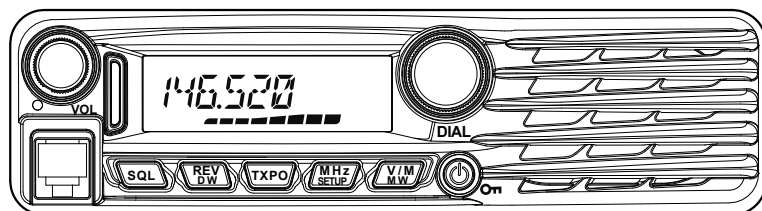


***YAESU***  
***The radio***

# ***FTM-3100R/E***

**Advance Manual**

**VHF FM TRANSCEIVER**



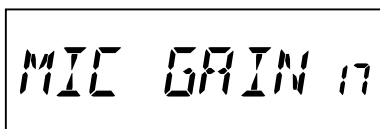
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## Microphone Gain Setting

The microphone gain has been programmed at the factory to a level that should be satisfactory for the supplied MH-48A6JA Microphone. If an after-market microphone is used, you may wish to set a different Mic Gain level.

1. Press and hold in the **[MHz(SETUP)]** key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select "**MIC GAIN 17**".
3. Press the **[MHz(SETUP)]** key, then rotate the **DIAL** knob to select the desired microphone gain level (LEVEL 1 - LEVEL 9).  
**Default:** LEVEL 5
4. Press and hold in the **[MHz(SETUP)]** key for one second to save the new setting and exit to normal operation.

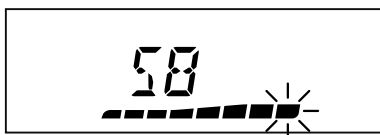
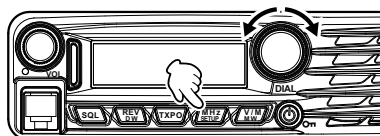


## RF Squelch

A special RF Squelch feature is provided on this radio, which allows setting the squelch so that only signals exceeding a pre-set S-meter level will open the squelch.

Use the following procedure to set up the RF squelch circuit for operation:

1. Press and hold in the **[MHz(SETUP)]** key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select "**RF SQL 27**".
3. Press the **[MHz(SETUP)]** key, then rotate the **DIAL** knob to select the desired signal strength level for the squelch threshold (S1 - S8 or OFF).  
**Default:** OFF
4. Press and hold in the **[MHz(SETUP)]** key for one second to save the new setting and exit to normal operation.



## Advanced Operation

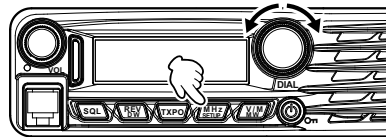
### Programming the Key Assignments

Default FTM-3100R/E key functions have been assigned to the Microphone [P1]/[P2]/[P3]/[P4] keys at the factory. The user may change these key function assignments, if quick access to another function is desired.

**Note:** The default setting: [P1] - SQL OFF  
[P2] - HOME  
[P3] - CD SRCH  
[P4] - WX CH (T CALL: EXP/European version)

To change the assignments for the programmable keys:

1. Press and hold in the [MHz(SETUP)] key for one second, then rotate the **DIAL** knob to select the Menu Item to configure the desired microphone button: (“PRG P1 23”, “PRG P2 24”, “PRG P3 25” or “PRG P4 26”).
2. Press the [MHz(SETUP)] key, then rotate the **DIAL** knob to select the function you wish to assign to the key you selected in the previous step.



The available program functions differ slightly for each of the four keys, the choices include:

- SQL OFF:** Open the Squelch to allow un-muted reception.
- HOME:** Recall the home channel.
- WX CH:** Switches operation to the Weather channels bank.
- CD SRCH:** Engages the Tone or DCS Search Scanning feature.
- SCAN:** Engages the Scan operation.
- T CALL:** Activates 1750 Hz Tone Burst.
- TX POWER:** Set the transmission power level.

Alternatively, one of the Set Menu items previously assigned may be set. To assign another desired Set Mode item to a programmable key, see the description in the box shown below.

3. Press and hold in the [MHz(SETUP)] key for one second to exit to normal operation.

You may assign Set Mode items to the Microphone [P1]/[P2]/[P3]/[P4] buttons, as well, to do this:

1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select the Set Mode Item that you wish to assign to the key as a Menu short cut.
3. Press and hold in the Microphone's [P1], [P2], [P3] or [P4] key for one second to assign the Set Mode Item to that button.
4. Now you can recall this preferred Set Mode Item by simply pressing the Microphone button momentarily.

## Split Tone Operation

The FTM-3100R/E can be configured to operate in a “Split Tone” system via the Setup menu, to facilitate operation on repeaters using a mix of both CTCSS and DCS control.

1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the DIAL knob to select “SQL EXP 33”.
3. Press the [MHz(SETUP)] key, then rotate the DIAL knob to select “ON”.

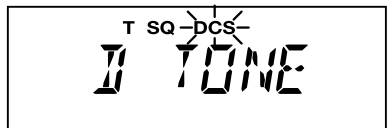
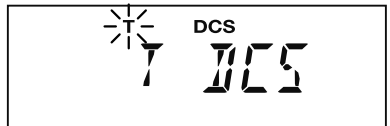
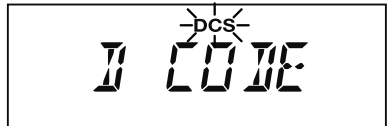
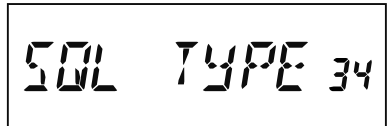
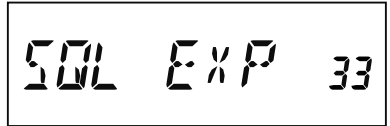
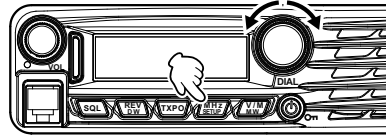
**Default:** OFF

4. Press the [MHz(SETUP)] key momentarily, then rotate the DIAL knob to select “SQL TYPE 34”.
5. Press the [MHz(SETUP)] key, and then rotate the DIAL knob to select the following parameters.

D CODE: DCS Encode only (the “DCS” icon will blink during operation)

T DCS: Encodes a CTCSS Tone and Decodes a DCS code (the “T” icon will blink and the “DCS” icon will appear during operation)

D TONE: Encodes a DCS code and Decodes a CTCSS Tone (the “T SQ” icon will appear and “DCS” icons will blink during operation)



## Advanced Operation

### Tone Search

When the CTCSS tone being transmitted by another station is not known, you can tune the radio to the incoming signal and activate tone scan to search for and identify the tone being used.

To scan for the tone in use:

1. Set the transceiver up for CTCSS Decoder operation (see the description in the box shown below.).



“**T SQ**” will appear on the display.

2. Press the Programmable key on the MH-48A6JA Microphone that is assigned “CD SRCH” (see page 4) to start scanning for the incoming CTCSS code.
3. When the radio detects the correct tone, scanning will halt on that tone, and audio will be allowed to pass.
4. Press the assigned Programmable key of the Microphone to lock in that tone and exit to normal operation.

**Note:** You may listen to the (muted) signals from the other stations during Tone Scanning when Set Mode Item “**TS MUTE 39**” is set to “OFF”. See page 31 for details. You can also change the Tone Search scanning speed, using Set Mode Item “**TS SPEED 40**” See page 32 for details.

#### CTCSS Decoder Operation

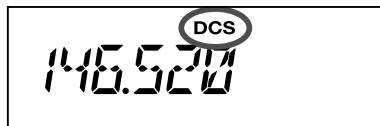
1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select “**SQL TYPE 34**”.
3. Press the [MHz(SETUP)] key, and then rotate the **DIAL** knob to select “**TSQL**”.
4. Press and hold in the [MHz(SETUP)] key for one second to save the new setting and exit to normal operation.

### DCS Search

When the DCS code being transmitted by another station is not known, you can tune the radio to the incoming signal and activate DCS code scan to search for and identify the DCS code being used.

To scan for the DCS in use:

1. Set the transceiver up for DCS operation (see the description in the box shown below.).



“DCS” will appear on the display.

2. Press the Programmable key on the MH-48A6JA Microphone that is assigned “CD SRCH” (see page 4) to start scanning for the incoming DCS code.
3. When the radio detects the correct code, scanning will halt on that code, and audio will be allowed to pass.
4. Press the assigned Programmable key of the Microphone to lock in that tone and exit to normal operation.

**Note:** You may listen to the (muted) signals from the other stations during DCS Scanning when Set Mode Item “**TS MUTE 39**” is set to “OFF”. See page 31 for details. You can also change the DCS Search scanning speed, using Set Mode Item “**TS SPEED 40**” See page 32 for details.

#### DCS Operation

1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select “**SQL TYPE 34**”.
3. Press the [MHz(SETUP)] key, and then rotate the **DIAL** knob to select “DCS”.
4. Press and hold in the [MHz(SETUP)] key for one second to save the new setting and exit to normal operation.

## Advanced Operation

### EPCS (Enhanced Paging & Code Squelch) Operation

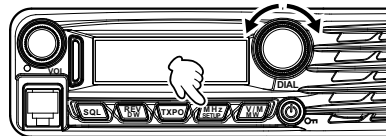
The FTM-3100R/E includes an Enhanced CTCSS tone encoder/decoder and a dedicated microprocessor providing paging and selective calling features. This allows placing a call to a specific station (Paging), and choosing to receive calls directed only to you (Code Squelch).

The paging and code squelch systems use two pairs of (alternately switched) CTCSS tones, which are stored in the pager memories. Basically, your receiver remains silent until it receives the CTCSS tone pair that matches those stored in the Receiving Pager Memory. The squelch then opens so the caller is heard, and the paging ringer immediately sounds, if activated. When you close the PTT switch to transmit, the CTCSS tone pair that is stored in the Transmitting Pager Memory will be transmitted automatically.

On the paged radio, the squelch will close automatically after the incoming page ends.

#### Storing CTCSS Tone Pairs for EPCS Operation

1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select “PAG CD-R 21” for the Receiving CTCSS Tone Pair or “PAG CD-T 22” for the Transmitting CTCSS Tone Pair.



PAG CD-R 21

PAG CD-T 22

3. Press the [MHz(SETUP)] key momentarily to enable adjustment of this Set Mode Item.
4. Rotate the **DIAL** knob to set the CTCSS Tone number, which corresponds to the first tone of the CTCSS Tone Pair.
5. Press the [SQL] or [V/M(MW)] key, then rotate the **DIAL** knob to set the CTCSS Tone number, which corresponds to the second tone of the CTCSS Tone Pair.
6. Press and hold in the [MHz(SETUP)] key for one second to lock in that tone and exit to normal operation.

\*05 47

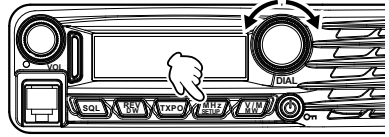
05 \*50

**Note:** The FTM-3100R/E does not recognize the order of the 1st tone and the 2nd tone. In other words, for example, the FTM-3100R/E considers both CTCSS pairs “05, 47” and “47, 05” to be identical.



### Activating the Enhanced Paging & Code Squelch System

1. Press and hold in the **[MHz(SETUP)]** key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select “**SQL TYPE 34**”.



SQL TYPE 34

3. Press the **[MHz(SETUP)]** key, and then rotate the **DIAL** knob to select “**PAGER**”.

PAGER

4. Press and hold in the **[MHz(SETUP)]** key for one second to save the new setting and exit to normal operation.
5. To disable the Enhanced Paging & Code Squelch, just repeat the above procedure, rotating the **DIAL** knob to select “**OFF**” in step 3 above.

When the Enhanced Paging & Code Squelch feature is activated, the “P” notation will appear on the right of the frequency display.

146.520 P

## Advanced Operation

### DTMF Operation

DTMF tones (Dual Tone Multi Frequencies) are the tones you hear when dialing from a telephone keypad. The FTM-3100R/E transceiver can transmit the DTMF codes by using the keys on the microphone or recalling registered number strings from memories.

The maximum of 16-digit DTMF codes can be registered in up to 10 memory channels. It is convenient to register telephone patch numbers, and network linking sequences to the DTMF memory channels.

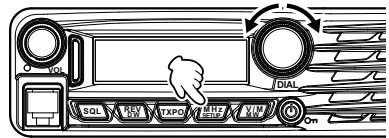
**Note:** The two combined frequencies of the DTMF tone transmitted for each key are indicated in the following table:

	1209 Hz	1336 Hz	1477 Hz	1633 Hz
697 Hz	1	2	3	A
770 Hz	4	5	6	B
852 Hz	7	8	9	C
941 Hz	*	0	#	D

### Transmitting a DTMF code manually

You can generate DTMF tones during transmission manually.

1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select "DT AUTO 10".



3. Press the [MHz(SETUP)] key momentarily, and then rotate the **DIAL** knob to select "MANUAL".

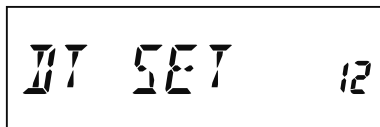
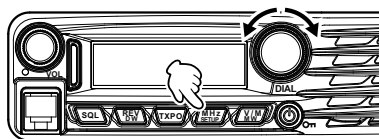


4. Press and hold in the [MHz(SETUP)] key for one second to save the new setting and exit to normal operation.
5. While pressing and holding **PTT**, press the desired DTMF characters ([0] to [9], [\*], [#], or [A] to [D]), sequentially on the microphone keypad.
- 6 Release **PTT**.

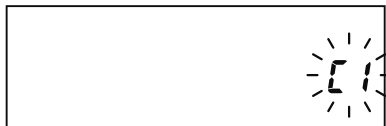
While transmitting the DTMF code, transmission status is sustained even when **PTT** is released.

### Registering a DTMF code

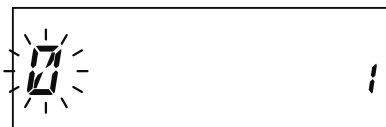
1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select "DT SET 12".



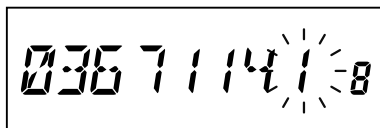
3. Press the [MHz(SETUP)] key momentarily, then rotate the **DIAL** knob to select the desired memory channel (C0 to C9) to register the DTMF code.
4. Press the [TXPO] key momentarily, then rotate the **DIAL** knob to select the first digit of the DTMF code.



**Note:** You can also use the keypad on the microphone to input the DTMF code.



5. When you have selected the correct digit, press the [V/M(MW)] key momentarily. Now, rotate the **DIAL** knob to select the second of 16 available numbers in the current DTMF Autodialer memory register.



6. Repeat this procedure for each digit in the DTMF code.

**Note:**

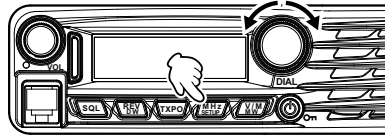
- To make a correction, press the [SQL] key to back-space the cursor, then re-enter the correct number.
- Press and hold in the [REV(DW)] key for one second to delete all data after the cursor that may have been previously stored.

7. When entry of all digits is complete, press and hold in the [MHz(SETUP)] key for one second to set the DTMF code and exit to normal operation.

## Advanced Operation

### Transmitting the registered DTMF code

1. Press and hold in the [MHZ(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select “DT AUTO 10”.



3. Press the [MHZ(SETUP)] key momentarily, and then rotate the **DIAL** knob to select “AUTO”.



4. Press and hold in the [MHZ(SETUP)] key for one second to save the new setting and exit to normal operation.

**Note:** While the DTMF Autodialer is activated, the ☎ icon will appear on the LCD.



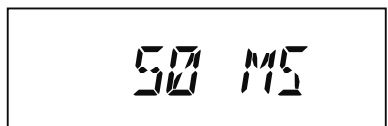
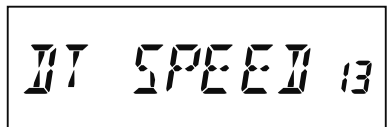
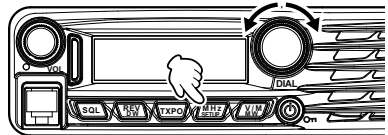
5. In the Autodialer mode, which you just engaged, first press the **PTT** switch, then press the microphone numeric key ([0] through [9]) corresponding to the DTMF memory string you wish to send. Once the string begins, you may release the **PTT** switch, as the transmitter will be held “on the air” until the DTMF string is completed.

To disable the Autodialer function mode, select “MANUAL” in step 3 above.

### Setting DTMF Autodialer sending Speed

The speed at which the DTMF digits are sent can be changed.

1. Press and hold in the [MHZ(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select “DT SPEED 13”.
3. Press the [MHZ(SETUP)] key momentarily, and then rotate the **DIAL** knob to select the desired speed (“50 MS”: High speed or “100 MS”: Low speed).
4. Press and hold in the [MHZ(SETUP)] key for one second to save the new setting and exit to normal operation.



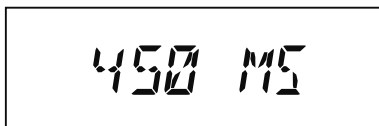
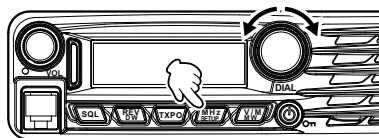
### Setting DTMF Autodialer TX delay time

A longer delay may be set between the time the transmitter is keyed and the first DTMF digit is sent:

1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the **DIAL** knob to select “DT DELAY 11”.
3. Press the [MHz(SETUP)] key momentarily, and then rotate the **DIAL** knob to select the desired delay time (50 MS / 250 MS / 450 MS / 750 MS / 1000 MS).

**Default:** 450 MS

4. Press and hold in the [MHz(SETUP)] key for one second to save the new setting and exit to normal operation.



## Memory Operation

### Split Memory

A separate transmit frequency may be registered to a memory channel to which a receive frequency has already been registered.


1. In the VFO mode, select the transmit frequency to be registered.
2. Press and hold the [V/M(MW)] key for one second.  
A memory number will appear in the bottom right corner of the display.
3. Within five seconds of pressing [V/M(MW)] key, rotate the **DIAL** knob (if necessary) to select the memory channel to which the transmit frequency is to be registered.
4. Press and hold in the **PTT**, and press the [V/M(MW)] key momentarily while holding in the **PTT**. This will not cause transmission, but rather it will instruct the transceiver to program the separate *transmit* frequency into memory.

Whenever a memory which contains independently stored transmit and receive frequencies is recalled, the “- +” indication will appear in the display.



### Moving Memory Data to the VFO

The data stored on a memory channel can easily be moved to the VFO.

1. Select the memory channel containing the frequency data to be moved to the VFO.
2. Press and hold in the [V/M(MW)] key for one second, and then press the [MHz(SETUP)] key. The “VFO WRT?” will appear on the display.  

3. Press the [MHz(SETUP)] key, the data will now have been copied to the VFO, although the original memory contents will remain intact on the previously-stored channel.

**Note:** If a split Frequency Memory channel was transferred, the TX frequency will be ignored (The transceiver will be set up for Simplex operation on the Receive frequency.)

### Memory Only Mode

When memory channel programming has been completed, you may place the radio in a “Memory Only” mode, whereby VFO operation is impossible. This may be particularly useful during public-service events where a number of operators may be using the radio for first time, and ultimate simplicity of channel selection is desired.

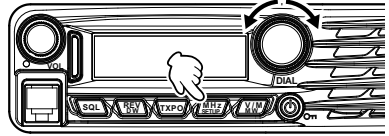
To place the radio into the Memory Only mode, turn the transceiver OFF. Now press and hold in the [V/M(MW)] key while turning the transceiver ON. The VFO and Home Channel will now be disabled.

To return to normal operation, repeat the above power-on procedure.

## Naming a Memory Channel

You may wish to append an alphanumeric “Tag” (label) to each memory, to aid in recollection of the channel’s use (such as club name, etc.).

1. Recall the memory channel on which you wish to append a label.
2. Press and hold in the **[MHz(SETUP)]** key for one second to enter the Set mode.
3. Rotate the **DIAL** knob to select “MEM NAME 18”.

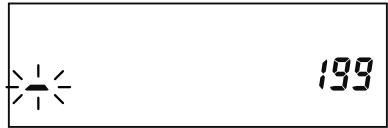


4. Press the **[MHz(SETUP)]** key momentarily to enable programming of the nametag.
5. Rotate the **DIAL** knob to select the first digit of the desired label.
6. Press the **[V/M(MW)]** key to move to the next character.



**Note:** To make a correction, press the **[SQL]** key to back-space the cursor, then re-enter the correct letter, number, or symbol.

7. Repeat steps 5 through 6 to program the remaining letters, numbers, or symbols of the desired label. A total of 8 characters may be used in the creation of a label.



8. When you have programmed a label that is under 8 characters, press the **[MHz(SETUP)]** key to confirm the label.



**Note:** Press and hold in the **[REV(DW)]** key for one second to delete all data after the cursor that may have been previously stored.

9. When you have completed the creation of the label, then press and hold in the **[V/M(MW)]** key for one second to save the label and exit.

While operating in the Memory Recall mode, press the **[MHz(SETUP)]** key to toggle the display between indication of the frequency, and indication of the Alpha/Numeric label.



## Scanning

### Scan Resume Options

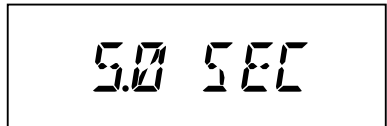
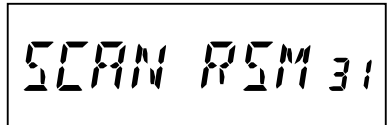
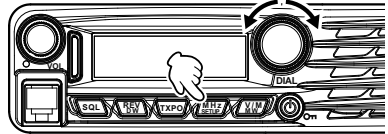
Select one of the three receiving operations to be performed after the scanning stops.

- (1) Restart scanning after receiving the frequency for the set amount of time. Select from 2.0 to 10.0 seconds (0.5 step).
- (2) Continue receiving the frequency until the signal disappears, and then restart scanning 2 seconds after the signal disappears (BUSY).
- (3) Stop scanning and receive that frequency (HOLD).

1. Press and hold in the [MHz(SETUP)] key for one second to enter the Set mode.
2. Rotate the DIAL knob to select "SCAN RSM 31".
3. Press the [MHz(SETUP)] key, then rotate the DIAL knob to select the desired scan-resume mode.

**Default:** 5.0 SEC

4. Press and hold in the [MHz(SETUP)] key for one second to save the new setting and exit to normal operation.



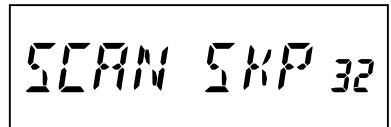
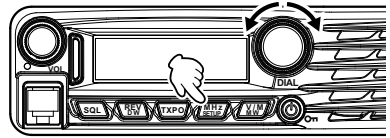
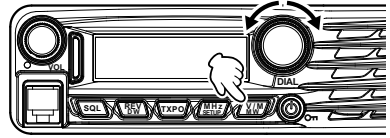


## Memory Skip Scanning

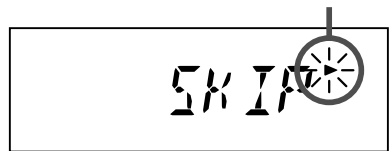
When some memory channels are continuously active, you may wish to *skip* them during *scanning*, but still have them available for *manual selection*.

To mask a memory to be skipped (only) during scanning, use the following procedure:

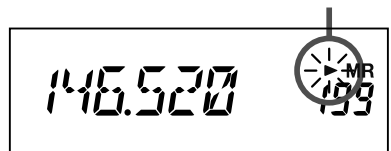
1. Set the radio to the Memory Recall mode by pressing the [V/M(MW)] key repeatedly, as necessary, until “MR” and a channel number appear on the right side of the display.
2. Rotate the **DIAL** knob to select the Memory Channel to be skipped during scanning.
3. Press and hold in the [MHz(SETUP)] key for one second, then rotate the **DIAL** knob to select “SCAN SKP 32”.
4. Press the [MHz(SETUP)] key, then rotate the **DIAL** knob to select “SKIP”. The current Memory Channel will now be ignored during scanning.
5. Press and hold in the [MHz(SETUP)] key for one second to save the new setting and exit to normal operation.



Blinks



Blinks



A blinking “▶” icon will appear when you recall the “skipped” memory channel manually.

To reinstate a channel into the scanning loop, select “OFF” in step 4 above, after first recalling the currently blocked channel (the “Skipped” channel is accessible via manual channel selection methods using the **DIAL** knob in the Memory mode, whether or not it is locked out of the scanning loop).

## Scanning

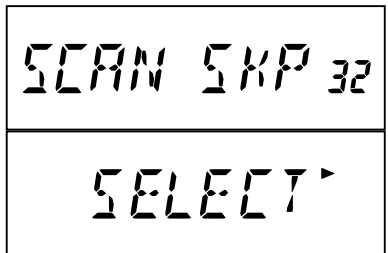
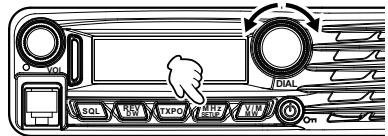
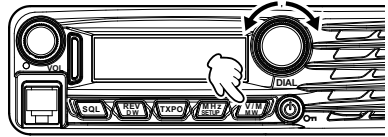
### Preferential Memory Scan

The FTM-3100R/E also allows setting up a “Preferential Scan List” of channels, which you can “flag” within the memory system. The flagged channels are designated by an “▶” icon when they are selected, one by one, for the Preferential Scan List.

When memory scanning is initiated beginning on a channel with the “▶” icon appended, only those channels bearing the “▶” icon will be scanned. If scanning is initiated on a channel which does not have the “▶” icon appended, all channels including those with the “▶” icon appended will be scanned.

Here is the procedure for setting up and using the Preferential Scan List:

1. Set the radio to the Memory Recall mode by pressing the [V/M(MW)] key repeatedly, as necessary, until “MR” and a channel number appear on the right side of the display.
2. Rotate the **DIAL** knob to select the Memory Channel that you wish to add to the preferential Scan List.
3. Press and hold in the [MHz(SETUP)] key for one second, then rotate the **DIAL** knob to select “SCAN SKP 32”.



4. Press the [MHz(SETUP)] key, and then rotate the **DIAL** knob to select “SELECT”.
5. Press and hold in the [MHz(SETUP)] key for one second to save the new setting and exit to normal operation.

To initiate Preferential Memory Scanning:

1. Set the radio to the Memory Recall mode by pressing the [V/M(MW)] key repeatedly, if necessary.
2. Rotate the **DIAL** knob to select any memory channel which has an “▶” icon appended to the channel number.



3. Press and hold in either the microphone [UP] or [DWN] button for one second to initiate Preferential Memory Scanning. Only the channels which have a “▶” icon appended to the channel number will be scanned.

## Programmable Memory Scan (PMS)

The FTM-3100R/E can be set to tune or scan only the frequencies between user-defined lower and band limits.

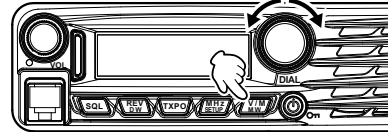
**Example:** Set up a PMS channel by registering a lower frequency of 144.300 MHz, and an upper frequency of 148.000 MHz to the L1/U1 memory channels.

### Registering to the programmable memory channels

1. In the VFO mode, select the desired lower-limit scan frequency (144.300 MHz).
2. Press and hold the [V/M(MW)] key for one second.

A memory number will appear in the bottom right corner of the display.

3. Within five seconds of pressing the [V/M(MW)] key, rotate the **DIAL** knob to select "L1".



**Note:** While operating in the Memory Storage mode, the keypad of the MH-48A6JA Microphone may be used to enter the memory channel number directly.

To do this, enter the desired Channel Number (see table below) on the keypad and then press the [#] key.

To enter Memory Channel "L1", press [2] → [0] → [1] → [#]

To enter Memory Channel "U0", press [2] → [2] → [0] → [#]

L1	201	L3	205	L5	209	L7	213	L9	217
U1	202	U3	206	U5	210	U7	214	U9	218
L2	203	L4	207	L6	211	L8	215	L0	219
U2	204	U4	208	U6	212	U8	216	U0	220

4. Press the [V/M(MW)] key again, momentarily, to store the displayed data into the memory channel (L1).
5. Select the desired upper-limit scanning frequency (148.000 MHz).

6. Within five seconds of pressing the [V/M(MW)] key, rotate the **DIAL** knob to select "U1".



7. Press the [V/M(MW)] key again, momentarily, to store the displayed data into the memory channel (U1).

## Scanning

### Scanning the programmable memory channels

1. Press the **[V/M(MW)]** key to enter memory mode.
2. Turn the **DIAL** knob, or use the microphone keypad, to recall the upper or lower frequency PMS memory channel (L1 or U1).
3. Press the **[#]** key on the MH-48A6JA Microphone.  
“P1” appear on the right side of the display.
4. Press and hold **[UP]** or **[DWN]** on the microphone for over one second.  
Programmable memory scanning will begin.

**Note:** To stop programmable memory scanning, press **PTT** on the microphone (this does not cancel PMS mode).

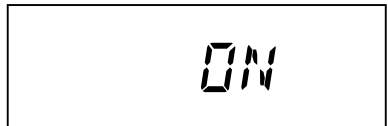
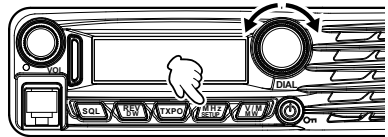
To cancel PMS mode, when programmable memory scanning stops, press the **[#]** key on the MH-48A6JA Microphone.

### Band Edge Beeper

The FTM-3100R/E will automatically “beep” when the receive band edge is encountered during scanning (either in standard VFO scanning or during PMS operation). Additionally, the band edge beep feature may be enabled to sound when the band edge frequency is reached while tuning the VFO, using the **DIAL** knob.

The procedure to enable the Band-Edge Beeper (during manual tuning) is:

1. Press and hold in the **[MHz(SETUP)]** key for one second, then rotate the **DIAL** knob to select “**BEP EDGE 4**”.
2. Press the **[MHz(SETUP)]** key, and then rotate the **DIAL** knob to set this Menu item to “**ON**”.
3. Press and hold in the **[MHz(SETUP)]** key for one second to save the new setting and exit to normal operation.



## Priority Channel Scanning (Dual Watch)

The FTM-3100R/E's scanning features include a two-channel scanning capability which allows operating on a VFO, Memory channel, or Home channel, while periodically checking a user-defined Memory Channel for activity. If a station received on the Memory Channel is strong enough to open the Squelch, the scanner will pause on that station in accordance with the Scan-Resume mode setting of Menu item "SCAN RSM 31." See page 16.

Here is the procedure for activating Priority Channel Dual Watch operation:

1. Set the transceiver to the Memory Recall mode by pressing the [V/M(MW)] key repeatedly, if necessary.
2. Press and hold in the [V/M(MW)] key for one second, then select the memory channel you wish to be the "Priority" channel.
3. Press the [TXPO] key momentarily. The "PRI CH?" will appear on the display.
4. Press the [TXPO] key momentarily. The "P" notation will appear on the "100 MHz" frequency digit on the display; indicating it is the Priority channel.
5. Now set the FTM-3100R/E for operation on another memory channel, Home channel, or on a VFO frequency.
6. Press and hold in the [REV(DW)] key for one second. The display will remain on the VFO, the selected memory channel, or the Home channel, but every five seconds the FTM-3100R/E will check the Priority Channel for activity.



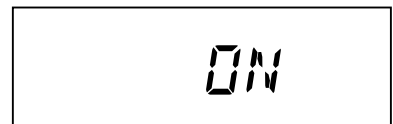
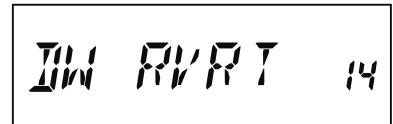
- Note:** During Dual Watch operation, the decimal points of the frequency display blink.
7. To cancel Dual Watch operation, press and hold the [REV(DW)] key for one second.

### Priority Revert Mode

During Priority channel operation (Dual Watch), a special feature is available which will allow you to move to the Priority Channel instantly, without waiting for activity to appear on the Priority Channel.

When this feature is enabled, and priority monitoring is engaged, just press the microphone PTT switch. Operation will instantly revert to the Priority Channel.

1. Press and hold in the [MHz(SETUP)] key for one second, then rotate the DIAL knob to select "DW RVRT 14".
2. Press the [MHz(SETUP)] key, and then rotate the DIAL knob to set this Menu item to "ON".
3. Press and hold in the [MHz(SETUP)] key for one second to save the new setting and exit to normal operation.



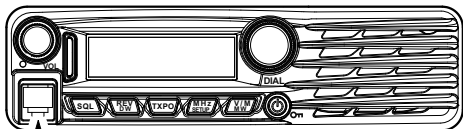
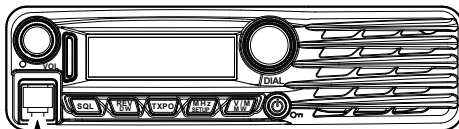
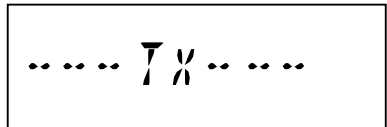
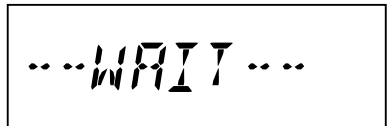
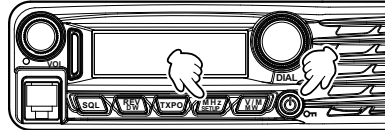
To disable Priority Revert operation, select "OFF" in step 2 above.

## Clone

The FTM-3100R/E includes a convenient “Clone” feature, which allows the memory and configuration data from one transceiver to be transferred to another FTM-3100R/E. This can be particularly useful when configuring a number of transceivers for a public service operation.

Here is the procedure for cloning data from one radio to another:

1. Turn both radios OFF.
2. Connect the user-constructed cloning cable between the MIC jacks of the two radios.
3. Press and hold in the **[MHz(SETUP)]** key while turning the radios ON. Do this for both radios (the order of switch-on does not matter). “CLONE” will appear on the displays of both radios when the Clone mode is successfully activated in this step.
4. On the Destination radio; press the **[MHz(-SETUP)]** key (“-- --WAIT-- --” will appear on the display).
5. On the Source radio; press the **[REV(DW)]** key (“-- -- --TX-- -- --” will appear on the Source radio, and the data from this radio will be transferred to the destination radio.
6. If there is a problem during the cloning process, “ERROR” will be displayed. Check your cable connections and battery voltage, and try again.
7. If the data transfer is successful, “CLONE” will appear on the Source radio display. The destination radio, to which the data is copied, will restart automatically.
8. Turn both radios off and disconnect the cloning cable.



RJ12/6  
6 Position 6 Contact  
Modular Plug

Pin 3: GND

Pin 1: PTT/CLONE

Pin 1: PTT/CLONE

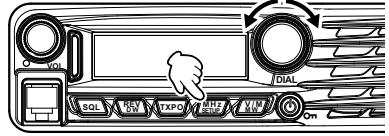
RJ12/6  
6 Position 6 Contact  
Modular Plug

Pin 3: GND

## Setup (Menu) Mode

The FTM-3100R/E Setup (Menu) mode, already described in parts of many previous chapters, is easy to activate and setup. The Menus may be used to configure many of transceiver parameters, some of which have not been detailed previously. Use the following procedure to activate the Setup (Menu) mode:

1. Press and hold the **[MHz(SETUP)]** key for one second to enter the Setup menu.
2. Rotate the **DIAL** knob to select the Menu Item to be adjusted.
3. Press the **[MHz(SETUP)]** key momentarily to enable adjustment of the selected Menu item, and then rotate the **DIAL** knob to perform the actual adjustment.
4. After completing the selection and adjustment, press and hold the **[MHz(SETUP)]** key for one second to exit the Setup menu and resume normal operation.



Menu Item	Function	Available Values	Default
1: APO	Enables/Disables the Automatic Power Off feature.	0.5H to 12H (0.5H step)/OFF	OFF
2: BCLO	Enables/Disables the Busy Channel Lock-Out feature.	ON/OFF	OFF
3: BEP KEY	Enables/Disables the key beeper.	KEY+SCAN/KEY/OFF	KEY+SCAN
4: BEP EDGE	Enables/Disable the Band-edge beeper while scanning.	ON/OFF	OFF
5: BELL	Selects the CTCSS/DCS/EPCS Bell Ringer repetitions.	1 to 20/CONTINUE/OFF	OFF
6: CLK TYPE	Shifting of the CPU clock frequency.	A/B	A
7: DC VOLT	Indicates the DC Supply Voltage.	---	---
8: DCS CODE	Setting of the DCS code.	104 standard DCS codes	023
9: DCS INV	Select a combination of DCS inversion codes in terms of communication direction.	NORMAL / INVERT / BOTH	NORMAL
10: DT AUTO	Enables/Disables the DTMF Autodialer feature.	MANUAL/AUTO	MANUAL
11: DT DELAY	Setting of the DTMF Autodialer TX Delay Time.	50/250/450/750/1000	450 MS
12: DT SET	Loading of the DTMF Autodialer Memories.	---	---
13: DT SPEED	Setting of the DTMF Autodialer Sending Speed.	50/100	50 MS
14: DW RVRT	Enables/Disables the "Priority Channel Revert" feature.	ON/OFF	OFF

## Setup (Menu) Mode

Menu Item	Function	Available Values	Default
15: LCD DMMR	Setting of the front panel display illumination level.	LEVEL 1/2/3/4	LEVEL 4
16: LOCK	Selects the Control Locking Lockout combination.	KEY + DIAL / PTT / KEY+PTT/DIAL+PTT / ALL/KEY/DIAL	KEY+DIAL
17: MIC GAIN	Adjust the microphone gain level.	LEVEL 1 to 9	LEVEL 5
18: MEM NAME	Programming an Alpha/Numeric label for a Memory Channel.	---	---
19: MW MODE	Selects the method of selecting of channels for Memory Storage.	NEXT CH/LOWER CH	NEXT CH
20: OPEN MSG	Selects the Opening Message that appears when the radio is powered ON.	OFF/DC/MESSAGE	MESSAGE
21: PAG CD-R	Setting the Receiver Pager Code for the Enhanced CTCSS Paging & Code Squelch function.	---	05 47
22: PAG CD-T	Setting the Transmitting Pager Code for the Enhanced CTCSS Paging & Code Squelch function.	---	05 47
23: PRG P1	Programming the function assigned to Microphone <b>[P1]</b> key.	SQL OFF HOME WX CH CD SRCH SCAN T CALL TX POWER Setup Menu Item #1 to 44	SQL OFF
24: PRG P2	Programming the function assigned to Microphone <b>[P2]</b> key.		HOME
25: PRG P3	Programming the function assigned to Microphone <b>[P3]</b> key.		CD SRCH
26: PRG P4	Programming the function assigned to Microphone <b>[P4]</b> key.		※
27: RF SQL	Adjusts the RF Squelch threshold level.	OFF/S1 to S8	OFF
28: RPT ARS	Activates/Deactivates the Automatic Repeater Shift feature.	ON/OFF	ON
29: RPT FREQ	Sets the magnitude of the Repeater Shift.	0.00 - 150.00 (MHz)	0.60 MHz
30: RPT SFT	Sets the Repeater Shift direction.	-RPT/+RPT/SIMPLEX	SIMPLEX
31: SCAN RSM	Selects the Scan Resume mode.	BUSY/HOLD/2-10 (SEC)	5.0 SEC
32: SCAN SKP	Selects the Memory Scan mode.	OFF/SKIP/SELECT	OFF
33: SQL EXP	Enables/Disables the split CTCSS/DCS coding.	ON/OFF	OFF
34: SQL TYPE	Selects the Tone Encoder and/or Decoder mode.	TONE/TSQL/DCS/ RV TONE/PAGER/OFF	OFF
35: STEP	Sets the frequency synthesizer steps.	AUTO/5/6.25/10/12.5/15/ 20/25/50/100 (kHz)	AUTO
36: TEMP	Indicates the current temperature inside the transceiver.	---	---
37: TONE FRQ	Setting of the CTCSS Tone Frequency.	67.0 to 254.1 (Hz)	100.0 HZ
38: TOT	Sets the Time-Out Timer.	0.5 to 10.0 (MIN)/OFF	3.0 MIN
39: TS MUTE	Enables/Disables the receiver audio output while the Tone Search or DCS Search Scanner is activated.	ON/OFF	ON



## Setup (Menu) Mode

Menu Item	Function	Available Values	Default
40: TS SPEED	Selects the Tone Search or DCS Search Scanner speed.	FAST/SLOW	FAST
41: VER DISP	Displays the transceiver software version	CPU x.xx DSP x.xx	---
42: WX ALERT	Enables/Disables the Weather Alert feature.	ON/OFF	OFF
43: WX VOL	Selects the audio output level of the Weather Alert.	NOR VOL/MAX VOL	NOR VOL
44: W/N DEV	Reduction of the Microphone Gain/Deviation and receiver bandwidth.	WIDE/NARROW	WIDE

※: Depends on the transceiver version.

## Setup (Menu) Mode

### Menu Selection Details

#### 1 APO

**Function:** Enables/Disables the Automatic Power Off feature.

**Available Values:** 0.5 H to 12.0 H (0.5 H/step) / OFF

**Default:** OFF

#### 2 BCLO

**Function:** Enables/Disables the Busy Channel Lock-Out feature.

**Available Values:** ON / OFF

**Default:** OFF

#### 3 BEP KEY

**Function:** Enables/Disables the key beeper.

**Available Values:** KEY+SCAN / KEY / OFF

**Default:** KY+SCAN

KEY+SCAN: The beeper sounds when any key is pressed, or when the scanner stops.

KEY: The beeper sounds when any key is pressed.

OFF: Beeper is disabled.

#### 4 BEP EDGE

**Function:** Enables/Disable the Band-edge beeper while scanning.

**Available Values:** ON / OFF

**Default:** OFF

#### 5 BELL

**Function:** Selects the CTCSS/DCS/EPCS Bell Ringer repetitions.

**Available Values:** 1 TIME to 20 TIMES / CONTINUE (Continuous ringing) / OFF

**Default:** OFF

#### 6 CLK TYPE

**Function:** Shifting of the CPU clock frequency.

**Available Values:** A / B

**Default:** A

This function is only used to move a spurious response “birdie”, should it fall on a desired frequency. Select “A” for the normal operation.

#### 7 DC VOLT

**Function:** Indicates the DC Supply Voltage.

## 8 DCS CODE

**Function:** Setting of the DCS code.

**Available Values:** 104 standard DCS codes

**Default:** 023

DCS CODE										
023	025	026	031	032	036	043	047	051	053	
054	065	071	072	073	074	114	115	116	122	
125	131	132	134	143	145	152	155	156	162	
165	172	174	205	212	223	225	226	243	244	
245	246	251	252	255	261	263	265	266	271	
274	306	311	315	325	331	332	343	346	351	
356	364	365	371	411	412	413	423	431	432	
445	446	452	454	455	462	464	465	466	503	
506	516	523	526	532	546	565	606	612	624	
627	631	632	654	662	664	703	712	723	731	
732	734	743	754	-	-	-	-	-	-	

## 9 DCS INV

**Function:** Select a combination of DCS inversion codes in terms of communication direction.

**Available Values:** NORMAL / INVERT / BOTH

**Default:** NORMAL

NORMAL: Homeomorphic

INVERT: Inverted Phase

BOTH: Both Phase

## 10 DT AUTO

**Function:** Enables/Disables the DTMF Autodialer feature.

**Available Values:** MANUAL / AUTO

**Default:** MANUAL

## 11 DT DELAY

**Function:** Setting of the DTMF Autodialer's TX Delay Time.

**Available Values:** 50 / 250 / 450 / 750 / 1000 ms

**Default:** 450 ms

## 12 DT SET

**Function:** Loading of the DTMF Autodialer Memories.

See page 11 for details.

## 13 DT SPEED

**Function:** Setting of the DTMF Autodialer Sending Speed.

**Available Values:** 50 (high speed) / 100 (low speed) ms

**Default:** 50 ms

## 14 DW RVRT

**Function:** Enables/disables the "Priority Channel Revert" feature.

**Available Values:** ON / OFF

**Default:** OFF

See page 21 for details.

## 15 LCD DMMR

**Function:** Setting of the front panel display's illumination level.

**Available Values:** LEVEL 1 - LEVEL 4

**Default:** LEVEL 4

## Menu Selection Details

### 16 LOCK

**Function:** Selects the Control Locking Lockout combination.

**Available Values:** KEY+DIAL / PTT / KEY+PTT / DIAL+PTT / ALL / KEY / DIAL

**Default:** KEY+DIAL

### 17 MIC GAIN

**Function:** Adjust the microphone gain level.

**Available Values:** LEVEL 1 - LEVEL 9

**Default:** LEVEL 5

### 18 MEM NAME

**Function:** Programming an Alpha/Numeric label for a Memory Channel.

See page 15 for details.

### 19 MW MODE

**Function:** Selects the method of selecting of channels for Memory Storage.

**Available Values:** NEXT CH / LOWER CH

**Default:** NEXT CH

**NEXT CH:** Stores the data into the memory channel which is next-highest from the *last-stored* memory channel.

**LOWER CH:** Stores the data into the lowest-available “free” channel.

### 20 OPEN MSG

**Function:** Selects the Opening Message that appears when the radio is powered ON.

**Available Values:** DC / MESSAGE / OFF

**Default:** MESSAGE

**DC:** DC supply voltage

**MESSAGE:** Set by user. See below.

**OFF:** No Opening Message

Here's how to program the Opening Message:

1. Set this Set Mode Item to “MESSAGE”.
2. Press the [TXPO] key momentarily to enable programming of the opening message. You will notice the first character entry's location blinking.
3. Rotate the **DIAL** knob to select the first letter/number of the message, and then press the [V/M(MW)] key momentarily to move to the next character.
4. Repeat the previous step as necessary to complete the message (up to 8 characters).
5. To correct a mistake, press the [SQL] key to backspace the cursor; now re-enter the correct letter/number.
6. When the desired opening message is completed, press the [TXPO] key momentarily to confirm the message, then press and hold in the [MHZ(SETUP)] key for one second to save the settings and exit to normal operation.

### 21 PAG CD-R

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**Function:** Setting the Receiver Pager Code for the Enhanced CTCSS Paging & Code Squelch function

See page 8 for details.

### 22 PAG CD-T

---

**Function:** Setting the Transmitting Pager Code for the Enhanced CTCSS Paging & Code Squelch function.

See page 8 for details.

### 23 PRG P1

---

**Function:** Programming the function assigned to Microphone [P1] key.

**Available Values:** SQL OFF / HOME / WX CH / CD SRCH / SCAN / T CALL / TX POWER or one of the all Set mode items (except Set mode items #23 through 26; initial setting is “Set mode item #7 DC VOLT”).

**Default:** SQL OFF

### 24 PRG P2

---

**Function:** Programming the function assigned to Microphone [P2] key.

**Available Values:** SQL OFF / HOME / WX CH / CD SRCH / SCAN / T CALL / TX POWER or one of the all Set mode items (except Set mode items #23 through 26; initial setting is “Set mode item #15 LCD DMMR”).

**Default:** HOME

### 25 PRG P3

---

**Function:** Programming the function assigned to Microphone [P3] key.

**Available Values:** SQL OFF / HOME / WX CH / CD SRCH / SCAN / T CALL / TX POWER or one of the all Set mode items (except Set mode items #23 through 26; initial setting is “Set mode item #17 MIC GAIN”).

**Default:** CD SRCH

### 26 PRG P4

---

**Function:** Programming the function assigned to Microphone [P4] key.

**Available Values:** SQL OFF / HOME / WX CH / CD SRCH / SCAN / T CALL / TX POWER or one of the all Set mode items (except Set mode items #23 through 26; initial setting is “Set mode item #32 SCAN SKP”).

**Default:** Depends on the transceiver version.

### 27 RF SQL

---

**Function:** Adjusts the RF Squelch threshold level.

**Available Values:** S1 - S8 / OFF

**Default:** OFF

## Menu Selection Details

### 28 RPT ARS

**Function:** Activates/Deactivates the Automatic Repeater Shift feature..

**Available Values:** ON / OFF

**Default:** ON

### 29 RPT FREQ

**Function:** Sets the magnitude of the Repeater Shift.

**Available Values:** 0.00 - 150.00 MHz

**Default:** 0.60 MHz

### 30 RPT SFT

**Function:** Sets the Repeater Shift direction.

**Available Values:** - RPT / + RPT / SIMPLEX

**Default:** SIMPLEX

### 31 SCAN RSM

**Function:** Selects the Scan Resume mode.

**Available Values:** BUSY / HOLD / 2.0 SEC - 10.0 SEC (0.5 SEC step)

**Default:** 5.0 SEC

**BUSY:** The scanner will hold until the signal disappears, then will resume when the carrier drops.

**HOLD:** The scanner will stop when a signal is received, and will not restart.

**2.0 SEC - 10.0 SEC:** The scanner will hold for the selected resume time, then resume scanning, whether or not the other station is still transmitting.

### 32 SCAN SKP

**Function:** Selects the Memory Scan mode.

**Available Values:** SKIP/SELECT/OFF

**Default:** OFF

**SKIP:** The scanner will "skip" the flagged channels during scanning.

**SELECT:** The scanner will only scan channels that are flagged (Preferential Scan List).

**OFF:** All memory channels will be scanned (the "flag" will be ignored).

### 33 SQL EXP

**Function:** Enables/Disables the split CTCSS/DCS coding.

**Available Values:** ON / OFF

**Default:** OFF

When this Set Mode Item is set to "ON", the following additional parameters are available after the "PAGER" parameter when configuring Set Mode Item "34 SQL TYPE":

**D CODE:** DCS Encode only.

**T DCS:** Encodes a CTCSS tone and Decodes a DCS code.

**D TONE:** Encodes a DCS code and Decodes a CTCSS tone.

## 34 SQL TYPE

**Function:** Selects the Tone Encoder and/or Decoder mode.

**Available Values:** TONE / TSQL / DCS / RV TONE / PAGER / OFF

**Default:** OFF

TONE: CTCSS Encoder

TSQL: CTCSS Encoder/Decoder

DCS: Digital Coded Encoder/Decoder

RV TONE: Reverse CTCSS Decoder (Mutes receiver when matching tone is received)

PAGER: Enhanced Paging & Code Squelch

**Note:** See also Set Mode Item "33 SQL EXP" regarding additional selections available during "Split Tone" operation.

## 35 STEP

**Function:** Sets the frequency synthesizer steps.

**Available Values:** AUTO / 5 / 6.25 / 10 / 12.5 / 15 / 20 / 25 / 50 / 100 (kHz)

**Default:** AUTO

## 36 TEMP

**Function:** Indicates the current temperature inside the transceiver.

## 37 TONE FRQ

**Function:** Setting of the CTCSS Tone Frequency.

**Available Values:** 50 standard CTCSS tones

**Default:** 100.0 Hz

CTCSS TONE FREQUENCY (Hz)					
67.0	69.3	71.9	74.4	77.0	79.7
82.5	85.4	88.5	91.5	94.8	97.4
100.0	103.5	107.2	110.9	114.8	118.8
123.0	127.3	131.8	136.5	141.3	146.2
151.4	156.7	159.8	162.2	165.5	167.9
171.3	173.8	177.3	179.9	183.5	186.2
189.9	192.8	196.6	199.5	203.5	206.5
210.7	218.1	225.7	229.1	233.6	241.8
250.3	254.1	-	-	-	-

## 38 TOT

**Function:** Sets the Time-Out Timer..

**Available Values:** 0.5 MIN - 10.0 MIN (0.5 MIN step) / OFF

**Default:** 3.0 MIN

The time-out timer shuts off the transmitter after continuous transmission of the programmed time.

## 39 TS MUTE

**Function:** Enables/Disables the receiver audio output while the Tone Search or DCS Search Scanner is activated.

**Available Values:** ON / OFF

**Default:** ON

## Menu Selection Details

### 40 TS SPEED

---

**Function:** Selects the Tone Search or DCS Search Scanner speed.

**Available Values:** FAST / SLOW

**Default:** FAST

### 41 VER DISP

---

**Function:** Displays the transceiver software version.

**Available Values:** CPU

### 42 WX ALERT

---

**Function:** Enables/Disables the Weather Alert feature.

**Available Values:** ON / OFF

**Default:** OFF

ON: The weather alert will be received

OFF: The weather alert will not be received

### 43 WX VOL

---

**Function:** Selects the audio output level of the Weather Alert.

**Available Values:** NOR VOL / MAX VOL

**Default:** NOR VOL

### 44 W/N DEV

---

**Function:** Reduction of the Microphone Gain/Deviation and receiver bandwidth.

**Available Values:** WIDE / NARROW

**Default:** WIDE





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