

Colt 1600DX

AM/FM/SINGLE SIDEBAND
160 CHANNEL 2-WAY RADIO



INSTRUCTION MANUAL

General Description

The Colt 1600DX is a combination transmitter-receiver designed primarily for mobile use. It employs the very latest technology to provide 160 channels of operation by means of digital frequency synthesis with PLL (phase-locked-loop) circuitry. The use of PLL assures a precise on-frequency operation on every channel in both transmit and receive mode. The Colt 1600DX also includes many other features which will provide greater operating convenience and assure optimum communications under a wide range of conditions.

Operable on 160 channels divided into four groups of 40 channels.

3-way RF Gain switch.

Full noise reduction features – ANL and noise blanker.

4 modes of operation – LSB, USB, AM, or FM – selectable with a rotary switch.

Provision of PA.

Concentrically mounted Fine and Coarse controls to fine tune to any transmissions or operate in inter-channel frequencies.

Tone switch to select receive tonal quality in 2-way.

RF power output switchable in 3-way for required communication range.

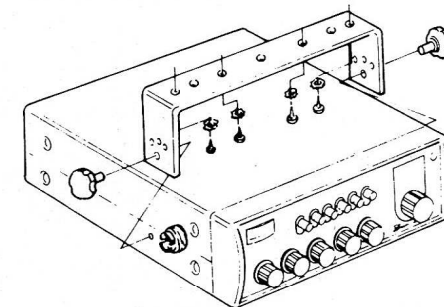
TX lamp that indicates you are on-the-air. External speaker jack for an extra sound source.

Electrically floating chassis for negative or positive ground operation without switching.

A high-sensitivity dynamic microphone equipped.

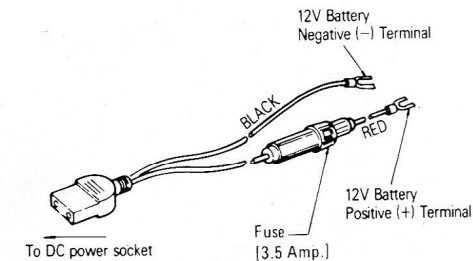
MOBILE INSTALLATION

Before installing the transceiver in a car, truck, boat, etc., be sure to choose a location which is convenient to the operating controls, and will not interfere with the normal functions of the driver. The transceiver may be mounted to the underside of the instrument panel or dashboard of a car, truck, etc., by means of the special bracket that is supplied with the transceiver.



Power Connection

The transceiver is designed to operate from a battery source of 13.8 Volt DC, in vehicles (or boats) employing either negative or positive ground electrical systems. The fused DC power cable supplied is used to make the necessary power connection to the transceiver. The red (fused) lead is connected to the positive (+) side of the electrical system in the vehicle, and the black lead is connected to the negative (-) side of the system.



Since the transceiver draws a certain amount of current, be sure to connect the power cable directly to the battery.

Antenna Connection

RG-58/u cable is generally used to connect the antenna to the transceiver. The cable should be terminated with a PL-259 connector for connection to the antenna input on the transceiver.

Specifications

General

Frequency composition. PLL synthesizer
 Frequency range. A – 26.515 to 26.955 MHz
 B – 26.965 to 27.405 MHz
 C – 27.415 to 27.855 MHz
 D – 27.865 to 28.305 MHz
 Channels. 160
 Frequency space. 10 kHz
 Emission. AM/FM/USB/LSB
 Power source. 13.8V DC

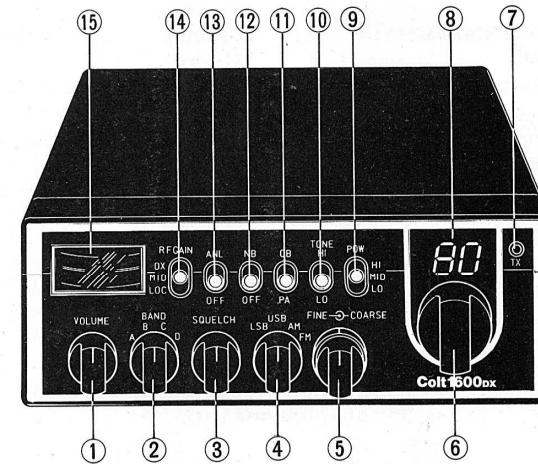
Receiver

Sensitivity. AM – 1 micro-V @ 10 dB S/N
 FM – 1 micro-V @ 20 dB S/N
 SSB – 0.5 micro-V @ 10 dB S/N
 Selectivity. 60 dB
 Audio Output. 2W @ 8 Ohm
 Fine Tune range. ±800 Hz
 Coarse Tune range. ±5 kHz
 Squelch range. 0.5 to 300 micro-V
 Intermediate frequency. AM/FM – 10.695 MHz/455 kHz
 SSB – 10.695 MHz

Transmitter

RF power output.	High	Mid	Low
SSB	12W	8W	2W
AM	7.5W	4W	1W
FM	10W	7W	2W

SSB generation. Double-balanced modulator with crystal lattice filter
 Coarse Tune range. ±5 kHz



Operating Controls and Features

(1) Off/Volume Control

Varies the sound output from the speaker. Also incorporates an on-off switch at the extremely counterclockwise position.

(2) Band Selector

Selects a group of 40 channels in four positions – A, B, C, and D.

(3) Squelch Control

Used to eliminate any annoying background noise when no signals are present. The degree of sensitivity to incoming signals is adjustable. When the Squelch control is rotated to the fully clockwise position, it provides maximum squelch; in the fully counterclockwise position, it provides minimum squelch.

(4) Mode Selector

Selects the mode of reception and transmission – LSB (lower side band), USB (upper side band), AM (amplitude modulation), or FM (frequency modulation).

(5) Fine/Coarse Control

This is concentrically located control

that permits individual adjustment of receiving and/or transmitting frequencies. **Fine (inner knob).** Provides fine tuning of the receiver section. On regular AM and FM reception, this will permit adjustment to off-frequency transmissions. In the SSB (either upper side band or lower side band) mode, this is used as a voice clarifier to adjust for clearer voice reception. This control will not affect the transmitter frequency.

Coarse Tune (outer knob). This control operates in the same manner as the Fine knob except it provides adjustment of both receive and transmit frequencies.

(6) Channel Selector

A 40-detent rotary switch to select any desired channel in conjunction with the Band Selector switch.

Window above this switch indicates the channel selected using an LED (Light-emitting-diode) digital readout.

(7) TX Indicator

Lights up when transmitting.

(8) Channel Indicator

A digital LED display to show channel selected.

Turned off when operating PA.

(9) Power Selector

Enables you to select the RF power output of the transceiver in 3 ways:

High. In this position the transceiver produces full rated RF power for maximum communication range.

Middle. In this position, the RF power is medium level.

Low. In this position, the minimum RF power output is obtained, may be used for short range communication.

Note. The RF power output level (W) which each position provides is dependent on the mode of operation. See Specifications section for specific RF power output.

(10) Tone Switch

Changes tonal quality in receiving in 2 ways:

High. High tones in the sound output are emphasized.

Low. Low tones in the sound output are emphasized.

(11) CB-PA Switch

When set to PA (lever down) position, the transceiver acts as a public address amplifier. Before operating PA, you must first connect an external PA speaker (8 Ohm, more than 2W) to the PA Speaker jack on the unit rear panel.

(12) NB Switch

Activates the noise blanker circuit which is effective in reduction of impulse type noises (ignition noise, etc.).

(13) ANL Switch

Activates the automatic noise limiter in the audio. The ANL will be effective in reduction of atmospheric (discharge) interference.

(14) RF Gain Switch

Selects RF Gain (receiver sensitivity) of the transceiver in 3 ways:

DX. In this position, the receiver section provides maximum sensitivity so that it

can pick up even weak signals.

Normally this switch should be placed in this position.

Mid. In this position, the receiver sensitivity is medium, and may be used when you desire to pick only strong or fairly strong signals.

Local. In this position, the receiver sensitivity is minimum, and the receiver will pick up only the strong signals. May be used when receiving strong (close) signals which are causing overload in receiving sound.

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(15) Meter

Serves to dual purpose:

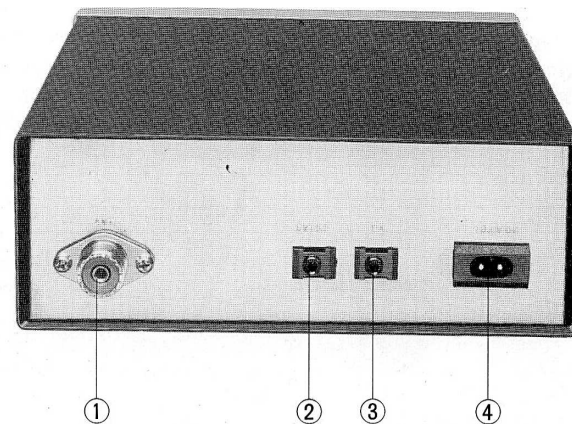
When receiving, this meter gives the relative strength of incoming signals in 'S' units. When transmitting, this gives RF power output in lower scale.

Microphone Jack

Accepts plug from the microphone supplied. The jack has a locating key inside and allows the plug inserted in only one way. Do not force the plug but align key way properly onto the jack.

Microphone

Supplied. With transmit pushbar (PTT) mounted at the left side.



Rear Panel Connection

(1) Antenna

Accepts a PL-259 type coaxial connector from the antenna lead-in cable.

(2) External Speaker Jack

Used to connect an external speaker (8 Ohm 2W) as an extra sound source. Insertion of the plug from a speaker will silence the internal speaker automatically.

(3) PA Speaker Jack

Used to connect a PA speaker (8 Ohm 2W) for PA operation.

Before operating PA you must first connect a PA speaker to this jack.

(4) 13.8V DC Jack

13.8V DC power for the transceiver supplied through this socket (using DC power cable supplied).

Operation

- (1) Turn the Volume control clockwise to apply power to the transceiver. The S-RF meter should be illuminated.
- (2) Rotate the Squelch control counterclockwise fully.
- (3) Set the CB-PA switch to CB position. Now background noise or transmission should be heard.
- (4) Select the mode of reception – AM, SSB, or FM.
- (5) Set the RF Gain switch to DX position.
- (6) Select the channel desired.
- (7) To transmit, depress the transmit switch on microphone; to receive, release the switch.

Channel Selection

The transceiver is capable of operation on 160 channels which are divided into 4 groups of 40 channels – A, B, C, and D. These groups are selected with the Band Selector switch as the following:

Band Switch

Position	Frequency Range
A	26.515 to 26.955 MHz
B	26.965 to 27.405 MHz
C	27.415 to 27.855 MHz
D	27.865 to 28.305 MHz

After the band to which the channel you desire to operate belongs is selected, rotate the Channel selector to find the channel. Rotating the channel selector clockwise or counterclockwise by 1 detent will tune the transceiver 10 kHz upscale or downscale. i.e. If you desire to operate on 27.405 MHz, first set the Band selector switch to 'B', then turn the channel selector to the position at which the channel readout shows '40'.

RF Gain Switch Adjustment

Normally, this control should be set to DX position to provide maximum receiver sensitivity for long range reception. However, when communicating with a nearby station, you may find that the strong signal from this station may cause overloading of your receiver. In such a case, you can use this switch to reduce the receiver sensitivity and thus prevent any overloading and distortion that may occur as a result of the extremely strong incoming signals. First set the switch to Mid position and if this position will not provide a sufficient reduction of overloading condition, set to Local position.

Fine Control Operation

This control provides fine tuning of the receiver by ± 0.8 kHz. On regular AM or FM reception, this will permit slight adjustment of your tuning in cases where the received signal is slightly off-frequency. For SSB reception, this control is used as a voice clarifier by turning it for clearest, most intelligible voice.

Coarse Tune Control Operation

This control acts like a VFO (variable frequency oscillator) allowing inter-channel reception and transmission. This shifts the assigned center frequency of the channel towards 5 kHz up (as rotated clockwise) or down (as rotated counterclockwise). In the center position, the receiving and transmitting frequency is normal (as listed in the Frequency/Channel Chart).

Schematic Diagram

