

# CHP Max Headend Optics Platform

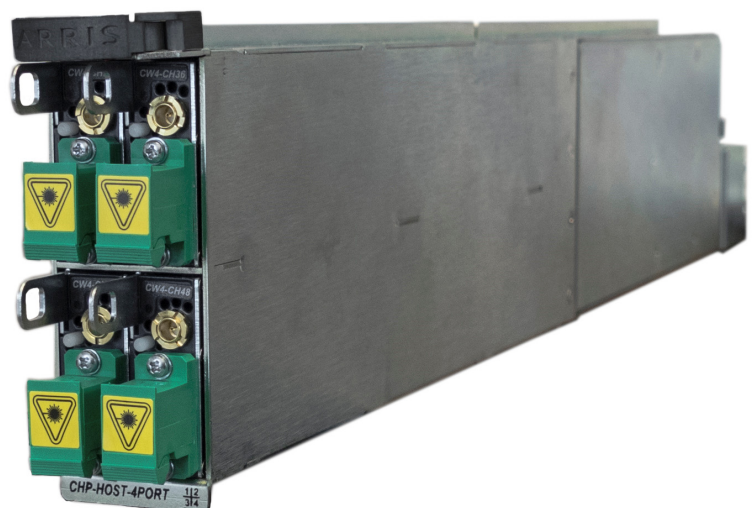
## CHP CORWave® 4 Quad Density

### 1.2 GHz C-Band DWDM Modular Forward Transmitters

## FEATURES

- Quad Density modular transmitter design
- 40 transmitters per CHP chassis for 20TX/RU density
- 1.2 GHz full spectrum supporting DOCSIS® 3.1 upgrades
- Optimize headend and hub efficiencies with industry leading density and low power consumption
- Support multiple optical architectures including full spectrum and RFoG
- Internal Electronic Slope Adjustment to compensate for headend combining and cable loss at high frequencies
- Configure, monitor, and manage with CORView™ Element Management System

The CommScope CHP CORWave 4 1.2 GHz Quad Density Forward Transmitter provides significant operational and system benefits. Featuring the highest density among comparable forward transmitters in the industry, the CORWave 4 enables operators to decrease their headend footprint and reduce powering costs. In addition, the CORWave 4's industry-leading Modular Quad Density, which incorporates four transmitters in a single-wide application host module, allows cable operators to add other application modules for new capacity and new services without increasing their current footprint. The CORWave 4's superior density also supports a 75% decrease in headend chassis footprint by decreasing the number of physical devices operators need for forward path transmission, providing additional cost and power savings.



## Reduce Complexity and Headend Space

The CHP CORWave 4 Quad Density is optimized for partial analog with a full compliment of digital channel loading. It will also support a full digital load for the entire RF spectrum. Available with front fiber connections, the CHP CORWave 4 is only compatible with all current CHP chassis. It features four sub-modules that are installed into a CHP single-wide host carrier for maximum flexibility of configuration and wavelength combinations. In addition, the CORWave 4 multiwavelength plan allows operators to reclaim fiber by leveraging their existing fiber infrastructures for up to 16 multiplexed C-band wavelengths with a long reach over a single fiber.

The CORWave 4 also allows for lower RF input, which requires less amplification in the headend, thereby reducing space and power consumption.

## Add Value to Existing Assets

Operators with a large base of active CHP Headend Optics Platforms can transition seamlessly to CHP CORWave 4 Quad Density. By doing so, they can deploy new, revenue-generating services, reduce complexity for existing deployments, and transition easily to new CHP installs. For added operational value, operators can monitor CORWave 4 transmitters via the CORView Element Management System, which provides an intuitive and user-friendly interface for security, discovery, configuration, and inventory functions.

The CORWave 4 also adds Internal Electronic Slope Adjustment to compensate for headend combining and cable loss at high frequency, especially when loading moves to 1.2 GHz.

## OPTIONS

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CHP CORWave Quad Density Multiwavelength Transmitter Modules

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4 Port Host Module

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5 Port Host Module

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CORView Element Management System

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Blank Submodule for Thermal Management

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## TRANSMITTER SUBMODULE SPECIFICATIONS

Characteristics	Specification
<b>Physical</b>	
Dimensions (W x H x D) <sup>1</sup>	1.41 x 0.56 x 9.1 in (3.58 x 1.42 x 23.11 cm)
Weight	Less than 1 lb (0.45 kg)
Optical Connector	SC/APC (8 degrees)
Test Point Connector Type	MCX (Adaptor to F cable supplied with Host Module)
<b>Environmental</b>	
Operating Temperature Range <sup>2</sup>	0° to 50°C (32° to 122°F)
Storage Temperature Range	-40° to 70°C (-40° to 158°F)
Humidity	5% to 95% non-condensing
<b>Optical</b>	
Output Power	10 dBm (Typical)
<b>RF</b>	
Bandwidth Operational Range	52 to 1218 MHz
Response flatness, P–V	1.0 dB (Typical), 2.0 dB (max)
RF Input Test Point	-20 ± 1.0 dB
<b>Power Requirements</b>	
Power Consumption (Single Module)	5 W (Typical)

### NOTES:

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

## TRANSMITTER BLANK MODULE SPECIFICATIONS<sup>1</sup>

Characteristics	Specification
<b>Physical</b>	
Dimensions (W x H x D) <sup>2</sup>	1.41 x 0.56 x 9.1 in (3.58 x 1.42 x 23.11 cm)
Weight	0.40 lb (0.18 kg)
<b>Environmental</b>	
Operating Temperature Range <sup>3</sup>	0° to 50°C (32° to 122°F)
Storage Temperature Range	-40° to 70°C (-40° to 158°F)
Humidity	5% to 95% non-condensing
<b>Power Requirements</b>	
Power Consumption (Single Blank Module)	0 W

### NOTES:

1. For blank module: Blank modules are required to be installed into any unused transmitter location of the host module when there are less than 4 transmitter submodules installed.
2. Includes handles and connectors.
3. Temperature measured at transmitter module's air inlet.

## 4 PORT HOST MODULE SPECIFICATIONS

Characteristics	Specification
<b>Physical</b>	
Dimensions (W x H x D) <sup>1</sup>	1.25 x 3.4 x 18.5 in (3.2 x 8.7 x 47.0 cm)
Weight, Host Only	2.35 lb (1.07 kg)
RF Ports (Four)	F Type
<b>Environmental</b>	
Operating Temperature Range <sup>2</sup>	0° to 50°C (32° to 122°F)
Storage Temperature Range	-40° to 70°C (-40° to 158°F)
Humidity	5% to 95% non-condensing
<b>RF</b>	
Bandwidth Operational Range	52 to 1218 MHz
<b>Power Requirements</b>	
Power Consumption	2 W (Typical)

**NOTES:**

1. Includes handles and connectors.
2. Temperature measured at transmitter module's air inlet. Fully populated host module with TXs with Blanks if using less than 4 TX submodules.

## QUAD TRANSMITTER (4 TRANSMITTERS WITH 4 PORT HOST MODULE) SPECIFICATIONS

Characteristics	Specification
<b>Physical</b>	
Dimensions (W x H x D) <sup>1</sup>	1.25 x 3.4 x 18.5 in (3.2 x 8.7 x 47.0 cm)
Weight	4 lb (1.81 kg)
Optical Connector	SC/APC (8 degrees)
Test Point Connector Type	MCX
<b>Environmental</b>	
Operating Temperature Range <sup>2</sup>	0° to 50°C (32° to 122°F)
Storage Temperature Range	-40° to 70°C (-40° to 158°F)
Humidity	5% to 95% non-condensing
<b>Optical</b>	
Output Power per TX	10 dBm (Typical)
<b>RF</b>	
Bandwidth Operational Range	52 to 1218 MHz
Channel-to-Channel Isolation	65 dB
Response flatness, P-V	1.0 dB (Typical), 2.0 dB (max)
RF Input Test Point	-20 ± 1.0 dB
Equalizer Slope Range	0 to 2 dB in 1 dB steps
<b>Power Requirements</b>	
Total Power Consumption	22 W (Typical), 26 W (max)

**NOTES:**

1. Includes handles and connectors.
2. Temperature measured at transmitter module's air inlet. Fully populated host module with TXs with Blanks if using less than 4 TX submodules.

## 5 PORT HOST MODULE SPECIFICATIONS

Characteristics	Specification
<b>Physical</b>	
Dimensions (W x H x D) <sup>1</sup>	1.25 x 3.4 x 18.5 in (3.2 x 8.7 x 47.0 cm)
Weight, Host Only	2.35 lb (1.07 kg)
RF Ports (Five)	MCX with locking option
<b>Environmental</b>	
Operating Temperature Range <sup>2</sup>	0° to 50°C (32° to 122°F)
Storage Temperature Range	-40° to 70°C (-40° to 158°F)
Humidity	5% to 95% non-condensing
<b>RF</b>	
Bandwidth Operational Range	52 to 1218 MHz
<b>Power Requirements</b>	
Power Consumption	2.3 W (Typical)

**NOTES:**

1. Includes handles and connectors.
2. Temperature measured at transmitter module's air inlet. Fully populated host module with TXs with Blanks if using less than 4 TX submodules.

## QUAD TRANSMITTER (4 TRANSMITTERS WITH 5 PORT HOST MODULE) SPECIFICATIONS

Characteristics	Specification
<b>Physical</b>	
Dimensions (W x H x D) <sup>1</sup>	1.25 x 3.4 x 18.5 in (3.2 x 8.7 x 47.0 cm)
Weight	4 lb (1.81 kg)
Optical Connector	SC/APC (8 degrees)
Test Point Connector Type	MCX
<b>Environmental</b>	
Operating Temperature Range <sup>2</sup>	0° to 50°C (32° to 122°F)
Storage Temperature Range	-40° to 70°C (-40° to 158°F)
Humidity	5% to 95% non-condensing
<b>Optical</b>	
Output Power per TX	10 dBm (Typical)
<b>RF</b>	
Bandwidth Operational Range	52 to 1218 MHz
Narrowcast to Narrowcast Port Isolation	50 dB
Response flatness, P-V	1.0 dB (Typical), 2.0 dB (max)
RF Input Test Point	-20 ± 1.0 dB
Equalizer Slope Range	0 to 2 dB in 1 dB steps
<b>Power Requirements</b>	
Total Power Consumption	22.3 W (Typical), 26.3 W (max)

**NOTES:**

1. Includes handles and connectors.
2. Temperature measured at transmitter module's air inlet. Fully populated host module with TXs with Blanks if using less than 4 TX submodules.

## GENERAL SOLUTION SPECIFICATIONS

Characteristics	Specification
<b>RFOG Application</b>	
Channel Loading	190 ITU-T J.83 Annex B QAM 256 channels, 54–1218 MHz
<b>HFC Application</b>	
<b>RF</b>	
Channel Loading	30 NTSC Analog channels from 55.25 MHz to 247.2625 MHz, 124 ITU-T J.83 Annex B QAM 256 channels (6 dB below analog) to 1002 MHz 154 ITU-T J.83 Annex B QAM 256 channels, 54–1002 MHz 190 ITU-T J.83 Annex B QAM 256 channels, 54–1218 MHz Note: Please contact your sales representative for higher analog channel loading count.
Nominal Input RF Power	13 dBmV for 30 NTSC Analog channels from 55.25 MHz to 247.2625 MHz, 124 ITU-T J.83 Annex B QAM 256 channels (6 dB below analog) to 1002 MHz 9 dBmV for 155 ITU-T J.83 Annex B QAM 256 channels, 54–1002 MHz 8 dBmV for 190 ITU-T J.83 Annex B QAM 256 channels, 54–1218 MHz
Minimum Input RF Power	8 dBmV for 30 NTSC Analog channels from 55.25 MHz to 247.2625 MHz, 124 ITU-T J.83 Annex B QAM 256 channels (6 dB below analog) to 1002 MHz 4 dBmV for 155 ITU-T J.83 Annex B QAM 256 channels, 54–1002 MHz 3 dBmV for 190 ITU-T J.83 Annex B QAM 256 channels, 54–1218 MHz
Input Level Range	-5 dB to +3 dB
<b>Typical Link Performance</b>	
CNR <sup>1,2,5</sup>	50 dB
CSO <sup>1,2,5</sup>	-60 dBc
CTB <sup>1,2,5</sup>	-60 dBc
MER <sup>2,3,4</sup>	38 dB for 30 NTSC Analog channels from 55.25 MHz to 247.2625 MHz, 124 ITU-T J.83 Annex B QAM 256 channels (6 dB below analog) to 1002 MHz 40 dB for 155 ITU-T J.83 Annex B QAM 256 channels, 54–1002 MHz 40 dB for 190 ITU-T J.83 Annex B QAM 256 channels, 54–1218 MHz
BER (Pre-FEC) <sup>4</sup>	1E-6 (ITU-T J.83 Annex B QAM 256 channels)

**NOTES:**

1. CNR and CTB/CSO may degrade up to 0.5 and 2 dB, respectively, over full operating temperature range.
2. Link performance based on single wavelength over 40 km, and 0 dBm into a reference receiver.
3. Source contribution not included.
4. For all RF Channel Loadings listed above.
5. For 30 NTSC Analog channels from 55.25 MHz to 247.2625 MHz, 124 ITU-T J.83 Annex B QAM channels (6 dB below analog) to 1002 MHz.

## ORDERING INFORMATION

Model Name	Description
CHP-CW4-ITU21-S	CHP CORWave 4 Submodule, ITU Channel 21, 10 dBm, SC/APC
CHP-CW4-ITU22-S	CHP CORWave 4 Submodule, ITU Channel 22, 10 dBm, SC/APC
CHP-CW4-ITU24-S	CHP CORWave 4 Submodule, ITU Channel 24, 10 dBm, SC/APC
CHP-CW4-ITU26-S	CHP CORWave 4 Submodule, ITU Channel 26, 10 dBm, SC/APC
CHP-CW4-ITU28-S	CHP CORWave 4 Submodule, ITU Channel 28, 10 dBm, SC/APC
CHP-CW4-ITU33-S	CHP CORWave 4 Submodule, ITU Channel 33, 10 dBm, SC/APC
CHP-CW4-ITU36-S	CHP CORWave 4 Submodule, ITU Channel 36, 10 dBm, SC/APC
CHP-CW4-ITU39-S	CHP CORWave 4 Submodule, ITU Channel 39, 10 dBm, SC/APC
CHP-CW4-ITU44-S	CHP CORWave 4 Submodule, ITU Channel 44, 10 dBm, SC/APC
CHP-CW4-ITU48-S	CHP CORWave 4 Submodule, ITU Channel 48, 10 dBm, SC/APC
CHP-CW4-ITU52-S	CHP CORWave 4 Submodule, ITU Channel 52, 10 dBm, SC/APC
CHP-CW4-ITU54-S	CHP CORWave 4 Submodule, ITU Channel 54, 10 dBm, SC/APC
CHP-CW4-ITU57-S	CHP CORWave 4 Submodule, ITU Channel 57, 10 dBm, SC/APC
CHP-CW4-ITU60-S	CHP CORWave 4 Submodule, ITU Channel 60, 10 dBm, SC/APC
CHP-CW4-ITU61-S	CHP CORWave 4 Submodule, ITU Channel 61, 10 dBm, SC/APC
CHP-CW4-ITU62-S	CHP CORWave 4 Submodule, ITU Channel 62, 10 dBm, SC/APC
CHP-CW4-HOST-4PORT	CHP CORWave 4 Host Module with 4 RF ports
CHP-CW4-HOST-5PORT	CHP CORWave 4 Host Module with 5 RF ports (1 Broadcast port and 4 Narrowcast ports)
CHP-CW4-BLANK	CHP CORWave 4 Blank Module

## 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
- International: +1-678-473-5656

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**Note:** Specifications are subject to change without notice.

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