

7. Operation

*****CAUTION:** Under the Manual Band Set operation, always be sure to check if BAND Switch position matches that of your radio before keying PTT or the CW paddle. Also when you have changed the BAND, do not make the full power CW (carrier) drive but reduced level power to see if the BAND is set correctly and the amplified RF power comes out properly. **Full power CW drive under the BAND Mis-set leads to the failure of the valuable final power FET devices.** ***

8-1 Various Status

There are four modes to be displayed on LCD.

STBY (Standby Mode)



This mode is for AC Power ON, and OPER. Switch at STBY position. Amplifier is in a through state.

OPER (Operate) Mode



This mode is for AC Power ON, and OPER switch at OPER. Position. Amplifier will work, if the transceiver is keyed.

ONAIR (On Air) Mode



This is for amplifier being keyed under OPER. Mode. Amplifier is amplifying or ready to amplify the drive signal.

PROT (Protection) Mode



Amplifier has been shut down by the protection circuit and is in a though state.

See page 19, Section11. *Protection Circuits* on how to reset.

8-2 How to Operate

8-2-1 Connect AC cord and coax cables as illustrated in Section 7 *Connection*. Connect the cable from "SEND" to ACC or the remote terminals of transceiver, where it is marked "SEND" or "TX GND". These terminal pins are shorted to ground when the transceiver is in TX/ON AIR mode. If these connections are not made, the amplifier will not go into TX (amplification) mode. For a temporary check to the amp, ground the SEND center pin by inserting an RCA plug whose center pin has been soldered to the outer case of the plug with a small piece of wire. As a side note, this SEND terminal shows 12 VDC when open, and draws 35 mA when shorted.

8-2-2 At first, turn the ALC knob full clockwise to avoid ALC voltage to the transceiver. Application of ALC will be covered in the following Section 9.

8-2-3 Keeping the POWER (AC mains) switch off, check the SWR of your antenna by keying the transceiver to TX mode (CW or RTTY mode). Monitor the SWR with an external SWR/Power meter. If SWR is 1.8 or higher at band center, the antenna has to be adjusted for lower SWR.. As an alternative, an antenna tuner may be inserted.

8-2-4 While keeping OPER/STBY switch at STBY position, turn the POWER switch on. Turn BAND AUTO-MAN'L switch to AUTO, or MAN'L(manual) position. If MAN'L is selected, turn BAND-MAN'L switch to desired band. See page 17, Section10. *Band Data Cable Connection*, for more details of various band data cables. Turn the STAND-BY switch to OPER (operate) position and the amplifier is ready to go. If the POWER switch is turned on, while OPER/STBY switch is at OPER(operate) position, the orange OPER lamp will blink, and you will need to reset the OPER switch to enter into operation mode. "PSE STBY OPERSW is displayed at this time. If you key the transceiver with the carrier level set relatively low (such as 20-30W), you will achieve an amplified output signal of a few hundreds watts. Monitor this output with the PF meter or with an external power meter. Increase drive level to roughly 50W and see if the antenna SWR stays constant. (As higher RF currents flow some antennas may show a changed SWR value due to heated connector junctions and trap coils.)

8-2-5 You can now increase the drive level to nearly 80-90W to achieve maximum carrier output power of 1.4 kW (CW, RTTY) from the amplifier. If you change to SSB mode, peak voice power will reach approximately 1.5 kW. For high duty cycle transmissions like RTTY, SSTV, or FM modes, it is recommended you reduce the drive power by 20-30 % compared with SSB/CW.

8-2-6 With a high power transceiver in SSB mode, you can overdrive the amplifier resulting in a distorted output signal. This can also occur if you speak too loud or if you set the microphone gain too high. Speak into the microphone properly to reduce the possibilities of splattering into the neighborhood. The ALC is effective in preventing the output signal from being distorted or to limit the carrier level to within rated output levels. As long as you do not overdrive, you can disregard the ALC connection. See page 15, Section 9. *ALC Connection* for details.

8-7-7 Protection circuits may work during operation depending on the conditions. If the protection circuit has shut down the amplifier, check the antenna SWR, Vd, AC line voltage, or try to reduce the drive level. To reset, turn off the OPER/STBY switch once, then back on again. Note that some protection modes need to reset the POWER switch(See page19, Section 11. *Protection & Safety Circuits* for more details). The power transformer has an overheat protection(130 °C) in the coil layer. If this temperature switch activates, the amplifier will put you in receive mode with the cooling fan operating until the transformer has cooled off. It may take ten to fifteen minutes to cool, depending upon room temperature. In the same way, there is a built-in thermal switch (100 °C) in the heat sink block of power FET's.