



FONSAFE™

HOME SECURITY SYSTEM & CONTROL CENTER



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FONSAFE™

Interrogator Module Installation Manual

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Overview

The Interrogator Alarm Verification Module (Interrogator Module) allows the monitoring bureau operator to "listen in" and/or "talk back" to the user after an alarm has occurred and also determine whether an alarm is an actual alarm condition. The Interrogator Module comes with or without a plastic enclosure that can use up to three microphones and two speakers. The Interrogator Module is connected to the phone line, ahead of the alarm panel.

Additional Features

FEATURE	DESCRIPTION
Auto siren shut off	Sirens shut off automatically while the Interrogator Module is in listen-in or talk-back mode.
Built-in relay	Allows Interrogator Module to share a siren with the alarm panel to facilitate the talk-back mode.
Auxiliary output	Built-in output can be used to activate an external relay.
Phone capabilities	Can dial up to a 20-digit phone number (DTMF or pulse). Automatic phone line disconnect in 2 minutes if the Interrogator Module does not receive any commands to remain on-line.
Memory	Stores all user-programmed data in an EEPROM.

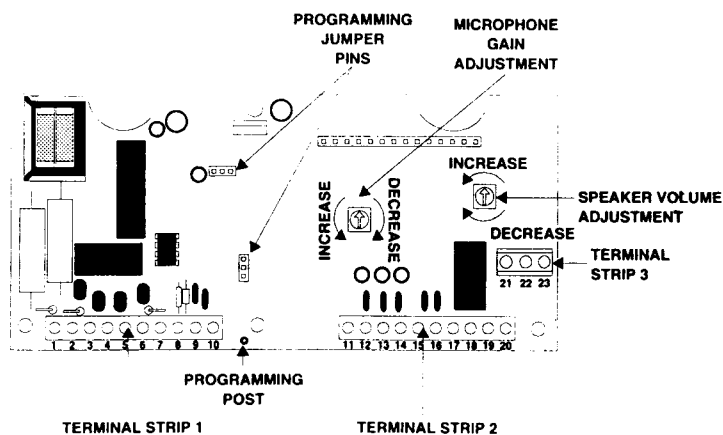
NOTE: The Interrogator Module shall not be employed for UL Listed systems.

Power Requirements

POWER REQUIREMENTS	DESCRIPTION
Input voltage	6.8 VDC
Input current	Inactive - 45 mA to 55 mA Active - up to 300 mA
Overvoltage protection	15 V

Interrogator Components

The following describes the Interrogator Module's physical features. The figure below shows the Interrogator components.



Terminals and Descriptions

TERMINAL	DESCRIPTION
1	6.8 VDC power positive
2	Ground (common)
3	Telco tip
4	Alarm panel tip
5	Alarm panel ring
6	Telco ring
7	Line carrier output (not used)
8	Auxiliary output - maximum 50 mA
9	ITI bus in (not used)
10	ITI bus out (not used)
11	Trip input
12	Microphone 1 positive
13	Shared ground for microphones 1, 2, and 3
14	Microphone 2 positive
15	Microphone 3 positive
16	Speaker +
17	Speaker -
18 through 23	Siren relay terminals

Installation

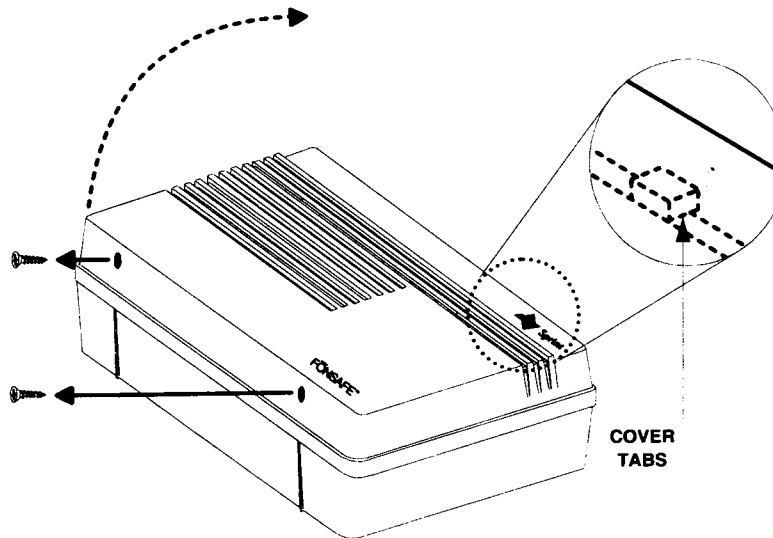
Installing Interrogator with Plastic Enclosure

The Interrogator Module has two types of packaging, with or without a plastic enclosure. To install the Interrogator Module with the plastic enclosure, the enclosure must be partially disassembled.

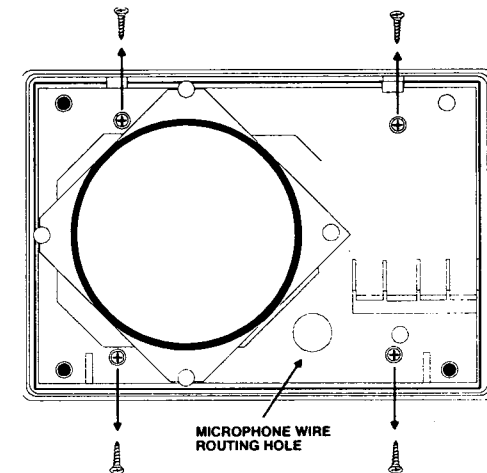
To install the Interrogator Module with the plastic enclosure:

NOTE: Run all necessary wiring before beginning the installation. Use shielded 22-gauge stranded wire for the microphones and 22-gauge stranded for all other wire runs.

1. Remove the two cover screws, lift cover off the cover tabs, and set aside.

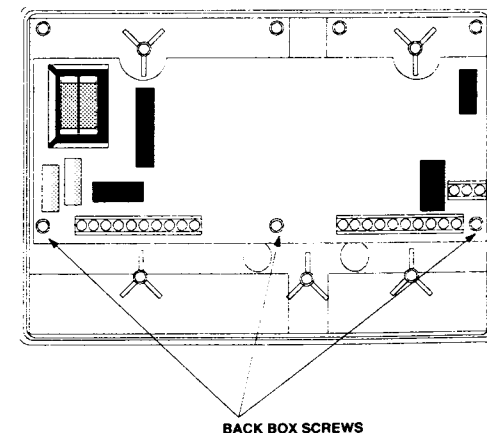


2. Remove speaker plate by removing the four speaker plate screws.

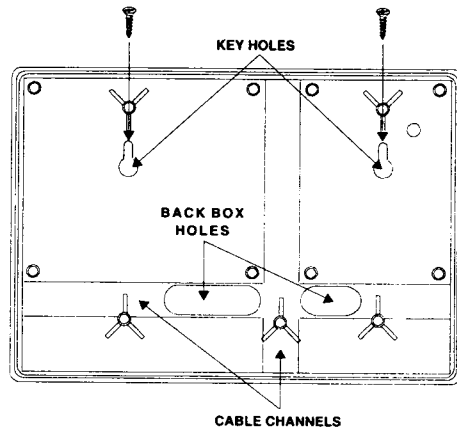


WARNING: YOU MUST BE FREE OF ALL STATIC ELECTRICITY WHEN HANDLING THE INTERROGATOR MODULE. TOUCH A GROUNDED, BARE METAL SURFACE BEFORE TOUCHING A CIRCUIT BOARD, OR WEAR A GROUNDING STRAP.

3. Remove the three back box screws from the Interrogator Module and remove the circuit board.



- Place the back box on the surface where you intend to mount it, and mark the wall through the key holes.



- Feed the prerun wire through one of the back box holes.

NOTE: Use the cable channels for wire runs that are run on top of the mounting surface. Knockouts are provided at either end of the cable channels.

- Mount the back box to the wall, using the appropriate fasteners.
- Replace the circuit board and the back box screws.

Wiring to the FONSAFE System

To wire the Interrogator Module to the FONSAFE system:

- Remove power from the MCU by unplugging the MCU and disconnecting the backup battery.
- Connect the Interrogator Module to the MCU using the tables below and the wiring diagram on the next page.

NOTE: Use two 22-gauge 4-conductor wire runs; one for the phone circuit and one for the MCU power and trip.

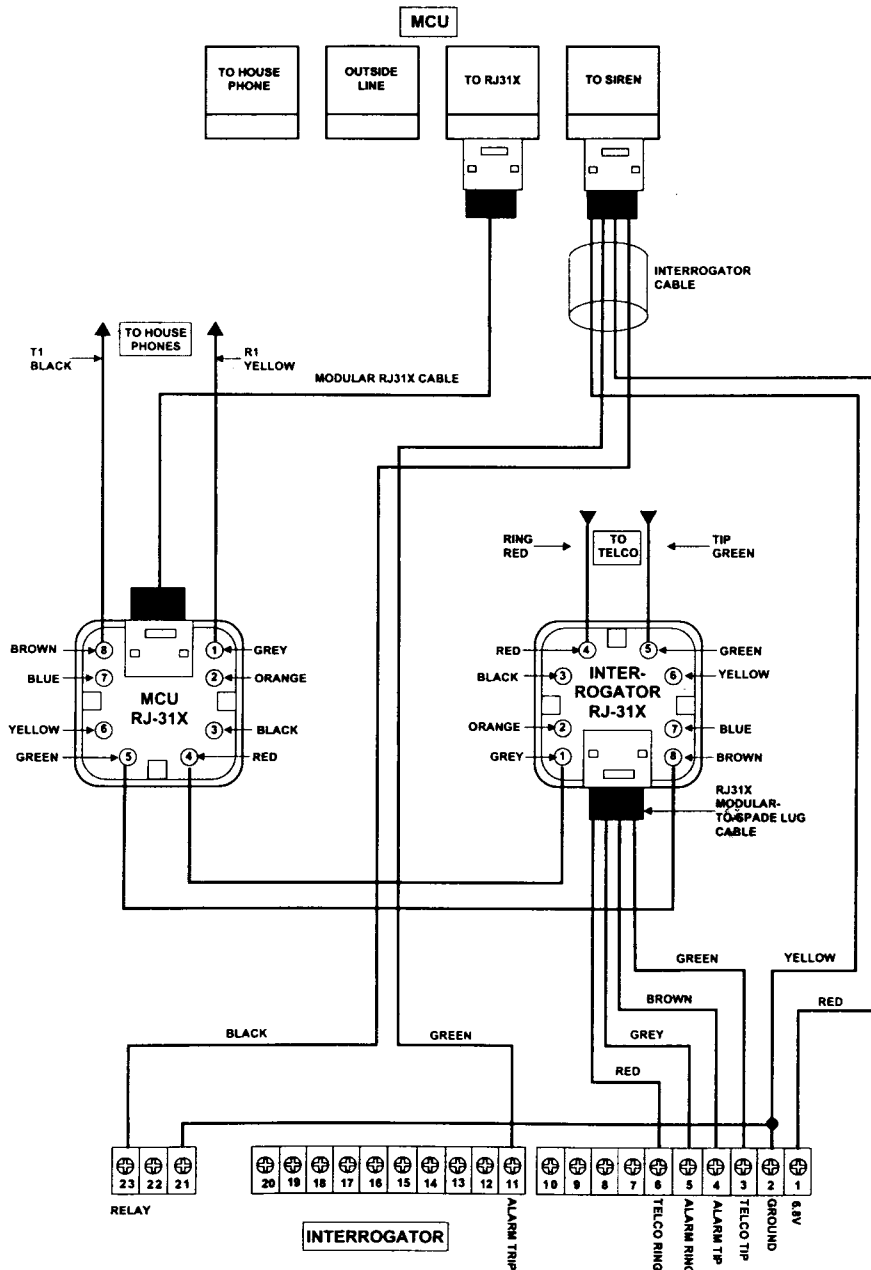
- Connect the phone circuit so the Interrogator Module is ahead of the FONSAFE system (refer to the wiring diagram on the next page).
- Connect the hardwire sirens so that sirens are cut off during listen-in or talk-back mode (refer to the tables below and wiring diagram on the next page).

NOTE: When the module is in the listen-in or talk-back mode, terminal 21 is closed to terminal 23. This relay contact is rated at 1 A at 30 VDC.

CONNECT INTERROGATOR MODULE TERMINAL:	TO FONSAFE MCU TERMINAL:
1 (DC Power)	2 (Siren Output Jack - red wire)
2 (Ground)	4 (Siren Output Jack - yellow wire)
11 (Trip Input)	3 (Siren Output Jack - green wire)
23 (Relay Output)	1 (Siren Output Jack - black wire)

CONNECT INTERROGATOR MODULE TERMINAL:	TO INTERROGATOR MODULE TERMINAL:
21 (Relay Input - ground)	2 (Ground)

Wiring the Interrogator Module to the FONSAFE system



Installing Microphones

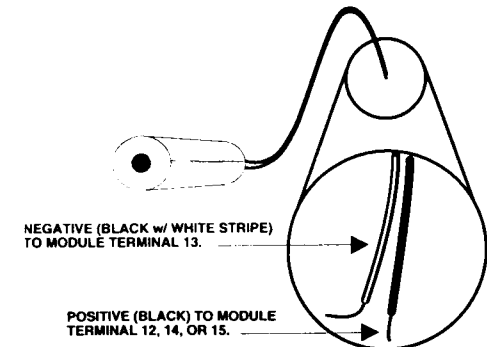
The following describes how to mount and wire microphones. Use the following guidelines when installing microphones:

- A maximum of three microphones can be used with the Interrogator Module.
- Install microphones so that talk-back can be done from different areas at the site.
- Use shielded, 22-gauge, stranded wire for each microphone wire run.

Installing the Drill-Mount Microphone (60-595)

To install the drill-mount microphone:

1. Examine the microphone location to ensure wiring access to the Interrogator Module.
2. Drill a 1/2" hole into the wall or ceiling.
3. Run 2-conductor, shielded, 22-gauge, stranded wire from the microphone location to the Interrogator Module.
4. Connect the microphone to the shielded wire, then connect the shielded wire to the Interrogator Module terminals, observing polarity.



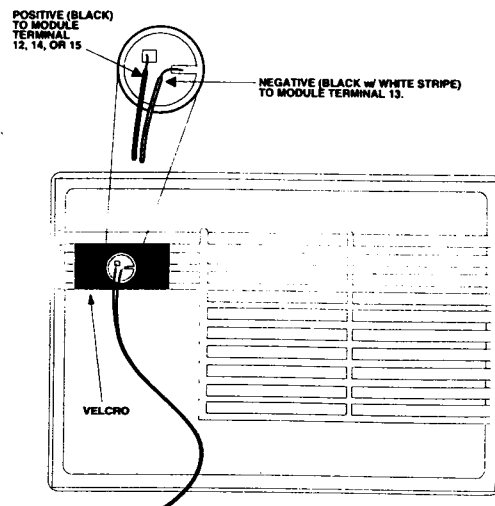
5. Slide the microphone housing into the hole until it is flush with the mounting surface.

Installing the Speaker Cover Microphone (60-596)

This microphone and speaker cover combination is designed to replace a cover on an existing interior siren (60-278 or 60-252).

To install the speaker cover microphone:

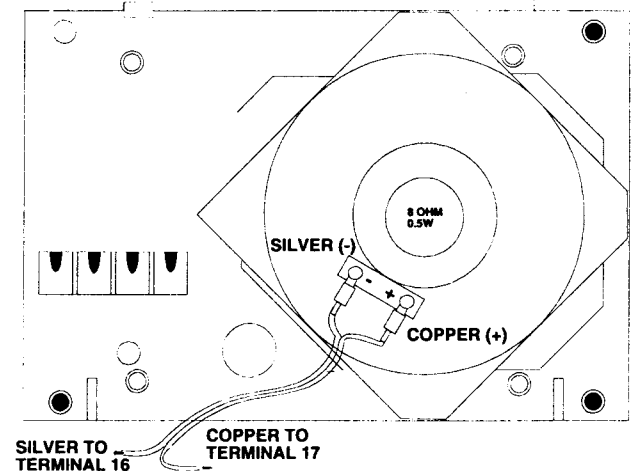
1. Remove the cover from the existing siren and disconnect the siren wires.
2. Remove the siren housing from the wall.
3. Run 2-conductor, shielded, 22-gauge, stranded wire from the siren location to the Interrogator Module.
4. Mount the siren housing back on the wall and reconnect the sirens.
5. Connect the microphone to the shielded wire, then connect the shielded wire to the Interrogator Module terminals, observing polarity (see figure below).
6. Install the microphone inside the speaker cover by pressing it into the velcro (see figure below).
7. Secure the speaker cover to the siren housing.



Installing the Microphone and Speaker on the Interrogator Module Enclosure

The Interrogator Module includes one microphone and one speaker. To install the microphone and speaker on the Interrogator Module enclosure:

1. Connect the microphone to the Interrogator Module's terminals.
2. Connect the speaker wire (included) to the Interrogator Module's terminals.

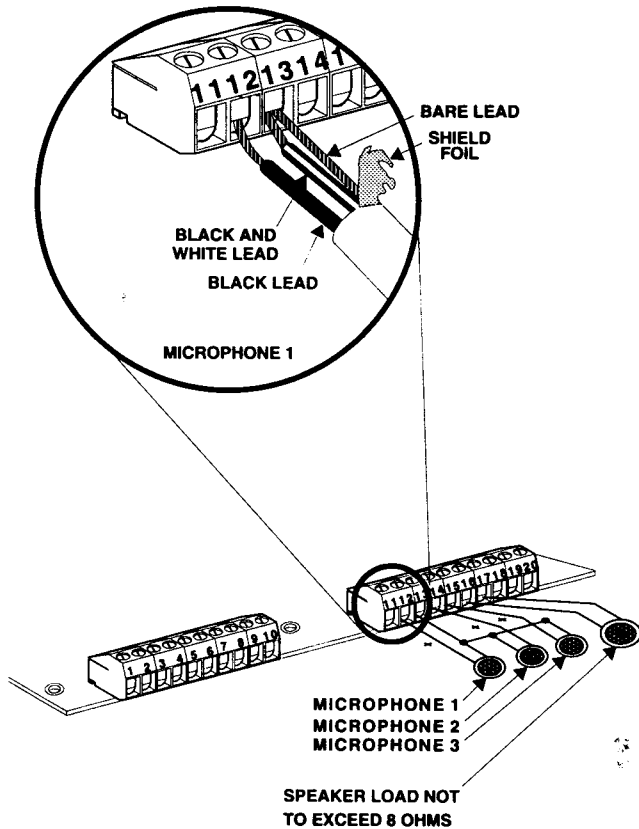


3. Connect the fast-on speaker wire ends to the speaker on the speaker plate.
4. Set the speaker plate on top of the Interrogator Module housing.

NOTE: Don't install the microphone on the Interrogator Module enclosure at this time. Since the enclosure must be attached to the Interrogator Module, wait until all programming is completed.

Connecting Microphones and Speakers

Connect all microphones and speakers as follows.



NOTE: Speakers must be wired so that the total impedance of the circuit is at least 8 ohms. For example, two 8-ohm speakers must be wired in series (16 ohms).

Programming

Programming Commands

The following describes the commands used for programming the Interrogator Module.

TO USE COMMAND:	TO:	PRESS:
Log on	Log on for programming from off-site.	* + # + 10 + PSWD + #
Auxiliary Output Manual Control	Manually turn the auxiliary output OFF and ON. (Default = none)	* + # + 11 + # + 0 (OFF) * + # + 11 + # + 1 (ON)
Retrieve Account Number	Retrieve Interrogator Module account number, which is given in DTMF tones. (Default = none)	* + # + 12 + #
Interrogator Password	Set the password used for Log On. (Default = 1 2 3 4)	* + # + 30 + nnnn + # (n = any 4 digits)
Dialing Format	Set the dialing format for either DTMF or pulse. (Default = DTMF)	* + # + 31 + 0 + # (pulse) * + # + 31 + 1 + # (DTMF)
Interrogator Phone Number	Store the phone number used by the Interrogator Module when the dial-back feature is used. (Default = none) For pauses, press and hold 7 for five seconds.	* + # + 32 + n + # (n = up to 20-digit phone number)
Off-Site Access Ring Detect	Control whether the Interrogator Module will answer phone for programming. (Default = 1) Note: This command must be disabled to program the Interrogator Module.	* + # + 33 + 0 + # (OFF) * + # + 33 + 1 + # (ON)
Account Number	Set the Interrogator Module account number (numerical only). Can be the same as the MCU account number if no alpha characters exist. (Default = none)	* + # + 38 + nnnnn + # (nnnnn = any 5 digits)

TO USE COMMAND:	TO:	PRESS:
MCU Type	Set the Interrogator Module for use with the connected MCU. (Default = 1)	* + # + 39 + n + # n = 2 (FONSAFE)
Trip Input and Trip Action	Set the trip input to match the output from the connected MCU, and sets the trip action mode. (Trip input default = 2) (Trip action default = 0)	* + # + 40 + x + y + # x = Trip Input 0 (falling edge) 1 (rising edge) 2 (ITI) y = Trip Action 0 = instant on with activation beeps from Interrogator Module 1 = instant on without activation beeps from Interrogator Module 2 = call back and answer after first ring 3 = dial out after trip detect 4 = call back without on-site phones ringing Note: It is recommended to only use Instant Mode (y = 0 or 1).
Auxiliary Output Option	When the Interrogator trip input is activated and command 41 is set to 1 (ON), the Interrogator Module provides a switched closure to ground, providing up to 50 mA at the auxiliary output (#8 on terminal strip 1).	* + # + 41 + n + # n = 0 (disabled) 1 (enabled)

TO USE COMMAND:	TO:	PRESS:
Auxiliary Output Time	Set the auxiliary output time. The auxiliary output time determines how long the auxiliary output is active, after the Interrogator Module is tripped. (Default = 0) Notes: Command 11 overrides command 41 unless there is time left on the timer (command 42). If command 41 is set to 1 (enabled), the time period that the auxiliary output will be ON is determined by command 42.	* + # + 42 + x + 0 + # x = auxiliary output time 0 (5 seconds) 1 (10 seconds) 2 (5 minutes) 3 (10 minutes)
Switch Hot Key Assignment	When set to 1, switches hot key assignments as follows: 0 to 3, 3 to 0, 1 to 4, or 4 to 1.	* + # + 44 + n n = 0 (default) 1 (switch)
Reset	Reset all programming to default settings.	* + # + 49 + #

Programming the Interrogator Module

The following describes requirements for programming the Interrogator Module.

Programming Requirements

- A TouchTone phone must be used to program the Interrogator Module.

NOTE: Some TouchTone phones may not program or operate the Interrogator Module if they require too much power to operate or if they don't generate true DTMF tones.

- You must program from a phone line other than the one that the Interrogator Module and MCU are using.
- The Interrogator Module must have ring detect disabled.

Activating Interrogator Support

To program the password, dialing format, and phone number, you must be interactive with the Interrogator Module. This is done by enabling the MCU's Interrogator Module support.

To enable the MCU's Interrogator Module support:

1. Press PROGRAM on the MCU. The MCU announces: *PLEASE ENTER PASSWORD.*
2. Enter Master Password.
3. Press 7, 5 on the MCU. This toggles the MCU's Interrogator Module support on and off (default is off).

The MCU announces the MCU's status, including:
PHONE I/O ON or *PHONE I/O OFF.*

NOTE: Make sure the MCU announces: *PHONE I/O ON.*

NOTE: The MCU refers to Interrogator Module support as "PHONE I/O" because of vocabulary restraints.

Off-Site Programming Access

The following pages contain two methods for gaining off-site programming access.

Use the **2 Ring, Pause, 2 Ring Method** if the system is connected to a phone that is also connected to an answering machine. Use the **10 Ring Method** if the system is connected to a phone that is NOT connected to an answering machine.

2 Ring, Pause, 2 Ring Method (Instant Mode)

If the system is connected to a phone that is also connected to an answering machine, and the Interrogator Module is in Instant Mode, follow the steps on the next page.

NOTE: This procedure only works if the Interrogator Module is in Instant Mode.

2 Ring, Pause, 2 Ring Method (Instant Mode) cont.

WHEN TO USE	WHAT TO DO	WHAT HAPPENS
To call the system from any off-premises TouchTone phone	Enter the phone number the system is connected to. Let the phone ring twice, then hang up. Pause for 10 seconds, then call again.	The system will pick up after the 2nd ring and ask for the MCU Password.
	Enter the MCU Password.†	MCU announces menu options.
	Press *, *, 0.	MCU announces: <i>GOOD-BYE</i> . You will then hear beeping. This means the Interrogator Module has the line.
	Press *.	The beeps stop. You can start programming the Interrogator Module. NOTE: If you do not press * within 20 seconds, the Interrogator Module will hang up.
	Press 9, 9 to log off the Interrogator Module.	

† You have nine attempts to enter the MCU password (three calls with three tries per call). If you fail to enter the correct password after the ninth attempt (third call, third try), the MCU will hang up, and remote access to the MCU will be disabled for 15 minutes.

2 Ring, Pause, 2 Ring Method (1-Ring Mode)

If the system is connected to a phone that is also connected to an answering machine, and the Interrogator Module is in 1-Ring Mode, follow the steps on the next page.

NOTE: This procedure only works if the Interrogator Module is in 1-Ring Mode.

2 Ring, Pause, 2 Ring Method (1-Ring Mode) cont.

WHEN TO USE	WHAT TO DO	WHAT HAPPENS
To call the system from any off-premises TouchTone phone	Enter the phone number the system is connected to.	
	Let the phone ring twice, then hang up.	
	Pause for 10 seconds, then call again.	The system will pick up after the 2nd ring and ask for the MCU Password.
	Enter the MCU Password.†	MCU announces menu options.
	Press *, *, 0.	MCU announces: <i>GOOD-BYE</i> and hangs up.
	Enter the phone number the system is connected to.	The Interrogator Module will answer after the 1st ring, and you will hear beeping. This means the Interrogator Module has the line.
Press *.	The beeps stop. You can start programming the Interrogator Module. NOTE: If you do not press * within 20 seconds, the Interrogator Module will hang up.	
Press 9, 9 to log off the Interrogator Module.		

† You have nine attempts to enter the MCU password (three calls with three tries per call). If you fail to enter the correct

password after the ninth attempt (third call, third try), the MCU will hang up, and remote access to the MCU will be disabled for 15 minutes.

10 Ring Method (Instant Mode)

If the system is connected to a phone that is NOT connected to an answering machine and the Interrogator Module is in Instant Mode, follow the steps on the next page.

NOTE: This procedure only works if the Interrogator Module is in Instant Mode.

10 Ring Method (Instant Mode) cont.

WHEN TO USE	WHAT TO DO	WHAT HAPPENS
To call the system from any off-premises TouchTone phone	Enter the phone number the system is connected to.	The MCU will answer after 10 rings and ask for the MCU password. NOTE: The MCU will answer after 7 rings, if an alarm or trouble has occurred.
	Enter the MCU Password.†	MCU announces menu options.
	Press *, *, 0.	MCU announces: <i>GOOD-BYE</i> . You will hear beeping. This means the Interrogator Module has the line.
	Press *.	The beeps stop. You can start programming the Interrogator Module. NOTE: If you do not press * within 20 seconds, the Interrogator Module will hang up.
	Press 9, 9 to log off the Interrogator Module.	

† You have nine attempts to enter the MCU password (three calls with three tries per call). If you fail to enter the correct password after the ninth attempt (third call, third try), the MCU will hang up, and remote access to the MCU will be disabled for 15 minutes.

10 Ring Method (1-Ring Mode)

If the system is connected to a phone that is NOT connected to an answering machine and the Interrogator Module is in 1-Ring Mode, follow the steps on the next page.

NOTE: This procedure only works if the Interrogator Module is in 1-Ring Mode.

10 Ring Method (1-Ring Mode) cont.

WHEN TO USE	WHAT TO DO	WHAT HAPPENS
To call the system from any off-premises TouchTone phone	Enter the phone number the system is connected to.	The MCU will answer after 10 rings and ask for the MCU password. NOTE: The MCU will answer after 7 rings, if an alarm or trouble has occurred.
	Enter the MCU Password.†	MCU announces menu options.
	Press *, *, 0.	MCU announces: <i>GOOD-BYE</i> and hangs up.
	Enter the phone number the system is connected to.	The Interrogator Module will answer after the 1st ring, and you will hear beeping. This means the Interrogator Module has the line.
	Press *.	The beeps stop. You can start programming the Interrogator Module. NOTE: If you do not press * within 20 seconds, the Interrogator Module will hang up.
	Press 9, 9 to log off the Interrogator Module.	

† You have nine attempts to enter the MCU password (three calls with three tries per call). If you fail to enter the correct password after the ninth attempt (third call, third try), the MCU will hang up, and remote access to the MCU will be disabled for 15 minutes.

What to Listen for When Programming

During programming, the Interrogator Module responds in one of two ways:

- ACK - high-frequency tone indicating the Interrogator Module accepted the programming command.
- NACK - low-frequency tone indicating the Interrogator Module rejected the programming command.

Programming for the FONSAFE System

The following steps describe the basic programming for use with a FONSAFE system.

1. Set trip input to 2 by pressing * + # + 40 + 2 + y + #, where y is the trip action (default is 0). It is recommended to only use Instant Mode (y = 0 or 1). Refer to *Programming Commands* in this manual.
2. Set MCU type to 2 by pressing * + # + 39 + 2 + #.
3. Disable off-site access by pressing * + # + 33 + 0 + #.
4. Set any additional programming features (refer to *Programming Commands* in this manual).
5. Press 9 9 to log off and hang up.

Operating the Interrogator Module with Hot Key Commands

Hot keys are operational commands that work only if an alarm has just-occurred (within 5 minutes) or when the proper password (log-on procedure) is used. The following describes the hot key commands.

HOT KEY	TASK	ACTION
0 (3)	All Mics ON (gain toggle)	Press 0 and press 0 again to increase the gain on all microphones.
1 (4)	Mic 1 ON (gain toggle)	Press 1 and press 1 again to increase the gain on microphone 1.
2	Mic 2 ON (gain toggle)	Press 2 and press 2 again to increase the gain on microphone 2.
3 (0)	Mic 3 ON (gain toggle)	Press 3 and press 3 again to increase the gain on microphone 3.
4 (1)	Turn speaker ON	Press 4 to speak (press 0 to listen).
6	Turn ON the auxiliary relay for the time specified by command 42	Press 6.
7	Extend connection time	Press 7.
9	Hang up	Press 9 9.

NOTE: Numbers in parenthesis () indicate the switched setting when command 44 is set to 1.

NOTE: Sometimes, the audio on-site may be so loud that it interferes with monitoring bureau communication. To correct this, press and hold the number 5 button for 5 seconds on a TouchTone phone. This toggles all microphones to low gain.

Testing

Before you begin the following test procedures, the CS-4000 operator must have a parallel phone connected to the line the MCU calls in on. (Sprint North Supply Part No. 483019 or Radio Shack Part No. 279-357 can be used to parallel a TouchTone phone.)

Off-Site Access Testing

This procedure describes how to test both off-site access methods, along with the dial-back and hang-up commands.

To test the two off-site access methods:

NOTE: While testing the off-site access methods, the dial back and hang up commands are tested also.

1. Access the Interrogator Module by using either the 2 Ring, Pause, 2 Ring Method or 10 Ring Method (refer to *Off-Site Programming Access* in this manual for information on using the methods).
2. Test the Log On command by pressing * + # + 10 + PSWD + #. The Interrogator Module responds with an ACK.
3. Program the phone number in the Interrogator Module to the phone number where you are by pressing * + # + 32 + desired phone number + #. The Interrogator Module responds with an ACK.
4. Press 9 9 to disconnect.
5. Access the Interrogator Module by using either the 2 Ring, Pause, 2 Ring Method or 10 Ring Method (refer to *Off-Site Programming Access* in this manual for information on using the methods).

NOTE: If no phone number is programmed for dial back, skip to step 11.

6. Press 8 8 and the Interrogator Module disconnects.
7. Hang up the phone.
8. The Interrogator Module calls back. Pick up the phone, listen for the beeps, and acknowledge the Interrogator Module by pressing *.
9. Enter the Log On command.
10. Press * + # + 12 + # and the Interrogator Module responds with DTMF tones, which represent the account number. This only occurs if the account number was programmed in a previous call using the Account Number Command (refer to *Programming Commands* in this manual).
11. Press 9 9 to disconnect.

Troubleshooting

The following contains troubleshooting information to help you identify and solve problems encountered with the system and its components.

Phone System

Problem

- No dial tone on house phones after wiring RJ31X jack or no dial tone on house phones after plugging in the DB-8 cord.

Actions

- Check for improper wiring of the RJ31X jack. Refer to *Wiring to the FONSAFE System* in this manual for proper MCU wiring diagrams and check the wiring.
- Check for improper wiring of DB-8 cord to MCU and Interrogator Module terminals. Refer to *Wiring to the FONSAFE System* in this manual for proper MCU wiring diagrams and check the wiring.
- Check for defective RJ31X jack. If defective, replace jack.
- Check for defective DB-8 cord. If defective, replace cord.

Problem

- Can't dial out on phones (constant dial tone).

Action

- This indicates there are polarity-sensitive phones on the premises. Reverse the wires you connected to the brown and gray wire terminals on the RJ31X jack.

Problem

- MCU does not seize the phone line.

Action

- RJ31X jack is wired between house phones. Jack must be wired between phones and incoming Telco block (phone protector block) for proper line seizure.

Monitoring Bureau Communication

Problem

- Monitoring bureau is not receiving any reports.

Actions

- DB-8 cord not plugged into RJ31X jack. Plug cord into jack.
- Improper wiring of RJ31X jack. Check the wiring. Refer to *Wiring to the FONSAFE System* in this manual for proper MCU wiring diagrams and check the wiring.
- Verify the phone number of the receiver line with the monitoring bureau operator. Reprogram the phone number if necessary and re-test.
- Defective RJ31X jack. Replace jack.
- Improper wiring of DB-8 cord to MCU terminals. Refer to *Wiring to the FONSAFE System* in this manual for proper MCU wiring diagrams and check the wiring.
- Defective DB-8 cord. Replace cord.

Microphones

Problem

- Microphone gain is low with pot adjustment set to maximum.

Action

- Microphone wiring polarity is reversed. Correct wiring.