

# Headend Optics Platform (CH3000)

## HT3580H Series Quad-Density Full Spectrum DWDM Transmitter System

### FEATURES

- DWDM transmitter: up to 16 wavelengths on ITU grid
- Hot plug-in/out, individually replaceable transmitter modules
- Optimized for full spectrum all QAM loading
- Manual or Automatic Gain Control (AGC) modes
- Low power consumption
- Industry's highest DWDM rack density: 48 transmitters per 3RU chassis, with redundant power supplies and optical multiplexing
- Front access -20 dB input test point
- Front panel laser On/Off control
- Local and remote status monitoring features

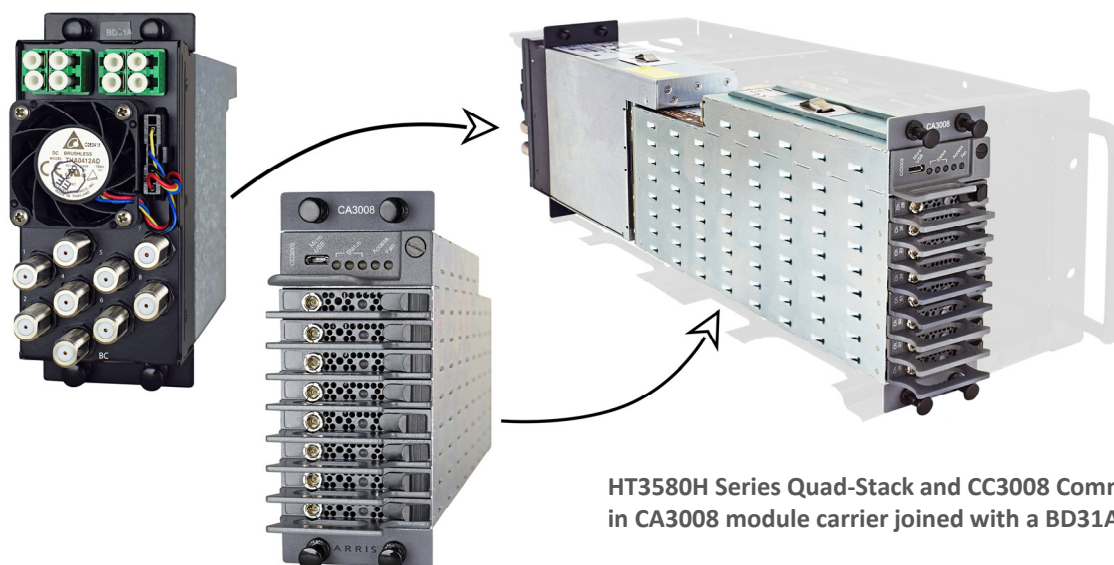


### SYSTEM OVERVIEW

The ARRIS HT3580H Series Quad-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.

The high density packaging design allows up to eight (8) HT3580H series high performance transmitters plus a CC3008 Communications Control Module to be stacked vertically and contained by the CA3008 module carrier, requiring only two chassis slots of a 3RU chassis. The compact solution supports up to 48 transmitters in a CH3000 chassis, including redundant power supplies.

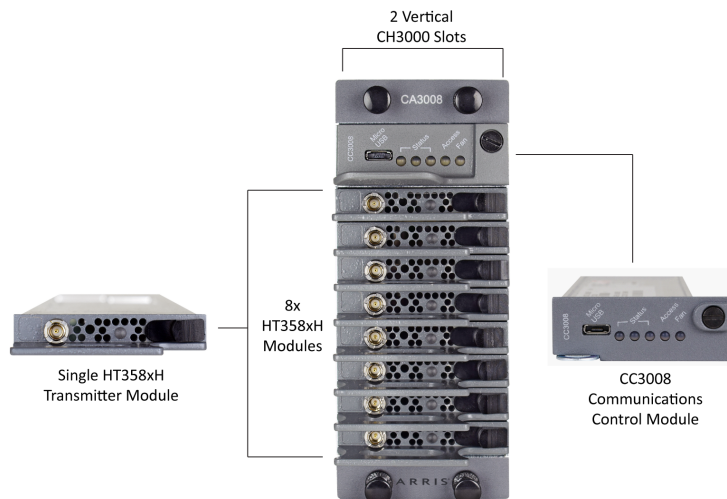
When installed in the chassis, the transmitters interface to a “zero-slot” back plate, providing support for up to eight HT3580H series transmitters. The figure below shows a fully loaded carrier mated to the BD31A8 Quad-Density back plate that supports eight HT3580H transmitters.



**HT3580H Series Quad-Stack and CC3008 Communications Module in CA3008 module carrier joined with a BD31A8 Back Plate**

The CC3008 Communications Module installed at the top of a HT3580H series transmitter stack provides the communications interface between the transmitters and the CH3000 mid-plane bus, allowing complete configuration and management control of the stack, both local and remote.

## HT3580H Series Quad-Density Full Spectrum DWDM Transmitters (1.2 GHz Passband)



ARRIS HT3580H Series Quad-Density Full Spectrum DWDM Transmitters are a key element of the ARRIS HFC and Fiber Deep architectures in support of the evolution to all QAM transmission. 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.

HT358xH series transmitters are designed for all QAM loading. These transmitters also incorporate advanced dispersion compensation circuitry to enable transmission of high quality signals over maximum distances.

The above figure shows a front view of the CA3008 carrier components: a single HT358xH Quad-Density Transmitter (left); a single CC3008 Communications Module (right), and a fully loaded “stack” (center) providing eight (8) DWDM transmitters, requiring only 2 slots of a CH3000 Chassis. A fully loaded CH3000 chassis supports 48 Quad-Density DWDM transmitters and redundant power supplies.

### Features

- DWDM transmitter: 16 wavelengths on the ITU grid
- Manual or Automatic Gain Control (AGC) modes
- RF input attenuation up to -6 dB
- Optimized for full spectrum loading
- HT358xH: All QAM loading
- Hot plug-in/out, individually insertable
- Low power consumption
- Industry’s highest DWDM rack density: 48 transmitters per 3RU chassis, with redundant power supplies
- Front access -20 dB input test point
- Front panel laser On/Off interlock control
- Local and remote status monitoring

## HT3580H SERIES SPECIFICATIONS

Characteristics	Specification
<b>Physical</b>	
Dimensions	11.5" D x 0.4" H x 2.0" W (29.2 x 1.0 x 5.1 cm)*
Weight	0.4 lbs. (0.18 kg)
	* Eight (8) 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.
<b>Environmental</b>	
Operating	-20° to +50°C (-4° to 122°F)
Storage	-40° to +85°C (-40° to +185°F)
Humidity	5% to 95% non-condensing
<b>RF and Optical Interface</b>	
RF input	F-type male (using BD31A8 or BD35M8 Back Plates)
RF test point	75Ω MCX female (flush with front panel) (if F connector is preferred, MCX to F adapter recommended, 1 provided with each Quad BD3 back plate or pack of ten available, ordering #TL3MCXF-10)
Optical connector	SC/APC (using BD35M8 Back Plates) LC/APC (using BD31A8 Back Plates)
<b>Power Requirements</b>	
Input voltage	12 VDC
Power consumption	6 W (per transmitter) including controller and back plate cooling fan
<b>General</b>	
	Hot plug-in/out
	Manual and automatic gain control
<b>Channel loading</b>	
	HT358xH: All QAM channels
<b>Optical</b>	
Optical output power	10 ± 0.25 dBm
Wavelength	See DWDM ITU Channel Plans description
Fiber length (user-settable, adjustable dispersion compensation)	HT358xH: 60 km (in 1 km steps) • Additional external dispersion compensation can be supported for some applications.
<b>Electrical</b>	
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)	HT358xH: • 10.2 dBmV/ch for 194 256-QAM channels into BC input, or 16.2 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 0 dB
RF input attenuator step size	0.5 dB
AGC Mode	Maintains RF power constant when input RF power changes up to ± 3 dB of the learned RF value
Level stability (typical)	± 0.2 dB
256-QAM BER	< 10 <sup>-6</sup> (pre-FEC, ITU-C)
MER (194 QAM load)	40 (40 km), 37 (60 km)
<b>DWDM ITU Channel Plans</b>	
	See muxing back plate information for wavelength graphics. ARRIS 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 ARRIS DWDM ITU Grid Channel Plan data sheet.

## BD31A8-100 Quad-Density Back Plates

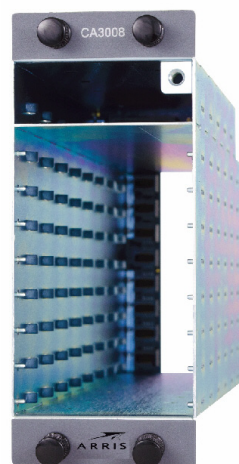
The BD31A8 models provide RF input and optical connections to or from the HT358xH transmitters. The fan provides air flow to keep transmitters cool.

BD31A8-100-H10F-0-AL is a quad-density back plate that provides 1 common BC input and 8 separate NC RF inputs for eight HT358xH Transmitters. It also supports eight separate optical output LC/APC connectors. Internally it includes an RF amplifier and splitter to split the BC input equally to all 8 transmitters and maintain 1x8 RF levels.

BD31A8-100-H18F-0-AL is a quad-density back plate that provides 8 separate BC inputs and 0 NC RF input for eight HT358xH Transmitters. It also supports eight separate optical output LC/APC connectors. This back plate is recommended for customers that prefer to do their broadcast and narrowcast RF combining external from the CH3000 Chassis.



BD31A8-100-H10F-0-AL Back Plate



CA3008 Module Carrier

### BD31A8 BACK PLATE SPECIFICATIONS

Characteristics	Specification
<b>Physical</b>	
Dimensions	7.2" D x 5.2" H x 2.0" W (18.2 x 13.0 x 5.4 cm)
Weight	2.0 lb. (0.91 kg)
<b>Environmental</b>	
Operating	-20° to +65°C (-4° to 149°F)
Storage	-40° to +85°C (-40° to +185°F)
Humidity	5% to 95% non-condensing
<b>Power Requirements</b>	
Input voltage	12 V <sub>DC</sub>
Power consumption	5.5 W max (2.5 W Typ), included in power figure found in HT3580H specifications
<b>Optical</b>	
Through 8 LC/APC connectors, the BD31A8-100 provides optical passthrough from the HT358xH transmitter.	
Optical Insertion Loss	0.2 dB Typ; 0.3 dB Max
<b>RF Interface</b>	
The BD31A8 provides RF to the HT358xH transmitter through F-type RF connectors	
<ul style="list-style-type: none"> <li>1 BC and 8 NC (BD31A8-100-H10F-0-AL)</li> <li>8 BC and 0 NC (BD31A8-100-H18F-0-AL)</li> </ul>	

## BD35M8-ACx and BD35M8-EEEx Quad-Density Back Plates for groups of 8 wavelengths

The ARRIS BD35M8 Family of back plates are 100 GHz grid spacing Quad-Density Mux Back Plates that multiplex the output of eight HT3580H Quad-Density Full Spectrum Transmitters.

These back plates provide connections for a group of eight HT3580H Series Transmitters installed in the same CA3008 Module Carrier, along with the CC3008 Communications Control Module.

These 8-channel mux back plates (for which outputs can be cascaded from one back plate to another) may be ordered for the channel groups indicated in the ordering information section.

BD35M8 BACK PLATE SPECIFICATIONS		
Characteristics	Specification	
<b>Physical</b>		
Dimensions	7.2" D x 5.2" H x 2.0" W (18.2 x 13.0 x 5.4 cm)	
Weight	2.0 lb. (0.91 kg)	
<b>Environmental</b>		
Operating	-20° to +65°C (-4° to 149°F)	
Storage	-40° to +85°C (-40° to +185°F)	
Humidity	5% to 95% non-condensing	
<b>Power Requirements</b>		
Input voltage	12 VDC	
Power consumption	5 W max (2.5 W Typ), included in power figure found in HT3580H specifications	
<b>Optical Interface</b>		
Optical Connectors	SC/APC (3) <ul style="list-style-type: none"><li>DWDM INP (input from previous mux back plate)</li><li>DWDM OUT (output to network or next mux back plate)</li><li>-20 dB optical test point</li></ul>	
<b>RF Interface</b>		
9 F-Type Connectors	<ul style="list-style-type: none"><li>1 BC and 8 NC</li></ul>	
<b>Optical</b>		
Channel spacing	100 GHz	
Channel plan	See ITU Channels in Ordering Information	
Insertion Losses, including connectors	Typ	Max
<ul style="list-style-type: none"><li>DWDM input to DWDM output</li></ul>	1.8 dB	2.1 dB
<ul style="list-style-type: none"><li>Ch. yy input to DWDM output</li></ul>	2.0 dB	2.4 dB
<ul style="list-style-type: none"><li>-20 dB test point</li></ul>	20.0 dB	20.4 dB
Uniformity, including connectors		
<ul style="list-style-type: none"><li>Module Uniformity</li></ul>	1.1 dB	1.5 dB
<ul style="list-style-type: none"><li>Paired Uniformity</li></ul>	0.5 dB	0.7 dB
Return loss, min	45 dB	
Directivity, min	55 dB	
Passband @ 0.2 dB		
<ul style="list-style-type: none"><li>Ch. yy input to DWDM output</li></ul>	± 0.125 nm	
<ul style="list-style-type: none"><li>DWDM input to DWDM output</li></ul>	Passes 1423.5 through 1617.5 with a notch at the channel add/drop band. WDL for the passband is within ± 0.15 dB	
Polarization dependent loss, max	0.15 dB (typically < 0.05 dB)	
Power handling, max (any input port)	21.8 dBm	

## BD35M8-DCx Quad-Density Back Plates for 2 sets for the same group of 4 wavelengths

The ARRIS BD35M8 Family of back plates are 100 GHz grid spacing Quad-Density Mux Back Plates that multiplex the output of 2 sets of four HT3580H Quad-Density Full Spectrum Transmitters onto two separate output ports.

These back plates allow 2 sets of four HT3580H Series Transmitters installed in the same CA3008 Module Carrier, and using the same CC3008 Communications Control Module, to feed two different fibers with four wavelengths on each fiber.

These 2x4-channel mux back plates (for which outputs can be cascaded from one back plate to another) that may be ordered for the channel groups indicated in the ordering information section.

### BD35M8 BACK PLATE SPECIFICATIONS

Characteristics	Specification	
<b>Physical</b>		
Dimensions	7.2" D x 5.2" H x 2.0" W (18.2 x 13.0 x 5.4 cm)	
Weight	2.0 lb. (0.91 kg)	
<b>Environmental</b>		
Operating	-20° to +65°C (-4° to 149°F)	
Storage	-40° to +85°C (-40° to +185°F)	
Humidity	5% to 95% non-condensing	
<b>Power Requirements</b>		
Input voltage	12 VDC	
Power consumption	5 W max (2.5 W Typ), included in power figure found in HT3580H specifications	
<b>Optical Interface</b>		
Optical Connectors	LC/APC (6) <ul style="list-style-type: none"><li>• 2 of DWDM INP (input from previous mux back plate)</li><li>• 2 of DWDM OUT (output to network or next mux back plate)</li><li>• 2 of -20 dB optical test point</li></ul>	
<b>RF Interface</b>		
9 F-Type Connectors	<ul style="list-style-type: none"><li>• 1 BC and 8 NC</li></ul>	
<b>Optical</b>		
Channel spacing	100 GHz	
Channel plan	See ITU Channels in Ordering Information	
Insertion Losses, including connectors	Typ	Max
• DWDM input to DWDM output	1.1 dB	1.3 dB
• Ch. yy input to DWDM output	1.3 dB	1.5 dB
• -20 dB test point	20.0 dB	20.4 dB
Uniformity, including connectors		
• Module Uniformity	0.4 dB	0.5 dB
• Paired Uniformity	0.5 dB	0.7 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	
Polarization dependent loss, max	0.1 dB (typically < 0.05 dB)	
Power handling, max (any input port)	21.8 dBm	



## ORDERING INFORMATION

## HT358xH Transmitter

Quad-Density, Full Spectrum DWDM Transmitter  
(1.2 GHz)

3 = EEx wavelengths (see BD35M8 table below)  
4 = ACx wavelengths (see BD35M8 table below)

For HT3583H = E + \*\* ITU Channel #  
For HT3584H = A + \*\* ITU Channel #

\*\* = ITU Channel Number (20 through 62;  
reference ARRIS DWDM ITU Grid Channel Plan  
Data Sheet)

Connector Type: SC/APC

H T 3 5 8 \* H - Q - \* \* \* 0 - 2 - A S

## Back Plates

Quad-Density Back plate for 8 HT358x Full  
Spectrum Transmitters with LC/APC Connector

0 = 1 common BC input and 8 NC RF inputs  
8 = 8 BC inputs and 0 NC RF input

Connector Type: LC/APC

B D 3 1 A 8 - 1 0 0 - H 1 x F - 0 - A L

Quad-Density Muxing Back plate for 8 HT358x Full  
Spectrum Transmitters with SC/APC Connectors  
with optical test point

0 = 1 common BC input and 8 NC RF inputs

B D 3 5 M 8 - \* \* \* - H 2 0 F - 3 - A S

HT3584H 16 Wavelength Plan	
Code	Wavelength Group
AC2	ITU CH 20, 21, 24, 29
	ITU CH 35, 42, 52, 54
AC4	ITU CH 23, 33, 44, 47
	ITU CH 51, 57, 58, 59

HT3583H 16 Wavelength Plan	
Code	Wavelength Group
EEB	ITU CH 21, 22, 24, 26
	ITU CH 28, 33, 36, 39
EED	ITU CH 44, 48, 52, 54
	ITU CH 57, 60, 61, 62

Connector Type: SC/APC

Quad-Density Muxing Back plate for 2 sets of 4 of  
the HT358x Full Spectrum Transmitters with  
LC/APC Connectors with optical test point

0 = 1 common BC input and 8 NC RF inputs

B D 3 5 M 8 - D \* \* - H 2 0 F - 3 - A L

HT3584H 2 sets of 4 of the 16 Wavelength Plan	
Code	Wavelength Group
DC1	ITU CH 20, 21, 24, 29
	ITU CH 20, 21, 24, 29

Connector Type: LC/APC



ORDERING INFORMATION

System Accessories

Communications Control Module

C C 3 0 0 8

Module Carrier

C A 3 0 0 8

Filler Module for Quad-Density Slots

H T 3 F I L H



RELATED PRODUCTS

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Optical Transmitters	Optical Passives
Digital Return	Installation Services

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

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