

# Headend Optics Platform (CH3000)

## AT3300L Multiwavelength LcWDM

### FEATURES

- Up to eight O-Band wavelengths per fiber
- 79 analog NTSC channels plus 75 QAM channels
- Dual inputs for separate BC/NC feeds
- 46–1002 MHz RF bandwidth on both inputs
- Front panel –20 dB input test port
- Manual or AGC operation
- True dynamic plug and play
- One full-depth slot in CH3000
- Up to 14 transmitters per 3RU chassis
- Hot-swappable, tool-less installation
- Front panel laser On/Off interlock switch
- Local and remote status monitoring features
- Open standard TCP/IP SNMP support
- 0° C to +50° C operation



### PRODUCT OVERVIEW

The ARRIS AT3300L series 1 GHz LcWDM (Low Cost Wave Division Multiplexing) Transmitters provide increased bandwidth capacity per fiber for the expanding service demands of HDTV, VoIP, VOD and high-speed DOCSIS. These transmitters are ideal for segmentation of node service areas because they enable the reuse of existing fiber up to eight times. These transmitters are designed for transport requiring optical output powers ranging from 6 to 12 dBm.

AT3300L series transmitters are available with dual 46–1002 MHz RF ports for combining separate broadcast and narrowcast inputs within the transmitter. 50dB isolation between the broadcast and narrowcast inputs protects against NC crosstalk on adjacent transmitters via the RF drive network. AGC circuitry compensates for variations in RF input level to maintain constant transmitter output RF drive level to the laser.

High density packaging enables network operators to install up to 14 transmitters per 3RU chassis, all of which can be monitored remotely or locally from the power supply module. Additionally, the compact single-width module design can be plugged in either the front or rear of the CH3000 3RU chassis to optimize equipment installation and operating conditions. The compact design minimizes rack space requirements in headends or hubs and enhances deployment of traditional HFC, passive HFC and fiber-to-the-home (FTTH) networks.

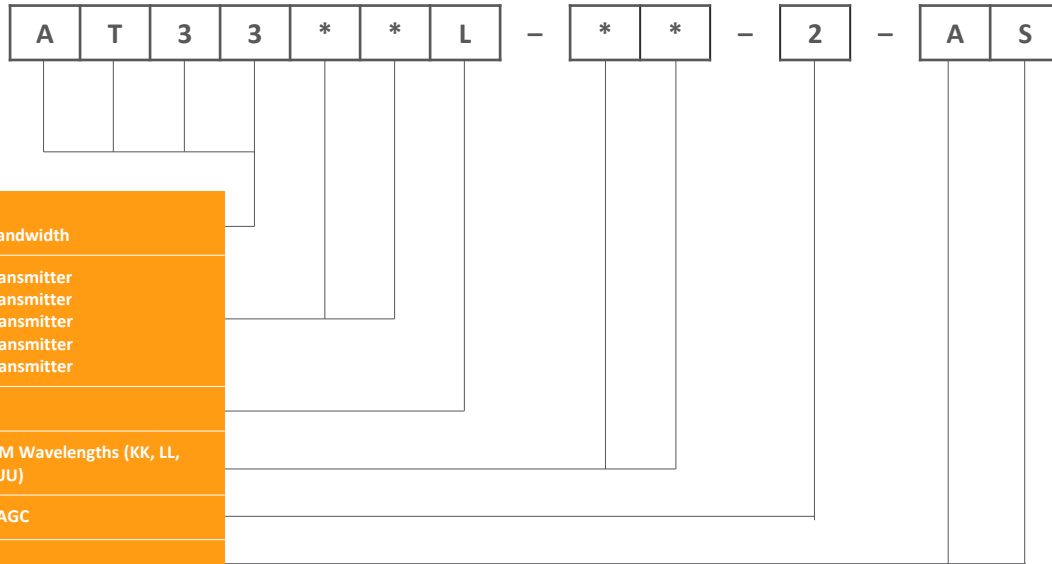
#### RELATED PRODUCTS

|                      |                       |
|----------------------|-----------------------|
| CH3000 Chassis       | Optical Patch Cords   |
| Optical Transmitters | Optical Passives      |
| BP Back plates       | Installation Services |

## SPECIFICATIONS

| Characteristics   | Specification   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|---|---|--------------------|-----------------------|--------------------|-----------------------|------|--------|--------------------|-------|----|---------------------|-------------|-----|--|----|--------------|-----|--|----|---------------|------|--|----|---------------|------|
| <b>Physical</b>   |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Dimensions  | 13.0" D x 4.3" H x 1.0" W (3RU) (33 cm x 11 cm x 2.5 cm)  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Weight  | 1.7 lbs (0.77 kg)   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| <b>Environmental</b>  |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Operating temperature range   | 0° to +50°C (32° to 122°F)  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Storage temperature range   | -40°C to +85°C (-40°F to +185°F)  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Humidity  | 5% to 95% non-condensing  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| <b>Power Requirements</b>   |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Power consumption   | 12 W max  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| <b>General</b>  |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Wavelength  | KK, LL, MM, NN, RR, SS, TT, and UU  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Hot plug-in/out   |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Manual or AGC operation   |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| <b>RF and Optical Interface</b>   |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| RF input(s)   | F-type (at Back Plate BP-A8)  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Input RF test point   | G-type (at front panel, -20 dB)   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Optical connector   | SC/APC (at Back Plate BP-A8)  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| <b>Electrical</b>   |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Passband  | 46–1002 MHz <ul style="list-style-type: none"> <li>• 79 NTSC analog channel loading: 46-552 MHz</li> <li>• 75 QAM channel loading: 552-1002 MHz (6 dB below analog channels)</li> </ul>   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Frequency response (including slope)  | <ul style="list-style-type: none"> <li>• BC Input: ± 0.5 dB</li> <li>• NC Input: ± 0.75 dB</li> </ul>   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Nominal RF input levels (dBmV/ch)   | <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th colspan="2" style="text-align: center;">Mode of Operation</th> </tr> <tr> <th></th> <th style="text-align: center;">AGC</th> <th style="text-align: center;">Manual</th> </tr> </thead> <tbody> <tr> <td>• NTSC 50-550 MHz:</td> <td style="text-align: center;">18</td> <td style="text-align: center;">15</td> </tr> <tr> <td>• QAM 550-1002 MHz:</td> <td style="text-align: center;">18</td> <td style="text-align: center;">15</td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 5px;">(Level of QAM signals through Aux RF input becomes 6 dB less after internal combiner.)</p>  |                    | Mode of Operation     |                    |                       | AGC  | Manual | • NTSC 50-550 MHz: | 18    | 15 | • QAM 550-1002 MHz: | 18          | 15  |  |    |              |     |  |    |               |      |  |    |               |      |
|   | Mode of Operation   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | AGC   | Manual             |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| • NTSC 50-550 MHz:  | 18  | 15                 |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| • QAM 550-1002 MHz:   | 18  | 15                 |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| AGC input capture range   | 15 to 21 dBmV   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Manual gain control   | 0 to 6 dB in 0.5 dB steps (± 0.25 dB accuracy)  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Input impedance   | 75 Ω  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| BC/NC input return loss, minimum  | 18 dB, min (46–1002 MHz)  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Level stability   | ± 0.5 dB (over operating temperature range)   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| Link performance (with full channel loading of 50–550 MHz analog and 550–1002 MHz QAM), typical | <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>CNR<sup>1</sup>:</td> <td style="text-align: right;">52 dB</td> </tr> <tr> <td>CSO:</td> <td style="text-align: right;">65 dB</td> </tr> <tr> <td>CTB:</td> <td style="text-align: right;">70 dB</td> </tr> <tr> <td>XMOD:</td> <td style="text-align: right;">65 dB</td> </tr> </tbody> </table> <p style="font-size: x-small; margin-top: 5px;"><sup>1</sup> CNR measurements with 4 MHz noise bandwidth for NTSC channels.</p>  | CNR <sup>1</sup> : | 52 dB                 | CSO:               | 65 dB                 | CTB: | 70 dB  | XMOD:              | 65 dB |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| CNR <sup>1</sup> :  | 52 dB   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| CSO:  | 65 dB   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| CTB:  | 70 dB   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| XMOD:   | 65 dB   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| NC-BC RF input isolation  | >50 dB  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| 256-QAM BER (ITU-C pre-FEC)   | 1.0 x 10 <sup>-5</sup>  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| <b>Optical Fiber Loss and Performance</b>   |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 30%; text-align: center;">Link Loss (dB)</th> <th style="width: 30%; text-align: center;">Output Power (dBm)</th> <th style="width: 10%; text-align: center;">Fiber Loss (min) (dB)</th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">6</td> <td style="text-align: center;">5.75 – 6.75</td> <td style="text-align: center;">5.5</td> </tr> <tr> <td></td> <td style="text-align: center;">9</td> <td style="text-align: center;">8.75 – 9.75</td> <td style="text-align: center;">8.5</td> </tr> <tr> <td></td> <td style="text-align: center;">10</td> <td style="text-align: center;">9.75 – 10.75</td> <td style="text-align: center;">9.5</td> </tr> <tr> <td></td> <td style="text-align: center;">11</td> <td style="text-align: center;">10.75 – 11.75</td> <td style="text-align: center;">10.0</td> </tr> <tr> <td></td> <td style="text-align: center;">12</td> <td style="text-align: center;">11.75 – 12.75</td> <td style="text-align: center;">10.0</td> </tr> </tbody> </table> <p style="font-size: x-small; margin-top: 5px;">NOTE: Contact an ARRIS representative for detailed link engineering.</p> |                    | Link Loss (dB)        | Output Power (dBm) | Fiber Loss (min) (dB) |      | 6      | 5.75 – 6.75        | 5.5   |    | 9                   | 8.75 – 9.75 | 8.5 |  | 10 | 9.75 – 10.75 | 9.5 |  | 11 | 10.75 – 11.75 | 10.0 |  | 12 | 11.75 – 12.75 | 10.0 |
|   | Link Loss (dB)  | Output Power (dBm) | Fiber Loss (min) (dB) |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | 6   | 5.75 – 6.75        | 5.5                   |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | 9   | 8.75 – 9.75        | 8.5                   |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | 10  | 9.75 – 10.75       | 9.5                   |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | 11  | 10.75 – 11.75      | 10.0                  |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | 12  | 11.75 – 12.75      | 10.0                  |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
| <b>Optical Fiber Loss and Performance</b>   |   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | Analog Broadcast Content - must be identical for all transmitter wavelengths (QAM Narrowcast content may differ)  |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |
|   | Cable length difference in analog (BC) feeds to the input of transmitters on the same fiber must not exceed 100 feet.   |                    |                       |                    |                       |      |        |                    |       |    |                     |             |     |  |    |              |     |  |    |               |      |  |    |               |      |

ORDERING INFORMATION



Required Module Back Plate

Back plate is included with ordered modules.



**Note 1:** Transmitters with wavelengths TT and UU are not available with output powers of 11 or 12 dBm.



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

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