INSTRUCTION MANUAL

1200MHz Band All Mode Power Amp.

Model HL-1240U

TOKYO HY-POWER LABS., INC.

Please read this instruction manual carefully before starting operation in order to keep the HL-1240U at its best condition for a long time.

1. GENERAL

With our latest RF technology, Model HL-1240U covers a wide frequency range of 40MHz bandwidth for 1200MHz amateur band. Also, it is designed to keep the insertion-loss minimum at receiving and through states and is an all mode power amplifier with such new accessory circuits as RX pre-amp, automatic input power select and automatic SWR meter etc.

Combined with a low noise GaAs FET pre-amp, HL-1240U enables you to enjoy the new attractive 1200MHz band expanding the communication range.

2. FEATURES

- Three pieces of hybrid power module "M57762" are used in parallel. With forced-air cooling method in combination with an effective heat sink and line-flow fan, the amp is, as a result, stable for a long time operation.

- Automatic RF input select : 2W/10W. You can drive the amp with both 2W hand-held and 10W base transceivers, as the amp automatically selects the incoming drive level.

- Built-in RX pre-amp using a highly effective low-noise GaAs FET MGF1302.

- The automatic Power/SWR meter is included. When pushing the select button, the SWR value can be read out directly without manual calibration as well as the output power level.

- The WARNG (WARNING) circuit monitors overvoltage of power supply, antenna mis-match and overheat of heat sink. And, its lamp lights to indicate on the front panel when these troubles occur.

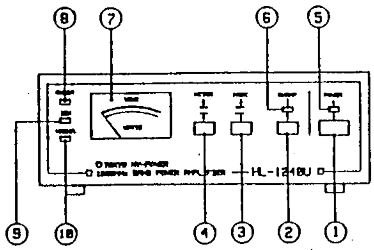
- On the rear panel, there is the connector jack for remote controller, "HRC-60" available as option. With the "HRC-60" the remote control operation of the amps controlling some switches for such as POWER and RX pre-amp and functions of the amp can be made.

3. SPECIFICATIONS

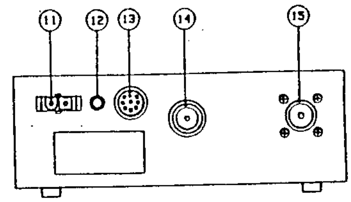
Frequency	: 1260 - 1300MHz Band
Mode	: FM·SSB·CW·(TV)
DC Power Supply	: DC 13.8V (neg. ground)
Max. Power Consumption	: 12A max.
Output Power	: 40W max. (Nominal)
RF Input Power	: 1W - 10W (max.)
Input/Output Impedance	: 50Ω
Input/Output Connector	: N-RB type (50Ω)
RX Pre-amp Gain	: approx. 10dB
Accessory Circuitry	: ① GaAs FET RX Pre-amp ② Automatic RF Input Select ③ Power/Automatic SWR Meter Built-in ④ Protections (WARNG) for DC Power overvoltage, Antenna Mis-match, and overheat ⑤ COX (Carrier operated T/R switch) ⑥ Mode Select Switch ⑦ Reverse DC Power Polarity Protection ⑧ STBY Terminal for (forced) send/ receive changeover
Semi-conductors	: RF Power Module x 3, Transistor x 7, GaAs FET x 1, Diode x 24, LED x 5, IC x 6, 3-terminal Regulator x 1
Fuse	: 15A
Accessories	: N-N Jumper Cable, Power Cord with in-line Fuse Box and Plug, Remote Control Lead Wire, RCA Plug for STBY
Dimensions	: 180(W) X 60(H) X 280(D) mm
Weight	: 2.7 Kg (approx.), 6 lbs

4. EXPLANATIONS OF FEATURES

FRONT PANEL



REAR PANEL



① POWER (Power Switch) :
With the first button push for ON status, ⑤LED lamp lights to indicate the power is applied to TX amp.

By the next push, ⑤LED and power are turned off. Then, the amp is in the "THRU" state.

② RX AMP (RX Pre-amp Switch) :
With the first button push for ON status, ⑥LED lamp lights to indicate the power is applied to RX pre-amp. With the next push, ⑥LED and the RX pre-amp are turned off.

Regardless of the ON/OFF status of the power switch, the switch will function independently for RX amp.

③ MODE (FM/SSB Mode Select) :
Carrier control send-receive switch. At SSB, change-over is made with some delay of approx. 1 second and relay does not chatter. This change is made instantly at FM.

[CAUTION] Set to the FM position when you can operate the transceiver with the connection of STBY terminal ⑫

④ METER (Power/SWR Meter Select Switch) :
With the first button push for "SWR" position, the automatic SWR circuit works to indicate the SWR value.

With the next push for "PO" position, it works to indicate the forward output power.

⑤ (LED) : Lights when the DC power in on.

⑥ (LED) : Lights when the RX pre-amp is on.

⑦ METER (POWER/SWR Meter) :
Indicates the forward power (transmitting output power from transceiver) when ④METER select switch is set to the "PO" position. Indicates the VSWR value from antenna at "SWR" position.

⑧ ON AIR : LED lights at transmitting.

⑨ 10W : LED lights when the driving input power is 10W.

⑩ WARNG :
LED lights when the protection circuit works. The circuit works when one of the troubles of overvoltage drive, antenna mis-match and overheat happens.

⑪ DC 13.8V (DC Plug) :
Connect the power cord of accessory to this plug.

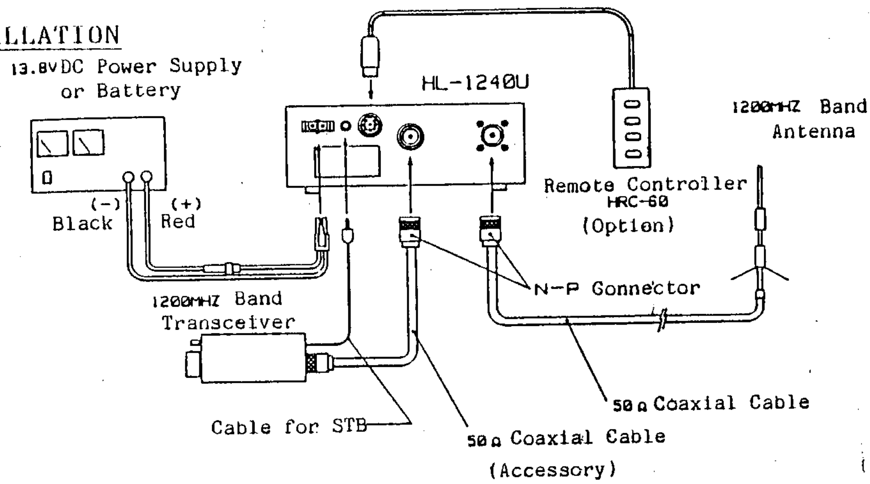
⑫ STBY (Stand-by Terminal) :
Connect the RCA plug and vinyl coated wires of plug for remote operation to "STAND BY" terminal on transceiver, and then HL-1240U can be controlled remotely by the transceiver.

⑬ REMOTE (Remote Controller Connector Jack) :
The connector jack for remote control operation of some switches and functions of the amp with the optional remote controller (HRC-60).

⑭ T·RX (Input Connector) :
Connects a coaxial jumper cable from ANT connector of transceiver.

⑮ ANT (Output Connector) : Connects a coaxial cable to antenna.

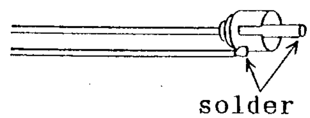
5. INSTALLATION



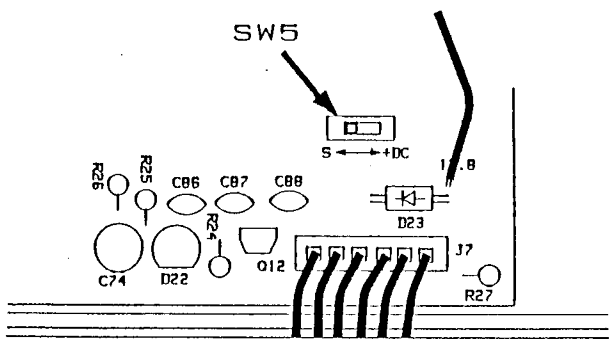
6. PREPARATIONS BEFORE OPERATIONS

1) Connect cables as required according to the installation on page 4.

2) Connect the RCA plug to "STBY" (12) and vinyl coated wires of plug for remote operation to "STAND BY" terminal on transceiver.



(CAUTION)
Please check that the transceiver has terminal or circuitry which comes to +DC on transmission or which is made short on transmission and open on reception. In case of "+DC", set the switch SW5 on the PC board to "+DC" position. And, in case of SHORT/OPEN, set to "S" position.



FRONT PANEL

7. CAUTION

To avoid malfunctions and damages, achieve the full performance, please pay attention to the following matters.

1) The heat sink temparature will rise high during the transmission. Be carefull not to block the ventillators at the top right side and right side of the cover.

2) Also, avoid operation near heat sources such as locations exposed to the direct rays of the sun, locations near heater, and the inside of car under the scorching sun in summer etc.

3) Don't forget to connect antenna (no load state). Also, don't operate with mis-matching (high SWR) condition, or power module may by killed. Please be careful.

4) Don't try to drive exceeding rated level (10W max.)

5) DC power must be kept no higher than rated level (DC 14V max.). If you connect DC 24V for diesel engine or AC 100V erroneously, the amp will be killed immediately.

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

7) Use always 50Ω coaxial jumper cable. If you use other cable (5C2V...75Ω, for example), it will be mis-match, and full power can't be achieved as reflection power, and may be a cause of trouble.

8) In case of using a thinner and longer cable, there is a much cable loss at the high frequency such as 1200MHz band.
Then, the receiving sensitivity and the radiated power level on transmitting are deteriorated. If the cables to antenna is extended, 8D2V (RG-9B etc.) or thicker one kept as short as possible is recommended.

9) If you extend the power cords by using vinyle coated wires, use same thickness or thicker one than accessory cord cut as short as possible.

If the cords are too slim and long, the amp may not obtain the rated output power due to the voltage drop of high current flow through the power cable.

10) If you touch the antenna directly during the transmission, you will receive an electrick shock and be burnt due to high frequency output power energy.

8. OPERATION

1) Be sure to check the connection before operation according to the installation on page 4.

2) Turn power switch of transceiver ON. At receiving state, amp is made "THRU" state, and signal from antenna bypasses the internal part of the amp, and receiving signal is heard from transceiver.

3) Turn ①POWER switch ON, and ⑥LED lights.

   Set ③MODE switch to the operating mode, RM or SSB (for CW, set to SSB position). In case of remote control operation, set this switch always to "FM", not to the actual operating mode.

4) By turning the transceiver to "transmit", the amp is made to "transmitting power amplification" state, and high power signal is emitted from antenna.
   At the same time, ⑧LED lamps are lighting.

5) Protection circuit for SHORT or OPEN state at output connector (side) is included. When the connector at output side is open or shorted, the DC power of power amp section is disconnected automatically. Then, ⑩WARNG LED lamp will light.

   To release the protection, turn ①POWER switch and ②RX switch off.
   Please start from the beginning after the trouble is cleared.

6) In case the receiving signals are weak, noisy and hard to copy, turn ②RX AMP switch on. You can hear signals clearly with the low noise pre-amp, and ⑥LED lamp lighs. If you use RX pre-amp where the very strong signal exists nearby, the pre-amp GaAs FET can be destroyed.

7) In case of operating RX pre-amp only, set ②RX AMP switch on with ①POWER switch off.

8) To monitor the PO and SWR meter, turn ①POWER switch on and make the amp into the transmitting state.

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