Prisma D-PON System
1550 nm Downstream Transmitter and EDFA

The Prisma® D-PON System is a fiber-to-the-home (FTTH) solution specifically designed for RF and DOCSIS-based service providers. This system provides the benefits of a FTTH passive optical network (PON) while maintaining existing HFC back-office systems, such as the billing support system (BSS), operations support system (OSS), broadcast video, narrowcast video, switched digital video, VOD, DOCSIS data, DOCSIS VOIP, and VDOC. The D-PON system allows for incremental FTTH growth on an adaptable, low-maintenance architecture, while using the existing back-office infrastructure and cable-friendly customer premise equipment (CPE).

The solution consists of the following components:

- Prisma D-PON 1550 nm Downstream Transmitter
- Prisma EDFA Optical Amplifier
- Prisma D-PON Optical Network Terminal (ONT) (data sheet part number 7017049)
- Prisma D-PON Upstream Receiver (data sheet part number 7017049)
- Prisma D-PON WDM LGX Modules (data sheet part number 7017620)

The Prisma D-PON Downstream Optical Transmitter and Optical Amplifier supply the downstream optical signal for the Prisma D-PON solution.

Figure 1.   1550 nm Downstream Transmitter (Left), 4-Port EDFA (Center), and 8-Port EDFA (Right)

Applications

- Residential FTTH (RF video, DOCSIS voice and DOCSIS data)
- MDU FTTH (RF video, DOCSIS voice and DOCSIS data)
- RF Video overlay for Commercial xPON

Primary Features

- 1 GHz full loading (78 Analog / 75 QAM at -6 dB)
- SBS tuning for EDFA driving 20 km fiber
- CNR 48 dB at -3.5 dBm received power
- Enables 25 dB PON downstream link budget at 1550 nm
- Supports DOCSIS 3.0 four- to eight-channel 256 QAM downstream channel bonding
- Multiple setup and control options via Intelligent Communications Interface Module (ICIM)

System Diagram

Figure 2.   Prisma D-PON System Diagram
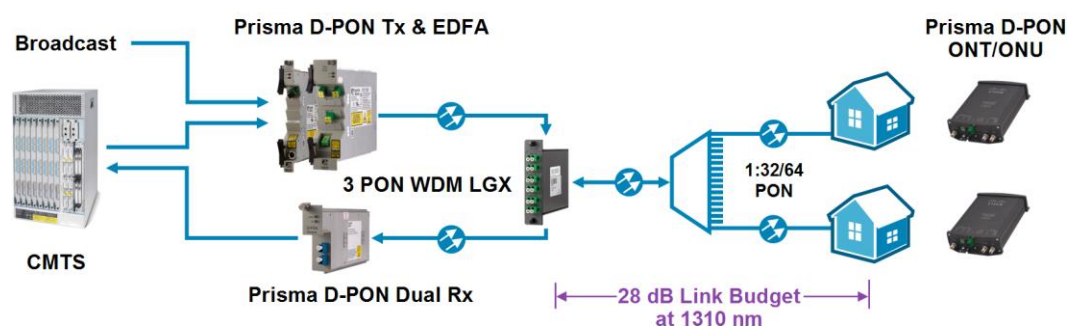
Product Specifications

Table 1. Prisma D-PON 1550 nm Downstream Transmitter

Specification	Value	Comments
Optical		
Wavelength	1550 - 1560 nm	
Output Power (minimum)	8 dBm	
SBS Threshold	20.5 dBm	
SBS Maximum Fiber Length	20 km	
Output Connector Type	SC/APC	
Electrical		
RF Bandwidth	50 - 1002 MHz	
Number of inputs	1 female F-type connector (broadcast) 1 female F-type connector (narrowcast)	On Prisma II chassis
Required RF Input Level (per channel)	21 dBmV (broadcast) 27 dBmV (narrowcast)	
Frequency Response 45 MHz – 1002 MHz	± 0.5 dB (46 - 550 MHz) ± 0.75 dB (550 - 1002 MHz)	
RF Input Return Loss	16 dB	
LEDs	1 Laser 1 Alarm	
Power Consumption	< 15 W DC	
Environmental		
Operating temperature	-40 to 149°F (-40 to 65°C)	
Storage temperature	-40 to 149°F (-40 to 65°C)	
Operating humidity	5% to 95%, non-condensing	
Mechanical		
Dimensions (W x H x D)	1.06 in. x 7.6 in. x 9.8 in. (2.7 cm x 19.3 cm x 24.9 cm)	
Weight	2.0 lbs. (0.9 kg)	
Regulatory and SafetyMechanical		
Dimensions (W x H x D)	1.06 in. x 7.6 in. x 9.8 in. (2.7 cm x 19.3 cm x 24.9 cm)	
Weight	2.0 lbs. (0.9 kg)	

Table 2. Prisma D-PON EDFA

Specification	Value	Comments
Optical		
Wavelength	1550 - 1560 nm	
Input Connector Type	SC/APC	Other options available
Input Power	0 dBm (minimum)	
Number of outputs	4 LC/APC (1 x 4 EDFA) 8 LC/APC (1 x 8 EDFA)	Other options available
Optical Output Power	+ 21.5 dBm	+15 dBm in service mode
Output Power Uniformity (port-to-port)	1 dB	
Noise Figure	5.9 dB	
Return Loss	> 50 dB	
Electrical		
LEDs	1 Laser 1 Alarm	
Power Consumption (max)	< 30 W DC	
Environmental		
Operating temperature	32 to 122°F (0 to 50°C)	
Storage temperature	-40 to 149°F (-40 to 65°C)	
Operating humidity	5% to 95%, non-condensing	
Mechanical		
Dimensions (1 x 4) (W x H x D)	2.1 in. x 7.6 in. x 9.8 in. (5.3 cm x 19.3 cm x 24.9 cm)	
Weight (1 x 4)	3.5 lbs. (1.6 kg)	
Dimensions (1 x 8) (W x H x D)	2.1 in. x 7.6 in. x 9.8 in. (5.3 cm x 19.3 cm x 24.9 cm)	
Weight (1 x 8)	3.5 lbs. (1.6 kg)	

Table 3. Prisma D-PON Downstream System Performance

Specification	Value	Comments
NTSC Channel Loading	78 NTSC & 75 QAM @ -6 dBc	For Upstream performance refer to Prisma D-PON ONT and Receiver data sheet, part number 7017049.
Distortion Performance	CNR - 48 CSO - 55 CTB - 55	CNR typical @ -3.5 dBm optical receive power

Table 4. Regulatory Compliance

Specification	Description
Regulatory and Safety Approvals	As required per country where the Prisma D-PON Downstream Transmitter and EDFA will be used

Note: Downstream System Performance with Prisma D-PON Tx, Prisma D-PON EDFA, 25 dB optical link and D-PON iW-2030 ONT. Optical link consists of WDM, 20 km fiber, and 1 x 32 optical splitter.

Prisma D-PON System Ordering Information *

Table 5.   Transmission Optics

Description	Part Number
(P2-15TXF-08EM-GHZ-SA-5060) 1550 Tx, NT78, 8 dBm, SA, 1550-60	737217
(P2-EDFA-FMOD-4X21.5-LA 2-WIDE) Opt Amp, 4 x 21.5 dBm, SA-LA	4028553
(P2-EDFA-FMOD-8X21.5-LA 2-WIDE) Opt Amp, 8 x 21.5 dBm, SA-LA	4029654
(P2-PS-M-A-S) Prisma II Power Supply	4012765
Kit, Prisma II Module Blank (6 pk)	716307
(P2-ICIM-MSO) ICIM, MSO version	4025187

Table 6.   Headend Receivers

Description	Part Number
(P2-HD-RXR-HG-SA) D-PON Wideband HD Dual Rev Rx, 5-90 MHz, HG, SA	4025368
(P2-HM) HD Host Module	4008281

Table 7.   Passives

Description	Part Number
LGX-BWDM-DPON-1310/1490/1550/1610 LA-TRPL	4028628
LGX-BWDM-DPON-1310/1550/1610 LA-TRPL	4028627
LGX Chassis, 4 RU, 12 slot, 72 pos Bulkhead Conn, Unloaded	750182

Table 8.   Subscriber ONTs

Description	Part Number
D-PON ONT iW-2030 (wideband, 1610 nm)	4025031.1610
D-PON ONT EU iW-2030 (EU wideband, 1610 nm)	4030723.1610

Table 9.   ONT Accessories

Description	Part Number
100-120 VAC / 50-60 Hz, 12 VDC / 1 A Wall-Mount PS - NA, Japan	4015452
PS, 12VDC/1A, 100-120 VAC / 50-60 Hz, Wall-Mount F-Conn for NA and Japan	4028842
PS, 12 VDC / 1 A, 230 VAC / 50 Hz, Wall-Mount, Linear Switching for Australia	4018797
220 VAC / 50-60 Hz, 12 VDC / 1 A Wall-Mount PS - Korea	4015458
230-240 VAC / 50-60 Hz, 12 VDC / 1 A Wall-Mount PS - UK	4018794
PS, 12 VDC / 1 A, 230 VAC / 50-60 Hz, Wall-Mount, Linear Switching for Europe	4015453
Indoor fiber splice enclosure and cover	4029691

* To order fiber optic jumpers for headend components as needed, please see *Fiber Optic Jumper data sheet*, part number 7001079.

Service and Support

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For More Information

To learn more about the Cisco Prisma D-PON System, contact your local account representative.

To subscribe to receive end-of-life/end-of-sale information, go to: http://www.cisco.com/cgi-bin/Support/FieldNoticeTool/field-notice.