

# INSTRUCTION MANUAL

50MHz Band All Mode Power Amplifier

Model HL-66V

\* I N S T R U C T I O N M A N U A L \*

50MHz Band All Mode Power Amplifier

Model HL-66V

Tokyo Hy-Power Labs., Inc.

Read this instruction manual completely before starting operation in order to keep HL-66V in the best condition for a long time.

#### GENERAL INFORMATION

HL-66V is a high power linear amplifier with maximum output power of 60W, designed for 50MHz band all mode operation with a built-in low noise RX preamp using GaAs FET originally developed for UHF heat tubes. It is a most suitable transmitter

For UHF band tuner. It is a most reliable linear power amplifier designed with our long accumulated RF power technology being concentrated.

## FEATURES

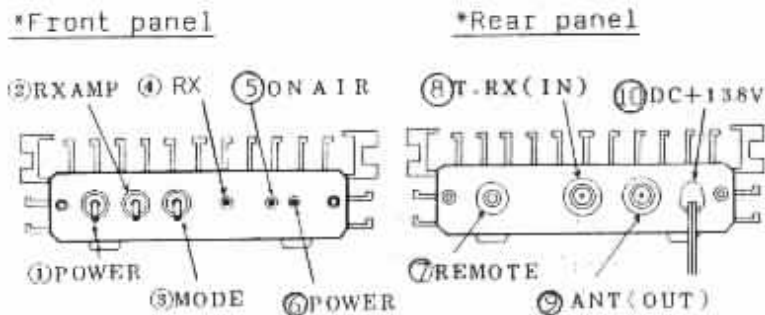
- °With a built-in RX preamp using GaAs dual-gate MES FET 3SK121 for UHF band, which has an excellent cross modulation characteristics, it amplifies even a noisy weak receiving signal. You can hear weak signals more clearly.
- °By using micro strip line technology at transmitter section, flat amplification over the 50MHz through 54MHz can be achieved.
- °Aluminum heat sink with a combined case by our original design is used. An excellent heat radiation effect as well as a new, smart appearance is achieved. The device is stable for a long time operation, as a result.
- °Power gain at low drive level of 1-3W is high. It enables to combine with a hand-held transceiver(approx. 20W out for 2W in, for example).
- °Connecting cables between remote send-receive control terminal of the device and transceiver, a relay will not chatter at SSB mode, and a smooth transmission can be achieved.

## SPECIFICATION

Frequency	: 50MHz band(50 - 54MHz)
Mode	: FM, SSB, CW, (AM)
Power supply	: DC 13.8V(12-14V) (neg. ground) 8A(max.)
Output power	: 50W (8W-60W)
RF input power	: 10W(1W-15W)
In/Out connector	: M type (50-239, 50Ω)

RX preamp gain	: approx. 18dB
Accessory circuit	: °Low noise GaAsFET RX preamp °COX °Mode switch °Remote send-receive control terminal °Reverse polarity protection
Semiconductors	: RF power transistor x 1, GaAsFET x 1, Transistor x 5, Diode x 15, LED x 3
Fuse	: 8A
Accessories	: Mobile mounting bracket, Remote control terminal plug(attached on rear panel), M-M jumper cable Fuse(8A)
Dimension	: 150(W) x 45(H) x 164(D) mm
Weight	: approx. 1.2 Kg

#### EXPLANATION OF FEATURES



(FIG.1)

#### 1. POWER(DC power switch)

At off position, the device is made "THRU" state. The transmitting and receiving signals will bypass the internal part of the device.

#### 2. RX AMP(RX preamp switch)

It can be operated independently by turning RX AMP switch on even if POWER switch is off.

3. MODE(FM/SSB mode select switch)

The change-over from TX(send) to RX(receive) is made with some delay of approx. 1 second at SSB mode, so that the relay does not chatter. And at "FM", the change is made instantly.

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4. RX(RX preamp pilot lamp)

This lamp indicates RX preamp is operating. This preamp and lamp can be on, even when POWER switch is off.

5. ON AIR pilot lamp

This lamp indicates the amp is transmitting or on air, and off at receiving state.

6. POWER pilot lamp

This lamp indicates DC power is ON.

7. REMOTE(remote control terminal)

Terminal for connecting lead wires from remote send-receive control terminal of your transceiver. The transmitting and receiving switch can be controlled remotely by the transceiver. It is not always necessary at "FM" mode.

8. T.RX(IN)(input connector)

Connect coaxial cable from ANT connector of the transceiver.

9. ANT(OUT)(output connector)

Connect coaxial cable to antenna.

10. DC13.8V(power leads)

Red for positive with fuse holder. Black for negative.

CAUTION

Be careful of following subjects which may become the cause of the trouble.

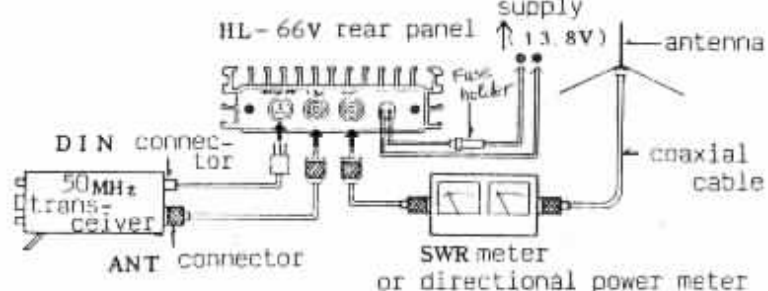
1. During transmission, the heat sink may reach a high temperature (approx. 60°C-80°C). Set the amp at a well-ventilated place. Don't put objects on top of the amp.
2. As the same way, don't operate the amp at places where is exposed to the direct rays of the sun, or nearby a heater etc.
3. Be sure to check the "Matching" or VSWR of antenna before operation. Measure "SWR" value by using SWR meter, according to FIG.2. In case SWR value is too high, adjust your antenna length or the length of coaxial cable to obtain lower SWR value. You had better obtain SWR value of less than 1.3 or hopefully as low as 1.
4. Choose a good antenna which withstands a high power, or SWR is degraded by heat within several minutes after starting transmission.
5. Be careful that DC power voltage and driving power are kept no higher than standard specified level. The amp will not be killed immediately, but it is most dangerous, if such other bad conditions occur simultaneously, as antenna mis-match or operation at highest limit.

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6. In case of using stabilized DC power supply, some DC power supplies produce abnormally high output voltage due to high frequency RF intrusion, which will kill the amp. Use a DC power fully protected against high frequency intrusion.

7. Don't open and touch the internal part of the device.

#### INSTALLATION

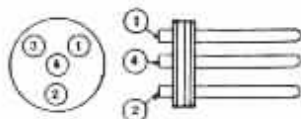


(FIG.2)

PREPARATION BEFORE OPERATION

1. Connect cables as required according to FIG.2.
2. Measure SWR value of the antenna. At first, turn POWER switch off, and measure with output power of the transceiver only. In case SWR value is too high, adjust the antenna length etc. to lower SWR value of 1.3 or less.
3. For remote control operation from transceiver, remove "REMOTE" plug from the rear panel of the device, and connect vinyl coated wires to "STAND-BY"(remote control) terminal of the transceiver, according to FIG.3.

\*Rear and side view, the cover of the plug being removed.

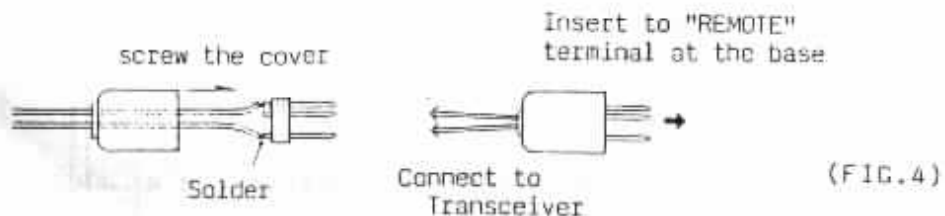


(FIG.3)

No.	Designation	Connecting point at transceiver
1.	+DC	Terminal or circuitry which produce DC +13 - 9V, on "transmit".
2.	GND	Ground at transceiver (GND)
3.	SHORT -OPEN	Terminal or circuitry which is made "SHORT" state at transmit, and "OPEN" state at receiving.
4.	(empty)	

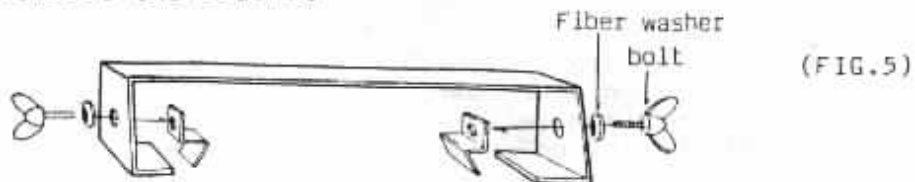
\*Connection

- a) Read the instruction manual of your transceiver to locate terminal pins which correspond to mentioned table "Connecting point at transceiver".
- b) In case that a terminal is not applied, search for a circuitry which comes to "+DC13.8V" at the transceiver.
- c) After a terminal or circuitry are decided, cut two vinyl cords in suitable length, and solder as FIG.4.
- d) Solder two vinyl cords to either pins 1 and 2 or pins 3 and 2 of the plug.

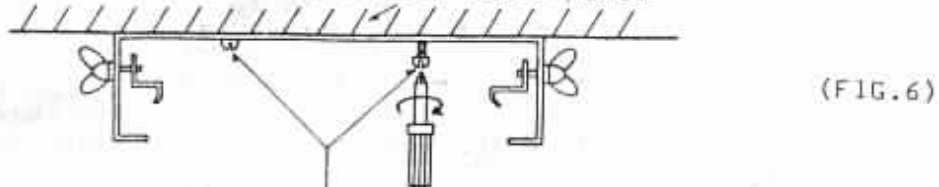


4. For setting the amp under the dash board panel of automobile with an attached mobile mounting bracket, please refer to FIG.5, 6 and 7.

°Construct the bracket



°Set the bracket to the dash board panel

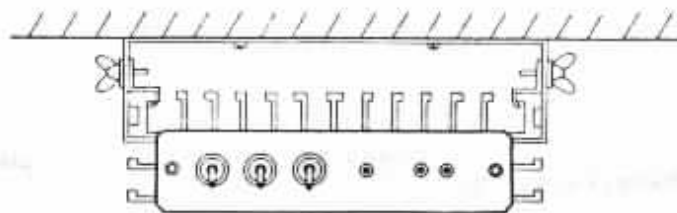


Put together two points  
with screw

(Screws are not accessories)

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°Set the device



(FIG. 7)

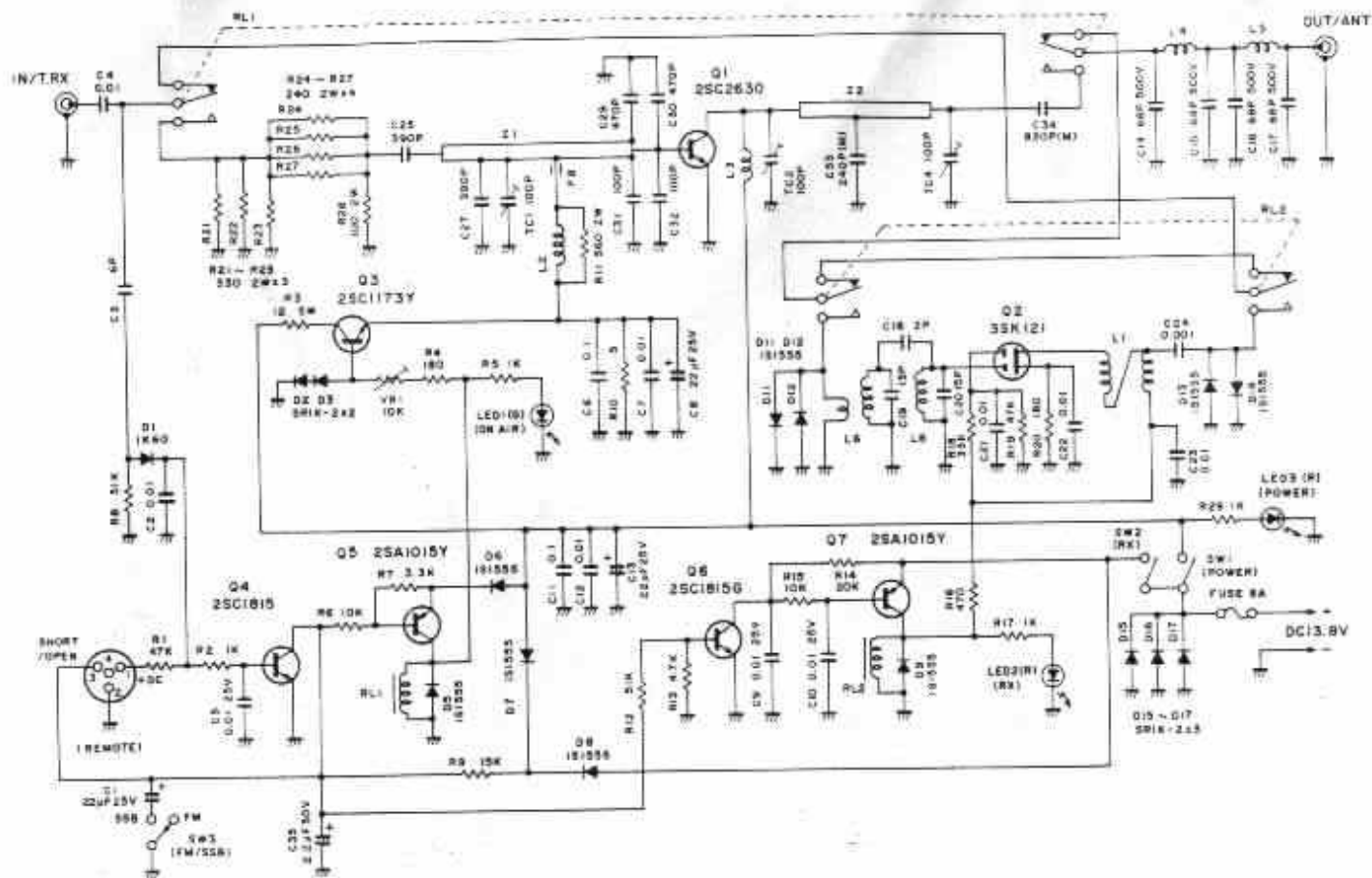
\*Slide upper both corner of the device into the bracket, tighten the device spinning bolts on both sides at the suitable position on front and rear direction.

And setting will be finished.

#### OPERATION

1. Before operation, keep POWER switch and RX AMP switch off.
2. Turn the power switch of transceiver on to be the receiving state.
3. Signal from antenna bypasses the internal part of the device, and receiving signal is heard from the transceiver.
4. Turn the POWER switch on, and POWER pilot lamp lights.

5. Turning the transceiver to "transmit", the device is made to "transmitting power amplification" state, and high power signal is emitted from antenna. At the same time, ON AIR pilot lamp lights and it indicates the amp is transmitting.
6. Select MODE switch to operation mode.  
In case of AM mode, set the switch to FM mode.  
In case of remote control operation, set the MODE switch always to FM, not to actual operation mode.
7. In case that the receiving signals are noisy and hard to catch, turn RX AMP switch on. Noises are reduced and you can hear signals more clearly. At this time, RX lamp lights.
8. In case of local QSO and the function of the device is not needed, just turn the POWER switch and RX AMP switch off, and signals to and from the transceiver will bypass the internal part of the device.
9. In case of RX preamp operation only, just turn RX AMP switch on with POWER switch off.



TOKYO HY-POWER HL-66V  
CIRCUIT DIAGRAM

\*The diagram is subject to change without notice.