

# Miniguard HS-2 SMT

## Handset Telephone Entry Autodialer

### INSTALLATION and OPERATIONAL INSTRUCTIONS

with 10 number rollover



255 Glider Circle Corona, CA 92880

(951) 371-1730 - Fax (951) 371-2592

[www.TrigonElectronics.com](http://www.TrigonElectronics.com)

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## **TABLE OF CONTENTS**

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<b>INTRODUCTION</b> .....	3
<b>PRODUCT OVERVIEW</b> .....	3
<b>MOUNTING</b> .....	4
<b>WIRING</b> .....	4
<b>WIRING DIAGRAM</b> .....	5
<b>PROGRAMMING</b>	
Entering Program Mode .....	6
Setting Operational Modes .....	6
Entering Autodialed Telephone Numbers .....	6
Verifying Autodialed Telephone Number .....	6
Setting the Site ID Number .....	7
Changing Program Access Number .....	7
Setting the Relay Duration Timer .....	7
Setting Incoming Ring Count .....	7
Setting Dial Mode .....	7
Setting Call Length .....	7
DTMF Echo Test .....	7
Cycling Relays .....	7
<b>OPERATION</b>	
<b>STANDARD</b> Mode .....	8
<b>EMERGENCY</b> Mode .....	8
<b>TROUBLE SHOOTING GUIDE</b>	
General .....	9
<b>CONDENSED GUIDE TO USE and PROGRAMMING</b>	
Security Dept. Operation .....	10
Standard Mode .....	10
Emergency Mode .....	10
Programming the Unit .....	10

## INTRODUCTION

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

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

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.

## PRODUCT OVERVIEW

The TRIGON HS-2 is a multi-number auto dialer. Upon Lifting the handset, the HS-2 dials a programmed telephone number. If the number dialed is busy or does not answer, the HS-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 HS-2 will rollover and start the dialing process again with the first phone number.

The HS-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 HS-2:

1. The **Standard Mode** provides timed closure of the relays and is typically used for access control.
2. The **Emergency Mode** causes relay activation at the moment the start button is pressed. This mode is best suited for safety use when camera and lighting control is desired.

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 HS-2 when it receives a command from the called party. This code, when interpreted by a Trigon DTMF Decoder, will identify the calling unit.

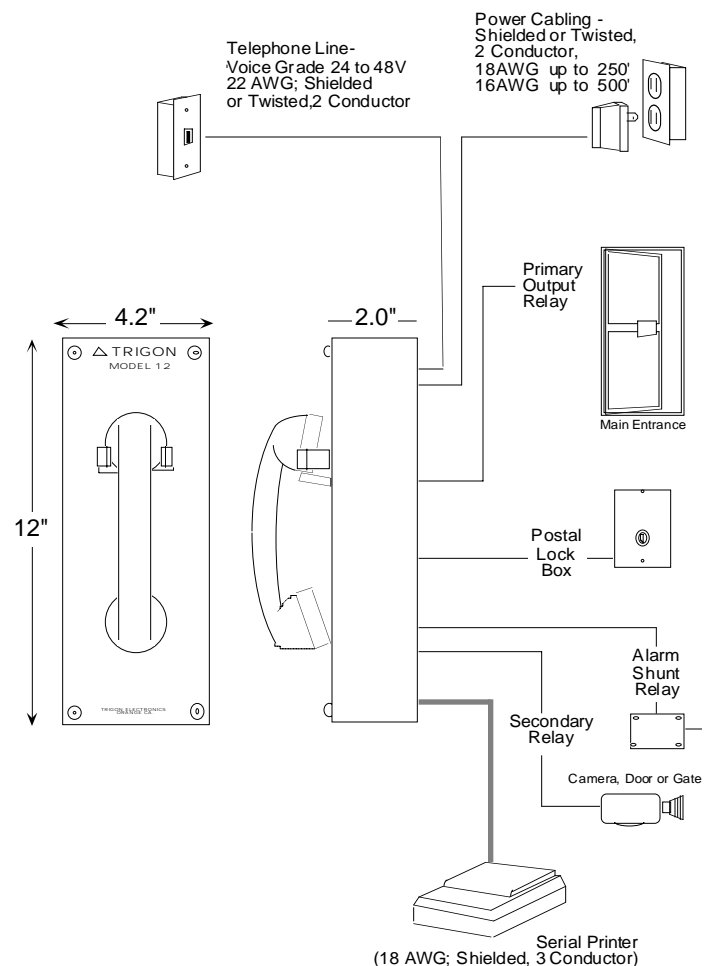
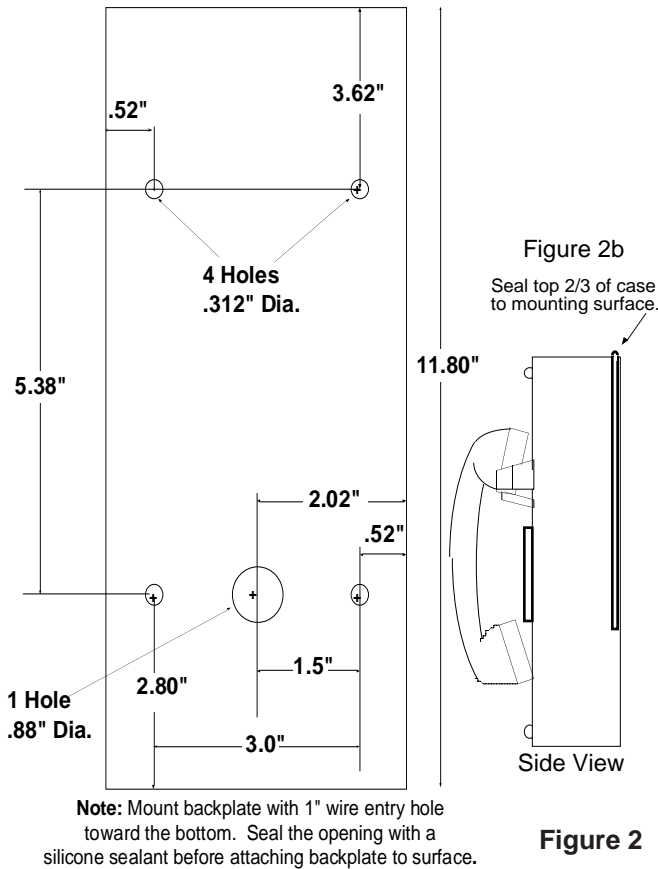


Figure 1

## 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. 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).

\* We provide an optional Lighted Hood that helps with weather protection

## 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. The Shunt relay is a low-power (4 watt) reed relay. It can be used for temporary alarm switch bypass, video camera activation, etc. The Shunt relay activates with the #1 or #2 power relay, and deactivates thirty seconds after relay release.
10. 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).
11. If all wiring and grounding is completed, mount the faceplate onto the backbox.

## WIRING DIAGRAM

Second Relay is **Standard**  
on HF-2, HS-2, MGIID  
100BD, MP4000

Second Relay is **Optional**  
on MGI, 100B, Minipak,  
T.A.C. 500,1000,1500

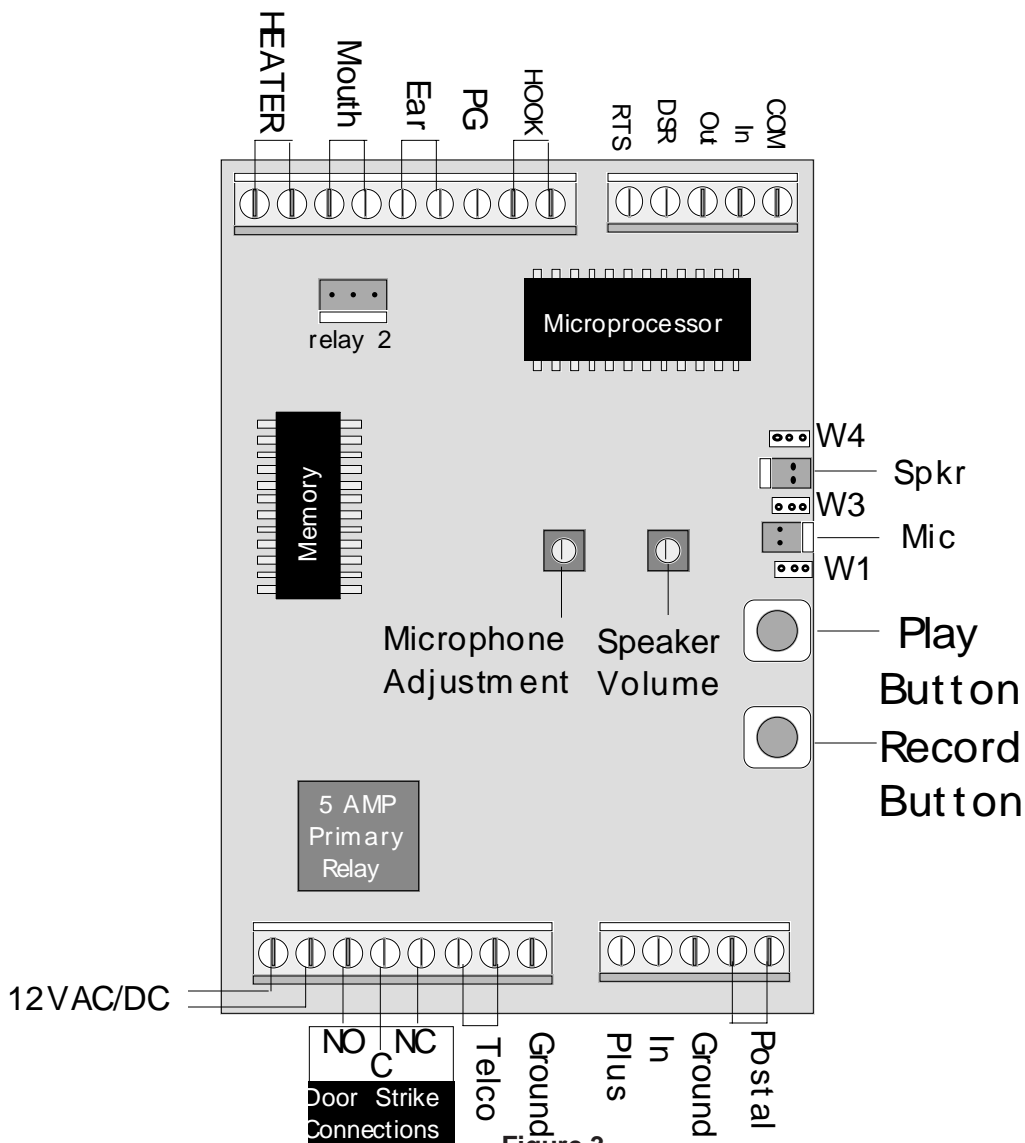
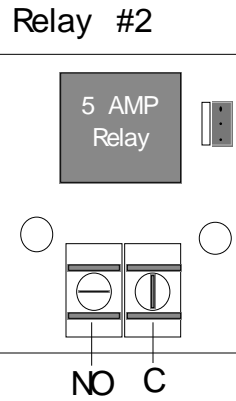


Figure 3

Input	Cable Size
0-250'	18AWG; Shielded
250 to 500'	16AWG; Shielded
500+'	14AWG; Shielded

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

# PROGRAMMING INFORMATION

## General Programming Information

The "Initial Setup" for the HS-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 HS-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 (16 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 7 tone firmware code and a 2 beep hi/lo tone.
5. If desired, exit Program Mode by pressing '#'
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 multi number, auto answer only.
- Or:** Press '6' then press '1' to set unit for single number, auto answer only.

- Or:** Press '6' then press '2' to set unit for multi number, manual answer enabled.
- Or:** Press '6' then press '3' to set unit for single number, manual answer enabled.
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 multi number, auto answer only.
- Or:** Press '6' then press '5' to set unit for single number, auto answer only.
- Or:** Press '6' then press '6' to set unit for multi number, manual answer enabled.
- Or:** Press '6' then press '7' to set unit for single number, manual answer enabled.
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'.

## PROGRAMMING, Cont.

### (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.

### (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 Electronic Site ID Number:

This number identifies the unit upon request from a Trigon Call Manager. It is also the method for changing the Voice Message from a "Please Enter" greeting to a "Voice Location Identifier". The Voice Location Identifier can be used when HF-2's are used on multiple entries. The default "Electronic Site ID" number is 0000. When this number is changed from to any number except 0000, the "Voice Location Identifier" will be activated.

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'.

After setting a new "Electronic Site ID" number, the "Voice location Identifier" feature is activated and a voice location message must be recorded on the voice chip.

### (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.

## OPERATION

### (I) 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.

### (J) Recording a new voice message.

To change the voice message on the voice chip follow these steps:

1. Referring to Page 5, move jumpers W1, W3, and W4 from the out board pair to the inboard pair.
2. To record a message press the "REC" button and speak into the microphone on the front of the HF-2. Message can be up to 15 seconds.
3. To play back the message press the play button and the message will play through the speaker. To re-record the message just push the REC button again.
4. If the play back is satisfactory, re position the W1, W3, and W4 jumpers to their out board positions.

If you have changed the message to a Voice Location Identifier the proceed with the "0n" command for message length and the "4n" command for message playback control.

### (K) Voice message length:

The voice message feature is set up from the factory as a "Please Enter" message when the visitor is granted entry by the called party. When the message has been changed to a "Voice Location Message" the approximate message length must be programmed as follows:

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

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.

The next step is to go to the "4n" command to set the Auto Message Control.

### (L) Auto Message Control options:

1. The unit must be in Program Mode.
2. Press '4' then '0' to Disable voice module completely.  
**Or:** Press '4' then '1' Enable message feature, speaker on microphone on. **Or:** Press '4' then '2' Enable message feature speaker on microphone off.  
**Or:** Press '4' then '3' Enable message feature speaker off microphone on.  
**Or:** Press '4' then '4' Enable message feature speaker off microphone off
4. If desired, exit Program Mode by pressing '#' (wait for two second tone).
5. To terminate call, press '7'.

## TROUBLE SHOOTING GUIDE

### 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 Dept. (800) 842-7444 or (951) 371-1730

[techsupport@trigonelectronics.com](mailto:techsupport@trigonelectronics.com)

[www.TrigonElectronics.com](http://www.TrigonElectronics.com)

## CONDENSED GUIDE TO USE and PROGRAMMING

**Legend:**

n	Numbers input during programming	*	The "star" key of the telephone
#	The "pound sign" key of the telephone	☎	Tones returned by the unit

### PROGRAMMING THE UNIT

*Enter the Programming Mode: Call the unit, then press*  
 [\*nnnn] ☎☎☎☎☎☎☎☎

- [0n] When n= (0 to 9) sets auto **Message Length Time** in seconds
- [1nnnn]☎☎ When nnnn= telephone's new **Site ID Number**
- [2n]☎ [nnnnnnn#]☎☎ **Input Telephone Numbers**,  
 When n=1 through 0 for the first number to the tenth number.  
 When nnnnnnn=telephone numbers
- [2n#]☎ **Deletes Telephone Number** in position n,
- [2\*n]☎ When n=**Ring Rollover Limit** ie: [2\*1] = 1 ring, [2\*9] = 9 rings
- [3nnnn]☎☎ When nnnn= new **Programming Code** for telephone.
- [4n] 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
- [5n]☎☎ Set **Ring Count Before Auto Answer**
- [6n]☎☎ Set **Dial Mode**‡  
 n=0 to set unit for multi number, auto answer only. (Standard mode)  
 n=1 to set unit for single number, auto answer only. (Call progress disabled)  
 n=2 to set unit for multi number, manual answer enabled. (Standard mode)  
 n=3 to set unit for single number, manual answer enabled. (Call progress disabled)  
 n=4 to set unit for ringdown, auto answer only. (Call progress enabled)  
 n=5 to set unit for ringdown, auto answer only. (Call progress disabled)  
 n=6 to set unit for ringdown, manual answer enabled. (Call progress enabled)  
 n=7 to set unit for ringdown, manual answer enabled. (Call progress disabled)
- [7n]☎☎ Set **Gate Interval Time**, where x = 1 to 9 in 5 second intervals:
- [8nnn]☎☎ Set **Call Length Time** Limit, nnn=000 to 999 seconds.
- [#] Return to Normal Mode

### 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

## OPERATION

### STANDARD MODE

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

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

**Ring Signal:** The HS-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 HS-2

Answer the HS-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 HS-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 HS-2's Site ID number**, press '#'.
7. To **Enter the Program Mode**, press ' \* ', followed by the four digit Programming Code.

### Calling the HS-2 To Grant Access

When a call is placed to the HS-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 HS-2 will time-out and hang up.

### RINGDOWN MODE

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

#### Answering the Call From the HS-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.

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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

### **(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'.

### **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

