

# Miniguard HF-2 Series

Handsfree Telephone Entry Autodialer



## INSTALLATION and OPERATIONAL INSTRUCTIONS

(Firmware revision #041215 Rev. C HF2X PWR2)  
with 10 number rollover



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October 15, 2005

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**INTRODUCTION**

This manual contains all the information required to install and program the TRIGON MINIGUARD HF-2. If you are using this manual to install this unit, it is very important to read all the sections in order.

If you are using this manual as a programming guide after the initial installation, you may find the TABLE OF CONTENTS useful in locating the particular programming procedure you need.

You should read these instructions before you begin installation. This will insure that everything is done efficiently.

**PRODUCT OVERVIEW**

The TRIGON HF-2 is a multi-number auto dialer. Upon pressing the button, the HF-2 dials a programmed telephone number. If the number dialed is busy or does not answer, the HF-2 will hang up and dial the next programmed number, up to a maximum of 10. If the last programmed number is busy or does not answer, the HF-2 will rollover and start the dialing process again with the first phone number.

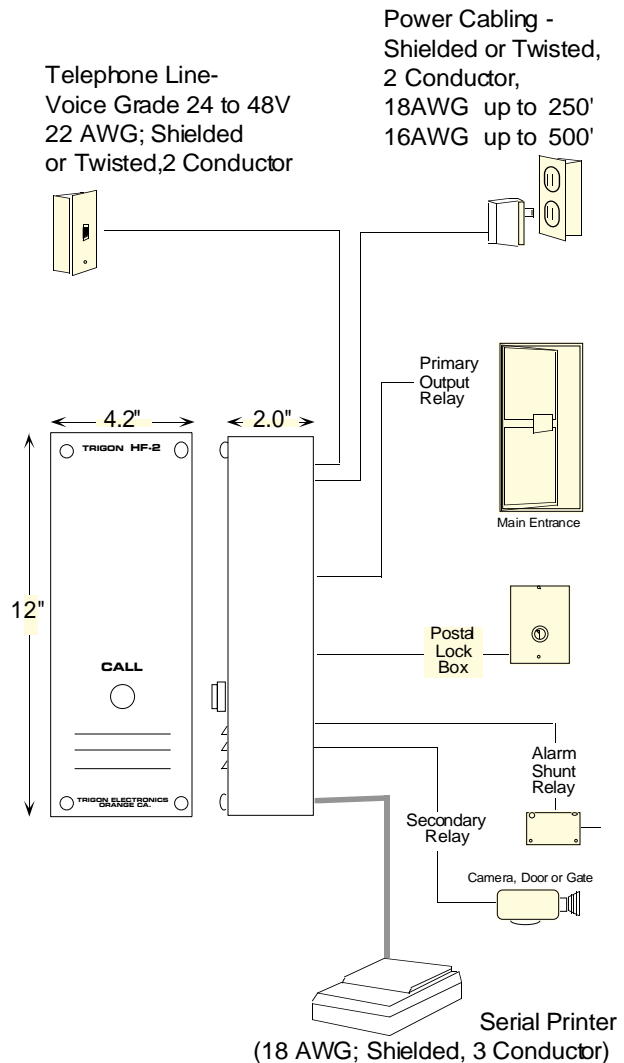
The HF-2 comes standard with 2 output relays. These relays can be programmed to operate in several different ways. Relays can be set to pulse momentarily for camera call-up, they can be set to stay latched on for the duration of the call, or they can be set to operate for a timed duration (for door strike operation, etc).

There are two Modes of Operation incorporated in the HF-2:

1. The **Standard Mode** provides timed closure of the relays and is typically used for telephone entry.
2. Optional **Ring Down Mode:**

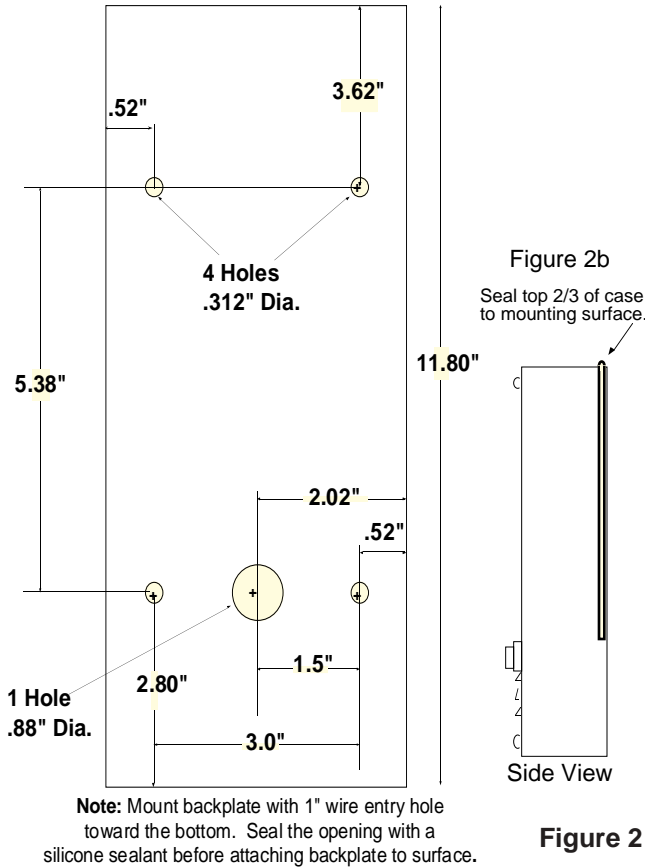
When call call button is pressed, the HF-2 seizes the telephone line and waits for the PBX to dial a preprogrammed number.

A Site I.D. code feature provides for unit identification. The Site I.D. code is a programmable four digit code that is transmitted by the HF-2 when it receives a command from the called party. This code, when interpreted by a Trigon DTMF Decoder, will identify the calling unit.



**Figure 1**

**MOUNTING**



Arrangements must be made with the local telephone company for installation of a standard voice-grade telephone line (touch-tone or rotary) as close to the unit mounting location as possible. The telephone company may require the following information.

FCC Registration No.....1Z8898-62546-DI-T  
 Ringer Equivalence.....0.8B  
 Connector.....Terminal Block

The unit is designed to be as weather resistant as possible\*. We do however recommend some shelter from direct rain and sunlight. An overhang is usually sufficient. Bolt the back plate (Fig. 2) to the mounting surface using the four .312" holes in the chassis. Feed the wiring through the access hole in the rear of the back plate, or utilize the knock-out on the bottom to feed through conduit when access through the back wall is not workable. At this point, the wiring should NOT be live (energized).

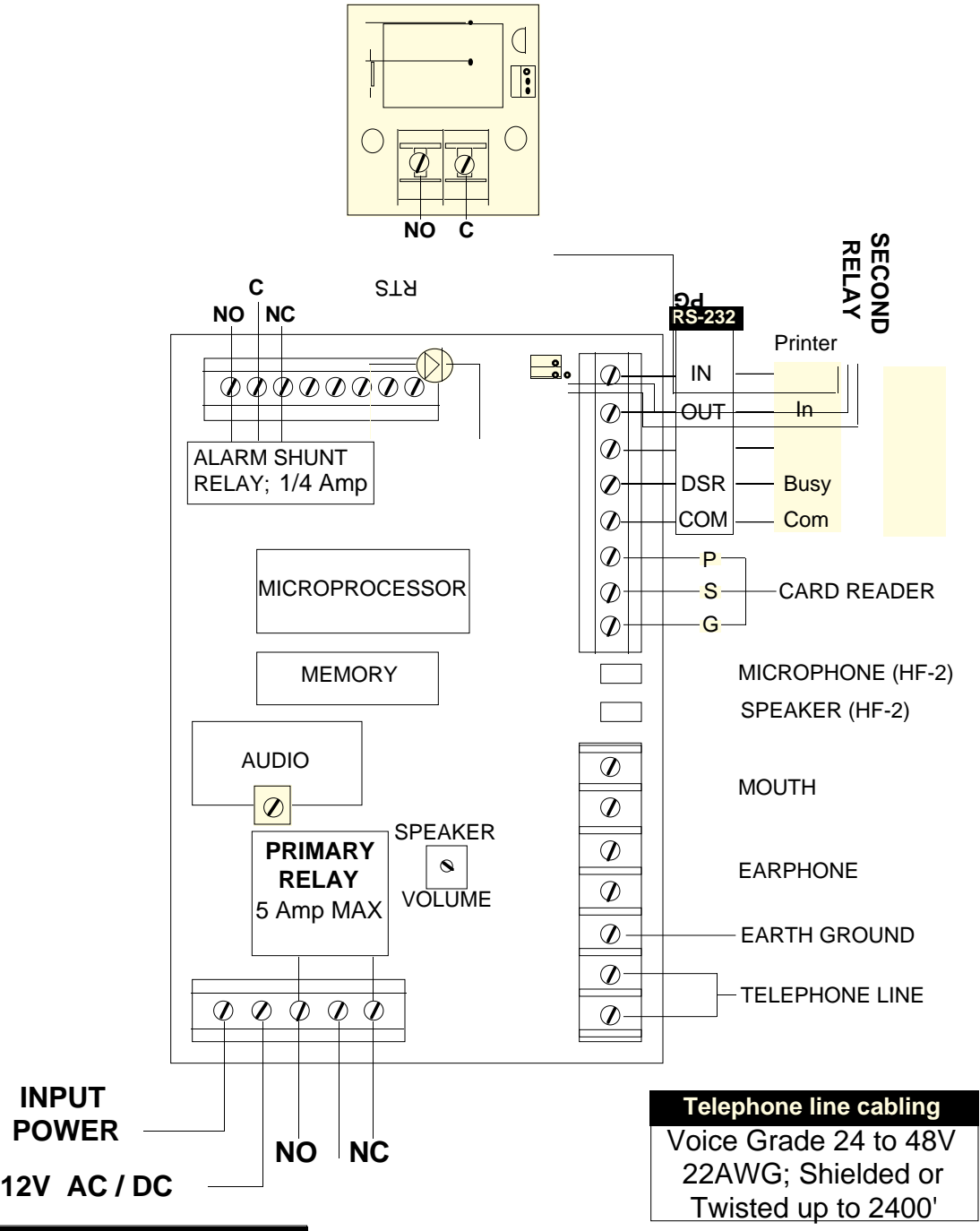
**Note:** If used in extreme weather, a bead of silicon sealant should be run around the outside top two thirds of the unit, after the front case is secured.

(Fig. 2b). Trigon also sells an optional Lighted Weather Hood that should be used if the unit is exposed to direct weather.

**WIRING**

1. Use the wiring diagram (Fig. 3) for wire connection information.
2. Do not power any other device from the Trigon's 12 VAC transformer. If a substitute transformer is used, be sure it is rated 12 VAC, 40VA, UL Class 2 listed. The 12 VAC input power wires should be 18AWG, 600V, insulated wire. This should be sufficient for distances up to 200 feet.
3. Do not energize wires until installation is completed.
4. Ground the unit by attaching a separate 12 AWG ground wire to the ground location on the terminal block. This ground wire should go to a grounding rod or grounded metal conduit.
5. Trigon recommends that an EMI filter (Cornell-Dubilier Model APF 1021 or equivalent) be mounted between the 12 VAC transformer output and the unit. EMI/RFI filters are available from Trigon. Mount the filter as close to the unit as possible. Ground the filter to the same point as unit ground.
6. Shielded cable is recommended. Ground the shielding to the same point as the unit and filter. To avoid ground loops, do not ground the shield at both ends. Use 600V insulated wire for this installation.
7. Isolate the Telco phoneline from 12 VAC power wires. This will prevent 60 Hz hum from occurring on the phoneline. Use 22 AWG wire on Telco line run distances of up to 2400 feet. Consult the factory for distances greater than 2400 feet.
8. Power Relays 1 and 2 are dry contact, Form C type, rated for 5 AMPS @ 30 VDC/ 250VAC.
9. Connect printer wiring to the RS-232 port (Printer IN to RS-232 OUT, Printer BUSY to RS-232 DSR, Printer COM to RS-232 COM).
10. If all wiring and grounding is completed, mount the faceplate onto the backbox.

**WIRING DIAGRAM**



Input power cabling	
0-250'	18 AWG; Shielded
250 to 500'	16 AWG; Shielded
500' +	14 AWG; Shielded

**Telephone line cabling**  
 Voice Grade 24 to 48V  
 22AWG; Shielded or  
 Twisted up to 2400'

Figure 3

**General Programming Information**

The "Initial Setup" for the HF-2 has been programmed at the factory. These factory default settings may be changed to better suit your particular application. If you decide to alter these settings, follow the instructions below. It is important that each programming step be taken in order. When reprogramming a specific feature, you must always enter the programming mode first. You may then go to the appropriate procedural steps for the changes desired.

Record below the autodialed numbers to be programmed into the HF-2.

**Autodialed Numbers**

**Primary Auto dial Number (16 digit max)**

\_\_\_\_\_

**Second Auto dial Number (16 digit max)**

\_\_\_\_\_

**Third Auto dial Number (16 digit max)**

\_\_\_\_\_

**Fourth Auto dial Number (12 digit max)**

\_\_\_\_\_

**Fifth Auto dial Number (16 digit max)**

\_\_\_\_\_

**Sixth Auto dial Number (16 digit max)**

\_\_\_\_\_

**Seventh Auto dial Number (16 digit max)**

\_\_\_\_\_

**Eighth Auto dial Number (16 digit max)**

\_\_\_\_\_

**Ninth Auto dial Number (16 digit max)**

\_\_\_\_\_

**Tenth Auto dial Number (16 digit max)**

\_\_\_\_\_

**Site ID Number-if required Number (4 digits)**

\_\_\_\_\_

**PROGRAMMING**

**(A To Enter Program Mode:**

1. Call the telephone number of the unit from a touch tone phone.
2. Listen for the three beep tones.
3. Enter '\*' then the unit's 4 digit Program Access Code within 10 seconds.
4. Listen for a 2 beep hi/lo tone.
5. If desired, exit Program Mode by pressing '#' (wait for two second tone).
5. To terminate call, press '7'.

If the unit is new, use the preset factory code. (Factory code is 9753).

**Note:** If you do not know the Program Access Code, call Trigon Tech Service. Have the unit's phone number ready. Trigon can call the unit and send a special command tone sequence that will reset the phone to 9753.

**(B Setting Operational Modes:**

**These settings determine how the HF-2 will dial and answer.**

Except when noted, each of the following program commands will result in two (2) tones (high/low) signifying their completion and acceptance.

*Standard Mode* allows the relays to be activated for a specified time period (such as for telephone entry purposes).

1. Unit must be in Program Mode.
2. Press '6' then press '0' to set unit for standard mode touch tone dialing.
3. Listen for (2) hi/lo tones.
4. If desired, exit Program Mode by pressing '#' (wait for two second tone).
5. To terminate call, press '7'.

*Ringdown Mode*, causes the HF-2 to present an off hook signal to a PBX or KSU so that the PBX/KSU will auto dial the preset program numbers that it has been programmed to call.

1. Unit must be in Program Mode.
2. Press '6' then press '4' to set unit for Ringdown Mode with touch tone dialing.
3. Listen for (2) hi/lo tones.
4. If desired, exit Program mode by pressing '#' (wait for two second tone).
5. To terminate call, press '7'.

**(C Programming in Telephone Numbers:**

1. Unit must be in Program Mode.
2. Press '2' then '1' (wait for tone) and enter the first phone number. Press '#' when complete. Press '2' then '2' (wait for tone) and enter the second phone number. Press '#' when complete. If more numbers are needed press '2' then '3' (wait for tone) and so on for up to 10 phone numbers. Press '#' when complete.
3. Wait for hi/lo tone.
4. If desired, exit Program Mode by pressing '#' (wait for two second tone).
4. To terminate call, press '7'.

**Note:** To replace a number simply put a new one over the top of the old one. To kill a number, just enter the normal command like "23" and hit '#' next. If you need a delay in the number, use the "\*" key as a number. A one second delay will be implemented for each "\*" encountered in the string of telephone numbers.

## PROGRAMMING, Cont.

### (D Verifying Telephone Numbers:

1. Unit must be in Program Mode.
2. Press ' ' then press '1' to verify the first phone number entered.
3. Press ' ' then press '2' to verify the second phone number entered etc.
4. If desired, exit Program Mode by pressing '#' (wait for two second tone).
5. To terminate call, press '7'.

### (E Setting the Site ID Number:

This number identifies the unit upon request from a central office.

1. Unit must be in Program Mode.
2. Press '1'.
3. Enter a four digit number.
4. Listen for two 'beeps' indicating command accepted.
5. If desired, exit Program Mode by pressing '#' (wait for two second tone).
6. To terminate call, press '7'.

### (F Changing Program Access Number:

This will change the factory preset number of '9753'.

1. Unit must be in Program Mode.
2. Press '3'.
3. Enter a new four digit number.

You will hear two 'beeps' indicating command accepted.

4. If desired, exit Program Mode by pressing '#' (wait for two second tone).
5. To terminate call, press '7'.

### (G Setting the Relay Duration Timer:

This will set the length of time the Primary and Secondary relays remain activated. The duration can be set from 1 to 45 seconds.

The duration is set by entering the number of five-second intervals desired (2= ten seconds).

1. Unit must be in Program Mode.
2. Press '7'.
3. Enter the number of 5 sec. intervals required.

You will hear two 'beeps' indicating command accepted.

4. If desired, exit Program Mode by pressing '#' (wait for two second tone).
5. To terminate call, press '7'.

**Note:** If '0' is entered in step 3, relays will pulse for one second.

### (H Setting Incoming Ring Count:

Entering a digit value of 1 to 9 will set the number of rings the HF-2 will count before auto-answering an incoming call.

1. Unit must be in Program Mode.
2. Press '5'.
3. Enter the number of rings desired ( 1 to 9).
- or
4. Enter '0' if an audible ring is desired from the HF-2 whenever it is called.

You will hear two 'beeps' indicating command accepted

5. If desired, exit Program Mode by pressing '#' (wait for two second tone).
6. To terminate call, press '7'.

**Note:** If '0' was programmed for an audible ring, the call may be answered by pressing the first 'Call' button on the face of the unit.

### (I Setting the Dial Mode.

This will select Rotary or Touch-Tone dialing.

1. The unit must be in Program Mode.
2. Press '6'.
3. Press '0' for Touch-Tone.
- or
4. Press '1' for Rotary.

You will hear two 'beeps' indicating command accepted

5. If desired, exit Program Mode by pressing '#' (wait for two second tone).
6. To terminate call, press '7'.

### (J Setting Call Length:

This is the period of time allowed for conversation before time-out. The time desired is measured in seconds, and entered using a 3 digit number. (060= 1 minute, 180= 3 minutes, etc). Factory preset is 3 minutes.

1. Unit must be in Program Mode.
2. Press '8'.
3. Enter call length in seconds (001 to 999).

You will hear two 'beeps' indicating command accepted.

4. If desired, exit Program Mode by pressing '#' (wait for two second tone).
5. To terminate call, press '7'.

**Note:** During a call, an inserted double beep tone will announce that the call will be auto terminated in 10 seconds. Pressing an "8" will reset the timeout, if additional time is required.

### (K DTMF Echo Test:

1. Press '9'.

The unit will send a tone sequence 1 thru 0 ,\* , #, and then echo any tones received from the caller.

2. To stop test. press '#' (wait for two second tone).
3. To terminate call, press '7'.

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**PROGRAMMING, Cont.**

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**(L Optional voice location module:**

**The voice location module is an optional device that can be used instead of the Trigon Decoder and the site ID code. The module will insert a voice message at the detection of a voiced answer.**

1. *The unit must be in Program Mode.*
2. *Press '0'.*
3. *Press '1' through '9'. for the number of seconds the auto message should last.*

You will hear two 'beeps' indicating command accepted

4. *If desired, exit Program Mode by pressing '#' (wait for two second tone).*
5. *To terminate call, press '7'.*

**Example '05' sets auto message to 5 seconds.**

**While it may be 30 seconds long, if needed, the unit can be programmed to control telephone hardware interruptions in a variety of ways.**

**(M Auto message options:**

1. *The unit must be in Program Mode.*
2. *Press '4'.*
3. *Press '0' through '4'. for the following options:*  
40 Disable voice module completely  
41 Caller can talk and hear message  
42 Caller can't talk, but can hear message  
43 Caller can talk, but can't hear message  
44 Caller can't talk or hear message
4. *If desired, exit Program Mode by pressing '#' (wait for two second tone).*
5. *To terminate call, press '7'.*

## OPERATION

### STANDARD MODE

When a CALL button is pressed, the HF-2 dials a pre-programmed phone number and monitors the line for the following signals:

**Busy Signal:** The HF-2 will hang up and redial the number after approximately three busy tones.

**Ring Signal:** The HF-2 will hang up and redial the number after approximately six unanswered rings (36 seconds).

**Voice or Touch-tones:** This indicates an answer. The unit then enters the Talk Mode.

#### Answering the Call From the HF-2

Answer the HF-2 incoming call with a short phrase at **least 3 seconds long**. The unit may fail to recognize a short greeting such as "Hello" and may not turn on the microphone.

Once voice communication has been established you may then press keys on your touch-tone telephone to do any of the following:

1. To **Activate the Primary Relay** and hang up, press '0' or '5'.
2. To **Activate the Secondary Relay** and hang, press '1' or '6'.

**Note:** Activating either power relay will simultaneously activate the alarm shunt relay for the relay activation time plus an additional thirty (30) seconds.

3. To **Terminate the Call**, press '7'.
4. To **Reset the HF-2's Call Length Timer**, press '8'.

**Note:** The unit will beep twice to warn of auto-call termination in 10 seconds.

5. To **Toggle on/off the Secondary Relay**, press '9'. The unit will respond with one beep to indicate that the relay has been deactivated, or two beeps to indicate that the relay has been activated.
6. To **Retrieve the HF-2s Site ID number**, press '#'.
7. To **Enter the Program Mode**, press ' \* ', followed by the four digit Programming Code.

### Calling the HF-2 To Grant Access

When a call is placed to the HF-2, the caller can perform any of the above operations with the following exceptions:

1. To **Enter the 'Talk' Mode**, press '2' or any of the above tones.
2. To **Activate the Primary Relay**, press '0' or '5'. You will hear one beep. Enter your four digit Program Code. The relay will activate for the preset cycle duration, and providing 1 beep per second until the end of the cycle.
3. To **Activate the Secondary Relay** and hang, press '1' or '6'.

**Note:** If the wrong Program code is entered, the unit will immediately hang up. If the program code or other information is not entered completely, the HF-2 will time-out and hang up.

### RINGDOWN MODE

When a CALL button is pressed, the HF-2 sends an off hook signal too the PBX/KSU and the PBX/KSU initiates its programmed calling routine.

#### Answering the Call From the HF-2

1. To **Activate the Primary Relay** and hang up, press '0' or '5'.
2. To **Activate the Secondary Relay** and hang, press '1' or '6'.

**Note:** Activating either power relay will simultaneously activate the alarm shunt relay for the relay activation time plus an additional thirty (30) seconds.

3. To **Terminate the Call**, press '7'.
4. To **Reset the HF-2's Call Length Timer**, press '8'.

**Note:** The unit will beep twice to warn of auto-call termination in 10 seconds.

5. To **Toggle on/off the Secondary Relay**, press '9'. The unit will respond with one beep to indicate that the relay has been deactivated, or two beeps to indicate that the relay has been activated.
6. To **Retrieve the HF-2s Site ID number**, press '#'.
7. To **Enter the Program Mode**, press ' \* ', followed by the four digit Programming Code.

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**TROUBLE SHOOTING GUIDE**

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**NO DIAL TONE**

1. Check input power at unit. Should be 12 VAC.
2. Check that unit is properly grounded to a good Earth ground.
3. Current starved. Increase AC input wire size.
4. Remove power, wait 5 seconds, restore power. Check for dial tone.
5. Check for phone line. Should be 48-52 VDC across phone line terminals (on hook).
6. Check VOLUME adjustment on PC board.
7. Check "SPKR" plug on PC board. Make sure speaker is properly plugged in (Handsfree units).
8. Verify that contacts and wires are clean and tight.

**CANNOT PROGRAM**

1. Incorrect/lost program code.
2. Not entering ' \* ' before program code.
3. Try 'NO DIAL TONE' troubleshooting procedures.
4. Keypad damaged. Check for vandalism.
5. Check that Program Prom/Microprocessor is fully seated.
6. Unit is in the wrong Operational Mode

**LOSES MEMORY**

1. Electrical noise on power line. Install EMI/RFI filter.
2. Excessive electrical noise from strike. Use low current strike.
3. Unit transformer shared with another device (i.e. door strike).

**RESIDENT CANNOT ACTIVATE STRIKE/GATE**

1. Tenant not pressing correct number on phone.
2. Strike/gate operator not wired correctly.
3. Missing or incorrect power to strike or gate operator.
4. Current starved. Increase wire size.
5. Tone may be too brief in duration (cordless phones, etc.).

**AC HUM IN SPEAKER**

1. Phone wires running in same conduit as AC power.
2. Unit not properly grounded.
3. Defective microphone.

**RESIDENT CANNOT HEAR VISITOR**

1. Defective handset/microphone.
2. Person receiving the call answers in too short a duration to activate the HF-2 (person must speak a minimum of 2 seconds to be detected).
3. Excessive background noise.

Feel free to contact our Technical Support Dept. (800)  
842-7444 or (951) 371-1730  
techsupport@trigonelectronics.com  
www.TrigonElectronics.com

**CONDENSED GUIDE TO USE and PROGRAMMING**

**General**

Data between [ ] is a mandatory program key stroke sequence. Data between { } is to be supplied by the programmer. Unit responses are shown between ( ).

**Legend:**

d	Dial mode (0= Touch, 1= Rotary)‡	pppp	Program Code
f	Five second relay duration time (1, 2,...9)	r	Ring Count (1, 2, ...9)
iiii	Site ID number (always use four digits)	*	The "star" key of the telephone
lll	Call Length Time in seconds (001, ...999)	#	The "pound sign" key of the telephone
nnn nnnn	Phone Number (up to 12 digits)	☎	Tones returned by the unit

**SECURITY DEPT. OPERATION**

When Security personnel receive a call from the unit, they press key [X] on their telephone to perform the following:

**STANDARD MODE**

- [0,5] Cycle Primary Relay
- [1,6] Cycle Secondary Relay
- [2] Factory Tone Test (answer tone)
- [7] Force disconnect (hang up)
- [8] Extends current Call Timer 3 minutes
- [9] Toggle on/off Secondary Relay (☎ = off, ☎☎ = on)
- [#] Requests Site ID Number
- [\*{pppp}] Enter Program Mode

**RINGDOWN MODE**

- [0,5] Cycle Primary Relay
- [1,6] Cycle Secondary Relay
- [2] Factory Tone Test (answer tone)
- [7] Force disconnect (hang up)
- [8] Extends current Call Timer 3 minutes
- [9] Toggle on/off Secondary Relay (☎ = off, ☎☎ = on)
- [#] Requests Site ID Number
- [\*{pppp}] Enter Program Mode

**PROGRAMMING THE UNIT**

*Enter the Programming Mode: Call the unit, then press [\*{pppp}] ☎☎*

- [0 then 0 to 9] sets auto message length time in seconds
- [1{iiii}]☎☎ Set unit's Site ID number
- [2 then 1-0] ☎ [nnn nnn#] ☎☎ Set unit's Auto dial numbers
- [3{pppp}]☎☎ Set unit's Program Code
- [4(n) set auto message option
  - n=0 Disable auto message feature
  - n=1 enable message feature with local speaker on and microphone on
  - n=2 enable message feature with local speaker on and microphone off
  - n=3 enable message feature with local speaker off and microphone on
  - n=4 enable message feature with local speaker off and microphone off
- [5{r}]☎☎ Set Ring Count before auto answer
- [6{d}]☎☎ Set Dial Mode‡
  - ‡ Dial Mode
  - 0 = Tone dial auto answer only
  - 1 = Rotary dial auto answer only
  - 4 = Ringdown with call progress, auto answer only
  - 5 = Ringdown without call progress, auto answer only
- [7{x}]☎☎ Set Gate interval time, where x = 1 to 9 in 5 second intervals:
- [8{lll}]☎☎ Set Call Length Time Limit
- [9(tones)#] Echo Test.
- [\*] then 1-0] Verifies primary or backup telephone numbers
- [#] Return to Normal Mode

# HF-2 KIT Wiring

