ARRIS CH3000

OPTICAL PLATFORM

ARRISs CH3000 Chassis offers network operators a platform featuring maximum flexibility, high packaging density and operational simplicity.

The chassis can accommodate a wide variety of both active and passive modules. Modules, depending on their function, may be either half platform depth or full platform depth and single or dual width. The CH3000 accepts up to 16 full depth or 32 half depth active modules in a 3RU chassis. The chassis mid plane provides a DC power bus and universal communications bus (supporting local and remote SNMP management) and enables installation of modules from either the front or rear of the chassis, with resulting complete inter-module communication and power for easier deployment, monitoring and servicing.

Dynamic back plates are easily pre-cabled and installed in the chassis to simplify installation of active modules. Active modules can then be mat-ed with associated back plates to ensure a fast, tool-less interconnection for power, optical, and RF connections. Modules are hot swappable without disconnecting cables or fibers.

- Chassis mid-plane supports power and management system
- Dynamic back plates for true plug and play
- All slots identical: any combination of modules can be installed in any slot
- Up to 14 active full depth modules and one power supply
- Up to 32 passive half depth modules
- Supports front and rear module plug in
- Supports remote SNMP management
- AC and DC power supplies with or without front panel displays
- Hot swappable load sharing functionality
- Monitoring and control of chassis resident active modules via RS-232 port

SPECIFICATIONS

PHYSICAL	
Dimensions	13.3” D x 5.22” H x 19.0” W (3RU) (34 cm x 13.5 cm x 48.5 cm)
Weight	• CH3000N 9.6 lbs (4.5 kg) Chassis without covers • CH3000C 15.6 lbs (7 kg) Chassis with top and bottom covers
Slot configuration	• 16 full-depth slots • 32 half-depth slots (16 front-loaded and 16 rear-loaded)
General	• All slots are identical (no specific slot allocation) • Supports any combinations of modules
ENVIRONMENTAL	
Operating temperature range	–20° to +65°C (–4° to 149°F)
Storage temperature range	-40°C to +85°C (-40°F to +185°F)
Humidity	5% to 95% non-condensing
ELECTRICAL	
32 midplane electrical interconnects (16 front and 16 rear), providing contacts for chassis alarm, slot address, RS-485 communication and 12 VDC power bus Supports hot plug-in of modules	

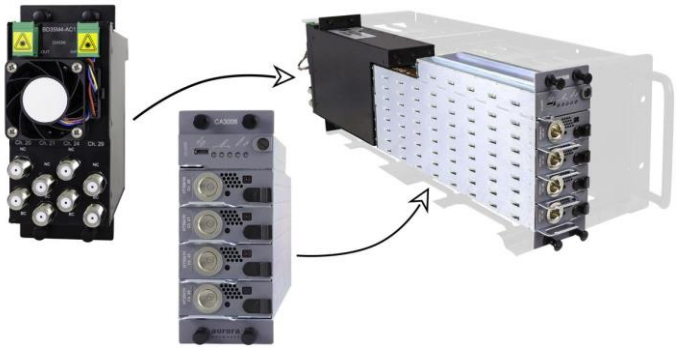
EXAMPLE CONFIGURATION

System modules

PART NUMBER		DESCRIPTION
CH3000N		CH3000 chassis without covers. The chassis provides 16 full depth slots
PS3006-D		Power supply with display, occupies 2 full slots
PS3006-N		Power supply without display. occupies 2 full slots
CX3002		Communication module, will be installed on the backplate of the power supply

Forward Path Modules

PART		DESCRIPTION
HT330xx		xx stands for: 03 = 3 dB Link 1 GHz transmitter 06 = 6 dB Link 1 GHz transmitter 09 = 9 dB Link 1 GHz transmitter 10 = 10 dB Link 1 GHz transmitter 11 = 11 dB Link 1 GHz transmitter 12 = 12 dB Link 1 GHz transmitter 13 = 13 dB Link 1 GHz transmitter 14 = 14 dB Link 1 GHz transmitter 15 = 15 dB Link 1 GHz transmitter
CA3008		Module carrier (space for 1 controller module and 4 HT33xx modules)
CC3008		Controller module
BD31A4 100 h12f 0 AS		Back plate



Return Path Module

PART		DESCRIPTION
AR3044 A-HL		Quad high gain analog return receiver (204 MHz)

MODULE OVERVIEW

POWER SUPPLIES	DESCRIPTION
PS3006	300 Watts Power supply
PS3248	-48 V DC Power supply
COMMUNICATION MODULE	**DESCRIPTION**
CX3002	Communication module
RECEIVER MODULES	**DESCRIPTION**
AR3002E	Analog forward receiver • Single 46-1218 MHz • High RF output allows passive RF splitting • Optical input • Up to 14 receivers per 3RU CH3000 chassis
AR3044	Analog return receivers (Quad Density) • AR3044H Quad 5-204 MHz • AR3044L, Quad 5-300 MHz • High RF output allows passive RF splitting • Optical input • Up to 56 receivers per 3RU CH3000 chassis.
DR3450N-50	Digital return receiver (next generation quad density) • 5-50/5-100 MHz, Quad 1-fer/2-ferm, DR3450N-75, 5-65/5-100 MHz, Quad 1-fer/2-fer • Operates in three RF bandwidth ranges: 5-50 MHz, 5-65 MHz, or 5-100 MHz (firmware selectable) • High packaging density, four receivers per single width, full-depth module slot. Up to 56 receivers per 3RU CH3000 chassis. • Single channel link mode or dual channel "2-fer" link modes, selectable via software user interface • High RF output: up to 38 dBmV per 6.4 MHz carrier in 50 MHz mode • Concatenated or point-to-point applications30+ dB of system RF gain from transmitter input to receiver output • Superior noise performance • Front access -20 dB RF test point, selectable for each input • Hot plug-in/out • Local and remote status monitoring • With BP3400C Quad Back Plate: 16 RF outputs, 4 slots wide supports 4 Quad DRs, 8 sockets for SFP-style dual RXs, deploy as needed, 1 socket for SFP TX/RX optional for management traffic

RECEIVER MODULES	DESCRIPTION
OR3144H	RFoG quad diplexer and low noise return receiver • 5-85 MHz • Quad RFOG diplexer/return receiver in ½ slot module for CH3000: Integrates AR and combining functionality, 4 parallel broadcast signals downstream with 4 reverse signals fed to one RF output • Interfaces – four 1550 nm BC inputs: Four network bi-directional network ports - BC & analog return, Four optical return paths combined to 1 RF output. Supports 1610, 1590, or 1310 nm optical return. Migrate from legacy (non-standard compliant 1590 wavelength) CPEs to 1610 • Superior low noise performance: < 2 pA/γHz, Internal RF combining of 4 receivers without the associated noise degradation of alternative approaches provides up to 6 dB improvement • Low power consumption: 2W • High density: up to 96 receivers in 3 RU
TRANSMITTER MODULES	**DESCRIPTION**
HT358xH	1550 nm quad-density full spectrum DWDM transmitters • DWDM transmitter: up to 16 wavelengths on the ITU grid • Optimized for full spectrum all QAM/OFDM loading • 1.2 GHz to support DOCSIS 3.1 deployments • Highest rack density in its class: up to 48 transmitters per 3RU chassis, with redundant power supplies and optical multiplexing • Hot plug-in/out, individually replaceable transmitter modules • Low power consumption • Dual RF inputs that are ideal for combining separate broadcast and narrowcast inputs • Manual or automatic gain control (AGC) modes • Quad-density back plate options that simplify installation and provisioning
HT354xH	• 1550 nm double-density full spectrum DWDM transmitters • DWDM transmitter: up to 40 wavelengths on the ITU grid • HT3541H: Analog loading up to 258 MHz plus QAM loading • HT3542H: Analog loading up to 552 MHz plus QAM loading • 1.2 GHz to support DOCSIS 3.1 deployments • High rack density: up to 24 transmitters per 3RU chassis, with redundant • ower supplies and optical multiplexing • Hot plug-in/out, individually replaceable transmitter modules • Low power consumption • Dual RF inputs that are ideal for combining separate broadcast and narrowcast inputs • Internal RF amplifier up to +6 dB • Manual or automatic gain control (AGC) modes • Double-density back plate options that simplify installation and provisioning
HT3562H	• 1550 nm double-density full spectrum transmitters • Externally modulated full spectrum transmitter: up to 16 wavelengths on the ITU grid • Enhanced MER performance over distances beyond 60 km providing tremendous value to multiple-system operators (MSOs) migrating to high order modulation technologies. • 1.2 GHz to support DOCSIS 3.1 deployments • Support for full QAM/OFDM loading or partial analog loading (up to 258 MHz) plus QAM/OFDM loading up to 1.2 GHz • Industry's highest rack density for externally modulated transmitters: 24 transmitters per 3RU chassis, including redundant power supplies and optical multiplexing • Hot plug-in/out, individually replaceable transmitter modules • Optional RF input equalization controls • Manual or automatic gain control (AGC) modes • Double-density back plate options that simplify installation and provisioning

TRANSMITTER MODULES	DESCRIPTION
AT3572H	• 1550 nm full spectrum transmitters • Externally modulated full spectrum transmitter: up to 16 wavelengths on the ITU grid • Enhanced performance featuring improvedMER performance over extended distances beyond 100 km to support reliable high order modulation transmission • 1.2 GHz to support DOCSIS 3.1 deployments • Support for full QAM/OFDM loading or partial analog loading (up to 552 MHz) plus QAM/OFDM loading up to 1.2 GHz • Hot plug-in/out, individually replaceable transmitter modules • Dual RF inputs that are ideal for combining separate broadcast and narrowcast inputs • Manual or automatic gain control (AGC) modes
AT3552H	• 1550 nm full spectrum transmitters • Externally modulated full spectrum transmitter • Featuring high SBS suppression (20 dBm), optimal for high launch powers into optical fiber for enhanced HFC, RFoG, PON, and FTTH applications • 1.2 GHz to support DOCSIS 3.1 deployments • Optimized for either analog (46 to 258 MHz) and QAM loading (258 to 1218 MHz) or all QAM/OFDM loading • Hot plug-in/out, individually replaceable transmitter modules • Dual RF inputs that are ideal for combining separate broadcast and narrowcast inputs • Manual or automatic gain control (AGC) modes
AT3545G	• 1550 nm full spectrum DWDM transmitters • AT3545G high-performance 1 GHz transmitters enable a cable network's evolution to full QAM capabilities, up to 40DWDM wavelengths, including a seamless migration for future CCAP deployments. AT3545G transmitters are optimized for two applications: • Light analog loading (up to 258 MHz) plus QAM loading up to 1002 MHz—ideal for migration to high or full QAM loading • Partial analog loading (up to 552 MHz) plus QAM loading up to 1002 MHz—ideal for node segmentation
AT3553 and AT3554	• 1550 nm broadcast transmitters • ARRIS's AT3550 series 1 GHz externally modulated transmitters are optimized for various channel loading requirements. Applications include Broadcast (amplify and split) and long-haul split band. • AT3553 for links up to 65 km (adjustable SBS suppression 16 +/- 2 dBm at 65 km) • AT3554 for links up to 100+ km (adjustable SBS suppression 14 +/- 2 dBm at 100 km) • 9.5 dBm minimum optical output power on 100 GHz ITU DWDM grid • 3-slot design fits CH3000 chassis platform
HT33xxH	• 1310 nm double-density transmitters • Models available for 3 to 15 dB link loss budgets • 1.2 GHz to support DOCSIS 3.1 deployments • Highest rack density in its class: 24 transmitters per 3RU chassis, with redundant power supplies and optical multiplexing • Hot plug-in/out, individually replaceable transmitter modules • Low power consumption • Dual RF inputs that are ideal for combining separate broadcast and narrowcast inputs • Optional automatic gain control (AGC)
AT3300G	• 1310 nm standard performance transmitters • ARRIS's AT3300G series 1 GHz transmitters are available with dual RF inputs with AGC. • Models available for 3 to 15 dB link loss budgets • Dual RF input that are ideal for combining separate broadcast and narrowcast inputs
DT3550N	• Digital return transmitters • Multiplexes two RF return segments onto one optical return path ("2-fer") • Support for pluggable SFPs provides flexibility of choices of optical output on 100 GHz ITU DWDM grid, CWDM grid, 1550 nm, or 1310 nm options • RF return bandwidth - 5 to100 MHz

The ARRIS FA3500 series is a family of high output, extremely compact 1550 nm optical amplifiers (EDFAs) in single-width modules with output powers ranging from 14 to 21 dBm. Dual amplifier versions, which provide two optically independent amplifiers in a single-width module, are also available. Their compact design dramatically reduces rack space requirements in the headend and hubs.

ARRIS also offers two models of high performance, multiport optical amplifiers: FA3530M and FA3533M. The high power output of these amplifiers is ideally suited for video distribution in RFoG and RFPON network architectures. In RFoG applications, the 8-port FA3530M EDFA at the headend amplifies and distributes the 1550 nm broadcast video signal to over 250 residential customers, over 8 typical RFoG network segments, each with 32 connected endpoint devices. Comparably, the 16-port FA3533M amplifies and distributes the 1550 nm broadcast signal to over 500 customers over 16 typical RFoG network segments, each with 32 connected endpoint devices.

Dense chassis packaging:

- 14 Single density EDFAs, up to 21 dBm optical output, in 3RU chassis, 14 Dual density, 28 EDFAs, up to 17 dBm optical output, in 3RU chassis

OPTICAL EDFA AMPLIFIERS	DESCRIPTION
FA3514S, FA3517S/F, FA3519F, FA3520S, and FA3521S	• Single amplifier models
FA3514D and FA3517D/G	• Dual-amplifier models
FA3517F/G, FA3519F, and FA3521F, H, and J	• Gain flattened models
FA3533M: 16x21 dBm outputs, FA3530M: 8x21 dBm outputs	• High power models