

M I R A G E  
C O M M U N I C A T I O N S

C - 1 0 2 2 - G  
R . F . A M P L I F I E R

## WARNING

The C-1022-G produces at least 200 watts of VHF R.F. power and is not to be taken lightly. Severe R.F. burns can be sustained at this power level!

Glass mount type antennas are not suitable and may explode your window if used with this much power.

A minimum of type RG-303 coax must be used at the connection between the output connector and antenna (or next stage if the C-1022-G is used as a driver) or breakdown may occur. Further, double shielded coax is recommended in mobile applications as R.F. may leak into the electrical system of the mobile application (i.e. computerized type ignition, etc)

The C-1022-G draws a nominal DC current of 46 amps and most alternators are rated at only slightly above this value. Check with your owner's manual of the vehicle you plan to install the C-1022-G in to determine if you need a larger alternator. Remember to calculate a worst case scenario; i.e. headlights, heater (defroster or A/C), windshield wipers and radios. Remember that alternators are rated at highway cruise speeds and not stop-and-go traffic.

MIRAGE/KLM is not responsible for dead batteries in mobile installations, or damage to anything that was caused by poor engineering practices by the consumer of this products

## C-1022-G R .F. AMPLIFIER

The Mirage C-1022-G is the next generation of Power Amplifiers for 220-223 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 preamp provides high gain and low-noise amplification for weak signal applications. The pre-amp includes a switchable 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/KLM RC-1 Remote Control Unit. The Mirage C-1022-G is capable of FM, SSB, and CW operational modes.

### SPECIFICATIONS:

Frequency Range.....	220 to 223 MHz
R. F. input power (Drive).....	1 W to 10 Watts
R. F. output power.....	200 Watts with 30 Watts drive.
Duty Cycle.....	120% "(I.C.A.S.)"
Modes.....	FM, SSB, CW
Receive Pre-amp.....	Dual Gate GaAs MesFet, Gain 22/16 dB-Nominal. Noise figure less than 0.6 dB. 1 dB compression point greater than -13 dBm input (Nominal)
VSWR Power Shut-down point.....	2:1 Approximately
R.F. input Power Shut-down point.....	50 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 keying connector.....	RCA phono
Remote control connector.....	6 pin Molex
Supply voltage.....	13.8 VDC (for full R.F. power output)
Supply current.....	40 amps (nominal)
Circuit Breaker.....	Low voltage, fast trip 50 amps.
Physical Dimensions.....	13 x 10 x 5 inches
Weight.....	13 pounds

INSTALLATION:

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 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

- POWER ON/OFF SWITCH..... Turns the D.C. power on or off.  
(Circuit Breaker)
- 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 (Green)..... Indicates that D. C. power is applied.
- PRE-AMP LED (Green)..... Indicates that the pre-amp is turned on.
- TX LED (Yellow)..... Indicates that the amplifier is keyed on.
- FAULT (Red)..... Indicates amplifier shut-down due to excessive VSWR, temperature, or R. F. drive power.

REAR PANEL:

- 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.
- B+ 1/4-20 Brass Stud..... + 13.8 VDC @50amp Connector
- Ground 1/4-20 Brass Stud..... Ground Connection  
(WARNING: the case is not a proper DC ground.)

**INTERNAL ADJUSTMENTS:**

SSB DELAY..... This allows the R.F. relay "hang-time" or delay to be adjusted to the time desired.

**TROUBLESHOOTING:**

The Mirage C-1022-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.

**FIVE YEAR LIMITED WARRANTY**

Any MIRAGE COMMUNICATIONS product found defective in materials or workmanship (except R. F. Power Transistors) will be repaired or replaced at no charge within Five years from date of purchase. The product must be returned to the factory, freight prepaid. R. F. Power transistors are warranted for one year from the date of purchase.

All internal adjustments are factory set for best performance consistent with reliable operation. Changing internal adjustments will void the warranty.

Unauthorized repairs or modifications will also void the warranty. We recommend that units requiring repair be returned to the factory.

R. F. power transistor replacement after the initial one year warranty period, but within the five year warranty period must be accomplished at the factory in order to maintain the original Five year product warranty.

This unit was not designed for repeater operation, and its use in such service is at your own risk. Consult the factory for recommendations regarding repeater service.

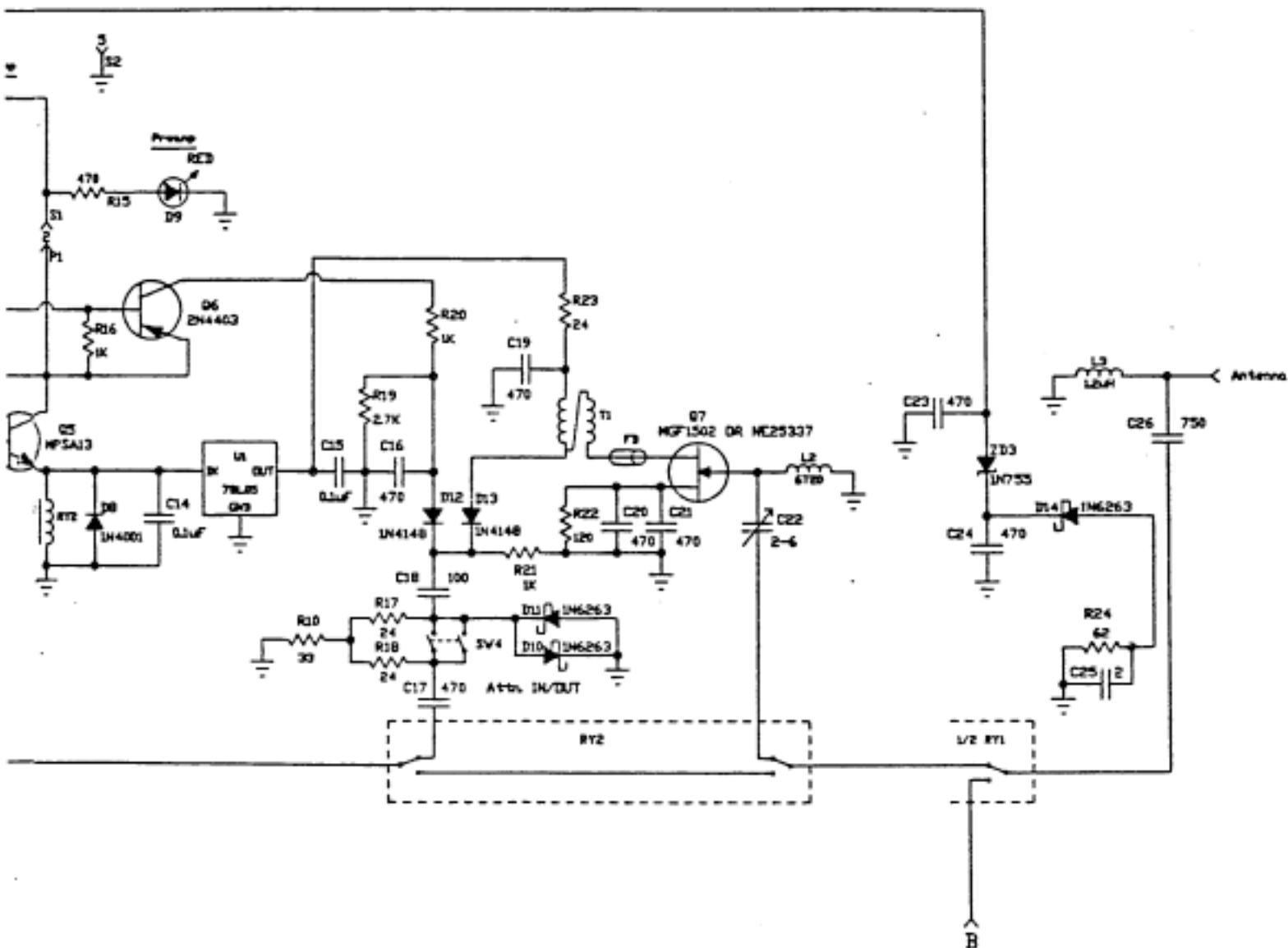
The WARRANTY REGISTRATION CARD must be submitted within ten days to obtain warrantv service.

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.

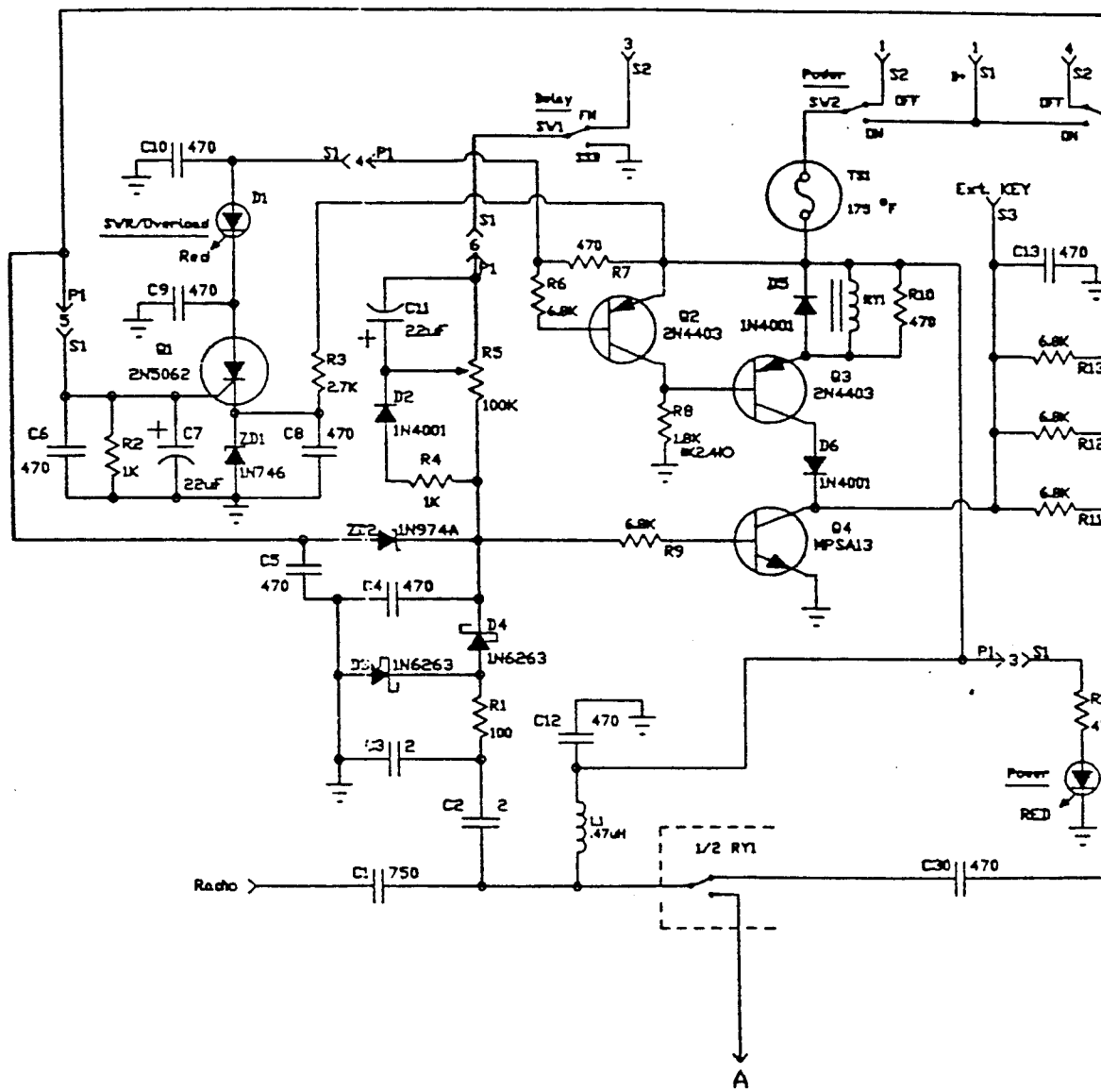
#### WARNING

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.

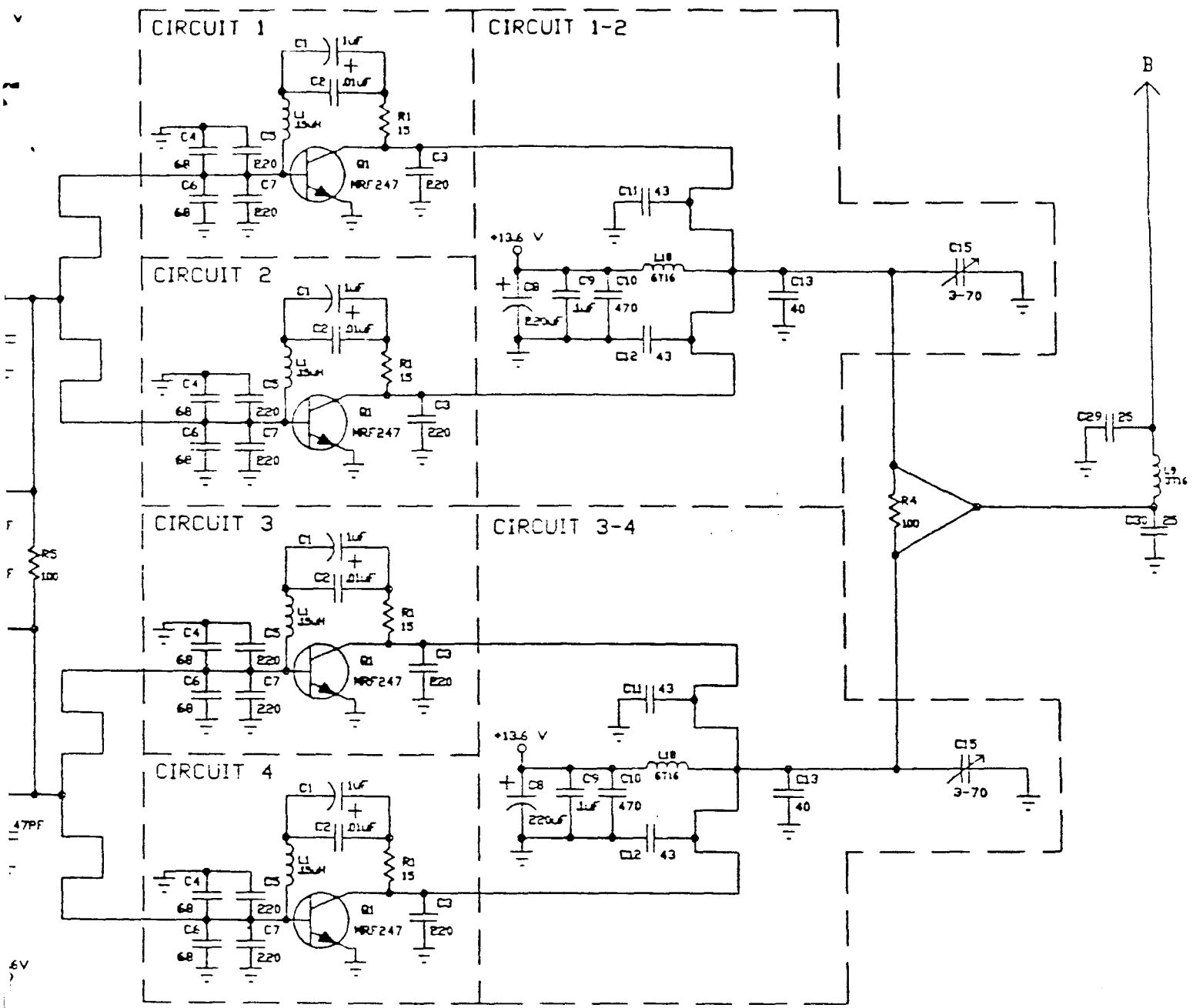


NOTE: \* Factory Select  
 1) P1 and S1 are internal circuit connectors  
 2) C2 is the 6 pin REMOTE connector

1 OF 2  
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 C-1022-G







NOTE: R - Factory Resistor  
 (1) P1 and P2 are internal circuit connectors  
 P3 is the 5 pin INMTC connector

2 of 2  
 MIRAGE/KLM  
 C 1022 G

