CHP Max Headend Optics Platform

CHP CORWave® DW-dual density
CHP CORWave® SW-single density
1 GHz O-Band Multiwavelength Forward Path Transmitters

FEATURES

- 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 support multiple optical architectures including full spectrum and overlay
- Front or rear fiber connections enable flexible installations
- Configure, monitor, and manage with CORView™ Element Management System

REDUCE CAPEX, INCREASE REVENUE GENERATION

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 DW) 1 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 DW, 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 SW) 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 as few as one fiber.

Reduce Complexity and Headend Space Needs

The CHP CORWave® DW is optimized for both analog and digital channel loading and is available in fixed and variable outputs with front and rear fiber connections. It is backwards 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 Max Headend Optics Platform allows cable operators to add value to their headends with the addition of the CHP CORWave DW for new, revenue generating services and reduced complexity. The CHP CORWave DW can be monitored by the CORView™ Element Management System which provides an intuitive and user-friendly interface for security, discovery, configuration, and inventory functions.

ADDITIONAL OPTIONS

CHP CORWave SW single density multiwavelength transmitter
- Front or rear fiber
- Fixed or variable output powers

CORView Element Management System

Available Wavelength Pairs for the CHP CORWave DW - Dual Density Forward Path Transmitter	Available Wavelengths for the CHP CORWave SW - Single Density Forward Path Transmitter
1291 nm/1291 nm	1291 nm
1291 nm/1293 nm	1293 nm
1295 nm/1290 nm	1295 nm

Implementation Requirements for Multiwavelength Applications

Implementation Requirements	Multiwavelength Application
Unique Requirements	
Available wavelengths [1]	CHP-DW0x: DW00-9191, DW01-9193, DW02-9590 CHP-DW(F)Vx: DW(F)V0-9191, DW(F)V1-9193, DW(F)V2-9590 CHP-DW(F)Xx: DW(F)X0-9191, DW(F)X1-9193, DW(F)X2-9590 [2, 3] CHP-SW(F)xx: 1291, 1293, 1290, 1295 nm
Maximum launch power/wavelength	11 dBm (4 wavelengths)
Common Requirements	
Analog content	Must use common analog content[1]
Digital content	Can use different, digitally modulated narrowcast content

Notes:
1. Maximum RF input cable length difference to transmitters is 100 feet.
2. -9191 = 1291, 1291 nm; -9193 = 1291, 1293 nm ; -9590 = 1291, 1290 nm
3. Available as front and rear fiber optioned units (CHP-DF denotes front fiber optioned units; CHP-DW denotes rear fiber optioned units).

TRANSMITTER SPECIFICATIONS [1]

Optical		
Optical Output Power		
	DW0x	4, 6, 8, 10, 13 dBm
	DW(F)Vx	2-4, 4-6, 6-8, 8-10, 10-12 dBm
	DW(F)Xx	4, 6, 8, 10, 12, 13 dBm
Optical Output Power Accuracy		± 0.5 dBm
RF		
Bandwidth Operational Range		54 to 1002 MHz
Response Flatness, P–V, typ./max.		1.0/2.0 dB
Input Return Loss		16 dB
RF Input Test Point		–20 ± 1.0 dB
Port-to-Port Isolation		50 dB, 54 to 1002 MHz
Port-to-Port Gain Variation, typ./max.		±0.5 dB/±1.0 dB
Powering		
Power Consumption	DW(F)	15 W (combined) maximum, 13 W (combined) typical
	SW(F)	9 W maximum, 8 W typical

Note:
1. Available as front and rear fiber optioned units (CHP-SF denotes front fiber optioned units; CHP-SW denotes rear fiber optioned units).

TRANSMITTER SPECIFICATIONS (CONTINUED)

Mechanical		
Optical Connector	DW	LC/APC (8 degrees)
	DF, SF, SW	SC/APC (8 degrees)
RF Connector		F-type
Dimensions (W x H x D) in (cm) [1]		1.25 x 3.4 x 18.5 in (3.2 x 8.7 x 47.0 cm)
Weight	DW(F)	3.0 lbs (1.4 kg)
	SW(F)	2.8 lbs (1.3 kg)
Environmental		
Operational Temperature [2]		32 to 122°F (0 to 50°C)
Storage Temperature		–40 to 158°F (–40 to 70 °C)
Humidity, noncondensing, max.		85%, noncondensing, max.

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

CNR vs. Link Budget	CHP-DW0x, CHP-DWVx, CHP-DFVx, CHP-SW0x, CHP-SWVx and CHP-SFVx
RF	
Channel Loading	80 NTSC analog channels, 75 QAM channels (6 dB below analog) 30 NTSC analog channels, 125 QAM channels (6 dB below analog) 155 QAM channels , 6-MHz QAM channels
Input RF Power	14 dBmV for 80 analog channels with 75 QAM channels @ -6 dB 16 dBmV for 30 analog carriers with 125 QAM channels @ -6 dB 12 dBmV for 155 QAM channels
Typical Link Performance	
CCNR	51.5 dB for 80 analog channels, 75 QAM channels (6 dB below analog) [1, 2] 53.5 dB for 30 analog channels, 125 QAM channels (6 dB below analog) [1, 3]
MER	38 dB (for all three cases) [1, 4]
BER	1E-6
CSO	–62 dBc [1, 2, and 3]
CTB	–68 dBc [1, 2, and 3]

Notes:
1. CNR, MER. And CTB/CSO may degrade up to 0.5, 0.5, and 2 dB, respectively, over full operating temperature range and overall polarization states.
2. Link performance based on 4 wavelengths over 15 km including optical passives at receiver, 80 NTSC channels measured according to standard procedures and 0 dBm into the receiver.
3. Link performance based on 4 wavelengths over 15 km including optical passives at receiver, 30 NTSC channels measured according to standard procedures and 0 dBm into the receiver.
4. Link performance based on 4 wavelengths over 15 km including optical passives at receiver, 80 NTSC channels measured with respect to ITU Annex B.

CNR vs. Link Budget	CHP-DWXx, CHP-DFXx, CHP-SWXx and CHP-SFXx
RF	
Channel Loading	60 PAL analog channels, 48 QAM channels (6 dB below analog)
Input RF Power	15.5 dBmV for 60 PAL analog channels with 48 QAM channels @ -6 dB
Typical Link Performance	
CCNR	50.2 dB for 60 PAL analog channels, 48 QAM channels (6 dB below analog) [1, 2]
MER	38 dB (for all three cases) [1, 4]
BER	1E-6
CSO	–62 dBc for 60 analog channels, 48 QAM channels (6 dB below analog) [1, 2]
CTB	–68 dBc for 60 analog channels, 48 QAM channels (6 dB below analog) [1, 2]

Notes:
1. CNR, MER. And CTB/CSO may degrade up to 0.5, 0.5, and 2 dB, respectively, over full operating temperature range and overall polarization states.
2. Link performance based on 4 wavelengths over 15 km including optical passives at receiver, 80 NTSC channels measured according to standard procedures and 0 dBm into the receiver.
3. Link performance based on 4 wavelengths over 15 km including optical passives at receiver, 30 NTSC channels measured according to standard procedures and 0 dBm into the receiver.
4. Link performance based on 4 wavelengths over 15 km including optical passives at receiver, 80 NTSC channels measured with respect to ITU Annex B.

RELATED PRODUCTS	
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Power Supplies	Optical Passives
Management Module	Installation Services

Customer Care

Contact Customer Care for product information and sales:
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Note: Specifications are subject to change without notice.

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