be seamlessly converted to nodes for cost saving cascade reductions
- Redundant power supply option improves network reliability



PRODUCT OVERVIEW

The ARRIS Versatile Segmentable Node VSN200 is the perfect solution for system operators who need a flexible fiber deep solution to manage network growth. With its high level GaN outputs, the VSN200 is appropriate for a variety of architectures including new builds and network extensions. As a cascade reduction tool, the VSN200 uses the same housing base as the SG2000/SG2440 node, providing operators with the ability to segment node locations with just an Electronics Package (E-Pack) and Lid swap. As a result, operators can avoid the costly down-times associated with cutting out the entire node.





Operators can economically deploy the VSN200 as a 1X1, and scale to a 2X2 with just the addition of a second optical receiver and transmitter, no configuration boards are required. The VSN200 utilizes Mini-Bridger Node MBN100 optics modules that provide excellent optical, RF, and thermal performance. Return transmitters include CWDM analog transmitters that, when combined with ruggedized optical passives, enable multiple wavelengths to be combined on a single fiber.

The node uses next-generation MBN-DRT-2X-85 85 MHz digital return transmitters to optimize return segmentation. Utilizing pluggable SFP optics, these transmitters provide operators with the flexibility of selecting DWDM, CWDM, or 1310 nm based on their network requirements. The node can be ordered with the host digital return transmitter pre-configured in the station, allowing the operator to select and add the SFP at the time of installation.

The VSN200's standard features include Fast Transfer Electronic Crowbar (FTEC), Ingress Control Switches (ICS), and 14.5 dB slope. Accessible Linear Mid-Stage Equalizers (LMEs) and JXP plug-in attenuator locations at each RF port allow for custom installations.

The VSN200 requires an optional embedded plug-in board to locally control redundant receivers or Ingress Control Switch (ICS) operation. The ICS is a valuable tool for isolating the source of return path noise and interference. By upgrading to the NODE-DOCSIS transponder, operators can utilize standards-based MIBs to remotely monitor and control these functions.

RELATED PRODUCTS	
Digital Return Transmitter	Optical Patch Cords
SFPs	Optical Passives
Fiber Service Cable	Installation Services

1290 nm to 1600 nm
-4.0 to 2.0 dBm continuous
SC/APC
45 dB minimum
7 pA/√ Hz Max.
Fmin to 1003 MHz
± 1.0 dB Fmin to 1003 MHz
14.5 ± 1.0 dB
± 2.0 dB over operating temperature range
−20 ± 1.0 dB (internal)
16 dB minimum



STATION PERFORMANCE Output Level 48 dBmV @ 550 MHz with 0 dBm optical input power Power Consumption 88 W maximum Hum Modulation @15 A -60 dBc max Segmented isolation -60 dBc max AC 8ypass Current 15 A POF CH. ANALOG DISTORTION -65 dB cS1 in 870 MHz Composite Triple Beat (CTB) -65 dB cB Composite Second Order (CSO) -62 dBc NOTE: 79 analog NTSC channels 55.25 to 547.25 MHz, 75 digital NTSC channels 55.22 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; +48 dB without litt from 25 utres. BIGITAL DISTORTION Modulation Error Rate (MER) 40 dB Note: 79 analog NTSC channels 55.25 to 547.25 MHz, 75 digital trib (mm 25 utres) with trib (mm 27	SPECIFICATIONS CONTINUED		
Power Consumption 88 W maximum Hum Modulation @15 A -60 disk max. Segmented Isolation -770 dis 54 to 550 MHz -65 dis 551 to 870 MHz -765 dis 571 to 1000 MHz 79 CH. ANALOG DISTORTION Composite Friple Beat (CTB) -65 dis C Carrier to Composite Noise (CCN) -62 disc Carrier to Composite Noise (CCN) -62 disc DIOTE: 79 analog NTSC channels 552.55 to 547.25 MHz, 75 digital NTSC channels 552 to 1002 MHz, 6 dis below analog, using LM1000 transmitter, 20 km, 0 dism at receiver input; +48 dism vo utput at 547.25 MHz, 14.5 dis virtual tilt from 52 to 1002 MHz. DIGITAL DISTORTION Modulation Error Rate (MER) 40 dis Noise Power Ratio (NPR) 44 dis Bit Error Rate (BER)* 4.5 dis NOTE: All Digital channel loading with +49 dism'v (actual) at 12 LM1000 transmitter, 20 km, 0 dism at receiver input; 14.5 dis virtual tilt from 52 to 1003 MHz. Weight Minimum 37 lb Weight Minimum 37 lb Weight (ECN) 40 criz (-40 °F to +140 °F) Weight (ECN) C-40 °C (-40 °F to +140 °F)	STATION PERFORMANCE		
Hum Modulation @15 A −60 dBc max. Segmented Isolation −70 dB 54 to 550 MHz −60 dB 57 to 1003 MHz −60 dB 85 1 to 1003 MHz −60 dB 85 1 to 1003 MHz AC Bypass Current 15 A 79 CH. ANALOG DISTORTION Composite Triple Beat (CTB) −65 dBc Composite Second Order (CSO) −62 dBc Carrier to Composite Noise (CCN) 50.5 dB NOTE: 79 analog NTSC channels 55.25 to 547.25 MHz, 75 digital NTSC channels 552 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; +48 dBmV output at 547.25 MHz, 14.5 dB virtual tilt from 52 to 1002 MHz. DIGITAL DISTORTION Modulation Error Rate (MER) 40 dB Noise Power Ratio (NPR) 44 dB Bit Error Rate (BER)* <1x10.*	Output Level	48 dBmV @ 550 MHz with 0 dBm optical input power	
Segmented Isolation	Power Consumption	88 W maximum	
### AC By pass Current 10 AC By pass Current	Hum Modulation @15 A	–60 dBc max.	
P9 CH. ANALOG DISTORTION Composite Triple Beat (CTB) –65 dBc Composite Second Order (CSO) –62 dBc Carrier to Composite Noise (CCN) 50.5 dB NOTE: 79 analog NTSC channels 55.25 to 547.25 MHz, 75 digital NTSC channels 552 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; +48 dBmV output at 547.25 MHz, 14.5 dB virtual tilt from 52 to 1002 MHz. Channels 55.2 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; +48 dBmV output at 547.25 MHz, 14.5 dB virtual tilt from 52 to 1002 MHz. Channels 55.2 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; +48 dBmV output at 547.25 MHz, 14.5 dB virtual tilt from 52 to 1003 MHz. Channels 55.2 to 1002 MHz, LM104 MHz. Channels 60 MHz. Channels 60 MHz. Channels 60 MHz. LM104 MHz. Channels 60 MHz. LM1040 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. Channels 60 MHz. LM1040 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. Channels 60 MHz. LM1040 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. Channels 60 MHz. Channels 60 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. Channels 60 MH	Segmented Isolation	–65 dB 551 to 870 MHz	
Composite Second Order (CSO) -62 dBc Carrier to Composite Noise (CCN) 50.5 dB NOTE: 79 analog NTSC channels 552.5 to 547.25 MHz, 75 digital NTSC channels 552 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; +48 dBmV output at 547.25 MHz, 14.5 dB virtual tilt from 52 to 1002 MHz. 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; +48 dBmV output at 547.25 MHz, 14.5 dB virtual tilt from 52 to 1002 MHz. Point AD ISTORTION Modulation Error Rate (MER) 40 dB Noise Power Ratio (NPR) 44 dB Noise Power Ratio (NPR) 45 dB Note: All Digital channel loading with +49 dBmV (actual) at 1002 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. **Pre-FEC*** **Pre-FEC*** MECHANICAL/ENVIRONMENTAL Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Mounting Aerial/Strand Mounting Aerial/Strand RF Connector 50.0 50.0 °C (-40 °F to +140 °F) **O*** **Pre-FEC*** **O*** **O*	AC Bypass Current	15 A	
Composite Second Order (CSO) Carrier to Composite Noise (CCN) NOTE: 79 analog NTSC channels 55.25 to 547.25 MHz, 75 digital NTSC channels 552 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; 488 dBmV output at 547.25 MHz, 14.5 dB virtual litt from 52 to 1002 MHz. DISITAL DISTORTION Modulation Error Rate (MER) 40 dB 81 Error Rate (BER)* 41x10-8 Carrier to Composite Noise (CCN) 45 dB NOTE: All Digital channel loading with +49 dBmV (actual) at 1002 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual litt from 52 to 1003 MHz. *Pre-FEC **Pre-FEC Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Mounting Aerial/Strand RF Connector 5CTE-compliant 5/8" housing, accepts 1.5" stinger 40" Ct o+60 "C (-40" F to +140" F)	79 CH. ANALOG DISTORTION		
Carrier to Composite Noise (CCN) NOTE: 79 analog NTSC channels 55.25 to 547.25 MHz, 75 digital NTSC channels 5552 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; 48 dBm/ output at 547.25 MHz, 14.5 dB virtual tilt from 52 to 1002 MHz. PIGITAL DISTORTION Modulation Error Rate (MER) Ad dB Noise Power Ratio (NPR) 44 dB Bit Error Rate (BER)* 41x10* Carrier to Composite Noise (CCN) 45 dB NOTE: All Digital channel loading with +49 dBmV (actual) at 1002 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. * Pre-FEC **Pre-FEC **Pre-FEC Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range → 40 °C to +60 °C (−40 °F to +140 °F)	Composite Triple Beat (CTB)	−65 dBc	
NOTE: 79 analog NTSC channels 55.25 to 547.25 MHz, 75 digital NTSC channels 552 to 1002 MHz, 6 dB below analog, using LM1000 transmitter, 20 km, 0 dBm at receiver input; +48 dBmV output at 547.25 MHz, 14.5 dB virtual tilt from 52 to 1002 MHz. DIGITAL DISTORTION Modulation Error Rate (MER)	Composite Second Order (CSO)	-62 dBc	
DIGITAL DISTORTION Modulation Error Rate (MER) 40 dB Noise Power Ratio (NPR) 44 dB Et Error Rate (BER)* 1x10-8 Carrier to Composite Noise (CCN) 45 dB NOTE: All Digital channel loading with +49 dBmV (actual) at 102 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. *Pre-FEC MECHANICAL/ENVIRONMENTAL Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range 40 dBm set to 1002 MHz. (-40 °F to +140 °F)	Carrier to Composite Noise (CCN)	50.5 dB	
Modulation Error Rate (MER) 40 dB Noise Power Ratio (NPR) 44 dB Bit Error Rate (BER)* 1x10-8 Carrier to Composite Noise (CCN) 45 dB NOTE: All Digital channel loading with +49 dBmV (actual) at 1002 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. *Pre-FEC* MECHANICAL/ENVIRONMENTAL Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)			
Noise Power Ratio (NPR) Bit Error Rate (BER)* Carrier to Composite Noise (CCN) NOTE: All Digital channel loading with +49 dBmV (actual) at 1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. *Pre-FEC **Pre-FEC **Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) **Weight Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range 44 dB 40 extlor* **Into* Airion** Airion* 45 dB 41 LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. **Pre-FEC **Pre-FEC **Pre-FEC **Pre-FEC **Pre-FEC **Pre-FEC **Into* Airion* Airio	DIGITAL DISTORTION		
Bit Error Rate (BER)* Carrier to Composite Noise (CCN) NOTE: All Digital channel loading with +49 dBmV (actual) at 102 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. *Pre-FEC* *Pre-FEC* MECHANICAL/ENVIRONMENTAL Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Minimum 37 lb Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)	Modulation Error Rate (MER)	40 dB	
Carrier to Composite Noise (CCN) NOTE: All Digital channel loading with +49 dBmV (actual) at 1002 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. *Pre-FEC* MECHANICAL/ENVIRONMENTAL Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Minimum 37 lb Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)	Noise Power Ratio (NPR)	44 dB	
NOTE: All Digital channel loading with +49 dBmV (actual) at 1002 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz. *Pre-FEC* MECHANICAL/ENVIRONMENTAL Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Minimum 37 lb Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)	Bit Error Rate (BER)*	<1x10 ⁻⁸	
* Pre-FEC MECHANICAL/ENVIRONMENTAL Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Minimum 37 lb Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)	Carrier to Composite Noise (CCN)	45 dB	
Dimensions 21.6 in (L) × 10.6 in (W) × 11.0 in (D) Weight Minimum 37 lb Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)		ctual) at 1002 MHz. LM1000 transmitter, 20 km, 0 dBm at receiver input; 14.5 dB virtual tilt from 52 to 1003 MHz.	
WeightMinimum 37 lbMountingAerial/StrandRF ConnectorSCTE-compliant 5/8" housing, accepts 1.5" stingerOperating Temperature Range-40 °C to +60 °C (-40 °F to +140 °F)	MECHANICAL/ENVIRONMENTAL		
Mounting Aerial/Strand RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)	Dimensions	21.6 in (L) × 10.6 in (W) × 11.0 in (D)	
RF Connector SCTE-compliant 5/8" housing, accepts 1.5" stinger Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)	Weight	Minimum 37 lb	
Operating Temperature Range -40 °C to +60 °C (-40 °F to +140 °F)	Mounting	Aerial/Strand	
	RF Connector	SCTE-compliant 5/8" housing, accepts 1.5" stinger	
Weather Rating IP68	Operating Temperature Range	-40 °C to +60 °C (-40 °F to +140 °F)	
	Weather Rating	IP68	

 $\textbf{Note:} \ \mathsf{Specifications} \ \mathsf{are} \ \mathsf{subject} \ \mathsf{to} \ \mathsf{change} \ \mathsf{without} \ \mathsf{notice}.$

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