INSTRUCTION MANUAL

1.2GHz band GaAsFET
Mast mounted RX pre-amp.
Model HRA-7

TOKYO HY-POWER

Model MR1-7 is a mast mounted RX pre-amplifier with low FET transistor designed for 430MHz band DX communications.

You will be satfafied with its excellent performance, which has not been achieved with the conventional pre-amplifiers.

FEATURES

. A low noise GaAs FET transistor for U/SHF bands, 2SK161 is used for high gain and low noise characteristics.

. Maximum handling power is 100W, and it is fully protected against destruction of GaAs FET.

. N type connectors(female) are used at both input and output terminals to minimize the insertion loss and the deterioration of impedance characteristics. And also the high quality coaxial relays are used as antenna change-over relays to switch the transmitting and receiving.

. A carrier controlled operation circuitry (Automatic send/receive switch) is incorporated, which works with all modes of FM,SSB,CW, ATV etc.

. A waterproof refined vinyl chloride cover is used to endure a long term operation at outdoors. Chassis, bracket, U-bolt and other hardwares are made of rugged and anti-corrosive stainless steel.

SPECIFICATION

Operating frequency	: 430 - 440MHz
Input/Output impedances	: 50 ohms
Gain	: 19 dB min.
Nominal noise figure	: 0.8 dB min.
Max. handling power	: 100W
DC power	: +9 - 15V (13.8V typ.) approx. 200mA(at 13.8V)
Connectors	: N type (female)

Fitting mast diameter	: [illegible] - [illegible] mm
Semiconductors	: 1pcs FET x 1, transistors x 4, diodes x 17
Accessories	: Bracket adaptor, U-bolt, Nut, O.I 3M DC cord, Instruction manual
Dimensions	: 150(W) x 80(H) x 75(D) mm
Weight	: Approx. 550 g

SETTING

1) Before the device is connected, be sure to adjust antenna, and keep SWR value lowered. If the device is used under a condition of high SWR, best performance can not be achieved. It will become the cause of the trouble.

2) Solder vinyl cord attached as DC power lead to the feedthrough terminal (+DC 13.8V) at the base. The negative(-) side is connected automatically be an outer braid of coaxial cable. In this case, the negative(-) side of power supply should be connected to the ground side of the UHT connector at the transceiver as direct current return.

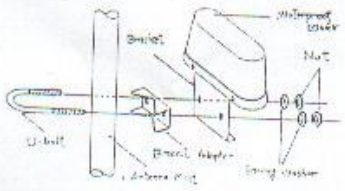
3) Set the device to a mast, according to "INSTALLATION".

4) Connect a short and thick coaxial cable from antenna to "ANT." connector of HRA-7.

5) Connect a coaxial cable from the transceiver to the "TRANSCEIVER" connector of HRA-7.

6) Connect the vinyl cord (DC power lead) to the positive terminal of power supply

INSTALLATION



CAUTION ON SETTING

1) Make a cable to connect antenna and HR1-7 as short as possible.

2) Set the stainless chassis side down to keep the rain off.

3) Fix a coaxial cable between the device and transceiver along a mast, so that a weight of cable is not directly loaded to the unit.

4) When connecting a coaxial cable connector, check carefully not to turn input-output sides conversely.

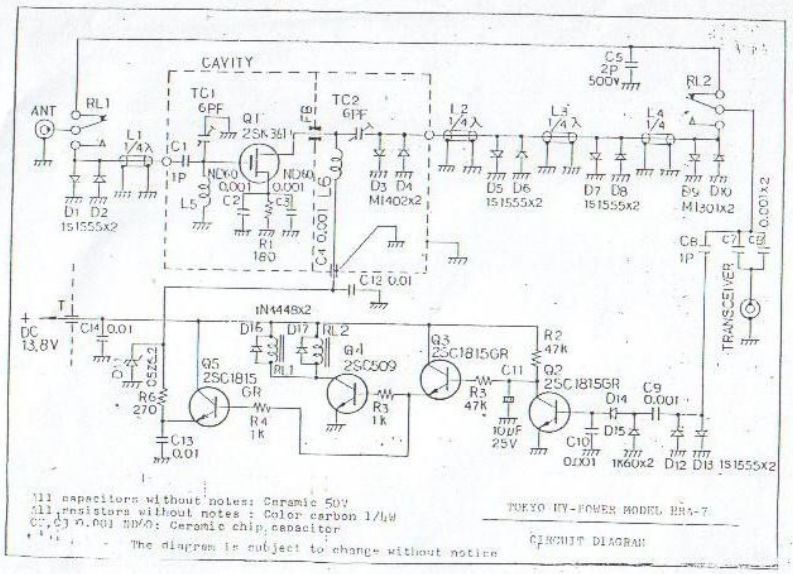
OPERATION

1) In case the DC power is not fed to HR1-7, the device is made "through" state, and preamp is kept off.

2) By switching the DC power supply on, a pre-amplifier acts in receiving, the sensitivity of receiving increases, and the noise figure characteristics will be improved.

3) By turning the transceiver to "transmit", a change-over relay is automatically activated by the carrier controlled circuitry, and the device is made "through".

4) If your transceiver has an RF gain control, it is sometimes efficient that RF gain is reduced a little.


CAVITY
ANT
RL1
L1 1/4λ
C1 1P
TC1 6PF
Q1 2SK361
TC2 6PF
L2 1/4λ
L3 1/4λ
L4 1/4
C5 2P 500V
RL2
D1 D2 1S1555x2
ND60 0.001
C2
C3
R1 180
L5
L6
C4 0.001
D3 D4 MI402x2
D5 D6 1S1555x2
D7 D8 1S1555x2
D9 D10 MI301x2
C6 1P
C7
C8 0.001x2
TRANSCEIVER
C12 0.01
T
DC 13.8V
C14 0.01
1N4148x2
D16 D17
RL2
RL1
Q4 2SC509
Q5 2SC1815 GR
Q3 2SC1815GR
Q2 2SC1815GR
R2 47K
R3 47K
R4 1K
R6 270
C11 10pF 25V
C9 0.001
C10 0.001
D14 D15 1N60x2
D12 D13 1S1555x2
C13 0.01
All capacitors without notes: Ceramic 50V
All resistors without notes : Color carbon 1/4W
C1,C3 0.001 ND60: Ceramic chip capacitor
The diagram is subject to change without notice
TOKYO HY-POWER MODEL HRA-7
CIRCUIT DIAGRAM