



## TY96/96A and TY97/97A VHF Radio Operating Manual



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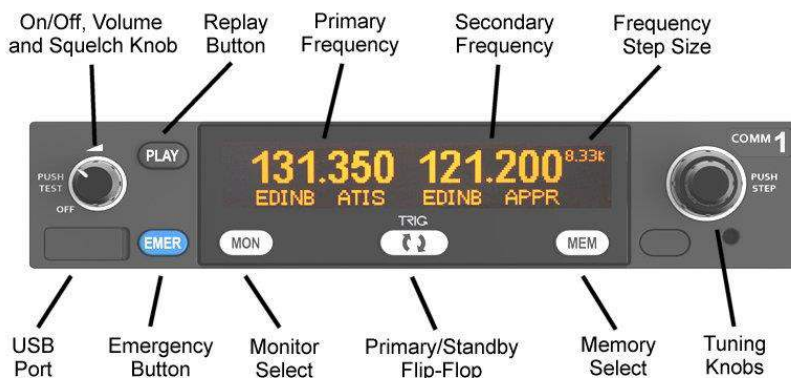
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## Front Panel



This operating manual covers both the TY96/TY97 (8.33 kHz and 25 kHz channel spacing) and the TY96A/TY97A (25 kHz only channel spacing). Any references to the TY96/97 will also apply to the TY96A/TY97A unless stated otherwise.

### Display

The display shows the primary and standby frequencies and a series of icons to indicate the operating mode of the radio.

The primary frequency is on the left and the standby frequency is on the right half of the screen. The **TX** icon shows that the radio is transmitting. An **RX** icon shows that the frequency is active and the audio will be heard through the headphone and speaker outputs. The standby frequency will only be received during the MONITOR function which is indicated by a **+2** icon when active.

The top right hand corner indicates what frequency step size is selected.

### On/Off, Volume and Squelch Knob

The left hand knob controls the power to the VHF radio, adjusts the audio volume, and controls the squelch. Turning this knob clockwise will switch on the radio and then increase the volume. Turning anticlockwise will reduce the volume and eventually will click off.

Pressing this knob toggles the automatic squelch on and off, which can be used to listen for faint stations and as a simple audio test.

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### Tuning Knobs

The right hand concentric knobs are used to tune the radio. The large knob adjusts the MHz portion of the standby frequency, and the smaller knob adjusts the kHz portion of the standby frequency.

Pressing the end of the small knob changes the channel spacing that the small knob operates through. If the radio is configured for 8.33 kHz operation, the steps toggle between 8.33 kHz channels and 25 kHz channels. If the radio is configured only for 25 kHz operation, the steps toggle between 25 kHz and 50 kHz channels.

Changing the step size does not change the behaviour of the radio, only the tuning knob step size – it helps to quickly tune a frequency.

The TY96A and TY97A do not support 8.33 kHz operation and so the steps will only toggle between 25 kHz and 50 kHz; again, changing the step size does not change the behaviour of the radio and only changes the step size between 25 kHz and 50 kHz.

### Flip-flop Button

The flip-flop button swaps the frequency in the standby position into the active position, and moves the active frequency to the standby position.

### MON Button

The VHF radio includes a dual-frequency listen feature; pressing the MON button toggles this feature on and off.

When the monitor is active, a **+2** icon appears next to the standby frequency, and the radio will scan between the active and standby frequencies listening for transmissions. The primary channel has priority – a transmission on the primary channel will interrupt the secondary channel. As an aid to identifying which channel is active, the **RX** icon will light next to the active channel and the secondary channel will appear slightly quieter than the primary. If your radio is wired for stereo and you are using a stereo headset, the secondary channel will also appear to be to the right of the primary channel.

This is useful in an aircraft with only a single radio since it allows you, for example, to copy the ATIS whilst maintaining a listening watch on the ATC frequency.

### **PLAY Button**

The VHF radio includes a digital audio recorder. Pressing the PLAY button will automatically replay the previous transmission received from ATC. During playback the **PB** icon will be displayed on the screen.

If a new transmission is received during playback, the playback is cancelled and the live transmission will be heard instead.

### **EMER Button**

The EMER button gives quick access to the standard emergency frequency of 121.5 MHz. As well as selecting 121.5 MHz, pressing the EMER button also mutes the music input and the auxiliary audio input, and if the volume is set to a low level it turns it up.

### **Intercom Function**

The TY96/TY97 radio has a built in intercom which can be installed as permanently engaged or selected via a switch. The intercom is voice activated and the audio is routed through to both of the headsets. The intercom squelch and volume can be adjusted independently from the radio function through the configuration menu.

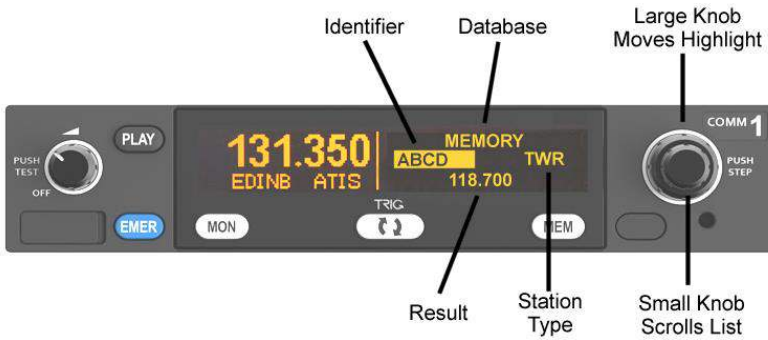
### **Frequency Database**

The radio has up to three databases containing frequencies and station identifiers. One is stored in the radio and configured by the pilot; it will always be available. One is a list of the ten most recently used frequencies; it will be populated automatically as you use the radio. The third is only available if your radio has been connected to a compatible GPS receiver, and contains frequencies loaded from the GPS database.

Note that the TY96A and TY97A are only able to store and recall 25 KHz channel frequencies.

To access these databases press the MEM button. The right hand part of the screen will be replaced with the database screen which always starts on the pilot created database.

The large knob moves the highlighted cursor, whilst the small knob selects the value at the cursor.

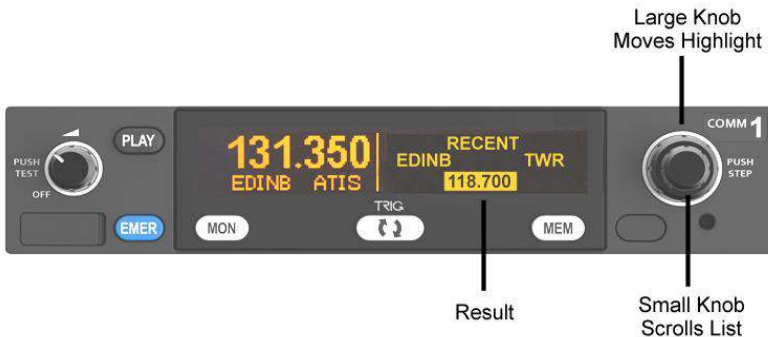


Airfield or facility identifiers are in alphabetical order. Scroll through the identifiers until you find the one that you want. Move the cursor using the large knob to highlight the station type, for example GND, TWR or APPR. Pressing the MEM button at any time puts the currently selected result into the standby frequency and returns to the normal operating screen. Pressing the Flip-Flop button puts the currently selected result into the active frequency instead, and returns to the normal operating screen.

### Recent Frequencies

There is also a memory of the ten most recent frequencies that you have used. From the initial memory screen, move the cursor using the large knob to highlight the MEMORY caption, and turn the small knob to select the RECENT database.

Move the highlight onto the frequency, and you can scroll through the ten most recently used frequencies.



## GPS Database

If it has been configured in your aircraft, there is a third database in the radio. This is loaded by your GPS receiver and will contain airfields appropriate to your current route of flight.

It is accessed exactly the same way as the built in database, except that you first select the remote data source using the large knob (to highlight the database field) and the small knob (to select the GPS data source).

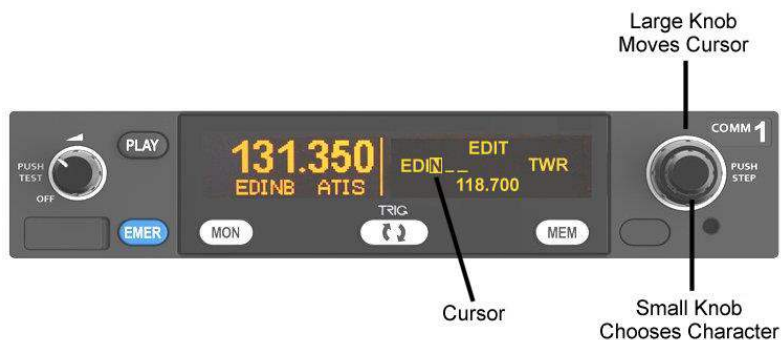
The only difference is that airfield identifiers are usually ordered by how close they are to your route, rather than alphabetical order.

## Entering New Frequencies

You can add station identifiers and frequencies to the internal database, which stores up to 250 entries. To edit the database, go into memory mode by pressing the MEM button, then press and hold the MEM button for 5 seconds. The screen will change to highlight the top field which will offer the choice of EDIT, DELETE, ADD NEW and CANCEL.

To add a new database entry, select ADD NEW, and then press MEM again. Use the large knob to move the highlighted cursor, and use the small knob to select characters, numbers or facility type. Pressing the MEM button again stores the new value, and returns to the normal memory mode.

If you already have entries in the database, you can edit them to change the details, or you can delete them. To do that, first find the entry that you want to edit or delete using the normal memory mode. Then, with the entry you want to change displayed, press and hold the MEM button for 5 seconds. The choices described earlier will be offered; EDIT, DELETE, ADD NEW or CANCEL. If you choose EDIT, and press MEM, the cursor can alter characters, numbers or facility type in the current entry. Pressing MEM will save that changed entry. If you choose DELETE, and press MEM, the current entry will be deleted.



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If you get this far and realise that you did not want to change the database at all, select CANCEL and then press MEM; you will be returned to the normal memory mode.

### **Saving and Loading the Frequency Database**

The frequency database entries you have made can be saved to a USB memory stick, or you can load a database from a USB stick. To load or save to USB, you need to put the USB memory stick into the radio before you switch on. When the radio detects the USB device it will offer to save or load your database. If there are data entries already on the radio you will be offered the choice to replace the whole database, or add entries from the USB stick. Similarly if there is already a database on the USB stick you can either overwrite it or add the radio data to the existing file.

To return to normal radio operation remove the USB device and switch the radio off and back on again.

In normal radio operation the USB port is powered off.

### **Configuration Mode**

Additional setup items can be accessed by holding down the MON button for 5 seconds. The menu options can be selected using the larger tuning knob and the parameter value can be altered using the smaller tuning knob.

|                                      |  |
|--------------------------------------|--|
| Intercom Volume                      | Sets the intercom volume level   |
| Intercom Squelch                     | Sets the sensitivity of the intercom voice operated squelch  |
| Music Volume                         | Sets the volume level of the music input   |
| Music Muting                         | Mutes the music audio when a VHF transmission is received by the radio   |
| Enable 8.33 kHz (TY96 and TY97 only) | Turns on or off the ability to tune 8.33 kHz stations. If you are operating in an area with no 8.33 kHz service, turning off the 8.33 kHz channels allows quicker tuning of 25 kHz and 50 kHz steps.<br>The TY96A and TY97A are not 8.33 KHz capable and so this option will not be available. |

### **General Low Temperature Operation**

The TY96/TY97 is certified to operate correctly down to -20°C, but at low temperatures the controller display may be impaired. On a cold day you may need to wait for the cockpit to warm up to ensure normal operation.

### **Warning Messages**

If the VHF radio detects a problem, the screen will indicate WARNING and a brief statement of the problem. Depending on the nature of the problem,



your VHF radio may not be working properly. Note the message on the screen and pass that information to your avionics maintenance organisation. Press the flip-flop button to clear the message.

The following warnings may be seen:

|               |  |
|---------------|--|
| Radio Hot     | The radio is overheating.  |
| Stuck Mic     | A PTT switch has been closed for more than 35 seconds and the transmitter has stopped to avoid blocking the channel.     |
| Low Voltage   | The aircraft power input is below 10 volts (TY96) or 16 volts (TY97).  |
| Ant Fault     | There is a problem with the aircraft antenna. The radio will still try to transmit, but you may not be heard.            |
| Transmit Fail | There is a problem with the transmitter and the radio gave up trying. You may still be able to receive but not transmit. |

### **Fault Annunciation**

If the VHF radio detects a catastrophic internal failure, the screen will indicate FAULT and a brief statement of the problem. Note the FAULT message at the bottom of the screen and pass that information to your avionics maintenance organisation. The fault may be cleared by re-cycling the power to the radio but if the fault is still present the message will reappear.

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