

## Optoelectronics

# Compact 865 MHz Node Model 90285

## Description

The flexible Model 90285 “two-in-one” 865 MHz Node can serve as a trunk or distribution node to feed architectures of various densities and addresses divergent system needs. Available with two high level RF output ports, it is ideal for delivering video as well as high-speed data services over advanced hybrid fiber coax (HFC) networks.



A directional coupler RF test point is provided at the forward outputs and reverse transmitter, allowing for accurate signal level measurement. Surge protection is provided for the RF ports, and the Compact node is equipped with a double gasket that includes an RF and a water-dust gasket. All Compact nodes can be configured with a Scientific Atlanta 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. By switching to detection mode (-6 dB) it can be observed from which part of the network the ingress originated. Once a failure has been located, the defective network segment may be isolated until the failure has been eliminated and the remaining part of the reverse path is ensured normal traffic.

The design of the mechanics enables the node to be mounted indoor or in a cabinet and the built-in fiber management can handle up to two fiber cables with 12 fibers each of a length of 3 meters. Internally, the fibers can be spliced and fixed in a splice tray. Up to three fibers can be spliced with pigtails and connected to the optical modules in the node - one for the receiver, one for the reverse transmitter, and one as spare fiber.

The node has a high gain front end and is delivered as a configured node containing all the necessary plug-in modules except the reverse transmitter - i.e. Pads, equalizers 65/87 MHz duplex filters and 15 to 65 MHz reverse filters are included. The node will be delivered with connection for 3.5/12 connectors.

The wide range of FP, DFB, and CWDM optical reverse transmitters provides solutions for many different reverse applications. The output powers of 0 dBm, 3 dBm, or 6 dBm enables the use of long links.

An attenuator type A77140.00xx available in 0 to 20 dB steps sets the output of the node. The default setting of the node is 2x112 dBμV with 2 dB attenuation and the node in high gain mode. Pushing the push button in 2 seconds switches the Gain mode. Selecting the low gain mode will give an output level of 2x100 dBμV at 0 dB attenuation.

The Gain Led will indicate the actual Gain

- Yellow - If the node is in Low Gain Mode (2x100 dBμV @ 0 dB attenuation)
- Green - If the node is in High Gain Mode (2x112 dBμV @ 2 dB attenuation)
- Flashing in one of the above-mentioned colors if the node is out of AGC range.

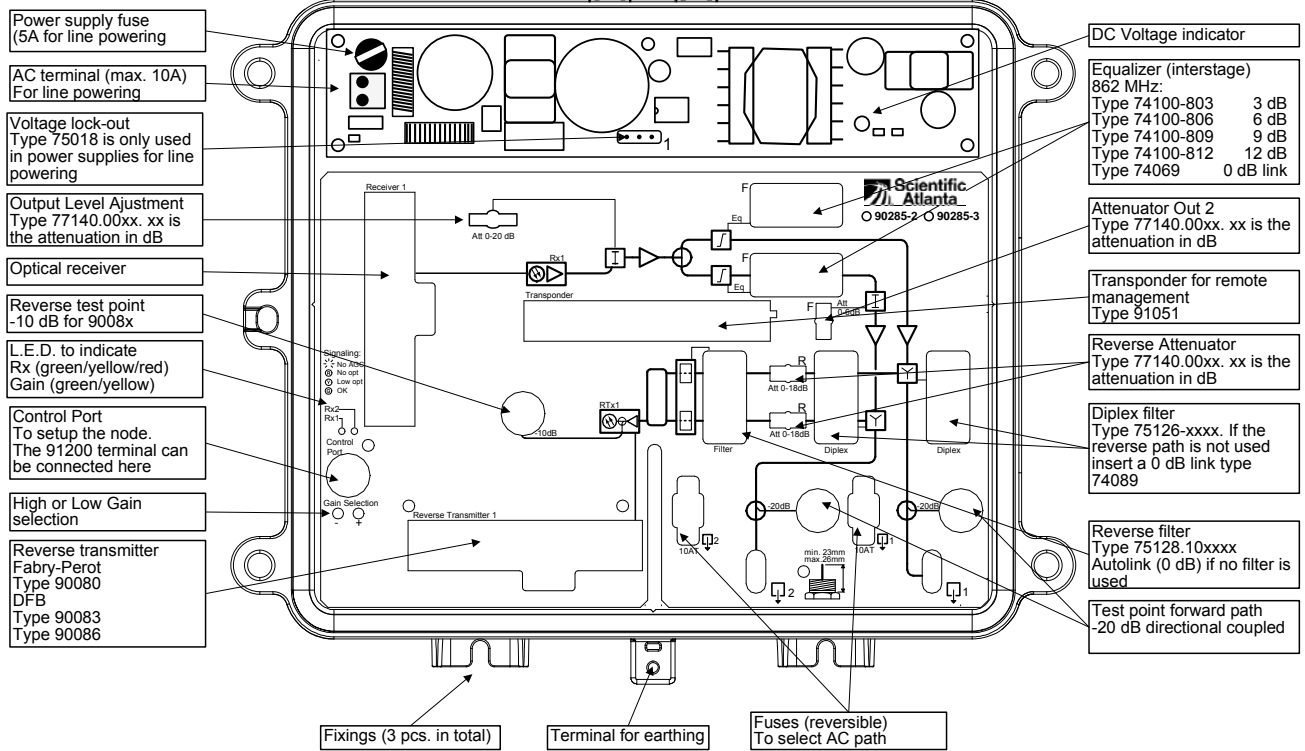
The Rx LED will indicate the status of the node:

- Flashing red - If the optical receive level is above +1 dB
- Yellow - If the optical receive level is between -3 dB and +1 dB
- Green - If the optical receive level is between -6 dB and -3 dB
- Red - If the optical receive level is below -6 dB

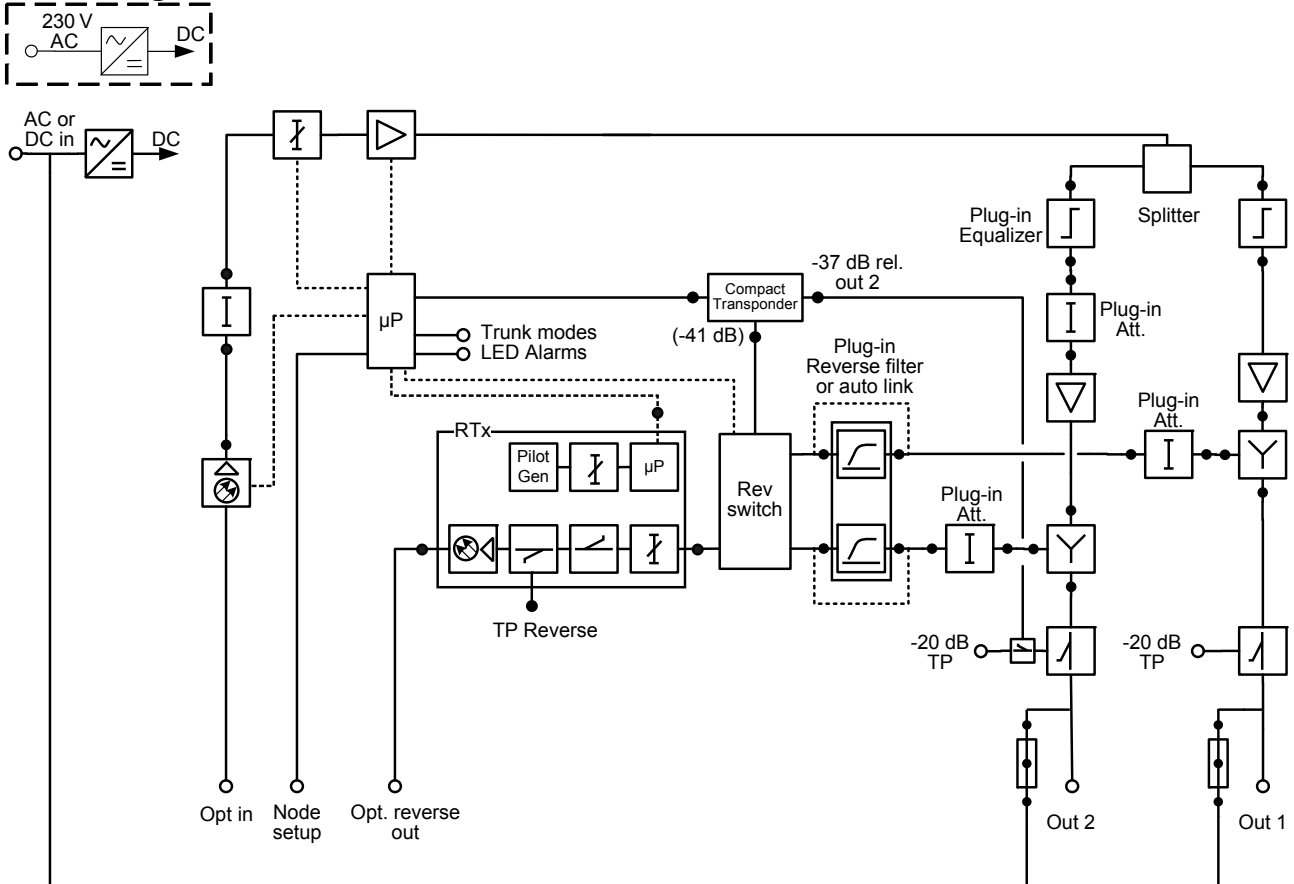
The factory setting for the reverse transmitter OMI is 8% at 70 dBμV at the port and 0 dB pad in the reverse path. The factory setting of the OMI for the pilot tone in the reverse transmitter is 4%. The reverse transmitter is switched off if the optical input level gets below -7 dBm.

# Compact Node 90285 for use in cabinets

## Overview



## Block Diagram



## Specifications

General performance	Units	90285	Notes
Optical wavelength	nm	1100 to 1600	
Max. optical input level	dBm	≤ 5.5	
<p>Optical input level</p> <p>90285 Output Level @ 1310 nm (3.9%)</p> <p>Output Level [dBμV]</p> <p>Legend: Max. Output Level (pink line), Min. Output Level (black line)</p>			
Input noise current, below 750 MHz	pA√Hz	≤ 6.5 (7.5 @ 750 to 865 MHz)	
Frequency range, reverse/forward	MHz	15 to 65/87 to 865	
Reverse attenuation from output to reverse transmitter	dB	Max. 8.75 @ 5 to 65 MHz Max. 9.25 @ 200 MHz	
Number of outputs	–	2 outputs	
Return loss, 5 to 40 MHz	dB	20	
Return loss, 40 to 865 MHz	dB	20 red. 1.5 / octave	
3-state reverse switch, Element Management controlled	dB	On / -6 / off	
Main output level	dBμV	2 x 114	
CTB system	dB	≥ 58	1
CSO system	dB	≥ 58	1
Flatness	dB	< ± 0.5 typ.	2
Output level slope	dB	Plug-in equalizer, min. 9 dB	
<b>Alarms</b>			
DC supply voltage	–	Green	
Optical level above +1 dBm	–	(Rx LED) Flashing Red	
Optical level between -3 dBm and +1 dBm	–	(Rx LED) Yellow	
Optical level between -6 dBm and -3 dBm	–	(Rx LED) Green	
Optical level below -6 dBm	–	(Rx LED) Red	
Low Gain setting of node	–	(Gain LED) Yellow	
High Gain setting of node	–	(Gain LED) Green	
AGC out of range	–	(Gain LED) Flashing	

## Specifications, continued

Electrical	Units	90285	Notes
Supply voltage, mains powered version	V AC	187 to 250	
Supply voltage, remote coaxial line version	–	24 to 65 V AC, 36 to 75 V DC	
Power consumption	W	≤ 33	
Max. current, output	A AC	≤ 8	
Max. current, local insertion	A AC	≤ 10	
Hum modulation	dBc	≤ -65	
Over voltage protection	–	6 kV, 1.2 / 50 μs	
Emission	dBpW	≤ 20	
Screening	dB	≥ 85	
Environmental		indoor or cabinet mounting	
Operating temperature	°C °F	-15 to +55 +5 to +131	
Mechanical			
Optical connector	–	SC/APC	
RF connector	–	3.5/12	
Test points	–	F-female	
Housing	–	Die-cast, Silumin	
Dimensions: W x H x D	mm in.	270 x 290 x 149.5 10.6 x 11.4 x 5.9	
When opened, the node requires a minimum space of 300 mm in width.			
<b>Notes:</b>			
1) Altice channels load, Pin max. -2 dBm, measured with 9 dB plug-in equalizers. Including Prisma II™ TSD Transmitter.			
2) At 25°C, output level ≤ 112 dBμV and 2 dB attenuation, Pin = -5 to -2 dBm			

## Element Management Parameters

Optical Input Receiver	
Receiver	A90052
Monitorable Parameters	Power supply DC voltage
	Power supply AC coax line voltage
	Optical input power
	Output level
	Temperature
	AGC range
	Factory data for node and transponder
Controllable Parameters	Reverse transmitter on/off
	OMI setting reverse transmitter
	Pilot tone setting reverse transmitter
	3-State Reverse switch 0, -6 dB, off
	Transponder transmit level
Alarms via Element Management System and Locally Local Alarms via LEDs	No optical input level
	Optical level OK
	AGC out of range
	Reverse transmitter aging
	Reverse laser failure

# Compact Node 90285 for use in cabinets



## Ordering Information

Description	Part Numbers
Compact Node, 865 MHz, 230 V AC	A90285.162
Compact Node, 865 MHz, 24 to 65 V AC	A90285.163

## Required and Optional Accessories

Below table contains ordering information for required and optional accessories. Please consult with your Scientific Atlanta sales representative to determine the best configuration for your particular application.

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

Required Accessories	Part Numbers
Plug-in Reverse Transmitter; chose from below: • 1 required for reverse transmission	A9008x.10yyyy

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

Optional Accessories	Part Numbers
Voltage lock-out module, 24 or 35 V	A75018.00xx
Plug-in Compact SMC transponder	A91051.12
Plug-in Pads (attenuators) - available in 1.0 dB steps from 0 to 20 dB	A77140.00xx
Plug-in Equalizer – available in 3.0 step from 3 to 9 dB	A74100.108xx
Plug-in link (0 dB instead of equalizer)	A74069.10
Plug-in Diplex Filter	A75126.10xxyy
Plug-in link (0 dB instead of diplex filter)	A74089.10
Optical Adapter - Internal optical connector is SC/APC, chose from below: • Adapter SC/APC to SC/APC	A90540.1088
Dual reverse filter - 1 required if the output level exceeds 100 dB $\mu$ V, chose from below: • 1 Dual low pass filter 65 MHz • 1 Dual high pass filter 11/15 MHz • 1 Dual band pass filter 15/65 MHz	A75128.1065 A75128.101115 A75128.101565

**Note:** Complete part numbers are available in separate datasheets.



Cisco, Cisco Systems, the Cisco logo, the Cisco Systems logo, Scientific Atlanta, Prisma, Prisma II, and ROSA are registered trademarks or trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document are property of their respective owners. Specifications and product availability are subject to change without notice.

© 2008 Cisco Systems, Inc. All rights reserved.

Americas  
1-800-722-2009 or 770-236-6900  
[www.scientificatlanta.com](http://www.scientificatlanta.com)

Europe & Asia  
+32 56 445 445  
[www.saeurope.com](http://www.saeurope.com)

Part Number 7013856 Rev A  
May 2008