

Raytheon

INTEGRATED SERVICES TELEPHONE VERSION 2 USER GUIDE



29 March, 2004
Revision -

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This equipment is to be serviced by trained personnel only.

DANGER/HAZARDOUS VOLTAGES INSIDE. Voltage or current hazard sufficient to cause shock.
To avoid the risk of electrical shock, do not disassemble the unit.

There are no user serviceable parts inside. Refer servicing to qualified service personnel.
Additionally, opening the unit, changing or modifying the equipment by the user shall void the warranty. If a failure occurs, please return through your RMA supply chain.

At the first sign of smoke, an unusual smell or other problems indicating breakdown, disconnect external power cords.

Should any solid or liquid fall into the unit, disconnect the unit and have the unit professionally checked before operating the unit again. Continued use risks damage to the unit, fire and possible electrical shock.

Ventilation openings must not be blocked or covered.

Air intake and exhaust openings are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating. Clean as necessary using a dry, lint-free cloth to prevent blockage.

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1 INTRODUCTION

This user guide contains operating instructions for the Integrated Services Telephone (IST-2) 50 Button Speakerphone. Information provided in this user guide includes a description of the IST-2, an explanation of IST-2 call features, a description of IST-2 controls and indicators, step-by-step instructions for using IST-2 call features, and general information on connectors and cables.

2 PURPOSE AND USE

The IST-2 is a 50-line-button desk/wall-mounted telephone instrument that serves as the user interface to Raytheon digital switching systems. The IST-2 provides the user with a consolidated secure/non-secure communications device allowing access to all of the switch resources from a single instrument. This eliminates the need for the user to have to remember particular operational nuances of a communications device.

The IST-2 telephone instrument connects to a switch via a twisted, shielded pair of wires and communicates digital voice and data. In addition to voice and data, the phone is able to activate functions of the switch, and the switch is able to control visual and audible functions on the phone. After manual call setup and activation, the data port will support up to 57600-baud full-duplex serial data communication (some switch limitations apply). The IST-2 supports line-key (button) expansion with the connection of up to two 80-key Line Expansion (LE-80) devices. Switch configurations may limit the number of LE-80 Line Key Expansion Units that may be connected to each IST-2. Refer to TM 93-012-EG, Equipment Setup Guide for LE-80 Line Key Expansion Unit, for information on the LE-80.

The Integrated Services Telephone (IST-2) main instrument is a top-mounted user interface keyboard, display, and handset. The handset is connected to the main instrument with a coiled cord. In addition to the handset, the unit contains an internal speaker and microphone to allow hands-free voice communication when authorized. The IST-2 has two line-interface ports to allow simultaneous connections to both a secure and a non-secure switching system. The unit has an auxiliary audio port for the connection of an additional audio device (handset, headset, recorder, etc.) and an auxiliary data port for the communication of serial data. The IST-2 also has a PCMCIA port to allow for future feature enhancements.

2.1 IST-2 CALL FEATURES

Table 1 lists IST-2 call features, gives a brief description of each call feature, and references step-by-step instructions for their use.

NOTE

- These call features can be enabled and disabled under control of the switching system database. Not all features may be available on every switch. For a definition of specific call features that are enabled on your IST-2, check with your system planner.
- Call features can be assigned to line keys for one-button access.

Table 1: IST-2 Call Features

Call feature	Description	Paragraph
Call hold (station)	Allows user to place current call on station hold, consult with a second party on another line, and then retrieve the first party.	4.2.7
Call hold (consultation)	Allows user to place current call on consultation hold, place a call to a second party, and then retrieve the first party. Up to three parties may be placed on consultation hold from a single subscriber directory number (SDN).	4.2.8
Call transfer	Allows user to transfer an incoming call to another phone user after answering the incoming call.	4.2.9
Group pickup	Allows user to answer an incoming call to an unattended phone if the position is assigned to the same pickup group.	4.2.5
Call park	Allows user to park an incoming call at a selected SDN to be picked up at another phone.	4.2.13
Call unpark	Allows user to retrieve a parked call at any phone.	4.2.14
Three-party or progressive conference	Allows user to establish a three-party or progressive conference call.	4.2.17.1, 4.2.17.2
Preset conference	Allows user to initiate a conference call to multiple parties using a preset conference number.	4.2.17.3
Camp on	Allows user to camp onto a busy phone number and receive a ring back when the camped-on number goes on-hook.	4.2.12
Call forward immediate	Allows user to forward all incoming calls to another phone number.	4.2.10.1
Call forward busy/don't answer	Allows user to forward all incoming calls that encounter a busy condition or are not answered within a predetermined number of rings (set in system database) to another phone number.	4.2.10.2
Call forward cancel	Allows user to cancel call forwarding previously enabled.	4.2.10.3
Paging access	Allows user to access a paging system.	4.2.15
Handset volume	Allows user to set handset/headset receive volume.	4.1.1
Aux volume	Allows user to set auxiliary port receive volume.	4.1.2
Ringer adjust	Allows user to set IST-2 ring volume and frequency and assign distinctive ringer rates and frequencies to individual line keys.	4.1.3, 4.1.4
Station disable	Allows user to disable the secure side of the IST-2 instrument. The IST-2 user will not receive any calls on the secure side and the user can place a secure call only to the system operator for assistance.	4.1.15
Station enable	Allows user to re-enable the secure side of the IST-2 instrument using a four-digit cipher code.	4.1.14

Call feature	Description	Paragraph
Station cipher code change	Allows user to change the IST-2 instrument four-digit cipher code.	4.1.16
Group service disable	Allows any user in a service group to disable a group of instruments.	4.1.18
Group service enable	Allows any user in a service group to enable the service group using a four-digit cipher code.	4.1.17
Group service cipher code change	Allows any user in a service group to change the four-digit cipher code for the service group.	4.1.19
Night answer for trunks	Allows user to answer incoming trunk calls when the system has been placed into night answer condition.	4.2.16
STU-III calls	Allows user to easily place outgoing calls through a STU-III.	4.2.1.3
COMSEC calls	Allows user to place outgoing secure calls using KY-57, KY-58, KY-68, KY-78, and ANDVT COMSEC devices.	4.2.1.4
Speed dial call	Allows user to place call using preprogrammed dialing information.	4.2.11
Speed dial programming	Allows user to program dialing information for easy recall.	4.1.7
Display adjust	Allows user to set display intensity.	4.1.6
ANI	Allows user to determine the identity of a caller before answering the call.	4.2.3
Data mode settings	Allows user to set baud rate, word length, parity, and XON/XOFF for data mode.	4.1.8
Last number	Allows user to redial last number dialed.	4.2.2
Extension enable	Allows user to enable another extension of a shared SDN to pick up a call while the line is in use.	4.2.6
Go secure	Allows activation of secure mode on a STU-III.	4.2.1.3.1
	NOTE	
	STU-III calls feature allows user to easily place outgoing secure calls through a STU-III. Consult with system planner for details on how to place STU-III calls.	
Go clear	Allows activation of clear mode on a STU-III	4.2.1.3.2
Line button-to-line button transfer	Allows user to transfer calls to other line buttons using 2ND key.	4.2.9.2
Line button-to-line button conference	Allows user to establish conference callers on different line buttons.	4.2.17.2
Home key	Allows user to identify a line button to be automatically selected when no line button is selected prior to going off-hook or when the phone is already off-hook and the current line is released.	4.1.12, 4.1.13

Call feature	Description	Paragraph
Distinctive Ring	Allows operator to change ringer rate or tone for respective line, as selected.	4.1.5
Speakerphone Enable	Allows operator to enable the use of the speakerphone speaker and microphone.	4.1.9
Speakerphone VOX	Allows operator to adjust speakerphone microphone noise threshold (High used when there is high background noise, Medium, or Low used when in an office environment with little background noise).	4.1.10
Speakerphone Dis-able	Allows operator to disable the use of the speakerphone speaker and microphone.	4.1.11
Second Speakerphone	Allows operator to cause the audio that is being output to the handset also to be passed to the Speakerphone speaker, allowing other people in the room to monitor the conversation (the speakerphone microphone is disabled).	4.2.18
Conferencing	Allows operator to establish a three-party or progressive conference call using a single line button. Other options include adding the next layer or a random layer to the conference.	4.2.17

3 CONTROLS AND INDICATORS

Figure 1 is a front panel view of the IST-2 showing each operator control and indicator. Table 2 lists the controls and indicators and briefly describes each control and indicator function.



Figure 1: IST-2 Controls and Indicators

Table 2: IST-2 Controls and Indicators

Control or indicator	Description	Paragraph
Indicators		
State indicator	Green LED. Illuminates hook state and ring.	3.1.1.1
Reserved indicator	Blue LED. Use defined by switch.	3.1.1.2
Speakerphone/Mute indicator	Red LED. Shows Speakerphone or Mute state.	3.1.1.3
Station line button LED	50 line buttons red and green LEDs to left of buttons show status of each station line.	3.1.2, 3.3.2
Display		
LCD display	2-line by 40-character Liquid Crystal Display (LCD) that indicates system date and time, preprogrammed messages, and call data (top line) and soft key information (bottom line).	3.2
Buttons		
Station line buttons	50 programmable line buttons used to perform any supported switch feature. Red and green LEDs to left of buttons show status of each station line.	3.1.2, 3.3.2
Dial pad	12 touch-tone keys for normal dialing purposes. Four precedence keys Flash Override, Flash, Immediate, Priority (FO, F, I, P) are included with dial pad.	3.3.1
Soft Keys	Used to configure the IST-2 by setting volume, LCD brightness, ring rates, speed dial, home key, speakerphone, data mode, and time format. Can also be used to check software version and reset configuration to default settings.	3.3.4
Feature keys:		3.3.3
DISABLE	Used to disable the IST-2 Telephone.	
SPEED DIAL	Used with dial pad digits 0 through 9 to dial a programmed speed dial number. Speed dial numbers are programmed via the soft keys, dial pad and display.	
2ND	Used with Speakerphone key to enter 2 nd Speakerphone mode, line key transfers or line key conferences. Used with line buttons to determine identity of a caller before answering a call.	
LAST NUMBER	Used to redial the last phone number dialed from the instrument.	

Control or indicator	Description	Paragraph
RETURN	Allows user to return to parties placed on consultation hold. First party placed on hold is accessed first, and current caller is placed on consultation hold.	
DATA	Used to enter/exit data mode.	
TRANSFER	Allows user to transfer a call to a third party and disconnect from call. Current caller is connected to the last party placed on consultation hold.	
RECALL DIAL	Allows user access to recall dial tone. Pressing RECALL DIAL key while talking to a party places that party on consultation hold. Press RETURN key to re-access party.	
EXT ENABLE	Allows another instrument with the same SDN extension to pick up a call.	
HOLD	Allows user to place a call on station hold. In speed dial programming mode, HOLD key inserts a 1-second pause in dialing sequence.	
CONF	Allows user to add another party to a call.	
RELEASE	Allows user to disconnect a call from the instrument. When used in speed dial programming mode, RELEASE key un-assigns a programmed speed dial code.	
MUTE	Allows user to mute (disable) all IST-2 microphones.	
SPEAKERPHONE	Must be authorized. Allows user to speak hands-free.	
Other Telephone Parts Identified		
Ringer (Internal)	An adjustable ringing sound used to alert the presence of an incoming call to the IST-2 Telephone. Also can provide a tone when feature and line buttons are pressed.	
Microphone	Used when talking on Speakerphone	
Handset	Used for normal conversations on IST-2 Telephone. Push-to-Talk (PTT) must be pressed to talk, but not to listen.	
PTT	Must be pressed and held while talking to the other party on IST-2 Telephone.	
Logo Emblem	Customizable departmental logo.	

3.1 INDICATORS

There are two basic types of indicators provided on the IST-2—the phone indicators and the line indicators.

3.1.1 Phone Indicators

The phone indicators include the following LEDs:

- State—green LED,
- Reserved—blue LED, and
- Speakerphone/Mute—red LED.

Phone indicators can be in one of four states:

- On (enabled),
- Off (disabled),
- Flashing, and
- Ring Cadence.

The flash is 60 IPM at a rate of 50% on and 50% off (0.5 sec on/0.5 sec off). Each of these phone indicators is located at the top of the phone with both the top and rear of the phone exposing the indicator. There is no intensity control of the indicators. There is no means provided to disable the indicators—other than removing the state that caused the enabling of the indicator.

3.1.1.1 State Indicator

The State indicator shows the hook state and ring. If the IST-2 is off-hook (the handset is not physically resting in its cradle, the speakerphone is activated, or the auxiliary port is enabled and off-hook) and there is an active line, the State indicator will be enabled (solid on). If the phone is idle and there is an incoming call, the indicator will follow the cadence of the ring—enabling with the audible ring tone and disabling while the ring tone is not present. If the phone becomes idle while there is an incoming call, the indicator will become enabled following the ring cadence of the incoming call. If the phone is off-hook and active on a call and there is another incoming call on another Red or Black line, the State indicator will remain enabled (solid on). The user will be notified, however, of the incoming call by ring tone and the associated Green LED line button indicator.

3.1.1.2 Reserved Indicator

The Reserved indicator does not currently have a purpose defined.

3.1.1.3 Speakerphone/Mute Indicator

The Speakerphone/Mute indicator shows whether the speakerphone is activated or the phone input is muted. The Speakerphone indicator will be enabled (solid on) while the speakerphone is activated. This will not include 2nd speakerphone mode. If the mute feature is enabled, the Speakerphone/Mute indicator will flash regardless of whether or not the speakerphone is activated.

3.1.2 Line Indicators

Each of the 50 line buttons has an associated pair of LEDs—one red and one green. The switch that has defined the line button will control these LEDs.

3.2 DISPLAY

The Display is a liquid crystal display (LCD) with 2 rows of 40 characters located at the top front of the IST-2. The display has six levels of brightness control using backlighting. The lowest level is off with five enabled levels. The display supports the ASCII character set as well as solid on (bar).

The top row of the LCD display is used, in general, to display switch-supplied information (Automatic Number Identification (ANI) and Security Access Level (SAL)) and the date/time. The top row emulates the display of the IST-130. The last character of the top row will show whether the 2nd feature button has been activated by displaying a '2' or nothing. The top row will, at times, display instructions or information for use in configuring the IST-2. If there is an incoming call or ANI/SAL update to an active call, while the user is reconfiguring the phone, the text in the first line will be overwritten by the ANI/SAL information as reported by the switch. The call information will remain on the display until either a subsequent key is pressed or the switch clears the call information.

The second line of the display is used in conjunction with the soft keys, which are located directly below the display. Button labels will be shown centered over each button whenever a button is available for use. If there is no current use for a particular soft key, there will be no corresponding label shown in the display.

If a communication failure occurs during operation, a message (“Non-Secure Failure”, e.g.) will be shown in the display to notify the user of such failure.

3.3 BUTTONS

The IST-2 has four sets of functionally different buttons—dial pad keys, line buttons, feature buttons, and soft keys. When selected, line buttons, feature buttons, and soft keys provide audible feedback (also called ‘key click’) if the button is defined. The key click is a momentary beep and does not persist while the button is depressed. The audio feedback can be disabled by a switch command. The audio feedback is, by default, disabled. The buttons are acted upon by their depression and not their release.

3.3.1 Dial Pad

The dial pad consists of 16 full-travel keys. The dial pad includes keys for 0-9, *, #, FO (Flash Override), F (Flash), I (Immediate), and P (Priority). The four precedence buttons (FO, F, I and P) are red. When pressed, the IST-2 generates the associated DTMF tone for as long as the key remains depressed. The DTMF tone ceases when the key is released. DTMF tone generation can be disabled by the switch. DTMF tones are also provided as audio feedback to the user when dialed.

3.3.2 Line Buttons

The IST-2 provides 50 line buttons. The line buttons are numbered down—like the IST-130—rather than across. Each of the 50 line buttons is configurable by one of two connected switches. If both switches attempt to configure a particular line with valid assignments, the Red switch’s configuration will succeed, the Black switch’s

configuration will be discarded, and a line button conflict error will be reported to the Black switch. The IST-2 supports the following line types:

IST-2 Supported Line Types			
SDN—ring always	SDN—ring delayed	SDN—no ring	SDN—line busy indicator
Feature key	Net—talk/listen	Net—monitor only	Net—activity indicator

Table 3: IST-2 Supported Line Types

The following line types are not supported by the IST-2:

IST-2 Line Types Not Supported			
Loop start—no ring	Loop start—routine ring	Loop start—priority ring	Loop start—special
Ground start—no ring	Ground start—routine ring	Ground start—priority ring	Ground start—special
1A2 Keypad—no ring	1A2 Keypad—routine ring	1A2 Keypad—priority ring	1A2 Keypad—special
RBC-2			

Table 4: IST-2 Line Types Not Supported

The IST-2 is configured with 50 lines and it may be connected to up to 2 LE-80s providing an additional 160 line buttons. The IST-2 has the capability to accept and process line assignments for a total of 210 lines. Currently, the switches only allow a maximum of 200 line keys.

Co-located with each line button are red and green LED indicators used to indicate the state of the line. If a line is not assigned, the line will provide no audible key-click feedback.

3.3.3 Feature Buttons

There are 14 permanent buttons that have labels on the buttons placed there as part of the manufacturing process. These buttons are located above and below the dial pad. The permanent feature buttons include:

- Phone Features
 - Speed Dial,
 - Last Number (redial),
 - 2nd (Second),
 - Speakerphone (handsfree),
 - Mute,
 - Data (data mode).
- Switch Features
 - Disable (Phone Disable),
 - Ext Enable (Extension Enable),
 - Return,
 - Conf (Conference),
 - Transfer,
 - Hold,
 - Recall Dial, and
 - Release.

3.3.4 Soft Keys

The IST-2 has 5 soft keys. The soft keys are distributed evenly just below the two-line Display. The labels are provided by the Display. The soft keys are used to configure the IST-2. When a soft key label is an arrow, pressing it will repeat the action every quarter second as long as the soft key remains depressed.

The IST-2 display is able to show up to 5 soft key options. When one of these is selected, the soft key labels (in the LCD display) change, and the next level of selections will be shown. Pressing the menu soft key presents the second-level menu choices:

- “Volume”,
- Brightness (“Bright”),
- “Ring”,
- Speed Dial (“Sp Dial”), and
- “More”.

3.4 Configurable Contact Closure

The IST-2 has a contact closure output (J4 pins 7 and 8) that is configurable via a telnet session on the Ethernet port to provide a closed relay contact. At the telnet session command prompt enter the commands as indicated:

1. “callsRedDataSel 1 <enter>” provides a contact closure when the IST-2 is in a ring state (closure does not follow ring cadence)

or

2. “callsRedDataSel 2 <enter>” provides a contact closure when a non-secure call is active and PTT is activated.

Consult with system planner for assistance in setup

4 IST-2 FUNCTIONALITY (NORMAL MODE)

The phone enters Normal mode once the initial self-test is passed (please refer to section 5 for self-test information). While in Normal mode, there will be many states—Red UDLT connected, Black UDLT connected, on-hook, etc. These states will be indicated when relevant to the operations or functionality of the IST-2.

In Normal mode, the phone accepts call commands from the switch to indicate the call states. Also, the user at the phone may initiate calls by going off hook. This may be accomplished by simply removing the handset from the cradle when a home key is defined or may require the selection of a line either before or after the handset is removed. The switch that defined the line button will be notified that the line was selected and the other switch will be notified that the other side was selected. The switch with the off-hook call will respond to the phone with commands to update LEDs, the display, etc. For most actions, the phone will simply pass commands to the switch associated with the active line and update indicators/display based upon responses from the switch. A few commands will be processed locally either instead of sending them to the switch or in addition to sending them to the switch. The features that are processed local to the phone include:

- Dialing,
- Speed Dial,
- Last Number Redial,
- Speakerphone,
- 2nd Speakerphone, and
- Mute.

4.1 TELEPHONE SETUP (CONFIGURATION MODE)

This section contains instructions configuring the telephone such as for setting handset/headset volume, ringer volume, ringer frequency, and distinctive ring; display intensity; enabling/disabling home key; enabling/disabling the telephone; changing the station cipher code; enabling/disabling a service group, and changing the group cipher code. Step-by-step instructions are provided in the paragraphs below for users who are not familiar with IST-2 operation. Refer to paragraph 3 and subsequent explanations for the IST-2 controls and indicators and their operation.

4.1.1 Setting Handset/Headset Volume

NOTE

The headset/headset volume adjustment procedure may be performed while a call is in progress.

To set handset/headset volume for the IST-2:

- a. Press **MENU** soft key, **VOLUME** soft key and then choose **HANDSET** soft key.
- b. Press **▶** to increase volume; press **◀** to decrease volume.

Volume is increased or decreased one increment each time the appropriate key is pressed. Holding down the ► or ◀ key increases or decreases volume several increments per second until the key is released or maximum or minimum volume is reached.

- c. Press any key other than a soft key to terminate the volume adjust mode and save the set volume level. Allowing the operation to time-out or changing menus also saves the current setting.

4.1.2 Adjusting Aux Volume

NOTE

The auxiliary port volume adjustment procedure may be performed while a call is in progress.

To set auxiliary port volume for the IST-2:

- a. Press **MENU** soft key, **VOLUME** soft key and then choose **AUX** soft key.
- b. Press ► to increase volume; press ◀ to decrease volume.

Volume is increased or decreased one increment each time the appropriate key is pressed. Holding down the ► or ◀ key increases or decreases volume several increments per second until the key is released or maximum or minimum volume is reached.

- c. Press any key other than a soft key to terminate volume adjust mode and save the current set volume level. Allowing the operation to time-out or changing menus also saves the current setting.

4.1.3 Adjusting Ringer Volume

- a. Press **MENU** soft key, **VOLUME** soft key and then choose **RING** soft key.

The ringer is enabled using the current ring and volume settings.

- b. Press ► to increase ringer volume; press ◀ to decrease ringer volume.

Ringer volume is increased or decreased one increment each time the appropriate key is pressed. Holding down the ► or ◀ key increases or decreases volume several increments per second until the key is released or maximum or minimum volume is reached.

- c. Press any key other than a soft key to terminate ringer volume adjust mode and save the current setting. Allowing the operation to time-out or exiting the menu also saves the current setting and removes the ring tone.

4.1.4 Adjusting Ringer Frequency

- a. Press **MENU** soft key then **RING** soft key.

The ringer is enabled using the current ring and volume settings.

- b. Press ► to increase ringer frequency; press ◀ to decrease ringer frequency.

Ringer frequency is increased or decreased one position each time the appropriate key is pressed until maximum or minimum frequency is reached.

- c. Press any key other than a soft key or a line button to terminate ringer adjust mode and save the current setting. Allowing the operation to time-out also saves the current setting.

4.1.5 Setting Line Button Distinctive Ring Rate and Tone

- a. Press **MENU** soft key then **RING** soft key.
- b. Press the line button to have distinctive ring feature. The Distinctive Ring menu will be presented to configure the selected line's distinctive ring (rate and tone).
- c. Select **RATE** or **TONE** to configure the line's distinctive ring.
- d. Press ► and ◀ to change ringer rate or tone for respective line, as selected. Other options are also provided.
- e. Press another line button and repeat to set a distinctive ring on the line button selected.
- f. Press any key other than a soft key or a line button to terminate the distinctive ring mode and save current setting. Allowing the operation to time-out also or exiting the menu saves the current setting.

4.1.6 Adjusting Display Intensity

- a. Press **MENU** soft key then **BRIGHT** soft key.
IST-2 display indicates **Brightness**: followed by a bar chart indicating current intensity level.
- b. Press ► to increase display intensity; press ◀ to decrease display intensity.
- c. Press any key other than a soft key to terminate the intensity mode and save the current setting. Exiting the brightness adjust menu will also save the current setting.

4.1.7 Configure Speed Dial

The IST-2 allows for the configuration of up to 36 speed dial numbers using the Dial Pad buttons. Valid speed dial codes are numbered 1-6 and 70-99. Each speed dial number may be up to 27 digits long including precedence keys, *, #, and pause.

- a. Press **MENU** soft key then **SP DIAL** soft key.

The first line of the Display is updated with the setting of the first speed dial number (1) and its digit string. If none are defined, nothing will be shown next to the speed dial number.

- b. Press ► or ◀ to scroll through the speed dial numbers.

- c. When you reach the desired speed dial number, press the first soft key, **SELECT** (which will clear the old digit string if one existed).
- d. Entering a new digit string using the Dial Pad buttons and the **PAUSE** soft key (or the Hold Feature Key).

Pressing the **RESTORE** soft key any time while entering the new sequence (before it is stored) restores the original digit sequence.

- e. Advancing to the next speed dial number or exiting the menu stores the newly entered speed dial number.
- f. To delete (clear) a speed dial assignment, press the Release Feature Key when a speed dial number is displayed.

4.1.8 Configure Data Mode

The Data Mode menu provides the ability to configure the data rate, number of data bits, the parity, and the XON/XOFF setting. The default settings for the Data Mode configuration are 9600-baud, 8 data bits, no parity, and XON/XOFF as off.

- a. Press **MENU** soft key then **MORE** soft key followed by **DATA** soft key.

The current settings are shown in the first line of the Display.

To set the Data Rate:

- b. Press the **DATA RATE** soft key at the Data Mode menu.
- c. Press **▶** or **◀** to scroll through the available data rates.
- d. Exit the menu or allow it to time out to save the displayed data rate.

To set the Data Bits:

- e. Press the **DATA BITS** soft key at the Data Mode menu.
- f. Press **▶** or **◀** to scroll through the available options (5-8).
- g. Exit the menu or allow it to time out to save the setting.

To set the Parity:

- h. Press the **PARITY** soft key at the Data Mode menu.
- i. Choose the soft key associated with the desired parity option, **NONE**, **EVEN** or **ODD**.
- j. Exit the menu or allow it to time out to save the setting.

To change the XON/XOFF state:

- k. Press the **XON/XOFF** soft key at the Data Mode menu.
- l. Exit the menu or allow it to time out to save the displayed setting.

4.1.9 Speakerphone, Enable

NOTE

Enabling the speakerphone is a two-step process. The authorization procedure for the IST-2 speakerphone is available at the following URL:

https://extwww.stp.raytheon.com/redswitch/ccsshome_ext.htm.

To gain access to the redswitch website, contact OO-ALC, Hill AFB.

- a. Press **MENU** soft key then **MORE** soft key followed by **SPKRPHN** soft key.

The current status of the speakerphone capability is shown in the first line of the Display

- b. Press the soft key **GET CODE**.

The user is then prompted with a confirmation request because this will clear any previously generated code, invalidating any previous request.

- c. Press the soft key **CONFIRM**.

Once the request is confirmed, the first line of the display shows a numeric code string.

- d. Convey the displayed code to the authorizing agent, who will in turn supply the authorization key.

- e. In the speakerphone menu, press the **AUTHORIZE** soft key and use the DTMF keypad to enter the key provided by the authorizing agent. Once the entire code has been entered, the first line of the display will indicate whether the speakerphone is now allowed or remains disallowed.

CAUTION

RESETTING THE CONFIGURATION OF THE IST-2 OR THE REMOVAL OF POWER FROM THE IST-2 FOR MORE THAN 24 HRS WILL REMOVE THE SPEAKERPHONE AUTHORIZATION AND SUBSEQUENTLY THE SPEAKERPHONE CAPABILITY, REQUIRING THE USER TO REPEAT THE SPEAKERPHONE AUTHORIZATION PROCESS

4.1.10 Speakerphone, VOX

- a. Press **MENU** soft key then **MORE** soft key followed by **SPKRPHN** soft key.

The current status of the speakerphone capability is shown in the first line of the Display; if allowed, the first line also shows the current VOX selection (High used when there is high background noise, Medium, or Low used when in an office environment with little background noise).

- b. Choose the new speakerphone VOX selection by pressing the associated soft key for High, Medium or Low noise options.

4.1.11 Speakerphone, Disable

- a. Press **MENU** soft key then **MORE** soft key followed by **SPKRPHN** soft key.

The current status of the speakerphone capability is shown in the first line of the Display

- b. Press the soft key **DISALLOW**.
- c. Press the soft key **CONFIRM**.

4.1.12 Home Key, Enable

- a. Press **MENU** soft key then **MORE** soft key followed by **MORE** soft key again.
- b. Press **HOME KEY**.

Display indicates **Home Key**.

- c. Press line button to be automatically selected when going off-hook or releasing from a call.
- d. Lift handset to verify home key selection.

4.1.13 Home Key, Disable

- a. Press **MENU** soft key then **MORE** soft key followed by **MORE** soft key again.
- b. Press **HOME KEY**.

Display indicates **Home Key**.

- c. Press **CLEAR** soft key.
- d. Lift handset to verify home key is disabled.

Line buttons must now be selected before placing a call or following the release from a call.

4.1.14 Enable IST-2

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Press dial-pad digits ***21** followed by four-digit cipher code.

The default cipher code is 0000 and should be changed by the user for security reasons. If there is a problem with your cipher code, contact the operator for assistance.

- c. Hang up handset or release from line button.

4.1.15 Disable IST-2

- a. Lift handset and listen for dial tone from the secure switch.

If home key is not enabled, press an idle secure line button for dial tone.

- b. Press **DISABLE** key or press dial-pad digits ***20**.

The IST-2 display indicates **Disabled** alternating with the date and time.

- c. Hang up handset or release from line button.

The secure side of the telephone is disabled.

4.1.16 Station Cipher Code, Changing

- a. Lift handset and listen for dial tone.

If home key is not enabled, press an idle secure line button for dial tone.

- b. Press dial-pad digits ***24** followed by old four-digit cipher code.

The default cipher code is 0000. If cipher code has been changed, contact the operator for assistance.

- c. Enter new four-digit cipher code.

- d. Hang up handset or release from line button.

- e. Verify code change by disabling (paragraph 4.1.15) and re-enabling (paragraph 4.1.14) the IST-2.

4.1.17 Service Group, Enable

NOTE

The user must be defined in a service group at the database in order to use this feature. Service groups and pickup groups are defined together in the switch database.

- a. Lift handset and listen for dial tone.

If home key is not enabled, press an idle secure line button for dial tone.

- b. Press dial-pad digits ***23** followed by the two-digit service group number and then the four-digit cipher code.

- c. Hang up handset or release from line button.

4.1.18 Service Group, Disable

NOTE

The user must be defined in a service group at the database in order to use this feature. Service groups and pickup groups are defined together in the switch database.

- a. Lift handset and listen for dial tone.

If home key is not enabled, press an idle secure line button for dial tone.

- b. Press dial-pad digits ***29** followed by the two-digit service group number and then the four-digit cipher code.
- c. Hang up handset or release from line button.

4.1.19 Service Group Cipher Code, Changing

- a. Lift handset and listen for dial tone.

If home key is not enabled, press an idle secure line button for dial tone.

- b. Press dial-pad digits ***26** followed by the two-digit service group number and then the four-digit cipher code.
- c. Reenter the two-digit service group number and then the new four-digit cipher code.
- d. Hang up handset or release from line button.

4.2 CALL HANDLING (CALL PROGRESSION MODE)

This section contains instructions for answering/placing calls and for enabling a sampling of the special features available to the IST-2 user. Step-by-step instructions are provided in the paragraphs below. For IST-2 users who are not familiar with the telephone feature codes, tables 5 and 6 list the default feature access codes for the DSS family and SDS family of switches.

Table 5: Telephone Feature Access Codes for DSS Switch Users

Code	Meaning	Code	Meaning
#7	Call forward busy/don't answer	#25	Nailed Conference
*27	Call forward cancel	#26	Nailed Conference with cipher code
*7	Call forward immediate	#27	Next layer add to a conference
#23	Camp-on	#5	Preset conference
#8	Cancel	#24	Preset conference
#29	Display SDN	#28	Random layer add to a conference
*25	Extension enable	#3	Return
#21	Group forward	*24	Station cipher code change
#22	Group forward cancel	*20	Station disable
*3	Group pickup	*21	Station enable
*26	Group service cipher code change	#1	STU-III conference
*29	Group service disable	#99	Terminate trunk
*23	Group service enable	#6	Transfer
#4	Hotline reuse	#*5	Trunk access

NOTE: Codes may be changed on switch-by-switch basis. Check with Maintenance personnel for validity of all codes.

Table 6: Telephone Feature Access Codes for SDS Switch Users

Code	Meaning	Code	Meaning
#7	Call forward busy/don't answer	#24	Preset conference
*27	Call forward cancel	##3	Preset conference – Attendant
*7	Call forward immediate	#35	Ringer disable, group
#28	Call unpark	#36	Ringer enable, group
*28	Call unpark	#33	Ringer disable, station
#23	Camp-on	#34	Ringer enable, station
##4	Conference net – Attendant	#6	Speed dial, system
*25	Extension pickup enable	*24	Station cipher code change
#31	Group forward enable	*20	Station disable
#32	Group forward cancel	*21	Station enable
*3	Group pickup	*1	Station hold
*26	Group service cipher code change	#1	Station hold, return to party on station hold
*29	Group service disable	#20	STU-II dialing by ID (Identifier)
*23	Group service enable	#22	STU-II disable data
##5	Meet me – Attendant	#21	STU-II disable data
#27	Meet me conference	*5	STU-III
#9	Night answer for trunks	*55	STU-III timed clear audio
*9	Paging access	#4	Three-party conference
*4	Post answer transfer		

4.2.1 Placing an Outgoing Call

Refer to the following paragraphs to place calls from the IST-2.

4.2.1.1 Placing a Normal Inter-switch Call

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Press a precedence key, if appropriate.
- c. Dial telephone number and listen for ringback tone.
- d. When called party answers, press PTT on handset and begin talking.

NOTE

Digits dialed after the call is in talk state are displayed on the first line of the active call area. This reflects the digits dialed after a trunk is seized.

- e. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.1.2 Using the Speakerphone

You must have speakerphone capability authorized (see paragraph 4.1.9 of this document) in order to use the speakerphone.

Outgoing Call

- a. With the handset on the cradle, select a line button, select the speakerphone button (activating the speakerphone) and dial the desired phone number.
- b. When the far-end answers, you may converse using the speaker (and the built-in microphone located in the lower right hand front of the phone).
- c. To switch to the handset, simply pick up the handset and continue the conversation using the handset audio—the speakerphone audio will become disabled when the handset is removed from the cradle.
- d. To return to speakerphone mode, press the speakerphone button and return the handset to the cradle. The handset may be returned to the cradle, if desired. If the handset is not put in the cradle, the speakerphone mode can be re-entered by pressing the speakerphone button again (speakerphone button toggles handset and speakerphone mode).
- e. When call is complete, press **RELEASE** key on telephone.

Incoming Call

- a. To use the speakerphone on an incoming call, select the ringing line key and select the speakerphone button.

- b. While in speakerphone operation, if an incoming call on another line key is received, the IST-2 will not perform the normal ringing. The user will hear short “beep” tones instead. The “beep” tone will repeat every 5 seconds until answered or the call is terminated on the instrument.

4.2.1.3 Placing a STU-III Call

This requires a **GO SECURE** feature key defined in the switch database as a line button assignment.

- a. Lift handset and listen for dial tone.

If home key is not enabled, press idle line button for dial tone.

- b. Enter the STU-III access code and the SDN for the desired security level, and then dial the number of the far end STU-III followed by the # key.
- c. When called party answers, press **GO SECURE** feature key on telephone to place STU-III call in secure mode.
- d. When call is in secure mode, press PTT on handset and begin talking.
- e. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.1.3.1 Go Secure

This requires a **GO SECURE** feature key defined in the switch database as a line button assignment.

To activate the secure mode on a STU-III:

- a. When on a STU-III call, press GO SECURE key to cause STU-III to go into secure mode. Do not initiate secure mode until both ends are keyed.

NOTE

Most systems have individualized dialing plans and IST line key definitions, which significantly enhance the ease and effectiveness of using COMSEC devices. Consult with your system planner to determine the additional COMSEC features of your system.

4.2.1.3.2 Go Clear

This requires a **GO CLEAR** feature key defined in the switch database as a line button assignment.

To activate the clear mode on a STU-III:

- a. When on a STU-III call, press line button configured as Go Clear feature key. This will cause the STU-III to go into the clear mode.

NOTE

Most systems have individualized dialing plans and IST-2 line key definitions, which significantly enhance the ease and effectiveness of using COMSEC devices. Consult with your system planner to determine the additional COMSEC features of your system.

4.2.1.4 Placing a Secure Call Using a COMSEC Device

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Enter the access code and the SDN for the selected COMSEC device.
- c. To place a secure call using a COMSEC device, enter four-digit identifier for destination device followed by # key.
- d. When called party answers, press PTT button on handset and begin talking.
- e. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.2 Last Number Redial

When a line is off hook and a DTMF digit sequence is dialed, that digit sequence is stored in RAM as the last number dialed for use with the Last Number button. The last 27 digits are stored. If more than 27 digits are dialed, only the last 27 will be stored.

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Press **LAST NUMBER** key on telephone, listen for digits being dialed, and listen for ringback.
- c. When called party answers, press PTT button on handset and begin talking.
- d. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.3 Identifying an Incoming Call

The ANI feature displays data describing the origin of an incoming call. The associated line button is identified in positions 37 through 39 of the telephone display. After the call is answered, the selected call is displayed as follows until the user terminates the call or places it on hold:

- a. The user can display identity of any pending call independent of current call activity by pressing **2ND** key on telephone followed by appropriate line button. This action causes identifier of selected call to be

displayed for 5 seconds on the telephone LCD display. If there is no prior activity at the telephone, this information is automatically displayed.

4.2.4 Answering an Incoming Call

When an incoming call arrives at the IST-2, the telephone begins to ring (provided the ringer is turned on) and the user answers the call as follows:

- a. Lift handset.
- b. Perform one of the following:
 - If the telephone has a home key defined and that is the ringing line, it answers automatically when the user goes off-hook
 - Locate and press telephone line button with flashing green LED.
- c. When call is complete, either hang up handset, or press RELEASE key on telephone.

4.2.5 Answering a Pickup Group Call

If the telephone is in a call group (must be defined in the switch database), the Call Pickup feature is used to answer any telephone in the group that is ringing. To use call pickup, an idle line must be selected.

NOTES

- Call pickup cannot be activated if the user called another party that has placed the user on hold.
 - Pressing ***3** will not automatically place the present call on consultation hold if auto hold is not defined in the database. Place the call on hold prior to performing this feature.
- a. When an unattended telephone in the pickup group is ringing, lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
 - b. Press ***3** on the telephone dial-pad to answer unattended telephone.
 - c. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.6 Using Extension Pickup

Extension pickup allows another party that shares an SDN to:

- Enter into a point-to-point call and transition it into a progressive conference.
- Enter a progressive or preset conference.

NOTES

- The IST-2 user cannot pull an individual member from the conference (i.e., conference member grab). This action puts the conference on consultation hold.
- Extension pickup is not allowed if the SDN has parties on consultation hold.

Perform the following steps to enter a conference as an extension pickup:

- a. Lift Handset.
- b. Press line button that shares the SDN.
- c. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.7 Station Hold

The ability to transfer calls to another line allows the user to connect a call from the hold queue directly to a currently active line (even if it is a different SDN). The activity on the current line is then placed on consultation hold, allowing the user to perform transfer or conference operations. There are two methods available to place a call on station hold discussed in subsequent paragraphs.

4.2.7.1 Automatic Station Hold

- a. With a call active at the IST-2 and an incoming call requiring answering, press the line button of the incoming call. The original call is placed in the hold queue.
- b. Observe the green LED on the telephone line button of the original call is flashing, the red LED is extinguished, and the call appears in the hold queue.
- c. The user is now connected to the new call.

4.2.7.2 Manual Station Hold

- a. With a call active at the IST-2, press **HOLD** key.
- b. Observe the green LED on the line button associated with the call is flashing and the red LED is extinguished

The party is now on station hold.

4.2.7.3 Retrieve a Call at Station Hold

- a. Press telephone line button associated with call on hold.

4.2.8 Consultation Hold

- a. When a call is active at the IST-2, press **RECALL DIAL** key and listen for dial tone.
- b. Party is now on consultation hold. User may dial another party for consultation.
- c. To alternate between callers, press **RETURN** key on the telephone.

NOTE

The number of parties that may be placed on consultation hold from any one telephone line is dependent on system configuration.

4.2.9 Transferring a Call

Use the procedures in the following paragraphs to transfer calls.

4.2.9.1 Transferring a Call Using the Same Telephone Line Button

If transferring an incoming call after it has been answered, begin at step e.

- a. Lift handset and listen for dial tone.
 - If home key is not enabled, press idle line button for dial tone.
- b. Press a precedence key, if appropriate.
- c. Dial telephone number and listen for ringback tone.
- d. When called party answers, press PTT on handset and begin talking.
- e. Press **RECALL DIAL** key and listen for dial tone.
- f. Dial telephone number for third party and listen for party to answer.

NOTE

When using **RECALL DIAL**, the number must be manually dialed using the telephone dial-pad. The call may be dropped if another line button is pressed.

- g. Press **TRANSFER** key and listen for dial tone.
- h. Either hang up handset or press **RELEASE** key on telephone.

4.2.9.2 Transferring a Call Using Multiple Telephone Line Buttons

If transferring an incoming call after it has been answered, begin at step e.

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Press a precedence key, if appropriate.
- c. Dial telephone number and listen for ringback tone.
- d. When called party answers, press PTT on handset and begin talking.
- e. Press **HOLD** key or another line button to place present caller on hold.

NOTE

Selecting another line button will not automatically place a call on hold unless automatic station hold is enabled. (See paragraph 4.2.7, Using Station Hold.)

- f. Press idle telephone line button, if not done in the previous step.
- g. Dial second party.
- h. Press **TRANSFER** key to transfer call to second party and listen for dial tone.
- i. Either hang up handset or press **RELEASE** key on telephone.

4.2.10 Call Forward

Use the procedures in the following paragraphs to forward calls. If your instrument is in a call forward condition, and the user goes off hook on a line key, the user will hear a distinctive dial tone alerting the user to the condition.

4.2.10.1 Initiating Call Forward Immediate

With Call Forward Immediate, the call is forwarded immediately to the forwarded phone. There is no indication on the called telephone that a call was forwarded after the following is completed:

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Dial ***7** followed by the four-digit telephone number of the destination telephone to receive forwarded calls.
- c. Listen for confirmation beeps.
Telephone display indicates CALL FWD IMM.
- d. Either hang up handset or press **RELEASE** key on telephone.

4.2.10.2 Initiating Call Forward for Busy/Don't Answer

NOTE

If Call Forward Immediate is already set, it takes priority over Call Forward Busy/ Don't Answer.

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Dial **#7** followed by the four-digit number of the destination telephone to receive forwarded calls.
- c. Listen for confirmation beeps.
Telephone display indicates CALL FWD BUSY.
- d. Either hang up handset or press **RELEASE** key on telephone.

4.2.10.3 Canceling Call Forward

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Dial ***27**.
Telephone display goes blank.
- d. Either hang up handset or press **RELEASE** key on telephone.

4.2.11 Placing a Speed Dial Call

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Press **SPEED DIAL** key, enter one- or two-digit speed code, and listen for ringback.
- c. When called party answers, begin conversation.
- d. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.12 Camping on a Busy SDN

When a called telephone is busy, the user can use the Camp-On feature to have the busy telephone automatically dial back to the user when the call is finished.

To camp-on a busy number, the Camp-On feature must be defined for the instrument at the switch database and camp-on requested as follows:

- a. When dialed telephone number is busy, press **RECALL DIAL** key on telephone and listen for dial tone.
- b. Dial **#23**, then hang up.

When busy SDN clears, the telephone rings, and green LED on line button flashes.

- c. Lift handset.
- d. Locate and press telephone line button with flashing green LED.

NOTE

If the telephone has the home key defined and that is the line that is ringing, it answers automatically when the user goes off hook.

- e. Press PTT on handset and begin talking.
- f. When call is complete, either hang up handset or press **RELEASE** key on the telephone.

4.2.13 Using Call Park

To park an incoming call to be retrieved from another phone:

- a. Press **RECALL DIAL** key. Listen for confirmation tone followed by dial tone.
- b. Enter **#28**, then unique four-digit number. Listen for confirmation tone, then hang up.

4.2.14 Unparking a Call

To unpark a call:

NOTE

A parked call may be retrieved at any properly class-marked phone. The number used for call parking does not have to appear on the phone used for unparking.

- a. Identify and press an idle line button. Listen for dial tone.
- b. Enter ***28**, followed by unique four-digit number used to park the call.
- c. Listen for confirmation tone, then begin talking.

4.2.15 Using the Paging System

Using the Paging System:

- a. Identify and press an idle line button. Listen for dial tone.
- b. Press *9 key, listen for dial tone, enter paging zone number (0-9), and listen for connection, then make announcement.

4.2.16 Night Answer for Trunk Circuits

To answer trunk calls during night service:

- a. Identify and press an idle line button. Listen for dial tone.
- b. Enter #9, listen for confirmation tone, then answer calls as received.

4.2.17 Conferencing

4.2.17.1 Creating Progressive Conference Using a Single Line Button

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle button for dial tone.
- b. Press a precedence key, if appropriate.
- c. Dial telephone number and listen for ringback tone.
- d. When called party answers, press PTT on handset and announce conference call.
- e. Press **RECALL DIAL** key and listen for dial tone.
- f. Dial telephone number of second party to be placed into conference call and listen for ringback.

NOTE

When using RECALL DIAL , the number must be manually dialed using the telephone keypad. The call may be dropped if another line button is pressed.

- g. When third party answers, press PTT on handset and announce the conference call.
- h. Press **CONF** key.
Conference members receive entry tone and then begin conference.
- i. Repeat steps e through h until all progressive conference members are added.

- j. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.17.2 Creating Progressive Conference, Multiple Line Buttons

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Press a precedence key, if appropriate.
- c. Dial telephone number and listen for ringback tone.
- d. When called party answers, press PTT on handset and begin talking.
- e. Press **HOLD** key or another line button to place present caller on hold.
- f. Press idle telephone line button if not done in the previous step.
- g. Dial second party.
- h. When called party answers, press PTT on handset and announce conference call.
- i. Press **CONF** key.
- j. Repeat steps e through i until all progressive conference members are added.
- k. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.17.3 Initiating a Preset Conference Call

NOTE

Preset conferences must be set up in the switch database before they can be initiated from the IST-2. The user must be a member of the preset conference in order to initiate that conference. Consult with the system administrator to request a preset conference configuration.

- a. Lift handset and listen for dial tone.
If home key is not enabled, press idle line button for dial tone.
- b. Dial **#24** on the telephone dial-pad followed by the two-digit number assigned to the preset conference or press line button set up as a preset conference.

All telephone lines assigned to the preset conference now ring. Call entry tone is heard as each participant enters the call.
- c. Announce conference call as each participant answers.

When all participants answer, begin conference.

- d. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.17.4 Initiating the Next Layer of a Conference (DSS Only)

Next layer of a conference allows the user to merge additional predefined preset conferences into the current conference.

NOTE

The next layers of a preset conference configuration must be set up in the DSS database before they can be initiated from the IST-2. Because the next layer is configured in the switch database, the conference member initiating the next layer does not have to be a member of the preset conference defined to be the next layer. Consult with the system administrator to request a next layered conference configuration.

Perform the following procedure to initiate the next layer of a conference:

- a. Lift handset and listen for dial tone.

If home key is not enabled, press idle line button for dial tone.

- b. Dial **#24** on the telephone dial-pad followed by the two-digit number assigned to the preset conference or press line button set up as a preset conference.

All telephone lines assigned to the preset conference now ring. Call entry tone is heard as each participant enters the call.

- c. Announce conference call as each participant answers.

When all participants have answered, begin conference.

- d. Press **RECALL DIAL** key and then dial **#27**.

All telephone lines assigned to the next layer now ring. As each member enters the conference, a barge-in tone may be heard. This is dependent upon the entry timeout.

- e. Announce the conference call as each participant answers.
- f. When all participants have answered, continue the conference.
- g. When call is complete, either hang up handset or press **RELEASE** key on telephone.

4.2.17.5 Initiating a Random Layer of a Conference (DSS Only)

Random layer of a conference allows the user to merge any preset conference into current conference.

NOTE

The initiator of a random layer of a conference must be a member of the preset conference being added (as well as a member of the original conference). Random layers are not set up in the switch database; only the preset conferences to be layered must be set up in the switch database. Consult with the system administrator to request a preset conference configuration.

Perform the following procedure to initiate a random layer of a conference:

- a. Lift handset and listen for dial tone.

If home key is not enabled, press idle line button for dial tone.

- b. Dial **#24** on the telephone dial-pad followed by the two-digit number assigned to the preset conference or press line button set up as a preset conference.

All telephone lines assigned to the preset conference now ring. Call entry tone is heard as each participant enters the call.

- c. Announce conference call as each participant answers.

When all participants answer, begin conference.

- d. Press **RECALL DIAL** key and then dial **#28** followed by the two-digit number assigned to the appropriate conference.

All telephone lines are assigned to the random layer ring. As each member enters the conference, a barge-in tone may be heard. This is dependent upon the entry timeout.

- e. Announce the conference call as each participant answers.

When all participants answer, continue the conference.

- f. When call is complete, either hang up handset, or press **RELEASE** key on telephone.

4.2.18 Second Speakerphone Feature

The Second Speakerphone function will cause the audio that is being output to the handset also to be passed to the Speakerphone speaker, allowing other people in the room to monitor the conversation (the speakerphone microphone will be disabled). The Second Speakerphone functionality does not rely on the Speakerphone capability to be enabled. This functionality is available on all phones.

- a. With a call active at the IST-2, press the 2nd button followed by the speakerphone button. The handset will be still in-use, but now the handset ear audio is duplicated at the speakerphone speaker.
- b. Placing the handset in the cradle while operating in second speakerphone mode releases the call. Alternatively, pressing the speakerphone button while operating in second speakerphone mode will activate the speakerphone microphone (if speakerphone is enabled for this IST-2).

5 SELF TEST (TEST MODE)

The IST-2 performs an automatic self-test upon recovery. The self-test mode executes a battery of tests, reporting board/link recovery states and a test summary status to the LCD Display, as well as individual test results to the debug port of the Red Control and Audio Board. Although there are several tests to perform, the automatic Test Mode presents only the summary results to the LCD display in order to expedite the power up process of the IST-2.

The Self-Test Mode consists of two subparts. The first subpart entails a sequence of tests that are automatically executed whenever the IST-2 is powered up or reset. Without any user action, the phone will automatically progress to the Normal Mode if no critical failures are detected. The second subpart of the Test Mode is an optional Manual Test Mode. At the conclusion of the automatic testing the user or maintenance technician will be given the opportunity to enter this Manual Test Mode by pressing the middle “soft key” before timeout. There will be no display message prompting the user to enter the Manual Test Mode. Once entered into the Manual Test Mode the user will be given a display menu that allows him to select one of five different manual tests. If he does not select a test within the 5-second period, the phone will transition into the Normal Mode. If he selects a manual test specific testing involving user interaction will be performed. At the conclusion or timeout of the selected manual test, the phone will again display the 5 manual test options. The user can then select another (or same) manual test or simply allow the 5-second timer to expire, entering the Normal Mode. Figure 2 illustrates the self-test flow.

If the IST-2 experiences a failure during its self-test cycle (either during the automatic or manual self test mode), report the failure indication to the local maintenance technician.

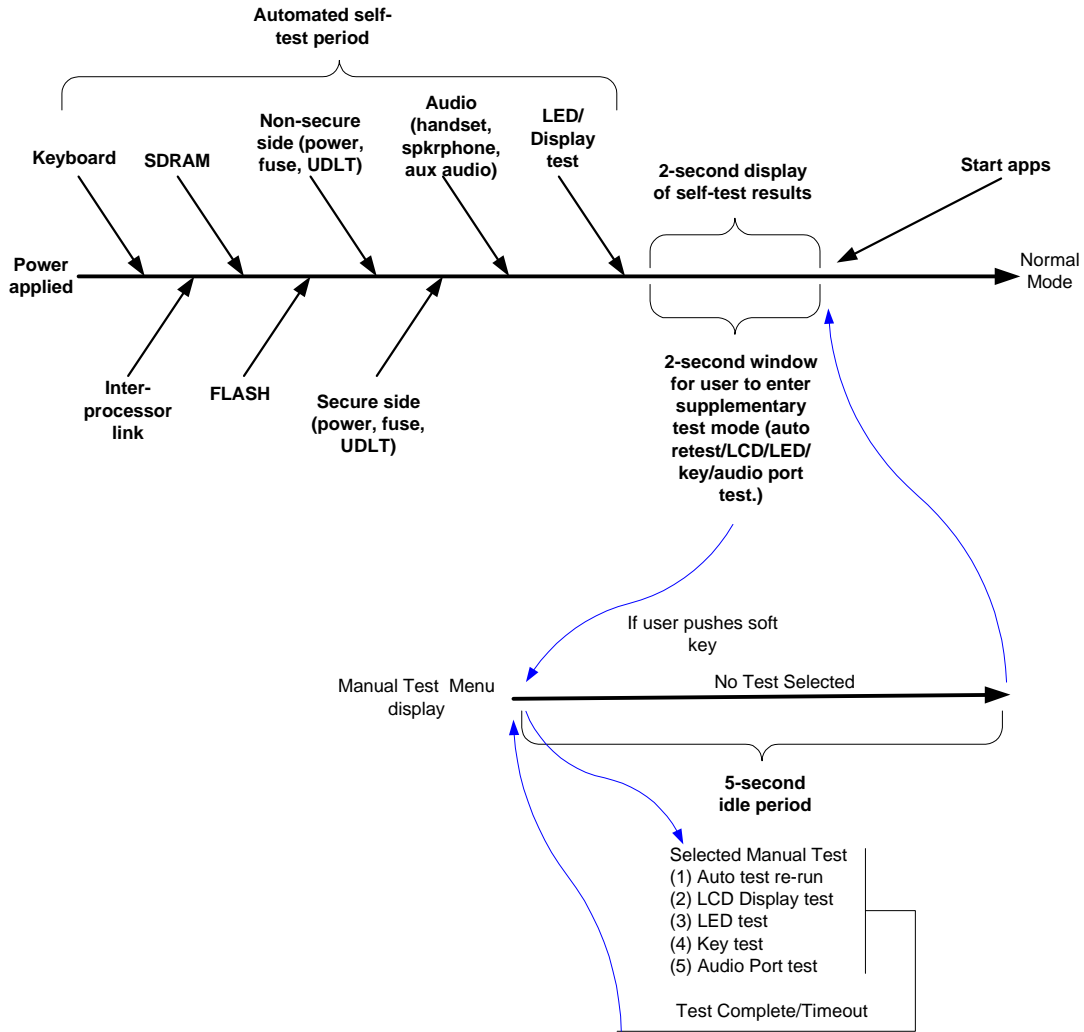


Figure 2: Self-Test Flow

6 ADDITIONAL/REPLACEMENT EQUIPMENT

6.1 TELEPHONE LOGO

A default patriotic logo emblem consisting of an American flag and bald eagle is affixed to the IST-2 at the time of manufacture and shipment. The emblem is replaceable at the option of the user.

The customer can purchase custom logo emblems from any nameplate manufacturer. The emblem will need to be manufactured to mechanical specification 2AA-01285-0000. A copy of this drawing can be found at URL https://extwww.stp.raytheon.com/redswitch/ccsshome_ext.htm. **(To gain access to the redswitch website, contact OO-ALC, Hill AFB.)** Scaled, camera-ready artwork must also be provided. A high quality JPG (.jpg) or EPS (.eps) file can be scaled to fit. In most cases, the artwork will need to be modified to fit the emblem diameter. In some cases it will also be necessary to modify the artwork by adding a border or enlarging the existing border to get the artwork to fit the physical dimensions of the label emblem. If the customer doesn't have an artwork department to provide the needed modifications, or is uncomfortable with the process of creating artwork for the emblem, requests for custom logo emblems can be made through Telecore's website, <http://www.telecore-inc.com>.

6.2 LINE BUTTON LABELS

The IST-2 is supplied with blank line button labels. The user is expected to customize these line button labels for their individual IST-2 line button configuration. Additional line button labels, as well as replacement clear plastic line button cover keycaps, may be ordered at the following URL: https://extwww.stp.raytheon.com/redswitch/ccsshome_ext.htm. **(To gain access to the redswitch website, contact OO-ALC, Hill AFB.)** Additionally, for your convenience, the line button template will be available on this URL as well, for download and customization.

6.3 USER GUIDE

Each IST-2 is accompanied by one copy of this manual. Replacement and additional copies can be viewed, downloaded or ordered at the following website:
https://extwww.stp.raytheon.com/redswitch/ccsshome_ext.htm.

(To gain access to the redswitch website, contact OO-ALC, Hill AFB.)

6.4 CABLES

The IST-2 comes complete with the coiled handset cord that plugs into the handset and handset port on the IST-2. The IST-2 is not supplied with any other cords or adapter cables. If cables other than those provided are needed, consult with your system planner or order additional cables through your support contract office.

For data mode operations of 57.6 kbaud, a low capacitance shielded twisted pair cable is recommended with a cable length of 12 feet or less from IST-2 to terminal device.

NOTE

When the user is active on a non-secure call, the IST-2 may experience a power on reset condition if the IST-2 is operating at an extended cable distance (near a 2000 foot distance) and the Red interface to the phone experiences a power loss.

6.4.1 Connector Input/Output.

Two connectors are provided to allow specific-application cables to be built that would use either the auxiliary audio port, J3, or the data port, J4. The pin-outs for the ports are given in Table 7.

NOTE

Consult with your system planner to verify the TEMPEST qualification is not violated when connecting to auxiliary parts.

Table 7. IST-2 I/O Connector Pinouts

AUXILIARY AUDIO PORT J3 (10 pin, Key 26)		DATA PORT J4 (10 pin, Key 13)	
Pin	Function	Pin	Function
1	Aux Ear –	1	RS-232 Data Output
2	Aux Ear +	2	RS-232 Data Input
3	Aux Mic +	3	GND
4	Aux Mic –	4	+5 V Filtered Output
5	Aux PTT	5	/Force On-Hook Input
6	Aux PTT Return	6	/Force On-Hook Input RTN
7	/Auxiliary Device Connected	7	Configurable Contact Closure
8	/Auxiliary Device Off-hook	8	Configurable Contact Closure
9	Off-Hook Contact Closure	9	N/C
10	Off-Hook Contact Closure	10	N/C
BACKSHELL	Shield/Chassis GND	BACKSHELL	Shield/Chassis GND

GLOSSARY

ANI	Automatic Number Identification
ASCII	American Standard Code for Information Interchange
BIT	Built-In-Test
Bps	Bits per second
cipher code	A unique four-digit number assigned to an individual IST-2 or to a service group consisting of several phones
COMSEC	Communications Security
conference call	A telephone call by which a caller can speak with two or more phone users simultaneously.
confirmation tone	A three-beep tone used to indicate that the user-implemented feature modification is complete.
DTMF	Dual Tone Multi-Frequency
F key	Flash precedence key
FO key	Flash override precedence key
I key	Immediate precedence key
I/O	Input/Output
IPM	Interruptions Per Minute
IST-2	Integrated Service Telephone
LCD	Liquid Crystal Display
LE-80	80 button Line Expansion Device
LED	Light emitting diode
MLPP	Multilevel precedence and preemption
P key	Priority precedence key
PCM	Pulse Code Modulation
PCMCIA	Personal Computer Memory Card International Association

PTT	Push-To-Talk
RAM	Random Access Memory
RBC-1	Red/Black Controller
SAL	Security Access Level
SDN	Subscriber directory number; a unique set of four or five digits assigned to a specific phone or phone group.
speed code	A one-digit number between 0 and 9 used to represent a speed dial storage location.
STU	Secure telephone unit.
trunk	A single or multi-channel communications circuit located between two telephone exchanges for making connections between subscribers.
UDLT	Universal Data Loop Transceiver
UTC	Universal Coordinated Time
VOX	Voice Operating Transmitter

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