Cisco Compact EGC Fiber Deep Nodes A90100 and A90300

The Cisco Compact EGC Fiber Deep Node (FDN) is a small node designed to meet the growing need for network segmentation (Figure 1). It provides advanced features and benefits at an attractive price point and helps operators reduce operating costs by streamlining node segmentation deployments and configuration. It is also well suited for migration toward fiber to the cabinet (FTTC) and fiber to the building (FTTB) architectures.

The node can operate at an output level of 117 dBμV in the forward path and can be configured electronically for quick initial setup or adjustments that are needed as network requirements shift. All settings can be done without interrupting service, an especially important capability in networks that deliver interactive services such as voice over IP (VoIP) and high-speed data. The node is equipped with an interface that allows configuration through a handheld programmer terminal or by connecting to a standard PC. This interface allows the settings to be stored and reapplied to maintain a streamlined configuration.

The node's large optical input range and high RF output level provide flexible options for use with a large variety of reverse transmitters and 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 and 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 the reverse path can be upgraded to 200 MHz.

The Cisco Compact EGC FDN Model A90100 and A90300 can be configured with a Cisco status monitoring transponder (meeting EuroDOCSIS and DOCSIS standards) to allow remote monitoring of critical node parameters and remote control of the built-in three-state reverse switch. All node settings are remotely addressable using a web GUI and **Simple Network Management Protocol** (SNMP) to help reduce truck rolls and associated cost.

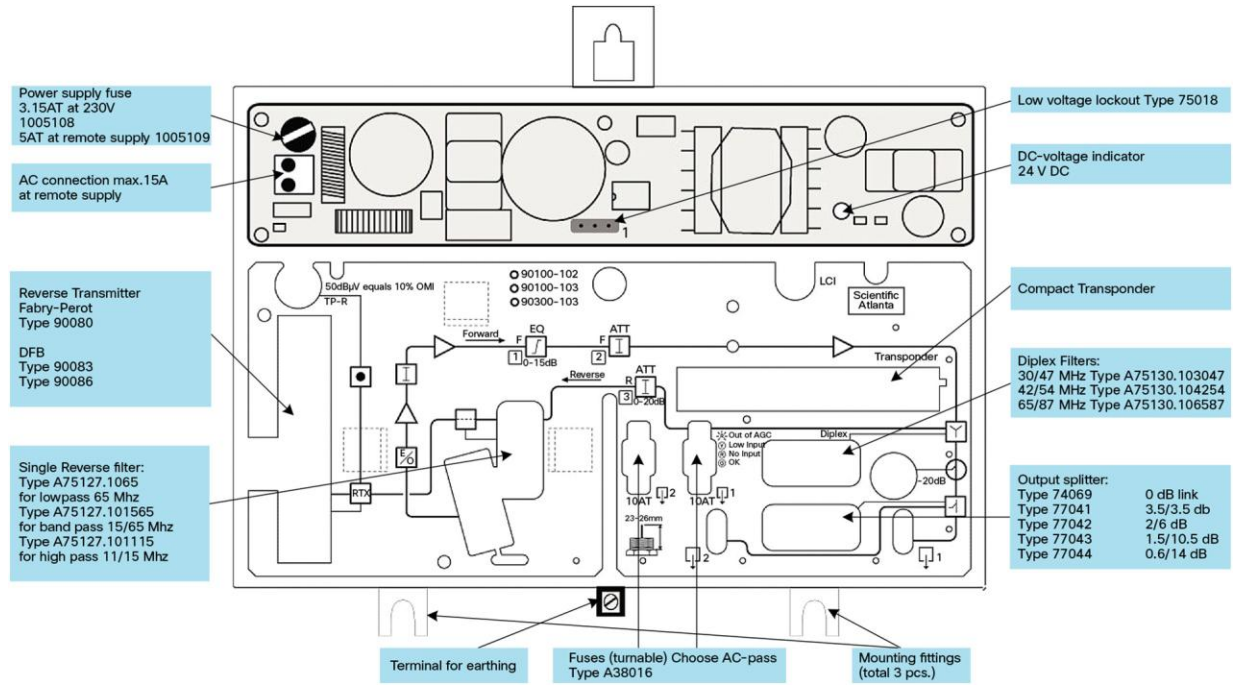**Figure 1.**   Cisco Compact EGC Fiber Deep Nodes A90100 and A90300
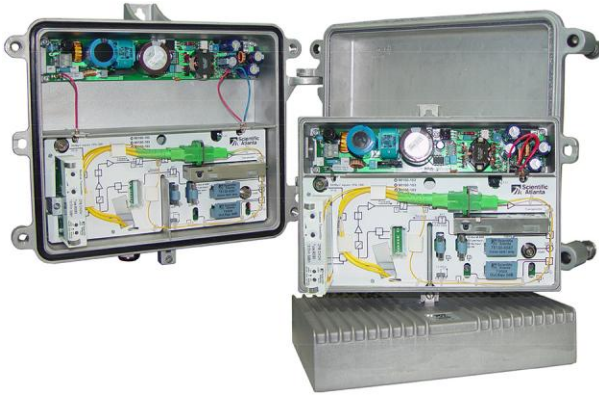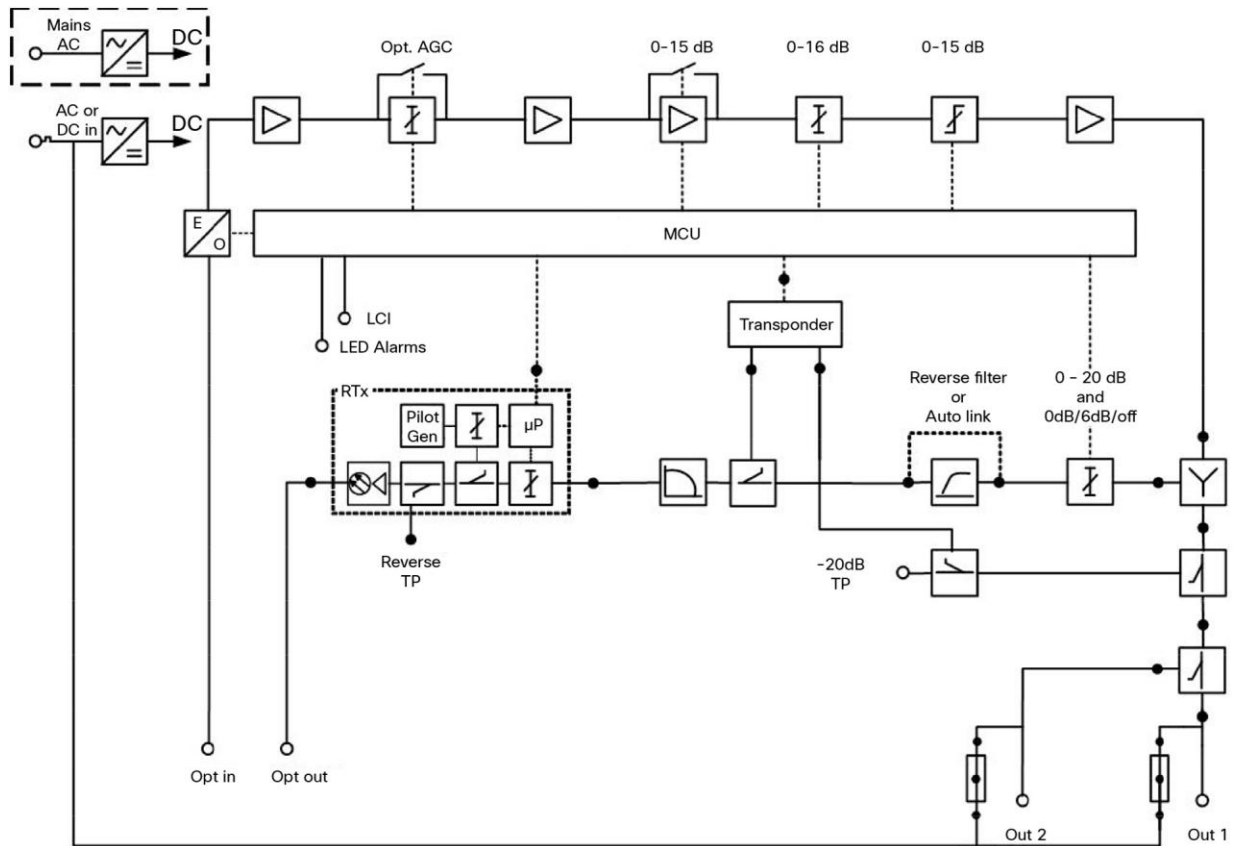

Features

- Gallium arsenide field-effect transistor (GaAsFET) gain block technology for improved distortion and noise performance
- High-output level up to 117 dBµV with improved composite triple beat (CTB) and composite second order (CSO) values
- Built-in output splitter (plug-in)
- Extensive range of plug-in reverse transmitter options, including Fabry-Perot (FP), distributed feedback (DFB), and coarse wavelength-division multiplexing (CWDM)
- Two different housings: compact indoor housing (IP54) and hardened outdoor housing (IP68)
- Integrated three-state reverse switch (on/-6 dB/off) that allows the reverse input to be isolated for noise and ingress troubleshooting
- Optional ingress block filter (plug-in)

Figure 2. Overview and Block Diagram

Overview

Power supply fuse
3.15AT at 230V
1005108
5AT at remote supply 1005109

AC connection max.15A
at remote supply

Reverse Transmitter
Fabry-Perot
Type 90080

DFB
Type 90083
Type 90086

Single Reverse filter:
Type A75127.1065
for lowpass 65 Mhz
Type A75127.101565
for band pass 15/65 Mhz
Type A75127.101115
for high pass 11/15 Mhz

Low voltage lockout Type 75018

DC-voltage indicator
24 V DC

Compact Transponder

Diplex Filters:
30/47 MHz Type A75130.103047
42/54 MHz Type A75130.104254
65/87 MHz Type A75130.106587

Output splitter:
Type 74069   0 dB link
Type 77041   3.5/3.5 db
Type 77042   2/6 dB
Type 77043   1.5/10.5 dB
Type 77044   0.6/14 dB

50dBµV equals 10% OMI
TP-R
○ 90100-102
○ 90100-103
○ 90300-103

Forward
EQ   F   1 0-15dB
ATT   F   2
Reverse
ATT   R   3 0-20dB
Transponder
Diplex
-20dB
Out of AGC
Low Input
No Input
OK
LCI
Scientific Atlanta
RTX
10AT   2   1DAT   1
23-26mm

Terminal for earthing

Fuses (turnable) Choose AC-pass
Type A38016

Mounting fittings
(total 3 pcs.)

Block Diagram

Product Specifications

Tables 1 through 3 provide product specifications for the Cisco Compact EGC Fiber Deep Nodes A90100 and A90300.

Table 1. Optical and RF Specifications

| Specification	Value	Notes
Optical wavelength	1100 to 1600 nm	
Optical input level (maximum)	6 dBm	
Optical range	–7 to 2 dBm	
Automated gain control (AGC) range	–7 to 2 dBm	2
AGC accuracy	±1 dB	
Input noise current, maximum	≤ 7.0 pA/√Hz (below 862 MHz) ≤ 8.0 pA/√Hz (862 to 1002 MHz)	
Frequency range	45 to 1002 MHz	6
Number of outputs	2	3
Output level	95 to 117 dBμV (35 to 57dBmV)	1
Level flatness	±0.75 dB @ 45 to 862 MHz ±1 dB @ 45 to 1GHz	
Output level temperature variation	±1 dB	

Specification	Value	Notes
Intermodulation • CTB • CSO	 ≥ 58 dBc ≥ 58 dBc	4
Interstage equalizer	0 to 15 dB	
Output return loss	≥ 20 dB	5
Test point, outputs	-20±0.5 dB @ 45 to 862 MHz -20±0.75 dB @ 45 to 1002 MHz	
Frequency range	5 to 200 MHz	6
Insertion loss	4±0.5 dB @ 5 to 65 MHz ≤ 6 dB @ 65 to 200 MHz	7
Input return loss	≥ 20 dB	8
Test point, outputs	Connected to Rev. Tx Transmitter	9
Isolation, reverse switch in off position	> 55 dB @ 5 to 65 MHz > 45 dB @ 65 to 200 MHz	
Three-state reverse switch (ingress)	On/–6 dB/off	

Table 2.   General Specifications

Specification	Value		Notes
Hum modulation	≤ –65 dB		
Transient protection	6 kV, 1, 2 µs/50 µs		
Screening effectiveness	≥ 85 dB		
Power Supply			
Supply voltage • Mains powered • Network powered	 187 to 250 VAC, 50 to 60 Hz 24 to 65 VAC		
Power consumption • General without plug-ins • Compact transponder • FP reverse Tx • DFB reverse Tx	 ≤ 30W ≤ 2.0W ≤ 2.5W ≤ 3.0W		10
Maximum current, outputs	7 A AC		
Maximum current, external supply	15 A AC		11
Safety and Compliance			
Electrical safety	EN 50083-1, EN 60065, IEC 65		
EMC emissions	EN 50083-2		
Connectors			
RF outputs	PG11		
RF test points	F-connector		
Optical adapter • Standard • Optional	 SC/APC to SC/APC SC/APC to E2000		12
LCI interface	Mini jack, female		
Mechanics			
	A90100, Indoor Use	**A90300, Outdoor Use**	
Housing	Die-cast, aluminum		
Water and dust ingress rating	IP54	IP68	

Specification	Value		Notes
Operating temperature	–15 to 55°C 5 to 131°F	–25 to 60°C –13 to 140°F	
Dimensions: W x H x D	230 x 188 x 119 mm 9.1 x 7.4 x 4.7 in.	297 x 145 x 215 mm 11.7 x 5.7 x 8.5 in.	
Weight	3.2 kg 7.0 lb	4.7 kg 10.4 lb	

Housing: Ports are at the base of the housing for easy connection to underground cabling. (Left: A90100, right: A90300)
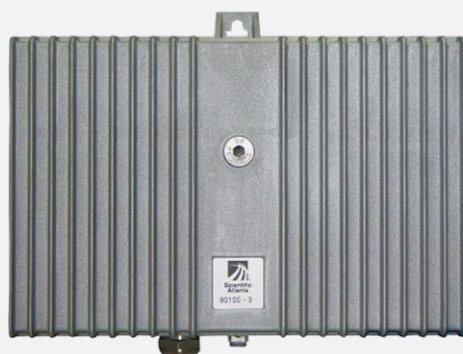
Notes:

1. Output level @ 1310 nm (m = 3.25%) or 1550 nm (m = 3%); valid for the node being configured with one RF output port.

2. Reducing output level will extend the AGC range as shown below.

Output Level	AGC Range dBm @ 1310 nm (m = 3.25%) or 1550 nm (m = 3%)	Output Level	AGC Range dBm @ 1310 nm (m = 3.25%) or 1550 nm (m = 3%)
117	–7 to 2	111	–10 to 2
116	–7.5 to 2	110	–10.5 to 2
115	–8 to 2	109	–11 to 2
Output Level	**AGC Range dBm** **@ 1310 nm (m = 3.25%) or 1550 nm (m = 3%)**	**Output Level**	**AGC Range dBm** **@ 1310 nm (m = 3.25%) or 1550 nm (m = 3%)**
114	–8.5 to 2	108	–11.5 to 2
113	–9 to 2	95 to 107	–12 to 2
112	–9.5 to 2		

3. With internal plug-in splitter.

4. At 42 unmodulated ch. in CENELEC channel loading, EN50083-3, Output level 1x117 dBµV, 9 dB equalizer. Or at 41 unmodulated ch. in CENELEC channel loading, EN50083-3 (without Band I), Output level 1x117 dBµV, 9 dB equalizer.

5. At 40 MHz decreasing with -1.5 dB/octave. With 0 dB link 74089. Forward output return loss≧18 dB at 40 MHz decreasing with -1.5 dB/octave with diplex filter A75130.xxxx.

6. Depending on plug-in diplex filters.

7. Output ports to input reverse Tx depending on output splitter. Valid for the node being configured with one RF output port.

8. Below 40 MHz, above 40 MHz decreasing with 1.5 dB/octave with LP-link 77099. Reverse output return loss ≧18 dB at 40 MHz decreasing with -1.5 dB/octave, the return path being equipped with optional reverse filter A73127.xxxx and diplex filter A75130.XXXX.

9. Depending on Reverse Tx specification.

10. Power consumption is 31W for network powered versions between 24 and 30V.

11. Only applicable for network powered versions.

12. The adapter type SC/APC to E2000 is available by the use of required accessory A90540.xxxxx.

Table 3. Monitoring Interface

Monitorable Parameters	
Power supply DC voltage	+
Power supply AC coaxial line voltage	+
Optical input power	+
Output level	+
Temperature	+
Factory data for node, transponder, reverse transmitter	+
Controllable Parameters	
Reverse transmitter on and off	+
Optical modulation index (OMI) setting reverse transmitter	+
Three-state reverse switch (on, -6 dB, off)	+
Reverse transmitter pilot level	+
Alarms using SNMP and local alarms using LEDs	
No optical input level	+
Low optical input level, adjustable	+
Optical level OK	+
AGC output range	+
Reverse transmitter aging	+
Reverse laser failure	+

Ordering Information

To place an order, visit the [Cisco Ordering Home Page](#) and use the information shown in Tables 4 through 6.

Table 4. Ordering Information

Description	Part Number
Compact EGC FDN, 862 MHz to 1GHz, 115V mains powered (US power plug)	A90100.101
Compact EGC FDN, 862 MHz to 1GHz, 230V mains powered (EU power plug)	A90100.102
Compact EGC FDN, 862 MHz to 1GHz, 65V coax line powered	A90100.103
Compact EGC FDN Outdoor, 862 MHz to 1GHz, 65V coax line powered	A90300.103

Required and Optional Accessories

The next two tables contain ordering information for required and optional accessories. Consult your sales representative to determine the best configuration for your particular application. The required accessories listed in Table 5 must be ordered separately.

Table 5. Required Accessories

Required Accessories	Part Number
Plug-in diplex filter: 1 required, choose from the following options: • 30/47 MHz split • 42/54 MHz split • 65/87 MHz split • 85/105 MHz split	 A75130.103047 A75130.104254 A75130.106587 A75130.1085105

Required Accessories	Part Number
Plug-in at output: 1 required, choose from the following options:	
• 1 link 0 dB at output	A74069.10
• 1 splitter 3.5/3.5 dB at output	A77041.10
• 1 splitter 2/6 dB at output	A77042.10
• 1 splitter 1/10.5 dB at output	A77043.10
• 1 splitter 0.6/14 dB at output	A77044.10
Plug-in reverse transmitter	
• 1 required for reverse transmission	A9008x.10yyyy
Optical adapter: up to 2 adapters are required; 1 for forward and 1 for reverse. Internal optical connector is SC/APC, choose from the following options:	
• Adapter SC/APC to E2108	A90540.1048
• Adapter SC/APC to FC/APC	A90540.1068
• Adapter SC/APC to SC/APC	A90540.1088

The optional accessories listed in Table 6 must be ordered separately:

Table 6. Optional Accessories

Optional Accessories	Part Number
Voltage lock-out module, 24 or 35V	A75018.00xx
Plug-in Compact EuroDOCSIS/DOCSIS Transponder	4038498
Handheld terminal (required for configuration of the unit)	A91200.11
Configuration kit (software and USB-cable)	A91220.10
Single reverse filter:	
• 1 Single low pass filter 65 MHz	A75127.1065
• 1 Single band pass filter 15/65 MHz	A75127.101565
• 1 Single high pass filter 11/15 MHz	A75127.101115
• 1 Single low pass filter 85 MHz	A75127.1085
• 1 Single band pass filter 15/85 MHz	A75127.101585

For More Information

http://www.cisco.com