

4700
APCO25 CONVENTIONAL
HANDHELD RADIO

OPERATING MANUAL

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DEVICE SHOULD BE OPENED BY AUTHORIZED PERSONEL. OTHERWISE IT WILL BE OUT OF WARRANTY.



BEFORE GETTING START TO USE THE DEVICE READ USER MANUALS.

4700 APCO25 Conventional Handheld Radio is produced by ASELSAN A.Ş.

Usage period of device is 10 year.

It is packed and labeled according to commercial packaging standards.

ATTENTION!

If device is stored more than 3 months, crypto key may be erased because of the discharge of the chargeable battery of the crypto board and "EMERGENCY ERASE BATTERY DISCHARGED" appears at the display. In this case device must be connected to an accumulator/battery/power supply and wait for at least 30 minutes at position ON. And then crypto loading process must be repeated.

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1 GENERAL INFORMATION

1.1 GENERAL PROPERTIES

ASELSAN 4700 APCO25 Conventional Handheld Radio Front view is given in Figure 1-1.



Figure 1-1: ASELSAN 4700 APCO25 Conventional Handheld Radio Front View

ASELSAN 4700 APCO25 Conventional Handheld Radio is developed according to the following criteria:

- Synthesized structure,
- Microprocessor controlled structure,
- Surface mount technology usage,
- Loading external program by FLASH EPROM,
- PC controlled full automatic test and adjustment,
- Easy maintenance,
- Hardware crypto option board,
- LCD display (with 3 colors) and keypad,
- High level and high quality audio output,
- Giving information to user by audible, lighting and printed warnings,
- User interface for easy use,
- DTMF support,
- Various type of accessories,
- Full-band operating at VHF and UHF bands,
- Compatible with TGM ST-001 standards,
- Compatible with TIA/EIA-603-A standard at Analog Mode,
- Compatible with TIA/EIA-102-CAAB standard at Digital Mode,
- Compatible with APCO25 EIA/ TIA 102 standards,
- Compatible with MIL-STD-810E procedures.

1.2 TECHNICAL PROPERTIES

Table 1-1: ASELSAN 4700 APCO25 Conventional Handheld Radio General Properties

General Technical Properties	
Frequency Band	146-174MHz, 406-470MHz
Operating Frequency Band Width	28MHz (VHF) / 64MHz (UHF)
Channel Spacing (Digital)	12.5kHz
Channel Spacing (Analog)	25kHz
Channel Number	300
RF Output Power	1-5W ± %10
Modulation (Analog)	11F3 (12.5kHz) / 16F3 (25kHz)
Modulation (Digital)	C4FM
RF Rate (Digital)	4.8ks/s
Data Rate (Digital)	7.2kb/s (clear) 9.6kb/s (protected)
Audio Encoder	IMBE (4.4kb/s)
RF Input/Output Impedance	50Ω
Microphone Input Impedance	2kΩ
Operating Way	Simplex or half-duplex
Operating Voltage	7.2V _{DC} (Handheld radio),
Operating Current maximum	<1.7A (Tx), <0.20A (Rx)
Standby Current maximum	<10mA
Operating Temperature Range	-30°C ~ +60°C
Operating Voltage Range	Standard supply voltage ±%20
Storage Temperature Range	-40°C ~ +85°C
Environmental Condition Standard	MIL-STD-810-E
Storage	ETS 300 019 Class 1.2
Shipping	ETS 300 019 Class 2.3
Usage	ETS 300 019 Class 7.3
Humidity (EIA/TIA RS-316C)	95% Relative Humidity at 50°C
Dimensions maximum (Y/G/D)	147/ 58.5/ 39mm ±%2 (with Li Ion 900mAh battery block, without antenna)
Weight maximum	0.4kg (with Li Ion 1800mAh battery block)
Battery Life (with 1000mAh battery and 5W output power)	minimum 8 hours

Table 1-2: ASELSAN 4700 APCO25 Conventional Handheld Radio Receiver Properties

Receiver Technical Properties	
Broadcasted Unwanted Broadcast	$\leq 100 \mu\text{V/m @ } f \geq 30\text{MHz}$
Reference Sensitivity	$\leq -119\text{dBm}$
Unwanted Receiving Suppression	$\geq 75\text{dB}$
Inter-modulation Suppression	$\geq 70\text{dB}$
Signal Shift Band Width	$\geq 1000\text{Hz}$
Audio Frequency Output Distortion	$< 5\% @ 500\text{mW} / 8\Omega$

Table 1-3: ASELSAN 4700 APCO25 Conventional Handheld Radio Transmitter Properties

Transmitter Technical Properties	
Operating Frequency certainty	$\leq 0.5\text{ppm}$
Broadcasted Unwanted Broadcast	$\geq 75\text{dB}$
Transmitted Unwanted Broadcast	$\geq 75\text{dB}$
C4FM Transmission Current	$< 850\text{mA @ } 1\text{W}$ $< 1150\text{mA @ } 2\text{W}$ $< 1500\text{mA @ } 4\text{W}$ $< 1700\text{mA @ } 5\text{W}$

1.3 PACKAGE CONTENT

ASELSAN 4700 APCO25 Conventional Handheld Radio is delivered in three different packages:

1. "ASELSAN 4700 Series Handheld Radio" Package
2. "4451 Desktop Charger" Package
3. "Desktop Charger Adapter" Package

1.3.1 "ASELSAN 4700 Series Handheld Radio" Box

This box contains handheld radio and basic components. Content of the box is listed at Table 1-4 and shown at Figure 1-4.

Table 1-4: "ASELSAN 4700 Series Handheld Radio" Package Contents

Item	Qty (EA)
ASELSAN 4700 APCO25 Conventional Handheld Radio	1
Handheld Radio Battery Block	1
Handheld Radio Clips	1
Handheld Radio Antenna	1
Handheld Radio User Manual	1

When the package has opened first appearance of the package is as given in Figure 1-2. Battery block is at the left size, handheld radio is at the right side. If these pieces are removed from their places clips is take place under battery block and antenna take place under the handheld radio as shown in Figure 1-3.

Items are covered with ergonomic plastic packaging materials.

Except the items given in Table 1-4 "4700 APCO25 Conventional Handheld Radio Operating Manual" (the one you are reading at the moment) can also take place in this package according to the contract. One Operating Manual is given for each radio.



Figure 1-2: Handheld Radio Packing First Appearance



Figure 1-3: Handheld Radio Packing Second Appearance



Figure 1-4: Handheld Radio Package Content

1.3.2 “4451 Desktop Charger” Package

4451 Desktop charger consist of two pieces; the charger and the adapter. Charger itself is take place in this package. Package content and appearance of the device is given in Figure 1-5.



Figure 1-5: “4451 Desktop Charger” Appearance with package and without package

1.3.3 “Desktop Charger Adapter” Package

Desktop charger adapter is replaced to its package inside protective foam. Appearance of the package is given in Figure 1-6.

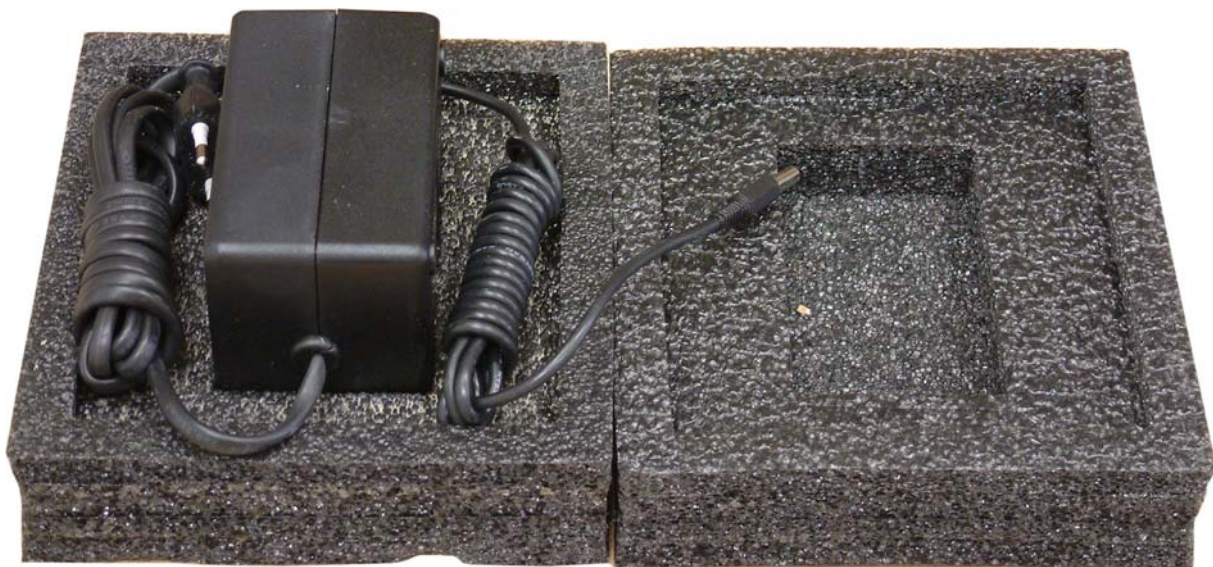


Figure 1-6: Desktop Charger Adapter Appearance with package

The appearance of the charger adapter without package is given in Figure 1-7.



Figure 1-7: Desktop Charger Adapter Appearance without package

2 PHYSICAL PROPERTIES AND USAGE

2.1 FRONT PANEL



Figure 2-1: ASELSAN 4700 APCO25 Conventional Handheld Radio Front View

Loudspeaker, microphone, LCD display and alphanumeric keypad take place at the front panel of 4700 APCO25 Conventional Handheld Radio.

2.1.1 LCD Display

Layout of the display is adjusted as; Icons at the top of the display, 3 rows between top and button and software buttons at the button. Software buttons cannot be seen at the display except strolling between menus, site name or received/started call type is appeared instead. Menu index option cannot be seen at the display until pressing a key. LCD Display appearance is given in Figure 2-2.

Icons do not appear at the display during strolling between menus. First row of the 5 rows indicates the software button, one row indicates the next menu, one row indicates the previous menu and two rows indicate the existing menu.

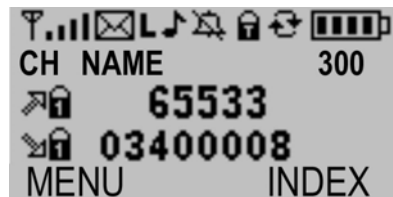


Figure 2-2: LCD Display Appearance

2.1.1.1 Icons and Functions

Meanings of the icons at the radio's display are given below:

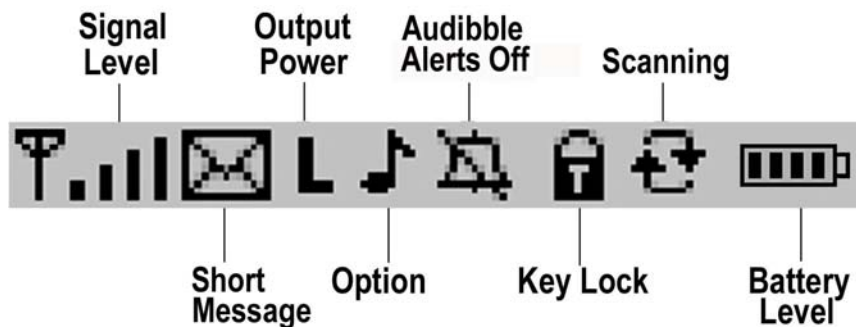



Figure 2-3: Icons at Radio Display

2.1.1.1.1 Signal Level Icon

Received signal is shown as 4 levels. Antenna symbol is always seen at the display as long as the radio has got the service. As the receiving signal gets stronger, bars at the display appears in order from short to long. Read value for RSSI is given under INFO Menu.

2.1.1.1.2 Short Message (SMS) Icon

When a short message has received  icon illuminates at the display. It goes on lighting unless all the messages are opened.

2.1.1.1.3 Output Power Icon

L appears at Low Power, M appears at Middle Power and H icon appears at High Power.

2.1.1.1.4 Option Icon

When the recognize option is in use 🎵 icon appears at the display.

Analog Mode: Icon appears if tone code squelch and selective call functions are in use.

Digital Mode: If one of channel monitor properties is programmed to radio icon does not light, if it is not programmed icon lights at the display.

2.1.1.1.5 Audible Alerts off Icon

If 🚫 icon appears at the display it means that Audible Alerts are off.

2.1.1.1.6 Keys Locked Icon

🔒 icon indicates that the front panel keys, which are called as keypad, are locked. When the keypad is functional icon does not appear.

2.1.1.1.7 Scanning Icon

When the scanning has been started at direct mode 🔍 icon appears at the display. Icon disappears when the scanning mode is exited. Broadcast received channel name and number appears at the display during scanning. "SCANNING" blinks at the lowest row.








2.1.1.1.8 Battery Level




Remaining battery capacity is shown with 5 leveled icon. When the battery is nearly discharge icon blinks at the display. During charge and discharge if radio is on icon bars are lights in order to indicate charging information. When the battery is fully charged icon appears normal at the display.

2.1.1.2 Other Icons

Icons that appear at the display about received and transmitted signal mode and their meanings are explained in Table 2-1.

Table 2-1: Other Icons

	Appears when a digital "Secret" cryption broadcast is received at digital mode.
	Appears when a digital "Private" cryption broadcast is received at digital mode.
	Appears when a digital clear broadcast is received at digital mode.
	Appears when an analog broadcast is received.
	Appears when a toned broadcast is received at analog mode.
	Appears when the radio makes a toned call at analog mode.
	Appears when the radio makes a digital "Secret" crypted broadcast at digital mode.

	Appears when the radio makes a digital "Private" crypted broadcast at digital mode.
	Appears when the radio makes a digital clear broadcast at digital mode.
	Appears when the radio starts an analog call.

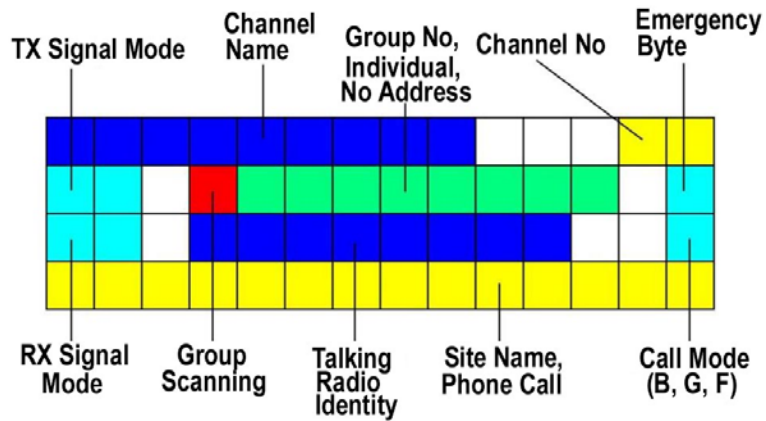


Figure 2-4: Display Layout at Digital Mode

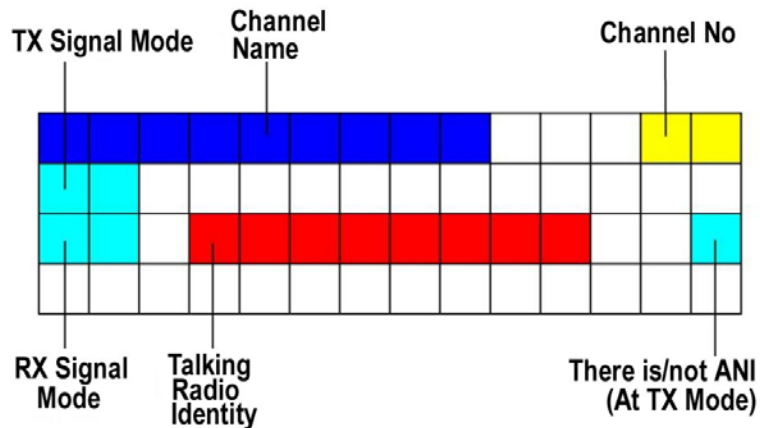


Figure 2-5: Display Layout at Analog Mode

Lowest row of display is used as "show site name" when the radio is at stand by position. "MENU"- "INDEX" options do not appear until a key is pressed from keypad.

2.1.2 Key Pad

Keypad takes place at the front panel. It consists of alphanumeric and functional keys, which can be illuminated and locked. Emergency Call Button is not included in keypad.



Figure 2-6: ASEL SAN 4700 APCO25 Conventional Handheld Radio Keypad

Menu functions of the radio are used for the processes like; passing scanning mode, keypad lock, exiting from emergency call mode, delete etc.

2.1.2.1 Key Lock / Emergency Reset Key

- Press Short: All keys at front panel are locked,
- Press Long: Emergency call reset functions are realized.

If any key is pressed to unlock the keypad a warning message appears at the display.

2.1.2.2 Scanning/Delete Key

While writing message if this key is pressed short it deletes the letter at the left side of the cursor. If it is pressed longer than 500ms all message is erased.

When it is used as Channel Scanning Key, start/stop channel scanning is done.

2.1.2.3 Software Keys

Their functions are changes according to the existing menu and they are written at the screen.

2.1.2.4 Up / Down Keys

In menu up-down, at normal operating increase-decrease and at editor right-left functions are realized by these keys. At APCO25 handheld radios, channel increase decrease process is functional at channel 16 position.

Up Key:

- At stand-by: It increases the channel number,
- In menu: It goes forward in the menu direction that has smaller shortcut number.

Down Key:

- At stand-by: It decreases the channel number,
- In the menu: It goes forward in the menu direction that has bigger shortcut number.

2.1.2.5 Alphanumerical Keys

Alphanumerical keypad is consisting of 0..9 numbers, * and # keys. It operates as alphanumerical in short message and index menu. It operates as numerical at the remaining of menu steps.

2.1.2.5.1 # Key

Digital Mode Functions:

- Status Info Entrance: It is used to enter radio user's present status info. "ACTIVE STATUS" writes at the display and cursor waits for the 2 digit number. When the number is entered related status message appears at the display.

- Starting Individual Call: It is used to start an individual call to another radio user. "INDIVIDUAL:" writes at the screen. Cursor blinks at the lowest row and wait for the number entrance for maximum 8 digit ('- - - - - -') format; it is also possible to reach number directly from INDEX. After entering last digit or selecting from index, "OK" is pressed. Meanwhile radio checks if the other radio is turned on, and then transmits "Start Individual Call" audible warning to the both sides, "individual" writes at the display. Call is started by pressing PTT Button. When the defined timeout period for the Individual Call has finished, "Individual Call Finished" audible warning is heard at both sides.

- Starting Phone Call: "PHONE" writes at the display and Cursor blinks at the lowest row and wait for the maximum 14 digit number entrance. As the digits are entered screen forwards to the left. Cursor may be moved though Right- Left with Up-down keys. Phone call is started by pressing "OK".

Analog Mode Functions:

- Starting Selective Call: "SELECTIVE CALL" writes at the display and waits for the (2-6) digit number entrance. After entering the last digit "OK" is pressed to start call.







2.1.2.5.2 * Key

Digital Mode Functions:

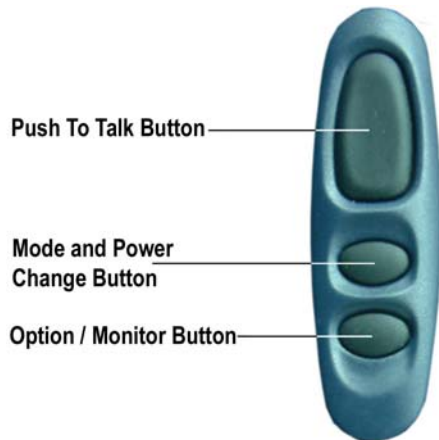
*** - : Change Group:** Cursor waits for the 5 digit number entrance at the screen. If "OK" is pressed after dialing group number radio settled to that group.

**** - : General Call:** If ** is pressed, "OK" and "EXIT" appears at the lowest row of. If "OK" is pressed, user can make general call by pressing PTT Button. If "EXIT" is pressed, radio exits from this mode.

Table 2-2: Alphanumerical Key Definitions at Editor Displays of Menu

Alphanumerical Keys	Pressing Key Number/definition										
	1	2	3	4	5	6	7	8	9	10	11
1		1									
2	A	B	C	2	a	b	c	Ç	ç		
3	D	E	F	3	d	e	f				
4	G	H	I	4	g	h	i	Ğ	ğ	İ	ı
5	J	K	L	5	j	k	l				
6	M	N	O	6	m	n	o	Ö	ö		
7	P	Q	R	S	7	p	q	r	s	Ş	ş
8	T	U	V	8	t	u	v	Ü	ü		
9	W	X	Y	Z	9	w	x	y	z		
0	0	+	.	,	:	;	!	"	'		
*	*	/	\	-	()	@				
#	#	?	€	\$	%	&	<	=	>		
	Its function written at the display (Menu/Select)										
	Its function written at the display (Index/Exit)										
	Up/left (Increase) Key										
	Down/right (Decrease) Key										
	Scanning / Delete Key										
	Key Lock Key										

2.2 SIDE PANEL



4700 APCO25 Conventional Handheld Radio side panel consists of:

- PTT Button,
- Mode and Power Change Button,
- Option/Monitor Button.

2.2.1 PTT Button

When PTT Button is pressed if the channel is not busy, radio passes transmission from the existing channel. Transmission interrupted if PTT Button is released.

2.2.2 Mode and Power Change Button

To change output power this button must be pressed long (more than 500msec). To make short digital clear/digital crypted mode change this button must be pressed short. RF Power adjustment can make as "High-Middle-Low-High-Middle-Low (H-M-L-H-M-L)".

2.2.3 Option / Monitor Button

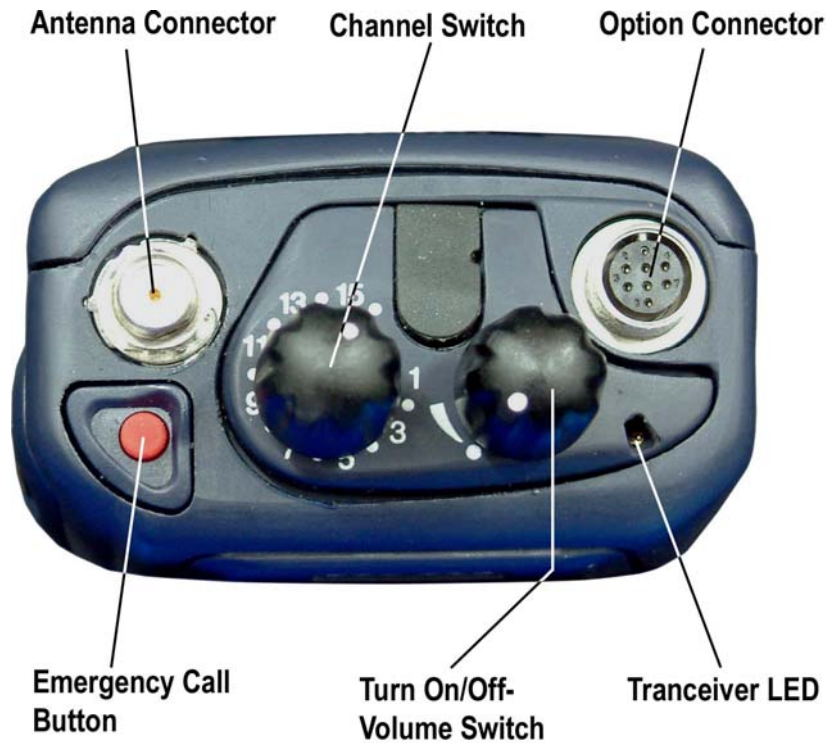
At analog mode:

- When it is pressed short 'Option (Selective call Stand-by) in use',
- When it is pressed long (more than 500msec) 'squelch on' process achieved.

At digital mode:

- When it is pressed short 'Option (Individual call Stand-by) in use',
- When it is pressed long (more than 500msec) "monitor (authorized radio)' process achieved.

2.3 TOP PANEL



4700 APCO25 Conventional Handheld Radio top panel consists of:

- Emergency Call Button,
- Antenna Connector,
- Channel Switch,
- Turn On/Off-Volume Switch,
- Option Connector,
- Transceiver LED.

2.3.1 Emergency Call Button

At authorized radios if this button is pressed longer than 3 seconds emergency call has started. When the radio starts emergency call transmission LED lights once for a short time. If emergency call and channel scanning button is pressed together "EMERGENCY DELETE" process is achieved.

2.3.2 Antenna Connector

Radio's antenna is attached to that connector. Be sure that antenna attached to the connector exactly before getting started to use the radio.

2.3.3 Channel Switch

First 15 channels can be selected by channel switch, to select channels bigger than 15 "Channel Switch" is taken to 16th position. At this position required channel number can be entered by keypad, or by up-down keys user can go to the required channel.

2.3.4 Turn On/Off- Volume Switch

Radio is turned on and off by this switch. And volume level is adjusted with this switch when the radio is turned on.

2.3.5 Option Connector

Radio's accessories attached and programmed by this connector.

2.3.6 Transceiver LED

LED illuminates blue during receiving, illuminates red at transmission.

2.4 ALERT TONES AND CALL ALERTS

Some alert tones are used to warn user in various kind of situations. Device alert tones and call alerts can be terminated from menu when it is required. Alert tones and call alerts list are given in Table 2-3.

Table 2-3: Alert Tones and Call Alerts

ALERT TONES	CALL ALERTS
Radio turned on,	Digital clear call at crypted radio,
Key pressed,	Call at analog channel,
Wrong entrance,	Busy channel,
Low voltage,	PTT Button is pressed,
Radio turned off,	System-fallback switching,
Failure (device).	Registered,
	Loosing service,
	Unauthorized,
	Individual Call Started,
	Individual Call Ended.

2.5 LIGHTING ALERTS

Some lighting alerts are used to warn user. They can be terminated when it is required. Lighting alerts list is given below:

- Key pressed (LCD display illuminates)
- Transmission (LED illuminates)
- Receiving (LED and LCD display illuminates)
- Busy channel (LED illuminates)
- Programming (LED illuminates).

2.6 WRITTEN ALERTS

Radio user is sometimes warned by a message appear at the display. List of these messages are given in Table 2-4.

Table 2-4: Written Warnings

ALERT	EXPLANATION
FAILURE X	Indicates that Failure Number X has occurred.
Transmission Time Out	Some channels have transmission time out period. This warning indicates that this period has finished.
Individual Call Time Out	Appears if both sides don't talk more than 4 seconds in an individual call.
Call Warning	Appears when waiting for feedback from system after transmitting call warning message.
Call Rejected	Appears when the other side rejects your call.
Status Request	Appears when waiting for response from system after transmitting status request message.
Status Request Received	Appears when status information is requested from system.
No Transmission Frequency	Appears when radio is taken to transmission mode while a transmission frequency is not programmed at the channel.
Battery Discharge! Power Off	Appears when the battery voltage is not capable to make transmission.
Battery Discharge' Low Power Select Power	Appears to warn user to take output to low power to go on communicating when the battery is not capable to make transmission at high power.
Settled to Factory Settings	Appears when user adjusts settings to factory settings.
Radio Disabled	Appears when the radio is disabled.
Key Erased Radio	Appears when the radio keys are erased.
Miss Call	Appears when the user does not answer a received call.
Short Message 16699999 sent	Indicates that the short message has been transmitted to the related identity.
Short Message 16699999 couldn't send	Indicates that the short message has not been transmitted to the related identity.
Ready Message 16699999 sent	Indicates that the ready message has been transmitted to the related identity.
Ready Message 16699999 couldn't send	Indicates that the ready message hasn't been transmitted to the related identity.
Status 16699999 sent	Indicates that the status message has been transmitted to the related identity.
Status 16699999 couldn't send	Indicates that the status message hasn't been transmitted to the related identity.
Call Warning 16699999 sent	Indicates that the call warning message has been transmitted to the related identity.
Call Warning 16699999 couldn't send	Indicates that the call warning message hasn't been transmitted to the related identity.
Status Request 16699999 sent	Indicates that the status request message has been transmitted to the related identity.
Status Request 16699999 couldn't send	Indicates that the status request message hasn't been transmitted to the related identity.
Radio is unauthorized for this call	Appears when the radio try to make an unauthorized call
Start Announcement Call	Appears before starting announcement call.
Called Identity couldn't find	Appears if called identification numbered radio is undefined, turned off or out of coverage area.
Attach CIK	Appears if CIK is not attached or cannot be perceived by the device.
Wrong PIN	Appears when the dialed PIN code is wrong.
Unprogrammed Group	Appears if user wants to dial a group number that is does not included.
Group Monitor On	Appears when digital group monitor is turned on.

ALERT	EXPLANATION
Group Monitor Off	Appears when digital group monitor is turned off.
Channel Monitor On	Appears when analog channel monitor is turned on.
Channel Monitor Off	Appears when analog channel monitor is turned off.
Keys are locked	When the keys are locked appears at the display for information. It also appears when a key is pressed except "Key Lock" button while the keys are locked.
Keys are unlocked	Appears when the keys are unlocked.
Key has received	Appears when a key is received from system through air.
Registering	During registering this message appears until a feedback is taken from system after sending message to the system.
Searching	At individual calls during call-setup this message appears until a feedback is taken from system about the other side status.
Ringing	Appears when the other side is ringing.
No answer	Message appears at individual calls if the other side does not answer even though its radio is turned on.
Called number busy	Message appears at individual calls if the called radio is busy.
Channel Busy	Appears when the radio is taken to transmission mode while the radio has busy channel lock.
Sending Position (GPS)	Appears for a short period during data transmission at GPS channel. It is preferred not to show the message while the user is in the menu while the message is being shown.
Battery nearly discharged! Charge the battery	IF the battery voltage level is under the first bar this message appears once per minute.
Battery Discharged! Radio turning off	Appears when the battery is discharged and not replaced to the charger yet. If battery is replaced to charger but charging has not been started yet "Please Wait" appears at the display.
Please Turn Off! Deep Discharge	If the radio is placed to charger for deep discharge radio must be turned off.
Please wait	If radio is not turned off during deep discharge device resets and turned on. After than when the charging is started again is supply is capable to operate micro but not capable to operate radio this message appears. After a while battery voltage increases and radio turns back normal operating mode.
Battery must be discharged with SC4451	Appears when the battery's deep discharge period has arrived.
No connection to repeater	At the channels whose receiver and transmitter frequencies are not equal; after making transmission if no channel active is perceived in 100ms at receiving mode this message appears.
Enter Scanning List	Appears when the radio starts scanning when the scanning list is empty.
Language: English	If menu is exited after selecting the language, selected language is shown for a while.
Full Index	Appears when a new record wanted to be added to the full index.

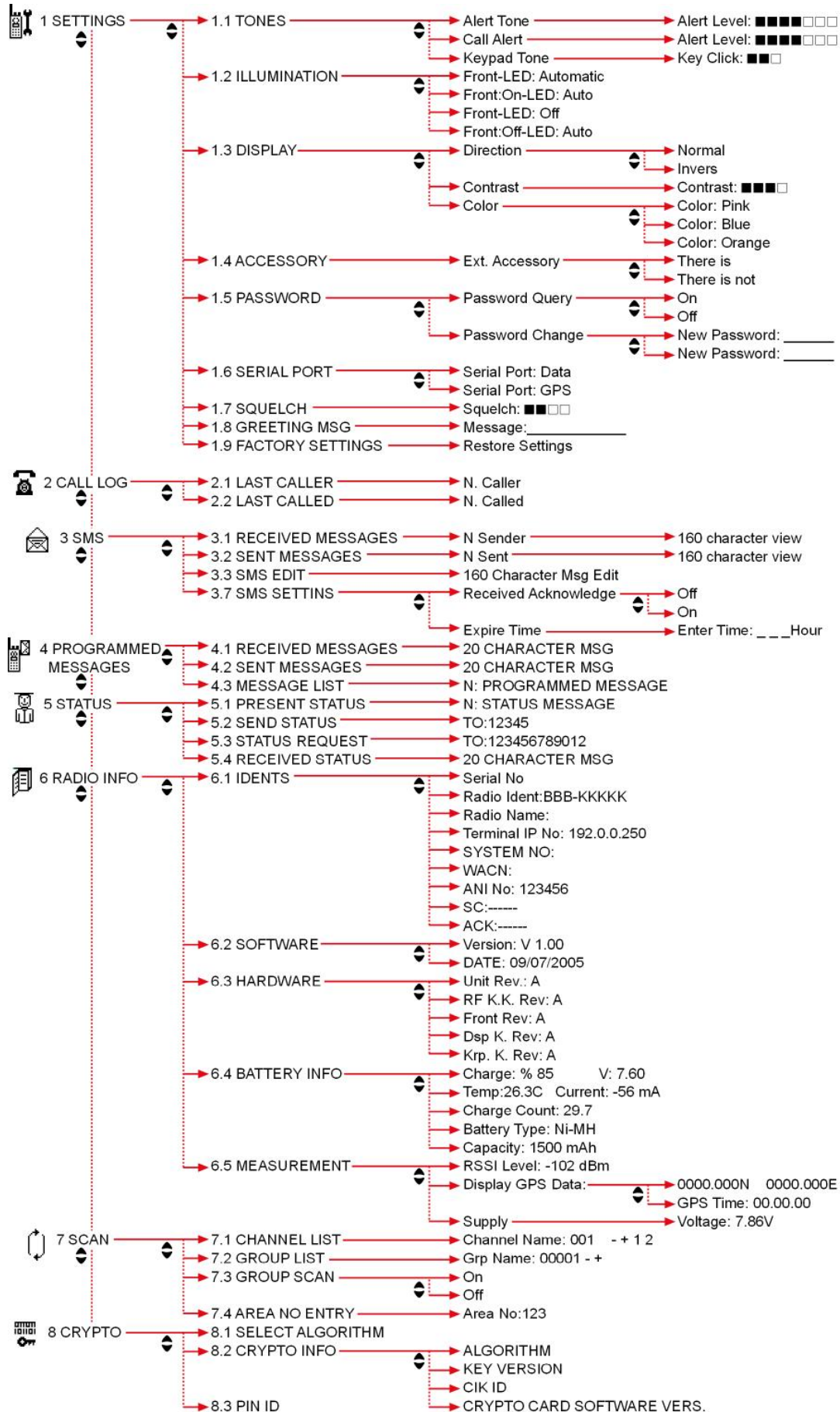
2.7 MENU SCREENS

Menu headings, which can be selected by menu buttons, are given below:

CRYPTO Menu only takes place at the radios that have crypto.

If radio has CRYPTO Menu, SETTING/Password (1.5) sub menu does not appear.

This menu appears at the radios that do not have crypto.



3 MENU USAGE

All kind of process can be done easily by following the display in the menu. All menu and sub-menu items have shortcuts. They can be authorized at 1st and 2nd level by administrator. Administrator can close menus at some radios. These menus can be selected up to the second digit.

3.1 SETTINGS MENU

Shortcut: 1

Radio user's settings are achieved by this menu.


Tones:

All tone levels of the radio can be adjusted according to user's desire by this menu.

Alert Tone: These alerts are produced by the radio to warn and inform user. It can be adjusted as 7 leveled.

Call Alert: These alerts are heard when the radio has received a call or starts a call. It can be adjusted as 7 leveled.

Keypad Tone: When the keys are pressed, "Keypad Tone" alert is heard. It can be adjusted as 3 leveled.

If these alerts are taken to lowest level no alert tone has heard. If "Alert Tone" and "Call Alert" warnings are disabled  icon appears at the display.

Illumination:

Illuminated Alerts of the radio contain Display, keypad and LED illumination. Lights can be adjusted according to the user's desire

Front - LED: Automatic: If this option is selected front panel only lights during communication and when the keys are clicked. LED illuminates only during transmitting and receiving.

Front: On - LED: Auto: If this option is selected front panel illuminates continuously. LED illuminates only during transmitting and receiving.

Front - LED: Off: If this option is selected all LED and front panel illuminations turned off.

Front: Off: If this option is selected only LED illuminates.

Front: Off – LED: Auto: If this option is selected front panel (display and keypad) light continuously.

Display:

Display direction, contrast and color adjustments are achieved by this menu.

Direction: User can select the direction of the display as "normal" and "inverse". "Inverse" alternative will be useful while carrying the radio at the waist.

Contrast: Display contrast can be adjusted by up , down  keys as 4 leveled.

Color: Front panel lighting color can be adjusted as blue, orange or pink.

Accessory:

External Accessory: This menu option is selected when an external accessory is attached to the radio, which cannot be found by the radio automatically. Thus radio turns its loudspeaker off.

Password:

This menu is taken place at the radios, which do not have crypto. If password query is turned on from Password/Password Query sub menu, radio asks password to the user at the first opening. Existing password can be changed from Password/Password Change.

Serial Port:

Option connector can be connected to different terminals with different rates and serves different services. For each process connector is taken to appropriate values by this menu.

Data: This menu option is selected for programming of the radio with programming (AP25TP47) or adjustment (A4700) software or making data communication through radio. If "data" is not selected software cannot connect with the radio.

GPS: This menu option is selected if GPS receiver is connected to the handheld radio.

Squelch:

Radio's receiver can be deafened to prevent random turning on of the squelch at the electromagnetically polluted environment at analog mode. This process can be done from squelch sub menu as 4 levels.

Greeting Message:

10 characters greeting message is entered by this menu. When the radio is turned on, logo and then greeting message appears.



Figure 3-1: ASELSAN Logo

Factory Settings:

To turn back to the factory settings with the help of this option, new values are appointed to the following parts:

Keypad Tone = 4

Alert Tone, call alert = 4

Illumination = Front – LED: Auto

LCD Contrast = 2

Serial Port = Data

Squelch = 0

Greeting Message = ASELSAN

Channel list = All conventional channels are included by scanning list, no priority channel

Group scan = On

3.2 CALL LOG MENU

Shortcut: 2

Last Caller Idents:

Received last 10 individual calls or call alert can be seen from this menu.

Last Called Idents:



Transmitted last 10 individual calls or call alert can be seen from this menu.

3.3 SMS MENU

Shortcut: 3

4700 radios can send 160 characters long messages to each other in digital system mode.

Received Message:

Received last 20 messages can be seen from this menu.  icon appears if there is any unread message.  icon disappears when all the messages are read.

When the received message menu is full icon light different and warn user to free some space (deleting some messages) in the list. New messages cannot be received until some messages deleted.

Send Messages:

Sent last 10 messages can be seen from this menu.

SMS Edit:

Message is written at this menu by using alphanumerical keys. Written message can be sent to an identity or center by dialing from keypad or selecting from index.

When the message has been sent user is informed by • symbol at the "Send To" list.

SMS Settings:

Received Acknowledge: If user wants to get the "radio to which the message has been transmitted get the message" info, it can be adjusted by this menu option.

Expire Time: "How long will the system keep the message to transmit it to the other user" period is determined by this menu.

3.4 PROGRAMMED MESSAGE MENU

Shortcut: 4

4700 APCO25 Conventional Handheld Radios can send and receive predefined programmed messages at digital system mode. Message length is maximum 20 characters.

Received Message:

Received last 10 programmed messages are seen under this menu. When the list is full the oldest message is deleted to get new message.

Sent Message:

Sent last 10 programmed messages are seen under this menu. When the transmitted status message is received by the other radio, user is informed by • symbol.

Message List:

25 pre-defined status messages list is hold under this menu. In order to send status message required message is selected and the radio ident to which the message will be sent is dialed or selected from index.

3.5 STATUS MENU

Shortcut: 5

Present Status:

User selects this sub menu for itself among the status messages, which are pre-programmed to the radio. User can select the appropriate message among the 15 status messages. Selected status info is transmitted as active status when the radio is interrogated by center or other radios.

Present status info is erased when the radio turned off.

Send Status:

Selected active status info is transmitted to other radio or center by this menu option. In order to send active status info radio's identity to which the info will be sent is dialed or selected from index.

Status Request:

Another radio's active status info is requested by this menu option. To get active status info radio's identity from which the info will be requested is dialed or selected from the list. 4700 radios can use entered status info during programming.

Received status info is shown at the display for 3 seconds and then transmitted to "Received Status" sub-menu.

Received Status:

10 status message requested by the radio can be displayed under this menu.

3.6 RADIO INFO MENU

Shortcut: 6

Idents:

- Serial number,
- Radio Ident,
- Radio Name
- Terminal IP number; in case of connecting terminal to the radio for data communication,
- System No

- WACK
- Analog ANI identity number

is seen under this sub menu.

Software:

Radio software version and date info is given under this menu.

Hardware:

Radio device, board base version info is given under this menu.

Battery Info:

Charge percentage, voltage level, temperature of the battery, drawn current info, charging number, type, capacity and identity info is given under this menu.

Measurement:

RSSI Level: Broadcast signal level at the channel is seen as dBm.

Display GPS Data: If GPS is connected to the radio; position info read from GPS receiver is shown as latitude, longitude and GPS clock info is shown as hour:minute:second.

Supply:

Power supply value is given at this menu.

3.7 SCAN MENU

Shortcut: 7

Channel List:

It occurs from simplex and unique repeater channels with 25kHz channel spacing at analog mode, 12,5kHz channel spacing at digital crypted mode.

Channel list determines the priority of the calls received by the radio in channel scan mode. Analog channel scan can create 1 first priority channel and 1 second priority channel. During scanning if a call is received from second priority channel, radio leaves the ordinary channel and goes to the second priority channel and meanwhile it goes on checking if there is a call from first priority channel.

If it received a call from first priority channel, it leaves the second priority channel and goes to first priority channel. And it does not interest in other channels until the call at this channel is finish. When radio receives a broadcast that it can not allow user to listen it (different tone at analog channel, different group no at digital channel) it goes on scanning process. Channel scanning becomes unfunctional when a digital or crypted call has been started to listen at channel.

(-), (+), (1), (2) signs take place near the channel number at the list.

- (-) sign means that, channel does not included by the scanning list,
- (+) sign means that, channel included by the scanning list,
- $\overline{1}$ sign means that, this channel is first priority channel during scanning,
- $\overline{2}$ sign means that, this channel is second priority channel during scanning.

Group List:

Groups, which are programmed to the radio, take place in this list.

Group Scan:

Group scanning process at radio is selected by the user. If group scan is selected as "On", calls received from the groups in the list are listened; if it is selected as "Off", only the broadcast at the existing group is listened. Calls being started from other groups cannot be listened.

Area No Entry:



Channel settling and channel based settings of the radio is selected according to the order determined by the administrator. If this menu usage authority has given to the radio, when the city traffic number is entered, channels give service in the same number and settling with the other radios in the city.

3.8 CRYPTO MENU

Shortcut: 8

This menu only takes place at the radios that have crypto.

Select Algorithm:

Selected algorithm can be seen under this menu. One of algorithm "secret" and "private" leveled algorithm is selected among the existing algorithms by up , down  keys and "OK" software key.

Crypto Info:

Algorithm: Selected algorithm can be seen under this menu.

Key Version: Key sets version info can be seen under this menu.

CIK ID: Attached CIK unit number can be seen under this menu.

Crypto Card Software Version: Attached crypto board's software version info can be seen under this menu.

PIN ID:

PIN ID that is asked at the opening of the radio can be changed under this menu. To change PIN ID, attached CIK unit PIN2 no is entered at first and then new PIN info is entered twice. After completing this process new PIN will be functional at the next opening of the radio.

4 OPERATING INFORMATION

4700 APCO25 Conventional Handheld Radios have two modes as analog and digital (clear and crypted); and have two operating modes as system (unique repeater, District Cover and Wide Area Cover) and direct mode (unique repeater and simplex). If system is in fallback mode, it is perceived as direct mode operating.

4.1 RADIOS' MODES

4.1.1 Analog Mode

Analog mode is used to communicate with the radios operating in simplex mode or to communicate with radios through a repeater, which is operating at analog mode in the area.

Functions like; communication with analog radios, receive/transmit selective call, tone code squelch, ANI, channel scan (2 level priorities) are achieved at analog mode. User is warned by audible and visual alerts.

4.1.2 Digital Mode

4.1.2.1 Digital Clear Mode

This mode is to communicate in simplex, direct mode or to communicate with the other radios at the area through RFSS by disabling crypto board. Digital clear mode – Digital crypted mode passage is achieved by pressing short to the upper button at the side panel. Even if the radio does not have crypto module, it can operate in digital clear mode. While the radio is at Digital clear mode, if its keys are installed, it let user to listen to the received crypted call.

Functions like group audio call, general audio call, individual audio call, receive/transmit short message (SMS), receive/transmit programmed message, sending active status, request/send status, data communication, emergency call, phone connection, call alert, displaying talking unit identity are achieved when the radio is settled to a digital channel.

4.1.2.2 Digital Crypted Mode

New properties about crypto are added to the digital clear mode functions in this mode.

Digital clear mode – Digital crypted mode passage is achieved by pressing short to the upper button at the side panel. While the radio is at Digital crypted mode, it let user to listen to the received digital clear mode.

Functions like group audio call, general audio call, individual audio call, receive/transmit short message (SMS), data communication, sending active status, request/send status, emergency call, phone connection, call alert, displaying talking unit identity are achieved when the radio is at digital crypted mode.

4.2 RADIO'S OPERATING MODES

Radio menus are arranged according to the authorization at system mode. Unauthorized and unfunctional menus cannot be seen. In case of unauthorized access request (channel, call etc.) radio gives an audible alert to warn user.

4.2.1 System Mode

Radio communicates with the other radios which are registered to the sites that consist of repeaters using a lot of different frequencies or just a unique repeater; all services are given. At the first opening of the radio and passing to the system channels radio is registered to the system. At the end of registration, registered site name appears at the lowest row of the radio's display.

4.2.2 Direct Mode





Radio communicates with the other radios through a unique repeater that uses two frequencies or with the radios that exist at the simplex area. Besides, radio operates as in direct mode communication when the system is in fallback mode.





5 HOW TO USE

- Be sure that antenna and battery block is connected truly before turning on the radio.
- Turn on the radio by turning the On/Off-Volume Switch in the clockwise direction.
- Enter the attached CIK unit's PIN code.
- Adjust the volume to required level by using On/Off-Volume Switch.
- Channel switch is turned to the required channel. Radio is waited to be registered to the channel through system.
- To make transmission PTT Button is pressed and it is hold pressed during transmission. LED at the top of the radio lights red during transmission.
- Output power of the radio can be selected as Low, Medium or High by pressing Mode and Power Change Button.
- When transmission has finished PTT Button is released to pass receiving position. LED at the top of the radio lights blue during receiving.
- Radio is turned off by turning On/Off-Volume Switch in the counter-clockwise direction.

5.1 REMOVING AND ATTACHING OF THE BATTERY BLOCK

WARNINGS

	<p><i>Do not EVER throw batteries to fire.</i></p>
	<p><i>At misusages batteries may release damaging chemical gasses. In this case; DO NOT BREATHE THE SMOKE, LEAVE THAT PLACE AS SOON AS POSSIBLE VENTILATE THE PLACE</i></p>
	<p><i>Misusage of batteries may cause fire and/or explosion.</i></p>
	<p><i>Do not try to open battery block. Battery cells contain electrolyte liquids, which may be damaging for skin and clothes. Do not touch to the crack battery cells with naked hand.</i></p>

	<p><i>Do not short cut + and – poles of battery blocks. Making shortcut between poles with metals like paper pincer, screwdriver may cause permanent damage and it may cause fire because of high current capacities of battery blocks.</i></p>
	<p><i>Battery blocks that are not going to be used anymore must be destroyed under appropriate circumstances for environment health.</i></p>
	<p><i>If explosive gasses exit at the atmosphere do not change battery blocks. Touching of the contacts may cause a spark and it may cause an explosion.</i></p>
	<p><i>Battery blocks must be totally discharged before charging them again.</i></p>

Removing and attaching steps of 4700 APCO25 Conventional Handheld Radio battery block is given below:





2 WHILE HOLDING THE LATCH, SLIDE THE **BATTERY BLOCK** IN THE ARROW DIRECTION



3 FINALLY; PULL THE **BATTERY BLOCK** IN THE ARROW DIRECTION TO REMOVE FROM THE BODY.

5.2 MAINTENANCE

- Radio does not require periodic maintenance.
- Protect your radio from dust, moisture, dense sun light, extreme heat sources and liquid materials.
- Use a soft and moistened cloth to clean. Do not use detergent and chemical solvents.

6 SERVED SERVICES TO THE RADIO USERS

Basic services that are supported by 4700 APCO25 Handheld Radio are summarized in this section.

6.1 EMERGENCY CALL

Radio demands emergency alarm services by this call. If the red button at the top panel of the radio is pressed more than 3 seconds, radio transmits "help" info to the emergency call address (channel), which is determined before. If the call is started at the system channel in the coverage area it is transmitted to the center, if it is started at direct mode caller radio's identity appears at all radios' display and caller radio is warned by an audible alert.

To exit from emergency call mode  button must be pressed more than 2 seconds.

6.2 GROUP CALL

This call is started to a certain group at Digital Crypted Mode. To start group call:

- '*' button is pressed and the required group number '00001-65533' is dialed,
- PTT Button is pressed.

Call can only be listened by the radios, which are included in the group.

6.3 GENERAL CALL

This call is started to all radios at Digital Crypted Mode. To start general call:

- '* *' and 'OK' is dialed,
- PTT Button is pressed.

Call can be listened by all radios in the existing channel.

6.4 INDIVIDUAL CALL

This call is started to only one radio at Digital Crypted Mode. To start individual call:

- '# #' is dialed,
- 8 digit radio identity to which the individual will be started is dialed,
- 'OK' pressed.

After establishing an individual call (audible alert is heard and 'INDIVIDUAL' writes at the display) PTT Button must be pressed with in 4 seconds. If both sides do not make transmission in 4 seconds call is terminated.

If there is individual call at the channel other radios cannot make transmission.

6.5 CALL ALERT

Radio leaves a warning message to another radio to call him back. To start call alert at the authorized radio:

- '#' button is pressed 4 times,
- 8 digit radio identity to which the call alert will be started is dialed,

- 'OK' pressed.


After the call alert has been transmitted, caller radio's identity appears at the receiver radio's display and an audible alert is heard.

6.6 PHONE CALL

Radio demands one-to-one communication at Digital / Crypted Mode by phone call. To start phone call at the authorized radio:

- '###' is dialed,
- Required phone number is dialed,
- 'OK' is pressed.

Phone call is made as uni-directional. If PTT Button is pressed, it makes transmission to phone network and if PTT button is released it listens to the broadcast from phone network.

Phone call is terminated if phone is closed or  button is pressed at radio.

6.7 PRESENT STATUS

Radio user's status info can be selected among the status defined at radio. To select status info:

- '#' is dialed,
- Required status info between "01-15" is entered,
- 'OK' is pressed.

If radio is turned off and turned on again, status info is deleted.

6.8 SEND STATUS

To send active status info to another radio user:

- 'Send Status' sub menu is selected from 'Status' menu,
- Radio ident to which the info will be sent is entered,
- 'OK' is pressed.

6.9 STATUS REQUEST

To request the status info of a radio under the system:

- 'Status Request' sub menu is selected from 'Status' menu,
- Radio ident from which the status info will be requested is entered,
- 'OK' is pressed.

6.10 SHORT MESSAGE (SMS)

Authorized radio can send maximum 160 characters message, which is entered by keypad to another radio or administration center. Received and sent messages can be seen under 'SHORT MESSAGE' menu.



To send short message:

- 'SMS EDIT' sub menu is selected from 'SMS' menu,
- Message (maximum 160 characters) is written by alphanumerical keypad,
- 'OK' is dialed and then the radio ident or center number to which the message will be sent is entered is entered,
- Message is send by pressing 'OK' button.

6.11 PROGRAMMED MESSAGE

Radio can send programmed messages, which are determined during programming, to another radio or administration center. Received and send programmed messages can be seen under 'PROGRAMMED MESSAGES' menu.

To send programmed message:

- 'MESSAGE LIST' sub menu is selected under 'PROGRAMMED MESSAGES',
- Required message is selected by up , down  buttons and 'OK' key,
- Radio ident or center number to which the programmed message will be sent is entered,
- Programmed Message is send by pressing 'OK' button.

6.12 DATA SERVICES

Message, status message transferred and data communication can be achieved by radio.

6.13 ANALOG CALL

At analog mode channel, when PTT Button is pressed radio makes transmission through the channel and it gets the analog broadcast at the channel.

6.14 SELECTIVE CALL

At analog mode channel, radio starts a call to another radio by dialing selective call number. This call's difference from general call is to warn that user to listen carefully. This call is heard by all radios at the channel.

ANI: Radio's identity info.

SC: Radio's selective call number.

ACK: When radio gets a selective call it sends this number the radio to inform that it has got the call.

Against the caller radio ANI number and SC number of the radio that it is calling, called radio responds with its ANI number to inform the caller radio that it has received the call. If selective call is started to a group ACK is not waited. ANI, SC tone sequences are displayed as the talking radios identity. To be abler to make selective call radio must be authorized and at channel parameters, ANI at that channel must be marked.


When SC is received by a radio only the caller radio's ANI info appears at the display.

SC number is given to the radios that have selective call property. SC number is a 2-6 digit number and can be selected by programming. Each radios SC number is given by a method that when the last digits are used together it creates a group. In this case groups are obtained with user number 9, 99, 999, 9999, 99999. SC started to group means that the call is started to every radios whose SC numbers are starting same. During programming, group tone at group identity entrance is determined as "0" or "A":

If group tone is programmed as "0" identity is entered as 22000.

If group tone is programmed as "A" identity is entered as 22GGG. thus caller radio dials group identity as 22***.

To start selective call '#' key is pressed at analog mode and SC number of the other radio is entered at the screen. Call has begun as soon as the all digits are entered.

While dialing the SC number, the number at the left side of the cursor is deleted by pressing  button.

6.15 TONED CALL

At analog mode channel, if channel is being shared by a lot of user, toned call is used to achieve communication of the user groups without listening each other when the channel is not busy. If Tone Code Squelch/Selective Call is disabled by Monitor/Option Button whole communication at the channel can be listened.

By tone Code Squelch, tone is added to channel's receiver and transmitter frequencies.

Radio receiver only turns on when it gets this tone. Channel tone info is entered with the frequency info during programming.

6.16 REGISTERING

Radio must be registered to the system to be able to get service from system channels. After turning on the radio and entering PIN info, radio is registered to the system automatically. Registered site is appeared at the lowest row of the radio's display.

If radio get out of the site coverage area and enter another site's coverage area it registered to the new site automatically. Thus user can get service from new system without changing the channel.

6.17 CALLER IDENT

Radio displays the caller radio's system ident at system or direct mode digital channels; at analog channels it displays the caller radio's ANI number. For analog ANI display, radio ANI display must be programmed to the radio.

6.18 REPEAT CALL

If call short message can not be sent because of a barrier it has repeated for 4 times to establish communication.

6.19 CHANNEL MODE ACCESS

Radio user can follow the call that is has transmitted/received is digital/cripted from display.

6.20 CHANNEL SCAN

When the radio user is at direct mode channel, it can take the other direct mode channels to its scanning list and watch if there is a call at any of them. It checks the direct mode channels that take place in the "channel scanning list" and if there is any broadcast in one channel, let user to listen to that channel. When any call is received it can respond from that channel with in scanning delay period (0-10sec). At the end of the time turns back to its channel and goes on scanning.

Channel scan list can be occurred for all 300 channels or a certain part. At analog usages, if there is broadcast in more than one channel 2 leveled priority can be given according to its own priority order. Priority scanning is not valid during digital channels scanning.

While communicating at analog mode, if a call has received from priority channels, radio passes to the priority channel. 1st and 2nd priority channel can be defined. If channel list becomes longer it will take time to turn back to the first channel to check.

Channel scan process is started and ended by pressing scanning button that take place at the front panel. During this process software keys and keypad (except Scan/Delete key) become unfunctional.

6.21 GROUP SCANNING

Radio user can listen to the digital/cripted calls received from all groups that it is included or just the group that it exists at the moment according to the group scanning mode. While the group scanning is in use at the 2nd row of display "*" sign appears near the Group Number.

6.22 SHORT CUT

All software, hardware, usage info about radio takes place at the menus. All menus are supported by numerical short cuts. User can reach the required sub menu by entering its short cut number.

6.23 AUDIBLE ALERTS

Radio gives various audible alerts to inform user. Tones and time periods of each alert changes.

6.24 LIGHTING ALERTS

Radio gives various lighting alerts to inform user. Red LED lights during transmission, blues LED lights during receiving. According to the usage requires top panel and front panel lighting can be adjusted separately for power save.

6.25 TRANSMISSION TIME OUT

To prevent one radio keep busy the channel its transmission time period can be limited. This period is determined during programming up to 255 seconds. And another time period can be determined for same radio that it has to wait before passing transmission again. Thus same radio does not keep busy the channel again for a while. This waiting period can be adjusted during programming between 0-15seconds. Transmission time out is notified by an audible alert and transmission is terminated. And radio does not pass transmission even if its PTT button is pressed, if waiting time period before making transmission again had been defined.

6.26 BUSY CHANNEL LOCK

Busy Channel Lock is used to prevent radio passing transmission if there is a broadcast in the channel. Radio that has busy channel lock cannot pass transmission as long as there is a broadcast at the channel.

6.27 DTMF

At analog mode if radio's alphanumeric keys are pressed during transmission, radio can produce DTMF tones. But "DTMF transmission authority" must have been given to the radio during programming. Radio can not make DTMF receive process.

6.28 SELECTING CHANNEL

Radios that have keypad select 300 channels by keypad. First 15 channels can be selected by Channel Switch. For bigger channels, Channel Switch is taken to position 16 and required channel is dialed from keypad. Radio settled to the selected channel after entering channel number and pressing "OK".

6.29 KEYLOCK

To prevent involuntary pressing the keys, keypad becomes unfunctional by key lock. This is achieved by pressing key lock button at the radio. If the same button and "UNLOCK" key is pressed keypad becomes functional again.

6.30 SIGNAL LEVEL

Received signal level is shown by bars. Besides, its value can be read as dBm from Radio Info / Measurement sub menu. User can adjust the output power according to the received signal level for power save or it can learn if it is outside of the coverage area.

6.31 BATTERY CHARGE LEVEL

BB4463 smart battery blocks are used at 4700 APCO25 Conventional Handheld Radios. Charge level of the battery can be seen at the display. And remaining charging level is shown as percentage and Volt at the related menu.

7 SIDE UNITS



Description	ASELSAN P/N
ET VHF APCO25 Conventional Crypted Dark Blue	5820-4711-4101

Side units of the handheld radio defined above are defined below.

7.1 ANTENNAS

Description	ASELSAN P/N
Helical Antenna 146-174MHz	5986-0597-0154
130±2mm VHF Strong Antenna 146-155MHz	5986-0597-0150
120±2mm VHF Strong Antenna 146-155MHz	5986-0597-0160
115±2mm VHF Strong Antenna 146-155MHz	5986-0597-0169
153±2mm UHF Whip Antenna 406-470MHz	5986-1597-0438

7.2 BATTERY BLOCKS

		Description	Capacity	Type No	ASELSAN P/N
 Li-Ion Battery Block	 Ni-Mh Battery Block	Ni-Cd	1000mAh	BB4463N	5820-4463-0001
		Ni-Cd with clips	1000mAh	BB4463NK	5820-4463-0002
		Ni-Cd with clips Economical(*)	1000mAh	BB4463NKE	5820-4463-0003
		Ni-MH High Capacity	1900mAh	BB4463MH	5820-4463-1003
		Ni-MH High Capacity with clips	1900mAh	BB4463MHK	5820-4463-1004
		Li-Ion	900mAh	BB4463L	5820-4463-2001
		Li-Ion with clips	900mAh	BB4463LK	5820-4463-2002
		Li-Ion High Capacity	1800mAh	BB4463LH	5820-4463-3001
		Li-Ion High Capacity with clips	1800mAh	BB4463LHK	5820-4463-3002

(*) If this battery is used, radio does not give any information or alert like remaining capacity etc.

Ni-Cd, Ni-MH and Li-Ion batteries are optional. Battery blocks must be fully charged before first usage. Especially at Ni-MH and Ni-Cd battery block usages, batteries must be recharged after they are fully discharged. Ni-MH and Ni-Cd battery blocks reach their full capacity after a few charge-discharge processes.

When discharge period has arrived, user warned by an alert at the display. Batteries must be discharged by SC4441 desktop charger.




7.3 BATTERY BLOCK CLIPSES

Description	ASELSAN P/N
Battery Block Clips Standard "S"	6030-0534-4006
Battery Block Clips "L"	6030-0534-4008
Battery Block Clips "XL"	6030-0534-4007

7.4 CHARGER



ASELSAN approved battery blocks that can be used with the SC4451 Charger are given in 'Battery Blocks' section. And the ASELSAN approved power adapters that can be used with the SC4451 Charger are given in the table below:

	Type No	Description	ASELSAN P/N
	SC4451	Desktop Charger Unit	5820-4451-0001
	AC4451	Vehicle Charger Unit	5820-4451-1001
	-	Charger Adapter	6625-3000-0015

Ni-Cd, Ni-MH and Li-Ion battery blocks, which have different capacities can be charged while they are attached to the radio or removed from radio. Charger operates according to the fast-charging technique. After the battery has been charged, it passes to the buffer charging. While a smart battery is attached to the charger, it gives information about the situation (charge has began, charging is going on, charging has finished, discharging has started, discharging is going on, short circuit, maintenance required, error etc.) by the lighting alerts. Charging or discharging process can be selected. Attached battery block can be charged after it is fully discharged.

Charging current is limited by electronic circuits for protection.

Desktop Charger Unit LED alerts are given in Table 7-1.

Table 7-1: Desktop Charger LED Warnings

LED COLOR	EXPLANATION
Red (Continuously)	Battery block is at fast charge *
Red Continuously, sometimes green	Charging process is about to finish (>%90)
Green (Continuously)	Charging has finished (Ni-Cd , Ni-MH ->Buffer Charge) (Battery is full>%95)
Orange (Continuously)	Battery block and charger connection error **
Red (Blinks)	Battery block temperature is not suitable for fast charging. When the battery temperature comes to the suitable value range *** device passes to fast charging automatically.
Red Continuously, sometimes orange	This alert goes on for about 3 minutes. Battery must be discharged for maintenance (Ni-Cd and Ni-MH batteries only).
Red-Green (in order)	This alert goes on for 2-10 seconds after the battery is being attached and removed from charger. At this case if battery is replaced to the charger, discharging has begun (Ni-Cd and Ni-MH batteries only).****
Green (Blinks)	Discharging (process is being started by the user). Except Li-Ion batteries.
Orange (Blinks)	Battery is failed. Battery couldn't reach to the required voltage value or there is short circuit between cells. There may also be a disconnection at the positive end of the battery.*****

* : Because of block-temperature-control fast charge is applied to Ni-Cd or Ni-MH battery block after 3 minutes the replacing the battery to the charger is the conditions are appropriate.

** : A permanent failure had been occurred at the battery block circuits, unapproved or unprogrammed battery.

*** : Starting fast charge temperature range can change according to the battery type.

**** : If battery is replaced to charger at first and then removed from charger with in 2-10 seconds to start discharge process, LED begins to blink red-green. To start discharging battery is replaced to the charger again.

***** : This situation occurs at the battery which hadn't been used for long time and thus couldn't reach to the normal voltage level or at the short circuit occurred battery blocks after 20 minutes. It also occurs at the battery whose positive end connection has broken, as soon as the battery is placed to the charger.

7.5 CIK UNIT

CIK Unit must be replaced to the socket (Figure 7-2) at the rear face of front panel between front panel and body before getting start to use handheld radio. Otherwise radio will be unfunctional.



Figure 7-1: CIK Unit



Figure 7-2: Handheld Radio CIK Socket

7.6 ACCESSORIES

Accessories that will be used with the 4700 APCO25 Conventional Handheld Radio are given below:

ACCESSORY	ASELSAN P/N
Handheld Microphone Set (5820-4464-0001)	5820-4464-0001
Inner Helmet Microphone-Earlap Set-PTT	5820-4464-0002
Tube Security Packet	5820-4464-0003
Tube Helmet Set	5820-4464-0004
Collar Microphone/Earlap Set	5820-4464-0005
VIP Ring Microphone/PTT-Earlap Set	5820-4464-0006
Tube Throat Microphone-Earlap Set	5820-4464-0007
Ear Top Band Helmet Set	5820-4464-0008
Tactical Helmet Set	5820-4464-0009
Acrobat-Earlap/Microphone Set	5820-4464-0011
Tube Ordinary Earlap Microphone/PTT Set	5820-4464-0012
Ear Top Ordinary Earlap Microphone/PTT Set	5820-4464-0013
Palm security Kit	5820-4464-0014
Wireless Earlap Microphone Set	5820-4464-0015

7.6.1 Handheld Microphone Set



Conversations can be heard through this microphone set. Broadcast is transmitted by PTT Button that takes place at the set and microphone. It is connected to the radio by spiral cable.

(5820-4464-0001)

7.6.2 Inner Helmet Microphone-Earlap Set



User put this set on to his head. Headphones are passing beyond the ears at both sides. Metal connecting headphones stay at the back of the neck.

Loudspeaker and microphone take place at one cable, PTT that is in the shape of ring take place at another cable.

(5820-4464-0002)

7.6.3 Tube Security Packet



Loudspeaker is placed into the ear. This part goes over to the attachment piece by a transparent colored spiral cable. PTT that is in the shape of ring take place at another cable. Microphone is attached to the clothes with a cable.

(5820-4464-0003)

7.6.4 VIP Ring Microphone/PTT-Earlap Set



Loudspeaker part is paced into the ear.
PTT that is in the shape of ring is at another cable.
Microphone ring is at the PTT.

(5820-4464-0006)

7.6.5 Tube Throat Microphone-Earlap Set



Loudspeaker is placed into the ear. This part goes over to the clothes attachment piece by a transparent colored spiral cable.

Microphone is at the elastic band, which wraps up the throat.

(5820-4464-0007)

7.6.6 Tactical Helmet Set



User put this set on to his head. Microphone comes through the user mouth; headphones come across to the ears at both side. Microphone can be adjusted by twisting. Microphone and loudspeaker is connected to a cable. PTT that is in the shape of ring connected to the radio through another cable.

(5820-4464-0009)

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