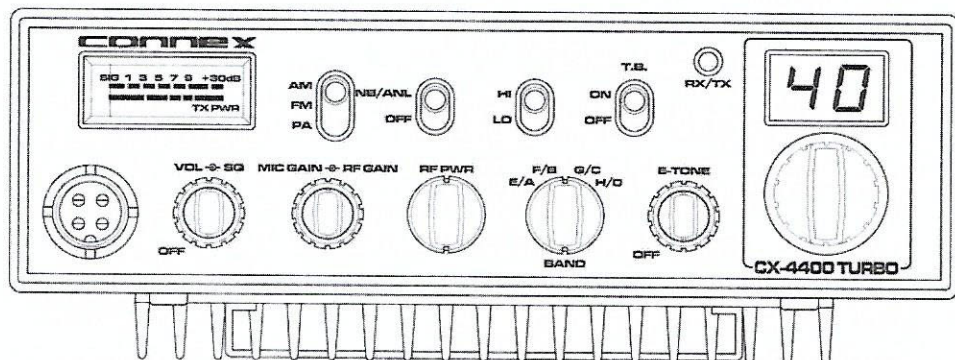


CONNEX



CONNEX – 4400 TURBO

OWNER'S MANUAL

Full Channel AM/FM
Amateur Mobile Transceiver

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SPECIFICATION

GENERAL

Model	CX-4400 TURBO
Frequency Range	28.015 ~ 28.585 MHz
Modes	AM/FM
Frequency Control	Phase-Locked-Loop Synthesizer
Frequency Stability	0.001%
Temperature Range	0°C to +50°C
Input Voltage	DC 13.8V
Antenna Impedance	50 Ohms
Size	7 7/8"(W) x 10 3/4"(D) x 2 3/8"(H)
Weight	5.0 lbs

TRANSMITTER

RF Power Output	AM : 50W, FM : 100W
Spurious Emission	-50dB
Audio Distortion	10%
Frequency Response	300 to 2500Hz
Microphone	Dynamic

RECEIVER

Sensitivity	AM 0.5 uV for 10dB S+N/N FM 0.25 uV for 12dB S+N/N
Squelch Sensitivity	0.5uV
Selectivity	> -50dB
Image Rejection	More than 50dB
Hum & Noise	40dB
Audio Output Power	2.5W at 10% THD

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

INSTALLATION

LOCATION

Plan the location of the transceiver and microphone bracket before starting the installation. Select a location that is convenient for operation and does not interfere with the driver or passengers in the automobile, the transceiver is usually mounted on the dash panel with the microphone bracket beside it.

MOUNTING THE RADIO

The transceiver is supplied with a universal mounting bracket. When mounting the bracket and radio to your car, make sure it is mechanically strong. In addition, provide a good electrical connection to the chassis of the vehicle. Proceed as follows to mount the transceiver:

1. After you have determined the most convenient location in your vehicle, hold the transceiver with mounting bracket in the exact location desired. If nothing will interfere with mounting it in the desired position remove the mounting bolts. Before drilling the holes, make sure nothing will interfere with the installation of the mounting bolts.
2. Connect the antenna cable plug to the standard receptacle on the rear panel. Most transceiver antennas are terminated with a type PL-259 plug and mate with the receptacle.
3. Connect the red DC power input wire (with the fuse) to +13.8V DC. This wire extends from the rear panel. In automobile installation, +13.8V DC is usually obtained from the accessory contact on the ignition switch. This prevents the set being left on accidentally when the driver leaves the car and also permits operating the unit without the engine running. Locate the accessory contact on most ignition switches by tracing the power wire from the AM broadcast receiver in the car.
4. Connect the black lead to -13.8V DC. This is usually the chassis of the car. Any convenient location with good electrical contact (remove paint) may be used.
5. Mount the microphone bracket on the right side of the transceiver, using two screws supplied. When mounting in an automobile, place the bracket under the dash so that microphone is readily accessible.

IGNITION NOISE INTERFERENCE

Use of a mobile receiver at low signal levels is normally limited by the presence of electrical noise. The primary source in automobile installation is from the generator and ignition system in the vehicle. Under normal operating conditions, when signal level is adequate, the background noise does not present a serious problem. In addition, when extremely low-level signals are being received, the transceiver may be operated with the engine turned off. The unit requires very little current and therefore will not significantly discharge the vehicle's battery.

In some installations, ignition interference may be high enough to make good communications impossible. The electrical noise may come from several sources. Many possibilities exist, as variations between vehicles require different solutions to reduce the noise.

ANTENNA

A vertically polarized, quarter-wavelength whip antenna provides the most reliable operation and greatest range. Shorter, loaded-type whip antennas are more attractive, compact and adequate for applications where the maximum possible distance is not required. In addition, loaded whips do not present the problems of high wind resistance imposed by a quarter-wavelength whip.

Mobile whip antennas utilize the metal body of the vehicle as a ground plane. When mounted at a corner of the vehicle they are slightly directional in the direction of the body of the vehicle. For all practical purposes, however, the radiation pattern is non-directional. The slight directional characteristic will be observed only at extreme distances. A standard antenna connector (type SO-239) is provided on the transceiver for easy connection to a standard PL-259 cable termination.

If the transceiver is not mounted on a metal surface, it is necessary to run a separate ground wire from the unit to good metal electrical ground in the vehicle. When installed in a boat, the transceiver will not operate at maximum efficiency without a ground plate, unless the vessel has a steel hull.

Before installing the transceiver in a boat, consult your dealer for information regarding an adequate grounding system and prevention of electrolysis between fittings in the hull and water.

TUNING THE ANTENNA FOR OPTIMUM S.W.R

Since there is such a wide variety of base and mobile antennas, this section will strictly concern itself to the various types of mobile adjustable antennas. Because the antenna length is directly related to the channel frequency, it must be tuned to resonate optimally on all channels of the transceiver.

Channel 1 requires a longer antenna than Channel 40 because it is lower in its frequency of operation. Due to the various methods of adjusting antennas for proper S.W.R. we have chosen what we think is the optimum method:

A. Antenna with adjustment screws (set screws).

1. Starts with the antenna extended and tighten the setscrew lightly enough so that the antenna can be lightly tapped with your finger for easy adjustment.
2. Set your transceiver to Channel 20. Press the PTT (push-to-talk) switch, and tap the antenna (making it shorter). The S.W.R meter will show a lower reading each time the antenna is tapped. By continuing to shorten the antenna, you will notice the S.W.R reading will reach a low point and then start rising again. This means that you have passed the optimum point for Channel 20.

Extend the antenna a short distance and again follow the procedure above. When the lowest point has been reached, switch to Channel 1 and then to Channel 40 and compare S.W.R readings. They should be almost equal.

B. Antennas, which must be cut to proper length

1. Follow the same procedure as above but adjust the length by cutting in 1/8" increments until a good match is obtained.
2. *Be very careful not to cut too much at one time, as once it is cut, it can no longer be lengthened.*

The whip is easily cut by filing a notch all the way around and breaking the piece off with pliers.

NOTE

The proper setting is achieved when the SWR is 1.5 or below, and when it has similar reading for channels 1 and 40.

If you are having difficulties in adjusting your antenna, check the following:

- a. All doors must be closed when adjusting the antenna
- b. Make sure the antenna base is grounded.
- c. Check your coaxial cable routing (it may be pinched when routed through the car)
- d. Try a different location in your car (keeping in mind the radiation pattern you wish.)
- e. Is the antenna perfectly vertical?
- f. Try a different location in your neighborhood. Stay away from large metal objects when adjusting (metal telephone polls or light poles, fences, etc.)

NOTE

The transceiver will operate into an SWR of 2 to 1 indefinitely and sustain an SWR of 2 : 1 for a maximum of 5 minutes at rated operating conditions.

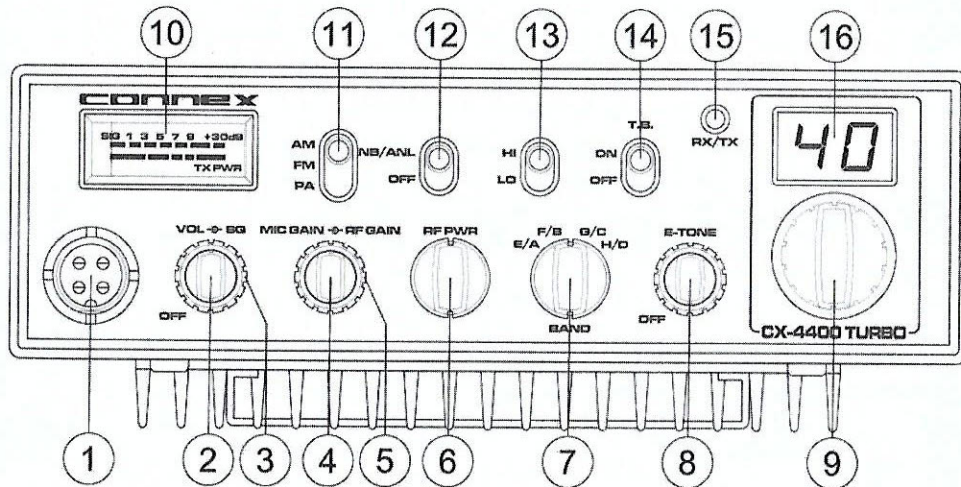
EXTERNAL SPEAKER

The external speaker jack (EXT SP.) on the rear panel is used for receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 4 watts. When the external speaker is plugged in, the internal speaker is disabled.

OPERATION

CONTROLS AND INDICATORS

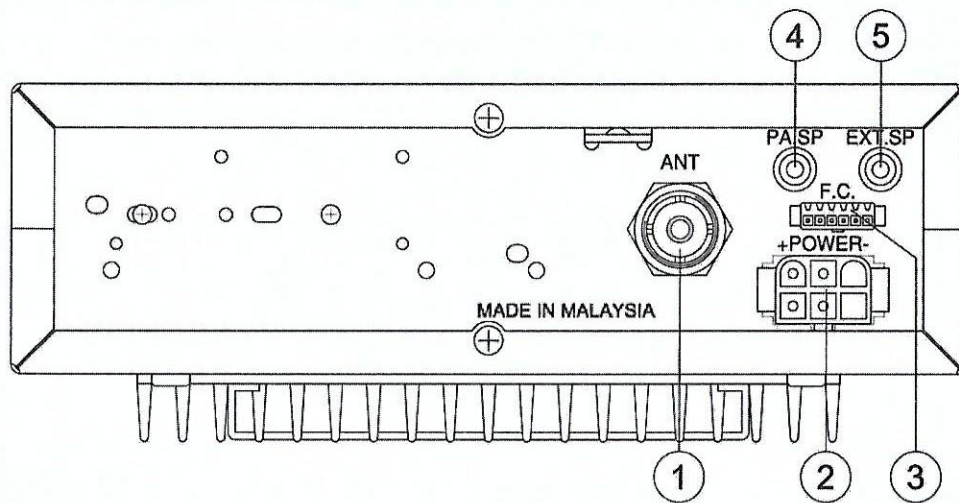
Front Panel



- 1. MICROPHONE JACK:** Used to connect microphone for voice source.
- 2. ON/OFF VOLUME CONTROL:** Turn clockwise to apply power to the radio and to set the desired listening level.
- 3. SQUELCH CONTROL:** This control is used to eliminate background noise being heard through the receiver, which can be disturbing when no signal is being received. To use this feature of your radio, gently turn the switch fully counterclockwise and then turn clockwise until the background noise is just eliminated. Further clockwise rotation will increase the threshold level so that only strong signals will be heard.
- 4. MIC GAIN CONTROL:** Adjust the microphone gain in the transmit and PA modes. This controls the gain to the extent that full talk power is available several inches away from the microphone. In the Public Address (PA) mode, the control functions as the volume control.
- 5. RF GAIN CONTROL :** This control is used to reduce the gain of the RF amplifier under strong signal conditions.

- 6. RF POWER CONTROL:** This control enables adjustment of power output continuously up to the rated output power.
- 7. BAND SELECTOR:** This switch selects A, B, C, D, E, F, G & H of operation.
- 8. E-TONE CONTROL:** This control is used for echo effect intervals of echo sound.
- 9. CHANNEL SELECTOR:** This control is used to select a de transmit and receive channel.
- 10. FRONT PANEL METER:** The front panel meter allows the user to monitor signal strength and RF output power level.
- 11. MODE SWITCH:** This switch allows you to select one of the following operating modes: AM/FM/PA.
- 12. NB/ANL /OFF SWITCH:** In the NB/ANL position, the RF Noise Blanker and the Automatic Noise Limiter in the audio circuits are activated. The Noise Blanker is very effective in eliminating repetitive impulse noise such as ignition interference.
- 13. HI/LO SWITCH:** This switch selects HI or LOW band of operation.
- 14. T.B./OFF SWITCH:** This switch is used to enable the Talk Back feature to monitor your own voice. For example, you could use this feature to compare different microphones.
- 15. TX/RX LED:** The red LED indicates the unit is in the transmit mode. The green indicates the unit is in the receive mode.
- 16. CHANNEL DISPLAY:** The channel display indicates the currently selected channel.

Rear Panel Connectors



1. **ANTENNA:** This jack accepts 50 ohms coaxial cable with a PL-259 type plug.
2. **POWER:** This accepts 13.8V DC power cable with built-in fuse. The power cord provided with the radio has a black and red wire. The black goes to negative and the red goes to positive.
3. **F.C.:** This jack is used to connect the optional Galaxy FC-390 six-digit frequency counter. All connections, including DC power, are provided to the Galaxy FC-390 through this jack.
4. **PA. SP.:** An 8 Ohm, 4 Watt speaker can be connected to this jack for PA operation.
5. **EXT SP.:** This jack accepts 4 to 8 Ohm, 5 watts external speaker. When the external speaker is connected to this jack, the built-in speaker will be disabled.

PROCEDURE TO RECEIVE AND TRANSMIT

A. MICROPHONE

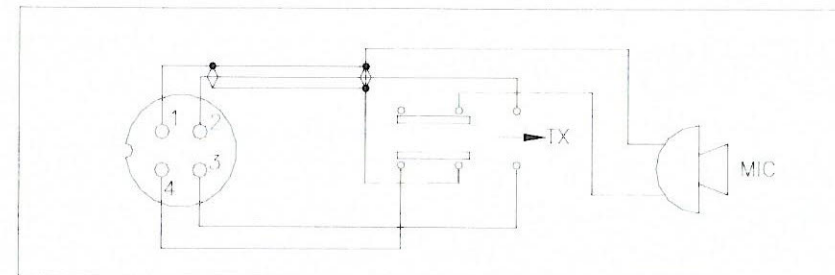
The push-to-talk switch on the microphone controls the receiver-transmitter. Press the switch and the transmitter is activated, release switch to receive. When transmitting hold the microphone two inches from mouth and speak clearly in a normal "voice". The transceiver is complete with low-impedance dynamic microphone.

For best result, the user should select a low-impedance dynamic microphone or a transistorized microphone.

The microphone should provide the functions shown in schematic below.

4 WIRE MIC CABLE

<u>Pin Number</u>	<u>Mic Cable Lead</u>
1	Audio Shield
2	Audio Lead
3	Transmit Control
4	Receive Control



Microphone Schematic Diagram

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