

# P25 SRM9030 / SRM9030plus Mobile Radio



# P25 – Conventional / Trunked Operating Instructions

# TNM-U-E-0094 Issue 1.2a

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# **ASSOCIATED DOCUMENTATION**

The following documentation is available for use with the SRM9000 series of products:

TNM-U-E-0079	P25 SRM9030 Mobile Radio Brief User Guide
TNM-P-E-0006	P25 SRM9030 Product Manual
TNM-I-E-0005	SRM9000 Installation Sheet
TNM-M-E-0002	SRM9000 R9 Service Manual

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# SAFETY

- 1. Do NOT operate your radio, without a hands free kit, whilst driving a vehicle.
- 2. Do NOT operate your radio in an explosive atmosphere. Obey the 'Turn Off Two-way Radios' signs where these are posted, e.g. on a petrol station forecourt.
- 3. Do NOT touch the antenna while the radio is transmitting.

# HINTS FOR USING THE RADIO

- When speaking, hold the microphone a few centimetres from your mouth and speak across it, rather than into it.
- Keep the length of your conversation to a minimum and replace the microphone on its cradle after use.
- When it is possible to move location, avoid making calls from known poor signal-strength areas such as the radio systems fringe areas (limit of range) or from screened or shadowed areas, e.g. an underground car park or underpass.
- To avoid unnecessary drain on the vehicle battery, keep the engine running when using the radio for extensive periods of time.

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#### 1. INTRODUCTION

#### 1.1 OVERVIEW

The Simoco SRM9000 Series Radios are a family of versatile Digital Signal Processor (DSP) controlled, software controlled two-way mobile radios.

These Operating Instructions describe the operation of the APCO P25 Standard compliant Mobile Radio, consisting of an SRM9000 Transceiver, a MA-MAB-2 Option Board, and SRM9030 / SRM9030plus Control Head.

The SRM9030-P25 Radio may be customised to your operational requirements using the Field Personality Programmer (FPP). Your Simoco representative can help in programming your radio facilities to meet your present and future requirements.

#### 1.2 CONFIGURATION

The SRM9030-P25 Radio must be configured using the P25 Field Personality Programmer (FPP) prior to operation. The configuration process defines the radio channels, signalling and other settings so that the radio will operate with your system

#### 1.3 MODES OF P25-SRM9030 OPERATION

The SRM9030-P25 Radio is capable of operation in Analogue FM, Analogue Trunking, P25 Conventional and P25 Trunked modes.

Radio Channels are organised in groups of up to 250 per zone. Up to 40 zones may be defined.

Generally, zones can be programmed with channels belonging to common function groups.

A radio channel can be defined as either Analogue, Conventional P25 Channel or Trunked P25 network, and a Zone may contain a mix of Analogue or Conventional P25 Channels.

### 2. CONTROLS





The SRM9030 Control Head has the following features:

- 11 programmable direct function Buttons
- 10 additional indirect Function Buttons (keys 0-9)
- 1000 Channels
- 40 Zones
- 250 Channels per zone
- LCD 102x64 graphic display. 8 lines of 14 characters (small font). 3 fonts, small medium and large. Context based soft menu labels.
- LED indicator

SRM9030 Key	Label	Function	
	9030/9030plus		
Power On/Off		To turn the radio on, press and hold the volume knob for about 1 second. To turn the radio off, press and hold the volume knob until the long tone sounds.	
РТТ		Push-to-Talk. Hold the microphone about 10cm from the mouth. Press and hold the PTT switch and speak. Release to listen.	
Volume		Turn the volume knob clockwise to increase volume and anti-clockwise to reduce volume.	
Function Key F1	<b>F1</b>	Programmable Function key. Default – Menu Select.	
Function Key F2	<b>F2</b>	Programmable Function key. Default – Channel Down.	
Function Key F3	6 F3	Programmable Function key. Default – Channel Up.	
Function Key F4	<b>F4</b>	Programmable Function key. Default – OK.	
Function Key F6		Programmable Function key. Located on Microphone.	
Function Key F5	Ø	Programmable Function key. Default – Alarm.	
Function Key F7	C	Programmable Function key. Default – Call	
Function Key F8		Programmable Function key. Default – Reset / Cancel.	
Function Key F9	$\triangleleft$	Programmable Function key.	
Function Key F10	Δ	Programmable Function key.	
Function Key F11	$\triangleright$	Programmable Function key.	

SRM9030 Key Label		Function
	9030/9030plus	
Function Key F12	$\bigtriangledown$	Programmable Function key.
Keypad	1 2 3 4 5 6 7 8 9 * 0 #	Keypad can be used to select a Channel or Special Function. E.g. 12# will select channel 12.

Indicator LED	Function
Green	Green LED when receiving a signal.
Red	Red LED when the radio is transmitting.

#### 3. MENU SYSTEM

This section details the operation of the menu system for the SRM9030-P25.

The SRM9030 has a menu system that is configurable by the FPP. The FPP has a pool of menu entries that can be applied as required in the order required. In simple configurations, no menu can be programmed, if required. See Figure 5 for example menu.

Pressing the "M" key from the top-level channel screen enters the menu system. This key has a soft menu label alongside it titled "MENU". The soft key above "MENU" is generally the accept or "OK" key.



The menus possible are:

- **Zone** (usually the first menu, as often accessed)
- Squelch
- Mute Adjust (FM) / Monitor (Digital)
- Phonebook
- Phonebook Edit
- User Options
- Contrast
- Alert Volume
- Radio Info
- Mode
- RSSI
- Crypto
- Setup
- Stored Calls
- Messages
- Scan Edit
- No Menu

The presence and order of the above menu selections is determined by the FPP configuration.

The **Setup** menu is a special case entry. **Setup** is a subgroup that can have any of the list of menu selections assigned to it. This means that lesser used selections can be partly hidden away under Setup subgroup if required, although still accessible.

The **User Options** menu group is also a menu subgroup. This subgroup usually contains on/off functions, such as Key Beeps or Backlight

The order and presence of the **Setup** subgroup selections is determined by the FPP. For instance **Info**, **RSSI** and **Contrast** could be placed under **Setup**.

#### 3.1 MENU NAVIGATION

Pressing the "**M**" key selects **Menu** mode from the main Channel Screen. Once in menu mode, the  $\nabla$  and  $\blacktriangle$  keys cycle through the menus.

To exit **Menu** mode, press the "**M**" key again or the Menu timeout will exit automatically. Generally, pressing "**M**" key while in a menu backs up to the next highest level of menu and the "**OK**" button selects the menu screen.

The  $\checkmark$  and  $\blacktriangle$  keys are used to navigate through a list of options such as channels, or increase/decrease a value.

When the **Menu** key is first pressed, the numeric keys become short cut keys to functions. Numeric keys can be programmed (using FPP) with functions i.e. Scan.

To access this, you can press the "**M**" or menu key from the channel screen and then the numeric key assigned to that function.





#### 4. MENU SCREENS

4.1 CHANNEL SCREEN



The Channel Screen shows the current channel and allows channel selection.

The **Channel Name** (top line) shows the text associated with the currently selected radio channel.

The **Zone Name** (middle) shows the text associated with the currently selected radio zone.

The **RSSI Bars** (left) indicate the signal strength of the current channel.

Pressing the "Menu" key enters the Menu mode.

The lower part of the screen is reserved for icons.

Radio channels may be configured with the Field Programmer as specific frequencies or as auto scan types. When an auto scan channel is selected, it will immediately go into scan mode. Selecting another non-autoscan channel will stop the scan.

If a radio channel is defined as a P25 Conventional Digital Channel, it will only receive P25 digital signals.

If a radio channel is defined as an Analogue FM channel, it will receive both P25 Digital\* and Analogue FM signals.

A radio channel defined as a P25 Trunked network will automatically start searching for the pre-programmed network, and only receive signals from that network once it has service.

\* While in Analogue mode, all unencrypted digital P25 traffic will be heard regardless of NAC or Talkgroup.



Figure 4 Icon Locations

As there are six positions for icons and displayed icons exceed this, some icons will share the same location.



ICONS	INDICATION
-	A filled speaker indicates that a signal is present and the audio can be heard from the speaker.
$\Box$	The outline speaker icon indicates that a signal is present and the radio is muted. This could be another user group, for instance.
$\bigcirc$	Scan Indicator. When radio is on a scan channel and scanning, the arrow will rotate.
	Transmit Indicator.
Y	Received Signal Strength Indication (RSSI). A stronger signal will display more bars above the "antenna" icon
	Encryption Indicator. The icon is shown when the selected channel is programmed for encryption. If an unencrypted signal is received, the icon will be not be displayed.
25	25 = Digital Mode Indicator.
S	Selective Mute. Only radio signals specifically directed to the user or the channel's defined talkgroup will be heard on the speaker.
	Normal Mute. Only radio signals from the users own network will be heard on the speaker.
M	Monitor. All P25 digital radio signals on the channel will be heard.
0-n	All keys except PTT, or any function assigned as Alarm, will be disabled. Press the OK key for 2 seconds to unlock all keys.
TA	Talk Around enabled indicator. When shown, Talk Around is active.
SC	Scrambler indicator. (analogue only)
Ε	Emergency mode. Blinking icon indicates that the emergency button has been pressed.
2	Individual Addressing Mode. When shown, the radio will transmit to an individual address instead of a talkgroup
$\square$	Envelope icon. Indicates that a message(s) stored if icon steady, icon flashes if unread message(s) stored.
	Trunking Icon. Displayed when the radio is in Trunking Mode.

С	Connecting icon. Shown when a text message is being sent and the connection is in progress.
l	Connection Fail icon. Shown when a text message transmission has failed.
*	Radio has stopped on a scan channel.

#### 4.2 MENUS

The menu structure on the SRM9000 is configurable using the Field Programmer. A system administrator usually tailors the order and presence of the menu options to specific customer requirements.

This section will describe all the possible menus.

Normally the menus are divided into two menu lists.

These are normally the Main menu list and the Setup menu list.

In the default configuration, the Main menu contains the Zone screen and a Setup screen. This allows access to the second "Setup" menu level.

#### 4.2.1 Zone Menu

The Zone Screen is used for changing Zones. A Zone is normally defined as a group of radio channels with a common operational role.



When the "**Zone**" menu option is displayed, press the "**OK**" button to enter the "**Zone**" select screen.



Once the "**Zone**" menu appears, press the  $\checkmark$  and  $\blacktriangle$  keys to choose the required Zone. Press the "**OK**" key to select the required Zone. The radio will return to the channel screen and select the first channel in the new Zone.

Direct access to the "**Zone**" menu from other screens can also be programmed to one of the function buttons with the Field Programmer.

#### 4.2.2 Squelch

This menu allows the channel's default squelch mode to be modified.

If the selected channel is changed or the radio is switched off, the channel's default squelch setting will be restored.



Press the "**OK**" key for the "**Squelch**" Menu.



P25 Squelch Screen

For a P25 digital channel, pressing the  $\checkmark$  and  $\blacktriangle$  keys will allow selection of either **Monitor**, **Normal** or **Selective** squelch mode.

For an analogue channel, pressing the  $\vee$  and  $\blacktriangle$  keys will allow selection of either **Monitor** or **Normal** squelch mode.

#### Digital Channel Monitor Mode:

The radio will receive any decryptable or clear P25 digital voice signals. The Network Access Code (NAC) is not checked. An " $\mathbf{M}$ " icon on the display indicates monitor mode.

#### **Digital Channel Normal Mode:**

When **Normal** squelch is selected, the radio will receive all decryptable or clear digital transmissions with the correct NAC. It does not check the Talk Group or Unit ID. An "**N**" icon on the display indicates normal squelch.

#### **Digital Channel Selective Mode**

If **Selective** squelch is chosen, the radio will only receive decryptable or clear digital transmissions with the correct NAC and Talk Group ID (TGID) or correct NAC and Unit ID. An "**S**" icon indicates selective squelch.

#### Analogue Channel Monitor Mode:

The radio will receive any Analogue voice or P25 digital signals. Digital NAC or Analogue CTCSS is not checked. An "**M**" icon indicates monitor.

#### Analogue Channel Normal Mode:

When **normal** mute is selected, the radio will receive correctly addressed Analogue radio transmissions and all decryptable or clear digital transmissions. An "N" icon indicates Normal.

Pressing the "OK" key returns to the main channel screen.

Pressing the "**Back**" or "**Menu**" key returns to the next highest menu level

#### 4.2.3 Mute Adjust

From the menu list, step through the menu options with the  $\vee$  and  $\blacktriangle$  keys until the "**Mute Adjust**" menu is displayed.

Press the "**OK**" key for the Mute adjustment screen.



Analogue Mute Screen

The mute adjustment will be applied to all the radio's analogue channels.

Use the  $\mathbf{\nabla}$  and  $\mathbf{A}$  keys to adjust the mute threshold. A numeric value of the present mute level is shown.

The "OK" key returns to the default channel screen with the selected mute setting.

It is recommended that the default mute setting of 4 is used. The SRM9000 series radios have a carrier noise mute and this means the mute will open at the point where an analogue signal is sufficiently noise free to be intelligible with a setting of 4.

Other settings are as follows:

- 0 no muting
- 4 normal setting,
- 8 will only hear reasonably strong signals
- 15 will only hear very strong signals.

Pressing the "**OK**" key will exit to the Channel Screen with the selected mute setting.

Direct access to the "**Mute Adjust**" screen from other screens can also be programmed to one of the function buttons with the Field Programmer.

#### 4.2.4 Phonebook Menu

When "**Phone Book**" is selected from the menu screen, the Phone Book Screen is shown. From this screen, it is possible to view the of all phone entries in the phone book.

6			
	Ph Book	Edit	F1
	Chris		<b>F</b> 2
	22001 10.0.2.1		<b>F</b> 3
		Back	F4

The second line shows the name of the selected phone book entry.

The third line shows the unit identifier of the phone book entry. This is the P25 ID that the radio will call.

The fourth line shows the IP address associated with the phone book entry. IP addresses are used for data calls.

Phone book entries may be selected with the  $\mathbf{\nabla}$  and  $\mathbf{\Delta}$  keys.

A "Reset" function key press (if configured) takes the radio back to the default screen display.

When the "Back" key or "Menu" is pressed, the radio returns to the Menu screen.

#### 4.2.4.1 Making an Individual Call

When "PTT" key is pressed:

- The radio is changed to individual call mode (individual call to the unit identifier of the selected phone entry). The individual call icon is displayed.
- If the radio is already in individual call mode addressed to a different unit, the destination unit ID shall be replaced by that of the newly selected phone entry.
- The radio will remain in individual call mode until the inactivity timeout has elapsed, ie. No PTT or signal received for the Field Programmer set time period (typically 10 seconds).
- The radio will return to the default screen.

#### 4.2.4.2 Making an Individual Call with Call Alert

When the **"OK"** key is pressed with the Phone Book entry displayed:

A Call Alert is sent to the displayed ID.

The called radio will sound a Call Alert.

#### 4.2.5 Phonebook Edit Menu

The Phone Book can be modified so that new entries can be added and existing entries can be modified or removed from the phone book.

Phone book entries may be Individual Addresses, Telephone numbers or Talk Groups.

Changes to the phone book are permanent.

#### 4.2.5.1 Phonebook Edit Default Screen

When "**Phone Book Edit**" is selected from the menu screen, the radio displays the Phone Book Edit Screen.

From this screen, an entry can be chosen using the  $\mathbf{\nabla}$  and  $\mathbf{A}$  keys.



The displayed information is the same as the Phone Book Screen display.

A **"Reset"** function key press (if configured) takes the radio back to the default screen display.

If the "Back" key or "Menu" key is pressed, the radio returns to the MENU screen.

If the "OK" key is pressed, the "Phone Book Edit" pop-up menu is displayed.



#### 4.2.5.2 Phone Book Edit Pop-up menu

The pop-up items are:

- Add: to add a new phone entry
- Edit: to edit (modify) the selected phone entry.
- **Delete:** to delete the currently selected phone entry.

The selection is made with the  $\mathbf{\nabla}$  and  $\mathbf{\Delta}$  keys.

The "Menu" or "Back" key takes the radio back to the Phone Book Edit Default Screen.

A "**Reset**" function key press (if configured) takes the radio back to the default screen display.

If "**Delete**" is selected, pressing "**OK**" removes the selected phone entry from the phone book and takes the radio back to the default screen display.

If "Add" is selected, pressing "OK" takes the radio to the Add New Entry sub-menu.

If "Edit" is selected, pressing "OK" takes the radio to the Edit Phone Entry sub-menu.

#### 4.2.5.3 Phone Book Edit – Add New Phone Entry

The first edit screen is the entry type screen. There are 6 possible types of Phone Book entries. These are:

Conv.Unit ID (Option 0)	Conv.PSTN (Option 1)	Conv.Group (Option 2)
Trunk Unit ID (Option 3)	Trunk PSTN (Option 1)	Trunk Group (Option 4)

Dialstring (Option 5)

Make the selection 0 - 5 and select OK.



From here, enter the System ID value as described in the Phonebook Edit section.

#### 4.2.5.4 Phonebook Edit

This selection is used to edit an existing phone book entry. The operation is similar to adding a phonebook entry in previous section.

In this example, editing a P25 Trunked ID is shown. It is also possible to edit a P25 Conventional ID and a P25 Group Entry.

The first step is to edit the System ID.

Ph	Book Edit	<b>F1</b>
Cł	Add d	<b>F</b> 2
22 İ	Delètel	F3
	Back	
	DOCK	



Upon entering this screen, the current trunked System ID of the selected entry is displayed.

The System ID entry can then be changed using the numeric digits and  $\mathbf{\nabla}$  key as a destructive backspace.

Once the New System ID is entered, press "**OK**" key to move on to the next sub-menu screen to edit the WACN ID, if required.



Upon entering this screen, the current WACN ID of the selected entry is displayed.

The WACN ID entry can then be changed using the numeric digits and  $\mathbf{\nabla}$  key as a destructive backspace.

If there is no change for the WACN ID, press "**OK**" key to move on to the next sub-menu screen to edit the name.

The next step is to edit the Unit ID, if required.



Upon entering this screen, the current Unit ID of the selected entry is displayed.

The entry can then be changed using the numeric digits and  $\mathbf{\nabla}$  key as a destructive backspace.

If there is no change for the Unit ID, press "**OK**" key to edit the IP address, if required.

Ph	Book	Edit	F1
Edi	t IP	Addr:	<b>P</b> 2
IV.	ν. ζ.	1	F3
		Back	<b>F</b> 4

Upon entering this screen, the current IP address of the selected phone entry is displayed.

The IP address can then be changed using the numeric digits and  $\checkmark$  and  $\blacktriangle$  key to move the cursor with  $\checkmark$  function key as a destructive backspace. The "#" key is used to enter a ".".

If there is no change for the IP address, press "**OK**" key and move on to the next sub-menu screen to edit the name.



Upon entering this screen, the current name of the selected phone entry is displayed.

The name entry can then be changed using the numeric digits and  $\vee$  and  $\blacktriangle$  key to move the cursor with **Reset** function key to delete.

If there is no change for the name, press "**OK**" key to complete the editing on the phone entry. The phone entry will be modified in the radio, and the radio will return to the default screen.

#### 4.2.6 User Options

The "**User Options**" menu provides access to a list of Functions that may be toggled on or off. Up to 10 functions may be defined in this menu by the FPP programmer.



Press the "**OK**" key for the "**User Options**" screen.



When the Function is selected, the function can be toggled ON or OFF with the "OK" key.

The  $\checkmark$  and  $\blacktriangle$  keys are used to select the other functions.

Pressing the **"Back**" or **"Menu**" key saves all the function settings and returns to the next highest menu level.

Toggle functions include Key Beeps, Backlight, Talk-Around, Analogue Scrambler and Low Power Override.

These functions can also be assigned directly to the radio's function buttons, if required.

#### 4.2.7 Contrast

This menu allows the screen's contrast setting to be changed.



Press the "OK" key for the "Contrast" adjustment screen



When the "**Contrast**" menu is selected, the contrast can be adjusted with the  $\mathbf{\nabla}$  and  $\mathbf{\Delta}$  keys. The numeric value of the Contrast is displayed.

Pressing the "OK" key returns to the main channel screen.

Pressing the Back or "Menu" key returns to the next highest menu level.

#### 4.2.8 Alert Volume

This Screen allows you to set the level of the relative Alert Volume level in relation to the current Volume setting. The level can be set in 62 steps over the range -31 to +31, with 0 being about the same as the voice level. For example, if the alert volume is set to -6, it will be softer than received voice on the radio.

From the Settings Sub Menu, step through the menu options with the  $\checkmark$  and  $\blacktriangle$  keys until the Alert menu is displayed.



Press the "OK" key for the "Alert Volume" adjustment screen



Use the  $\checkmark$  and  $\blacktriangle$  keys to change the relative alert volume level. The beep will sound at the indicated level each time the setting is changed.

Press "**OK**" to accept the setting and return to the Channel Screen.

Pressing the "Menu" key will exit back to the setup menu.

*Note:* A minimum Alert Level may be set by the FPP to ensure that the Alerts can always be heard from the speaker.

#### 4.2.9 Radio Information

These screens display information that identifies the Field Programmer File description, Radio ID, Serial Number, Software Version and IP Address.

From the Settings Sub Menu, step through the menu options with the  $\mathbf{\nabla}$  and  $\mathbf{\Delta}$  keys until the Radio Info menu is displayed.



Press the "OK" key for the "Radio Info" Screen.

The  $\checkmark$  and  $\blacktriangle$  keys select the following information pages:



Description, P25 Conv. Unit ID and Radio Band



Application Software Version and Date



P25 Radio Unit Trunked ID and IP Address



Radio Software Version and Serial Number



Application Upgrade Version, Date and PLA



P25 Trunked SysID, WACN, GID and UID



**Encryption Summary** 

**External Application Memory Status** 

The "**Radio Info**" screens are read-only screens. Press "**OK**" to return to the Channel Screen.

#### 4.2.10 Mode Menu

The mode menu is used for changing from one radio to another, such as PMR/LMR mode to P25 or MPT1327 trunking.

From the Channel Screen, select menu mode with the "**Menu**" key and step through the menus with the  $\mathbf{\nabla}$  and  $\mathbf{\Delta}$  keys until the "Mode" menu is reached.



Press "**OK**" to select the Mode menu.



From the "**Mode**" menu, use the  $\checkmark$  and  $\blacktriangle$  keys to select the required operating mode, such as Apco P25, PMR or MPT Trunking. While the required mode is displayed, press OK to select that operating mode. The radio will then display the default screen for that mode.

Keypad shortcuts can be used to change modes from the keypad.

- PMR (\*60#)
- P25 (\*80#)
- MPT Network 1 (\*71#)
- MPT Network 2 (\*72#)