BDA Broadband Drop Amplifier

FEATURES

• 1 GHz Gallium Arsenide Technology
• 2.5 dB Noise Figure
• Patented Auto-Seize FFT F-Connector
• One, Two, or Four Port Versions
• Two-Way Capable
• LED Power Verification
• Local or Remote Powering
• Environmentally Hardened Design
• 6 kV Surge Resistant
• Current limited power supply

PRODUCT OVERVIEW

The BDA Broadband Telecommunications Drop Amplifier is a two-way 1 GHz amplifier designed for customer premise amplification. These amplifiers can be used to compensate for long drops and excessive splitting losses. Each BDA is housed within a robust aluminum die cast housing and utilizes the ARRIS FFT Auto-Seize F-Connector for maximum reliability.

Gallium Arsenide Technology

The BDA amplifier uses advanced Gallium Arsenide technology for improved distortion and noise performance. This technology provides improved distortion performance for both CTB and CSO distortions. Compared to silicon based amplifiers, GaAs distortion performance remains linear at significantly higher output levels.
BDA Broadband Drop Amplifier

Two-Way Capable

The BDA amplifier has built-in diplex filters for two-way operation. A passive return path is provided for return path continuity and enables the use of multiple broadband devices such as set-top terminals and cable modems. An active return path is provided for the BDA-**.AR-* models to overcome external splitting losses. The BDA is available with return split (42/52 MHz) diplex filters in passive return models, and traditional K-split (42/54 MHz) and N-split (85/104 MHz) diplex filters for the active return models. Please contact your ARRIS Account Representative for specific details.

Local or Remote Powering

The BDA can be powered locally or remotely via a UL-approved AC to DC power supply. A power inserter (BDP-100/PI) is available as an accessory item for remote powering applications. All BDA models include a 110/220 VAC power supply for ready powering during installation.

Surge Tolerant

The BDA amplifier is designed to meet the 6 kV IEEE C62.41-1991 Category B-3 Combination Wave at the input port. It is also designed to meet both 6 kV IEEE C62.41-1991 Category A-3 Ring Wave and 1 kV Combination Wave surge for all output ports, power supply transformer port, and power inserter ports. This surge tolerance enhances system reliability.

Indoor or Outdoor Applications

A weather seal and protective coating are provided so that the BDA amplifier may be used for indoor or outdoor applications.

RELATED PRODUCTS

<table>
<thead>
<tr>
<th>CHP Chassis</th>
<th>Optical Patch Cords</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supplies</td>
<td>Optical Passives</td>
</tr>
<tr>
<td>Control Module</td>
<td>Installation Services</td>
</tr>
</tbody>
</table>
### BDA-42-PR-R - SPECIFICATIONS

#### Forward Specifications

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain (dB)</td>
<td>52-1000</td>
<td>13.2</td>
<td>15.0</td>
<td>10.1</td>
</tr>
<tr>
<td>Input Return Loss (dB)</td>
<td>52-1000</td>
<td>18.0</td>
<td>20.0</td>
<td>18.0</td>
</tr>
<tr>
<td>Output Return Loss (dB)</td>
<td>52-1000</td>
<td>18.0</td>
<td>20.0</td>
<td>18.0</td>
</tr>
<tr>
<td>Output Port to Port Isolation (dB)</td>
<td>52-1000</td>
<td>24.0</td>
<td>27.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Flatness, (dB max)</td>
<td>52-1000</td>
<td></td>
<td></td>
<td>± 0.8</td>
</tr>
</tbody>
</table>

#### Distortions (dB min)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
<th>Passband: 5-42 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Loading Output Levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>77 Channels (550 MHz)</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>110 Channels (750 MHz)</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>CTB (dBc min)</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>XMOD (dBc min)</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>CSO (dBc min)</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Noise Figure (dB max)</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td>RFI Shielding (dB min)</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Hum Modulation (dBc)</td>
<td></td>
<td>70</td>
</tr>
</tbody>
</table>

### BDAPS-12-US-E - SPECIFICATIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input and Output Connectors</td>
<td>F-Connector</td>
<td>SCTE compliant, FFT P-series auto-seize</td>
</tr>
<tr>
<td>Nominal Impedance</td>
<td>75 Ω</td>
<td></td>
</tr>
<tr>
<td>AC Power Supply Voltage</td>
<td>110/220 VAC nominal</td>
<td></td>
</tr>
<tr>
<td>Amplifier DC Input Voltage</td>
<td>12 VDC nominal</td>
<td></td>
</tr>
<tr>
<td>Power Consumption</td>
<td>3W Maximum</td>
<td>BDA input port: 6 kV - IEEE C62.41-1991 Cat. B-3 Combination Wave, 3 kA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BDA output port(s): IEEE C62.41-1991 Cat. A-3 Ring Wave, 6 kV, 200 A and 1 kV Combination Wave (10x)</td>
</tr>
<tr>
<td>Housing Dimensions</td>
<td>20 x 45 x 56 mm</td>
<td>Height x Width x Depth</td>
</tr>
<tr>
<td>Weight</td>
<td>1.1 lb (0.5 kg)</td>
<td></td>
</tr>
</tbody>
</table>

### Environmental Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Seal</td>
<td>15 psi</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +60°C (-40°F to +140°F)</td>
<td></td>
</tr>
</tbody>
</table>

---

**Ask us about the complete Access Technologies Solutions portfolio:**

- **Fiber-Deep**
- **DOCSIS® 3.1**
- **Node Segmentation**
- **HPON™/RFoG**
- **FTTx**

---
## BDA-42-*-AR-R - SPECIFICATIONS

### Forward Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Freq. (MHz)</th>
<th>BDA-42-1-AR-R</th>
<th>BDA-42-4-AR-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain (dB)</td>
<td>54-1000</td>
<td>13.6</td>
<td>6.7</td>
</tr>
<tr>
<td>Input Return Loss (dB)</td>
<td>54-1000</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Output Return Loss (dB)</td>
<td>54-1000</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Output Port to Port Isolation (dB)</td>
<td>54-1000</td>
<td>—</td>
<td>25</td>
</tr>
<tr>
<td>Flatness, (dB max)</td>
<td>54-1000</td>
<td>—</td>
<td>27</td>
</tr>
<tr>
<td>Distortions (dB min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel Loading Output Levels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>77 Channels (550 MHz)</td>
<td></td>
<td>27</td>
<td>19</td>
</tr>
<tr>
<td>110 Channels (750 MHz)</td>
<td></td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>CTB (dBc min)</td>
<td></td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>XMOD (dB min)</td>
<td></td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>CSO (dBc min)</td>
<td></td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Noise Figure (dB max)</td>
<td></td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>RFI Shielding (dB min)</td>
<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Hum Modulation (dBc)</td>
<td></td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

### Return Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Freq. (MHz)</th>
<th>BDA-42-1-AR-R</th>
<th>BDA-42-4-AR-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain (dB)</td>
<td>5-42</td>
<td>9.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Input Return Loss (dB)</td>
<td>5-42</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Output Return Loss (dB)</td>
<td>5-42</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Output Port to Port Isolation (dB)</td>
<td>5-42</td>
<td>—</td>
<td>25</td>
</tr>
</tbody>
</table>

## BDAPS-18-US-E - SPECIFICATIONS

### Parameter

<table>
<thead>
<tr>
<th>Specification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input and Output Connectors</td>
<td>F-Connector, SCTE Compliant, FFT P-series auto-seize</td>
</tr>
<tr>
<td>Nominal Impedance</td>
<td>75 Ω</td>
</tr>
<tr>
<td>AC Power Supply Voltage Input</td>
<td>110/220 VAC nominal</td>
</tr>
<tr>
<td>Amplifier DC Input Voltage</td>
<td>18 VDC Nominal</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>9W</td>
</tr>
<tr>
<td>Surge Protection</td>
<td>Input port: 6 kV - IEEE C62.41-1991 Cat. B-3 Combination Wave, 3 kA Output port(s): IEEE C62.41-1991 Cat. A-3 Ring Wave, 6 kV, 200 A and 1 kV Combination Wave (10x)</td>
</tr>
<tr>
<td>Dimension</td>
<td>20 x 45 x 56 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.1 lb (0.5 kg)</td>
</tr>
</tbody>
</table>

### Environmental Specifications

| Specification                  | | |
|--------------------------------|---|
| Pressure Seal                  | 15 psi |
| Operating Temperature          | -40°C to +60°C (-40°F to +140°F) |
## BDA-85-AR-R - SPECIFICATIONS

### Forward Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Freq. (MHz)</th>
<th>BDA-85-1-AR-R</th>
<th>BDA-85-4-AR-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain (dB)</td>
<td>104-1000</td>
<td>13.6</td>
<td>6.7</td>
</tr>
<tr>
<td>Input Return Loss (dB)</td>
<td>104-1000</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Output Return Loss (dB)</td>
<td>104-1000</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Output Port to Port Isolation (dB)</td>
<td>104-1000</td>
<td>—</td>
<td>25</td>
</tr>
<tr>
<td>Flatness, (dB max)</td>
<td>104-1000</td>
<td>—</td>
<td>± 1.0</td>
</tr>
</tbody>
</table>

### Channel Loading Output Levels

- **77 Channels (550 MHz)**: 27 dB
- **110 Channels (750 MHz)**: 24 dB
- **CTB (dBc min)**: 75 dB
- **XMOD (dB min)**: 75 dB
- **CSO (dBc min)**: 62 dB
- **Noise Figure (dB max)**: 3.5 dB
- **RFI Shielding (dB min)**: 100 dB
- **Hum Modulation (dBc)**: 75 dB

### Return Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Passband: 5-85 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain (dB)</td>
<td>5-85</td>
</tr>
<tr>
<td>Input Return Loss (dB)</td>
<td>5-85</td>
</tr>
<tr>
<td>Output Return Loss (dB)</td>
<td>5-85</td>
</tr>
<tr>
<td>Output Port to Port Isolation (dB)</td>
<td>5-85</td>
</tr>
</tbody>
</table>

## BDAPS-18-US-E - SPECIFICATIONS

### Parameter

<table>
<thead>
<tr>
<th>Specification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input and Output Connectors</td>
<td>F-Connector, SCTE Compliant, FFT P-series auto-seize</td>
</tr>
<tr>
<td>Nominal Impedance</td>
<td>75 Ω</td>
</tr>
<tr>
<td>AC Power Supply Voltage Input</td>
<td>110/220 VAC nominal</td>
</tr>
<tr>
<td>Amplifier DC Input Voltage</td>
<td>18 VDC Nominal</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>9W Maximum</td>
</tr>
<tr>
<td>Surge Protection</td>
<td>Input port: 6 kV - IEEE C62.41-1991 Cat. B-3 Combination Wave, 3 kA</td>
</tr>
<tr>
<td></td>
<td>Output port(s): IEEE C62.41-1991 Cat. A-3 Ring Wave, 6 kV, 200 A and 1 kV Combination Wave (10x)</td>
</tr>
<tr>
<td>Dimension</td>
<td>20 x 45 x 56 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.1 lb (0.5 kg)</td>
</tr>
</tbody>
</table>

### Environmental Specifications

- **Pressure Seal**: 15 psi
- **Operating Temperature**: -40°C to +60°C (-40°F to +140°F)
Figure 1: BDA Local Powering Configurations

Figure 2: BDA Remote Powering Configuration

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDA-42-4-PS-PR-R</td>
<td>1510265-002</td>
<td>BDA-42-4-PS-PR-R - 1GHz BDA, 42/54, With 110/220V PS, 4 Output, Passive Return, F-connector, ROHS</td>
</tr>
<tr>
<td>BDA-85-1-PS-AR-R</td>
<td>1510265-004</td>
<td>BDA-85-1-PS-AR-R - 1GHz BDA, 85/104MHz, With 110/220V PS, 1 Output, Active Return, F-connector, ROHS</td>
</tr>
<tr>
<td>BDA-85-4-PS-AR-R</td>
<td>1510265-005</td>
<td>BDA-85-4-PS-AR-R - 1GHz BDA, 85/104MHz, With 110/220V PS, 4 Output, Active Return, F-connector, ROHS</td>
</tr>
<tr>
<td>BDA-42-1-PS-AR-R</td>
<td>1510265-006</td>
<td>BDA-42-1-PS-AR-R - 1GHz BDA, 42/54MHz, With 110/220V PS, 1 Output, Active Return, F-connector, ROHS</td>
</tr>
<tr>
<td>BDA-42-4-PS-AR-R</td>
<td>1510265-007</td>
<td>BDA-42-4-PS-AR-R - 1GHz BDA, 42/54MHz, With 110/220V PS, 4 Output, Active Return, F-connector, ROHS</td>
</tr>
<tr>
<td>BDP-100/PI</td>
<td>463653-001-00</td>
<td>Power Inserter, 1 GHz</td>
</tr>
</tbody>
</table>

Note: Specifications are subject to change without notice.

Copyright Statement: ©ARRIS Enterprises, LLC, 2016. All rights reserved. No part of this publication may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation, or adaptation) without written permission from ARRIS Enterprises, LLC (“ARRIS”). ARRIS reserves the right to revise this publication and to make changes in content from time to time without obligation on the part of ARRIS to provide notification of such revision or change. ARRIS and the ARRIS logo are all registered trademarks of ARRIS Enterprises, LLC. Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and the names of their products. ARRIS disclaims proprietary interest in the marks and names of others. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

BDA_DS_03MAR16

Customer Care
Contact Customer Care for product information and sales:
• United States: 866-36-ARRIS
• International: +1-678-473-5656

Ask us about the complete Access Technologies Solutions portfolio:
Fiber-Deep, DOCSIS® 3.1, Node Segmentation, HPON™/RFoG, FTTx