

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

UHF RF Power Amplifier

Model HL-120U

Tokyo Hy-Power Labs., Inc.

*General Information

HL-120U is a high power linear amplifier designed for 430MHz amateur band. It features stable and powerful amplification along with excellent linearity with a combination of rugged RF Power transistors and Micro strip line circuitry. With the built-in low noise receiver pre-amp using GaAs FET, HL-120U enables you to enjoy more comfortable DX QSOs.

* FEATURES

1. Power Level Meter

An accurate output power can be read with a use of Micro strip line type directional coupler.

2. Low-Noise GaAs FET RX Pre-amp

With a use of latest GaAs FET, an excellent cross-modulation characteristics and gain are achieved with an excellent noise figures.

3. Output Power Level Switch(HI/LO)

Output Power can be reduced by a half at "LO" position.

4. FM/SSB Mode Switch

The time constant of the COX is changed in relation to the mode of either FM or SSB. At "FM", the change from "TX" to "RX" is made instantly and at "SSB", with some delay.

5. N-type Coaxial Connectors

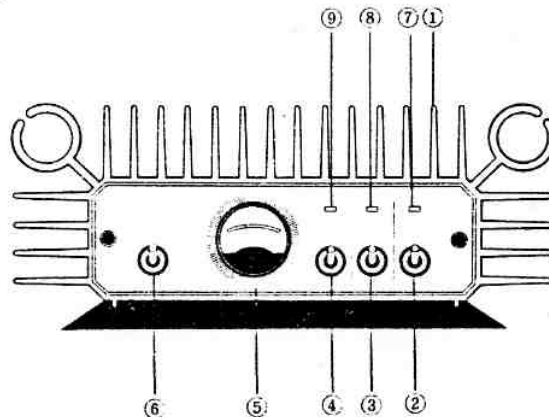
Low-loss N-type connectors are used for input and output connections to achieve transmission efficiency.

*SPECIFICATIONS

- 1.Frequency : 430 MHz band
- 2.Mode : FM,SSB,CW,TV
- 3.Supply Voltage : DC 13.8V(negative ground)
- 4.Power Consumption : 5A - 17A(at TX)
- 5.Output Power : 10W - 100W(TV, 40-60W Max)
- 6.Input Power : 1W - 14W
- 7.Input/Output Impedance : 50 ohm
- 8.Connector : N type
- 9.Accessory Circuit : COX, GaAsFET RX Pre-amp,
Power Meter,
Reverse Polarity Protection,
Remote Control Terminal
- 10.Semiconductors : RF Power transistorx3,
Transistorx6, GaAsFETx1,
Diode x25, LEDx3, thermistorx1
- 11.Accessories : Fuse(20A), N-M Jumper Cable,
Instruction Manual
- 12.Dimension : 218(W) x 82(H) x 299(D) mm
- 13.Weight : approx. 3.5 Kg

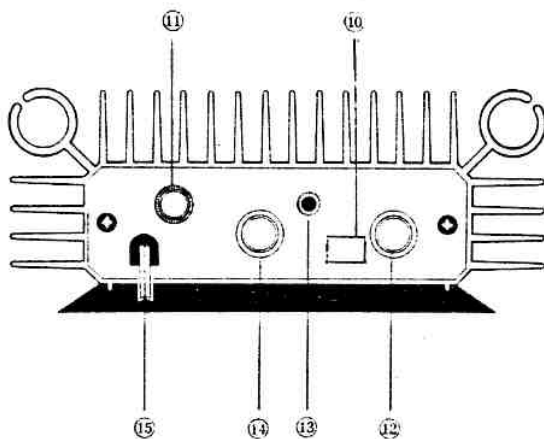
*EXPLANATION OF FEATURES

*Front panel



- 1.Heat Sink : Aluminum, heavy duty
- 2.DC Power Switch : ON/OFF
- 3.RX Amp Switch : Receive pre-amp switch, ON/OFF.
The Pre-amplifier for receive works even if the main "Power" switch is off.
- 4.MODE Switch : SSB/FM mode select, at "SSB", the change-over from TX to RX is made with some delay of approx. 1 second, and at "FM", the change is made instantly.
- 5.Output Power Meter : Monitors output level.
- 6.Power Level Switch : Selects either high or low output level.
At "HI", full power is delivered and at "LO", half of the full output.
- 7."POWER" Pilot lamp : Red lamp indicates DC power is on.
- 8."RX" Pilot lamp : Red lamp indicates receive preamp is ready.
Please note that preamp does work, if the DC Power switch is off.
- 9."ON AIR" Pilot lamp : Green lamp indicates the amp is transmitting or on air.

*Rear panel

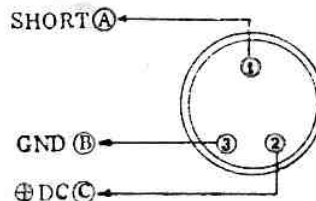


- 10.Name Plate
- 11.Fuse Holder(20A)
- 12."ANT" connector : connect antenna.

- 13. Remote Control Terminal : Although HL-120U has an automatic C.O.X., HL-120U can also be controlled remotely by the transceiver.
- 14. "TX" Connector : Connect the cable from the transceiver.
- 15. DC Power Leads : Red for positive, Black for negative.

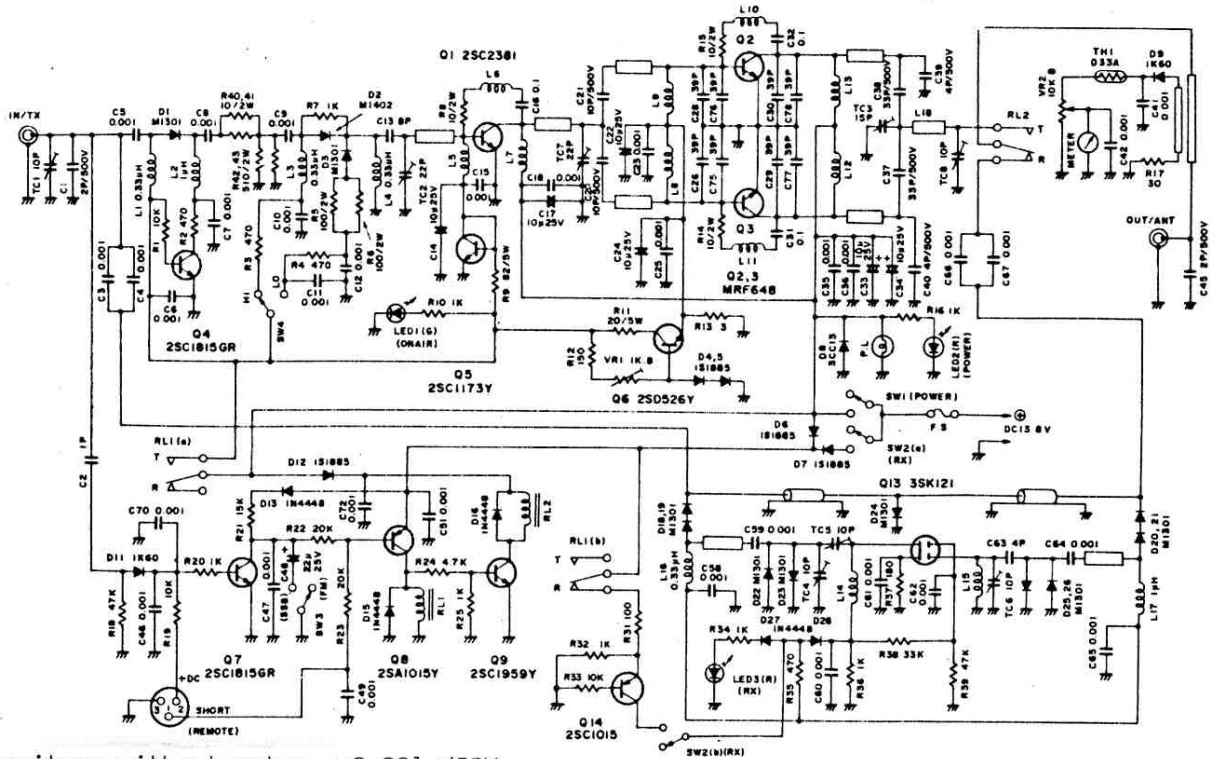
*SETTING AND OPERATION

- 1. Connect Dc power leads to the DC power supply and/or the battery, red lead to the positive(+) terminal and the black one to the negative(-).
- 2. Using a coaxial jumper cable(50 ohm type), connect "TX(IN)" of the rear panel to the Antenna connector of the transceiver.
- 3. Connect the antenna cable to the "ANT(OUT)" at the rear panel. Set the "MODE" switch to either FM or SSB.
- 4. The impedance condition of the antenna used (or SWR) must be checked to be 1.5 or less by using SWR meter to avoid RF power loss and instability of the amp.
- 5. Switching the transceiver to "transmit", HL-120U is also automatically switched to transmit.
- 6. Returning the transceiver to "stand-by(or receive)", will automatically return the HL-120U to the "receive" state.
- 7. Turning the DC power switch off, the transmitting signals from the transceiver will bypass the HL-120U.
- 8. For remote control operation with the transceiver, remove the cover of the plug, and solder the two leads to pins 1 and 3. The lead connected to pin 3 must be wired to ground pin of the remote control terminal of the transceiver. The other lead connected to pin 1 must be wired to the pin of the transceiver, which becomes "make" or "short" at transmitting. For such transceivers as will produce positive DC voltage at transmitting, use pins 2 and 3. Mode switch must be switched to "FM" position, whenever the remote control is made.



*CAUTION

- 1. Nominal DC power supply voltage for HL-120U is 13.8V, and HL-120U is designed to work from 12V battery system. Please do not apply DC voltage over 15V, or the overvoltage will kill the amplifier.
- 2. Since expensive precision components are used throughout, please do not touch or tweak internal parts or controls.



Capacitors without notes : 0.001 μ /50V
 Resistors without notes : 1/4W Carbon
 C26, 28, 29, 30, 75, 76, 77, 78 : Ceramic Chip Capacitor
 C60, 61, 62 : Ceramic Chip Capacitor
 L5, 6, 8, 9, 10, 11, 14, 15 : Print pattern

CIRCUIT DIAGRAM HL-120U
TOKYO HY-POWER