OZ Optics
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OPTICAL POWER REGULATORS

Preliminary

Bench Top Optical Power Regulator

Features

- Controls output power to ±0.1 dB
- 50 dB dynamic range
- Millisecond response speed
- Single and multi-channel versions
- Singlemode and PM fiber versions
- OEM, rack mountable, and stand-alone versions

Applications

- Power stabilization in DWDM networks
- Signal conditioning in test equipment

Product Description

OZ Optics has successfully combined its expertise in variable attenuators with its optical power monitor technology to develop an optical power regulator. This product allows one to maintain the output optical power from a fiber optic system at a constant level, countering changes caused by PDL, reduced amplifier gain, or other sources.

The optical power regulator uses the output from an optical power monitor as feedback to control an attenuator. Simple controls allow the user to enable or disable the feedback circuit, monitor the signal intensity, and control the output power through the fiber. The system can maintain output power levels constant to better than ±0.1 dB, with millisecond response speed.

Optical power regulators are used wherever one has an unstable output from and optical fiber and one needs a more stable signal. They are ideal for power stabilization in DWDM networks, where changes in power can produce transmission errors. The complete unit is available either as a miniature module that can be integrated into other devices, a stand-alone module for testing, or as a rack mountable unit for optical networks. Contact OZ Optics for further information.

Standard Product Specifications

Minimum Insertion Loss	1 dB typically
Attenuation Range	50 dB
Input Power Range	-20 dBm to +25 dBm
Wavelength Dependent Response	±0.25 dB (over the wavelength range of 1510–1610 nm)[1]
Polarization Dependence	±0.1 dB

[1] Results given for an optical power regulator for 1550 nm. Responses for regulators for other wavelengths will vary.

Questionnaire

1. Do you need a stand-alone unit or a miniature OEM unit?
2. What is the operating wavelength?
3. What type of fiber are you using? Singlemode or polarization maintaining (PM) fiber? What are the core and cladding sizes?
4. What type of connectors are you using?
5. Is there a minimum return loss specification?

Ordering Information

Part Number

OPR-*A*-*XY*-*W*-*a/b*-*F*-*LB*

A = Model Type:
1000 = Bench Top Unit

XY = Connector code:

3S = Super NTT-FC/PC	SCA = Angled SC
3U = Ultra NTT-FC/PC	LC = LC
3A = Angled NTT-FC/PC	LCA = Angled LC
8 = AT&T-ST	MU = MU
SC = SC	X = No Connector

See table 6 of the OZ *Standard Tables* data sheet for other connectors.
https://www.ozoptics.com/ALLNEW_PDF/DTS0079.pdf

W = Wavelength: Specify in nanometers:
Example: 1310/1550 for standard telecom wavelength range.

a/b = Fiber Core/cladding sizes, in microns
9/125 for 1310/1550 nm SM fiber.
See the OZ *Standard Tables* data sheet for other standard fiber sizes.
https://www.ozoptics.com/ALLNEW_PDF/DTS0079.pdf

F = Fiber Type:
S = Single Mode
P = Polarization Maintaining

LB = Backreflection level. 60 dB for singlemode and polarization maintaining fibers for 1310 and 1550 nm operating range.

Ordering Examples for Custom Parts

A customer needs a stand alone optical power regulator to control the power from his 980 nm pump laser in a fiber amplifier unit. The customer is using singlemode fiber for that wavelength, which has a 6 micron core and a 125 micron cladding. He requires a unit with FC/APC connectors on both ends. The OZ Optics part number is as follows: OPR-1000-3A3A-980-6/125-S-50.

Application Notes

Figure 1 shows the basic concept behind the optical power regulator. Light from the source is sent through an electrically controlled variable optical attenuator. An optical power monitor is connected to the attenuator output. The monitor taps a small amount of light from the fiber and measures the signal intensity. This signal is fed into the feedback circuitry to control the attenuator. The user sets the desired output power. The feedback circuit can be enabled or disabled through a switch. An analog output voltage allows external monitoring.

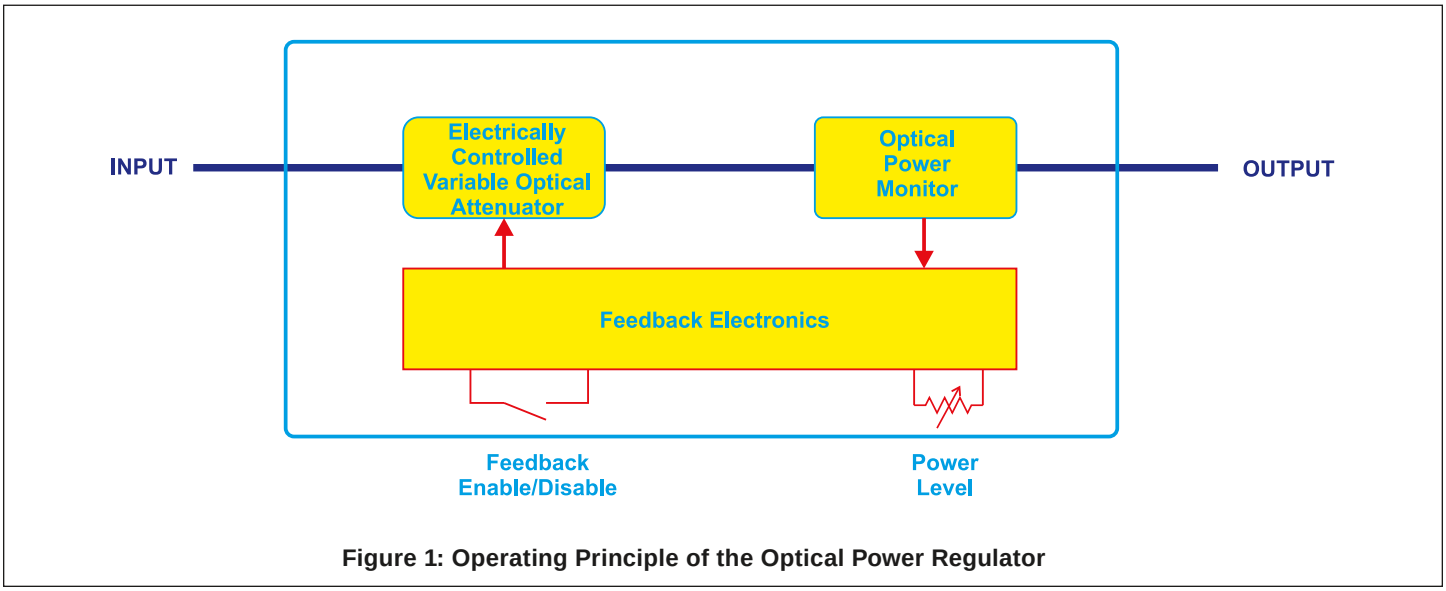

Figure 1: Operating Principle of the Optical Power Regulator