CB 27/81 **Murphy**

Instruction Manual
Murphy DS-602
40-Channel FM Mobile
Citizens' Band Transceiver



Your Murphy DS-602 Citizens' Band transceiver is a quality piece of electronic equipment, skillfully constructed from the finest semiconductors and electronic components. The transceiver is loaded with the state-of-the-art circuitry to give you a highly selective and sensitive receiver combined with an efficient 4-watt FM output transmitter.

Your transceiver features an advanced phase-locked-loop (PLL) frequency control system to generate the multiple frequencies necessary to operate on all 40 channels authorised for use throughout the United Kingdom. The PLL circuit uses only one crystal which assures ultra precise frequency control (as compared to conventional multi-crystal-synthesised transceivers) and results in greater reliability.

Your transceiver features the following:

- — Digital PLL frequency synthesiser.
- — Adjustable squelch control for noise-free standby.
- — RF attenuator switch built in.
- — Reversible ground polarity.
- — Dynamic, communication type microphone supplied.
- — Illuminated S/RF meter.

Before You Call For help . . . . .

Our repair centre receives many returned products which actually are working properly! Maybe the owner just didn't read the owner's manual or overlooked something, or perhaps the problem they encountered was a blown fuse that the owner could easily have replaced with a new one. So we recommend you read this manual carefully and be sure that you understand all the basic features of your CB unit and special ones too! Before you assume your unit needs repair, refer to the Service and Maintenance section of this manual to see if the problem is due to what you can easily eliminate.

Enjoy your Murphy DS-602!

For your own protection, we urge you to record the serial number of this unit in the space provided below. You will find the serial number located on the back panel of the unit.

Model No. Murphy DS-602 Serial Number

Specifications

General.
Channels: 40 digital PLL synthesised
Frequency range: See back cover
Operating temperature range: −20 degree C to +45 degree C
Power source: 11.7 to 15.9V DC reversible ground
(13.8V nominal)
Current drain: (1) Transmit. 1.2A nominal, (2) Receive.
1.2A nominal
Dimensions:
Width. 5-3/4″
Height. 2″
Depth. 7-1/8″

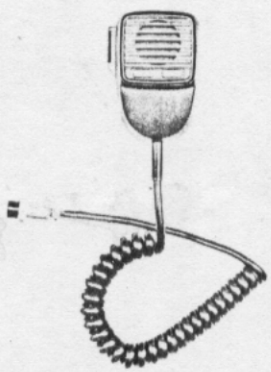
Transmitter.
Emission: 6F3 (FM)
Frequency Response: 400Hz 10 ± 2
2.5KHz 10 ± 4
RF power output: 4W
Frequency tolerance: < ± 1.5 kHz
RF power attenuator: > 10 dB
Frequency deviation: > ± 1.5 kHz @ 1,250 Hz audio
Adjacent channel power: < 10 microwatt
Spurious emission: (1) < 50 nW within the following
frequency bands
80 MHz — 85 MHz
87.5 MHz — 118 MHz
135 MHz — 136 MHz
174 MHz — 230 MHz
470 MHz — 862 MHz
(2) < 0.25 microwatt at any other frequency.

Receiver.
Conversion system: Dual conversion superheterodyne
IF: 10.695 MHz 1st and 455 kHz 2nd
Channel display: Digital 7 segment LED's
Audio output power: > 2.5W into 8 Ohm
Sensitivity: < 1 microvolt @ 10 dB S/N
Adjacent channel rejection: > 40 dB
Spurious emission: < 20 nW
Squelch sensitivity: [illegible] to 30 microvolt

Front Controls and Rear Connections

S/RF Meter
Indicates (1) relative strength of incoming signal, (2) RF output power.

Microphone
Dynamic type, specifically designed for communications use. Press pushswitch for transmitting.



RF Attenuator Switch
If your aerial is mounted at a height exceeding 7 m, you must set this switch to PWR ATT position to reduce the transmitter power.

Channel 9 Switch
Set to CH 9 position and the unit will jump to channel 9. when returned to Off position, you will be on the previously selected channel.

Channel Indicator
Shows the selected channel in a large easy-to-read 7-segment LED display.



Channel Selector
Selects one of the 40 channels as indicated in the channel indicator.

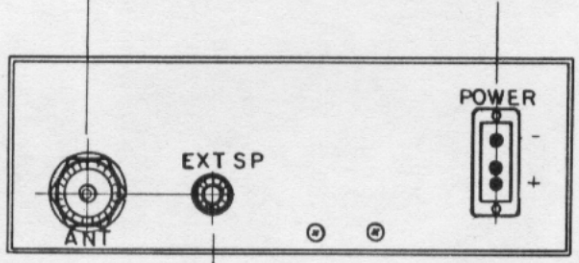
Squelch Control
Permits you to cut out annoying background noise in between messages. When properly set, your CB radio will remain silent until audible message comes through.

Microphone Jack
Accepts plug from the dynamic microphone supplied.

Off/Volume Control
Turn clockwise to apply power to the unit and adjust for the desired loudness.

Aerial Connector
Connect your CB aerial to this SO-239 coaxial connector which mates with PL-259 plug.

13.2V DC Power Socket
Connect the plug from DC power cable set for connection to a source of 12 Volt DC positive or negative ground battery. The red wire with the in-line fuse at the other end must be connected to the plus (+) side and the black wire to the minus (−) side of the battery.



Extemal Speaker Jack
If you want to use an external speaker for an extra sound source, connect it into this jack. Use 1/8″ 2-conductor plug.

Using Your Transceiver

Do not transmit without a suitable aerial or load connected to the aerial connector. To ensure proper installation, review the Installation section.

To Receive

1 Rotate the **Squelch** control fully counterclockwise.
2 Rotate the **Off/Volume** control clockwise to about 9 o'clock position. Now the meter and the channel display should light and hissing sound or stations operating on the channel will be heard.
3 Select the desired channel by rotating the Channel selector.
4 Adjust the **Squelch** control to cut out annoying background noise when no signals are present (or wait until signals cease on the channel).

To adjust the Squelch control: Slowly rotate the **Squelch** control clockwise to the point where the background noise just stops. When a signal comes in, it will overcome the squelch action and be heard without interference disturbance on the channel in between signals.

Do not set the **Squelch** control too far clockwise, or weak signals will not be able to open the squelch circuit. To receive very weak signals or to disable the squelch circuit, simply set the **Squelch** control fully counterclockwise position.
5 Adjust the **Volume** control for suitable loudness. Turn clockwise to turn uniton and adjust for desired loudness.
6 Channel 9 Switch. To switch to channel 9 instantly, simply flip the channel 9 switch to up (CH 9) position. To return to previously monitored channel, flip back to Off position.

To Transmit

1 Be sure the microphone is firmly connected to the microphone jack on the unit.
2 Select the desired channel to transmit.
3 Press the microphone's pushswitch and hold it at a distance about 10 cm from your mouth. Speak in a normal voice.
4 To receive, release the microphone's pushswitch.

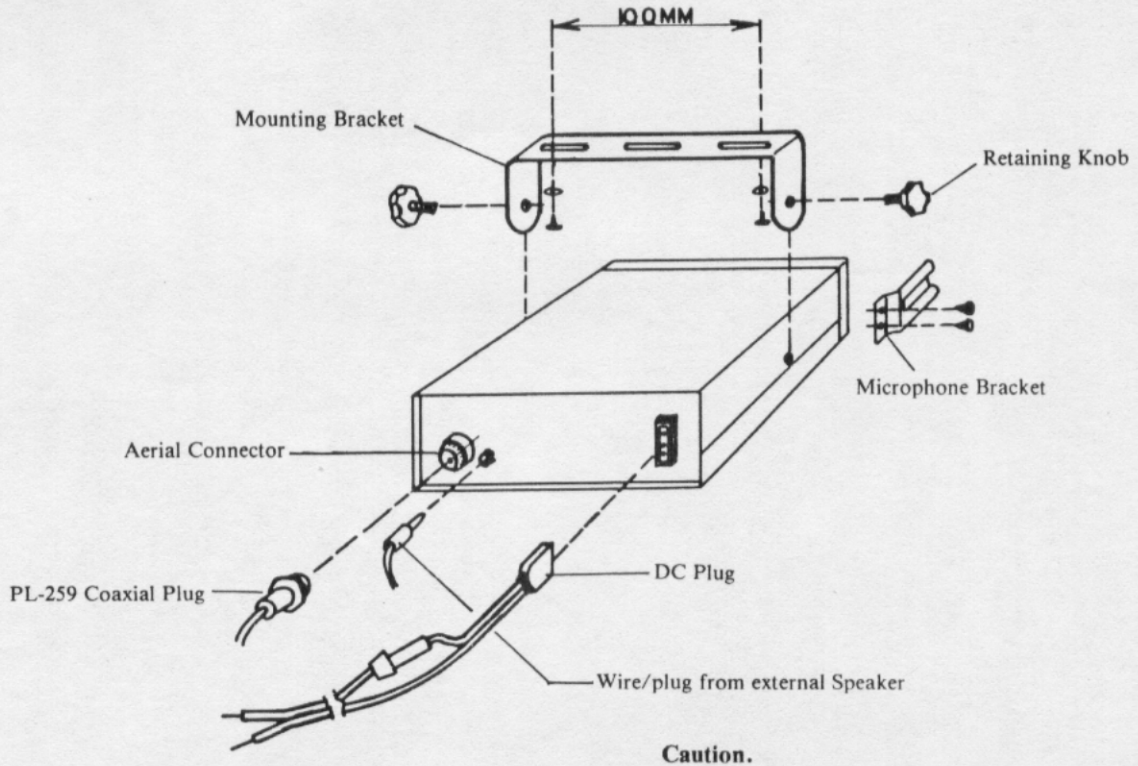
Installation

Safety and convenience are the primary factors in deciding exactly where to locate your transceiver. The transceiver is designed for ease in control accessibility. Be sure that the unit is located so that it does not interfere with the driver or impair access to any controls. Connecting cables must be routed and secured in such a manner as to not interfere with the operation of the brake, accelerator or other controls. Interference from either the unit or connecting cables may contribute to the loss of control of the vehicle.

The transceiver is designed for use with either negative or positive ground electrical system. See diagram on next page and proceed as follows:
Step 1: With negative ground system, connect the red wire (one with in-line fuse holder) to either the (a) fuse block, (b) cigarette lighter, or (c) directly to the positive post on the battery. Usually, the fuse block is the most convenient connecting point. It is also possible to connect to the **Accessory** terminal on the fuse block or ignition switch, so that your CB unit automatically goes off, preventing accidental battery drainage. Then tightly connect the black wire directly to the vehicle's metal frame.
Step 2: With positive ground system, reverse the wires, connecting the red/fuse-holder wire to the frame, the black wire to your DC power source. A light or meter can be a good aid in locating a suitable power source and ground.

In either case, a good, direct metal-to-metal ground is essential for optimum performance.

Connect your aerial system to the aerial connector. If you are using an external speaker, connect it to the appropriate jack on the unit rear panel.



Caution.
The 2-A fuse included with this transceiver is an important safety feature which must not be circumvented. The use of a fuse greater than 2-A may result in overloading and/or fire and consequential damage to the transceiver or vehicle.

CB Aerials

For best reception and transmission, your transceiver should use an aerial especially designed for a frequency of 27 MHz. Aerials are purchased separately and supplied with assembly and installation instructions, mounting hardware, and a coaxial aerial cable fitted with a fully assembled standard connector for quick connection to your transceiver. CB aerials are available in many sizes and styles. Loaded and helical type quarter-wave antennas are most popular and are easily installed. These aerial types are physically shorter but are electrically equivalent to full quarter-wave whip aerials.

The aerial's mounted location on the vehicle affects the operation of the transceiver. Transmission and reception characteristics vary for different aerial locations. Three most popular aerial mountings are shown right:

Roof mount—The aerial mounted on roof represents a transmission/reception range closest to ideal.

Front wing mount—The radiation pattern is slightly greater in the direction of the rear bumper opposite the side on which the aerial is mounted. Provides ease in aerial mounting.

Rear wing mount—The radiation pattern is strongest in the direction of the front bumper opposite the side on which the aerial is mounted.



Roof Mount



Front Wing Mount



Rear Wing Mount

Other Function. If your aerial is mounted at a height exceeding 7 m, the Home Office requires a reduction in transmitter power of 10 dB.
When above is applicable to you, you must set the PWR high and low switch located on the unit front panel to low position to accomplish reduction of the transmitter power output.

General rules for best mobile aerial performance

1 Mount aerial on vehicle as high as possible.

2 The higher percentage of the aerial length mounted above rooftop, the better performance.

3 Centre aerial in middle of selected location (i.e., boot, gutter or roof).

4 Install aerial cable line away from noise sources (ignition system, gauges, etc.).

5 Be sure to mount aerial with a good metal-to-metal ground.

6 Prevent aerial cable damage.

Noise

Some noise is to be expected and is normal. There will be a higher level of background noise when used as a mobile CB transceiver and the car is running. If this noise becomes objectionable (which is caused by the vehicle's alternator, generator, spark plugs, windshield washer and other electrical systems), a noise suppression kit may need to be installed. Noise from the alternator or generator will create a whining high-pitched sound and will vary with engine speed. Spark plugs and ignition noise will show up as a popping sound and can also vary with engine speed.

To tell the difference between noise created by the ignition system and noise created by the generator, start the vehicle and race the engine—now, turn the engine off, and if the noise stops immediately, you have determined the ignition system is at fault. Noise which stops a few seconds after the ignition is turned off, is caused by the alternator or generator.

'Noise can be caused by electrical interference from spark plugs and ignition cables. Most late model vehicles have resistance high tension ignition cable and resistive spark plugs supplied as standard equipment. This eliminates the need for spark plugs suppression. If not supplied, kits are available from automotive supply dealers.

Service and Maintenance

Your transceiver has been built in accordance with Murphy's exacting quality control standards. However, the transceiver should be treated with reasonable care normally accorded to any electronic equipment.

If you encounter difficulty in operating the transceiver, please check the following:

Symptom	**Possible Cause** (and Remedy)
Unit dead, no indicator lights.	(1) Blown fuse (Replace). (2) Power wire disconnected (Review installation instructions).
Unit will not send or receive, indicator lamps on.	(1) Aerial disconnected or shortened.
Unit will not receive. No background noise.	(1) Squelch set too high (Readjust).
Unit will receive but not transmit.	(1) Loose microphone connection. (2) Aerial problem (Check). (3) Microphone defective (Substitute another mic).
Reception garbled with loud whining background noises. Symptom comes and goes, or persists for days.	(1) Atmospheric disturbances. Worsens during peak sunspot activity.

Operating Frequencies

Your transceiver provides for transmission and reception of frequency modulated emissions on the following frequencies:

Channel 1	27.60125 MHz	Channel 21	27.80125 MHz
Channel 2	27.61125 MHz	Channel 22	27.81125 MHz
Channel 3	27.62125 MHz	Channel 23	27.82125 MHz
Channel 4	27.63125 MHz	Channel 24	27.83125 MHz
Channel 5	27.64125 MHz	Channel 25	27.84125 MHz
Channel 6	27.65125 MHz	Channel 26	27.85125 MHz
Channel 7	27.66125 MHz	Channel 27	27.86125 MHz
Channel 8	27.67125 MHz	Channel 28	27.87125 MHz
Channel 9	27.68125 MHz	Channel 29	27.88125 MHz
Channel 10	27.69125 MHz	Channel 30	27.89125 MHz
Channel 11	27.70125 MHz	Channel 31	27.90125 MHz
Channel 12	27.71125 MHz	Channel 32	27.91125 MHz
Channel 13	27.72125 MHz	Channel 33	27.92125 MHz
Channel 14	27.73125 MHz	Channel 34	27.93125 MHz
Channel 15	27.74125 MHz	Channel 35	27.94125 MHz
Channel 16	27.75125 MHz	Channel 36	27.95125 MHz
Channel 17	27.76125 MHz	Channel 37	27.96125 MHz
Channel 18	27.77125 MHz	Channel 38	27.97125 MHz
Channel 19	27.78125 MHz	Channel 39	27.98125 MHz
Channel 20	27.79125 MHz	Channel 40	27.99125 MHz