

Compact EGC Segmentable Node 115 V Mains Powered A90200

The Compact EGC Segmentable Node A90200 is specifically designed to meet the growing need for network segmentation. The node provides advanced features and benefits, helps operators reduce operating costs by streamlining node segmentation deployments and configuration, and is well suited for migration toward FTTC/FTTB architectures.

The node has an excellent RF performance that allows it to operate in redundant and full segmented mode in the forward and reverse path. 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's interface allows easy configuration through a handheld programmer terminal or by connection to a standard PC. This interface allows the settings to be stored and reapplied to streamline configuration.

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 diplexer filter is used to determine the forward/reverse band split.

To meet future demands for more bandwidth, the node offers an electronic 862 MHz to 1 GHz field-programmable bandwidth extension, and reverse path that can be upgraded to 200 MHz.

The Compact EGC Segmentable Node A90200 can be configured with a Cisco status monitoring transponder (SMC or HMS) to enable remote monitoring of critical node parameters and remote control of the built-in 3-state reverse switch. All node settings are remotely addressable via the ROSA[®] Element Management System to help reduce truck rolls and associated cost.



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Figure 1. Compact EGC Segmentable Node A90200



Features

- High-output level up to 56 dBmV with improved distortion and noise performance
- RF output level adjustable over a wide range 34 to 56 dBmV
- Covering a wide optical input -7 to $+2$ dBm
- Configurable for 1 GHz or 862 MHz operation
- Configured by Electronic Gain Controlled (EGC) technology
- Full segmentable in forward path and reverse path
- Automatic redundancy switching for forward path
- Easy setup and control

Figure 2. Overview

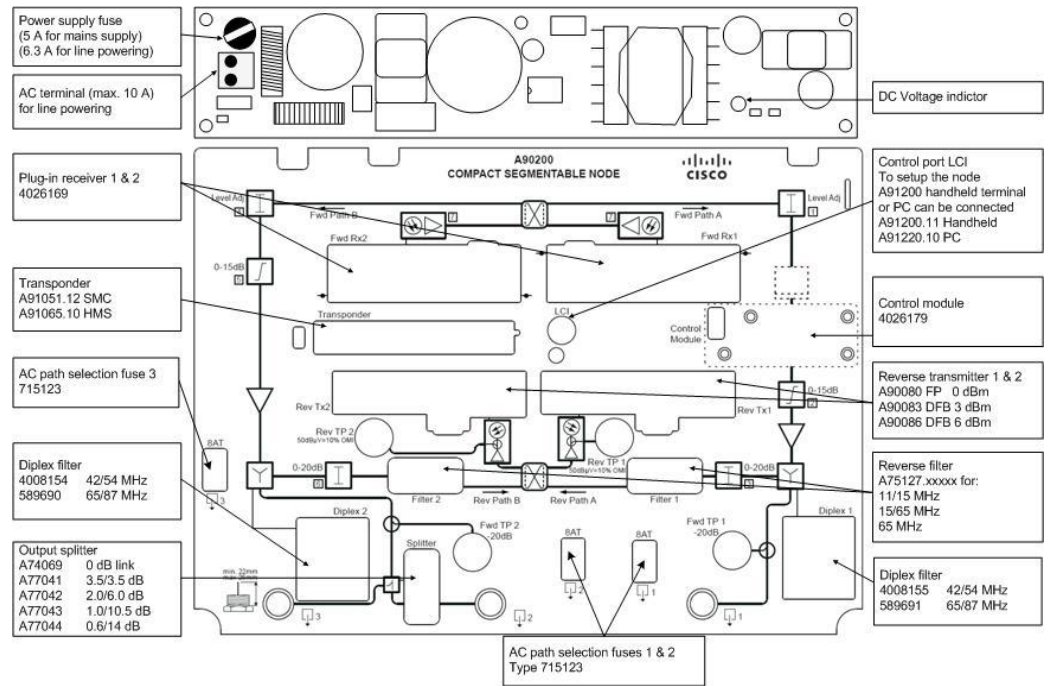
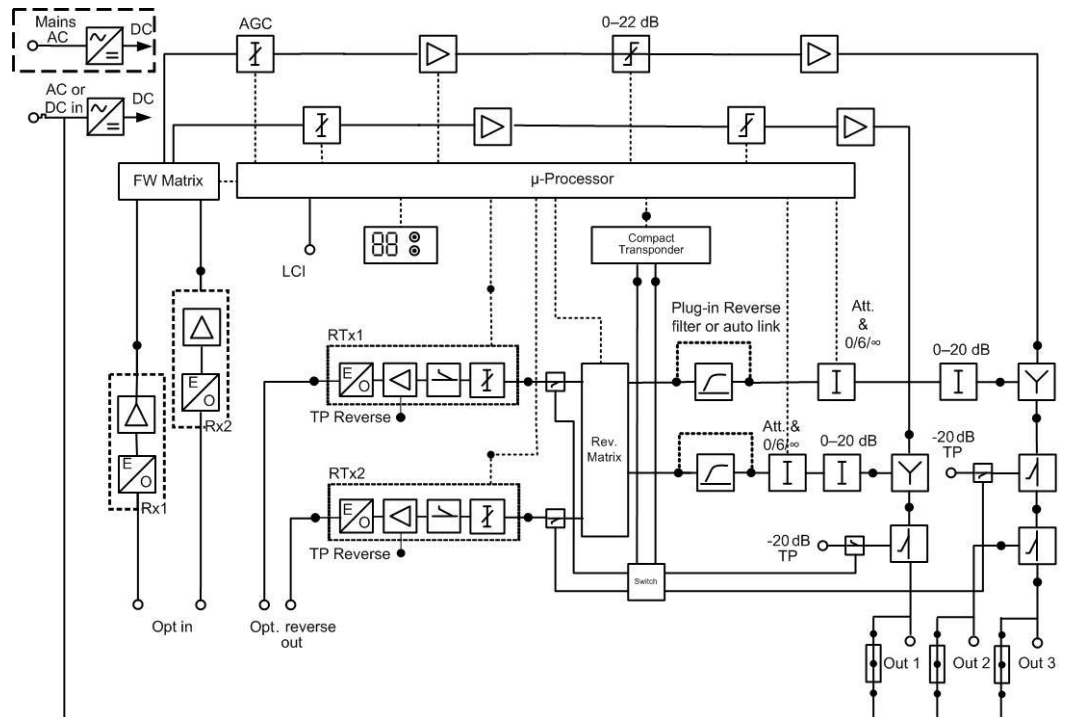


Figure 3. Block Diagram



Product Specifications

This section provides product specifications.

Table 1. Optical Specifications

Item	Unit	Value
Optical		
Optical wavelength	nm	1200 to 1600
Optical input level	dBm	-7 to +2
AGC accuracy	dB	$\leq \pm 0.5$
Equivalent input noise current (EIN)	$\text{pA}/\sqrt{\text{Hz}}$	7 @ 86 to 862 MHz 8 @ 86 to 1002 MHz

Table 2. Forward RF Specifications

Item	Unit	Value	
Forward RF ¹			
Frequency range	MHz	Selectable 86 to 862 or 86 to 1002	
Output level range	dBmV	34 to 56 @ 3.25% OMI/ch	
Responsivity	dB A/W	66.25 ±0.5 @ full gain, 1310 nm	
Flatness	dB	≤ ±0.75 @ 86 to 862 MHz ≤ ±1.0 @ 86 to 1002 MHz	
Interstage tilt	dB	0 to 15, 0.5 dB step	
Path to path isolation	dB	≥ +60 @ 86 to 862 MHz ≥ +55 @ 862 to 1002 MHz	
Output return loss	dB	≥ 18 @ 40 MHz reduction 1.5 dB/octave	
Test point return loss	dB	≥ 20 @ 40 MHz reduction 1.5 dB/octave	
Test point	dB	−20 ±0.5 @ 86 to 862 MHz, −20 ±0.75 @ 86 to 1002 MHz	
Distortion ² CTB CSO	dBc	−68 −63.5	
Hum modulation	dB	≤ −65 @ 7 A	
Thermal stability	dB	≤ ±1.0	
Redundant receiver switch over time	ms	≤ 25	
Number of optical inputs	–	2	
Number of RF output ports	–	2 active outputs + 1 additional output with plug-in output splitter	
Group delay	nsec	With 42/54 diplexer Δf = 3.58 MHz	With 65/86 diplexer Δf = 4.43 MHz
		≤ 20 @ 55.25–58.83 MHz	≤ 10 @ 112.25–116.68 MHz
		≤ 8 @ 61.25–64.83 MHz	≤ 8 @ 119.25–123.68 MHz
		≤ 8 @ 67.25–70.83 MHz	≤ 8 @ 126.25–130.68 MHz
Insertion Loss of Transponder Pick Off Point ³	dB	40±1.5	

Notes:

1. Unless otherwise specified, all forward band specifications are tested with a 65/86 diplexer module installed.
2. At 79 NTSC ch. With QAM, Output level 54 dBmV @ 1002 MHz, With 14.5 dB EQ, and QAM -6 dB offset.
3. From RF port to the transponder's RF input.

Product Specifications

Table 3. Reverse RF Specifications

Item	Unit	Value	
Reverse RF ¹			
Frequency range	MHz	5 to 200	
Tilt	dB	Slope < 1.0	
Flatness	dB	≤ ±0.5	
Path to path isolation	dB	60	
Input return loss	dB	≥ 18 @ 40 MHz reduction 1.5 dB/octave	
Input test point return loss	dB	≤ −18	
Input test point	dB	−20 ±0.5	
RTx test point return loss	dB	≤ −18 @ 40 MHz reduction 1.5 dB/octave	
RTx test point	–	50 dBμV equals to 10% OMI	
Hum modulation	dB	≤ −65 @ 7 A	
Reverse input attenuator	dB	0 to 20, 0.5 dB step	
Reverse tri-state switch	–	On, −6 dB, Off	
Thermal stability	dB	≤ ±0.7	
Redundant transmitter switch over time	ms	≤ 25	
Group delay	nsec	With 42/54 diplexer Δf = 1.5 MHz	With 65/86 diplexer Δf = 1 MHz
		≤ 20 @ 5–6.5 MHz ≤ 10 @ 6.5–8 MHz ≤ 8 @ 8–9.5 MHz ≤ 8 @ 37.5–39. MHz ≤ 8 @ 39–40.5 MHz ≤ 8 @ 40.5–42 MHz	≤ 20 @ 5–6 MHz ≤ 10 @ 6–7 MHz ≤ 8 @ 7–8 MHz ≤ 8 @ 62–63 MHz ≤ 8 @ 63–64 MHz ≤ 8 @ 64–65 MHz
Insertion Loss ²	dB	≤ 8	
Insertion Loss of Transponder Pick Off Point ³	dB	30±1.5	
Notes:			
1. Unless otherwise specified, all reverse band specifications are tested with a 65/86 diplexer module installed.			
2. From RF port to the reverse transmitter input; tri-state switch at ON setting.			
3. From the transponder's RF output to the reverse transmitter's input.			

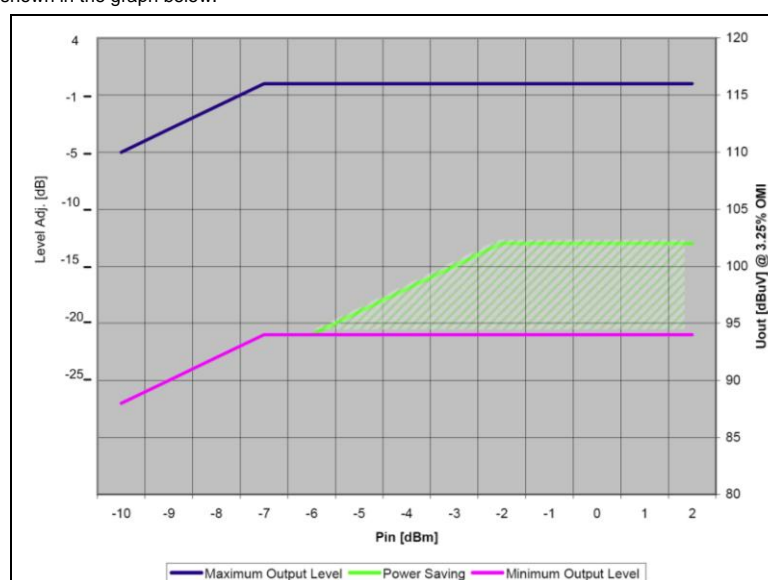
Product Specifications

Table 4. Station Powering Specifications

Item	Unit	Value								
Power Supply										
115 V mains powered	VAC	100 to 240								
Powering										
Maximum AC current	A	15 @ power supply input								
Maximum AC current per port	A	7								
Power Consumption										
Power consumption ¹	W	1×Tx, 1×Rx, 1xtransponder					2×Tx, 2×Rx, 1xtransponder			
		≤ 54					≤ 59			
Power reduction Power saving on Dynamic power saving ² Redundancy mode Single output mode	W	2.7 per path 9.5 per path 3 23.3								
Control module power consumption	W	0.5								
Transponder	W	≤ 2.0								
AC Current vs AC Voltage										
AC input voltage	V	24	30	35	40	45	50	55	60	65
AC current draw (1×TX, 1×Rx, 1xtransponder)	—	3.0	2.4	2.1	1.9	1.7	1.6	1.5	1.4	1.3
AC current draw (2×TX, 2×Rx, 1xtransponder)	—	3.3	2.9	2.4	2.1	1.9	1.7	1.6	1.5	1.4

Notes:

1. Segmented mode, Power saving mode off.
2. The availability of the dynamic power saving depends on the combination of the optical input level and the RF output level as shown in the graph below.



Product Specifications

Table 5. Environmental, Mechanical and Compliance/Safety Specifications

Item	Unit	Value
Environmental		
Operating temperature	°C	–40 to +55
	°F	–40 to +131
Storage temperature	°C	–40 to +85
	°F	–40 to +185
Water/dust ingress rating	–	IP67
Mechanical		
Connectors	–	SC/APC PG11
Optical		
RF		
Housing dimensions (H x W x D)	mm	293 x 292 x 125
	in.	11.5 x 11.5 x 4.9
Weight	kg	8
	lb	17.6
Compliance/Safety		
Electrical safety	–	IEC 60065
Laser safety	–	IEC 60825-1
EMC emissions	–	47CFR Part 15, 47CFR Part 76
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 required and optional accessories. Consult your account representative to determine the best configuration for your particular application.

Table 6. Node A90200 and Part Number

Description	Part Number for Ordering
Compact EGC Segmentable Node, 1 Rx, 1 GHz, AGC, 115 VAC, 65/86 MHz	A90200.101

The following **Required Accessories** must be ordered separately.

Table 7. Required Accessories and Part Numbers

Description	Part Number for Ordering
Plug-in at output—1 required, choose from below: 0 dB jumper 3.5/3.5 dB splitter 2/6 dB directional coupler 1/10.5 dB directional coupler 0.6/14 dB directional coupler	A74069.10 A77041.10 A77042.10 A77043.10 A77044.10
Plug-in Reverse Transmitter, choose from below: Reverse Transmitter for compact Nodes, FP 0 dBm Reverse Transmitter for compact Nodes, DFB with Isolator 3 dBm Reverse Transmitter for compact Nodes, DFB with Isolator 6 dBm	A90080.10 A90083.10yyyy A90086.10yyyy
Optical Adapter Internal optical connector is SC/APC, choose from below: Adapter SC/APC to E2108 Adapter SC/APC to FC/APC Adapter SC/APC to SC/APC	A90540.1048 A90540.1058 A90540.1088

The following **Optional Accessories** must be ordered separately.

Table 8. Optional Accessories and Part Numbers

Description	Part Number on Module	Part Number for Ordering
Plug-in Compact SMC Transponder		A91051.12
Plug-in Compact HMS Transponder		A91065.10
Handheld Terminal (required for configuration of the unit)		A91200.11
PC Configuration Kit (software and USB-cable)		A91220.10
Plug-in Diplex Filter—2 required, choose from below: * 42/54 MHz split (left) 42/54 MHz split (right) 65/86 MHz split (left) 65/86 MHz split (right)		4008154 4008155 589690 589691
Single Reverse Filter—1 required, choose from below: Single low pass filter 65 MHz Single band pass filter 15/65 MHz Single high pass filter 11/15 MHz		A75127.1065 A75127.101565 A75127.101115
Optical Receiver	4026169	4033722
Control Module	4026179	4034246
Sleeve PG11 - 5/8" with O-ring *		744576
* Included in the part number listed in Table 6.		



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