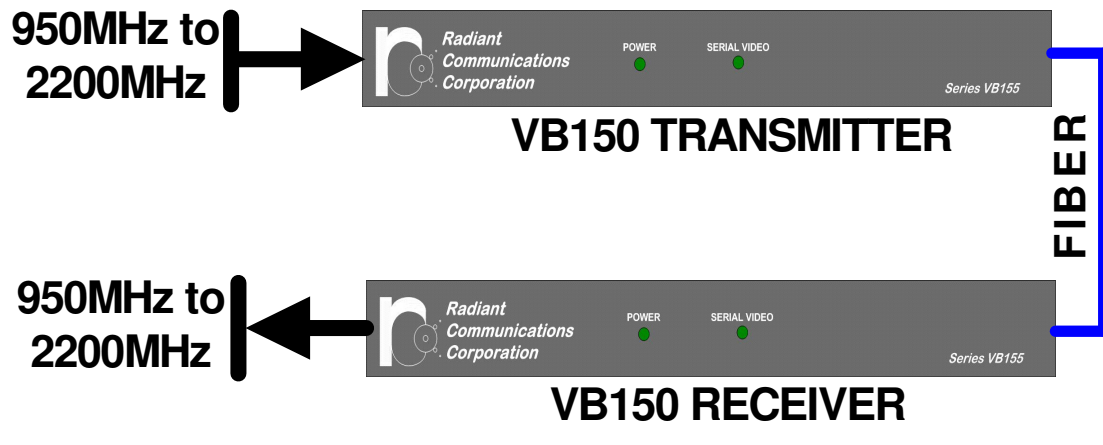


Series VB150

L Band Transmission System



Description

The Radiant Communications Model VB150 L-Band Satellite Transport Fiber Optic Link transports RF signals from 950 MHz to 2100 MHz over one single-mode optical fiber at 1310 nm, 1550 nm, CWDM and DWDM wavelengths. This direct broadcast satellite link uses a hybrid fiber/coax system to distribute RF signals from satellite earth terminals. The units are format independent and will carry an RF signal typical of satellite systems with an optical loss budget of up to 12dB.

The VB150 will operate at ambient temperatures from -40° to $+70^{\circ}$ C. Operating voltage is +12 Volts DC. LNB power is available through the transmitter RF input connector via a pass through on either a terminal block (Rack Mnt/1U) or on the DB9 (Modular). Both units contain indicator LED's that display Power and Optical Output (Tx) or Optical Link (Rx).

The link achieves a carrier-to-noise ratio greater than or equal to 50 dB. Passband is flat within ± 2 dB over any 500 MHz interval. Input impedance (Rx) is 75 Ohms. RF connections are via a standard F type connector on the 75 Ohm models. Optical connections are via a standard SC/APC connector.

GENERAL INFORMATION

1. The operating wavelength of the standard transmitters must be specified at the time the order is placed.
2. The operating wavelength of the CWDM transmitters varies according to the specific unit ordered.
3. All optical power levels are average values
4. The receiver contains a green power LED in addition to an LED for optical signal detect. The LED will be green when the proper optical input level is being received. When the optical input falls below – 15dBm, the LED is off. Receive Optical Power can be monitored via an external voltage and open collector Power Alarm.
5. The transmitter contains a Power Led as well as an Optical Output Alarm. The LED will be green while there is Transmit optical power. Laser Bias Current and Laser fail Alarm can be monitored via an external voltage and open collector output.
6. The stand-alone units will operate using +12 Volts DC wall mount power supply, and can supply voltage to the LNB. Rack-mount modules and 19” Rack units also allow LNB power via the LNB Pass-through connection directly to the F-Connector.

INSPECTION

Remove the unit from its shipping container. Any in-shipment damage that may have occurred should be visually apparent. Look for bent or damaged connectors or mounting brackets. Claims for damage incurred in shipment should be made directly to the transportation company in accordance with their instructions. Save the shipping cartons until installation and performance verification are completed.

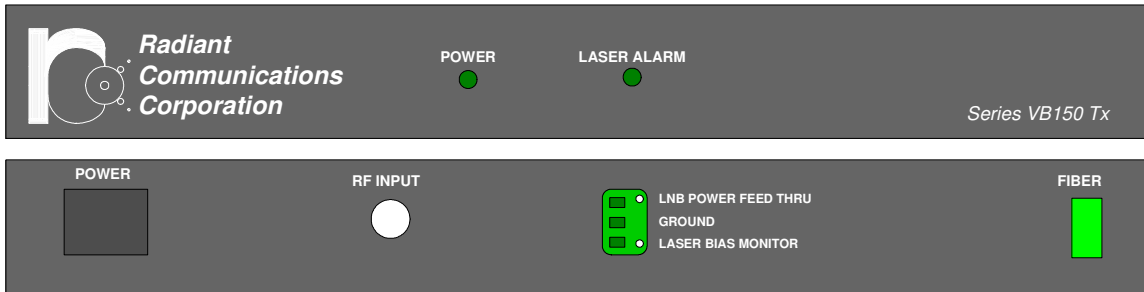
OPERATING INSTRUCTIONS

1. Install the links as described in this document
2. Clean the optical connectors. Connect the optical fiber to the transmitter and the receiver. Be sure that the fiber has continuity and less than the maximum allowable optical loss. Also be certain that the fiber is the proper size. Radiant Communications recommends that this product only be used with single-mode fiber.
3. Connect the satellite LNB output to the RF input to the transmitter via an external supply to the designated “LNB pass-through” pins.
4. Connect the RF output on the receiver to the appropriate broadband receiver. (e.g., broadband distribution amplifier or TV set top receiver).
5. **Stand-alone Units:** Connect power supplies to the transmitter and receiver. The power supply must be +12.
6. Apply power. The units are now fully operational. No user adjustment or attention is required.

VB150
Fiber Optic L-Band Link
1U VERSION

Parameter	Min	Typ	Max	Units
Wavelength	1280	1310	1360	nm
Bandwidth	950		2100	Mhz
Noise Figure (Odb Loss)		25		dB
RF Link Gain		+15		dB
RF Input	-35		-15	dBm
RF impedance		75		ohm
Optical Loss		12		db
Max RF input			0(+48dBmv)	dBm
Max Optical Input to Receiver			4	mW
Max LNB Feed		26		V
Power Supply		110		VAC

Tx



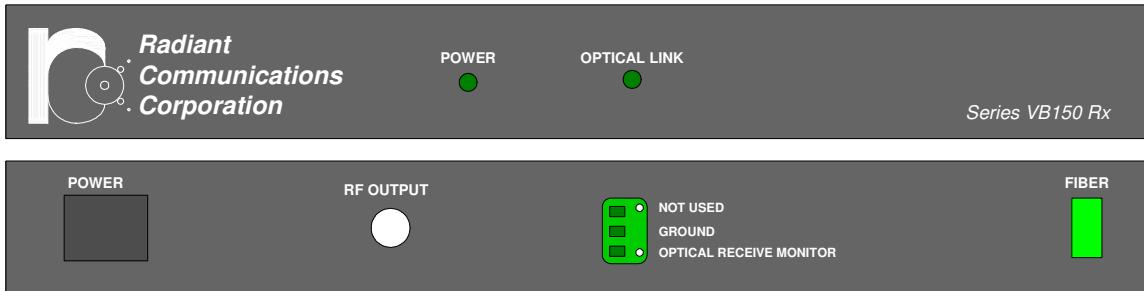
POWER LED indicates that the unit is on

LASER ALARM is lit when there is a malfunction in the laser circuit

LNB POWER FEED THRU +26V max input for LNB power through coax.

LASER BIAS MONITOR 0.1V=10mA

Rx



POWER LED indicates that the unit is on

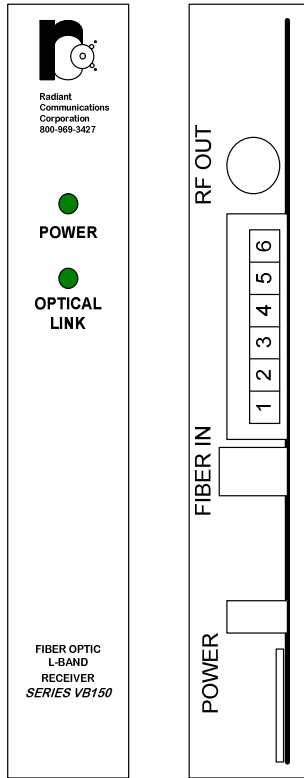
OPTICAL LINK is lit when the light level is too low (less the -10 dbm)

OPTICAL RECEIVE MONITOR 1V=1mW

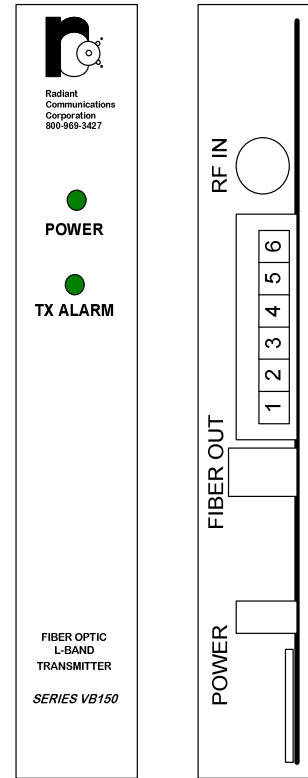
VB150

Fiber Optic L-Band Link Rack Mount

Receiver



Transmitter



Pin	Description
1	GND
2	RECEIVE ALARM OPEN COLLECTOR
3	GND
4	RECEIVE MONITOR (1V=1Mw)
5	GND
6	N/A

Pin	Description
1	GND
2	LASER ALARM OPEN COLLECTOR
3	GND
4	LASER BIOS MONITOR (0.1V=10mA)
5	GND
6	LNB POWER FEED

Parameter	Min	Typ	Max	Units
Wavelength	1280	1310	1360	nm
Wavelength(CWDM)	1470	1550	1610	nm
Bandwidth	950		2100	Mhz
Noise Figure (0db Loss)		25		dB
RF Link Gain		+15		dB
RF Input	-35		-15	dBm
RF Input	14		34	dBmV
RF impedance		75		ohm
Optical Loss		12		db
Max RF Input TX			0(+48dBmv)	dBm
Max Optical Input RX			4	mW
Max LNB Feed		26		V

LNB Power Settings

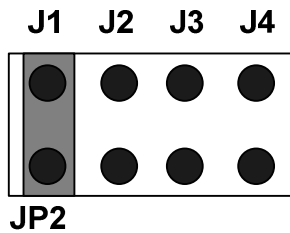
The LNB can be power either from external DC source or with Internal generated power.

The VB150 must be set prior of the installation to the correct LNB power settings.

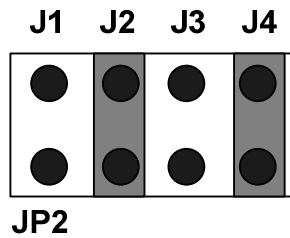
This could be done by setting up the JP2 jumper for card cage units or by dip switches for the 1U version units.

- Card Cage version LNB power configuration

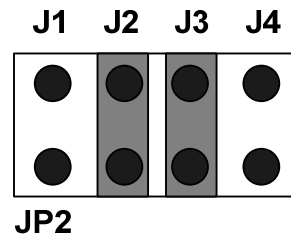
External LBN Power



Internal 13V LBN Power

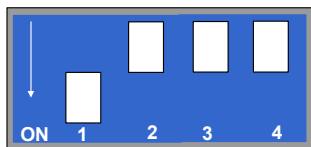


Internal 17V LBN Power

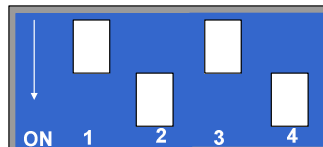


- 1U version LNB power configuration

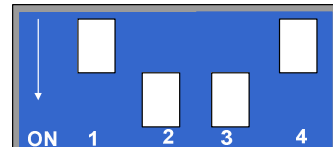
External LBN Power



Internal 13V LBN Power



Internal 17V LBN Power



TROUBLESHOOTING

Common problems include using a transmitter as a receiver and vice versa, lack of continuity in the optical fiber, lack of power (or reversed power), or improper input levels. Note that the transmitters and receivers are designed to work with a 75 Ohm system, depending on the model purchased. If problems persist consult Radiant Communications Technical Support.

Problem	Check	Comments
No Optical Power out of Tx.	Check Tx Power Connection	Power must be +12 V _{DC} (150 mA) from the power supply (Modular/Rckmount) 1U chassis requires 110/120vac 60Hz.
No Optical Power out of Rx.	Check Power at the Tx	Power must be +12 V _{DC} (150 mA) from the power supply (Modular/Rckmnt) 1U chassis requires 110/120vac 60Hz.
Signal out of Rx if noisy.	Check Optical power at the Rx.	The input level to the receiver must be between -15 dBm and +3 dBm for the unit to operate properly. Be sure to ground the case of the Tx and Rx.
No Signal out of Rx	Verify the input signal at the Rx	The input level to the receiver must be between -15 dBm and -35dBm for the unit to operate properly.
	Check the Rx power connection	
Signal amplitude out of Rx too large	Verify that the Rx output is terminated into 75 Ohms.	Add a 75 Ohm terminating resistor.
Signal out of Rx is distorted	Verify input signal at Rx.	The input level to the receiver must be between -15dBm and -35 dBm for the unit to operate properly.
	Verify fiber size.	Single-mode fiber must be used with this product.

	Min.	Typ.	Max.	Units
Environmental Characteristics				
Operating Temperature	-40		+70	°C
Storage Temperature	-40		+85	°C
Humidity	5		95	%

Physical Characteristics				Units
Weight 1U" Rack		4.30		Lbs.
Weight Card Cage Version		1.25		Lbs.
Dimensions 1U" Rack	16	12	1.75	In.
Dimensions Card Cage Version	8.75	8.75	1.5	In.

Connectors	
Optical	SC/APC
Power	MODULAR-DB9/1U-AC RECEPTACLE/RACKMNT-2.1MM PLUG

SAFETY PRECAUTIONS

The optical emissions from the units are laser-based and may present eye hazards if improperly used. NEVER USE ANY KIND OF OPTICAL INSTRUMENT TO VIEW THE OPTICAL OUTPUT OF THE UNIT. As always, be careful when working with optical fibers. Fibers can cause painful injury if they penetrate the skin.