



# Heavy Duty Emergency Telephones

## HDE 20/30 Series Analog Installation & Operation



**HDE-30**



**HDE-20**

**HDE 20/30 SERIES ANALOG TELEPHONES P007769 Rev. D0**

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## Package Contents

- (1) One HDE 20/30 Series Telephone
- (1) Driver bit for Tamper Resistant Screws

## Product Overview

### **HDE 20/30 Series Heavy Duty Emergency Telephones**

HDE SERIES telephones are intended for use in public areas where direct assistance or hands-free communication is required. They provide a hands-free, two-way link to emergency/assistance through analog, half-duplex telephone transmission. A call may be initiated from the HDE or from the monitoring station. The HDE may be programmed to autodial two numbers or to ring down through a PABX. With an optional external signaling alarm such as a Scream Alert, an HDE telephone is an effective tool to alert emergency personnel of an urgent situation. The status of each HDE can be remotely monitored, informing maintenance personnel if there is a malfunction. Monitoring equipment can be purchased separately.

No other telephones may be installed on the HDE extension.

**NOTE: In the event of a supplemental power failure, the HDE product will continue to operate in a basic functional mode however audio will be at a reduced level. The primary and supplemental relay controls will continue to function, however the devices to which they are connected may no longer operate.**

## Features

#### **Enclosure and Faceplate**

- 16 Gauge 316ss

#### **Emergency Button and Call Button**

- Vandal resistant plastic

#### **Tamper Resistant Screws**

- Protect against unauthorized access

#### **Remote Programming**

- Program options from a remote location (password protected)

#### **Power Surge Protection**

- Surge Arrestor to protect from lightning strikes
- Polyswitch Resettable Fuse – self resetting fuse to protect from line surges

#### **Relay(s)**

- Primary – on all models - Switches power to a beacon, camera, or similar device whenever the HDE telephone is off-hook.
- Supplemental – Two additional relays managed from the monitoring station can control cameras, external lighting, electronic door locks, etc.



GENERAL ALERT  
ALERTE GÉNÉRALE

#### **Warning**

*Electrical Hazard:* This product should be installed by a licensed electrician according to all electrical and building codes.

#### **Avertissement**

*De danger électrique :* Ce produit doit être installé par un électricien agréé selon tous les codes électriques et du bâtiment.



GENERAL ALERT  
ALERTE GÉNÉRALE

#### **Warning**

*Dislocation Hazard:* To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.

#### **Avertissement**

*Risque de dislocation:* Pour éviter les blessures, cet appareil doit être solidement fixé au plancher/mur conformément aux instructions d'installation.

## Firmware Revision

This manual applies to all products with F/W revision: Standard: R031 B44: R030C

## Options and Accessories

### *Conformal Coated Circuitry*

- The circuit board can be protected with a silicon-based conformal coating, making it resistant to corrosive agents (e.g., H<sub>2</sub>S, SO<sub>2</sub> and NH<sub>3</sub>) and environments with high humidity.

### *B44 Safety Code Compliance*

- All HDE models can be programmed to perform phone line diagnostics to meet B44 Safety Code Compliance Requirements.

### *12V AC/DC Supplemental External Power Supply*

- All HDE models accept 12V AC/DC external power supply to boost speaker volume, (non-switching power supplies are recommended).
- Maximum Speaker Volume @ 1.0 Meters - Line Powered 75.4dB, with External Power 86.1dB.

## Models

Order Number	Model	Call Button Configuration	Mounting	Maximum Speaker Volume @ 1.0 Meters	
				Line Powered (0.25W)	With External Power (3.3W)
P6930	HDE-20	Single Call Button	Surface	75.4dB	86.1dB
P6931	HDE-21	Single Call Button With Keypad	Surface	75.4dB	86.1dB
P6932	HDE-22	Dual Call Button	Surface	75.4dB	86.1dB
P6933	HDE-23	Dual Call Button With Keypad	Surface	75.4dB	86.1dB
P6935	HDE-30	Single Call Button	Recessed	75.4dB	86.1dB
P6936	HDE-31	Single Call Button With Keypad	Recessed	75.4dB	86.1dB
P6937	HDE-32	Dual Call Button	Recessed	75.4dB	86.1dB
P6938	HDE-33	Dual Call Button With Keypad	Recessed	75.4dB	86.1dB

**Note:** HDE phones will be operational even without a 12V AC/DC power supply externally connected to J16, however no diagnostics would be performed and the contacts at J12 will remain permanently open.

## Installing the HDE-20/21/22/23 Telephones

- Follow all appropriate electrical codes and use only approved electrical fittings for the installation. If 120VAC power is provided to the Primary Relay, the enclosure must be properly grounded to the surge arrestor.
- Ensure that none of the electrical connection circuits are live.
- No other telephones may be installed on the HDE extension.
- Remove the cover screws from the front of the unit and carefully remove the front cover assembly. Note that the electronics are attached to the front plate.
- Choose a wall location that is free of obstructions and permits space for cable or conduit runs.
- Ensure mounting can support 7lbs (3kg) and any additional foreseeable load.
- Use the template provided or the enclosure itself to locate and drill holes for #8 or M4 mounting screws.
- Secure the unit to the wall.
- Attach individual wires from the exchange (Tip/Ring/Ground) to the surge arrestor (Tip & Ring are not polarity sensitive).
- If the external power supply connection and/or Primary/Supplemental Relays are utilized, connect wiring in accordance with local electrical standards.

### **Operational Mode Jumper Settings**

- JP1 and JP2 control the operational mode of the HDE. There are two modes of operation, Programming/Auto-Answer and Program-Lockout/Ringer Mode. Programming/Auto answer will allow the administration the ability to dial into the HDE and program the phone. It also allows the operator to dial in and monitor the environment sound around the phone. The Program-Lockout/Ringer Mode will prevent someone from accessing the phone to reprogram any of the registers. Also in this mode, the phone will ring on incoming calls.

### **Commissioning**

- Ensure all connections are tight, then replace and secure the cover. Use the driver bit provided to install the tamper resistant screws.
- Connect the telephone into the system.
- Program the telephone.
- Test the unit by calling to and from another telephone.

*Note: Verify regulatory requirements before installing on a public network.*

*Figure 3 - HDE-20, HDE-21, HDE-22 & HDE-23 Mounting*

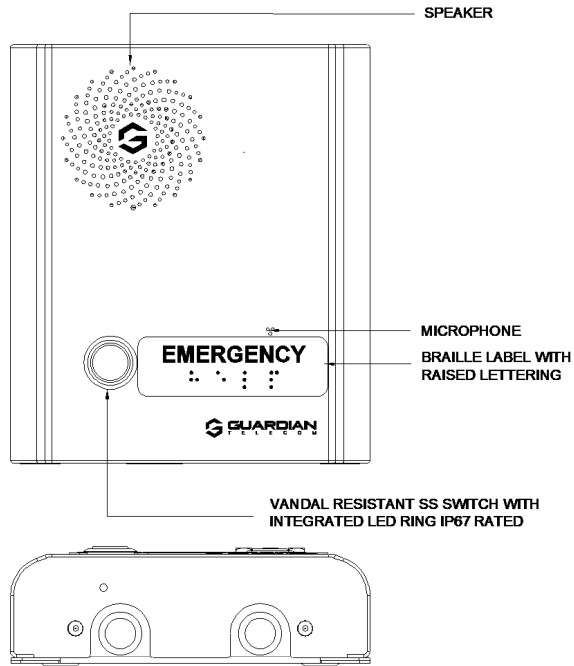
*See: Figure 7 - Wiring Diagram*

*Tip: There are two 7/8" holes available for wiring.*

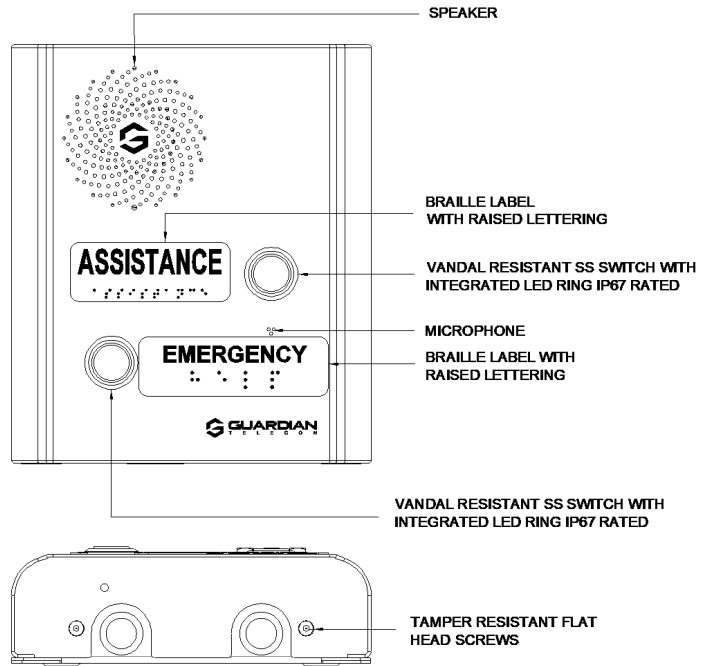
*See: Figure 9 - Jumper Settings*

*Tip: Store the driver bit in a secure place for future use.*

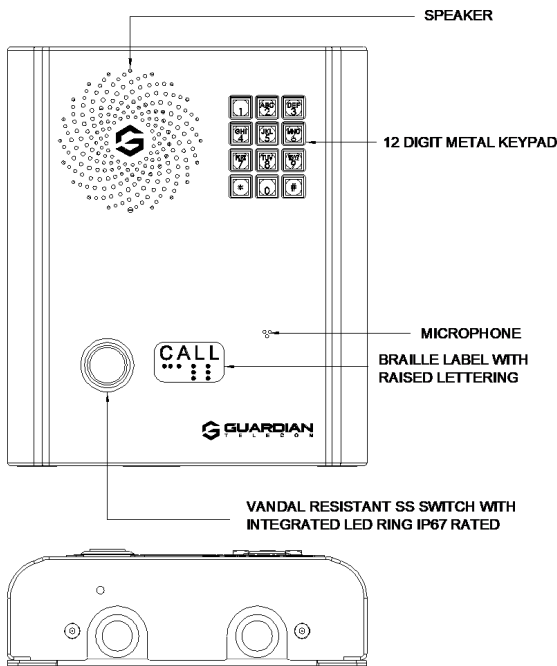
*See: HDE Programming*



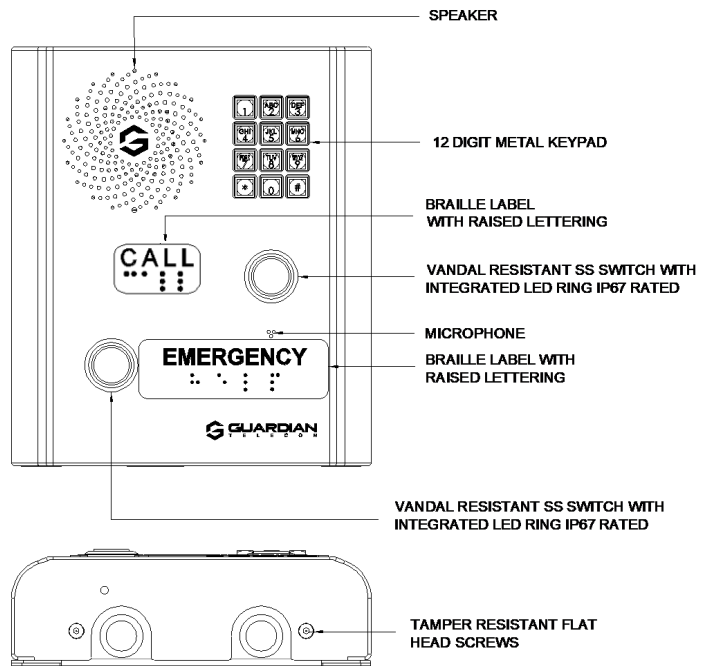
**HDE-20**



**HDE-22**

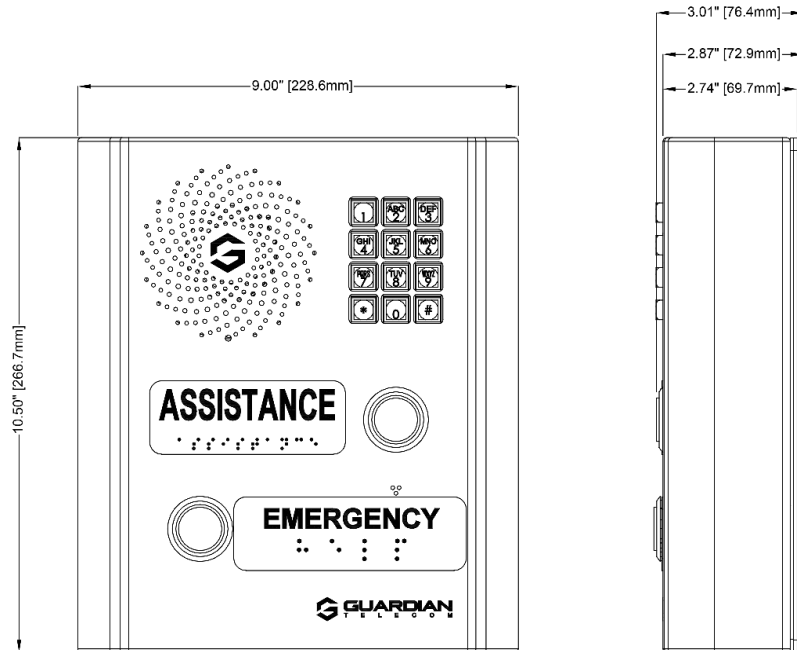


**HDE-21**

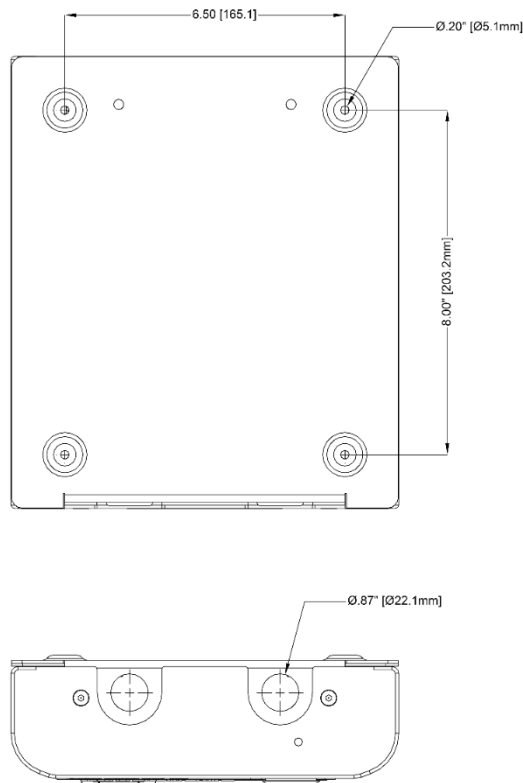


**HDE-23**

**Figure 1 - HDE-20, HDE-21, HDE-22 & HDE-23 Features**



**Figure 2 - HDE-20, HDE-21, HDE-22 & HDE-23 Dimensions**



**Figure 3 - HDE-20, HDE-21, HDE-22 & HDE-23 Mounting**



## Installing the HDE-30/31/32/33 Telephones

- Follow all appropriate electrical codes and use only approved electrical fittings for the installation. If 120VAC power is provided to the Primary Relay, the enclosure must be properly grounded to the surge arrestor.
- Ensure that none of the electrical connection circuits are live.
- No other telephones may be installed on the HDE extension.
- Remove the cover screws from the front of the unit and carefully remove the front cover assembly. Note that the electronics are attached to the front plate.
- Prepare an opening 7 ½" (190 mm) wide, 10 ⅞" (276 mm) high and 3 ⅛" (79 mm) deep. Install blocking around the rough opening if required.
- Bring the telephone wiring into the bottom of the opening. If the optional external power supply and/or the Primary/Supplemental Relays are utilized, supply wiring for them as well.
- Install an appropriate fitting into the 7/8" (22mm) opening in the bottom of the enclosure.
- Bring cables into the enclosure through the fittings and secure the enclosure into the opening.
- Attach individual wires from the exchange (Tip/Ring/Ground) to the surge arrestor (Tip & Ring are not polarity sensitive).
- If the external power supply connection and/or Primary/Supplemental Relays are utilized, connect wiring in accordance with local electrical standards

### **Operational Mode Jumper Settings**

- JP1 and JP2 control the operational mode of the HDE. There are two modes of operation, Programming/Auto-Answer and Program-Lockout/Ringer Mode. Programming/Auto answer will allow the administration the ability to dial into the HDE and program the phone. It also allows the operator to dial in and monitor the environment sound around the phone. The Program-Lockout/Ringer Mode will prevent someone from accessing the phone to reprogram any of the registers. Also in this mode, the phone will ring on incoming calls.

### **Commissioning**

- Ensure all connections are tight, then replace and secure the cover. Use the driver bit provided to install the tamper resistant screws.
- Connect the phone line to the HDE.
- Program the HDE.
- Test the unit by calling to and from another telephone.

***Note:** Verify regulatory requirements before installing on a public network.*

***See:** Figure 6 - HDE-30, HDE-31, HDE-32 & HDE-33 Mounting.*

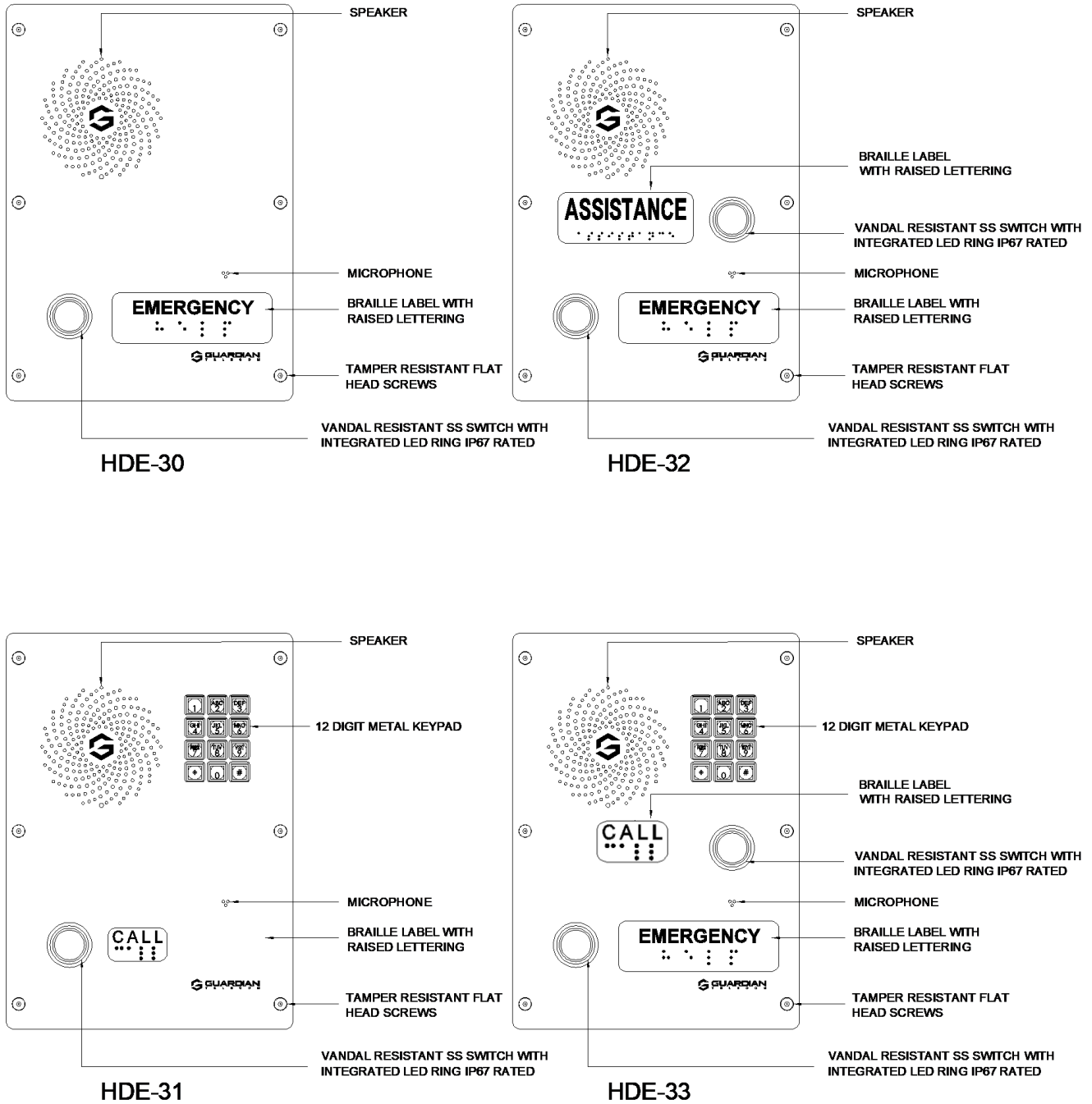
***See:** Figure 7 - Wiring Diagram*

***Tip:** There is a 7/8" hole in the bottom of the enclosure and another one on top.*

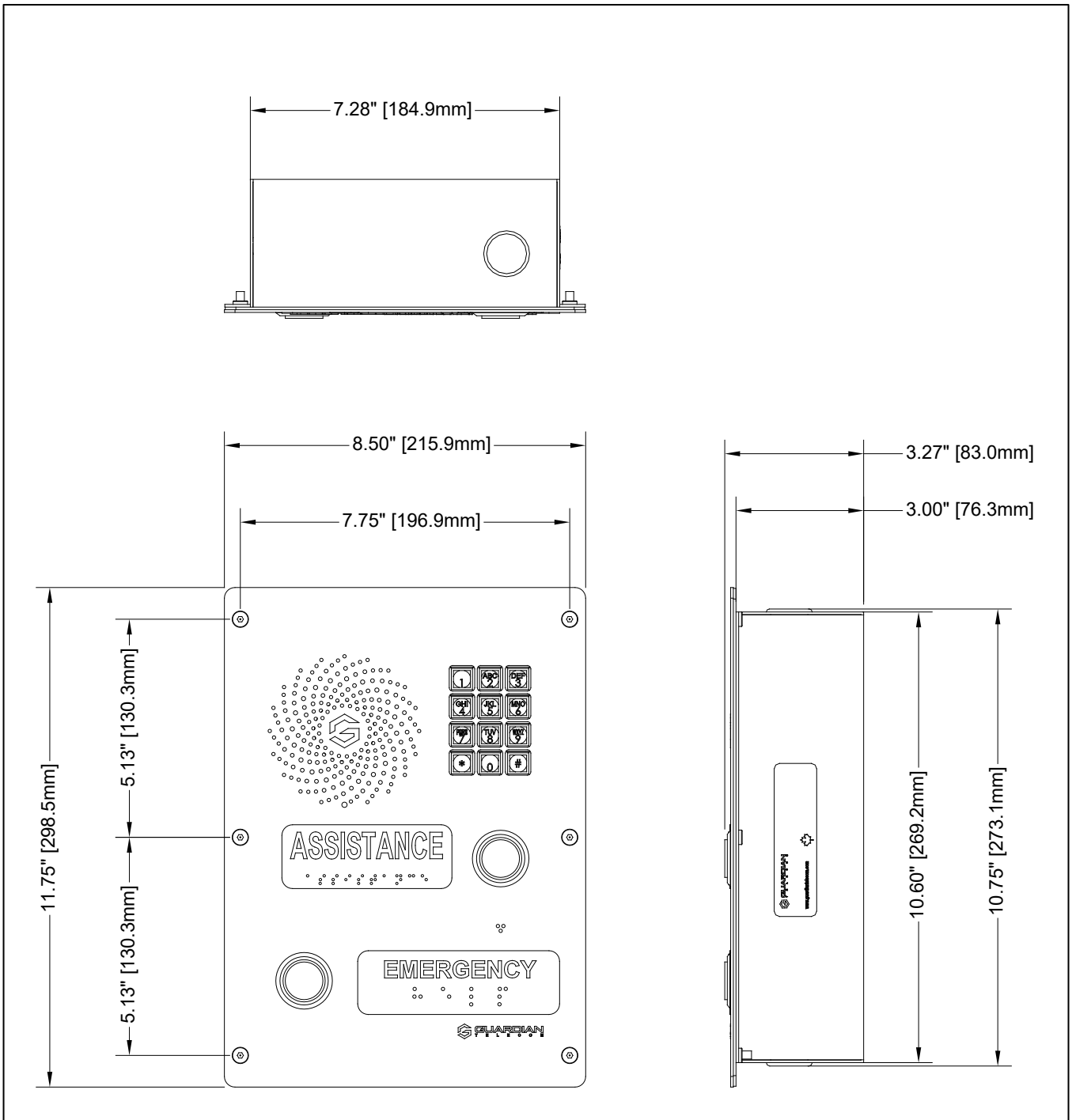
***See:** Figure 9 - Jumper Settings*

***Tip:** Store the driver bit in a secure place for future use.*

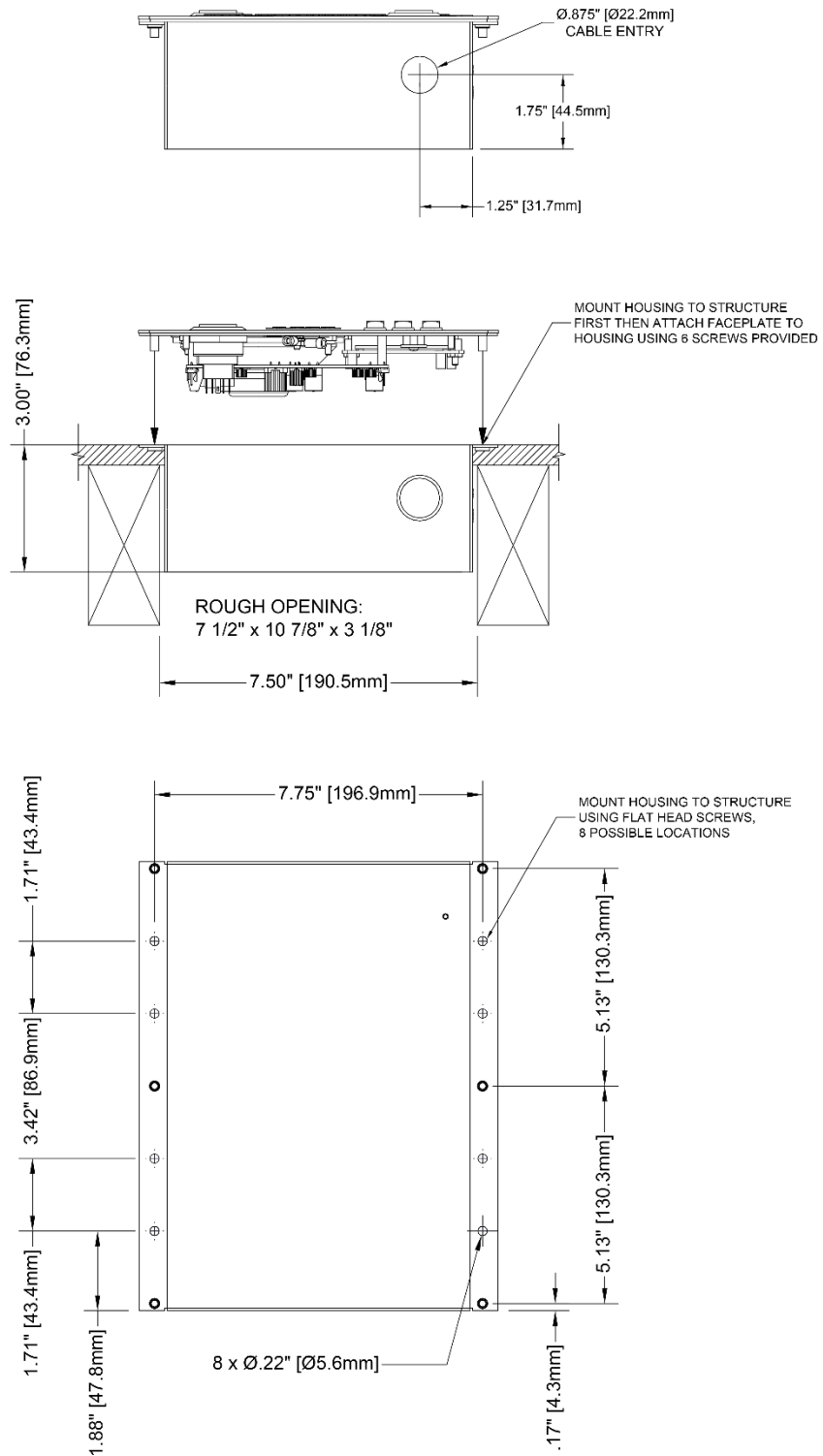
***See:** HDE Programming*



**Figure 4 - HDE-30, HDE-31, HDE-32 & HDE-33 Features**



**Figure 5 - HDE-30, HDE-31, HDE-32 & HDE-33 Dimensions**



**Figure 6 - HDE-30, HDE-31, HDE-32 & HDE-33 Mounting**

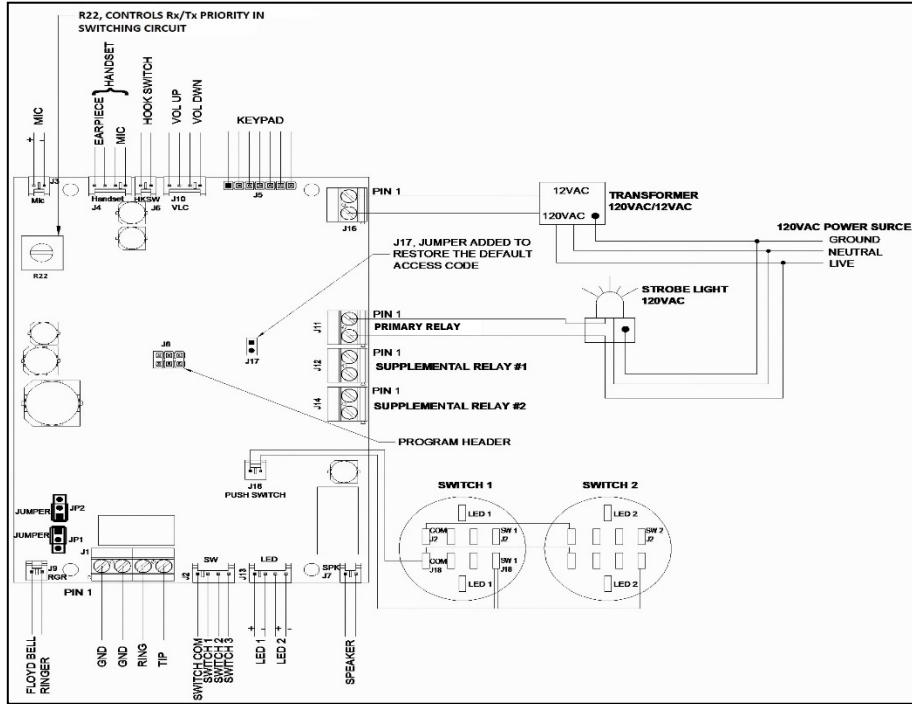


Figure 7 - Wiring Diagram

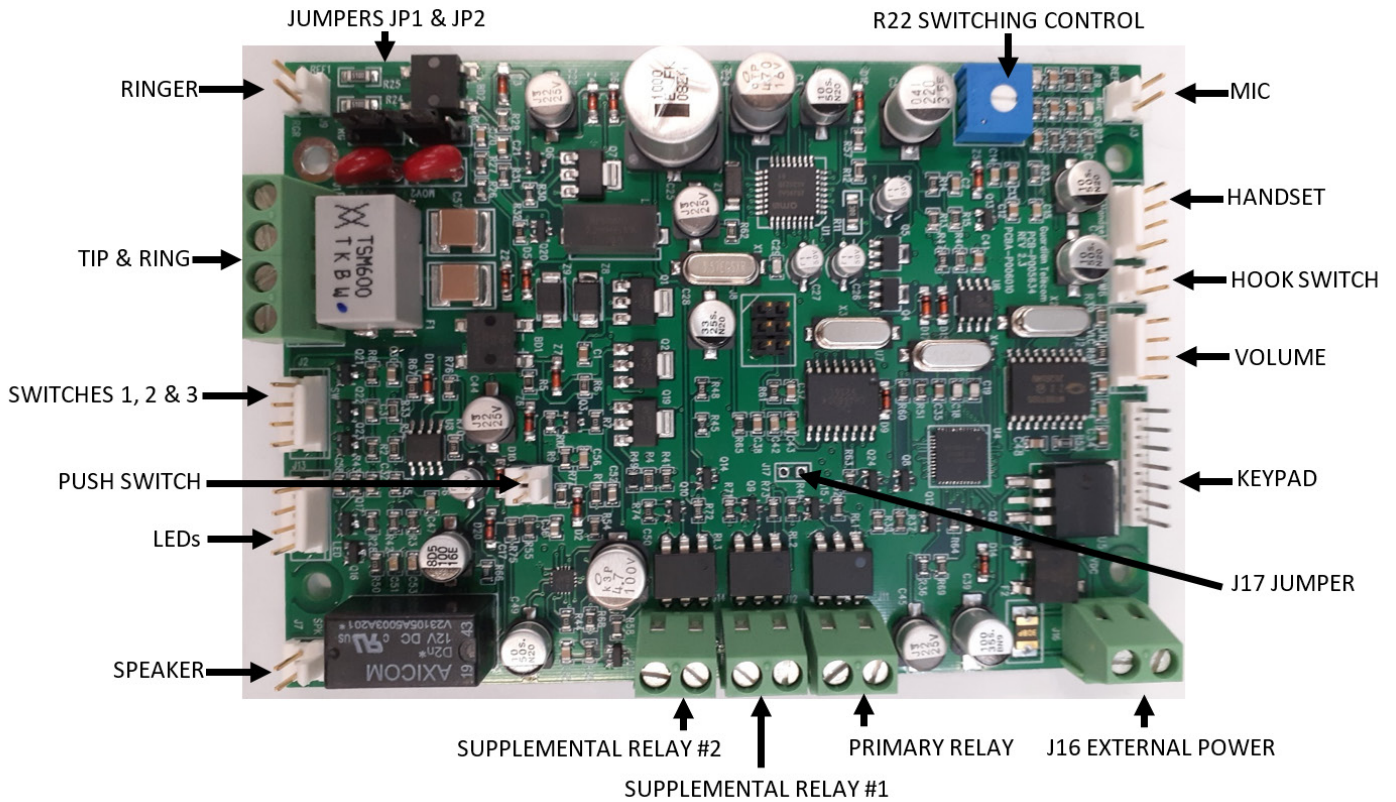
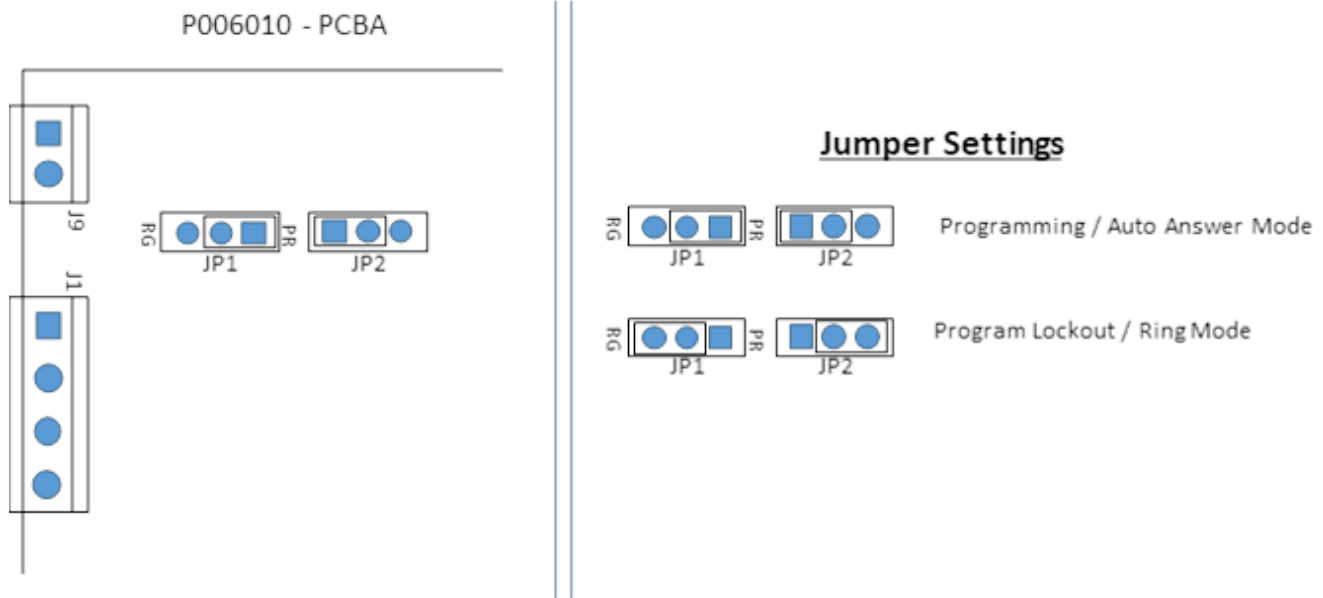


Figure 8 - Circuit Board Layout



**Figure 9 - Jumper Settings**

### B44 Safety Code Compliance Option:

HDE Analog telephones can be ordered with a B44 Safety Code Compliance Option. In this configuration, the phone is programmed to automatically check for a dial tone every 3 minutes (provided the phone is on-hook), to ensure integrity of the phone line. Telephones with this feature are commonly used in elevators and in similar situations to trigger an alarm if dial tone or external power is lost.

For the HDE to perform this diagnostic, a 12V AC/DC power supply must be externally connected to J16 (a non-switching power supply is recommended). Once the HDE is properly installed and connected to a landline, the contacts of supplemental relay #2 (J14) will be open. Press either the red EMERGENCY button or the blue CALL/ASSISTANCE button to dial out, this will cause the contacts of supplemental relay #2 (J14) to close. The HDE will now automatically check for a dial tone every 3 minutes (provided it is on-hook). In case of a failure to detect a dial tone or if a loss of power to connector J16 of the HDE is experienced, the contacts at J12 will open. This relay can therefore be used to trigger an alarm and notify maintenance personnel that the HDE is off-line.

If the Emergency button is pressed while a test is in progress, the test will be terminated, and the Emergency call will be processed.

The B44 firmware label for a telephone that is configured with the B44 option is F006010-3BK-EL.30B.

## Setting up the HDE

### ***Initial Setup of the HDE***

Once the HDE has been installed and connected, it should accept incoming calls and automatically answer them. Typically, the first thing to do would be to program the outgoing phone numbers to dial when the different buttons are pressed. The procedure for programming the dialed numbers vary for the different versions of the HDE as outlined below:

**Note: Jumpers JP1 and JP2 must be set correctly to permit access for programming.**

HDE-20 and HDE-30 (*EMERGENCY BUTTON ONLY*):

Dial into the HDE and when it answers press the 0 key, then the access code to enter programming mode. Enter 01 and wait for a confirmation beep. Enter the phone number to dial when the red EMERGENCY button is pressed, followed by the \* key and wait for a confirmation beep. If it is desired to program a backup phone number, in case the first number is not answered within 15 seconds, or if the line is busy, enter 00 and wait for a confirmation beep. Enter the backup phone number followed by the \* key and wait for a confirmation beep. Press the # key or hang up the call.

HDE-21 and HDE-31 (*KEYPAD ONLY*):

Since these versions of the HDE come equipped with a keypad, programming the call register is optional. Any digits programmed in the call register will precede the digits dialed on the keypad after the blue CALL button is pressed. This feature may be useful if it is desired to have the HDE automatically select a line or enter an area code prior to the user manually entering a phone number on the keypad. If some preset digits are to be programmed in the call register, dial into the HDE and when it answers, press the 0 key then the access code to enter programming mode. Enter 02 and wait for a confirmation beep. Enter the preset digits followed by the \* key and wait for a confirmation beep. Press the # key or hang up the call to exit.

HDE-22 and HDE-32 (*EMERGENCY AND ASSISTANCE BUTTONS*):

Dial into the HDE and when it answers, press the 0 key then the access code to enter programming mode. Enter 01 and wait for a confirmation beep. Enter the phone number to dial when the red EMERGENCY button is pressed followed by the \* key and wait for a confirmation beep. If a backup phone number is required in case the first number is not answered within 15 seconds or the line is busy, enter 00 and wait for a confirmation beep. Enter the backup phone number followed by the \* key and wait for a confirmation beep. Enter 02 and wait for a confirmation beep. Enter the phone number to dial when the blue ASSISTANCE button is pressed followed by the \* key and wait for a confirmation beep. Press the # key or hang up the call.

HDE-23 and HDE-33 (*EMERGENCY BUTTON AND KEYPAD*):

Dial into the HDE and when it answers, press the 0 key then the access code to enter programming mode. Enter 01 and wait for a confirmation beep. Enter the phone number to dial when the red EMERGENCY button is pressed followed by the \* key and wait for a confirmation beep. If it is desired to program a backup phone number, in case the first number is not answered within 15 seconds or the line is busy, enter 00 and wait for a confirmation beep. Enter the backup phone number followed by the \* key and wait for a confirmation beep. Since these versions of the HDE come equipped with a keypad, programming the call register is optional. Any digits programmed in the call register will precede the digits dialed on the keypad after the blue CALL button is pressed. This feature may be useful if it is desired to have the HDE automatically select a line or enter an area code prior to the user manually entering a phone number on the keypad. If some preset digits are to be programmed into the call-register, enter 02 and wait for a confirmation beep. Enter the preset digits followed by the \* key and wait for a confirmation beep. Press the # key or hang up the call.

***Adjusting the Volume of the Speaker, Microphone and Handset***

The volumes of the speaker, microphone, and handset (if equipped), can be adjusted by programming registers 23, 24, 30 and 31, see (*HDE Programming*) and (*Register Number and Functions for the HDE Series*).

**Register 31 (Rx Gain)**

The Rx gain register sets the amplification level of the received signal before it reaches the speaker amplifier. It can be adjusted from 22dB to 37dB in 2dB increments by setting the value in the register from 1 to 8.

**Register 24 (Speaker Volume)**

The speaker volume register sets the telephone line powered speaker amplifier volume level. It can be adjusted from -20dB to 0dB in 2.5dB increments by setting the value in the register from 1 to 8.

**Register 30 (Tx Gain)**

The Tx gain register sets the amplification level of the transmitted signal. Adjusting this register will affect the sensitivity of the HDE microphone. It can be adjusted from 39dB to 54dB in 2dB increments by setting the value in the register from 1 to 8.

**Register 23 (Handset Volume)**

The handset volume register sets the volume level of the handset speaker (if equipped). It can be adjusted from -6dB to 9dB in 2dB increments by setting the value in the register from 1 to 8.

***Generating a Test Report***

The HDE can generate a test report using DTMF tones. This command code is only useful when a polling module is installed; see (*Station Monitoring*).

***Reporting the Station ID***

Pressing the \* key will cause the HDE to report the Station ID# programmed into Register 09 (if any) using DTMF tones.

***Incoming Call Lockout***

JP1 and JP2 control the operational mode of the HDE. There are two modes of operation, Programming/Auto-Answer and Program-Lockout/Ringer Mode. Programming/Auto answer will allow the administration to dial into the HDE and program the phone. It also allows the operator to dial in and monitor the environment sound around the phone. The Program-Lockout/Ringer Mode will prevent someone from accessing the phone to reprogram any of the registers. Also in this mode, the phone will ring on incoming calls. (See: *Figure 9 - Jumper Settings*)



## Setting Transmitting and Receiving Paths Priority:

Potentiometer R22 controls the transmit and the receive path priority of the HDE. Adjusting the potentiometer in a counterclockwise direction will increase the sensitivity of the receive path and adjusting it clockwise will increase the sensitivity of the transmit path. The default setting is mid-range.

## Station Monitoring

Displaying the HDE Station ID# requires a DTMF decoder at the monitoring station. It will display provided Register 09 was programmed by the user with a 1–8-digit number. The Station ID# can be determined at any time during a call by pressing the \* key at the monitoring station.

Equipment is available to automatically monitor the integrity of a system. Contact Guardian Telecom for information on a Station ID display or Automatic Monitoring equipment.

## Field Repairs

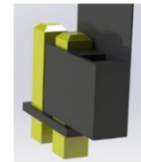
Field repairs may only be carried out by qualified technicians using OEM parts. Substitution of parts voids warranty and may pose a hazard to users of the equipment.

**Note:** The circuitry in the HDE Series telephones is protected by a Polyswitch resettable fuse. The fuse will reset itself after a time lapse determined by the fault condition and ambient temperature.

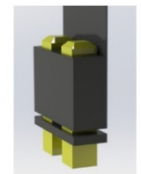
## Restoring the Factory Access Code

To reset the HDE factory Access Code:

1. Call into or out of the HDE with the faceplate open and PCBA accessible.
2. Move the jumper on J17 to connect both pins (Jumpered Image) for approx. 1 second or more.
3. Remove the jumper and place back in the un-jumpered position. The HDE will announce back with three beep tones.
4. Disconnect the call to the HDE.
5. On the next dial the access code will be restored to the factory settings.



Unjumpered



Jumpered

## Setup for Ringdown Mode

If only the \* key is entered in registers 00 and 01 or 02, the register will be cleared and will not contain any dial out phone numbers.

## HDE Programming

### Introduction

To change the register values of the HDE, the access code stored in Register 10 is required; see *(Register Number and Functions for the HDE Series)*. The factory default access code is 12345678. The user can change the access code by storing a custom code into Register 10. The access code must be eight characters and only digits are allowed. If the user-defined access code has been forgotten, the factory default access code (12345678) can be restored by calling into the HDE and momentarily shorting the two pins of connector J17, see *(Restoring the Factory Access Code)*. Alternatively, contact Guardian Telecom and we can remotely restore the factory default access code.

### Entering Programming mode

1. Call the HDE and wait for it to auto-answer.
2. Press "0" to access programming mode.
3. Enter the eight-digit access code and press the \* key (factory default access code is 12345678).
4. If the access code is accepted, a confirmation beep will be heard. If the access code is not recognized, the HDE will go back on-hook (see "Introduction" section above on how to restore the factory default access code).
5. Once the HDE has entered the programming mode, the user has 3 minutes to set up the required registers before the HDE disconnects the call.

### Programming procedure

1. Enter the two-digit number corresponding to the register to be accessed. A single confirmation beep will be heard. See *(Register Number and Functions for the HDE Series)* for more details.
2. Make an entry in the "Entered Codes" column for that register.
3. If fewer than the maximum number of digits allotted for that register have been entered, press \* to store the selection. One beep will signify that the entry has been accepted, two consecutive beeps will signify that the entry has been rejected. If the maximum number of digits has been entered, the selection will automatically be stored, and a beep will be heard (there is no need to press the \* key). It is possible to program multiple registers consecutively – after a selection is stored in a register and a beep confirmation is heard, enter the value of the next register to be accessed and repeat steps 1-3. To restore the factory default settings in Registers 11-31, access Register 08 and wait for a beep confirmation.
4. Registers 00, 01, 02, and 03 can store phone numbers up to 20 digits. If fewer than 20 digits are to be stored, enter them consecutively followed by the \* key and wait for a beep confirmation. If the HDE times out or the programming phone terminates the call before the terminator \* is entered, the register will not update and will retain the existing number (if any) in memory. If only the \* key is entered after one of these registers is accessed, nothing will be stored in that register. In this case, when the call button on the HDE is pressed, no number will be dialed out. This option could be used in a ring-down line, where the PABX automatically directs the call upon receiving a call request. Additionally, if Register 00 is left blank, the HDE will not attempt to dial a second number if the primary number (stored in Register 01) is busy and automatically disconnect the call.
5. If the HDE comes equipped with a keypad, a default access number (for example 9 - to access an outside line), can be stored in Register 02 and the rest of the number can be dialed manually with the keypad.
6. The "#" key can be included in the phone numbers entered into Registers 00-03 to provide a three second pause, but it contributes to the total digit count entered (20-digit maximum). This feature could be useful if an access number needs to be keyed in prior to dialing a phone number or an extension needs to be selected. For example, "9#1234567" can be entered to automatically access an outside line "9", wait 3 seconds, and then dial the number "1234567".

Alternatively, "1234567#123" will dial the phone number "1234567", wait 3 seconds, then select extension 123. The "#" can be written consecutively to provide a longer pause (for instance "1234567##123" will provide a six second delay).

7. To exit programming mode, press the # key or hang up the phone.

**Register Number & Functions for the Speaker Phone spkfon-(3BK-STD30)**

Register codes	Functions	Descriptions	Parameter	Entered Codes
00	Phone #1 B	Switch #1 Autodial, Second phone number	20-digit phone number	
01	Phone #1 A	Switch #1 Autodial, First phone number	20-digit phone number	
02	Phone #2	Switch #2 Autodial phone number	20-digit phone number	
03	Phone #3	Switch #3 Autodial phone number	20-digit phone number	
08	Default settings	<ul style="list-style-type: none"> <li>* Dial tone check = 1</li> <li>* Call progress tone = 1</li> <li>* EM switch lockout = 1</li> <li>* Monitor Voice = 2</li> <li>* Ansbypass = 2</li> <li>* Max digits in keypad dialing = 7</li> <li>* Handset volume = 3</li> <li>* Ring count = 0</li> <li>* Door latch releasing time = 5 seconds</li> <li>-----</li> <li>* Talk time = 3</li> <li>* Speaker volume =6</li> <li>* Voice sw =1</li> <li>* BGN offset = 2</li> <li>* Soft clip = 5</li> <li>* Tx level = 6</li> <li>* Rx level = 3</li> <li>* Ringback cadences=5</li> <li>* LLC = 7</li> </ul>		

09	Station ID #	Station Identification number		8-digit number	
10	Access code	Programming mode Access code		8-digit number	
11	Dial tone / Call Progress Tone Check	Dial tone check before autodial/ ring down Mode		1 = check dial tone, 2 = no check	
12	Call progress tones	Call progress tone associated with systems		1 = PABX, 2 = CO line	
13	EM switch lockout	Emergency switch lock out		1 = disable lockout 2 = enable lockout	2
14	Monitor Voice	Monitor Voice in the Talk mode. Call will be terminated without voice existing in a 20 sec frame.		1=Monitor Voice 2=No Voice monitoring	2
15	Answer Mode bypass to Talk	Answer Mode bypass to Talk		1=On hook after 15 sec delay without receiving select key 2=after 15sec bypass to Talk mode	2
16					
17	Phone Line monitor period	Phone Line monitor re-entry period time (minutes)		1 to 10 minutes	5
18					
19					
20					
21	Talk time	Communication link timer (1 -10 minutes)		1 – 9, 0 0 = No time limit	1
22	Max digits in keypad dialing	Maximum digits allowed in keypad dialing		1 – 9 0 = No keypad lockout	
23	Handset volume	Handset Reset volume; 2dB/step		1 – 8	
24	Speaker volume	Speaker volume. 2dB/step		1 - 8	6

25	Number of rings before call being answered	Pre-auto-answer ring counts		0 -9 0 = Call is answered within the first ring.	
26	Door latch open time	Time duration for the door relay to close. Relay time = entered number X 5.		1 – 9, 9 = 45 seconds	
27	Voice switch speed			1= max speed 4= min speed	1
28	Background noise offset level			1=120mV 2=180mV 3=240mV 4=300mV	2
29	Soft clip, BGN settings			1 = Tx soft clip 2 = Rx soft clip 3 = Tx, Rx s.c. 4 = BGN on 5 = BGN, Tx s.c 6 = BGN, Rx s.c. 7 = BGN, Tx, Rx s.c. 8 = BGN off, Tx, Rx sc off	5
30	TX gain	Transmit gain: 0-8 39dB to 48dB 1dB /step			6
31	RX gain	Receive gain: 0-8 39dB to 54dB 2dB /step			6
32	Ring back cadence counter	1 to 8 cadences, PABX= 4seconds/cadence CO line= 6seconds/cadence			3

33	LLC	Line Loss Compensation		8= 3.5V, 20mA-50mA 1= 3.5V, No LLC 2= 3.5V, 45mA-75mA 3=3.5V, No LLC 4= 4.5V, 20mA-50mA 5= 4.5V, No LLC 6= 4.5V, 40mA-75mA 7= 4.5V, No LLC	7
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**Report of Auto-dialing registers and devices registers**

All these register settings could be accessed in the program mode, that is after passing the access code verification.

90		Report register 00 setting + '*'		
91		Report register 01 setting + '*'		
92		Report register 02 setting + '*'		
93		Report register 03 setting + '*'		

94		Report settings of all device registers in the following order: <ol style="list-style-type: none"> <li>1. Reg 09</li> <li>2. Reg 08</li> <li>3. Reg 10</li> <li>4. Reg 11</li> <li>5. Reg 12</li> <li>6. Reg 13</li> <li>7. Reg 14</li> <li>8. Reg 15</li> <li>9. Reg 17</li> <li>10. Reg 21</li> <li>11. Reg 22</li> <li>12. Reg 23</li> <li>13. Reg 24</li> <li>14. Reg 25</li> <li>15. Reg 26</li> <li>16. Reg 27</li> <li>17. Reg 28</li> <li>18. Reg 29</li> <li>19. Reg 30</li> <li>20. Reg 31</li> <li>21. Reg 32</li> <li>22. Reg 33</li> </ol>		
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**Device status report**

Receiving DTMF '8' after auto-answer, the phone will send back the status of the following devices in DTMF codes '0' (fail) or '1' (OK).

The sequence of the string is in the following order and terminated with the '\*'.

1. Microphone status: 0=fail, 1=OK
2. Speaker status: : 0=fail, 1=OK
3. Call button1 status: 0=open, 1=close
4. Call button2 status: 0=open, 1=close
5. Call button3 status: 0=open, 1=close
6. Keypad status: 0=stuck keypad, 1= keypad OK
7. '\*'

**Access code entering procedure:**

First Key	8-digit code	Enter key	beep
"0"	"0" to "9", "#" are valid keys.	"*"	1 beep = Access to programming mode. On hook = Access denied.

**Programming procedure:**

Register codes	Beep tone	1 to 20 digits	Enter key	Store in memory + beep
XX: Two-digit number. "0" – "9" are valid keys	1 beep tone	"0" to "9" are valid keys. "# is for a three second pause.	Enter "*" key to store the selection into the memory.	1 beep = selection accepted. 2 beeps = selection rejected.

## Making a Call from the HDE:



HDE-20 and HDE-30:

Press the red EMERGENCY button and the phone number(s) programmed into Registers 00 and 01 will automatically be dialed, see *(Initial Setup of the HDE)*.



HDE-21 and HDE-31:

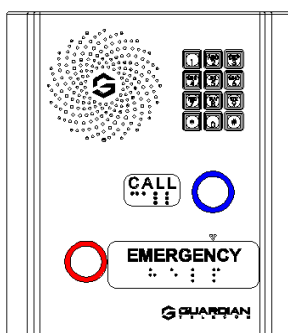
Press the blue CALL button and then dial the phone number upon hearing the dial tone. If some preset digits were programmed into Register 02, they will automatically precede the number dialed on the keypad by the user, see *(Initial Setup of the HDE)*.



HDE-22 and HDE-32:

If the red EMERGENCY button is pressed, the phone number(s) programmed into Registers 00 and 01 will automatically be dialed.  
If the blue ASSISTANCE button is pressed, the phone number programmed into Register 02 will automatically be dialed, see *(Initial Setup of the HDE)*.

**Note:** The EMERGENCY call always takes priority over an ASSISTANCE call. In the event the EMERGENCY button is pressed while an ASSISTANCE call is in progress, the ASSISTANCE call will be disconnected, and the EMERGENCY call will be processed.



HDE-23 and HDE-33:

If the red EMERGENCY button is pressed, the phone number(s) programmed into Registers 00 and 01 will automatically be dialed.  
If the blue CALL button is pressed, the user can dial the phone number upon hearing the dial tone. If some preset digits were programmed into Register 02, they will automatically precede the number dialed on the keypad by the user, see *(Initial Setup of the HDE)*.

**Note:** The EMERGENCY call always takes priority over a dialed CALL. In the event the EMERGENCY button is pressed while a call is in progress, the call will be disconnected, and the EMERGENCY call will be processed.



<b>LED Indicator</b>		
<b>Action</b>	<b>Phone Status</b>	<b>LED Status</b>
Pressing a button	HDE dials pre-programmed number(s)	Flashing
	HDE connected to dialed number and call has been accepted	Steady
	HDE is on-hook	Off

### **Handling an Incoming Call from the HDE at the Monitoring Station**

When the monitoring station answers an incoming call from the HDE, register 15 setting will determine how the HDE will operate.

**Answer Mode Bypass to Talk - Register 15:**

***If Set to “1”:*** Caller must send a mode command within 15 seconds or the HDE will assume the call to be a robot call and auto hang up. Sending a DTMF for Key “1” will put the HDE into a normal call mode where the caller can listen or communicate normally.

***If Set to “2”:*** If a mode command is not received within 15sec, the HDE will automatically put the phone in normal talk mode and send back a short confirmation tone to the caller to indicate they can continue to communicate or listen in from the HDE.

**Call Termination – Registers 14 & 21:**

Calls can be terminated using various methods. All public Central Office lines will issue out a call processing tone when a phone at either end is terminated but there are private PBX’s that do not as a result, it is possible for a condition to occur where an HDE could remain connected to a line indefinitely after a call is terminate. To prevent this from occurring there are settings within the HDE to manage this as follows:

Operator enters “#” key: Instructs the HDE to terminate the call and go back on hook.

Register 21 – Call timer: By setting a call timer the phone will auto-hang up after a pre-determined time. NOTE: For emergency use of the HDE a call timer may not be warranted and should be set to 0.

Register 14 – Monitor Voice: If this is set to “1” the HDE will monitor the audio activity and if no one is speaking / communicating within 20sec, the HDE will auto-hang up the call.

**Emergency Signaling / Help is on the way:**

Entering two \* keys consecutively at the monitoring station, \*\*, will cause the button LED on the HDE to flash, indicating that help is on the way. The LED will continue to flash until the phone goes back on hook, or it times out.

**Actuating the Relays:**

The HDE 20/30 Analog telephone has three relays that can be activated to perform various tasks.

**Primary Relay:** Once communication has been established between the HDE and the monitoring station, the contacts of the primary relay will automatically close and will open only when the HDE is back on-hook. No programming or other action is required to utilize this relay except to connect the chosen device - which could for example be a beacon or a camera - to terminal block J11.

**Supplemental Relays:**

Two additional relays are provided:

Supplemental relay #1 is managed from the monitoring station and can control cameras, external lighting, electronic door locks etc.

Supplemental relay #2 can also be managed from the monitoring station for a similar purpose; alternatively, it can be configured for B44 Safety Code Compliance. B44 is a safety feature that will trigger an alarm if the phone line or power connection is lost and is commonly used in elevators and in similar environments.

- Supplemental relay #1 is connected at (J12) and can be closed from the monitoring station by entering the first three digits of the Station ID# followed by the \* key. The station ID# is at Register 09 in the Register table.
- Supplemental relay #2 has two possible configurations.
  1. Relay #2 is connected at (J13). Unless it is programmed for B44 Compliance it can be closed by entering the 4th, 5th, and 6th digits of the Station ID# followed by the \* key.
  2. B44 Compliance: For details of the B44 Safety Code Compliance refer to section *B44 Safety Code Compliance Option*: in this manual. To have an HDE phone configured for B44 it must be specified with the initial order and it cannot be changed in the field. The B44 firmware label for a telephone that is configured with the B44 option is F006010-3BK-EL.30B.

Register 26 in the Register Table sets the duration of time in seconds that supplemental relays 1 & 2 remain closed when activated. The number entered is in seconds multiplied by 5, default is 1, which gives a time duration of five seconds. Unless a longer time duration is required, there is no need to change the default setting. If Supplemental relay #2 is set up for B44 Compliance the setting in Register 26 will have no effect on its operation.

**Example of use**

An example of the use of a supplemental relay could be if the #1 relay is wired to an electrically controlled door lock. If communication is established between the HDE and the monitoring station due to someone pressing the ASSISTANCE button and the request is to unlock the door, entering the first three digits of the station ID number followed by the \* will unlock the door for the programmed time interval.

## Specifications

<b>Audio Performance</b>	
AUDIBLE RANGE FREQUENCY RESPONSE	300 – 3400 Hz
DIALING METHOD	DTMF
TRANSMIT OBJECTIVE LOUDNESS RATING (TOLR)	-36 dB @ 0.5 METER
MAXIMUM SPEAKER VOLUME ALL MODELS	75.4 dB @ 1.0 METER WITHOUT EXTERNAL POWER SUPPLY
MAXIMUM SPEAKER VOLUME ALL MODELS	86.1 dB @ 1.0 METER WITH EXTERNAL POWER SUPPLY
SET IMPEDANCE	600 OHMS NOMINAL
MAXIMUM LOOP	15,000 Ft (4,500 M) OF 22 AWG COPPER
<b>Electrical</b>	
AUTO ANSWER SENSITIVITY	40 – 100 VRMS, 16 – 25 Hz
LINE VOLTAGE	24 – 56 VDC
LINE FUSE	0.25 AMP 250 VOLT RESETTABLE
RINGER EQUIVALENCE NUMBER	0.44B
CONNECTION METHOD	SURGE ARRESTOR
CALL PROGRESS TONES	DIAL TONE: 350Hz & 440Hz @ -16dBm0 BUSY TONE: 480Hz & 620Hz @ -24dBm0 DUTY CYCLE 500mS ON, 500mS OFF
EXTERNAL POWER SUPPLY (OPTIONAL)	12V AC/DC, 5W (NON-SWITCHING IS RECOMMENDED)
RELAY CONTACTS	
PRIMARY RELAY	0.13A @ 350V
SUPPLEMENTAL RELAYS 1 & 2	2.5A @ 60V
<b>Environmental</b>	
TEMPERATURE	-40° TO +50° C (-40° TO +122° F)
HUMIDITY	0 TO 95% RH
<b>MECHANICAL</b>	
BODY CONSTRUCTION	16 GAUGE 316SS
DIMENSIONS	SEE DRAWINGS – PAGES 5 TO 9
WEIGHT	6LBS(2.72KG)
SHIPPING DIMENSIONS	14-5/8" X 10-3/4" X 4-3/4" (371 X 273 X 121 MM)
SHIPPING WEIGHT	HDE-20, HDE-21, HDE-22, HDE-23 7.1 LBS (3.2 KG) HDE-30, HDE-31, HDE-32, HDE-33 6.5 LBS (3 KG)
STANDARD MOUNTING	VERTICAL WALL OR RECESSED
WIRING ACCESS	TWO 7/8" HOLES FOR OWNER SUPPLIED FITTINGS
HARDWARE MATERIAL	STAINLESS STEEL
<b>COMPLIANCE</b>	
INDUSTRY CANADA	1012A-601B

### **B44 CONFIGURED HDE**

LINE MONITORING INTERVAL	3 MINUTES
RELAY CONTACTS	SUPPLEMENTAL RELAY 2 – NORMALLY CLOSED (OPEN ON FAIL)

<b>Replacement Parts</b>		
<b>Part No.</b>	<b>Description</b>	<b>Field Replaceable</b>
P004248	Gasket - HDE Surface Mount, Back	Yes
P004249	Gasket - HDE Surface Mount, Bottom	Yes
P004593	Microphone C/W Connector	Yes
P005706	Bit For Tamper Proof Screws	
P005764	Grommet - 7/8" Solid Black	Yes
P005960	Label - "Emergency" C/W Braille	Yes
P006003	Gasket - Microphone/Speaker Installation	Yes
P006010	PCBA - Speaker Phone	Yes
P006474	4" Speaker C/W Connector	Yes
P006852	Label - "Call" C/W Braille	Yes
P007391	Metal Keypad	Yes
P007535	Tamper Proof Screw, #10-32 1/2" (T-25)	Yes
P007777	Backplate - HDE Surface Mount	Yes
P007780	Housing - Back Box, HDE Flush Mount	Yes
P007838	Faceplate - HDE-32, Dual Push Button	Yes
P007850	Faceplate - HDE-20, Single Push Button	Yes
P007851	Faceplate - HDE-22, Dual Push Button	Yes
P007860	Faceplate - HDE-30, Single Push Button	Yes
P007860	Faceplate - HDE-31, Single Push Button with Keypad	Yes
P007861	Faceplate - HDE-33, Dual Push Button, With Keypad	Yes
P007862	Faceplate - HDE-21, Single Push Button with Keypad	Yes
P007863	Faceplate - HDE-23, Dual Push Button, With Keypad	Yes
P007924	Label - "Assistance" C/W Braille	Yes

## Warranty

Guardian Telecom Ltd. warrants that its products are free from defective workmanship and materials. Guardian Telecom will, within five years from the date of final sale to the customer, replace or repair any such products provided they are returned to our facilities for examination. Freight costs (including brokerage if applicable), both to and from Guardian, are the sole responsibility of the customer. This warranty does not extend to any items that are deemed to have been misused, modified, neglected, improperly specified, improperly installed, or used in violation of instructions or specifications approved by Guardian Telecom. Guardian Telecom Ltd. shall not be liable for incidental or consequential damage of any kind caused by any defect in our product. The total liability shall not, under any circumstances, exceed the purchase price of the products furnished by Guardian Telecom Ltd.

***A return authorization must be obtained prior to warranty claims or repairs.***

## Disclaimer

The products covered by this manual are designed for use in Industrial Environments and/or Hazardous Locations. Due to the range of possible applications for these instruments the manufacturer will not be responsible for damages or losses of any kind suffered as a result of the use of this product, including consequential damages.

## Warning

This device may be opened and reassembled by qualified personnel only, for the purposes of installing the product, making adjustments, and replacing components, following the instructions in the product manual.

**High voltages may be present in this product when connected to telephone wiring.**

## Service Telephone Number

### **1-800-363-8010**

Guardian Telecom provides a customer service telephone number that is toll-free within North America. If you need assistance when installing or operating this product, please call the toll-free telephone number between regular business hours (8:00AM-5:00PM), Mountain Standard Time. If you are calling outside of regular business hours, please leave a detailed message, and a member of Guardian Telecom's Service Department will return your call as soon as possible. If your product requires service, Guardian personnel will supply you with an RMA (return materials authorization) number over the telephone or through our web site product return page. This number must be included with your return address and the name of the person to contact.

**Guardian Telecom Ltd.**  
**Toll-free 1-800-363-8010**  
**Ph. (403) 258-3100**  
**Fax. (403) 255-2595**  
**[www.guardiantelecom.com](http://www.guardiantelecom.com)**

## Feedback

Guardian Telecom continually strives to make reliable, durable, and easy to use products. If you, as an installer or user of our equipment, have any suggestions for improvements to this or any of our products or documents, including this manual, we would appreciate hearing from you.

## Guardian Product Return

Guardian products have been quality tested and are in full working order when shipped from the factory, given the rugged nature of these products shipping is not expected to damage a unit. In the unlikely event of a malfunction, Guardian follows the three-step procedure below.

### ***Step I - On-Site Correction***

- The most common source of difficulties with a new product is improper installation in one of two ways: incorrect wiring connections or connection to an incorrect power source.
- Product wiring needs to be properly connected to the on-site wiring. Correct wiring instructions are shown in the user manual included with the product.
- Connecting a telephone to a standard power source, rather than tip & ring, will blow the telephone's internal, user-replaceable fuse or trip the resettable fuse. In the event of fuse burnout, disconnect the telephone from the power source, replace the fuse, and reconnect following the wiring diagrams provided with the product. If a resettable fuse trips continuously disconnect the telephone from the power source and reconnect following the wiring diagrams provided with the product.

### ***Step II - Return Materials Authorization (RMA)***

- When a product has been installed following user manual instructions and the unit fails to operate, the user must contact Guardian Telecom to obtain authorization to return the product. This can be done by completing an RMA form online at <https://www.guardiantelecom.com/support/rma/>, or by calling the service telephone number given in this manual.
- After providing information on the product, the owner and the nature of the problem, Guardian will issue an RMA number, to be shown on documentation returned with the product.
- In addition to the RMA number, shipping documents should include name, address, and telephone number of the owner along with contact information for the person responsible for the repair and/or the user who identified the malfunction.
- (Where a product is being returned for repair from outside of Canada, customs documentation must show the product's serial number, date of export [date of purchase], and a notation that the equipment is: "Canadian goods returning.")

### ***Step III - Factory Authorized Service***

- Once received, each product is carefully inspected and tested. If the product is under warranty, repairs are completed and the product returned to the owner, generally within five working days of receipt by the factory.
- A product that has been subjected to misuse, neglect or accident or is beyond the warranty period will be evaluated. The service department will provide the owner's representative with a repair cost estimate. Once approved, repairs are completed and the product returned, generally within five working days.

## Cleaning Tips for Guardian Telephones

Guardian Telephones may occasionally need to be cleaned to maintain their appearance. Generally, wiping the surface with a clean, water-dampened cloth will remove most films or residues. If the soiling is too stubborn for plain water, a mild detergent solution may be used. Be sure to wipe away any detergent residue with a plain water dampened cloth. The Telephone may be cleaned with any general-purpose household glass and surface type cleaner. Do not spray the telephone directly! Spray the cleaner on a soft cloth then wipe the surface. Pre-treated cloths, such as those used for eyeglasses or cameras, may be used to clean the Telephone. Premoistened towelettes may also be used, however, avoid those containing lanolin or aloe, as they will leave a slippery residue. The handset and surface of the telephone may be cleaned with disinfectants used for general cleaning in a medical environment. Isopropyl alcohol may be used applied with a cloth. Avoid using alcohol on silicon-based keypads, since doing so may significantly degrade legibility.

- Do not use furniture polishes, waxes, or plasticizer-based cleaner (Armor All etc.)
- Do not use lanolin, aloe, glycerin, or other skin care type products.
- Do not apply any solvent such as acetone, mineral spirits etc.
- Do not directly spray or immerse the handset.

## Storage

General Storage (All situations):

- Note any stacking limits or warnings on packaging (if any).
- Do not store in temperatures over +80C.
- Store in original packaging if possible until needed.

Long Term Storage (> 6 Months):

- If the area is air-conditioned and not subject to high changes in humidity, continue to store in original packaging.
- If wide humidity shifts are expected, then use these steps:
  - Remove product from packaging (including plastic bags) and store on shelf in open air.
  - If the area is subject to a high degree of dust, to help maintain cosmetic appearance you can cover it with cloth (Do not cover it with plastic or materials that will trap moisture) or clean periodically.
  - Do not store out of packaging long term where they are exposed to sunlight. Long-term exposure to UV may cause fading on plastic parts.



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***Tough. Trusted. True.***

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