Optical Node Series (NC)
FA4514-02, FA4517-02, FA4521-02, FA4523-02
Single Slot Optical Amplifiers

FEATURES

• 14, 17, 21 or 23 (2x20) dBm output power level
• User-selectable Constant Current or Constant Gain mode
• Low noise figure
• Optical path isolation (input and output)
• Remote status monitoring and control
• ASE muting
• Auto-limiting optical output for eye safety
• Hot plug in/out

PRODUCT OVERVIEW

The ARRIS FA4514S-02, FA4517S-02, FA4521S-02 and FA4523S-02 modules are high-output, extremely compact 1550 nm single slot optical amplifiers. These high performance amplifiers enable operators to use 1550 nm and DWDM analog transmitters to deliver high-quality broadcast and digital narrowcast content over significant transmission distances.
These optical amplifiers enhance the deployment of traditional HFC, Fiber Deep and fiber to the home (FTTH) networks. They can be user selected to operate in two modes. Constant current: Delivering fixed optical output power, typically used for single wavelength deployments. Constant gain: For multi wavelength applications where the optical level per wavelength remains constant with varying numbers of wavelengths. They also include automatic ASE muting. Here the EDFA output is muted when the incoming optical signal is lost, with optical power automatically restored when the signal returns. The optical output is auto limited to not exceed 21.7 dBm ensuring optical eye safety limits are maintained at all times.

The units are designed as plug-in modules for ARRIS’s NC4000 series Fiber Node Platforms, including the NH4000 “Virtual Hub,” and, when used in the latter, provides a practical alternative to OTN-style cabinets.

### SPECIFICATIONS

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<th>Characteristics</th>
<th>Specification</th>
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<td><strong>Physical</strong></td>
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<tr>
<td>Dimensions</td>
<td>4.0&quot; L x 2.2&quot; H x 2.3&quot; W (10.2 cm x 5.6 cm x 5.8 cm)</td>
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<tr>
<td>Weight</td>
<td>0.6 lbs (0.3 kg)</td>
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<tr>
<td><strong>Environmental</strong></td>
<td></td>
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<tr>
<td>Operating Temperature Range</td>
<td>–40° to +85°C (–40° to 185°F)</td>
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<tr>
<td>Storage Temperature Range</td>
<td>–40° to +85°C (–40° to 185°F)</td>
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<tr>
<td>Humidity</td>
<td>5% to 95% non-condensing</td>
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<tr>
<td><strong>General</strong></td>
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<td>Hot plug in/out</td>
<td>Constant Current or Constant Gain</td>
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<td>Modes of operation</td>
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<td><strong>Optical Interface</strong></td>
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<td>Optical connectors</td>
<td>SC/APC</td>
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<td><strong>Power Requirements</strong></td>
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<tr>
<td>Input voltage</td>
<td>24 VDC</td>
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</table>
| Power consumption | • FA4514 and FA4517: 9 W max  
• FA4521: 10 W max  
• FA4523: 18 W max |
| **Status Indicator LEDs** |          |
| CURR MODE = Lighted green when operating in constant current (power) mode  
GAIN MODE = Lighted red when operating in constant gain mode  
EDFA@MAX = Bi-state LED:  
• Yellow if laser is at maximum current or EDFA is maximum output power  
• Red if ASE muting is activated, or a hardware failure or eye safety limit (21.7 dBm) is reached |
| **Remote Monitoring/Control Parameters** |                |
| Optical input power, laser current, optical output power, laser temperature, operational mode |               |
| **Optical** |               |
| Input signal wavelength | 1530 – 1565 nm |
| Optical signal path isolation, input | • FA4523-02, FA4521S-02 > 30 dB: all temperatures  
• FA4514-02, FA4517S-02 > 30 dB: from -20° to 70°C > 20 dB otherwise |
| Output power stability (all models) | • Constant Current Mode: ± 0.6 dB  
• Constant Gain Mode: ± 0.7 dB |
| **Performance Parameters** | Model |
| Nominal output power (dBm) (with 0 dBm input) | FA4514S  
FA4517S  
FA4521S  
FA4523S |
| Noise figure (dB) (at 0 dBm input, over all wavelengths and temperatures) | (typ 5.6)  
(5.8)  
(5.8)  
(5.8) (typ 5.2) |
| Noise figure, broadcast (1545 – 1563 nm input) (dB) | (typ 4.7)  
(5.0)  
(5.0)  
(5.0) (typ 4.5) |
| Composite input power range (dBm) | −10 to +11  
−6 to +10  
−6 to +11  
−6 to +11 |
| Constant Gain Mode | Min  
Max  
Max range 1 (dB) |
| −6 (4 λ at –12 dBm ea)  
+10 (20 λ at –2 dBm ea) | 4 – 20  
6 – 23  
6 – 27  
6 – 26 |
| −6 (4 λ at –12 dBm ea)  
+10 (20 λ at –2 dBm ea) | −6 (4 λ at –12 dBm ea)  
+10 (20 λ at –2 dBm ea)  
−6 (4 λ at –12 dBm ea)  
+10 (20 λ at –2 dBm ea) |

**NOTES:**
1 Gain control step = 0.25 dB for all models.
2 If Gain = (6–Δ) dB, the minimum composite input power is (–8+Δ) dBm.
3 If Gain = (6–Δ) dB, the minimum composite input power is (–6+Δ) dBm.
FA4514-02, FA4517-02, FA4521-02, FA4523-02

ORDERING INFORMATION

<table>
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<th>Part Number</th>
<th>Description</th>
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<tr>
<td>FA45xxS-02-AS</td>
<td>xx= Nominal output power: (14, 17, 21, 23 dBm)</td>
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RELATED PRODUCTS

<table>
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<tr>
<th>Product</th>
<th>Description</th>
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<tr>
<td>NC4000 Series Fiber Node Platforms</td>
<td>NH4000 Virtual Hub</td>
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<tr>
<td>OR41x8 RFoG Receiver</td>
<td>CP8xxx RFoG ONU</td>
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Customer Care

Contact Customer Care for product information and sales:
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- International: +1-678-473-5656

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