

COMMSCOPE CH3000

OPTICAL PLATFORM

COMMSCOPEs 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 intermodule 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		<pre>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</pre>
CA3008		Module carrier (space for 1 controller module and 4 HT33xx modules)
CC3008	1 2 00000	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	 Optical input Up to 56 receivers per 3RU CH3000 chassis. 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 	



RECEIVER MODULES	DESCRIPTION	
	RFoG quad diplexer and low noise return receiver	
OR3144H	 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	
	1550 nm quad-density full spectrum DWDM transmitters	
HT358xH	 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	DESCR	IPTION
	•	1550 nm full spectrum transmitters
	•	Externally modulated full spectrum transmitter: up to 16 wavelengths on
		the ITU arid
	•	Enhanced performance featuring improvedMER performance over
		extended distances beyond 100 km to support reliable high order
		modulation transmission
AT3572H		1.2 GHz to support DOCSIS 3.1 deployments
A1337211		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
	٠	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
AT3552H	•	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
	•	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
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
	•	1550 nm broadcast transmitters
	•	COMMSCOPE's AT3550 series 1 GHz externally modulated transmitters
		are optimized for various channel loading requirements. Applications
		Include Broadcast (amplify and split) and long-naul split band.
AT3553 and AT3554	•	A13553 for links up to 65 km (adjustable SBS suppression 16 +/- 2 dBm
		at 65 km)
	•	A13554 for links up to 100+ km (adjustable SBS suppression 14 +/- 2
		ubili al 100 Kill) 0.5 dBm minimum enticel output newer on 100 CUz ITU DWDM grid
	•	
	•	1210 nm double denoity transmitters
	•	Nodele eveileble for 2 to 15 dP link less hudgets
	•	Noucis available for 5 to 15 up liftk loss budgets
НТ33ххН	•	Lize on support DUCERES . Lachard Ments
	•	righest rack density in its class. 24 transmitters per 3KU chassis, With redundant nower supplies and ontical multiploxing.
	-	Hot plug-in/out, individually replaceable transmitter modules
		Low power consumption
	-	Dual RE inputs that are ideal for combining congrate broadcast and
AT3300G		narrowcast inputs
		Ontional automatic gain control (AGC)
		1310 nm standard performance transmitters
		COMMSCOPE's AT3300G series 1 GHz transmitters are available with
	Ū	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 COMMSCOPE 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.

COMMSCOPE 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	