

CHP Max Headend Optics Platform

CHP CORWave® D1-Dual Density

CHP CORWave® S1-Single Density

1.2 GHz O-Band Multiwavelength Forward Path Transmitters

FEATURES

- 1.2 GHz O-Band transmitter supporting DOCSIS® 3.1 bandwidth upgrades
- Maximize fiber assets with up to 4 O-Band wavelengths (starting at 1291 nm) and 30 km reach, designed for both analog and digital channel loading
- Optimize headend and hub efficiencies with industry leading density and low power consumption
- Fixed or variable output powers and extended linearization, supporting multiple optical architecture needs
- Front or rear fiber connections enable flexible installations
- Configure, monitor, and manage with CORView™ Element Management System
- Internal Electronic Slope Adjustment to compensate for headend combining and cable loss at high frequencies

For cable operators looking to reduce CAPEX by decreasing footprint in their headends, collapse OTNs/hubs, or save on powering, the CHP CORWave Dual Density (CHP CORWave D1) 1.2 GHz multiwavelength forward transmitter provides an immediate 50% decrease in the number of physical devices needed for forward path transmission and some of the lowest power consumption among comparable forward transmitters in the industry. The CHP CORWave D1, with 2 lasers in a single-wide application module, increases revenue by allowing other application modules to be added for new capacity and new services without increasing the current footprint. It is available in a power conserving, single density option (CHP CORWave S1) consisting of a single laser in a single-wide application module, for use where physical footprint is not considered an issue.

The CORWave multiwavelength plan allows fiber reclamation and leverages the existing fiber infrastructure for up to 4 multiplexed O-Band wavelengths and up to 30 km reach over one fiber.



Reduce Complexity and Headend Space Needs

The CHP CORWave D1 is optimized for both analog and digital channel loading and is available in fixed and variable outputs with front and rear fiber connections. Extended linearization models are designed for better distortion performance in Celene loading applications. It is backward compatible with all current and legacy CHP chassis. Two wavelengths in one single-wide application module simplify operations, provide less headend “plumbing,” and provide easier module management.

Add Value To Existing Assets

A large installed base of the CHP Headend Optics Platforms allows cable operators to add value to their headends with the addition of the CHP CORWave D1 for new, revenue generating services and reduced complexity. The CHP CORWave D1 can be monitored by the CORView Element Management System which provides an intuitive and user-friendly interface for security, discovery, configuration, and inventory functions. Internal Electronic Slope Adjustment has been added to these models to compensate for headend combining and cable loss at high frequency, especially when loading moves to 1.2 GHz.

TRANSMITTER SPECIFICATIONS

Characteristics	Specification
Physical	
Dimensions ¹	1.25 in W x 3.4 in H x 18.5 in D (3.2 cm x 8.7 cm x 47.0 cm)
Weight	3.0 lb (1.4 kg)
Optical Connector	LC/APC (8 degrees) or SC/APC (8 degrees)
RF Connector	F Type
Environmental	
Operating Temperature Range ²	0° to 50°C (32° to 122°F)
Storage Temperature Range	-40° to 70°C (-40° to 158°F)
Humidity	95% non-condensing, max
Optical	
Fixed Optical Output Power	Fixed (0x): 4, 6, 8, 10, 13 dBm Variable (Vx): 2-4, 4-6, 6-8, 8-10, 10-12 dBm Extended Linearization (Xx): 4, 6, 8, 10, 12, 13 dBm
RF	
Bandwidth Operational Range	54 to 1218 MHz
RF Input Impedance	75 Ω
Response Flatness, P-V, Typical	-0.5 dB (min), +0.5 dB (max) (52 to 1006 MHz) -1.0 dB (min), + 1.0 dB (max) (52 to 1218 MHz)
Input Return Loss	16 dB
RF Input Test Point	-20 ± 1.0 dB
Port-to-Port Isolation	50 dB channel-to-channel
Port-to-Port Gain Variation	-0.5 dB (min), +0.5 dB (max) (relative to 25°C)
Equalizer Slope Range	0 to 2 dB in 1 dB steps
Gain Adjustment Range	-3.0 dB (min), +3.0 dB (max) for 10 dBm and lower output power -3.0 dB (min), 0.0 dB (max) for 12 and 13 dBm output power
ADC Range	-3.0 dB (min), +3.0 dB (max) for 10 dBm and lower output power -3.0 dB (min), 0.0 dB (max) for 12 and 13 dBm output power
Power Requirements	
Power Consumption	D1: 12.5 W (Typical), 15 W (max) S1: 6.5 W (Typical), 8 W (max)

NOTES:

1. Includes handles and connectors.
2. Temperature measured at transmitter module's air inlet.

CNR VS. LINK BUDGET

Characteristics	Specification
RF	
Channel Loading	79 NTSC analog channels, 75 QAM channels (6 dB below analog) 30 NTSC analog channels 160 QAM channels (6 dB below analog) 190 QAM channels, 6-MHz QAM channels
Nominal Input RF Power	11 dBmV for 79 NTSC Analog channels from 55.25 MHz to 547.2625 MHz, 75 ITU-T J.83 Annex B QAM 256 channels (6 dB below analog) to 1002 MHz 13 dBmV for 30 NTSC Analog channels from 55.25 MHz to 247.2625 MHz, 160 ITU-T J.83 Annex B QAM 256 channels (6 dB below analog) to 1218 MHz 8 dBmV for 190 ITU-T J.83 Annex B QAM 256 channels, 54-1218 MHz
Typical Link Performance for 79 NTSC Analog Channels, 75 QAM Channels (6 dB Below Analog)	
CCNR ^{1,2}	51.5 dB
MER ^{2,3}	> 42 dB
BER	1E-6 (Annex B Test)
CSO ^{1,2}	-62 dBc
CTB ^{1,2}	-65 dBc
Typical Link Performance for 30 NTSC Analog Channels, 160 QAM Channels (6 dB Below Analog)	
CCNR ^{1,2}	53.5 dB
MER ^{2,3}	> 42 dB
BER	1E-6 (Annex B Test)
CSO ^{1,2}	-63 dBc
CTB ^{1,2}	-65 dBc

NOTES:

- The above specifications are at 25°C. The CNR, CSO, and CTB may degrade up to 0.5, 2.0, and 2.0 dB, respectively, over the full operating temperature range and over all polarization states.
- Link performance based on 4 wavelengths over 15 km including optical passives, 0 dBm into the receiver.
- MER corrected for source contribution. Measured with a signal source with MER greater than 44 dB and a signal analyzer with MER measurement capability greater than 46 dB MER.

IMPLEMENTATION REQUIREMENTS FOR MULTIWAVELENGTH APPLICATIONS

Implementation Requirements	Multiwavelength Application
Unique Requirements	
Available Wavelengths	1291, 1293, 1295, 1290 nm
Maximum Launch Power/Wavelength	11 dBm (4 wavelengths)
Common Requirements	
Analog Content ¹	Must use common analog content
Digital Content	Can use different, digitally modulated narrowcast content

NOTE:

- Maximum RF input cable length difference to transmitters is 100 feet.

ORDERING INFORMATION

1.2 GHz Forward Path Transmitter

				1	2	3	4		5	6	7	8		9	10		11
C	H	P	—	x	x	x	x	—	y	y	y	y	—	z	z	—	c

1-2	Module Type	5-6	7-8	Wavelength		9-10	Laser Output Power
D1	Dual CORWave 1.2 GHz			Laser Wavelength pairings are as listed below. The wavelength for each channel shall comply with the O-Band multiwavelength plan (1291, 1293, 1295, 1290).		04	4 dBm (Variable or Fixed)
S1	Single CORWave 1.2 GHz					06	6 dBm (Variable or Fixed)
3	Fiber Orientation			For Single transmitters digits 5 and 6 will be 12. Digits 7 and 8 will reflect the center wavelength.		08	8 dBm (Variable or Fixed)
F	Front					10	10 dBm (Variable or Fixed)
W	Rear					12	12 dBm (Variable only)
4	Output					13	13 dBm (Fixed only)
0	Fixed					11	Connector Type
V	Variable					S	SC/APC (D1F, S1F, S1W only)
X	Extended Linearization					L	LC/APC (D1F, D1W only)
		12	91	None	1291		
		12	93	None	1293		
		12	95	None	1295		
		12	90	None	1290		
		91	91	1291	1291		
		93	93	1293	1293		
		95	95	1295	1295		
		90	90	1290	1290		
		91	93	1291	1293		
		95	90	1295	1290		

RELATED PRODUCTS

CHP Chassis	Optical Patch Cords
CHP Power Supplies	Optical Passives
CHP Management Module	Installation Services

Contact Customer Care for product information and sales:

- United States: 866-36-ARRIS
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Note: Specifications are subject to change without notice.

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