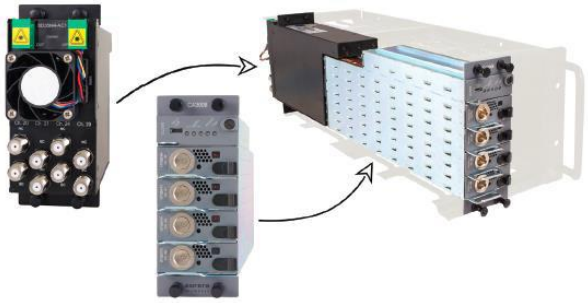
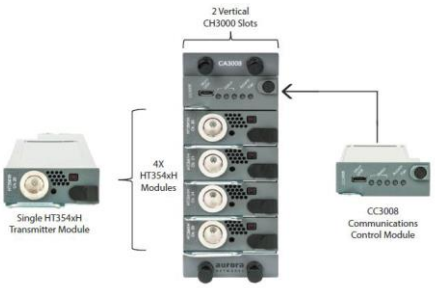
COMMSCOPE HT3540H Series

DOUBLE DENSITY FULL SPECTRUM DWDM TRANSMITTERS (1.2 GHZ PASSBAND)

The COMMSCOPE Networks' HT3540H Series Double-Density Full Spectrum Dense Wave Division Multiplexing (DWDM) Transmitter System provides high performance and a high rack density forward path transmission solution for Cable TV service providers.

- DWDM transmitter: up to 40 wavelengths on ITU grid
- Hot plug in/out, individually replaceable transmitter modules
- Optimized for full spectrum loading
- Analog loading up to 552 MHz plus QAM loading
- Manual or Automatic Gain Control (AGC) modes
- Low power consumption
- Industry's highest DWDM rack density: 24 transmitters per 3RU chassis, with redundant power supplies and optical multiplexing
- Front access –20 dB input test point
- Front panel laser On/Off switch
- Local and remote status monitoring features





These high performance transmitters are designed for Dense Wave Division Multiplexing (DWDM) applications for point-to-point forward path transmission of full spectrum broadcast and narrowcast services.

The HT3541H series transmitters are designed for "light" analog channel loading from 0 to 30 analog channels (up to 258 MHz) plus QAM channel loading, or for all QAM loading. They are are also designed for QAM-only loading for digital services as part of a BC/NC overlay system.

The HT3542H series transmitters are designed for "full" analog channel loading from 0 to 79 analog channels (up to 552 MHz) plus QAM channel loading.

SPECIFICATIONS

PHYSICAL	
Dimensions	11.5” D x 0.8” H x 2.0” W (29.2 x 2.0 x 5.1 cm)*
Weight	0.75 lbs. (0.34 kg)
	* 4 transmitter units designed to be vertically stacked, plus a CC3008 Communications Module, and installed inside a CA3008 Module Carrier. The combination occupies two slots in a 3RU CH3000 Chassis.
ENVIRONMENTAL	
Operating	–20° to +65°C (–4° to 149°F)
Storage	–40° to +85°C (–40° to +185°F)
Humidity	5% to 95% non-condensing
RF AND OPTICAL INTERFACE	
RF input	F-type male (mates to BD31A4 or BD35M4 Back Plates)
Input RF test point	G-type male (located at front panel, –20 dB)
Optical connector	SC/APC (mates to BD31A4 or BD35M4 Back Plates)
POWER REQUIREMENTS	
Input voltage	12 VDC
Power consumption	10 W (per transmitter) including controller and back plate cooling fan
GENERAL	
Hot plug-in/out	
Manual gain alignment	
CHANNEL LOADING	
HT3541H: 0–30 Analog channels (up to 258 MHz), plus QAM channels HT3542H: 0–79 Analog channels (up to 552 MHz), plus QAM channels HT3543H: All QAM channels	
OPTICAL	
Optical output power	10 ± 0.25 dBm
Wavelength	See DWDM ITU Channel Plans description
Fiber length (user-settable, adjustable dispersion compensation)	HT3541H and HT3543H: 60 km (in 5 km steps) HT3542H: 40 km (in 1 km steps) • Additional external dispersion compensation can be supported for some applications.
ELECTRICAL	
Passband	45–1218 MHz
Frequency response (including slope)	• ± 1.0 dB (BC input @ 25°C) • – 6 ± 0.5 dB (NC input relative to BC input)
Nominal RF input levels (input attenuator = 0 dB)	**HT3541H:** • 16.2 dBmV/ch for 30 analog channels into BC input • 10.2 dBmV/ch for 256-QAM channels into BC input, or 16.2 dBmv/ch into NC input **HT3542H:** • 15 dBmV/ch for 79 analog channels into BC input • 9 dBmV/ch for 256-QAM channels into BC input, or 15 dBmv/ch into NC input **HT3543H:** • 10.7 dBmV/ch for 154 256-QAMchannels into BC input, or 16.7 dBmV/ch into NC input
RF input impedance	75 Ω, nom
RF input return loss	18 dB, min
RF input attenuator/amplify range (Manual Mode)	-6.0 to +5.0 dB Normal mode. High-gain mode (+5.5, +6.0 dB) supports BC RF input port, NC RF input is terminated.
RF input attenuator step size	0.5 dB
AGC Mode	Maintains laser power to within ± 3 dB of the learned RF value
Level stability (typical)	± 0.5 dB (–1 worst case relative to 25°C)
256-QAM BER	< 10–5 (pre-FEC, ITU-C)
MER	> 37 dB to 50°C; > 36 dB to 65°C

Link performance	HT3541H		HT3542H		HT3543H	
Loading	30A + 124 QAM		79A + 75 QAM		154 QAM	
Length (km)	40	60	30	40	40	60
CNR* (dB)	52	50	51	50	See MER	See MER
CSO (dB)	61	58	60	58	-	-
CTB (dB)	65	65	65	65	-	-
	* max 1 dB degradation at temperature extremes					
	An HT3541H transmitter can also be used as a narrowcast transmitter. For example, in BC/NC overlay systems, it would have the performance of an AT3535G-xx-1-AS transmitter. For more information about BC/NC overlay system performance and evolution from low NC 256-QAM channel loading to full spectrum 256-QAM channel loading, or for information about full spectrum multiwavelength applications with up to 40 DWDM wavelengths, please contact your COMMSCOPE representative.						

DWDM ITU CHANNEL PLANS

COMMSCOPE supports DWDM network architectures with a variety of products on the standard DWDM ITU Grid (ITU-T G.694.1). For a more complete description, please refer to the COMMSCOPE DWDM ITU Grid Channel Plan data sheet.

COMMSCOPE BD35M4-AC

DOUBLE-DENSITY BACK PLATE

This back plate provides connections for a group of four HT3540H Series Transmitters installed in the same CA3008 Module Carrier, along with the CC3008 Communications Control Module. These 4-channel mux back plates (for which outputs can be cascaded from one back plate to another) may be ordered for various channel groups.

SPECIFICATIONS

PHYSICAL	
Dimensions	7.2” D x 5.2” H x 2.0” W* (18.2 x 13.2 x 5.1 cm)
Weight	2.0 lb. (0.91 kg)
ENVIRONMENTAL	
Operating	–20° to +65°C (–4° to 149°F)
Storage	–40° to +85°C (–40° to +185°F)
Humidity	5% to 95% non-condensing
POWER REQUIREMENTS	
Input voltage	12 VDC
Power consumption	5 W max (2.5 W Typ), including the replaceable cooling fan
OPTICAL INTERFACE	
Optical Connectors	SC/APC (2)
	• DWDM INP (input from previous mux back plate) • DWDM OUT (output to network or next mux back plate)
RF INTERFACE	
8 F-Type Connectors	• 4 BC and 4 NC (1 BC/NC pair per transmitter)

OPTICAL		
Channel spacing	100 GHz	
Channel plan	See ITU Channel Plans description	
Insertion Losses, including connectors	Typ	Max
• DWDM input to DWDM output	1.0 dB	1.2 dB
• Ch. yy input to DWDM output	1.4 dB	1.6 dB
Uniformity, including connectors		
• Module Uniformity	0.7 dB	1.0 dB
• Paired Uniformity	0.4 dB	0.6 dB
Return loss, min	45 dB	
Directivity, min	55 dB	
Passband @ 0.2 dB		
• Ch. yy input to DWDM output	± 0.125 nm	
• DWDM input to DWDM output	Passes 1423.5 through 1617.5 with a notch at the channel add/drop band. WDL for the passband is within ± 0.15 dB	
Ripple within passband	0.5 dB max	
Polarization dependent loss, max	0.1 dB (typically < 0.05 dB)	
Power handling, max (any input port)	21.8 dBm	

COMMSCOPE BD31A4-100

DOUBLE-DENSITY BACK PLATE

The BD31A4 is a double-density back plate that provides a choice of 4 separate BC and 4 separate NC RF inputs, or 1 common BC and 4 separate NC RF inputs, for four HT3541H Transmitters. The BD31A4-100 provides RF input and optical connections to or from the HT3541H transmitters.

SPECIFICATIONS

PHYSICAL	
Dimensions	7.2” D x 5.2” H x 2.0” W* (18.2 x 13.2 x 5.1 cm)
Weight	2.0 lb. (0.91 kg)
ENVIRONMENTAL	
Operating	–20° to +65°C (–4° to 149°F)
Storage	–40° to +85°C (–40° to +185°F)
Humidity	5% to 95% non-condensing
POWER REQUIREMENTS	
Input voltage	12 VDC
Power consumption	5 W max (2.5 W Typ), including the replaceable cooling fan
OPTICAL	
	Through 4 SC/APC connectors, the BD31A4-100 provides optical pass-through from the HT354xH transmitter.
Optical Insertion Loss	0.2 dB Typ; 0.4 dB Max
	Refer to the HT354xH product specifications for more information.
RF INTERFACE	
	The BD31A4-100 provides RF to the HT354xH transmitter through F-type RF connectors. • 4 BC and 4 NC (BD31A4-100-H12F-0-AS) • 1 BC and 4 NC (BD31A4-100-H10F-0-AS)