Operator's Manual

OpenSky

Always on. Always there.

OpenSky CS-803/ SP-103/TRCM-103

Digital Trunked Control Station

OpenSky is a registered trademark of M/A-COM, Inc.

NOTICE!

This manual covers M/A-COM products manufactured and sold by **M/A-COM, Inc.**

NOTICE!

Repairs to this equipment should be made only by an authorized service technician or facility designated by the supplier. Any repairs, alterations or substitutions of recommended parts made by the user to this equipment not approved by the manufacturer could void the user's authority to operate the equipment in addition to the manufacturer's warranty.

Proper Radio Use, Installation, and Service

Introduction

Use, installation, and service of the CS-803 radio as summarized below will ensure the safe performance of this equipment. Use of this radio as described below will result in user exposure substantially below the FCC recommended limits for human exposure to Radio Frequency Electromagnetic energy.

Proper Use

Do not operate this radio if any of the RF connectors are not secure or if open connections are not properly terminated.

Proper Installation and Service

The CS-803 radio and antenna must be professionally installed by experienced antenna installation professionals. During the installation of directional antennas, the installer must not point the main beam of the antenna to locations occupied by persons within the distance of maximum permissible exposure limits specified in Part 2 of the FCC regulations. Failure to follow these instructions will void the product warranty and may expose the end user and others to excessive Radio Frequency hazard. All antennas are intended to be installed outdoors and at distances from personnel well beyond the minimum allowable distance.

Proper grounding is necessary, not only for correct functionality and maximum performance, but for minimizing damage that may occur from lightning strikes. The CS-803 radio and the SP-103 do not include a lightning-protection device, but it is recommended and only effective if the connection is made as the design intended. Follow the installation instructions to ensure a properly grounded unit.

FCC regulations

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device is not required to comply with the FCC RF exposure limits for Uncontrolled Exposure (General Population) and Occupational Exposure, because it is assumed that neither uncontrolled nor occupational exposure is applicable in the general installation configuration. The installation of the antenna for the CS-803 is to be performed such that no person is within 10 meters during normal operation, and the CS-803 must be disabled before maintenance to the antenna is attempted.

The Federal Communications Commission (FCC) requires the user to obtain a station license for this radio equipment before operating it.

The operator is responsible at all times for the proper operation and maintenance of the equipment.

FCC regulations state that the frequency, deviation, and power of a radio transmitter must be maintained within specified limits. It is recommended, therefore, that these three parameters be checked before the station is placed in service.

Important Safety Instructions

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this apparatus near water.

6) Clean only with dry cloth.

7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

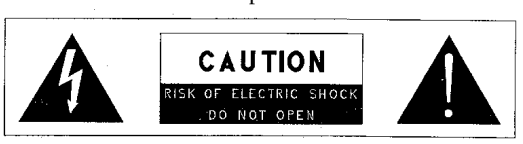
11) Only use attachments/accessories specified by the manufacturer.

12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13) Unplug this apparatus during lightning storms or when unused for long periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15) Warning: The lightning bolt signifies an alert to the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of significant magnitude to constitute a risk of electric shock to persons.



16) Warning: The exclamation point alerts the user to the presence of important operation and maintenance (service) instructions in the literature accompanying the product.

17) Outdoor Use Warning: To reduce the risk of Fire or Electric Shock, Do Not Expose This Apparatus to Rain or Moisture.

18) Wet Location Warning: Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

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1 Product Description

Your CS-803 Digital Control Station is a hardware component of the OpenSky network, an integrated voice and data communications system that delivers end-to-end digital transmissions over a single wireless network to various subscriber units.

The CS-803 is intended to operate in an office environment, typically for dispatch purposes. The radio operates over both the Specialized Mobile Radio (SMR) and National Public Safety Planning Advisory Committee (NPSPAC) frequency bands. These bands provide a total of over 830 possible channels spread over the 806-824 MHz transmission and 851-869 MHz reception bands. The CS-803 operates full duplex with an 18W (typical) transmit output power.

The CS-803 uses Time Division Multiple Access (TDMA) technology to allow multiple users to share a single RF channel. In addition, a single 25kHz RF channel can support simultaneous digital voice and data communications. Depending on the user configuration of the network or agency, the radio supports the OpenSky digital protocol as well as Conventional FM.

The CS-803 provides voice and data services in a dispatch operation. Voice operation is provided through various CS-803 compatible user interfaces that use a microphone and speaker. For data transfers or graphics, the CS-803 is constructed with an industry-standard RS-232 interface serial port for connecting optional equipment such as a Mobile Data Terminal (MDT), laptop PC or third-party display or key-entry device. OpenSky works seamlessly with equipment from popular manufacturers and off-the-shelf applications through a standard UDP/IP protocol, providing you with simple “plug and play” connectivity.

A host terminal, not included with the CS-803, provides data connectivity through the standard RS-232 serial (DCE) interface.

Your CS-803 is a “soft” radio. Its functions are determined by whichever release of OpenSky software applications are installed.

1.1 Voice and Data Operation

In Conventional FM mode, the voice path operates like a traditional dispatch radio, with a microphone to transmit (push-to-talk) and a speaker to receive. The data path operates similarly to the voice path, but has a few slight differences.

In OpenSky Trunked Protocol (OTP), there is no separate voice and data path – all transmitted information is digital. The system is TDMA based, and operates at a data rate of 19.2 kbps. All data information in and out of the control station uses the RS-232 serial port.

1.2 Rear Panel

The CS-803 Rear Panel Assembly, Figure 1-1, contains all of the control station interfaces. Power to the CS-803 is controlled by an on/off switch and provided by a normal AC switched line. The rear panel also includes an antenna port, an RS-232 serial port, an I/O communication port, and a CAN port to connect optional OpenSky user interfaces such as the SkyPort Desk Set (SP-103), the Control Head (CH-103), and the Tone Remote Control Module (TRCM-103) which allows the user to connect to off the shelf Tone Remote Desk Sets. The optional TRCM-103 mounts in the back of the CS-803.

Figure 1-1: Rear Panel

2 OPERATION

2.1 Operation with the SP-103 or CH-103

2.1.1 User Interface Components

User interfaces such as the CH-103 and the SP-103 for your CS-803 include Power Button/Speaker Volume Dials, the Microphone/Speaker I/O Port, a 5-key "soft-button" keypad for making menu selections, a 19-character vacuum fluorescent Display Panel, 3 Mode Selector buttons, an Emergency Button (CH-103 and SP-103 only) and an Ambient Light sensor. Additionally, the SP-103 includes a 12-position DTMF keypad.

Figure 2-1 shows a Control Head Unit (CH-103) and Figure 2-2 shows a SkyPort (SP-103), which are two of the available user interface accessories for the CS-803 Control Station.

Figure 2-1: CH-103 Control Head

Figure 2-2: SP-103 SkyPort

Table 2-1: User Interface Controls and Functions

PART	FUNCTION
POWER Button/**Volume** Dial (CH-103 only, SP-103 has AC power with on/off switch on back of unit)	Push to Power Up. Push again to Power Down. Twist clockwise to increase speaker volume. Twist counter-clockwise to decrease speaker volume.
Mic Connection	Attach hand-held microphone, hands-free speaker, or keypad, microphone here. Headset mic/spkr and desk mics also available.
EMERGENCY button	In the OpenSky Protocol, when suitably configured, pressing this button will send an emergency alert and open voice communication with your default emergency talkgroup.
LIGHT sensor	User interface automatically selects Display Panel brightness level based on ambient light. You should not block this sensor.
MENU and **SELECTOR** buttons	Cycle through the menu loop with UP and DOWN buttons. Scroll through selections with LEFT and RIGHT buttons. Press SELECT button to indicate your final choice.
DISPLAY area	Menu selections appear here, along with Data Connectivity and Volume indicators. User may select which of several DWELL SCREENS the radio will display.

PART	FUNCTION
MODE SELECTOR buttons	Depending on setup choices made by your Network Administrator, you'll use these buttons to choose between software modes (FM, OTP), voice groups or channel presets.
DTMF Keypad 3x4 array (SP-103 only	Depending on setup choices made by your Network Administrator, you'll use the DTMF keypad for specific tasks such as entering a User ID and Password , or selective calling via the radio.

2.1.2 Display Screen Overview

The display screen shows the status of your control station setup. Data connectivity and volume indicators reside in the right-hand sector. The rest of the screen is devoted to a 2-line vacuum fluorescent display that changes in response to user interaction with the Menu Selection keys. See Figure 2-3 for illustrations of the display items.

Data Connectivity

(Looks like an antenna)

Presence of this icon indicates data network connectivity.

Speaker Volume Icon

(Looks like a speaker)

This icon indicates user-selected speaker volume setting. Twist the volume knob to change this setting.

Selection Display

(The top line of text)

This display changes as you press the Left and Right menu selector buttons to scroll through the selections in the active menu loop.

Menu Display

(The bottom line of text)

The Menu Display changes as you press the Up and Down menu selector buttons to scroll through the menu loop.

Dwell Display

(The user-defined display default)

When not engaged in menu selection, the 2-line VF display defaults to the user-selected Dwell Display. The top line shows the current Transmit Talkgroup. The bottom line shows the user's choice of the current Profile, Received Talkgroup/Caller ID (when available), and Channel (when enabled).

Sample Display Screen

Figure 2-3 reflects just one of many possible displays for a display screen. There is no pre-selected default screen for the OpenSky II Phase 2 protocols. Instead, each user will select the display condition of his/her choice by making a selection from the Dwell Display menu.

Figure 2-3: Sample Display Screen

Table 2-2: Display Parts and Functions

COMPONENT	FUNCTION
Data Connectivity Icon	Resident in every display screen. If this icon is displayed, there is a data connection. If the icon is not present, there is no data connection.
VOLUME Icon	Resident in every display screen. Shows current speaker volume setting chosen by the user.
MENU SELECTION Display	During a menu session, the bottom line responds to the Up and Down menu buttons to show the active menu (Talkgroup Menu in this case). The top line responds to the Left and Right menu buttons to display the options within that menu (available Talkgroups within the active profile in this example).

Menu Display and Control Area

Following power-up, the display shows the selected Talkgroup. Pressing the MENU button up or down (Table 2-2) changes the display to the next available menu. The dwell display is displayed if you are not pressing the menu keys. If you switch to another menu, the user interface will return to the dwell display if no key is pressed for 10 seconds.

After any Menu/Select procedure, your display screen will revert to whatever display you have chosen as your dwell display. Once the dwell display is active, it will change dynamically to reflect the current profile, received Talkgroup/caller ID (when available), or channel (when enabled).

The user interface display screens are highly interactive and respond with a changing display in the upper and lower text lines as the user presses the Menu Selection buttons to scroll through the menu loop and the entries under each menu.

When the button pressing stops, the screen will revert to the dwell display and show the status of whichever category of information the user has selected from the dwell display menu.

Dwell Display User-Selectable

The first line of any Dwell Display for Open Sky trunked mode operation is always the selected Talkgroup for your selected profile. What appears in the second line, depends on what choice you make for your default display preference.

Whatever your preference, your control station user interface will respond dynamically to changes in status, always displaying the current information about your network connection. You may elect to have the screen display your current Profile, Received Talkgroup/Caller ID (when available), or Channel (when enabled).

Table 2-3 shows the choices available for dwell display and some representative options available under each menu heading. Setups vary widely from network to network; do not expect to find these actual options in your menu.

Table 2-3: Sample Setup: Dwell Display Hierarchy

PROFILE	RECEIVED TALKGROUP/ CALLER	CHANNEL (WHEN ENABLED)
TACTICAL	POLICE 01	OT450
SOUTH	DISPATCH	OT460
HIGHWAY	EMS 09	OT550
METRO	No Calls	OT999

Changing your Dwell Display choice is as simple as any other menu selection operation.

See the chapter on Display Screen Functions for step-by-step instructions on how to select or change your Dwell Display.

2.1.3 Operating the Control Station with an SP-103 or CH-103

How to turn the Control Station/SP-103 on

1. Push the **Power Switch** on the rear panel of the CS-803. An LED on the front of the CS-803 will illuminate to indicate Power Up.

CS-803
Power
Switch

2. Push the **Power Switch** on the rear panel of the SP-103. The user interface display will display Booting Please Wait.

SP-103
Power Switch

3. Wait through the **Startup Sequence**, which lasts approximately 10 seconds.

   During this time your control station is provisioned with your customized user personality, emergency conduct and user specifications, all designed for your specific needs by the Network Administrator and prompted by your User ID.

4. When provisioning is complete, the CS-803 user interface located on the SP-103 or CH-103 will display the Dwell Display in the Display Screen.

5. The **Speaker Volume** indicator displays your current volume setting. Rotate the Power Button/ Volume Dial clockwise to increase the volume, counter-clockwise to reduce the volume.

How to Log on to the Network

Network log-on is either automatic or directed via a PC. Even if you want to use your control station for non-network traditional RF communications, you will still need to log on to the network first, then select Talkaround Mode to work off-network.

Contact your local administrator for procedures on how to log onto the Network.

Self-Test

After Power Up, your CS-803 control station undergoes a multi-function automatic Boot procedure. Your control station is provisioned with your user personality: as many as 16 user profiles are downloaded to your equipment from the network in response to your User ID. Emergency behavior is provisioned along with each profile.

Your control station conducts a diagnostic Built-In Self-Test (BIST). The Self-Test is a battery of hardware diagnostic tests on the internal components of the control station. All processor and

memory elements, interfaces, connectivity elements, and RF functionalities are diagnosed for operational integrity.

How to Turn the Control Station/SP-103 Off

6. Push the **Power Switch** on the rear panel of the CS-803 and the SP-103. The LED on the front of the CS-803 and the user interface on the SP-103 will cease to illuminate to indicate Power Down.
7. Several user-selected radio settings will survive the Power Down procedure.
8. At your next Power Up, these saved settings will automatically default, along with your network personality settings.

How to Change the Volume

NOTE

Your user interface Display Screen always displays the current volume, whether or not a call is being received.

9. Rotate the **Power Button/Volume Dial** on the user interface clockwise to increase the Speaker Volume.
10. Rotate the **Power Button/Volume Dial** on the user interface counter-clockwise to decrease the Speaker Volume.
11. Whether you are receiving a voice call or not, your volume setting change will immediately reflect in the display screen Speaker Volume indicator.

Voice Calls

As soon as your control station completes the Startup/Log On/Provision/Self-Test sequence and registers on the OpenSky network, you will begin to hear voice calls from the talk and listen groups in your active profile, if they are available.

2.1.3.1.1 How to Receive a Voice Call

No action is required on your part, but the following list details how your control station responds to incoming voice messages.

1. If your Dwell Display is set to **Received Talkgroup/Caller ID**, your display screen shows the User ID of the incoming caller, if available, or the group call alias otherwise.
2. If your Dwell Display is set to **Profile** or **Channel**, your display screen shows the data appropriate to those displays, but provides no indication as to the identity of your incoming caller.

2.1.3.1.2 How to Make a Voice Call

The steps for making a voice call with your CS-803 are similar to those for a conventional radio.

3. First, if you have not already, Power Up your CS-803. (See Section 2.3.1)
4. Depress and hold the **Push-to-Talk** button on your microphone and speak normally. For maximum clarity, hold the microphone approximately 1½ inches from your mouth. Optionally on an SP-103 the user can depress a foot-switch operated PTT .
5. Release the **Push-to-Talk** button or switch to terminate your outgoing voice call.

Radio Tones

The control station user interfaces provides four (4) tones that provide feedback to the user indicating whether the control station is able to transmit on the channel when Push-to-Talk (PTT) is pressed. These are described in the sections below.

- **Deny Tone**

If the control station is not able to access the channel when PTT is pressed, the control station user interface will issue three short beeps, all of the same pitch, as the deny indication. The control station user interface will issue the deny tone when PTT is pressed if it is out of coverage, or if the requested voice group is already active. The user must release the Push-to-Talk button and re-key the PTT to make another call request.

- **Queued Tone**

If the radio site is currently fully occupied with calls, a new call request may be queued by the system. The control station issues three tones, a low tone followed by two higher tones, to indicate that the call has been placed in the queue. The user may release PTT at this point, if desired. When resources are available, the user will receive the grant tone, and the control station will begin to transmit. PTT should be re-keyed at this time, and released when the talk spurt is complete.

- **Grant Tone or Go-Ahead Tone**

If granted after being queued, the control station user interface provides a short single tone “beep” to inform the user that channel access has been granted. The user should press and hold PTT, and begin speaking.

- **Removed Tone**

After access to the control station channel has been granted and the user is transmitting, the control station may be pre-empted by a high priority call or by loss of coverage. The removed tone is a single long low-pitched tone, which notifies the user that access to the channel has been lost. When the removed tone is heard, access to the channel has been lost and the control station is no longer transmitting, even if PTT is being pressed. PTT must be re-keyed to regain channel access.

Enable/Disable Side Tones

The control station user interface sounds confirming tones when the Menu or Selector buttons are pressed. Most users find this audible confirmation helpful in navigating the menus in the Display Panel.

The side tone level can be adjusted, by navigating to the Side Tone menu, and selecting Off, Low, Med, or High.

To temporarily disable the tones use the Menu Selector buttons to access the Side Tone Menu. Select Off from the menu choices.

If the control station user interface is operating properly but tones are not heard when the Menu or Select buttons are pressed, the side tones are most likely disabled. Access the Side Tone menu and reset the Tones to On.

Use the following procedure to enable or disable Side Tones:

1. Use the **Up and Down buttons** to cycle through the Menu choices until SideMenu appears.
2. Use the **Left or Right button** to change the display from the menu choices (Off, Low, Med, High).
3. Press the **Select button** to lock in your choice.

Your selected Dwell Display will appear as soon as the CS-803 accepts your choice.

Figure 2-4: Side Tones Menu

Table 2-4: Side Tones Menu Components

COMPONENT	EXPLANATION
Side Tones Menu	Used to select side tone level.
Menu Option	When the Menu is accessed, the screen will indicate whether the side tones are Off, Low, Med, or High. To change the setting, press the Left or Right button and confirm your choice with the Select button.

Select Brightness Setting

The CS-803 user interfaces utilize a front-panel light sensor to adjust the display to ambient light conditions. However, the Brightness Selection gives users some control over the screen display.

To Change Screen Brightness:

4. Use the **Up and Down buttons** to cycle through the Menu choices until Bright Menu appears.
5. Use the **Left button** to reduce the brightness, or the **Right button** to increase the brightness.

Your display screen should be immediately brighter or dimmer as you requested.

Table 2-5: Brightness Selection Menu Components

COMPONENT	EXPLANATION
Brightness Menu	Used to change screen display brightness.
Menu Option	When you access the Menu, you will see << >>. Use your left arrow to decrease the brightness and the right arrow to increase the brightness.

Check or Change Active Profile

If the Dwell Display is set to Profile, the screen will display the user's active profile at all times. Otherwise, to see the current selection, use the Menu Selector keypad to access the Profile Menu.

To switch to a new active Profile during your work shift, access the Profile Menu from the Menu Selector keypad and make a new selection from the options.

To Set your Active Profiles:

1. Use the **Up and Down buttons** to cycle through the Menu choices until ProfileMenu appears.
2. Use the **Left and Right buttons** to cycle through the Profile Menu options established by your Network Administrator.

Your selected Dwell Display will appear after a timeout of a few seconds.

Menu Option:
Sample Profile from your Personality Dwell Display

Active Menu:
Profile Selection

Figure 2-5: Profile Selection Menu

Table 2-6: Profile Selection Menu Components

COMPONENT	EXPLANATION
Profile Menu	Determines which group of up to 16 profiles will be your active Profile.
Menu Option	When you access the Menu, the currently selected Active Profile appears in the option line. To change, scroll to a new Profile and press the Select button.

Check or Change Active Talkgroup

1. Use the **Up and Down buttons** to cycle through the Menu choices until TalkGrpMenu appears.
2. Use the **Left and Right buttons** to cycle through the list of user groups in your Active Profile, as established by your Network Administrator.
3. Press the **Select button** to lock in your choice.

Your selected Dwell Display will appear as soon as the CS-803 accepts your choice.

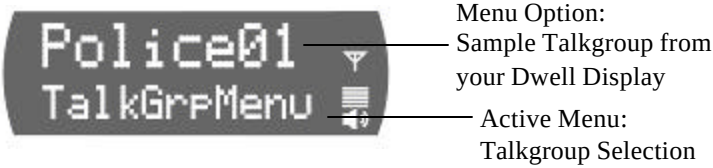


Figure 2-6: Talkgroup Selection Menu

Table 2-7: Talkgroup Selection Menu Components

COMPONENT	EXPLANATION
Talkgroup Menu	Determines which group of up to 16 user groups will be your active Talkgroup.
Menu Option	When you access the Menu, the currently selected Active Talkgroup appears in the option line. To change, scroll to a new Talkgroup and press the Select button.

2.1.4 Lock Out Talkgroup

There are at least two ways to focus your voice communications by suppressing calls from user groups in your active profile.

- **No Scan.** By changing your Scanning Mode to NOSCAN means, you only scan your selected Talkgroup.
- **Lock Out.** By locking out selected Talkgroups, you can eliminate just the background "noise" you select, focusing your scanning resources on just the groups whose calls you wish to track.

Groups You Can Lockout

- **Active Profile.** It stands to reason that only groups in your active profile can be locked out, since they are the only groups whose voice calls you will hear. You can lockout any group in your profile, not just active groups.
- **Received Call Menu.** If you do not find a name, you are looking for in the Lockout menu, it is not in your active profile.

2.1.4.1.1 How to Lock Out a Listen Group

1. Use the **Up and Down buttons** to cycle through the Menu choices until LockOutMenu appears.
2. Your display screen shows LockOutMenu in the bottom line and, in the top line, the name of a user group from your active profile.
3. Use the **Left and Right buttons** to cycle through the list of candidates, if any, until the user group you want to **Lock Out** appears onscreen.

4. Press the **Select button** to lockout the group. A < will appear next to the name.

Your selected Dwell Display will appear as soon as the CS-803 accepts your Lockout choice.

2.1.4.1.2 How to Unlock a Listen Group

1. Use the **Up and Down buttons** to cycle through the Menu choices until LockOutMenu appears.
2. Your display screen shows LockOutMenu in the bottom line and, in the top line, the name of a user group from your active profile.
3. Use the **Left and Right buttons** to cycle through the list of candidates, if any, until the user group you want to **Unlock** appears onscreen.

4. Press the **Select button** to unlock the group. The < will disappear from next to the name.

Your selected Dwell Display will appear as soon as the CS-803 accepts your Unlock choice.

Table 2-8: Lockout Selection Menu

COMPONENT	EXPLANATION
Menu Option	As you scroll through the user groups in your active profile, notice they only appear in the Lock Menu if they are in the current profile.
Lock Out Talkgroup	Both Locked-Out and Not-Locked groups appear in the Menu. The locked-out group has a **<** next to the name.

Caution Regarding Profile Changes

Talkgroup Lockout status does not survive a change of Profile. If you need to select a new Profile after taking the time to Lockout several Talkgroups from your current profile, understand that making the change will unlock all groups.

- Compare your options before changing your profile. If you can achieve your goal by temporarily assigning Priority Talkgroup status to a user group, you may be able to avoid having to lock out the same groups twice.

2.1.5 Select Scan Mode

Two scanning modes are available for the CS-803, but only one can be active at any time. Changing your scanning mode changes the way your control station scans voice calls for all of the profiles in your user personality, no matter which profile is or becomes active.

Your choice of scanning mode will broaden or narrow the span of your communications with all the listen groups in your profiles, but does not affect your interaction with your talk groups.

Your scanning mode choice will stay in effect until you change it again; even if you turn off your radio, your current selection will be saved until your next use.

Table 2-9: Scan Modes

Scan Mode	Explanation
No Scanning	**Eliminates distractions**. Full communications (listen and talk) with your talk group. No calls from listen groups.
Normal Scanning	**This is the default setting.** Network administrator has established this as the most effective configuration for everyday use. Full communications (listen and talk) with your talk group. Receive calls from the listen groups, if available from your current site.

Check or Change Active Scan Mode

The Dwell Display screens do not show active Scan Mode status. To see your current selection, use the Menu Selector keypad to access the Scan Mode Menu. The scan mode status displayed in the top line of the screen display is your active status.

To change scan mode during your work shift, access the Scan Mode Menu from the Menu Selector keypad and make a new selection from the options available.

- To **narrow** your scanning list to just the talk group in your active profile, choose No Scan from the Scan Menu.
- To select the **default scanning mode** that scans all the listen groups in your active profile, choose Normal from the Scan Menu.

2.1.5.1.1 How to set your Scan Mode

1. Use the **Up and Down buttons** to cycle through the Menu choices until ScnModeMenu appears.
2. Use the **Left and Right buttons** to cycle through the list modes until your choice appears: Normal or No Scan.
3. Press the **Select button** to lock in your choice.

Your selected Dwell Display will appear as soon as the CS-803 accepts your choice.

Component	Explanation
Scan Mode Menu	Determines whether you will scan or suppress your listen groups for incoming voice messages.
Menu Option	When you access the Menu, the currently active Scan Mode appears in the option line. To change, scroll to a new mode and press the Select button.

2.1.5.1.2 Duration of Scanning Mode Selections

Scanning Mode selections survive Power Down. At startup, your radio will default to the scanning mode of your last use. Any selection you make during your shift will remain in effect until you make a new selection from the Scan Mode menu.

2.1.6 Emergency Communications

Your control station can send out an Alert or place Voice Calls over the entire network in an emergency. OpenSky handles Emergency Calls and Alerts with the very highest priority, giving you and the people you serve access to the help you need no matter how much traffic the network is handling.

How to Place an Emergency Call

1. Press the red **Emergency Button** on your user interface to send an emergency alert. You will find the button just to the right of the 5-button Menu and Selector keypad.
2. You will hear the emergency tone if you are successful. Other users will hear the **Emergency Alert** signal, a distinctive 3-tone burst of sound.
3. At the same time, the network enables the **Emergency Talkgroup** provisioned in your current talkgroup.
4. The microphone is opened for a programmed amount of time in order to send your voice out over the emergency talk group.
5. Based on your provisioned priorities, the radios in the **Emergency Talkgroup** will hear your call and see the emergency talk group displayed on their radio.
6. When your emergency ends or if you inadvertently pressed the button, press and hold the red **Emergency Button** a second time to clear the emergency alert and call. Only you, the user who initiated the alert, dispatcher, or the network administrator can clear an emergency.

2.1.7 Selective Call

Selective calling is the capability for two voice radio units/control stations to shortly obtain and utilize an independent talkpath for a private call.

In the OpenSky system, a source control station can be configured to initiate selective calls through a preprogrammed list in memory. Alternatively, a properly equipped source control station can initiate a selective call to any radio in the system by entering the ten-digit voice user ID (which looks like a telephone number) of the target device. Radios can optionally be configured to only receive (not initiate) selective calls.

How to Make a Selective Call

1. Use the keypad to key trailing unique digits to place the call **OR**, if you do not have a keypad, use the **Up and Down buttons** to cycle through the Menu choices until Speed Dial appears.

- If using the keypad mic, press the number.
- If using the Menu, select the number using the Left or Right arrows and press Select.

2. If someone is calling you, you will hear a ringing sound. Press the **Right** arrow to accept the call.
3. To hang-up, press the **Select** button.

2.1.8 Dynamic Regrouping

In the event of an emergency, the network administrator will determine what control station/radio users should be formed into an ad hoc talk group to respond to the emergency conditions.

The administrator will edit the personalities of the affected users to include an emergency profile and then page the affected control stations/radios (not users) to re-register with the network to receive their edited personalities.

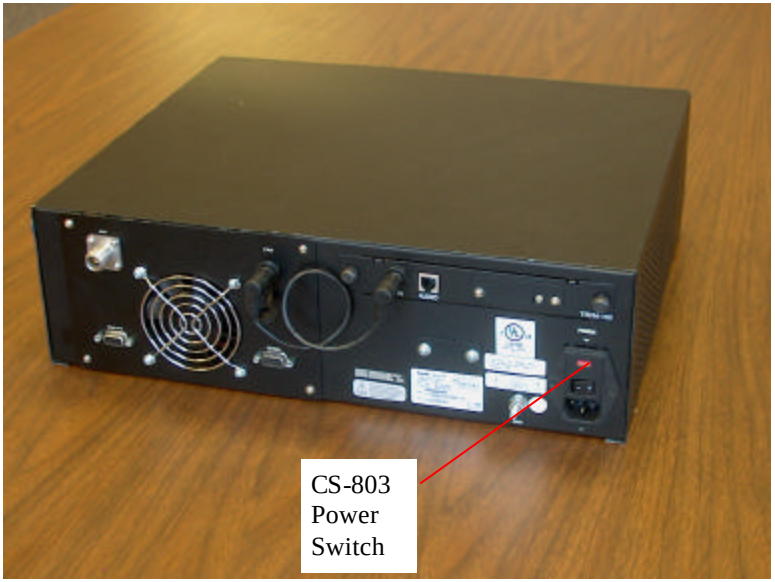
In response, affected control stations/radios automatically re-register to receive their edited personalities.

During re-registration, subscriber equipment will default to the profile selected by the administrator.

2.2 Operation with the TRCM-103 and Third Party Tone Remote Desk Set

2.2.1 How to turn the Control Station/TRCM-103 on

1. Ensure the TRCM-103 has been installed in the back of the CS-803 and calibrated with the Desk Set as indicated in the Installation Manual.
2. Push the **Power Switch** on the rear panel of the CS-803. An LED on the front of the CS-803 will illuminate to indicate Power Up.



3. Power Up the Desk Set as directed by the Third Party Desk Set's user manual.
4. Wait through the **Startup Sequence**, which lasts approximately 10 seconds.

During this time your control station is provisioned with your customized user personality, emergency conduct and user specifications, all designed for your specific needs by the Network Administrator and prompted by your User ID.

2.2.2 How to Log on to the Network

Network log-on is either automatic or directed via a PC. Even if you want to use your control station for non-network traditional RF communications, you will still need to log on to the network first, then select Talkaround Mode to work off-network.

Contact your local administrator for procedures on how to log onto the Network.

2.2.3 Self-Test

After Power Up, your CS-803 control station undergoes a multi-function automatic Boot procedure. Your control station is provisioned with your user personality: as many as 16 user profiles are downloaded to your equipment from the network in response to your User ID. Emergency behavior is provisioned along with each profile.

Your control station conducts a diagnostic Built-In Self-Test (BIST). The Self-Test is a battery of hardware diagnostic tests on the internal components of the control station. All processor and memory elements, interfaces, connectivity elements, and RF functionalities are diagnosed for operational integrity.

2.2.4 How to Turn the Control Station/TRCM-103 Off

1. Push the **Power Switch** on the rear panel of the CS-803. The LED on the front of the CS-803 will cease to illuminate to indicate Power Down.
2. Several user-selected radio settings will survive the Power Down procedure.
3. At your next Power Up, these saved settings will automatically default, along with your network personality settings.

2.2.5 How to Change the Volume

See the Third Party Desk Set's User Manual for changing the volume setting.

2.2.6 Voice Calls

As soon as your control station completes the Startup/Log On/Provision/Self-Test sequence and registers on the OpenSky network, you will begin to hear voice calls from the talk and listen groups in your active profile, if they are available.

How to Receive a Voice Call

No action is required on your part. The incoming call will be forwarded as clear audio to the third part Tone Remote Desk Set.

How to Make a Voice Call

The steps for making a voice call with your CS-803 are similar to those for a conventional radio.

1. First, if you have not already, Power Up your CS-803. (See Section 2.2.1).
2. Select the proper function button on the Third Party Tone Remote Desk Set that corresponds to the Talk Group. See your System Administrator for the mapping of Function Buttons.
3. Depress and hold the transmit button on your Third Party Tone Remote Desk Set.
4. Release the transmit button to terminate your outgoing voice call.

2.2.7 Radio Tones

The control station user interfaces provides four (4) tones that provide feedback to the user indicating whether the control station is able to transmit on the channel when the Transmit Button is pressed. These are described in the sections below.

- **Deny Tone**

If the control station is not able to access the channel, the control station user interface will issue three short beeps, all of the same pitch, as the deny indication. The control station user interface will issue the deny tone if it is out of coverage, or if the requested voice group is already active. The user must release the Transmit button and re-key the Transmit button to make another call request.

- **Queued Tone**

If the radio site is currently fully occupied with calls, a new call request may be queued by the system. The control station issues three tones, a low tone followed by two higher tones, to indicate that the call has been placed in the queue. The user may release transmit button at this point, if desired. When resources are available, the user will receive the grant tone, and the control station will begin to transmit once the transmit button is re-keyed. The Transmit button should be released when the talk spurt is complete.

- **Grant Tone or Go-Ahead Tone**

If granted after being queued, the control station user interface provides a short single tone “beep” to inform the user that channel access has been granted. The user should press and hold the Transmit button, and begin speaking.

- **Removed Tone**

After access to the control station channel has been granted and the user is transmitting, the control station may be pre-empted by a high priority call or by loss of coverage. The removed tone is a single long low-pitched tone, which notifies the user that access to the channel has been lost. When the removed tone is heard, access to the channel has been lost and the control station is no longer transmitting, even if the Transmit button is being pressed. The Transmit button must be re-keyed to regain channel access.

M/A-COM, Inc.
1011 Pawtucket Boulevard
Lowell, MA 01853
1-877-OpenSky/978-442-5000
Fax: 978-442-5350
www.macom.com