



**YAESU ELECTRONICS CORPORATION**

6851 Walthall Way  
 P.O. Box 498  
 Paramount, California 90723  
 Phone: (213) 633-4007

FTS-32E  
 BCD PROGRAMMABLE  
 CTCSS - BURST ENCODER

FOR 207R HT

The FTS-32E is a micro-miniature digitally synthesized Encoder that is pre-programmed with 32 tones. Four jumper wires on the Encoder select either the 32 CTCSS or 32 Tone Burst frequencies. The Encoder is supplied with the CTCSS jumper wires installed. The tones are selected one at a time with a BCD (Binary Coded Decimal) dip switch package mounted on the Encoder. Therefore, any one of the 32 tones can be selected at any time by changing the dip switches. The Encoder has been custom designed to fit into the FT-207R with no modifications required.

The dip switch is mounted on the Encoder so that it faces the back of the Handie case. Therefore, at the amateurs option, a rectangular hole can be cut in the back of the case. This would allow immediate access and selection of any one of the 32 tones without opening the Handie.

The Encoder is powered by the transmit DC voltage in the Handie. Therefore, there is no current drain until the Handie is on, and the PTT switch is pressed. A separate ON-OFF switch for the Encoder is not necessary since the CTCSS tones are typically not audible even when operating simplex. You may wish to program the Encoder to its lowest (67.0 Hz) frequency when tone access is not required.

The FTS-32E is capable of the following 32 CTCSS or Tone Burst frequencies:

<u>C T C S S</u>					<u>B U R S T</u>						
Group A					Group B						
		97.4	ZB	141.3	4A	Test					
67.0	XZ	100.0	1Z	146.2	4B	<u>Tones</u>	<u>Touch Tones</u>	<u>Burst Tones</u>			
71.9	XA	103.5	1A	151.4	5Z						
74.4	WA	107.2	1B	156.7	5A	600	697	1209	1600	1900	2250
77.0	XB	110.9	2Z	162.2	5B	1000	770	1336	1650	1950	2300
79.7	SP	114.8	2A	167.9	6Z	1500	852	1477	1700	2000	2350
82.5	YZ	118.8	2B	173.8	6A	2175	941	1633	1750	2100	2400
85.4	YA	123.0	3Z	179.9	6B	2805			1800	2150	2450
88.5	YB	127.3	3A	186.2	7Z				1850	2200	2500
91.5	ZZ	131.8	3B	192.8	7A						
94.8	ZA	136.5	4Z	203.5	M1						
						Tone Length Approximately 300ms					2550

Frequency Accuracy ± 1 Hz Maximum  
 -40°C to +85°C

Frequency Accuracy ± 1 Hz Maximum  
 -40°C to +85°C

FTS-32E INSTALLATION  
INTO THE FT-207R HANDIE

1. Remove the antenna and any other accessories from the FT-207R.
2. Rotate the transmit offset knob to the BU-OFF position.
3. Rotate the VOL-OFF knob to the OFF position.
4. Remove the battery compartment cover and battery from the Handie.
5. Remove the four (4) screws holding the bottom plate to the case of the Handie.
6. Position the Handie face down on your work surface.

NOTE: THE COMPONENTS AND WIRING OF THE HANDIE ARE SOMEWHAT FRAGILE BECAUSE OF THEIR MINIATURIZATION. THEREFORE PLEASE EXERCISE CARE WHILE INSTALLING THE ENCODER, ESPECIALLY IF YOU CHOOSE TO CUT THE ACCESS HOLE IN THE CASE BACK!

7. Carefully lift the battery case section away from the rest of the Handie. Lay the battery case to the right of the Handie.
8. If you are going to cut the access hole in the case back, proceed with the next step. If the external programming of the Encoder is not desired, proceed to step 13.
9. Follow the dimensions and template in Figure 1 and scribe the outline of the rectangular hole on the case back. If there is any doubt as to the size or location of the hole, scribe the outline smaller than necessary. The hole can be enlarged to the correct size with a small file.
10. Fold the bottom plate and wires up against the battery case so they will not be damaged.
11. Cut the hole using our suggested procedure. Drill two holes near opposite corners of the rectangular box that was scribed. Carefully, use a coping saw to saw out the hole. Then use a small file to enlarge the hole to the exact size.
12. Decide if you wish the Encoder to be set for the CTCSS tones, or the Tone Burst tones. The Encoder is supplied with the four jumper wires set for CTCSS. If you desire the Burst Tones, cut jumper wires "A", "C", and "D"; and reconnect jumper wire "B".
13. Program your desired frequency into the Encoder by following the programming on one of the charts in Figure 2.

14. Carefully place the Encoder into position into the case back. Be sure the lugs on the external charge jack do not interfere with the Encoder. If necessary, bend the lugs slightly out of the way.
15. Install the two mounting screws supplied with the Encoder to secure the Encoder to the battery case.
16. Carefully unfold the bottom plate and re-position it into the bottom of the battery case. Position the wires into the space between the Encoder circuit board cutout and the external charge jack.
17. ~~Install the two screws that secure the bottom plate to the battery case back.~~
18. Refer to Figure 3 and set the deviation control for the amount of deviation you desire. Typical repeater systems require 300 to 700 Hz deviation. You may wish to set the control to the approximate 500 Hz point until you become familiar with the deviation requirements of the repeaters in your area. If you have a deviation meter available, you may wish to power up the Handie temporarily, and set the deviation with instruments.
19. Carefully fold the battery case onto the Handie until the edge connector can be connected to the pins on the Encoder. Then push the edge connector onto the matching pins on the Encoder.  
  
NOTE: BE SURE THE EDGE CONNECTOR IS ORIENTED PROPERLY ON THE PINS.
20. Place the battery case onto the Handie, being careful not to pinch any wires. Then install the remaining two screws in the bottom plate.
21. If you have cut the access hole in the case back, you may wish to cut out the appropriate CTCSS or Burst Tone chart and fasten it to the inside of the battery case cover. Then the programming codes will be readily available.

The installation of the FTS-32E is now complete. The battery and antenna can be re-installed and the Handie returned to service.

