Theory of Operation

I. Power Control

The control board draws a general 13.8V dc power supply, which is converted through U1,

a 3-terminal regulator, to 8.0V dc for the receiver and transmitter.



Fig. 1 Power Supply Block Diagram

II. Relay Control

When a valid signal is detected, the COR goes low and trigger PTT of the transmitter. At the same time, the audio output from discriminator is routed to MIC input of the transmitter. The potentiometer VR3 is used to adjust the receive audio output to the proper level for transmit audio deviation.

III. Float Charging Function

The TR-50 provides selectable AC (100-240V ac) power supply. Normally users can equip battery back-up system connected to the external DC jack with floating charge function in the mean time. This provides auto-revert to DC battery once the AC mains fails.

IV. Fan Control

This repeater provides three options of cooling fan control: PTT controlled, temperature controlled and continuous operation. The power supply of the fan is controlled through a 5V voltage detector, HT7050A. When the input is above 5V, the output is high-Z; when lower than 5V, the output goes low.

V. AF Amplification

The receive audio is routed to another AF amplifier NJM386M, which is convenient for the

users to monitor the activities of current channel.

VI. Definition for control ports

The definition of all the pins goes as follows:

1.	J3	1pin——NC	
		2pin——TLED-	
		3pin—MIC+	Transmitter
		4pin—PTT	
		5pin——TLED+	
		6pin-RLED+	
		7pin——SP+	
		8pin——RLED-	Receiver
		9pin——Rx AF	
		10pin——COR	
2.	J6		
		1pin——ETxD	
		2pin——ERxD	Transmitter
		3pin——ATxD	
		4pin——ARxD	Receiver
3.	RJ45 EXT		
		1pin——ARxD	
		2pin—MIC	
		3pin——ATxD	
		4pin——ERxD	
		5pin——GND	
		6pin——ETxD	
		7pin——EXT PTT	
		8pin——SB+(8V)	