

# CHP Max Headend Optics Platform

## CHP-CHASSIS-19U and CHP-PS Chassis and Power Supply

### FEATURES

- Optimize headend and hub efficiencies with industry leading density and low power consumption up to 20 transmitters or 40 receivers per 2RU chassis
- Up to 44 full spectrum wavelengths for harvesting new bandwidth through node segmentation
- Support multiple optical architectures including full spectrum, overlay, and RFoG
- Integrated optical passives for further reduction of footprint
- DOCSIS® 3.1 support for future capacity expansion to 1.2 GHz downstream, 300 MHz upstream
- Transmitters with variable output reduce need for troublesome optical attenuators and front or rear fiber connection simplify installation and cable management
- Configure, monitor, and manage with CORView™ Element Management System



### PRODUCT OVERVIEW

ARRIS products and solutions can help cable operators attain new subscriber revenue and higher average revenue per subscriber without major CAPEX. Cable operators can seamlessly and easily stay in line with future goals, add new services, and strongly position against the competition.

As part of the CHP Max Headend Optics Platform, CHP Max5000® headend chassis applications unite HFC and digital transport onto a single scalable system, allowing service providers to accelerate deployment of VOD, high speed data, telephony, and other advanced services in a space-saving footprint.

## Flexible Options

The CHP Max5000 offers 13 module slots in a 2RU chassis, providing 10 module slots for application modules, 2 for isolated redundant power supplies, and 1 for a local or remote management module. The high-speed backplane supports data communication in gigabit EPON applications, while a high-speed shelf interconnect option with a 100 BaseT Ethernet connection provides daisy chaining capability for multiple chassis. Front or rear fiber connection options provide flexibility in installation and maintenance.

## CHP Max5000 Chassis

The CHP Max5000 (2RU) chassis fits into a 19-inch or 23-inch rack that holds 10 single-width application modules, and routes power and element management signals. An optional bracket kit is available for installation into a 23-inch rack. Each chassis requires one power supply module and accepts a second for redundancy. A high speed shelf interconnect option with a 100 BaseT Ethernet connection provides daisy chaining capability for multiple chassis.

Modules slide into the chassis from the front of the rack, with either front or rear optical connections. Separate interfaces built into the back panel of each chassis provide power and data communications to and from installed application modules. Universal slots accept the plug-in application modules in virtually any combination to accommodate a variety of service delivery requirements. The chassis provides universal management through the Craft interface, SNMP with HMS, or remote IP access via a Craft Management Module (CMM) or System Management Module (SMM).

Designed for thermal efficiency, the CHP Max5000 chassis provides a wide operational temperature range for maximum reliability. A plenum with eight cooling fans offers better reliability than module-based fans; in the event of a fan failure, application modules—and the services provided—remain in operation.

## CHP Max5000 Power Supply\*

CHP Max5000 isolated, load-sharing, redundant power supplies are efficient, switched-mode modules that accept either AC or DC input. One power supply supports a completely loaded chassis, while two offer power redundancy that eliminates service interruption if one power supply or line-in feed service fails.

The CHP Max5000 switched-mode AC power supplies accepts AC input from 85 to 264 VAC (47 to 63 Hz) and provides DC voltages to drive application modules. Each chassis accepts a second backup AC power supply for load sharing and redundancy. The power supplies are fully isolated, which eliminates a single point of power failure.

The CHP Max5000 switched-mode DC power supplies accepts DC input from –72 to –36 VDC and produces 475 W to power a fully-loaded chassis of application modules. Each chassis accepts a second backup DC power supply for load sharing and redundancy. These power supplies are fully isolated, eliminating a single point of power failure.

CHP power supplies are located on the far right side of the chassis behind the Craft Management Module (CMM) or System Management Module (SMM). Isolated outputs allow the primary and redundant supplies to operate in a power-sharing configuration. Should the primary power source fail, a second power supply provides all necessary DC power.

\*AC power supply with or without US power cord. International customers will need to order the power supply without the power cord and select the appropriate power cord for their application from the ordering matrix in the CHP System technical specification.

## SPECIFICATIONS-CHASSIS

### Interfaces

SNMP Interface <sup>1</sup>	Connector: RJ-45; Electrical Interface: 10BaseT Ethernet
Hi Speed Shelf Interconnect Interface	Connector: RJ-45; Electrical Interface: 100BaseT Ethernet <sup>2</sup>
Lo Speed Shelf Interconnect Interface	Connector: RJ-14; Electrical Interface: RS-485
Local Alarm Terminal Interface	Connector: Terminal block; Electrical Interface: NO, NC, or C <sup>3</sup>

### Mechanical

Chassis Dimensions (W x H x D) in (cm)	19 x 3.5 x 18 in (48.3 x 8.9 x 45.7 cm)
Module Port Dimension, 1 wide (W x H x D) in (cm)	1.25 x 3.0 x 15.7 in (3.2 x 7.6 x 39.9 cm)
Weight, empty <sup>4</sup>	15.5 lbs (7.0 kg)

### Environmental

Operational Temperature Range	32 to 122° F (0 to 50° C)
Storage Temperature Range	-40 to 158° F (-40° to 70° C)
Humidity, non-condensing, max.	85%

#### Notes:

1. Requires use of system management module (SMM).
2. High speed shelf interconnection only; requires backplane Ethernet Switch (P/N CHP-BP-ETH-SW).
3. Dry contact closures. NO = Normally Open. NC = Normally Closed. C = Common.
4. Chassis enclosure and backplane without modules.

## SPECIFICATIONS CHP-PS/AC1-SW AC POWER SUPPLY

<b>Powering</b>	CHP-PS/AC1-SW
Input Voltage, 47 to 63 Hz	85 to 264 Vac
Input Current Limit, continuous, RMS, max.	9.0 A
Inrush Current Limit, peak, max.	40 A
Input Transient, IEEE C62.41-1991 Category B 1.2, 50 $\mu$ s	4 kV/0.13 kA
Power Consumption, max.	700 W
Input Connector	IEC 320-C14 plug
Output Voltages and Current	12.0 Vdc +0.35/-0.0 Vdc, 2.3 to 24 A 5.0 Vdc +0.2/-0.05 Vdc, 31 A -5.0 Vdc +0.15/-0.2 Vdc, 2 A 3.5 Vdc $\pm$ 0.1 Vdc, 5 A
Output Noise Ripple, RMS	25 mV @ 12.0 V output 25 mV @ 5.0 V output 20 mV @ -5.0 V output 20 mV @ 3.5 V output
Efficiency, min.	68 %
Power Factor	0.9
<b>Status Interface</b>	
Functions Monitored	All DC voltages, internal temperature, fan currents
<b>Mechanical</b>	
External Dimensions (W x H x D) in (cm)	3.9 x 1.57 x 14.46 in (9.91 x 3.99 x 36.73 cm)
Weight	2.75 lbs (1.24 kg)
<b>Environmental</b>	
Operational Temperature Range	32 to 122° F (0 to 50° C)
Storage Temperature Range	-40 to 158° F (-40 to 70° C)
Humidity, non-condensing	5 to 95%

**SPECIFICATIONS CHP-PS/DC1-SW DC POWER SUPPLY**

<b>Powering</b>	CHP-PS/DC1-SW
Input Voltage	-72 to -36 Vdc
Input Current Limit, max.	15.0 A @ 36 Vdc
Inrush Current Limit, max.	40 A <sup>2</sup>
Power Consumption, max.	540 W
Input Connector	3-pin male conn., mates with power plug (P/N MT0401)
Output Voltages and Current	12.0 Vdc +0.35/-0.0 Vdc, 24 A 5.0 Vdc +0.2/-0.05 Vdc, 31 A -5.0 Vdc +0.15/-0.2 Vdc, 2 A 3.5 Vdc ± 0.1 Vdc, 5 A
Output Noise Ripple, RMS	25 mV @ 12.0 V output 25 mV @ 5.0 V output 20 mV @ -5.0 V output 20 mV @ 3.5 V output
Output Noise Switching Spikes, peak to peak	6100 mV @ 12.0 V output 100 mV @ 5.0 V output 60 mV @ -5.0 V output 60 mV @ 3.5 V output
Efficiency, min. <sup>3</sup>	85 %
<b>Status Interface</b>	
Functions Monitored	Input and all DC voltages, internal temperature, fan currents
<b>Mechanical</b>	
External Dimensions (W x H x D) in (cm)	3.9 x 1.57 x 14.46 in (9.91 x 3.99 x 36.73 cm)
Weight	2.75 lbs (1.24 kg)
<b>Environmental</b>	
Operational Temperature Range	32 to 122° F (0 to 50° C)
Storage Temperature Range	-40 to 158° F (-40 to 70° C)
Humidity, non-condensing	10 to 95%, not to exceed 0.024 lbs of water/lb of dry air
<b>Regulatory Requirements<sup>4</sup></b>	
UL60950 3rd Ed/CSA C22.2 number 60950 and EN60950	
EN50083-2	
EN300 386 V1.3.1	
FCC Part 15, Class A	
FCC Part 76, Subpart K	
EN55022, Class A	

**Notes:**

1. Inrush current shall not trip a 15 A mains external circuit breaker during a Hot Start condition. Hot Start occurs when a thermally stabilized power supply is removed and immediately reinserted.
2. Inrush current shall not trip a 20 A mains external circuit breaker during a Hot Start condition. Hot Start occurs when a thermally stabilized power supply is removed and immediately reinserted.
3. When operating at 25° C over the input operating range with a full rated output load.
4. All emissions tests must be passed in two configurations: two power supplies operating redundantly and a single power supply installed in a chassis configured to provide maximum system load.

### Ordering Information

Component Type	Model Series	Description
Chassis	CHP-CHASSIS-19U	19-inch CHP MAX5000 chassis with enhanced backplane and slots for 10 application modules and 2 power supplies
	CHP-CHASSIS-R- 19U	19-inch CHP MAX5000 recessed chassis for use with front fiber applications, includes enhanced backplane and slots for 10 application modules and 2 power supplies
23-in External Bracket	CHP-EXTBKT-23	Bracket adapts 19-inch chassis to install in a 23-inch rack.
Power Supply	CHP-PS/AC1-SW	Isolated 475 Watt power supply accepting 110/220 Vac input.
	CHP-PS/DC1-SW	Isolated 475 Watt power supply accepting -48 Vdc input.

### RELATED PRODUCTS

CHP Transmitters	Optical Patch Cords
CHP Receivers	Optical Passives
Management Module	Installation Services

## Customer Care

Contact Customer Care for product information and sales:

- United States: 866-36-ARRIS
- International: +1-678-473-5656

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

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