



# OPTICAL AMPLIFIER MODULES

For the 4200 Family

## Features and Benefits

- Extends transport distances up to 1000 kilometers without regeneration (using mid-stage DCM)
- Provides choice of constant —or variable—gain modules to meet network requirements
- Features variable-gain OA, which compensates for span loss, to mitigate the effects of aging spans
- Suppresses transients to protect services and receivers and simplifies channel count changes with SmartGain dynamic gain control
- Adjusts the amplifier automatically, reducing OPEX when waves are added
- Offers gain region, covering the entire C-band from 1530 nm to 1565 nm and coincides with both 100 GHz and 200 GHz Ciena channel plans
- Includes integrated system controller
- Allows for connection to external test equipment through DWDM monitoring ports

Ciena has expanded the optical layer functionality of the 4200 by introducing two Optical Amplifier (OA) modules, which extend transport up to 1000 kilometers without regeneration.

The 4200 optical layer product suite now comprises the OAF-00-1-C fixed-gain amplifier (21 dB, 35 nm OA) as well as the OAV-0S-U-C variable-gain amplifier (18-23 dB, 35 nm OA).

The 4200 OAs amplify the entire C-band DWDM channel plan and accommodate a single optical fiber for uni-directional transmission. The unidirectional design gives network planners the flexibility to place the most appropriate amplifier at a given network location, improving optical budgets and potentially minimizing costs. The modules are designed with enough flexibility that each OA type can be used alone as a transmit (post-) or receive (pre-) amplifier, or in pairs to create an In-Line Amplifier (ILA). Fixed-gain and variable-gain amplifiers can even be paired together to create a more cost-effective ILA configuration.

Embedded SmartGain control circuitry maintains a constant gain across the transport spectrum regardless of the input power. SmartGain eases the deployment of new services by allowing an increase in new wavelengths without requiring amplifier gain adjustments downstream. In addition, the OAs' rapid transient-suppression feature protects downstream services in the event of a fiber break.

