

OPTICAL RECEIVER

VL2510

USER'S MANUAL

Radiant Communications Corporation

• 5001 Hadley Road • South Plainfield • NJ 07080 • Phone 800.969.3427 • In New Jersey 908.757.7444
• Fax 908.757.8666 • Email sales@rccfiber.com • Web www.rccfiber.com •

GENERAL DESCRIPTION

VL2510 is a low price, high performance optical receiver specially designed for optical systems. It can be used at headend node locations of a fiber optic link to convert the optical signal to RF signal.

FEATURES

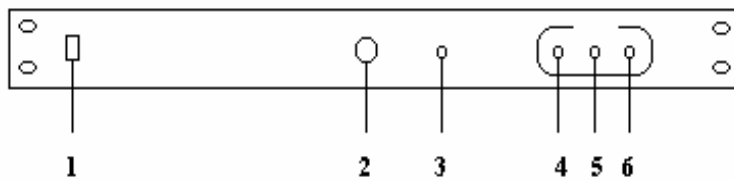
- Optical receiver module and RF amplifier module together
- Frequency range 5-350MHz
- A test point on the front panel (-20dB)
- Optical input power range 0 dBm~ -15 dBm.
- High-quality switching mode power supply

SPECIFICATIONS

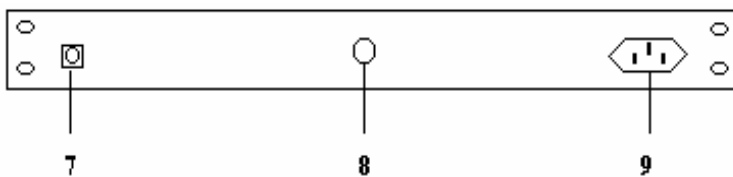
Electric Characteristics	
Frequency Range	5-350MHz
Flatness	±1dB
Output Level (0dBm input)	110dBμV
Output Return Loss	>14dB
RF Output Test Point	-20dB below output level
Second Order Distortion	<-70dBc
Triple Order Distortion	<-75dBc
Interior Gain Adjustment	0~ -10dB
AC Line Voltage	90-260Vrms
AC Watt	20 watts max.
DC Voltage	24±0.5V
Responsivity of Monitoring	4V/mW

Optical Characteristics	
Optical Wavelength	1290~1600nm
Optical Input Return Losses	>45dB
Spectral Sensitivity	0.85A/W (1310nm typical)
Optical Fiber	Mono (9/125 μ m)
Optical Input Power	0dBm (max.)
Fiber Connector type	FC/APC or SC/APC
Storage Temperature	-30°C to 80°C
Operating Temperature	-20°C to 40°C

BOARD ILLUSTRATION

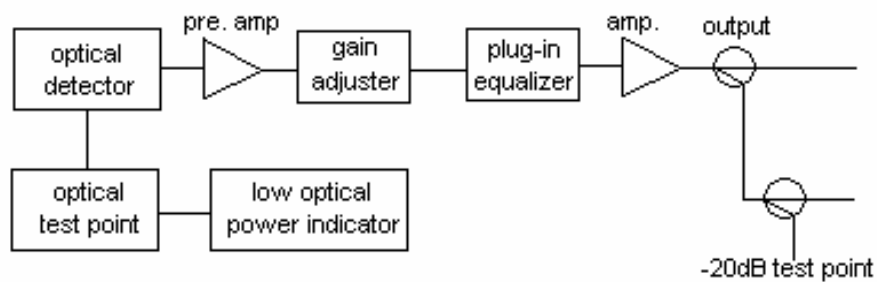


1. Power ON/ OFF
2. RF Test Port (-20dB)
3. Power Indicating Lamp
4. Optical Power Monitoring -- Low
5. Optical Power Test Point -- +
6. Optical Power Test Point -- -



- 7. Optical Input (FC/APC or SC/APC adapter)
- 8. RF output
- 9. Power in

Block Diagram



1. Gain Adjuster

A variable attenuator to control the output level.

2. Plug-In Equalizer

The equalizer board is for customer's option. It is used to establish a slope output from the receiver for distribution of the signal. Equalizers are available in 2dB steps from 0 to 10dB. The receiver is preset 0dB slope output before sales.

3. Output Amplifier

There is a 350MHz power-double hybrid with 24dB gain.

4. Optical Power Test Point

The optical power test point inside the receiver is scaled at 2 Volts per million watt and provides an indication of received optical signal power. The expected DC voltage at this test point should be between 0.5V and 2.0V.

INSTALLATION AND ADJUSTMENT

To properly install the receiver, please remember to look through the User's Manual before use, and perform the following steps.

Invisible optical beam come out from the end of the optical connector, permanent damage would happen to eyes if see it directly.

1. Fiber Connection

Splice the fiber service cable to the transmitting fiber before node installation. Fusion splicing is recommended since it has low insertion loss and is the most reliable method. The splicing should be done by experienced technicians.

Carefully remove the protective cap from the end of the FC/APC or SC/APC connector, clean the end with a lint free tissue moistened with alcohol, then insert the connector into the FC/APC or SC/APC adapter in the rear panel, and tighten the connector securely.

2. Power Connection

Put the plug into the power receptacle, and the Power Indicating Lamp will be lit.

3. Receiver/Link Performance Testing & Adjusting

(1). Measure the voltage at the optical input power test point with a voltmeter. The voltage at this test point represents the optical input power. Take note of this voltage for future reference. Then, using Table 2 to find the corresponding optical input power. Also, you can test the optical input power by using a Optical Power Meter.

(2).The optical input power can be between 0dBm and -15dBm. A signal level greater than 0dBm must be attenuated to meet with the distortion target, while a level lower than -15dBm may result in an unacceptable C/N parameter.

(3). Output Level

The output of the receiver is a function of the optical input power and the modulation of the transmitter is generally set at 3.5%/CH. The optical input power vs the minimum RF output level is listed in Table 2.

Table 2.

Also, you can test the output level by using a Field-strength Meter.

Table 2 Test Point Voltage vs Optical Input Power

Test Point Voltage (Vc)	Optical input power (dBm)	Output level
2.00	0.0	110
1.58	-1.0	108
1.26	-2.0	106
1.00	-3.0	104
0.80	-4.0	102
0.64	-5.0	100
0.50	-6.0	98
	-7.0	96
	-8.0	94
	-9.0	92
	-10.0	90
	-11.0	88
	-12.0	86
	-13.0	84
	-14.0	82
	-15.0	80

The Optical Power Monitoring Lamp is lit if the Input Power below -15dBm . If the output level needs to be changed, open the machine and adjust the rheostat W1. In return path of the fiber system, the output level of VL2510 is $100\text{dB}\mu\text{V}$ provided that the optical input level is -5dBm . (See Table 2)

Table 3

System	Pre-slope
5~350MHz	2dB,4dB,6dB,8dB,10dB optional

- (4) Considering the different demand of systems, we can supply a series of pre-slope pin-board. (See Table 3)
- (5) The Power Indicating Lamp is lit if the optical input level is low than -15dBm . Please check the working condition of the optical link. (i.e., fiber connection, the output level of the Transmitter, etc.)