

MIRAGE

COMMUNICATIONS EQUIPMENT

INSTRUCTION MANUAL

C-5012-G R.F. AMPLIFIER

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CAUTION: Read All Instructions Before Operating Equipment!

C-5012-G

R.F. AMPLIFIER

The Mirage C-5012-G is the next generation of Power Amplifiers for 222-225 MHz. New features make it the most useful and versatile amplifier available. Features include automatic power shut-down circuitry for protection against high antenna VSWR, high temperature and excessive R.F. power input. A newly designed GaAsFET receive pre-amp provides high gain and low noise amplification for weak signal applications. The pre-amp includes an attenuator to reduce signal output level. This is useful in preventing Receiver Overload and subsequent Intermodulation Distortion caused by strong signals. Provision is made for automatic or remote (external) keying, and for remote control of all front panel functions using the Mirage RC-1 Remote Control Unit. The Mirage C-5012-G is capable of FM, SSB, and CW operational modes.

SPECIFICATIONS

Frequency Range.....	222 to 225 MHz
R.F. input power (Drive)	1 Watt to 50 Watts
R.F. output power	120 watts with 50 Watts drive.
Duty Cycle	Intermittent "(I.C.A.S.)"
Modes.....	F M, SSB, CW
Receive Pre-amp	GaAsFet, Gain 21/15 dB- Nominal. Noise figures less than 0.6 dB. 1 dB compression point greater than -13 dBm input (Nominal)
VSWR Power Shut-down point.....	3:1 Approximately
R.F. input Power Shut-down point	70 Watts Nominal
Temperature Power Shut-down point	175 Degrees F.
Keying.....	Automatic (R.F. sensing) or remote (external).
Input/Output Impedance.....	50 ohms
R.F. connectors	SO-239 (UHF)
Remote control connector	RCA phono
Remote control connector	6 pin Molex
Supply voltage.....	13.8 VDC (for full R.F. power output)
Supply current.....	25 amps (nominal)

Circuit Breaker	Low voltage, fast blow. 35 amps.
Physical Dimensions	12 x 3 x 5 1/2 inches.
Weight	5 pounds

INSTALLATION

The Mirage C-5012-G may be mounted using the brackets 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 sink to any surrounding enclosure and an unobstructed flow from the front to the back of the sink. **CAUTION:** with extended use the heat sink becomes very hot. The D.C. power leads must use a minimum # 8 gauge wire. 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 best performance. The receiving pre-amp gain is set to the high value at the factory. To switch to minimum gain move the DIP switch which is located in the hole on the left side cover near the power supply leads to the "up" position. If desired, the transmit relay hold-in (hang-time) may be adjusted by adjusting the potentiometer located behind the slot at the rear on the left side of the amplifier. If external amplifier keying is desired, a switched ground connection must be provided to the center pin of the RCA jack.

FRONT PANEL SWITCHES/LED'S

POWER ON/OFF SWITCH	Turns the D.C. power on or off.
SSB/FM SWITCH.....	Selects relay time delay for the mode of operation. The relay drop time is lengthened for the SSB mode of operation.
PRE-AMP ON/OFF SWITCH.....	Turns Pre-amp power on or off.
POWER LED	Indicates that D.C. power is applied.
PRE-AMP LED	Indicates that the pre-amp is turned on.
TX LED	Indicates that the amplifier is keyed on.
FAULT	Indicates amplifier shut-down due to excessive VSWR, temperature, or R.F. drive power.

REAR PANEL CONNECTORS

RADIO (SO-239)	R.F. input from radio.
ANT (SO-239)	R.F. output to antenna.
RCA phono (Unmarked)	Remote keying.
Molex (Unmarked)	Remote control

INTERNAL ADJUSTMENTS

SSB DELAY	This allows the R.F. relay "hang-time" or delay to be adjusted to the time desired.
PRE-AMP ATTENUATOR SWITCH	Sets the pre-amp gain to full or reduced value.
INPUT VSWR AND OUTPUT POWER	These adjustments are made at the factory and should not require field adjustment.
PRE-AMP TUNING	These adjustments are also made at the factory for best gain and noise figure performance. They should not require field adjustment.

TROUBLESHOOTING

The Mirage C-5012-G is designed for long, trouble-free performance and should not require extensive troubleshooting in the field. Many causes of common malfunctions are eliminated by the built-in protective circuitry. NOTE: In the event of automatic power shut-down, the amplifier must be turned off, and the cause of shut-down determined and removed. In case of difficulty check the following before assuming amplifier malfunction:

- a. Loose antenna or power supply connections.
- b. VSWR of antenna system.
- c. Coaxial cables from radio to amplifier, and amplifier to antenna.
- d. Output voltage of power supply.
- e. Power output of radio.
- f. Improper fuse rating.

The WARRANTY REGISTRATION CARD must be submitted within ten days to obtain warranty service.

MIRAGE COMMUNICATIONS assumes no responsibility for any antenna or other accessories connected to this product.

This warranty does not apply to units that have been misused, accidentally damaged, subjected to unusual environmental conditions, or have had unauthorized modifications of repair.

WARNING: This unit should not be operated with the cover removed. The cover confines R.F. radiation, including harmonics, to the inside of the case. Operation of the unit without the cover could result in direct harmonic radiation. The harmonic filters contained in the circuit will not suppress direct radiation.

IMPORTANT REMINDER

All MIRAGE amplifiers manufactured for amateur radio - with the exception of repeater amplifiers - are rated as ICAS - Intermittent Commercial and Amateur Service. This generally means 5 minute duty cycles, i.e. 5 minutes transmitting, 5 minutes receiving.

Although all of our units, except the hand helds, have thermal protection, continued use where this cut out occurs can damage transistors.

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 662-323-8287. 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 mail to MIRAGE, 300 Industrial Park Road, Starkville, MS 39759 or by Fax to 662-323-6551. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.