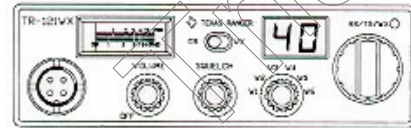


# TEXAS RANGER TR-121WX



SOLID STATE CITIZENS BAND  
AM MOBILE TRANSCEIVER  
PLUS 6 NOAA WEATHER CHANNELS

**OWNER'S MANUAL**

MIC971030

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**SPECIFICATIONS****GENERAL**

Frequency Range	26.965 -- 27.405MHz
Channels	40 AM and 6 NOAA Weather Channels
Frequency Control	Phase Lock Loop Synthesizer
Frequency Stability	0.001%
Temperature Range	-30°C to +50°C
Input Voltage	13.8V DC
Antenna Impedance	50 Ohms
Dimension	5 7/8"(W) × 7 1/4"(D) × 1 7/8"(H)
Weight	2.0 lbs

**TRANSMITTER**

RF Power Output	4W
Spurious Emission	Better than -60dB
Carrier Emission	Better than -60dB
Frequency Tolerance	0.005%
Microphone	Dynamic

**RECEIVER**

Sensitivity for 10dB (S+N)/N	0.5uV
Squelch Sensitivity Threshold	0.5uV
Tight	1000uV
Image Rejection	-65dB
Audio Power Output	2W @ 10% Distortion
AGC Figure of Merit	100mV for 10dB Change in Audio output
Audio Response	300 to 2500Hz

**WEATHER RECEIVER**

Frequency Range	162.400MHz to 162.550MHz
Frequency Control	Crystal
Modulation	FM, +/- 4KHz Deviation

## 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 automobiles, the transceiver is usually mounted below 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. Also, provide a good electrical grounding 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 which mate with the ANT 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 from 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 or near the transceiver, using two screws supplied. When mounting in an automobile, place the bracket under the dash so the microphone is readily accessible.

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### IGNITION NOISE INTERFERENCE

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

Even though the transceiver has ANL control, 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 and 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. Also, the loaded whips do not present the problems of height imposed by a full 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 nondirectional. 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 a 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.

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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 all channels of the transceiver. Low channel (CH 1) requires a longer antenna than high channel (CH 40) because it is a lower frequency.

Due to the various methods of adjusting antennas for proper S.W.R., we have chosen what we think is the optimum method:

##### A. Antennas with adjustable screws (set screws).

1. Start with the antenna extended and tighten the set screw lightly enough so that the antenna can be lightly tapped with your finger for easy adjustment.
2. Set your transceiver to middle channel (CH 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 low channel (CH 1) and then to high channel (CH 40) and compare S.W.R. readings. They should be almost equal.

#### NOTE

THE PROPER SETTING IS ACHIEVED WHEN THE SWR IS 1.5 OR BELOW, AND WHEN IT HAS THE SAME READING FOR LOW AND HIGH CHANNELS.

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

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 into the car.)
- d. Try a different location on 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 or lamp post, fences, etc.)

#### NOTE

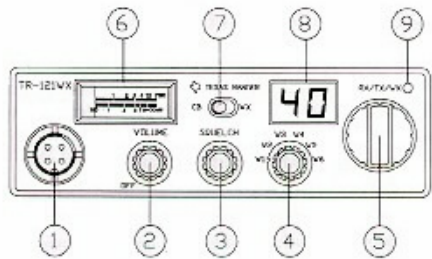
The transceiver will operate into an SWR of 2 to 1 indefinitely and sustain an SWR of 20:1 for a maximum of 5 minutes at rated operating conditions.

##### External Speaker

The external speaker jack (EXT. SPK) on the rear panel is used for remote 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 disconnected.

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## OPERATION CONTROLS AND CONNECTIONS

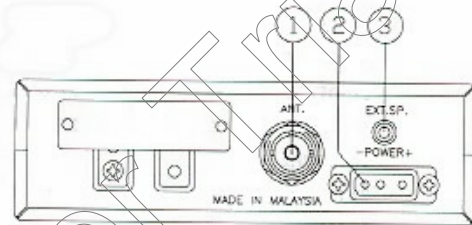


1. **MICROPHONE JACK** : Used to connect microphone for voice source.
2. **ON/OFF VOLUME CONTROL** : Turn clockwise to apply power to the radio and to set the desired listening level.
3. **SQUELCH CONTROL** : This control is used to control or eliminate receiver background noise in the absence of incoming signal. For maximum receiver sensitivity, it is desired that the control be adjusted only to the point where the receiver background noise is eliminated. Turn fully counterclockwise, then slowly clockwise until the receiver noise disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signal will be heard at a maximum clockwise setting.
4. **WEATHER CHANNEL SELECTOR** : This switch selects one of the U.S. NOAA Weatherband broadcast stations.
5. **CHANNEL SELECTOR** : This control is used to select a desired transmit and receive channel.

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6. **FRONT PANEL METER** : The Front Panel Meter allows the user to monitor signal strength, RF output power and SWR level.
7. **CB/WEATHER SWITCH** : Switch to WX position to receive Weatherband broadcast or switch to CB position for normal CB operation. (The radio will not transmit in the weatherband mode).
8. **CHANNEL DISPLAY** : The channel display indicates the current selected channel.
9. **TX/RX/WX LED** : This indicator will light red when in the transmit mode, green for receive mode and yellow for Weather mode.

## REAR PANEL CONNECTOR



1. **ANTENNA** : This jack accepts 50 ohm coaxial cable with a PL-259 type plug.
2. **POWER** : This accepts 13.8VDC 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. **EXTERNAL SPEAKER** : This jack accepts 4 to 8 ohm, 5 watt external speaker. When the external speaker is connected to this jack, the built-in speaker will be disabled.

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**CB CHANNEL FREQUENCY LIST**

Channel	Channel	Channel	Channel
1	26.965MHz	21	27.215MHz
2	26.975MHz	22	27.225MHz
3	26.985MHz	23	27.255MHz
4	27.005MHz	24	27.235MHz
5	27.015MHz	25	27.245MHz
6	27.025MHz	26	27.265MHz
7	27.035MHz	27	27.275MHz
8	27.055MHz	28	27.285MHz
9	27.065MHz	29	27.295MHz
10	27.075MHz	30	27.305MHz
11	27.085MHz	31	27.315MHz
12	27.105MHz	32	27.325MHz
13	27.115MHz	33	27.335MHz
14	27.125MHz	34	27.345MHz
15	27.135MHz	35	27.385MHz
16	27.155MHz	36	27.365MHz
17	27.165MHz	37	27.375MHz
18	27.175MHz	38	27.385MHz
19	27.185MHz	39	27.395MHz
20	27.205MHz	40	27.405MHz

**NOAA WEATHER CHANNEL LIST**

Channel	Channel	Channel	Channel
1	162.550MHz	4	162.425MHz
2	162.400MHz	5	162.450MHz
3	162.475MHz	6	162.500MHz