SERIES 400
POWER MONITOR-ATTENUATORS

EigenLight's Series 400 Power Monitor-Attenuators (PMAs) combine the power control capability of a variable attenuator with the measurement capability of an in-line power monitor. With a single compact device you can now vary power levels and simultaneously see the absolute optical power being delivered to your lightwave system or fiber optic test set.

Series 400 PMAs are optically passive, featuring low insertion loss, low polarization-dependent loss, and high return loss. Use these devices in place of conventional attenuators for in-line control and monitoring in the field, factory or laboratory.

FEATURES

- **40 dB Variable Attenuation**
- **Absolute or Relative Power Readout**
- **Optional Analog Output for Data Logging**
- **Typical Battery Life 3 Years**
- **Auto Power On/Off (Light Activated)**
- **Dual LCD Displays for Easy Viewing**

SPECIFICATIONS

	Model 410 Highest Sensitivity	Model 420 Lowest Loss
Fiber Type	Single-Mode	Single-Mode
Attenuator Range	40 dB	40 dB
Attenuator Resolution	0.1 dB	0.1 dB
Power Range	-50 dBm to +16 dBm	-40 dBm to +20 dBm
Minimum Insertion Loss	<1.5 dB	<1.0 dB
Return Loss	>40 dB	>40 dB

APPLICATIONS

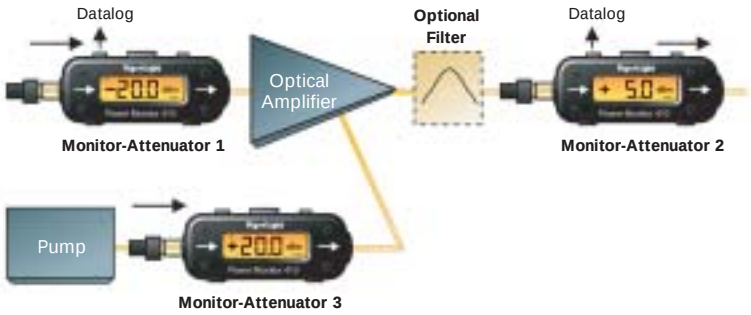
LIGHTWAVE SYSTEMS

Monitor Reading = Attenuated Power Delivered to Receiver

APPLICATIONS

- In-System Power Control
- Alarm Threshold Testing
- System Margin Testing
- Manual Bit-Error Measurement

OPTICAL AMPLIFIERS



Monitor 2 Reading – Monitor 1 Reading = Amplifier Gain (dB)

APPLICATIONS

- In-system Gain Measurement
- Amplifier Parameter Control
- Saturation Testing
- Alarm Threshold Testing

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EigenLight CORPORATION

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U.S. patents 5,591,964; 5,708,265

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Ultra-Long Battery Life
Series 400 power monitor-attenuators have typical battery life of 3 years as a result of a proprietary detection circuit that samples the optical power for a short time during each measurement cycle.

Relative or Absolute Power Measurement
The dB/dBm mode button allows you to measure either absolute or relative optical power.

Wavelength/Speed Control
The wavelength select button allows you to choose the operating wavelength within a broad spectral range. It also allows you to switch the response time between a fast and slow mode of operation.

Analog Output (Optional)
Optional micro phone jack provides analog voltage output for data logging.

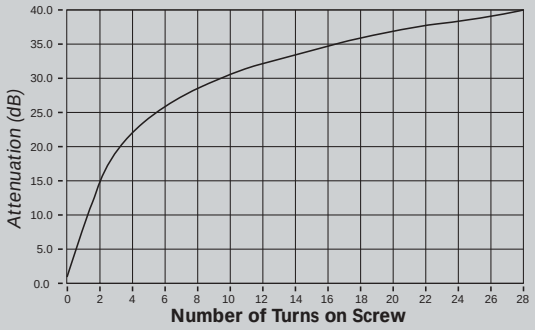
Power-Level Control
Variable air-gap attenuator provides fingertip control of power level, while angled interfaces maintain a greater than 40 dB return loss.

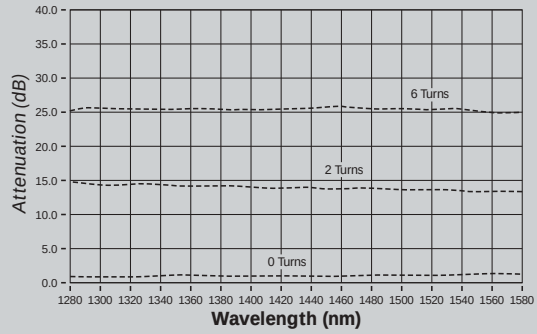
Pigtail Interface
Pigtails on input and output allow you to install power monitor in place of jumper cable. All industry-standard fiber optic connectors are available.

Durable Construction
Internal steel-tube construction provides excellent durability for field, factory, or laboratory environment.

Directivity
Each device transmits light in both directions but detects light propagating in the forward direction only.

Dual LCD Displays
LCD displays on both front and back allow easy viewing of the readout in any configuration, and eliminate the need to bend or loop the cable in order to view the display.





Optical Specifications	M410	M420
Attenuator Range	40 dB	40 dB
Attenuator Resolution	0.1 dB	0.1 dB
Power Range	-50 to +16 dBm	-40 to +20 dBm
Minimum Insertion Loss	<1.5 dB	<1.0 dB
Absolute Accuracy[1]	±0.2 dB	±0.2 dB
Return Loss	>40 dB	>40 dB

For other specifications see Table 1 and Table 2 below.

Electrical Specifications	
Power	4 Lithium Coin Cells (CR2032)
Battery Life	3 Years Typical (Slow Mode)
Display Resolution	0.1 dB
Display Refresh Rate	0.1 Sec./0.8 Sec. (Fast/Slow Mode)
Analog Output Voltage	1 millivolt/dBm (0dBm = 0 millivolt)
Analog Output Impedance	40kΩ

Environmental Specifications	
Operating Temperature	0° C to +40° C
Storage Temperature	-10° C to +60° C
Relative Humidity	<95% Non Condensing

Mechanical Specifications	
Size (Housing Only)	9.5 x 3.7 x 3.6 cm
Weight	140 gram (5 oz.) with Batteries
Housing Material	Flame Retardant ABS Plastic

1. Measured at Output and Calibrated Wavelengths

Ordering Information and Accessories

1.5 meter pigtail on input/output standard on all models.
Specify model, options and fiber optic connector type when ordering, as shown below (use tables on right).

Ordering Information:

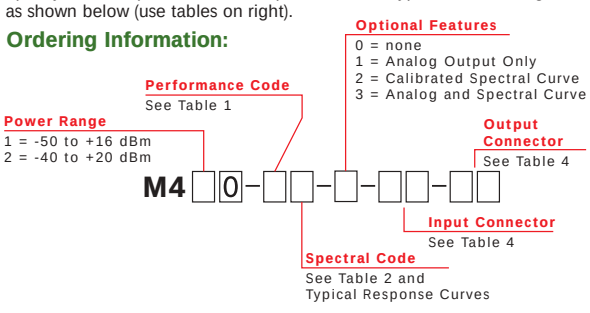


TABLE 1: Performance Code

Code	Description	Polarization Stability[1]	PDL[2]	Directivity[3]
0	Standard	<0.2 dB	<0.2 dB	>20 dB
2	Low Polarization Dependence	<0.1dB	<0.1 dB	>20 dB

TABLE 2: Spectral Code

Code	Description	Fiber Type	Range	Calibration
0	Standard	Single Mode	1280 – 1580 nm[4]	1310, 1550 nm
1	WDM	Single Mode	1520 – 1620 nm[5]	1550 nm

TABLE 3: Accessories *(See Accessories Brochure)*

M4 Anodized aluminum mount with magnetic base for mounting (Series 400)
C3 High-Impact plastic carrying case for field transport and storage

TABLE 4: Connectors[6]

Code	Connector Type
10	FC
15	FC/APC
20	ST
25	ST/APC
30	SC
35	SC/APC
40	LC
50	MU
90	Bare Fiber

For more information on all of our products visit our website:
www.eigenlight.com

1. Maximum Change in Monitor Reading with Polarization
2. Polarization Dependent Loss
3. Sensitivity to Forward Directed Light Relative to Backward Directed Light at Minimum Attenuation
4. See Graph on Series 300 Brochure: Spectral Code 0 Typical Response
5. See Graph on Series 300 Brochure: Spectral Code 1 Typical Response
6. Super PC Polish Standard