

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

All Mode Power Amplifier

Model HL-250V25

Tokyo Hy-Power Labs., Inc.

HL-250V25 is a high power linear amplifier designed for 144MHz band all mode operation. It provides a maximum output power of 250W when driven by any 25W radio. Using the built-in low noise GaAs FET receive pre-amp, the HL-250V25 enables you to enjoy a more comfortable VHF DX QSO. Due to the effective forced-air cooling, the HL-250V25 is reliable and stable even in continuous operation.

FEATURES

*Selectable HI/LO Output

Output power can be reduced to approximately half power at the "LO" position. Some variation from exactly half power is to be expected.

*Power Level Meter

You can monitor the output power level at all times. Accurate output power can be read with the built-in precision micro-strip type directional coupler and a 50 ohm load with low VSWR.

*Protection Circuit

When the connector at the output side is open or shorted, protection circuits will operate to prevent the power amplifier from reaching full output and thus prevents the transistors from being damaged.

*All Mode Compatibility(SSB/FM/CW)

In the SSB mode, the time constant of the COX(automatic send receive switch) is set to be approximately one second. Consequently, the relay rarely chatters during conversation, and smooth SSB operation is the result.

*Remote Send-Receive Control

"+DC or SHORT" remote control lead wires are incorporated. This enables a smooth and instant changeover especially on SSB mode and CW mode when two leads are properly wired to the remote control terminals of the transceiver.

*Variable Fan-Motor Speed

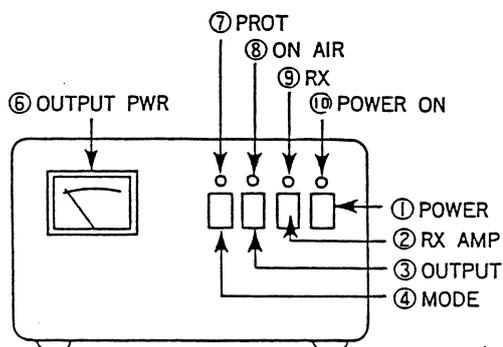
When the temperature in the heat sink exceeds 60 degrees C(140F), motor speed will increase rapidly to enhance the cooling of the heatsink and transistors.

SPECIFICATIONS

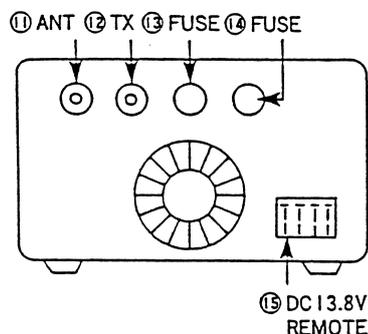
Frequency	: 144MHz(144-148MHz) Band
Mode	: FM/SSB/CW
DC Power	: DC 13.8V(negative ground)
Power Consumption	: 38A Approx.
Output Power	: HI = 250W LO = 90 - 140W
RF Input Power	: 25W
Input/Output Impedance	: 50 ohm
Input/Output Connector	: M type
Accessory Circuit	: COX(Carrier Operated T/R switch), Remote control lead wires, Mode select switch, GaAs FET low noise RX pre-amp., Output power level select(HI/LO), Power meter, Load open/short protection, Reverse DC power polarity protection, Changeable fan-motor speed
Semiconductors	: RF Power Transistor x 5, GaAs FET x 1, Transistor x 9, Diode x 25, LED x 4
Accessories	: Coaxial jumper cable, DC power cord, Fuse(25A) x 2
Dimensions	: 220(W) x 120(H) x 350(D) mm
Weight	: 4.85 Kg(approx.)

EXPLANATION OF FEATURES

*Front panel



*Rear panel



1. POWER (DC power switch)
In the off position, the amp is in the "THRU" state.
The transmitted and received signals will bypass the active internal part of the HL-250V25.
2. RX AMP (RX receive pre-amp switch)
In the "ON" position, the received signal is amplified by a low noise GaAs FET device.
3. OUTPUT (Output power level select switch)
Select either high or low output level.
At "HI", full power is delivered and at "LO", approximately half of the full output is available.
4. MODE (FM/SSB mode select)
When changing from TX (send) to RX (receive) in the "SSB" mode, relay change-over is made with a delay of approximately one second. This change is made instantly at "FM".
6. OUTPUT PWR (Power meter)
Indicates transmitting output power.
7. PROT. (Protection pilot lamp)
When output of the amplifier is open or shorted, DC power is disconnected automatically to protect the power transistors. At this time, this lamp lights to indicate the amplifier is off. Also, this protection may function when SWR on the antenna is extremely high.
8. ON AIR pilot lamp
Lights when the amp is transmitting or on air.

9. RX pilot lamp
Lights when the RX pre-amp is ready, even if DC power switch is off. The pre-amp may be used when the power amplifier is off.
10. POWER ON pilot lamp
Lights when DC power is supplied to TX amp and power switch is "ON".
11. ANT(output connector)
connects a coaxial cable to antenna.
12. TX(RX input connector)
Connects a coaxial jumper cable from ANT connector of transceiver.
- 13, 14. Fuse holder
25A fuse in each holder.
15. DC 13.8V REMOTE(DC power/remote connector)
Connector for DC power lead and remote control cable.
For the connection of remote control cable, please refer to "PREPARATION BEFORE OPERATION" on page 6.

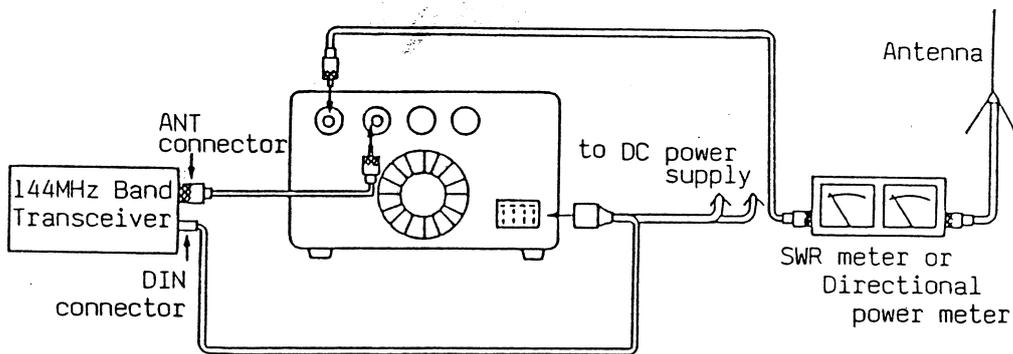
CAUTION

Be careful of the following items which may cause troubles.

1. Set the amp in a well ventilated place.
DO NOT cover ventilation holes of the amp.
2. In the same way, DO NOT operate the amp at places where it is exposed to the direct heat of the sun, or near a heater.
3. Be sure to check the "Matching" or VSWR of antenna before operation. Measure the SWR value by using an SWR meter according to the installation on page 5. If SWR value is too high, adjust your antenna to obtain a lower SWR value. You should obtain an SWR of less than 1.3:1 or hopefully as low as 1.0:1.
4. Choose a good antenna which withstands high power, or the SWR will be degraded within a few minutes after starting transmission, due to the heating of the antenna. In some cases, the antenna may be damaged or destroyed.
5. DO NOT try to drive over the rated level(25W).
6. Be careful that the DC power voltage is kept no higher than 13.8V(12-14V). Although supplying about 15V will not kill the amp immediately, it is dangerous to the transistors if such other undesirable conditions occur, such as antenna mismatch or over drive, simultaneously. In case the battery is 24V, use 24V to 13.8V DC/DC converter. Supplying over 15V WILL KILL the amp immediately!

7. In case that AC to DC converter (Voltage stabilized power supply) is used at home station, some DC power supplies produce abnormally high output voltage due to high frequency RF intrusion, which will kill the RF power transistor of the amp. USE OVP (Over Voltage Protected) SUPPLY ONLY! Use a DC power supply fully protected against high frequency intrusion, and capable of supplying high current.
8. DO NOT open and touch the internal part of the amp. The device is fully adjusted at the factory.

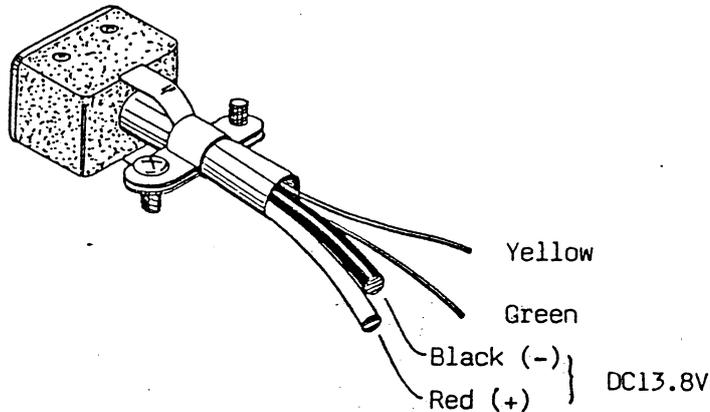
INSTALLATION



PREPARATION BEFORE OPERATION

1. Connect cables as required according to the above installation.
2. Measure the SWR value of the antenna. First, turn the power switch off, and measure with the output level of transceiver only. When SWR is high, adjust the antenna element etc. to lower the SWR value to 1.3:1 or less (as low as possible).
3. For remote control operation from the transceiver, connect remote control lead wire from remote control connector (DC 13.8V REM) to "STAND-BY" terminal (remote control) at the transceiver. Connect the green lead to a terminal that grounds for TX or the yellow lead to one that supplies voltage on transmit.

LEAD COLOUR	DESIGNATION	CONNECTING POINT AT TRANSCEIVER
Yellow	+ DC	Terminal or circuitry which produces DC +1 to +12V on transmit.
Green	OPEN-SHORT	Terminal or circuitry which is grounded on transmitting and in an "OPEN" state on receiving.



OPEATION

1. Before operation, keep #1. POWER switch and #2. RX AMP switch off.
2. Turn the power switch of transceiver on and receive.
3. Signals to and from the antenna will bypass the internal part of the device. In that case, you can hear signals on the transceiver.
4. Turn #1. POWER switch on, and #9. POWER ON pilot lamp lights.
5. By using the transceiver to "transmit", the HL-250V25 will provide "transmitting power amplification" and a high power signal is emitted from amplifier. At the same time, the ON AIR pilot lamp lights to indicate that the amp is transmitting or on air.
6. Select #4. MODE switch to the operating mode. when you operate by remote control, this switch must be always set to "FM", not to the actual mode.
7. Protection circuit for SHORT or OPEN state at output side is included. When the connector at output side is open or shorted, DC power is disconnected automatically, and #6. PROT pilot lamp lights. To release the protection, turn #1. POWER switch and #2. RX AMP switch off. Please begin from the beginning after the trouble is cleared.

8. In case the receiving signals are weak, noisy and hard to receive, turn #2.RX AMP switch on. You can hear signals clearly with the low noise pre-amplifier, and #8.RX pilot lamp lights. If you use Rx preamp in a strong electric field, the pre-amplifier GaAs FET may be destroyed.
9. If lower power is needed or if the power supply capacity cannot handle the full amplifier power, switch to "LO" output.
10. In the case of a local QSO and the amp is not needed, just set #1.POWER and #2.RX AMP switches off.
11. In case of RX preamp operation only, set #2.RX AMP switch on with #1.POWER switch off.

