

## Mirage B-310-G

The Mirage B-310-G is a VHF power amplifier designed for the 144-148 MHz band. New features make it the most useful and versatile amplifier available for the handheld transceiver. Features include all mode compatibility (FM/SSB/CW), wrap-around heat sink, high gain GaAsFET preamplifier, and 250 mW to 8 watts input.

### FEATURES

1. High output power of 100 watts  
100 watts is achieved with 250 mW to 8 watts input.
2. All mode compatibility (FM/SSB/CW)  
In the SSB mode the time constant of the Carrier Operated Transmit (COX) relay is set to approximately one second to prevent annoying relay chatter during conversation, and achieving smooth SSB transmission.
3. Wrap-around heat sink  
The heat sink and combined case, by original design is used for excellent heat dissipation as well as a new smart appearance.
4. Input power from 250 mW to 8 watts  
With an input power of 8 watts maximum, the Mirage B-310 -G is compatible with most modern handheld transceivers.
5. GaAsFET receive pre-amplifier  
A built-in low noise GaAsFET receive pre-amp enables you to enjoy a more comfortable VHF QSO with weak stations.

## SPECIFICATIONS

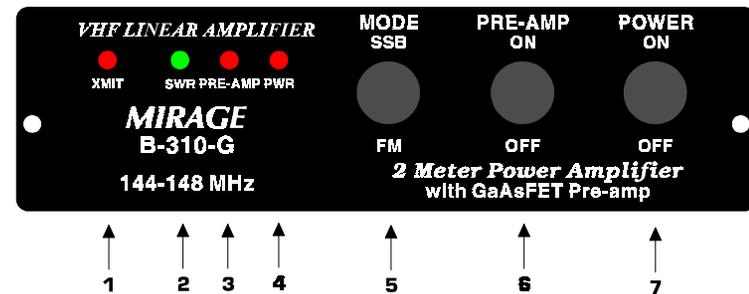
FREQUENCY	: 144 TO 148MHz
RF INPUT	: 250 mW - 8 WATTS
RF OUTPUT	: 100 WATTS TYPICAL
DUTY CYCLE	: INTERMITTENT (ICAS)
MODES	: FM SSB CW
RECIEVE PRE-AMP	: 18db TYPICAL
KEYING	: AUTOMATIC SENSING
SUPPLY VOLTAGE	: 12 - 15 VOLTS DC
RF CONNECTORS	: TWO (2) SO-239 UHF
SUPPLY CURRENT	: 15 AMPS TYPICAL
FUSE	: FAST BLOW, 20 AMP
INPUT/OUTPUT IMPEDANCE	: 50 OHMS

## EXPLANATION OF FEATURES

### FRONT PANEL

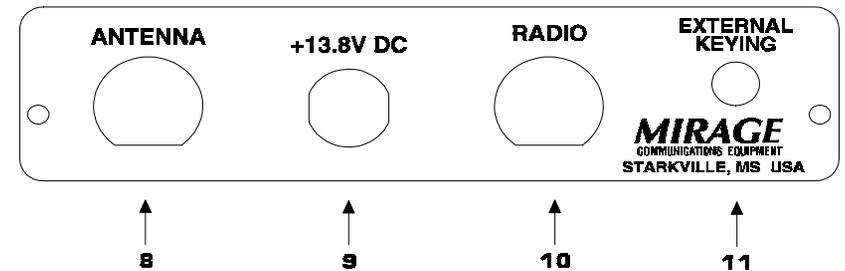
1. XMIT LED  
The XMIT LED indicates the amp is transmitting on the air.
2. SWR LED  
The SWR LED lights when the SWR is to high.
3. PRE-AMP LED  
The PRE-AMP LED will illuminate when the pre-amp is engaged. The pre-amp can be used independently even if the amplifier's power is off.
4. PWR LED  
If the LED is in the off position the amplifier will pass the RF in a straight through mode. This means that both the receive and transmit signal will bypass the internal circuitry of the amplifier. If the LED is illuminate then the amplifier is in the standby mode and will amplify any signal that is supplied to its input of more than 250 mW.

5. **MODE (SSB/FM) SWITCH**  
When in the SSB mode the amplifier will delay the change over time of the carrier operated transmit relay to 1 second before disengaging. This will prevent relay chatter as a result of working SSB or CW. In the FM mode the relay will operate normally and disengage once the transmit signal is dropped.
6. **PRE-AMP (ON/OFF) SWITCH**  
When engaged the amplifier's pre-amp will be switched into the circuit for receive. A sensing circuit will disengage the pre-amp when a transmitted signal is applied to the amplifier's input. The pre-amp may also work independently if the amplifiers main power switch is off.
7. **POWER (ON/OFF) SWITCH**  
When engaged, the amplifier is ready to amplify any signal applied to its input of the proper frequency.



## BACK PANEL

8. ANTENNA  
The coax from your antenna is connected to this port.
9. +13.V DC  
This port has two wires. The RED wire is for positive and incorporates a FUSE holder. The BLACK wire is for negative. The Mirage B-310-G amplifier will accept voltages of 12 to 15 volts DC.
10. RADIO  
The coax from your radio or exciter is connected to this port.
11. EXTERNAL KEYING  
Used to manually key the amplifier relay.



## **INSTALLATION**

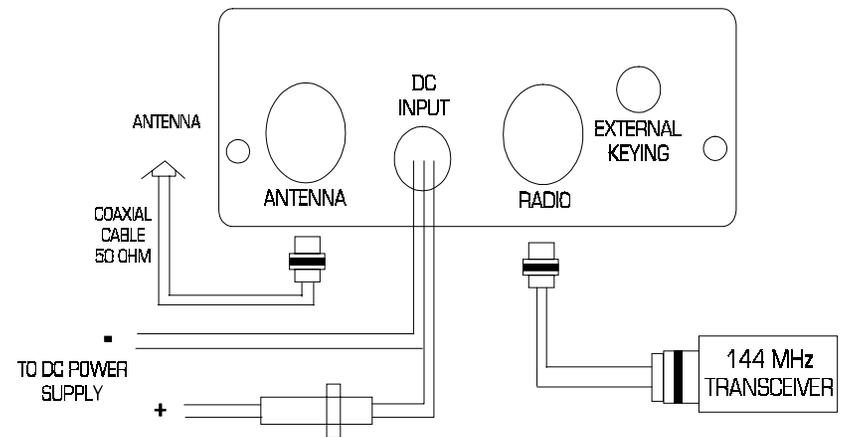
The Mirage B-310-G may be mounted using the bracket supplied or simply placed in a convenient operating position. In either case, there must be adequate ventilation for the finned heat-sink. This generally means at least 1 inch clearance from the heat-sink to any surrounding enclosure and an unobstructed flow from the front to back of the heat-sink. Do not operate the amplifier in places where it will be exposed to the direct rays of sun or a nearby heat source such as heaters, radiators, etc.

**CAUTION:** With extended use the heat-sink may become very hot.

## Wiring and Operation

If it is necessary to extend the DC power leads use wire of the same gauge in order to avoid a voltage drop on your power leads. Be careful that the DC power supplied is no higher than 15 volts or damage may result. A source voltage of 13.8 volts is recommended and should be used whenever available. Some automobiles will generate a high current surge when started. It is recommended that the amplifier be placed in the off position when starting your vehicle.

Use a minimum length of good quality 50 ohm cable between the radio and the amplifier. The antenna system should have a VSWR of 1.5:1 or better for the best performance. If used in a mobile installation, choose a good mobile antenna which will withstand the power of this amplifier. Be sure to check the SWR for any degrading once the antenna has been heated by a few minutes of operation. An antenna with a rating of 100 watts is recommended.



## **TROUBLESHOOTING**

The Mirage B-310-G is designed for long, trouble-free performance and should not require extensive troubleshooting in the field. If difficulty is encountered, check the following before assuming the amplifier has malfunction:

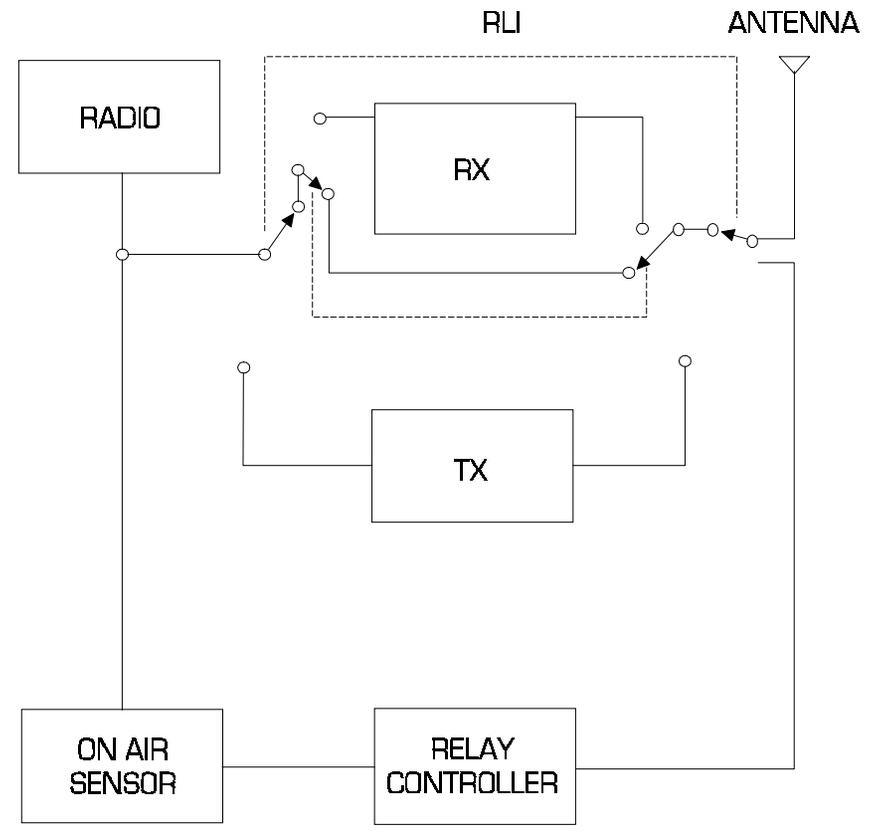
1. Loose antenna or power supply connections
2. SWR of the antenna system
3. Coaxial cables form radio to amplifier, and amplifier to antenna
4. Output voltage of power supply
5. Power output of radio
6. Improper fuse rating

## **TECHNICAL ASSISTANCE**

If you have any problem with this unit, first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual you may call MIRAGE at 601-323-8287. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by FAX to 601-323-6551. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.

Mirage B-310-G Instruction Manual  
**B-310-G BOOSTER AMP. BLOCK CIRCUIT**



SCHEMATIC