



Instruction Manual

CS100 / CS101
FM Portable Radio



Connect Systems Inc.



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<http://www.connectsystems.com>



Instruction Manual

CS100/CS101 FM Portable Radio

Thank you for purchasing your new CS100/CS101 two-way radio. This simple to use radio adopts the latest technology to provide reliable communication in today's demanding communication environment.

Notice to the User:

- Please read this instruction manual before operating this radio.
- It's prohibited to use the radio or charge it at any area with a potentially explosive atmosphere (where the air contains gas, dust and smog, etc.) , as well as while parking at a fuel pump at a service station; or any area where radio communication is prohibited (such as a hospital or a airport.)
- It's prohibited to operate the radio without permission in the areas where the government laws prohibit radio communication.
- Please don't expose the radio to direct sunlight for a long time; as well as place the radio near any heating devices.
- Please don't put the radio in extremely dusty, moist humid areas or unstable surfaces.
- Only qualified personal, with proper tools and in-

struments are allowed to service and repair the radio, do not disassemble the radio by your own to avoid damages to the radio.

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■ Unpacking and Checking the Equipment

Unpack the radio carefully. It is recommended that the user verifies items listed in the following table before discarding the packing material. If any items are missing or have been damaged during shipment, please contact the carrier or the dealer immediately.

Supplied Accessories

	Accessories	Quantity
1	Radio	1
2	Antenna	1
3	Battery	1
4	Charger	1
5	Power Adapter	1
6	Belt Clip	1
7	Instruction Manual	1

■ Getting started

▲ Charging the Battery

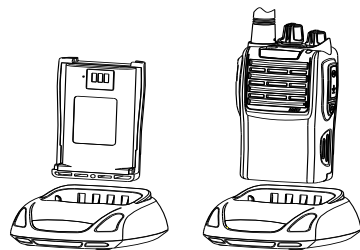
Plug the power adapter into the proper AC wall outlet; and insert the DC plug in the charger cup. The Red LED flashes

after it enters normal working mode. (Red LED lights per 4.5 seconds)

Insert the battery or the radio (as shown in the image) into the charger slot. Please Turn off the radio before inserting it into the charger.

Make sure the battery is in good contact with the charger terminals. When the Red LED indicator is lit, it indicates the battery is being charged.

After charging for about 3 hours, the Green LED will light, indicating the battery has been fully charged.



For initial charging of the battery, please leave the battery in that state of green indicator for another 1~2 hours before removing it from the charger, to achieve the best performance of the battery. Then user can disconnect the power adapter from the AC outlet.

If the Red LED flashes quickly (0.2s on 0.2s off), It means

the charging process has stopped, This could be due to the charging temperature being too high or the battery is faulty, This activates the charger to enter a protective mode and disrupts all charging function of the battery. Please stop charging immediately and remove the battery from the charger.

Notice:

* The new battery is not fully charged prior to delivery from the factory. It is required to be fully charged before first use.

* If the battery has not been used, or placed in storage for a prolonged period (e.g over 2 months), the user should repeat charging the battery several times to achieve the normal battery capacity.

* Do not recharge the battery after it has been fully charged or it is partially discharged, otherwise it might affect the battery life or performance. Remove the battery from the charger after charging is completed.

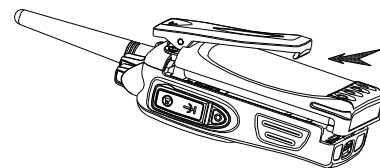
* If the radio enters low battery warning state, please recharge the battery. Do not use the radio in low power state, as this will affect the battery life and performance.

▲ Installing the Battery Pack

To install the battery, please place it into the groove on the top of the radio chassis about 5mm away from latch.

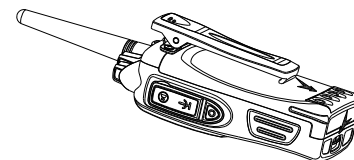
If the radio has the belt clip installed, you will have to press one side of the clip, to raise it and slide the battery in proper position.

Press the battery with your fingers and push the battery until you hear a latch click, the battery is now installed



Removing the battery pack :

If user wishes to remove the battery from the radio, first press the battery latch located on the bottom of the radio, and then press down to slide the battery about 5mm to release the latch.



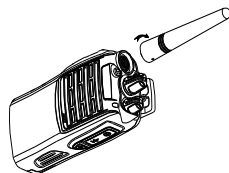
Notice:

* Do not short-circuit the battery terminals or dispose of the battery in fire.

* Do not disassemble the battery case.

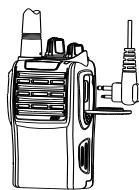
▲ Installing the Antenna

Screw and turn the antenna in clockwise direction, directly into the connector at the top of the radio, till it is secured



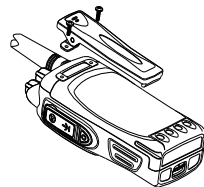
▲ Install Remote speaker or Earpiece

Open the cover of the jack for Remote Speaker Microphone or PTT Earpiece. Insert the plug of the Remote Speaker Microphone or PTT Earpiece into the jack on the radio. When inserting the accessory plug, make sure it is properly aligned (straight) to avoid internal damage to the connector in the radio.

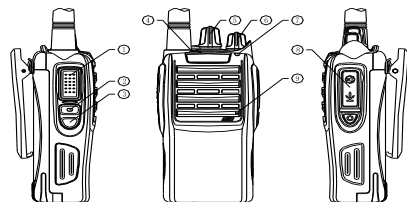


▲ Installing/Removing the Belt Clip

Use the 2 screws (M2.5x6.0) provided with the radio and fix these screws on to belt clip and the holes in the aluminum case. If user wishes to remove the belt clip from the radio, just unscrew remove the clip, Please ensure the screws were screwed back for future installation of the belt clip.



■ Radio Overview



① PTT (PUSH-TO-TALK) Button

To make a call (Transmit), press and hold the PTT button, speak into the microphone in normal voice. Release the PTT button to receive signals.

② Side Button 1 (Programmable Button)

③ Side Button 2 (Programmable Button)

④ Top Button (Programmable Button)

⑤ Channel Selector

Rotate to select channel 1~16.

⑥ Power/Volume Knob

Turn clockwise to switch on the radio.

Turn counterclockwise till a "click" sound is heard to switch off the radio.

Rotate to adjust the volume after turning on the radio.

⑦ LED Indicator

LED Indicator Status/Alert. Green LED lights when a carrier is detected in the current channel. Red LED lights during transmitting. Flashes orange when the 2/5Tone signaling received. Green led flashes when scanning, Red LED flashes when the battery is low.

⑧ Speaker / Microphone Jacks

Used to connect the optional Remote Speaker/microphone or PTT Earpiece.

⑨ MIC Input

Please keep your mouth about 10 cm (3~4 inches) away from the microphone input to achieve the best voice

quality. If the distance is too far or too close to the radio, it will affect the voice quality.

■ Basic Operations

▲ Power on the radio

Turn on the radio by turning the Power/Volume switch clockwise till a "click" sound is heard, The current channel will be announced, the radio is now in RX (Receiving) mode if the channel has been programmed.

▲ Adjust Volume:

Rotate the Power/Volume knob to adjust the volume with the monitor key pressed. Turn clockwise to increase the volume and counterclockwise to decrease the volume.

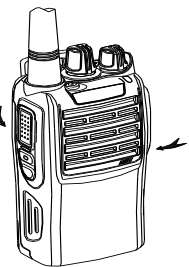
▲ Select a Channel:

Rotate the channel selector to the desired channel. If channel is programmed, a channel annunciation will be heard. When a signal is received, it will be heard through the speaker.



▲ Make a Call:

To make a call, press the PTT, and speak in normal voice and keep your mouth about 10cm(3-4 inches) away from the microphone to achieve optimal voice quality.



▲ Receive a Call:

Release the PTT button and adjust the volume at the proper position to receive calls.

The dealer can set CTCSS/DCS, 5-Tone or 2-Tone or MDC on your radio. Once channels are programmed with Selective signaling, user will not hear calls except those from the radios in the same group and sending the proper ID

■ Programmable Button Function

The dealer can program the side button 1, side button 2 and the top button with the following Optional functions:

- None (No Function)
- Annunciation Selection
- Talkaround
- Call1/Call2/Call3/Call4
- Lone Worker

- Emergency
- Cancel Emergency
- Scan
- Noise Channel Delete
- Call Forward
- H/M/L Power Switch
- Squelch Adjust
- Monitor Momentary/Call Cancel
- Monitor/Call Cancel
- Squelch Off Momentary/Call Cancel
- Squelch Off/Call Cancel
- Lock Key/Channel Knob
- Battery Check
- CTCSS Scan Save CH / CTCSS Scan Forever Save CH
- Surveillance
- Special Emergency 1/2/3

When pressing a Key, notice the different beeps you will hear

- No beep: indicates key pressed has no function programmed
- one beep: indicates feature enabled
- two beeps: indicates feature disabled
- “Error” beep: indicates key pressed invalid
- Voice prompt: state after key acknowledge.

The dealer can program the following functions:

None

No Function is programmed.

Annunciation Selection

Press this key to disable or enable channel annunciation function.

Talk Around

Press this key to disable or enable Talk Around function. In talk around state, the radio will transmit with the RX frequency of the channel.

CALL 1/CALL 2/CALL3/CALL4

Press the button set as “CALL 1/CALL 2/CALL3/CALL4” to transmit the stored code.

Special Emergency 1/2/3

Press the button set as “Special Emergency 1/2/3” to enter a special emergency mode. Please ask your dealer for detail information.

LONE WORKER

When the radio is set in lone worker, it will sound pre-alert tones before the Lone Worker time expires, and the user should press any key on the radio within the Reset Time, indicating the user is safe, otherwise, the radio will enter emergency state automatically.

Emergency

When you press the top button set as “Emergency”, the radio will enter emergency state, the radio can sound alarm tone or transmit ID code or background tone to your partners or the system, the detail setting is programmed by your dealer.

Cancel Emergency

Press the top button set as “Cancel Emergency Call” to cancel Emergency function. The normal action to cancel the Emergency call is to press and hold the top button for approx 2 seconds. This then resets the radio. It is normal for the radio to fully reset as though it has been switched off and then ON again.

Scan

Press the button set as “Scan” to start or stop scanning. If scan beep tone enabled, 4 high beeps will indicate entering scanning state, or 4 low beeps indicate exiting scanning state. If scan LED enabled, the green LED will blink while scanning.

The working channel of the radio will revert to the defined channels automatically when you press PTT button during scanning

Noise Channel (Temporarily) Delete

When scanning pauses on a channel, press and hold the button programmed as “Temporarily Delete Noise Channel” to delete this channel from the scanning list temporarily .

Note: The priority channel cannot be deleted. And when the number of scanning channels is less than 2, user cannot delete any channel, either.

After exiting scanning mode and entering it again, the temporarily deleted channel will be added in the scanning list again.

Call Forward

This function enters mode whereby an individual call cause the radio to transmit the call forward telegram. This feature is used more on mobile radios and it allows the user to leave the vehicle. If the vehicle receives an individual call ,it will transmit a telegram to the forwarding radio. This radio will open .Assuming both radios have the same CTCSS tone , the call will take place. This function is only used in 5-tone mode

H/M/L Power Switch

Press the key set as “H/M/L Power Switch” to switch among high ,middle and low power.

Squelch Adjust

User can change the squelch level by pressing “Squelch Adjust” button. But when user powers on the radio again, the radio will return to the default squelch level set by your dealer.

Monitor Momentary/Call Cancel

Press the side button set as “Monitor Momentary” to turn off CTCSS, DCS, 5-Tone, 2-Tone and MDC and to hear the signals that cannot be heard when in normal working mode. Release the Monitor key to return to normal working mode.

When in selective call state, press this key to exit selective call.

Monitor/ Call Cancel

Press the side button set as “Monitor” to turn off CTCSS, DCS, 5-Tone,2-Tone and MDC and to hear the signals that can not be heard when in normal work. Press again the Monitor key to return to normal working mode.When in selective call state, press this key to exit selective call.

Squelch Momentary/Call Cancel

Press the button set as “Squelch Momentary” to turn on the squelch; release it to exit.

When in selective call state, press this key to exit selective call.

Squelch Off/ Call Cancel

Press the button set as “Squelch off” to turn on the squelch; press it again to exit.

When in selective call state, press this key to exit selective call

Key Lock

Press the button set as “Key Lock” to lock or unlock the following function keys: Channel knob, Annunciation Type Selection , TalkAround, Lone Worker, Man Down, Scan, Noise Channel Delete, Call Forward, H/M/L Power Switch, Squelch Adjust, FCS, Surveillance , etc.

Battery Power Check

Press the button set as “Battery Power Check” to hear the current power level. If user head “Very low battery”, user would need to recharge the radio as soon as possible.

CTCSS Scan Save CH / CTCSS Scan Forever Save CH

If the scan type of a certain channel is “CTCSS /SCAN”, one can press scan key to let the radio start CTCSS SCAN feature, then the radio will scan the preset frequency band, and will land on an active frequency.

If that channel was not you wanted , you can press “SCAN KEY” again to skip this “noise” channel.

After finding a wanted channel, you can press “CTCSS Scan Save CH” or “CTCSS Scan Forever Save CH” to save the current RF frequency & its CTCSS data onto the current channel (channel before scan).

The difference between “Save” and “Forever Save” is: If it was ” CTCSS Scan Save CH”, the radio will enable CTCSS / SCAN re-entry, where as “CTCSS Scan Forever Save CH” will inhibit CTCSS SCAN feature in the current channel.

Surveillance

Press this key to disable or enable Surveillance function. When this function is enabled, the beep is not heard and the LED does not light when a signal is received, or a key is pressed.

■ VOX (Voice Operated Transmission)

VOX allows hands-free transmission on the radio when using the appropriate earphone/headset.

Two types of VOX are available: built-in and external.

If VOX has been set, when speaking voice reaches the preset volume, VOX will activate the radio to transmit automatically.

■ Radio Settings

▲ TOT (Time-out Timer)

1) TOT dispatch time

The TOT Transmit Time is the maximum period of time that the radio is allowed to transmit continuously in normal delete mode. When the programmed time expires, the radio generates a warning tone and stops transmitting. The range for the TOT Transmit Time is from 15 seconds to 1200 seconds in increments of 5 seconds.

2) TOT Re-key

a) TOT re-key specifies the time when transmission is prohibited after the time-out timer is activated. b) During the time of transmitting prohibition, if user press the PTT button, warning tone sounds and transmitting is prohibited.

3) TOT Pre-alert

a) Before the time-out timer stops transmitting, the radio sounds pre-alert tone. b) After the alarm tone, if the transmitting time is longer than the preset time limit, the time-out timer will be activated.

4) TOT Reset

a) TOT Reset is the delay time between releasing the PTT button and resetting the time-out timer. b) If the time of releasing the PTT button is shorter than the

TOT Reset, the countdown of transmitting prohibition will continue.

▲ Battery Save

The dealer can program the battery save type.

If the battery save function has been set, 10 seconds after no signals being received or no operations being conducted, the radio enters the battery save mode. It will exit the battery save mode automatically after receiving signals or being switched into TX mode.

Battery Save Types: Short, Middle, Long and OFF.

Battery save function can increase battery active time

▲ Low Battery Warning

Low battery warning tone sounds and LED flashes when the battery power goes below the preset value and User need to recharge the battery. If the battery voltage is too low, transmission is prohibited.

▲ Channel Annunciation

The dealer can activate or prohibit this function.

When switching to a channel by rotating the channel knob, the current channel number will be heard.

▲ CTCSS/DCS

The dealer can set CTCSS/DCS on the channels to ignore calls on the same channel from irrelevant radios.

If a channel has been set with CTCSS/DCS, the squelch will be activated only when it receives the proper CTCSS / DCS signals. And only the radios set with the same CTCSS / DCS signaling as those on yours can hear your call.

Note: Using a CTCSS/DCS channel doesn't mean your calls are private. If the CTCSS/DCS tones of other radios are identical with those on yours, they can hear your calls.

■ User Template

A user template includes PTT code-transmitting, encoding, decoding, Busy Channel Lockout, Call 1/2/3/4, RX squelch mode, TX conditions and decoding conditions, etc. Maximum 16 user templates are available on this radio.

▲ RX Squelch Mode

The dealer can set conditions under which the speaker will be activated from the following 4 options:

1) CTCSS/DCS and Signalling Squelch: The speaker will be activated only when both CTCSS/DCS and the selective signaling matched.

2) Signalling Squelch: The speaker will be activated when the selective signaling matched.

3) CTCSS/DCS Squelch: The speaker will be activated when CTCSS/DCS matched.

4) Carrier Squelch: The speaker will be activated when carrier wave presents

▲ Scan

When in scanning, the radio checks signals on each channel; it stops scanning and pauses on the channel on which signals are detected until the signals disappear. If a delay time has been set between the interval of signal disappearing and scanning restarting, the radio will stay on that channel if it receives any signals during the delay time.

The operating channel of the radio will revert to the following channels automatically when you press PTT button during scanning. The dealer can select one among the following four options:

1) Start channel

When pressing PTT button, the radio will transmit from the channel described in the Start.

2) Selected channel

When pressing PTT button, the radio will transmit from the channel selected.

3) Last called

When pressing PTT button, the radio will transmit from the last channel that received a call.

4) Last used

When pressing PTT button during the scanning, the radio will transmit from the last channel you used to talk.

Priority Scan

During scanning, if the priority channel has been set on the will automatically switch to the priority channel even the normal channel is receiving signals at that time. And the radio will stay on the priority channel till the signals disappear. The dealer can set the delay time between signal disappearing and continuing scanning.

Temporarily Delete Noise Channel When scanning pauses on a channel, press and hold the button programmed as "Temporarily Delete Noise Channel" to delete /this channel temporarily from the scanning list.

Note: The priority channel cannot be deleted.

▲ DTMF

The dealer can set DTMF signaling into encoding sequence. If DTMF is set in the encoding template, press the

corresponding programmable button "Call 1", "Call 2", "Call 3", or "Call 4" to transmit the coding.

▲ 5-Tone Signaling(selectable)

The dealer can activate or deactivate this function by programming.

5-Tone has 9 encoding formats: CCIR1, CCIR2, ZVEI1, ZVEI2, SVEI3, EEA, EIA, USER DEFINED 1, and USER DEFINED 2. The last two formats are user defined.

▲ 2-Tone Signaling(selectable)

This function can be enabled or disabled by dealers through programming software.

▲ MDC Signaling

This function can be enabled or disabled by the dealers through programming software.

MDC has 4 systems, in which different main ID, group ID, etc. could be set by the dealer.

MDC encode

If the PTT ID of the chosen channel is set as MDC, the MDC code will be transmitted when calling.

■ Troubleshooting

No.	Problems	Solutions
1	The radio cannot switch on	<ul style="list-style-type: none"> ● Battery pack may not have been installed properly. Remove the battery pack and install it again. ● Battery power may be insufficient. Recharge or replace the battery pack.
2	The battery power runs out quickly after charging.	<ul style="list-style-type: none"> ● The battery life is finished; please replace it with a new battery pack.
3	Cannot talk to or hear other members in your group.	<ul style="list-style-type: none"> ● The frequency or CTCSS/DCS signaling are not identical and please reprogram it. ● Make sure the setting of the selective signaling 5-Tone in the RX Squelch Mode is proper. ● Beyond the radio efficient communication range.
4	Other voices from non-group members are heard on the channel.	<ul style="list-style-type: none"> ● Change the CTCSS/DCS tone, and make sure change the tone on all radios in your group. ● Please set 5-Tone selective signaling on the channel.

5	Communication range is too small.	<ul style="list-style-type: none"> ● Make sure the antenna is well connected. ● Make sure the antenna is the originally supplied one. ● Check if the battery power is in the normal state. ● Ask your local dealer to adjust the squelch level.
6	Unable to transmit.	<ul style="list-style-type: none"> ● Make sure the PTT button has been pressed completely. ● Battery power may be insufficient. Recharge or replace the battery pack. ● Transmitting frequency has not been set on the channel and the radio has been remote killed.
7	Noise is too loud.	<ul style="list-style-type: none"> ● Battery power may be insufficient. Recharge or replace the battery pack. ● Beyond the efficient communication range.

■ Radio Specifications

CS100/CS101		
Frequency Range (MHz)	CS100:400~470	CS101:136-174
RF Power	4W / 2W / 1W	5W / 2W / 1W
Spurious and Harmonics	≤-70 dB	
Frequency Stability	±2.5ppm	
Maximum Frequency deviation	±2.5 kHz (N)/±5kHz (W)	
Receiver Sensitivity	Narrow Band ≤0.28μV / Wide Band ≤0.25μV	
Adjacent Channel Selectivity	≥60dB (N)/ 70dB (W)	
Intermodulation Rejection	≥65dB	
Maximum AF Output Power	≥1000mW	
Number of Channels	16	
Battery (Standard)	DC 7.4V	
Dimension (W×H×D)	97.5mm×54.5 mm×31.5 mm	
Weight	215g With battery and antenna	

Model: _____ Serial No.: _____

1) Channels List

Channel	Type	Receiving Frequency	Transmittig Frequency	CTCSS /DCS/LTR Decode	CTCSS /DCS/LTR Encode	Power	Bandwidth	Scan List
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

■ Settings (by the Dealer)

2) Optional Functions

Time-out Time (TOT) 15-600s
 Squelch Level 0-9
 Voice Annunciation ON OFF
 Battery Save OFF Short Middle Long