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Optoelectronics

Compact 865 MHz Node Model 90286

Description

The flexible Model 90286 "two-in-one" 865 MHz Node can serve as a trunk or distribution node to feed architectures of various densities and address divergent system needs. Available with two high level RF output ports, this node is ideal for delivering video as well as high-speed data services over advanced hybrid fiber coax (HFC) networks.

A 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 outdoor mechanics enables the node to be pole or wall mounted 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 diplex 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.

Attenuators available in 0 to 20 dB steps set 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 for 2 seconds switches the Gain mode. Selecting the low gain mode will give an output level of 2x100 dBµV at 0 dB attenuation.
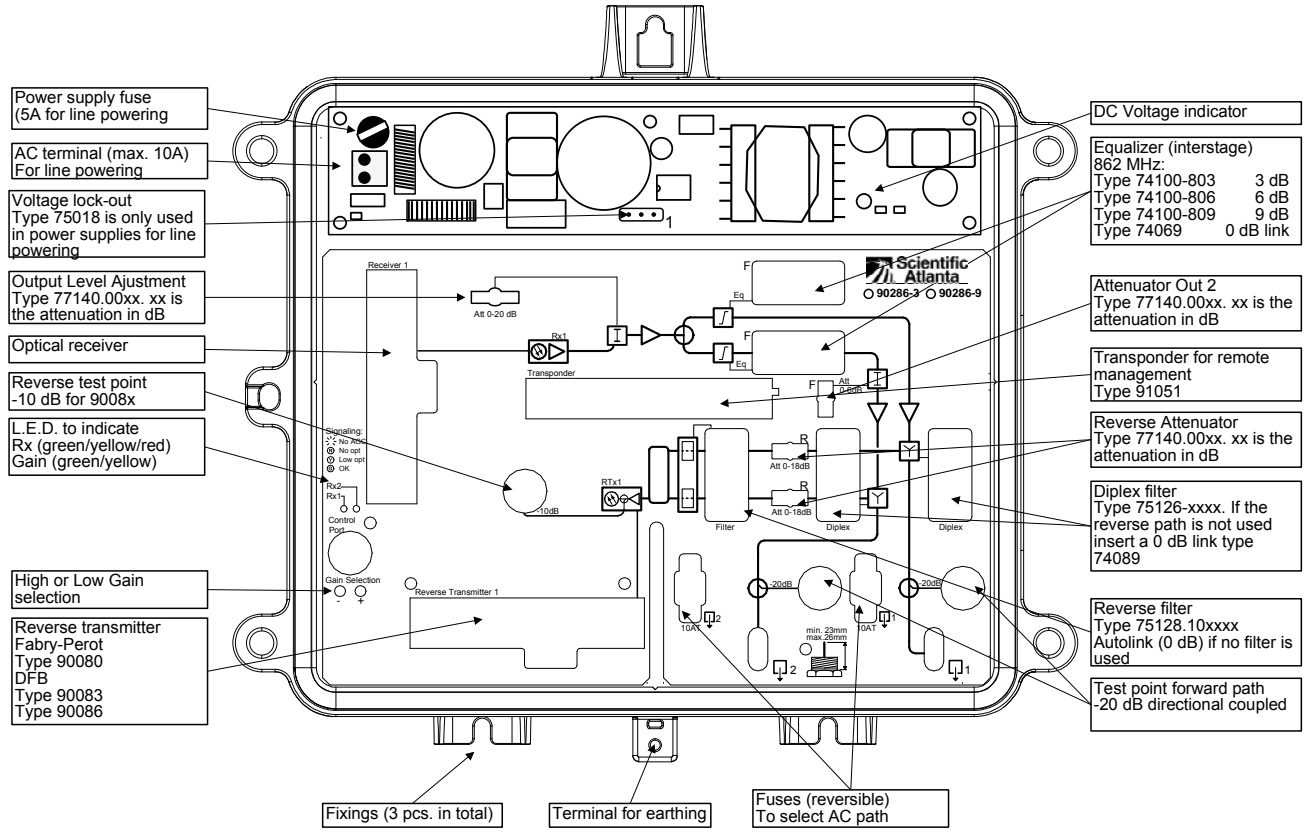
The Gain Led will indicate the actual Gain

- Yellow - If the node is in Low Gain Mode (2x100 dBµV)
- Green - If the node is in High Gain Mode (2x112 dBµV)

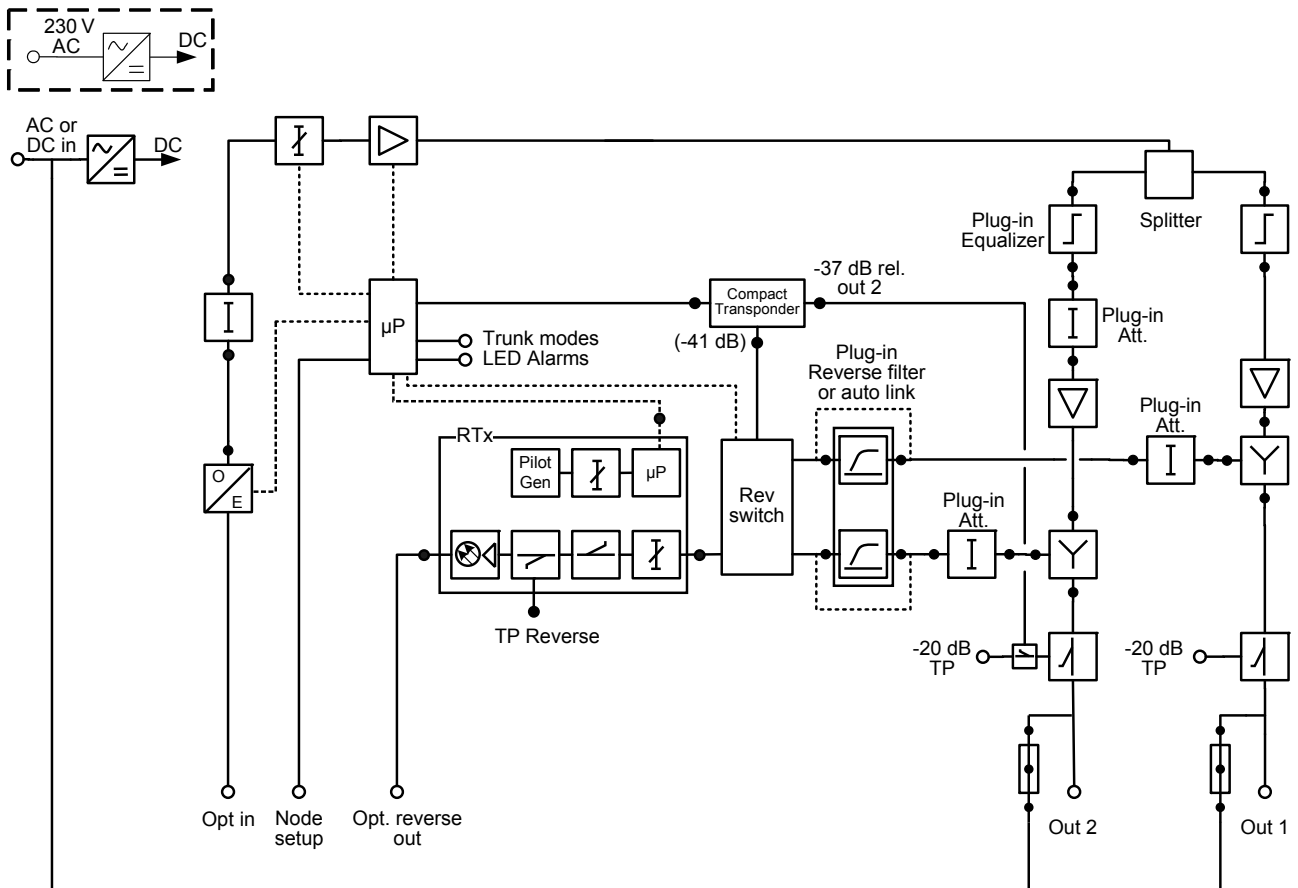The Rx LED will indicate the status of the node:

- Quick 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
- Flashing in one of the above-mentioned colors if the node is out of AGC range.

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Overview

Power supply fuse (5A for line powering

AC terminal (max. 10A) For line powering

Voltage lock-out Type 75018 is only used in power supplies for line powering

Output Level Ajustment Type 77140.00xx. xx is the attenuation in dB

Optical receiver

Reverse test point -10 dB for 9008x

L.E.D. to indicate Rx (green/yellow/red) Gain (green/yellow)

High or Low Gain selection

Reverse transmitter Fabry-Perot Type 90080 DFB Type 90083 Type 90086

DC Voltage indicator

Equalizer (interstage) 862 MHz:
Type 74100-803   3 dB
Type 74100-806   6 dB
Type 74100-809   9 dB
Type 74069   0 dB link

Attenuator Out 2 Type 77140.00xx. xx is the attenuation in dB

Transponder for remote management Type 91051

Reverse Attenuator Type 77140.00xx. xx is the attenuation in dB

Diplex filter Type 75126-xxxx. If the reverse path is not used insert a 0 dB link type 74089

Reverse filter Type 75128.10xxxx Autolink (0 dB) if no filter is used

Test point forward path -20 dB directional coupled

Fixings (3 pcs. in total)

Terminal for earthing

Fuses (reversible) To select AC path

Block Diagram

230 V AC

AC or DC in

µP

Trunk modes
LED Alarms

Compact Transponder

-37 dB rel. out 2

(-41 dB)

RTx

Pilot Gen

µP

Rev switch

Plug-in Reverse filter or auto link

Plug-in Equalizer

Splitter

Plug-in Att.

Plug-in Att.

Plug-in Att.

Plug-in Att.

TP Reverse

-20 dB TP

-20 dB TP

Opt in

Node setup

Opt. reverse out

Out 2

Out 1

2

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Specifications

General performance	Units	90286	Notes
Optical wavelength	nm	1100 to 1600	
Max. optical input level	dBm	≤ 5.5	3
Optical input level			

90286 Output Level @ 1310 nm (OMI 3.9%)

Output Level [dBµV]

- Max. Output Level
- Min. Output Level

Optical Input Level [dBm]

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	
Alarms			
DC supply voltage	–	(LED on power supply) 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	

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Specifications, continued

Electrical	Units	90286	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			
Operating temperature	°C °F	-15 to +55 +5 to +131	
Mechanical			
Optical connector	–	Depending on adapter	
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 180 10.6 x 11.4 x 7.1	

Notes:
1) Altice channels load, m = 3.25%, 1310 nm or m=3%, 1550 nm. Pin max. 0 dBm, measured with 9 dB plug-in equalizers.
2) At 25º C, ≤ 0.5 dB @ output level ≤ 100 dBµV, ≤ 0.75 dB @ output level ≤ 112 dBµV.

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

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Ordering Information

Description	Part Numbers
Compact Node, 865 MHz, 230 V AC	A90286.162
Compact Node, 865 MHz, 24 to 65 V AC	A90286.163

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 • 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 E2108 • Adapter SC/APC to FC/APC • Adapter SC/APC to SC/APC	A90540.1048 A90540.1058 A90540.1088
Dual reverse filter - 1 required if the output level exceeds 100 dBµV, 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.

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