

Cisco Compact Broadband Node CBN1222/CBN1224

The Cisco[®] Compact Broadband Node CBN1222/CBN1224 is designed to meet the growing need for bandwidth. The node provides advanced features and benefits and helps operators reduce operating costs by simplifying DOCSIS 3.1 deployments and network upgrades.

The node makes use of the latest developments in gallium nitride (GaN) monolithic microwave integrated circuits (MMICs), bringing excellent RF performance at a lower power consumption (compared to GaAs – Gallium Arsenide technology). It can be configured electronically for rapid initial setup or for adjustments that are needed as network requirements shift. All settings can be done without service interruption, an especially important capability in networks that deliver real-time interactive services such as voice over IP (VoIP) and high-speed data transmission.

The node provides flexible options because of its large optical input range and high RF output level. Thus, it can work with a large variety of reverse transmitters to support a variety of applications within the network.

The number of plug-ins has been minimized to help operators keep inventory and costs down. The full-range electronic attenuators and equalizers offer improved versatility and make it possible to achieve the same adjustment range as with conventional plug-ins or potentiometer solutions. A plug-in diplex filter is used to determine the forward/reverse band split.

To meet future demands for more bandwidth, the node can be configured in the forward band for 1 GHz or 1.2 GHz for bandwidth extension and reverse path that can be upgraded to 204 MHz.

The Cisco Compact Broadband Nodes CBN1222/CBN1224 (Figure 1) can be configured with a status-monitoring transponder (EuroDOCSIS/DOCSIS) to enable remote monitoring of critical node parameters and remote control of the built-in three-state reverse switch.

Figure 1. Cisco Compact Broadband Node CBN1222/CBN1224



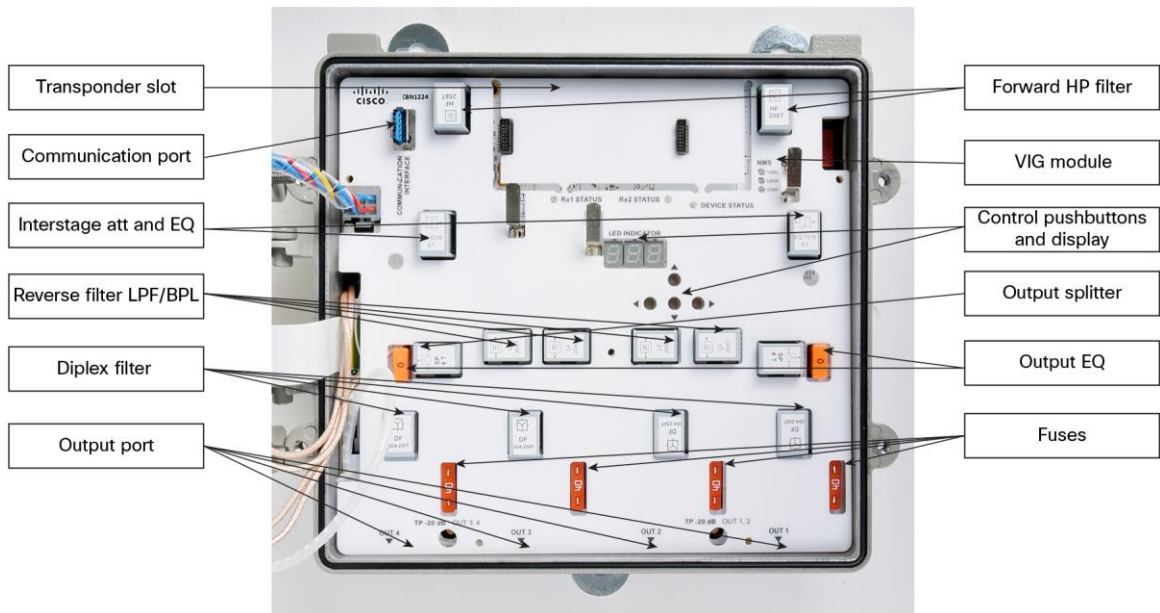
Features

- Improved distortion at a lower power consumption with GaN-based output stages
- RF output level adjustable over a wide range: up to 116 dB μ V
- Wide optical input: -9.9 to +2 dBm
- Configurable for 1.2 GHz or 1 GHz operation
- Configured by electronic gain control (EGC) technology
- Full segmentable in forward path and reverse path
- Automatic redundancy switching for forward path
- Easy setup and control

Product Diagrams

Figure 2 shows an overview product diagram.

Figure 2. Overview



Figures 3 and 4 provide a block diagram for the Cisco Compact Broadband Node CBN1224 and CBN1222, respectively.

Figure 3. Block Diagram CBN1224

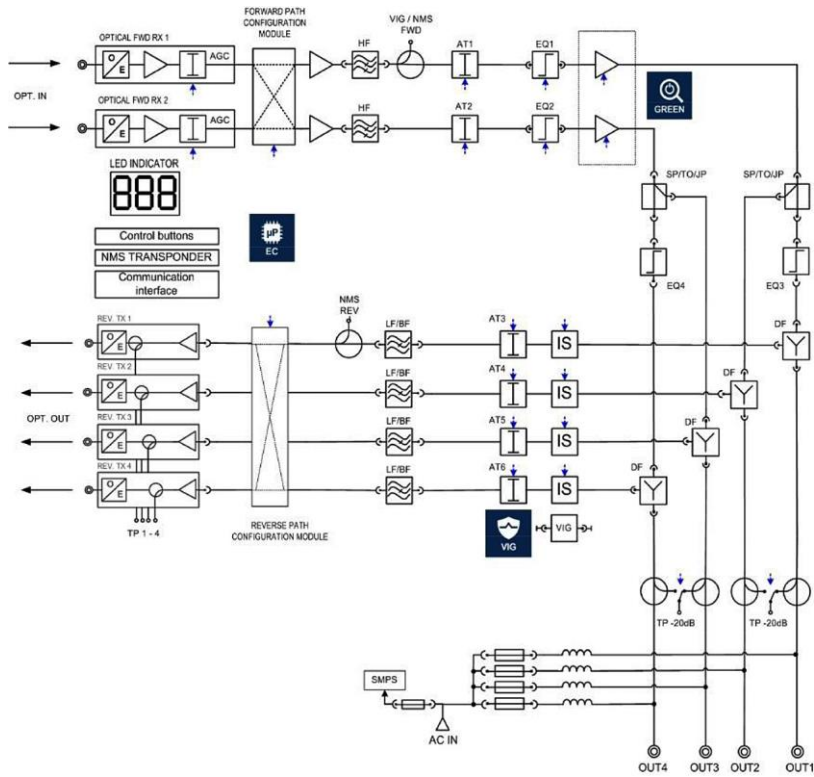
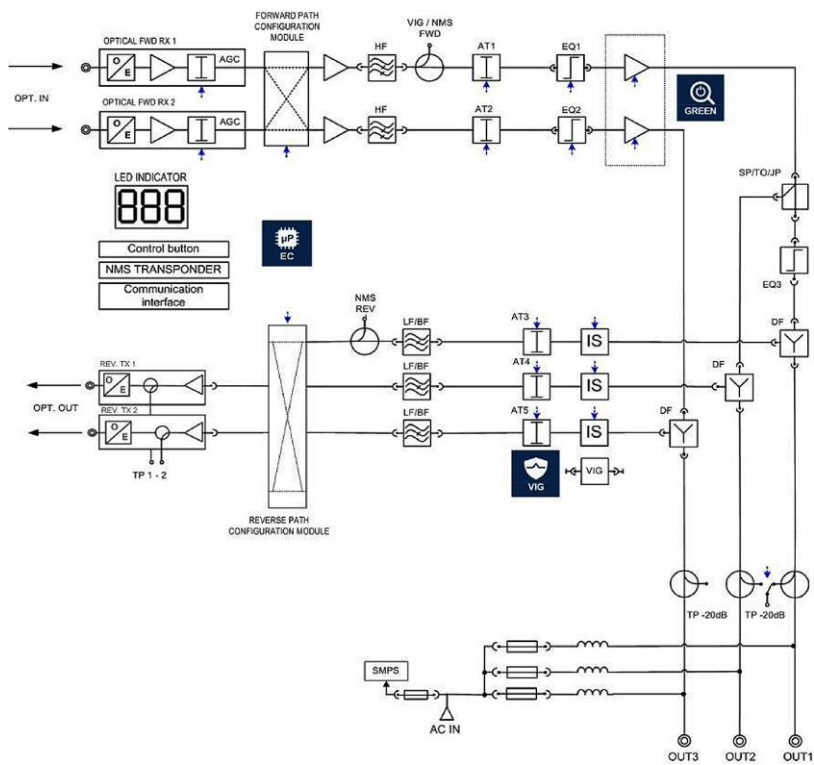


Figure 4. Block Diagram CBN1222



Product Specifications

This section provides product specifications. Table 1 lists optical specifications, Tables 2 and 3 give forward and reverse RF specifications, and Table 4 lists station-powering specifications. Table 5 provides environmental, mechanical, compliance, and safety specifications.

Table 1. Optical Specifications

Item	Value
Optical¹	
Optical wavelength	1260–1620 nm
Optical input level	–9.9 to +2 dBm
Optical AGC range	–7 to 0 dBm
Equivalent input noise (EIN) current	6 pA/√Hz (typical 5 pA/√Hz)

Table 2. Forward RF Specifications

Item	Value				
Forward RF¹					
Frequency range	85 to 1218 MHz				
Output level: gain limited	118 dBμV at 3.25% OMI per channel with 1310nm at –7 dBm optical input				
Digital output level ²	109 dBμV (CINR = 41.5 dB)				
Number of output ports	<table border="1"> <tr> <td>CBN1222</td> <td>CBN1224</td> </tr> <tr> <td>2 active + 1 passive split output</td> <td>2 active + 2 passive split output</td> </tr> </table>	CBN1222	CBN1224	2 active + 1 passive split output	2 active + 2 passive split output
CBN1222	CBN1224				
2 active + 1 passive split output	2 active + 2 passive split output				
Flatness	< ≤ ±0.75 dB at 110–865 MHz ≤ ±1.0 dB at 110–1218 MHz				
Tilt from 110–1218 MHz ³	0.5–3 dB				
Interstage attenuator	0–20 dB, step 0.5 dB				
Interstage tilt	0 – 20 dB, step 0.5 dB				
Distortion ^{3,4}	<ul style="list-style-type: none"> • CTB ≤ –60 dB • CSO ≤ –60 dB 				
Notes:					
1. Unless otherwise specified, all forward band specifications are tested with a 65/86 diplexer module installed.					
2. Full digital load from 258 to 1218 MHz, 120 channels, 256 QAM, 12 dB of slope.					
3. Depending on configuration.					
4. CENELEC 42 channels, 3.25% OMI, 9 dB tilt, and output level 116 dBμV.					

Table 3. Reverse RF Specifications

Item	Value
Reverse RF¹	
Frequency range	5–204 MHz
RF input level ²	70 dBμV
Flatness	≤ ±0.5 dB at 5 to 85 MHz ≤ ±0.75 dB at 5 to 204 MHz
Input return loss	≥ 18 dB at 5–65 MHz, reduce 1.5 dB per octave
Reverse input attenuator	0–20 dB, 0.5 dB step
Reverse tristate switch	On, –6 dB, off
Reverse test point	0 dB reference to input port
Notes:	
1. Unless otherwise specified, all reverse band specifications are tested with a 65/86 diplexer module installed.	
2. 10% OMI, with reverse attenuator set to 0 dB.	

Table 4. Station Powering Specifications

Item	Value	
Power Supply		
65V remote powered	30–65 VAC	
Powering		
Maximum AC current	15A at power supply input	
Maximum AC current per port	10A	
HUM modulat ¹	55 dBc at 6A	
Power Consumption		
Power consumption ²	CBN1222 with 2 x RTX and transponder ≤ 41.0W	CBN1224 with 4x RTX and transponder ≤ 48.0W
Notes:		
1. Between 15–865 MHz and at room temperature (25°C).		
2. Segmented mode; power saving mode off.		

Table 5. Environmental, Mechanical, Compliance, and Safety Specifications

Item	Value	
Environmental		
Operating temperature	–40 to +60°C (–40 to +131°F)	
Water/dust ingress rating	IP67	
Mechanical		
Connectors	<ul style="list-style-type: none"> • Optical • RF 	
	SC/APC PG11 (reduction ring PG11-5/8" included)	
Housing dimensions (H x W x D)	255 mm x 234 mm x 128 mm (10.0 in. x 9.2 in. x 5.0 in.)	
Weight	< 4 kg (8.8 lb)	
Compliance/Safety		
Electrical safety	EN 50083-1, EN 60065, IEC 60065	
Laser safety	IEC/EN 60825-1	
EMC emissions	EN 50083-2	
RoHS	Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, O.J. (L 19)	

Ordering Information

This section contains ordering information for the node (Table 6) and required and optional accessories. To determine the best configuration for your particular application, consult your account representative.

Table 6. Cisco Compact Broadband Node: CBN1220 Series Part Numbers

Description	Part Number for Ordering
Compact Broadband Segmentable Node CBN1224, 2 Rx, 1.2 GHz, AGC, 65 VAC, 2 x 4	CBN-SGN-1224
Compact Broadband Segmentable Node CBN1222, 2 Rx, 1.2 GHz, AGC, 65 VAC, 2 x 2	CBN-SGN-1222

The required accessories listed in Table 7 must be ordered separately.

Table 7. Required Accessories and Part Numbers

Description	Part Number for Ordering
Reverse transmitter (1 to 2 or 1 to 4): <ul style="list-style-type: none"> Reverse transmitter for CBN122x, CWDM 3 dBm (1310 nm to 1610 nm) Reverse transmitter for CBN122x, CWDM 6 dBm (1490 nm to 1610 nm) 	CBN-RTX-3-xxxx CBN-RTX-6-xxxx
Forward filter: 2 required, choose from below: <ul style="list-style-type: none"> High pass filter 85 MHz High pass filter 105 MHz High pass filter 258 MHz 	CBN-HPF-85 CBN-HPF-105 CBN-HPF-258
Forward equalizer: 2 required, choose from below: <ul style="list-style-type: none"> Equalizer filter 1006 MHz Equalizer filter 1218 MHz 	CBN-EQL-1008 CBN-EQL-1218
Diplex filter: 1 required for each port, choose from below: <ul style="list-style-type: none"> 65/86 MHz split 85/105 MHz split 204/258 MHz split 	CBNA-DPL-6585 CBNA-DPL-85105 CBNA-DPL-204258
Reverse filter: 1 required for each port, choose from below: <ul style="list-style-type: none"> Low pass filter 65 MHz Low pass filter 85 MHz Low pass filter 105 MHz Band pass filter 15/65 MHz Band pass filter 15/85 MHz Band pass filter 15/204 MHz 	CBN-LPF-65 CBN-LPF-85 CBN-LPF-105 CBN-BPF-1565 CBN-BPF-1585 CBN-BPF-15204
Output splitter: 1 or 2 required, choose from the below: <ul style="list-style-type: none"> 0 dB link 4.5/4.5 dB splitter 6 dB tap port 8 dB tap output 10 dB tap port 13 dB tap port 15 dB tap port 17 dB tap port 	CBN-LNK-0 CBN-SPL-12-04 CBN-SPL-12-06 CBN-SPL-12-08 CBN-SPL-12-10 CBN-SPL-12-13 CBN-SPL-12-15 CBN-SPL-12-17

The optional accessories listed in Table 8 must be ordered separately.

Table 8. Optional Accessories and Part Numbers

Description	Part Number for Ordering
Plug-in DOCSIS transponder	CBN-XPB-DOCSIS
Plug-in EuroDOCSIS transponder	CBN-XPB-EuroD
VIG module	CBN-VIG2412
Kit BLE dongle and license for configuration and control	CBNA-DONGLE-BLE

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For More Information

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