D-100-ATVN
420 - 450 MHz AMPLIFIER

The MIRAGE D-100-ATVN represents the latest in 420 - 450 MHz Power amplifiers. It incorporates features that make it the most versatile and useful amplifier available today. The D-100-ATVN will amplify FM, SSB, and CW signals. It has variable SSB delay, remote keying, over-temperature protection, and remote control operation when using the optional RC-1, Remote Control Unit. The D-100-ATVN can be used on amateur television at a reduced output level.

SPECIFICATIONS

FREQUENCY RANGE	420 - 450 MHz
POWER	INPUT: 0.2 Watts to 7 Watts maximum P.C.P.
	OUTPUT: 52 Watts or more for 2 Watts input. See typical power page 3.
MODES	FM, SSB, CW, ATV
DC POWER	13.6 VDC at 20 Amps nominal
FUSE	35 Amp (internally mounted)
IMPENDANCE	50 Ohm input and output
DUTY CYCLE	Intermittent-internal overtemp protection
SIZE	12" x 3" x 5-1/2"
WEIGHT	5 lbs.

INSTALLATION

The D-100-ATVN may be mounted using the brackets which are available. The D-100-ATVN must have adequate ventilation around the heat-sink. Use of #8 or larger wire to connect the unit to the battery is recommended. RG-8U, or the equivalent, should be used between the D-100-ATVN and the antenna. The antenna should be matched to better than 1.5:1 for best performance. Higher SWR will not damage the amplifier.

FRONT PANEL FUNCTIONS

POWER ON/OFF	This switch turns the power amplifier ON and OFF.
SSB/FM	Selects the relay time-delay for the mode of operation. In either the SSB or FM position, the amplifier is still biased for linear operation.
LED (POWER ON)	This LED will go out if the amplifier overheats. It will come back on when the amplifier cools.
LED (TX)	This LED will light during transmitting periods.

REAR PANEL FUNCTIONS

OUTPUT POWER ..... The D-100-ATVN puts out enough power to cause heating of the antenna coax. RG-8 or equivalent is recommended between the amplifier and antenna.

HEAT SINK TEMPERATURE ..... Along with high power output, comes the possibility of high heat sink temperatures. The D-100-ATVN must be mounted where air can circulate over the heat sink. The D-100-ATVN has a built-in thermostat that will turn it "OFF" at 170 degrees F. The amplifier will not come back "ON" until the temperature drops to 140 degrees F.

INPUT POWER ..... Input power should not exceed 7 Watts PCP. Higher power than this may cause failure of the input transistor. This will VOID ANY WARRANTY.

SSB OPERATION ..... The D-100-ATVN can be overdriven causing the SSB signal to be distorted. When using the D-100-ATVN on SSB, the drive level or the mic gain from the exciter should be adjusted for best "on the air" performance.

INTERNAL ADJUSTMENTS

"SSB DELAY" ..... This allows you to change the holding time on the XMT relay. This adjustment is accessible through the 2nd or 3rd slot on the left side behind the front panel.

"RF ADJUSTMENTS" ..... There are no internal adjustments dealing with the RF amplifier board. Tuning of the RF amplifier is preset at the factory by our technicians.

FUSE ..... A 35-amp fuse is located under the cover on the PC board. Should the fuse "blow," determine the cause and use the exact type in the unit as a replacement.

IN CASE OF DIFFICULTY

1. Check for loose antenna or B+ connections.
2 Check SWR of antenna.
3. Look for bad or lossy coax.

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 mail to MIRAGE, 921 HWY 25 South, Starkville, MS 39759 or 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.

TYPICAL POWER CURVE

Watts In	Watts Out
0.5	32
1.0	52
1.5	70
2.0	83
2.5	96
3.0	99
3.5	105
4.0	109
5.0	114

ATV OPERATION

Like SSB or any other AM mode, amplifiers must be driven in their linear region. Video has a complex waveform that must be maintained for good picture quality, color and sound. The D-100-ATVN properly matches the output of the watt PC Electronic ATV transmitter (TC70, TX70, and KPA5) or any others in this power range that incorporate blanking pedestal setup adjustment and sync stretching in the video modulator.

SET-UP

1. Make sure that no video is connected to the transmitter.
2. Locate the blanking pedestal pot in the ATV transmitter modulator.
3. Connect a RF watt meter between the D-100-ATVN and resonant 70 cm antenna.
4. Turn on ATV transmitter and adjust pedestal pot for maximum RF wattmeter reading.
5. Note that level, which will be the constant sync tip power, and multiply that power level by 0.6 (this is 60% of sync tip for proper blanking pedestal).
6. Reset the blanking pedestal pot for this reduced power level on the RF wattmeter.
7. Plug in video and adjust the video gain for best snow free picture received at station at least 1 mile away.

Typical set-up will give 70 Watts on the sync tip and blanking set for about 45 Watts. At this level, the maximum transmit time on should not exceed 20 minutes, a little longer if

some air is blown down the heatsink fins. Blanking should not be set above 55 Watts to ensure sufficient headroom to prevent sound buzz due to subcarrier clipping on the sync tip. Clipping can also occur if the video gain is too high and the camera is on a very bright or white subject. A Bird wattmeter will only give valid readings for the sync tip and pedestal set-up as they are CW readings. The wattmeter will not give any reliable readings under video modulation as it does not respond properly to AM modulation frequencies above 50 KHz. Your actual ATV power for comparison purposes to other stations is the sync tip power you read during set up plus a few percent for the sound subcarrier riding on it given as peak envelope power.