

Prisma II Optical Amplifiers for Fiber to the Home (FTTH)

The Prisma® II optical network is an advanced transmission system designed to enhance network architectures and increase reliability, scalability, and cost effectiveness. The Prisma II Optical Amplifiers offer a wide range of configurations and output powers for outstanding network architectural flexibility.

Pre-Amplifier Modules

The pre-amplifier module amplifies the optical signal and outputs the high optical power level required at the post-amplifier input. The pre-amplifier modules are available with 1, 2, or 9 output ports at 19 dBm per port. All modules are configured with SC/APC optical connectors. The 1 and 2 port versions are single-wide modules, and the 9 port version is available as a double-wide or triple-wide module. While normally used in a temperature controlled headend or CO environment, the single- and triple-wide pre-amplifiers are temperature hardened for use in applications with less temperature control.

Figure 1. Prisma II Triple-Wide Pre-Amplifier (Left) and Single-Wide Post-Amplifier (Right)



Post-Amplifier Modules

The post-amplifier module is directly fed by the pre-amplifier module and outputs the high optical power level required to feed the Passive Optical Network (PON). There are two main types of post-amplifiers, double-wide and single-wide.

The double-wide post-amplifier module is normally used in a temperature controlled Headend or CO environment. The double-wide post-amplifier module is available in a variety of output port counts (8 to 24 ports). These modules are configured with high density LC/APC optical connectors.

The single-wide post-amplifier module is temperature hardened for use in applications having less temperature control than a headend or CO environment. The single-wide post-amplifier modules have 4 output ports at 17, 18.5, and 19.5 dBm per port, and are configured with SC/APC optical connectors.

Features

- Designed to operate within the NEBS certified Prisma II platform
- Configurable amplifier system with one pre-amplifier; added amplifier modules provide ultra-high output power potential
- Nonvolatile storage of preset operating parameters simplifies installation procedures
- Remote software download via Intelligent Communications Interface Module (ICIM)
- Optical test port
- Multiple setup and control options via ICIM
 - Local monitoring via ICIM front panel
 - Remote monitoring via Transmission Network Control System (TNCS) or SNMP
 - User defined input alarm levels

Block Diagrams

Figure 2. Single-Wide Amplifier Modules

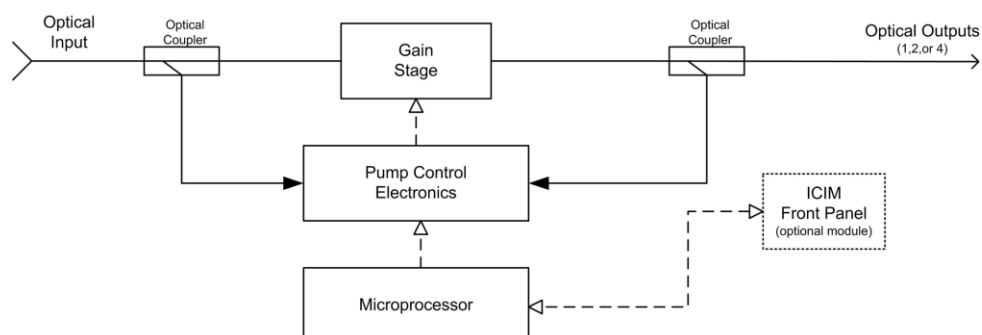


Figure 3. Double-Wide Amplifier Modules

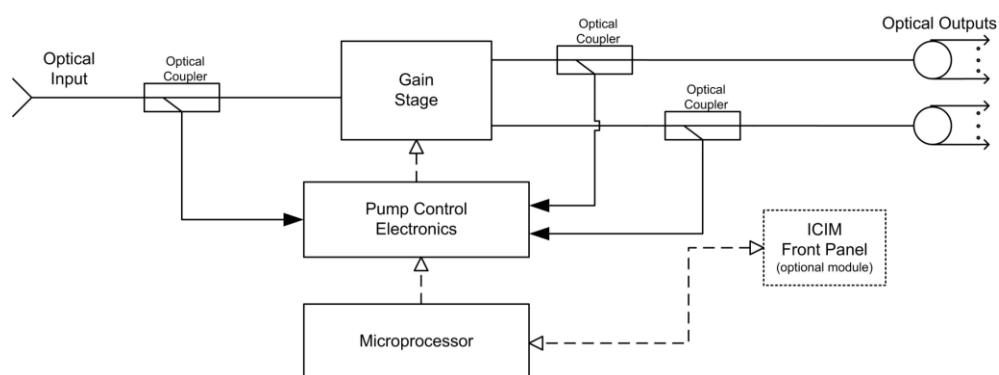
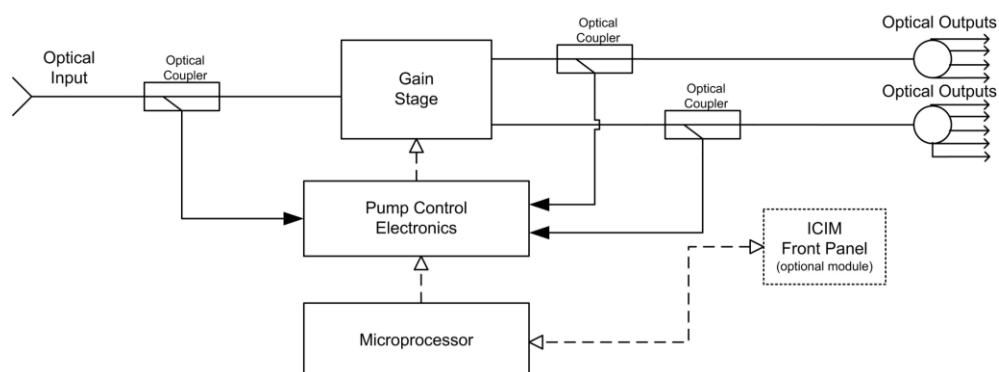


Figure 4. Triple-Wide Amplifier Modules



Product Specifications

Table 1. Specifications

Amplifier Module	Units	Single-Wide Pre-Amp	Single-Wide Post-Amp	Double-Wide Post-Amp	Double-Wide and Triple-Wide Pre-Amp/Hybrid	Notes
Output Power						
1 x 19	dBm	1 @ ≥ 19.0				6
2 x 19	dBm	2 @ ≥ 19.0				6
1 x 21.5	dBm	1 @ ≥ 21.5				6
4 x 17	dBm		4 @ ≥ 17.0			7
4 x 18.5	dBm		4 @ ≥ 18.5			7
4 x 19.5	dBm		4 @ ≥ 19.5			7
8 x 22.5	dBm			8 @ ≥ 22.5		7
10 x 21.5	dBm			10 @ ≥ 21.5		7
12 x 21.0	dBm			12 @ ≥ 21.0		7
14 x 20.0	dBm			14 @ ≥ 20.0		7
16 x 19.5	dBm			16 @ ≥ 19.5		7
18 x 18.9	dBm			18 @ ≥ 18.9		7
20 x 18.5	dBm			20 @ ≥ 18.5		7
22 x 18.1	dBm			22 @ ≥ 18.1		7
24 x 17.65	dBm			24 @ ≥ 17.65		7
8 x 24	dBm			8 @ ≥ 24.0		7
10 x 23	dBm			10 @ ≥ 23.0		7
12 x 22	dBm			12 @ ≥ 22.0		7
14 x 21.5	dBm			14 @ ≥ 21.5		7
16 x 21	dBm			16 @ ≥ 21.0		7
18 x 20.5	dBm			18 @ ≥ 20.5		7
20 x 20	dBm			20 @ ≥ 20.0		7
22 x 19.5	dBm			24 @ ≥ 19.5		7
24 x 19	dBm			24 @ ≥ 19.0		7
4 x 21.5	dBm				4 @ ≥ 21.5	8
8 x 21.5	dBm				8 @ ≥ 21.5	8
9 x 19	dBm				9 @ ≥ 19.0 (double-wide) 9 @ ≥ 19.0 (triple-wide)	2, 8 2, 8

Product Specifications, cont'd.

Optical						
Input Power, Typical	dBm	> 5	> 18.5	> 18.5	> 5	4
Noise Figure	dB	≤ 5.5	≤ 6.0	≤ 6.0	≤ 6.0	1, 5
Wavelength	nm	1550 - 1560		1550 - 1560	1550 - 1560	
Output Power Variation vs. Wavelength	dB	± 0.1		± 0.1	± 0.1	
Output Power Uniformity (port-to-port)	dB	< 1		< 1	< 1	
Polarization Dependent Loss	dB	< 0.5		< 0.5	< 0.5	
Connector		SC/APC		LC/APC	SC/APC	6
Electrical						
Power Consumption (maximum)	W DC	15		30	45	
Environmental						
Temperature Range, Operational	°C °F				0 to 50° 32 to 122° (double-wide)	
Temperature Range, Full Specs	°C °F	-40 to 65° -40 to 149°		0 to 50° 32 to 122°	-40 to 65° -40 to 149° (triple-wide)	
Humidity Range	%	0 to 95		0 to 95	0 to 95	3
Mechanical - Physical Dimensions						
Depth	in. cm	9.8 24.9		9.8 24.9	9.8 24.9	
Width	in. cm	1.0 2.5		2.1 5.3	3.2 8.1	
Height	in. cm	7.6 19.3		7.6 19.3	7.6 19.3	
Weight	lb. kg	2.25 1.0		3.5 1.6	4.0 1.8	
Module Width	slots	1		2	3	

Notes:

- Noise figure for pre- and post-amplifiers is for any pre- or post-amp combination, with +5.0 dBm input to the pre-amplifier. Launch amp noise figure is for launch amp only, with +5.0 dBm input.
- Full temperature range is for the conditions listed in GR-63-CORE.
- Recommended for use only in non-condensing environments.
- Full specifications at noise figure rated input.
- Keep cladding pump amplifier cascade to 2 modules. Contact System Engineering for other cascade options.

6. 980 nm SM Pump/EDFA Amplifier.
7. Cladding Pump Amplifier.
8. Hybrid EDFA/Cladding Pump Amplifier.

Unless otherwise noted, specifications are based upon measurements made in accordance with SCTE/ANSI standards (where applicable) using standard frequency assignments, and are referenced to the ambient air temperature at the inlet to the Prisma II chassis.

Ordering Information

Table 2. Pre-Amplifier Modules

Description	Part Number
Pre-amp module, single-wide, 1 port, +19.0 dBm, SC/APC (P2-EDFA-MOD-1X19-SA)	4011537.111.000.AA
Pre-amp module, single-wide, 1 port, +21.5 dBm, SC/APC (P2-EDFA-MOD-1X21.5-SA)	4011537.114.000.AA
Pre-amp module, single-wide, 2 ports, +19.0 dBm, SC/APC (P2-EDFA-MOD-2X19-SA)	4011537.112.000.AA
Post-amp module, double-wide, 4 ports, +21.5 dBm, SC/APC (P2-EDFA-MOD-4X21.5-SA)	4027263
Post-amp module, double-wide, 8 ports, +21.5 dBm, LC/APC (P2-EDFA-MOD-8X21.5-LA)	4029654
Pre-amp module, triple-wide, 9 ports, +19.0 dBm, SC/APC (P2-EDFA-MOD-9X19-SA)	4005264 *
Pre-amp module, double-wide, 9 ports, +19.0 dBm, SC/APC (P2-EDFA-MOD-9X19-SA 2-wide)	4022007

Table 3. Post-Amplifier Modules

Description	Part Number
Post-amp module, single-wide, 4 ports, +17.0 dBm, SC/APC (P2-EDFA-FPST-4X17-SA)	4000770 *
Post-amp module, single-wide, 4 ports, +18.5 dBm, SC/APC (P2-EDFA-FPST-4X18.5-SA)	4002630 *
Post-amp module, single-wide, 4 ports, +19.5 dBm, SC/APC (P2-EDFA-FPST-4X19.5-SA)	4005262 *
Post-amp module, double-wide, 8 ports, +22.5 dBm, LC/APC (P2-EDFA-FPST-8X22.5-LA)	4010485.101.000.AB
Post-amp module, double-wide, 10 ports, +21.5 dBm, LC/APC (P2-EDFA-FPST-10X21.5-LA)	4010485.102.000.AB
Post-amp module, double-wide, 12 ports, +21.0 dBm, LC/APC (P2-EDFA-FPST-12X21.0-LA)	4010485.103.000.AB
Post-amp module, double-wide, 14 ports, +20.0 dBm, LC/APC (P2-EDFA-FPST-14X20.0-LA)	4010485.104.000.AB
Post-amp module, double-wide, 16 ports, +19.5 dBm, LC/APC (P2-EDFA-FPST-16X19.5-LA)	4010485.105.000.AB
Post-amp module, double-wide, 18 ports, +18.9 dBm, LC/APC (P2-EDFA-FPST-18X18.9-LA)	4010485.115.000.AA
Post-amp module, double-wide, 20 ports, +18.5 dBm, LC/APC (P2-EDFA-FPST-20X18.5-LA)	4010485.107.000.AB
Post-amp module, double-wide, 22 ports, +18.1 dBm, LC/APC (P2-EDFA-FPST-22X18.1-LA)	4010485.113.000.AA
Post-amp module, double-wide, 24 ports, +17.65 dBm, LC/APC (P2-EDFA-FPST-24X17.65-LA)	4010485.116.000.AA
Post-amp module, double-wide, 8 ports, +24.0 dBm, LC/APC (P2-EDFA-FPST-8X24.0-LA)	4010485.125.000.AA
Post-amp module, double-wide, 10 ports, +23.0 dBm, LC/APC (P2-EDFA-FPST-10X23.0-LA)	4010485.124.000.AA
Post-amp module, double-wide, 12 ports, +22.0 dBm, LC/APC (P2-EDFA-FPST-12X22.0-LA)	4010485.123.000.AA
Post-amp module, double-wide, 14 ports, +21.5 dBm, LC/APC (P2-EDFA-FPST-14X21.5-LA)	4010485.122.000.AA
Post-amp module, double-wide, 16 ports, +21.0 dBm, LC/APC (P2-EDFA-FPST-16X21.0-LA)	4010485.121.000.AA
Post-amp module, double-wide, 18 ports, +20.5 dBm, LC/APC (P2-EDFA-FPST-18X20.5-LA)	4010485.120.000.AA
Post-amp module, double-wide, 20 ports, +20.0 dBm, LC/APC (P2-EDFA-FPST-20X20.0-LA)	4010485.119.000.AA
Post-amp module, double-wide, 22 ports, +19.5 dBm, LC/APC (P2-EDFA-FPST-22X19.5-LA)	4010485.118.000.AA
Post-amp module, double-wide, 24 ports, +19.0 dBm, LC/APC (P2-EDFA-FPST-24X19.0-LA)	4010485.117.000.AA

* Remote software download and optical test port features are not available on this model.

Service and Support

Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach defines the minimum set of activities needed by technology and by network complexity to help you successfully deploy and operate Cisco technologies and optimize their performance throughout the lifecycle of your network.

For More Information

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