Data Sheet

Prisma II™ Multi-Wavelength High Density Transmitter

Increasing customer demands for advanced services and competitive pressures are causing HFC network operators to consider strategic options. One popular alternative involves segmentation of the network to reduce service group size and increase effective per-home bandwidth.

HDTx-M

Cisco's advanced Prisma II Multi-Wavelength High Density Transmitters (HDTx-M) and complementary O-band optical passives provide innovative and economical forward path segmentation solutions in areas with fiber count limitations. Multiple optical wavelengths carrying differing content are multiplexed for transport on a common fiber and demultiplexed to feed the segmented service areas. Optimal performance is achieved by making use of up to six carefully selected O-band optical wavelengths (channels). The transmitters are offered in a range of output powers from 4 dBm to 12 dBm to increase network design flexibility.

The HDTx-M transmitters may be used in either the new Prisma XD high density chassis or in the standard Prisma II chassis*.

- When used in the 6 RU standard Prisma II chassis, a Host Module is used to interface between the chassis and the high density transmitter (or receiver) modules. 2 high density modules occupy each single-wide host module. The Prisma II standard chassis can accommodate up to 26 high density modules. High density modules can be mixed with other full-height PII modules in the chassis.
- When used in the 3 RU Prisma XD chassis, the high density modules plug directly into the chassis without host module. The Prisma XD chassis can accommodate up to 16 high density modules.


Two HDTx-M's in Host Module

The HDTx-M transmitters have 1 GHz passband which greatly increases bandwidth for high definition TV and other advanced services. Microprocessor control allows ease of installation and flexibility of application.

** In a 28 connector Prisma II chassis, only the HDTx Broadcast Input port is available. The Prisma II 56 connector chassis is required to utilize both the Broadcast and Narrowcast inputs on the HDTx.*

Features

- High density design allowing up to 16 transmitters in a Prisma II XD chassis and up to 26 transmitters in a standard Prisma II Chassis
- Energy efficient design with lowest power consumption per transmitter
- 1 GHz RF passband to increase bandwidth capacity for new service
- Precise optical power levels and pre-selected wavelengths enable superior link optimization
- Nonvolatile storage of pre-set operating parameters simplifies installation procedures
- Dual RF inputs for broadcast video and new media (narrowcast) service tiers
- Blind-mate (push-on) RF and DC connectors
- RF input test point
- User selectable Automatic Gain Control (AGC)
- Multiple set-up and control options
  - Local Control via Local Craft Interface (LCI)
  - Local monitoring via Intelligent Communications Interface Module (ICIM)
  - Remote monitoring via ROSA®/TNCS status monitoring and control element manager
- Master / Slave Redundancy

Specifications

Optical	Units	HDTx-M	Notes
Optical Output Wavelength Range	nm	1300 - 1340	
Optical Channels		A,B,C,D,E,F	
Optical Output Power	dBm dBm dBm dBm dBm	4 6 8 10 12	
Electrical			
Bandwidth	MHz	46 - 1002	
Frequency Response	dB	± 0.6	
Input Return Loss	dB	>16.0	
Port-to-Port Isolation (Narrowcast to Broadcast Inputs)	dB	>45	
Broadcast (BC) RF Input Required RF Input Level per Ch. (NTSC) 78 NTSC analog ch's with: -320 MHz QAM (550-870 MHz) @ -6 dB -450 MHz QAM (550-1002 MHz) @ -6 dB 64 PAL B/G analog ch's with: -270 MHz QAM (600-870 MHz) @ -6 dB -400 MHz QAM (600-1002 MHz) @ -6 dB 59 PAL D/K analog ch's with: -270 MHz QAM (600-870 MHz) @ -6 dB -400 MHz QAM (600-1002 MHz) @ -6 dB	 dBmV dBmV dBmV dBmV dBmV dBmV	 15.3 15.0 16.3 16.0 16.6 16.3	1
Narrowcast (NC) RF Input Required RF Input Level per Ch. (QAM) -for QAM @ -6 dBc relative to analog ch's Required RF Input Level per Ch. (analog) - for equal amplitude analog ch's (BC and NC)	 dB dB	 +6 +12 (above Broadcast RF analog level)	2
Power Consumption (maximum)	W DC	7.5	
Front Panel Test Point Relative to Input	 dB dB	Broadcast Input -20 ± 0.5 @ Narrowcast Input -32 ± 0.5@	

Specifications, continued

Environmental	Units	HDTx-M		Notes
Operating Temperature Range		Premium	Standard	
Full Specs	°C	-20 to +65	0 to +50	8
	°F	-4 to +149	32 to +122	
Storage	°C	-40 to +65	-40 to +65	
	°F	-40 to +149	-40 to +149	
Humidity Range	%	0 to 95		
Mechanical (Modules)				
Depth	in.	8.80		
	cm	22.35		
Width	in.	1.03		
	cm	2.62		
Height	in.	3.48		
	cm	8.84		
Weight	lb	0.90		
	kg	0.41		
Module Width	slots	1		

Premium HDTx-M Link Performance Specifications

Carrier to Noise (see notes: 1,3,4,5,9)		78 CW NTSC with 53 QAM_{256} (550-870 MHz) 64 CW PAL B/G or 59 CW PAL D/K with 33 QAM_{256} (600-870 MHz)												
Model #	Output Power (dBm)	Total Optical Link Loss (dB)[3]												
		3	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
P2-HD-13TXM-04	4	54.5	**53.5**	52.5	51.5									
P2-HD-13TXM-06	6			54.5	**53.5**	52.5	51.5							
P2-HD-13TXM-08	8					54.5	**53.5**	52.5	51.5					
P2-HD-13TXM-10	10							54.5	**53.5**	52.5	51.5			
P2-HD-13TXM-12	12									54	**53**	52	51	

Standard HDTx-M Link Performance Specifications

Carrier to Noise (see notes: 1,3,4,5,9)		78 CW NTSC with 53 QAM_{256} (550-870 MHz) 64 CW PAL B/G or 59 CW PAL D/K with 33 QAM_{256} (600-870 MHz)											
Model #	Output Power (dBm)	Total Optical Link Loss (dB)[3]											
		3	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
P2-HD-13TXM-04-ST	4	52.5	**51.5**	50.5	49.5								
P2-HD-13TXM-06-ST	6			52.5	**51.5**	50.5	49.5						
P2-HD-13TXM-08-ST	8					52.5	**51.5**	50.5	49.5				
P2-HD-13TXM-10-ST	10							52.5	**51.5**	50.5	49.5		
P2-HD-13TXM-12-ST	12									52	**51**	50	49

Distortion Performance (all HD-Tx's)	78 CW NTSC with up to 75 QAM_{256} (550-1002 MHz) 64 CW PAL B/G or 59 CW PAL D/K with up to 50 QAM_{256} (600-1002 MHz)	Notes
CTB	70	1,4,9
CSO	65	1,4,9
XMOD	65	1,4,9

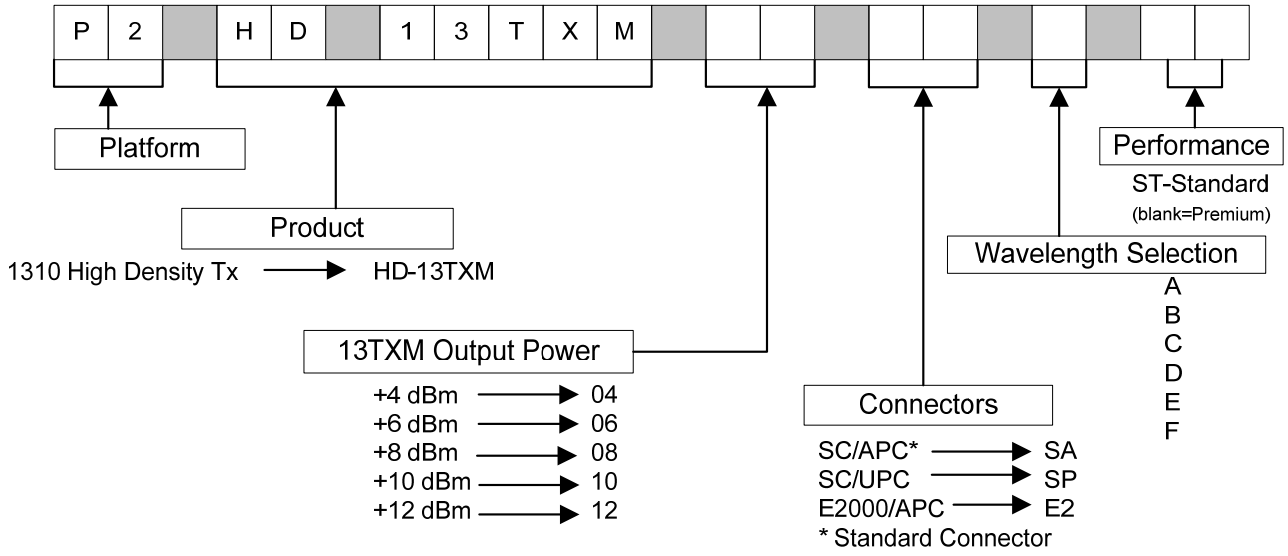
256 QAM BER Performance (all HD-Tx's)	78 CW NTSC (55-550 MHz) with up to 75 QAM_{256} (-6 dB, 550-1002 MHz)	Notes
Pre-FEC BER (typical)	≤ 1.0 e-6	1,4,6,7

Notes:

1. At specified RF input level. RF levels shown are required with Tx AGC off.
2. Narrowcast Input requires an RF input level that is greater than the RF input to Broadcast.
3. Total optical link loss allows 3.5 dB for passive loss with balance of all fiber loss.
4. All measurements taken with Scientific-Atlanta 6940/44/GainMaker Node Receiver.
5. For 78 NTSC, 64 PAL B/G, or 59 PAL D/K with QAM_{256} loading through 1002 MHz, subtract 0.3 dB from listed CNR.
6. Pre-FEC BER specified for ITU-T J.83 Annex B 256 QAM modulation, 78 NTSC in CW mode, 15 minute test duration w averaged BER.
7. Pre-FEC BER improves to ≤ 1.0 e-9 when tested with 78 NTSC carriers modulated with independent NTSC video sources.
8. Temperature at air inlet to Prisma II chassis.
9. Above performance is for a single Tx. For a multi-wavelength system with multiple Txs, carrier-to-noise and distortion performance will be reduced. Consult with Scientific Atlanta Application Engineering for system performance.

Unless otherwise noted, specifications are minimum performance over temperature. Specifications are based upon measurements made in accordance with SCTE/ANSI standards (where applicable), using standard frequency assignments.

Ordering Information



Premium SC/APC Model #	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F
P2-HD-13TXM-04-SA	4021839	4021844	4021849	4021854	4021859	4021864
P2-HD-13TXM-06-SA	4021840	4021845	4021850	4021855	4021860	4021865
P2-HD-13TXM-08-SA	4021841	4021846	4021851	4021856	4021861	4021866
P2-HD-13TXM-10-SA	4021842	4021847	4021852	4021857	4021862	4021867
P2-HD-13TXM-12-SA	4021843	4021848	4021853	4021858	4021863	4021868
Premium SC/UPC Model #	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F
P2-HD-13TXM-04-SP	4021869	4021874	4021879	4021884	4021889	4021894
P2-HD-13TXM-06-SP	4021870	4021875	4021880	4021885	4021890	4021895
P2-HD-13TXM-08-SP	4021871	4021876	4021881	4021886	4021891	4021896
P2-HD-13TXM-10-SP	4021872	4021877	4021882	4021887	4021892	4021897
P2-HD-13TXM-12-SP	4021873	4021878	4021883	4021888	4021893	4021898
Premium E2000 Model #	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F
P2-HD-13TXM-04-E2	4021899	4021904	4021909	4021914	4021919	4021924
P2-HD-13TXM-06-E2	4021900	4021905	4021910	4021915	4021920	4021925
P2-HD-13TXM-08-E2	4021901	4021906	4021911	4021916	4021921	4021926
P2-HD-13TXM-10-E2	4021902	4021907	4021912	4021917	4021922	4021927
P2-HD-13TXM-12-E2	4021903	4021908	4021913	4021918	4021923	4021928

Standard SC/APC Model #	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F
P2-HD-13TXM-04-SA-ST	4028887	4028892	4028897	4028902	4028907	4028912
P2-HD-13TXM-06-SA-ST	4028888	4028893	4028898	4028903	4028908	4028913
P2-HD-13TXM-08-SA-ST	4028889	4028894	4028899	4028904	4028909	4028914
P2-HD-13TXM-10-SA-ST	4028890	4028895	4028900	4028905	4028910	4028915
P2-HD-13TXM-12-SA-ST	4028891	4028896	4028901	4028906	4028911	4028916

Description	Part Number
PS-HM (Host Module)	4008281
PII Chassis upgrade kit *(converts 28 connector chassis to 56 connector chassis)*	741429

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