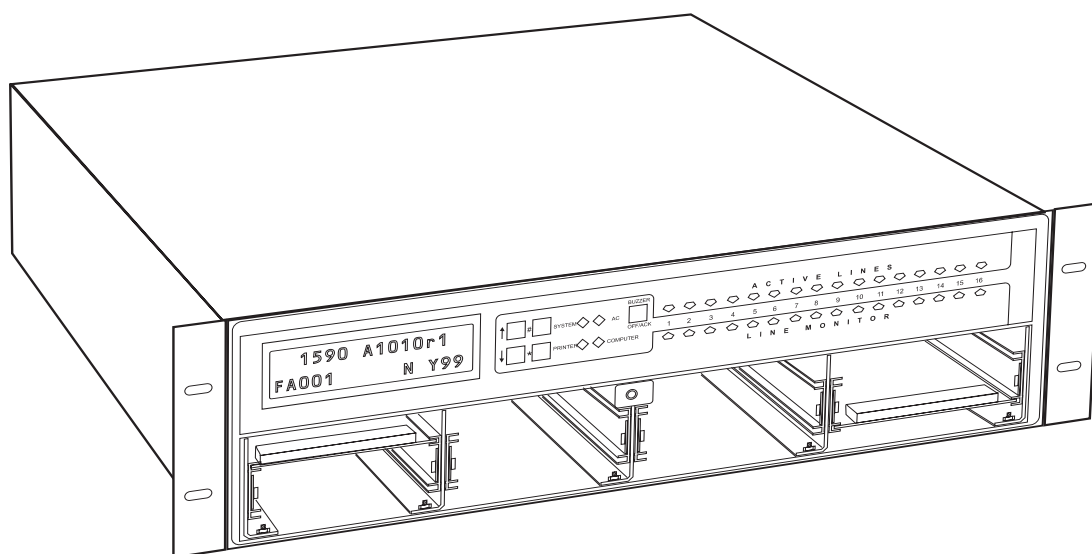


Osborne-Hoffman 2000E

Reference Manual



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FCC compliance This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

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Preface

This is the *GE Osborne-Hoffman 2000E Reference Manual*. This document includes an overview of the product and detailed instructions explaining:

- how to install your OH2000E; and
- how to program the line cards and use the receiver.

There is also information describing how to contact technical support if you have questions or concerns.

To use this document effectively, you should have the following minimum qualifications:

- a basic knowledge of alarm monitoring concepts; and
- a basic knowledge of how panels and other devices communicate with receivers.

Read these instructions and all ancillary documentation entirely before installing or operating this product. The most current versions of this and related documentation may be found on our website. Refer to the *Chapter 6, Troubleshooting, maintenance, and support* on page 47 for instructions on accessing our online publication library.

Note: A qualified service person, complying with all applicable codes, should perform all required hardware installation.

Conventions used in this document

The following conventions are used in this document:

Bold	Menu items and buttons.
<i>Italic</i>	Emphasis of an instruction or point; special terms.
	File names, path names, windows, panes, tabs, fields, variables, and other GUI elements.
	Titles of books and various documents.
<i>Blue italic</i>	(Electronic version.) Hyperlinks to cross-references, related topics, and URL addresses.
Monospace	Text that displays on the computer screen.
	Programming or coding sequences.

Safety terms and symbols

These terms may appear in this manual:



CAUTION: *Cautions* identify conditions or practices that may result in damage to the equipment or other property.



WARNING: *Warnings* identify conditions or practices that could result in equipment damage or serious personal injury.



When disposing of this product, please separate it from other waste and deliver it to the appropriate recycling center in your country, in accordance with Waste Electrical and Electronic Equipment (WEEE) directive 2002/96/EC and amendment 2003/108/EC and their respective national equivalents. For more information, visit www.recyclethis.com.

Chapter 1 Introduction

This chapter provides an overview of your Osborne-Hoffman 2000E, including descriptions of the components of the receiver along with the front and back panels.

In this chapter:

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<i>Sample configuration</i>	4
<i>Overview of the OH2000E</i>	5
<i>Front panel</i>	5
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<i>Construction</i>	7

Product overview

The Osborne-Hoffman 2000E receiver incorporates breakthrough technology for the security industry, which establishes standards in performance and reliability. A combination of these technologies with compact electronic packaging results in significant space as well as RS 232 port savings, rapid signal processing, and ease of adaptation to different formats.

Product contents

The standard Osborne-Hoffman 2000E system consists of:

- OH2000E receiver only, 110 volt or OH2000E receiver only, 220 volt
- AC power cord
- DC power cord
- WinUtility CD
- Printed manual

Inspect the package and contents for visible damage. If any components are damaged or missing, do not use the unit; contact the supplier immediately. If you need to return the unit, you must ship it in the original box.

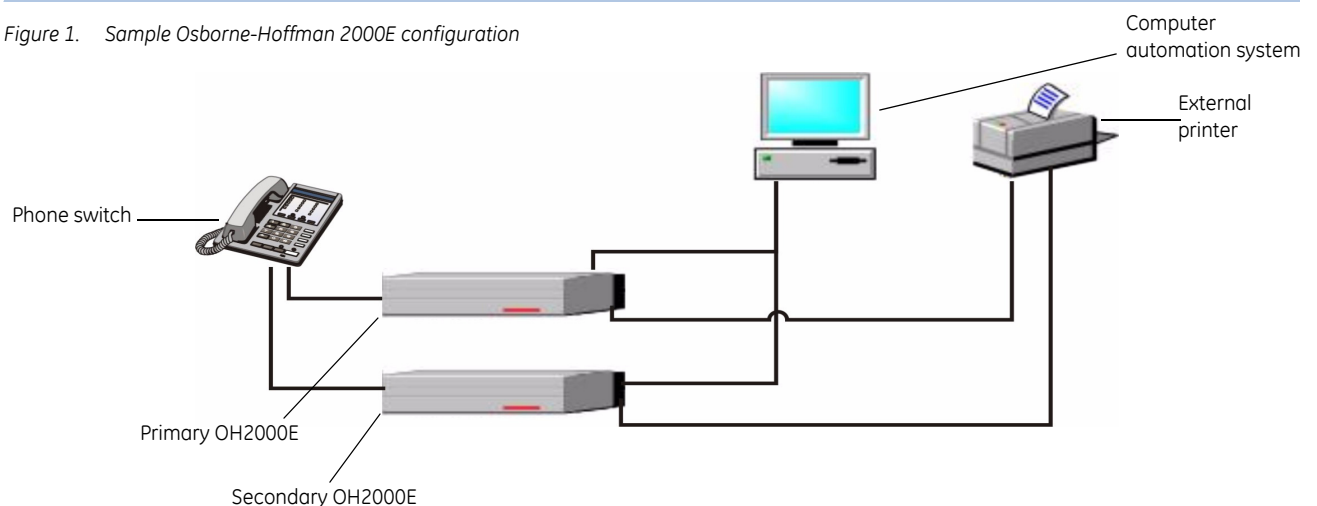
Other requirements

To complete the installation of the Osborne-Hoffman 2000E, you will also need (or may have ordered with the receiver) either of the following components:

- One or more line cards
- TCP/IP line card

Sample configuration

The following figure shows a typical layout of an OH2000E configuration.



Overview of the OH2000E

Features of the OH2000E include:

- DSP (digital signal processing) technology - provides time and frequency domain analysis common to all formats.
- Flash memory technology - allows flexible programming and easy updates.
- Hot swap substitution - allows quick changing of the line cards.
- Periodic heartbeat signal - sent to the computer to indicate its status.

This section describes the displays and construction of the OH2000E.

Construction

The OH2000E is composed of:

- Line cards - located in slots behind the bottom panel in the front.
- The master board - located under the top cover.
- The display board.

The structure of the OH2000E consists of up to 16 independent ports with two lines per line card. The received signal and the status of all receivers are collected by the master board, which supervises the operation of the line cards. Received signals are displayed on the display board and sent to the printer and to the computer by the master board.

To remove the top cover, turn the OH2000E off. Remove both AC and DC prior to removing top cover. Remove only four screws from the rear of the top cover. Use a small screwdriver to pry up the center slot of the top cover.

To insert the line cards, see [Install the line cards](#) on page 10.

Front panel

The upper front panel contains an LCD display, system and line status LEDs, and switches. The lower panel is used to access eight slots, each of which holds a 2-line card. A blank card is inserted in unused slots.

Figure 2. Front panel of the OH2000E receiver

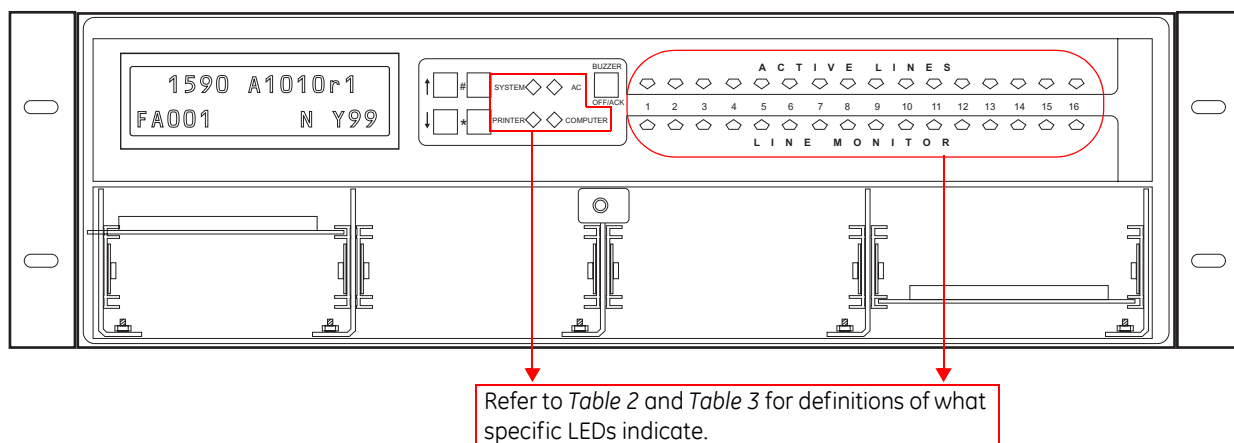


Table 1. Front panel descriptions

Display/part	Description
LCD display	A 4-inch-wide double-line display. Shows received signals and system option selections.
LEDs (also see Table 2 and Table 3)	System - Shows that the OH2000E is on. AC/DC - Shows AC power and DC battery status. Printer - Shows the status of the printer attached to the external printer port. Computer - Shows the status of the computer attached to the OH2000E. Consult the automation instruction manual for compatibility and UL listing with the OH2000E. Active Lines - Shows lines, which are ready to receive signals, and their status while receiving. Line Monitor - Shows telephone line fault status.
Switches	Buzzer OFF/ACK - Used to acknowledge events and turn the buzzer off. UP, DOWN,#,* - Used to program date and time, to view the LCD display for past events and to program OH2000E options.

LED descriptions

There are four LEDs on the front of the OH2000E along with LEDs for each of the lines. Each LED gives the status of specific functions. See *Figure 2* on page 5.

Table 2. LEDs for AC/DC, Printer and Computer

LED	Description
Green System LED	The System LED will blink if the system is on.
AC/DC	- Blinks in sync with green LED - Means no battery. - ON - Means battery low if AC is missing. - Blinks on every fourth green LED - Means no AC.
Printer	If the Printer LED is on, it means there is no printer or the printer is off-line.
Computer	If the Computer LED is on, it means no computer is detected. If the Computer LED blinks, it means the automation computer is not accepting alarms. The OH2000E is in manual mode in this case.

Table 3. LEDs for active lines and line monitor

Operation	Green (active lines)	Red (line monitor)
Line active (waiting for signal)	Blinks in sync with the green system LED	OFF
Receiving signal	ON	OFF
Line fault	Blinks in sync with the green system LED	Blinks twice as fast as the green system LED
Listen-in	Blinks twice as fast as the green system LED	OFF
Inactive line (board missing)	OFF	ON
Being programmed	Blinks in sync with the green system LED	Blinks in sync with the green system LED
Bad program checksum	Blinks twice as fast as the green system LED ¹	Blinks twice as fast as the green system LED ¹

1. When the OH2000E is in operation (not being programmed), these indicate no communication to the line card from the master board. If communication to the master board from the line card failed, you would have an inactive indication. This is probably due to the line card not being plugged in adequately.

Rear panel

The following drawing shows the back of the OH2000E receiver. *Table 4* describes the components of the rear panel.

Figure 3. Rear panel of the OH2000E receiver

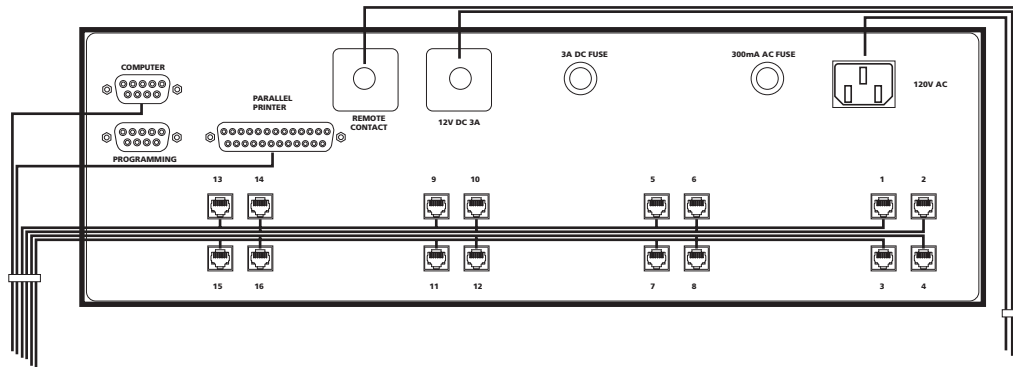


Table 4. Rear Panel Descriptions

Part	Description
120 VAC	Plugs into a standard wall outlet. Center prong should be connected to an earth ground.
12 VDC	Attaches to a standby battery.
Telephone jacks 1 through 16	Connects to standard telephone lines.
Computer	Connects to the serial port of a computer. Connect the receiver to a UL listed computer automation system. Consult the automation instruction manual for compatibility and UL listing.
Parallel printer	Connects to a standard 80-column printer.
Remote contact	Provides a dry closure for an external relay.
Programming	Attaches to the serial port of a computer for programming options and for updates.

Chapter 2 Hardware installation

This chapter provides instructions on getting started with the Osborne-Hoffman 2000E receiver.

In this chapter:

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<i>Establishing line card groups</i>	15

Installation

Use this section to follow a basic procedure for installing and starting the OH2000E receiver.

Note: The OH2000E is intended to operate in a normal central station environment. Temperatures above 95°F (35°C), continuously high humidity, extremely dusty conditions, and a corrosive atmosphere should be avoided. The OH2000E mounts onto a standard 19-inch rack or a tabletop.

To install the OH2000E, use the following steps, and refer to *Figure 4, Installation diagram* on page 14. All connections are made in the back of the OH2000E.

- *Install line cards*
- *Install line cards*
- *Connect the telephone lines*
- *Set the date and time*
- *Connect a printer to the parallel port*
- *Connect a computer automation system*
- *Connect backup power*
- *Additional UL requirements*

Install line cards

Access the line cards from the front panel. Unscrew the black retaining screw in the center to remove the lower panel. The line cards are arranged in a two-layer stack, with lines 1 and 2 in the upper left and lines 15 and 16 in the lower right corner. To remove a card, unplug the Telco jacks in the rear and pull on the tab. Unused card slots have blank cards. This signals to the OH2000E that there is no line card present in those slots. If a blank line card is not inserted, the OH2000E will not be able to distinguish a nonfunctioning card.

To insert a line card or a blank card, slide the card into the guides on the side of the slot to be filled until the card is plugged into the rear. The telephone jacks will be flush with the rear plate when the cards are completely plugged in. Close the front cover first, and then plug in the telephone jacks. This will prevent the line cards from being pushed out when the jacks are inserted.



CAUTION: Guard against static electricity. Handle the boards from the edges as much as possible. The boards are also designed for hot swapping. It is not necessary to power down.

Line card jumpers

On the line card, the jumpers are used for the line card memory test prior to shipping or to clear the memory.

- When both jumpers J1A and J2A are pulled off, the line is ready for the memory test in production. The memory test uses a special test board.
- To clear the memory of line A, the line card board is unplugged, J1A is removed and the board is re-inserted. After a wait of about 10 seconds, the board is unplugged again, J1A is re-installed, and the board is re-inserted.

Connect the power supply

Primary Power¹: 120 V at 60Hz, 240 VAC at 50 Hz; 300mA, 150 mA max.

Secondary Power: 12 VDC, 3 A max., 1 A max. charge current, supervised

Connect the AC cord from the 110 VAC jack into a 110 VAC outlet with a solid earth ground. The green System LED will flash. The red AC LED and the buzzer will be ON to indicate that DC power has not been connected. Turn the buzzer OFF by pressing the Buzzer OFF switch. The red Line Monitor LEDs will be ON for active lines not connected to the telephone. Active lines are lines for which a card is present as indicated by the green Active LEDs. The red Printer and red Computer LEDs will indicate that these devices are not connected.

Connect the telephone lines

Using an RJ-31X (or equivalent) jack, connect the telephone lines to the numbered jacks 1 through 16. Connect as many line cards as you wish to use. Plug a blank card in where no line card is present. The green Active LEDs indicate lines ready to receive signals. The red Line Monitor LED will indicate a line fault.

Set the date and time

You can set the date and time using the OH2000E Line Programmer application after the receiver is installed. See *Chapter 3 Programming line cards* for more information.



CAUTION: When you want to view, but not change the present option flag settings, select the VIEW OPTION FLAGS option in the menu. Trying to just view them and selecting SET OPTION FLAGS will result in a change back to the default values of the flags. Refer to *Viewing option flags* on page 54 for instructions.

To set the date and time on the receiver, do the following:

1. Press # to enter the menu.
2. Press the down arrow once to SET DATE AND TIME. You are first prompted to change the year.
 - Press the up arrow to increase a number.
 - Press the down arrow to decrease a number.
 - Press * to go back to previous entry.
 - Press # to go to next entry.
3. After setting the year, you can set the month, date, and then time.
4. Press # when finished setting the time. This takes you back to the normal display.

-
1. The primary power (not power-limited) AC wiring and secondary power DC wiring should be separated by 1/4 inch spacing from each other and from the power limited wiring. Use cable ties to tie the wire bundles to the UL listed rack-mounting cabinet. Connect the receiver to a UL listed computer automation system. Consult the automation system instruction manual for compatibility and UL listing with the OH2000E.

Connect a printer to the parallel port

Parallel printer port: 5 VDC max., 6 mA max., unsupervised (must be located in same room)

Relay ratings: Omron G5A 237P 5 VDC relay rated at .5 A, 60 VAC or VDC

The red Printer LED will turn OFF. You must use a form-feed printer such as Panasonic and Okidata. See [UL requirements](#) on page 67 for a list of some UL-listed printers. UL requires that the OH2000E and the printer be in the same room. Operation without a printer is not recommended.

Note: If the OH2000E is off, turn off the printer and connect it to the OH2000E with both devices powered down before powering either back up.

Connect a computer automation system

Computer port: ± 15 VDC max, ± 10 mA max., unsupervised (must be in same room)

Programming port: ± 15 VDC max, ± 10 mA max., unsupervised (must be in same room)

Relay ratings: Omron G5A 237P 5 VDC relay rated at 0.5 A, 60 VAC or DC

UL requires that the OH2000E and the computer be in the same room. Consult the automation instruction manual for compatibility and UL listing with the OH2000E.

Connect the computer the Computer port. The red computer LED will turn off. The computer port is a 9600-baud serial port, using 8 data bits, 1 stop bit, and no parity.

Computer RS-232 serial connection and specifications

A 9-pin connector is used on the OH2000E computer port. When a 9-pin connector is also used on the computer end, use a 9-pin to 9-pin cable.

When the computer uses a 25-pin port, make connections as shown in *Table 5*.

Table 5. Computer RS-232 serial connection and specifications

Computer			RS232 circuit	OH2000E 9-pin	Function
9-pin	RJ45	25-pin			
1	2	8	Carrier detect	1	DCD pulled to +5V
2	5	3	Receive data	2	RS-232 out of OH2000E
3	6	2	Transmit data ¹	3	RS-232 in to OH2000E
4	3	20	Data terminal ready	4	NC
5	4	1,7	Signal ground	5	GND
6	1	6	Data set ready	6	DSR pulled to +5V (connected to DCD)
7	8	4	Request to send ¹	7	CTS to OH2000E (usually about +8V)
8	7	5	Clear to send	8	RTS out of OH2000E
9		22	Ring indicator	9	NC

1. If you are using a second computer for eavesdropping purposes, do not connect pin 3 and pin 7 of the 9-pin connector to the eavesdropping computer if the automation is also connected.

Verifying the computer automation connection

- Use the WinUtility in eavesdropping mode to verify the output to the computer. Connect an external PC with the WinUtility to the computer port to verify the OH2000E output.
- You can verify the automation by running both the WinUtility and the computer automation simultaneously using a Y cable. This allows direct comparison with data shown by the automation. Refer to [Setting up eavesdropping](#) on page 27 for more information.

Troubleshooting the computer installation

The following information might be helpful for the installation:

- If the Computer LED is ON solid, the CTS from the computer is not connected. Pin 7 on the OH2000E computer port expects about +8 volts. Measure the voltage on the cable from the computer attached to pin 7. Trace the cable back to the CTS output of the computer. If the CTS output of the computer measures 8 volts, trace the connection to pin 7 on the OH2000E.
- If the Computer LED blinks, the OH2000E has not received the start character (02h) from the computer. After failure to receive an ACK (06h) from the computer, this start character tells the OH2000E that the computer is ready to receive. Inserting the dummy plug (shorts pins 2 and 3, and 7 and 8) in the computer port will clear the red Computer LED and puts the OH2000E in the manual mode.
- The computer LED is OFF when the computer is properly connected and ready to receive signals.

Connect backup power

Connect the 12 VDC jack to a 12 VDC battery to provide back up power. The battery should be a gel-cell or sealed lead acid type. A 35 Ah capacity is needed to provide back up for 24 hours. The red AC LED will turn OFF and the green System LED will be on. If AC should be lost, the red AC LED flashes slowly. If DC is lost, the red AC LED flashes in sync with the green System LED.

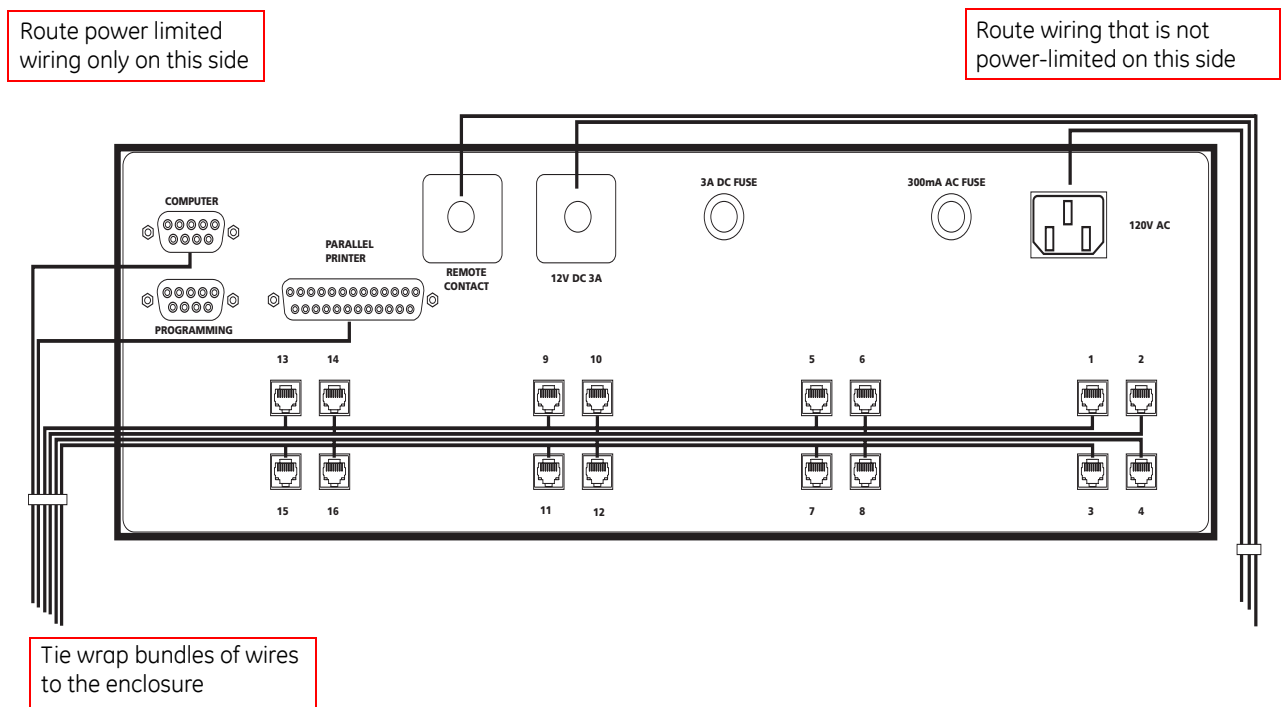
Additional UL requirements

UL requires the use of a listed rack, cabinet, battery enclosure, and wiring as described in [UL requirements](#) on page 67.

Installation diagram

Refer to the following diagram for installing an OH2000E receiver.

Figure 4. Installation diagram



Establishing line card groups

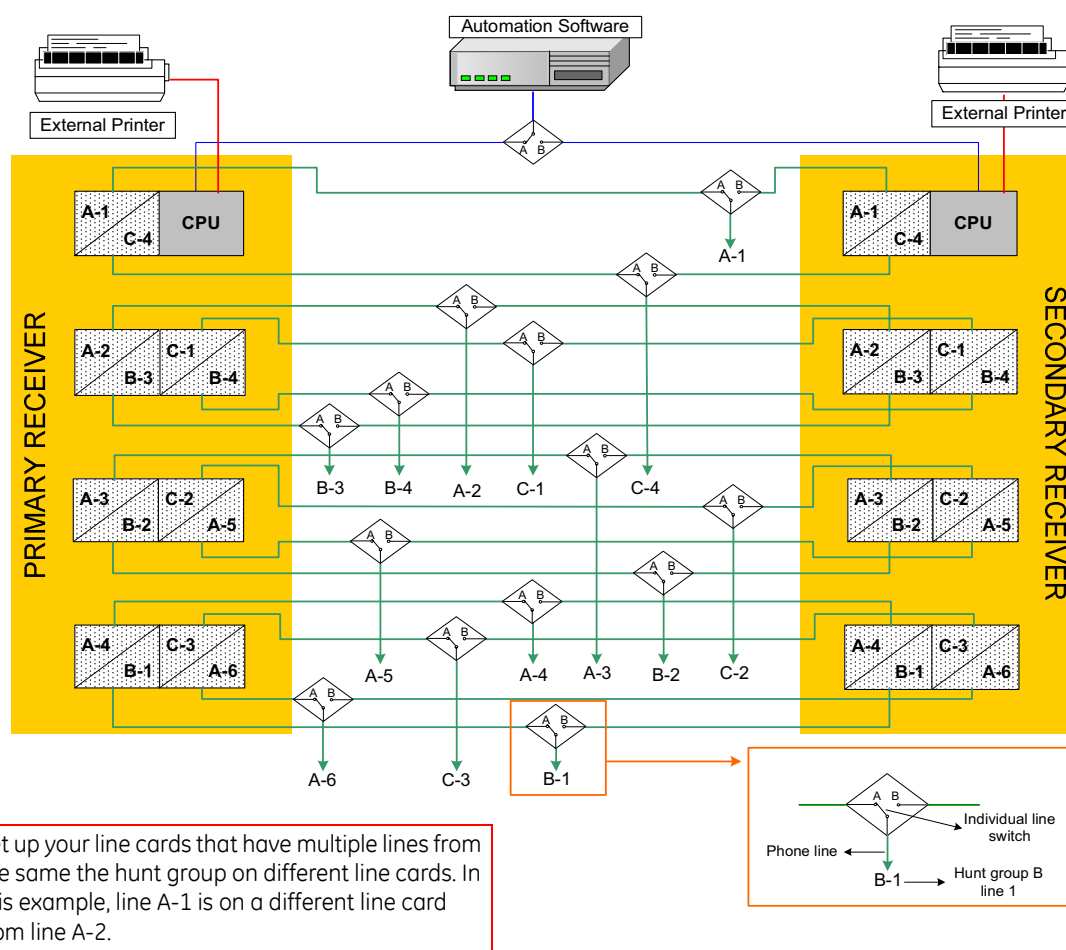
It is helpful to set up hunt groups of phone lines and corresponding line card groups. You can then decide on the protocols to be used with each of the line card groups.

Grouping line cards enables signals from panels to be routed quickly to the correct line card for the language a panel speaks to the receiver, which is called a protocol. For example, if you program your first line card group for SIA and CID, then you would route panels that use those signal formats to that line card group. The signals are efficiently read because the receiver doesn't have to go through several protocols to match the correct one.

Deciding how you're going to group the line cards will depend on whether you're switching over existing accounts to the OH2000E, or you're a new central station setting up the receiver and panels. The line card groups are based on the protocol. If you're programming the receiver for existing panels, group the line cards based on the most-used protocols of panels in the field.

Note: We recommend that you group line cards by SIA, CID, and then other formats, as most recent panels use SIA and CID. Each line card group consists of two or more line cards.

Figure 5. Sample of line card grouping



Note: For UL certified central stations, you must comply with the UL requirements for distributing hunt group lines to different line cards within the receiver or use two separate receivers. For dealers using DNIS, please refer to [Chapter 5, Special features](#) on page 40.

Chapter 3 Programming line cards

This chapter provides instructions on using the WinUtility application for programming the line cards on your Osborne-Hoffman 2000E.

In this chapter:

<i>Overview</i>	18
<i>Installing the WinUtility Application</i>	18
<i>Starting the Linecard Programmer application</i>	19
<i>Programming options and updates</i>	20
<i>Line card status</i>	20
<i>Line card options</i>	21
<i>Setting the receiver time</i>	25
<i>Creating DNIS tables</i>	25
<i>Updating line cards with DNIS files or new revisions</i>	26
<i>Eavesdropping feature</i>	27
<i>Using the data capture feature</i>	29
<i>Receiving updates</i>	29

Overview

Use the OH2000/OH2000E Line Card Programmer application to update and select parameters for line cards and set up eavesdropping. Program the line cards with specific protocols. You can define up to four protocols per line card by default.

There are three applications available on the WinUtility CD:

- Program Receiver - Update line cards to a new revision and select optional parameters.
- Eavesdropping - Eavesdrop on the communication between the OH2000E and the computer.
- Capture Call ID - Capture incoming call data.

The OH2000E Line Card Programmer program is contained on a CD-ROM. New updates are provided via e-mail or on the website.

Only use the PC to set options or load updates into the OH2000E. These options can also be programmed with the switches on the front of the OH2000E (see Appendix A, [Overview](#) on page 50), in which case the PC is not needed.

Installing the WinUtility application

To install the OH2000E WinUtility on your PC, do the following:

1. Insert the CD-ROM in the CD drive on your computer.
2. In the CD-ROM drive directory, double-click the **setup.exe** icon.
3. On the initial installation window, click **Next**.
4. Specify the directory you want it installed in, and then click **Next**. By default, it is installed in C:\Program Files\OH2000E.
5. Follow the rest of the instructions you are prompted with to complete the installation.

When the Windows application is e-mailed, it is a self-extracting file, which installs itself when double-clicked.

Starting the Linecard Programmer application

To start the OH2000E Linecard Programmer application, do the following:

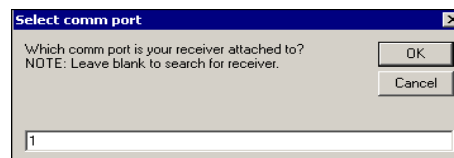
1. Turn the OH2000E receiver ON, and connect it to the programming port using a straight-through cable.
2. Connect the other end of the straight-through cable from the OH2000E to an available com port on the laptop or desktop.
3. From the **Start** menu, select **Programs**, **OH2000E**, then **OH2000E** again. The program could be in a folder with a different name, depending on what you selected during the installation of the Line Card Programmer.
4. Either click **OK** on the initial window, or wait until you see *Figure 6*.

Figure 6. OH2000E Line Card Programmer



5. To start the Linecard Programmer application, click **Program Receiver**. The *Select comm port* window (*Figure 7*) displays.

Figure 7. Select Com Port Window



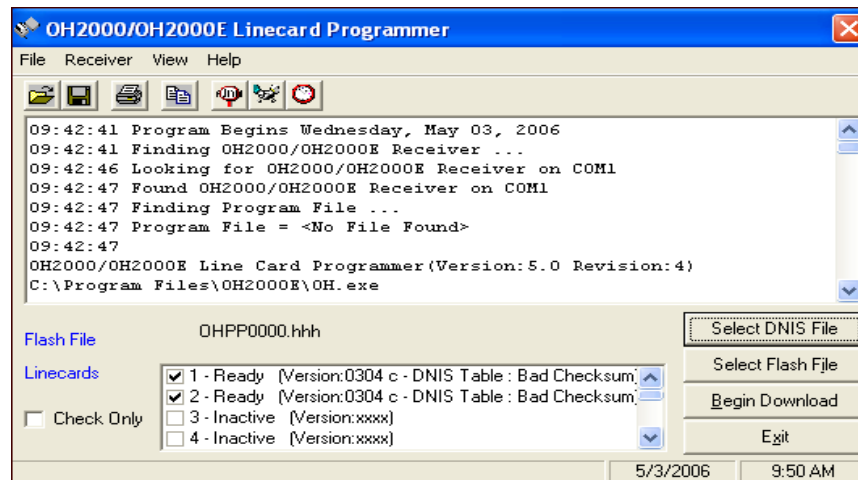
You can enter a specific COM port number in the field and then click **OK** to search for that connection. Leave the field blank and click **OK** to begin a search for an OH2000E connected to any COM ports. After a COM port is found, the main window is displayed. Actions can then be performed by selecting menu items or using the toolbar.

Note: The OH2000E receiver must be ON and connected to the programming port before you start the OH2000E program. Otherwise, the message "OH2000E not found" will appear. If this occurs, exit the OH2000E program and re-start with the OH2000E receiver already connected and powered.

Programming options and updates

Use the menus and buttons on the main *OH2000/OH2000E Linecard Programmer* window to program options and updates in the OH2000E receiver line cards.

Figure 8. Line Card Programmer window



You can perform the following functions from the *Line Card Programmer* window:

- [Line card status](#)
- [Line card options](#)
 - [General tab](#)
 - [Formats tab](#)
 - [Rcv Options tab](#)
 - [D Flags tab](#)
- [Setting the receiver time](#)
- [Creating DNIS tables](#)
- [Updating line cards with DNIS files or new revisions](#)

Line card status

Path: *Receiver, Get Status*

Use this path to refresh the status of the line cards connected to the OH2000E receiver displayed in the lower section of the *Line Card Programmer* application window. You can select a specific COM port, or click **OK** to search for a OH2000E connected to a COM port.

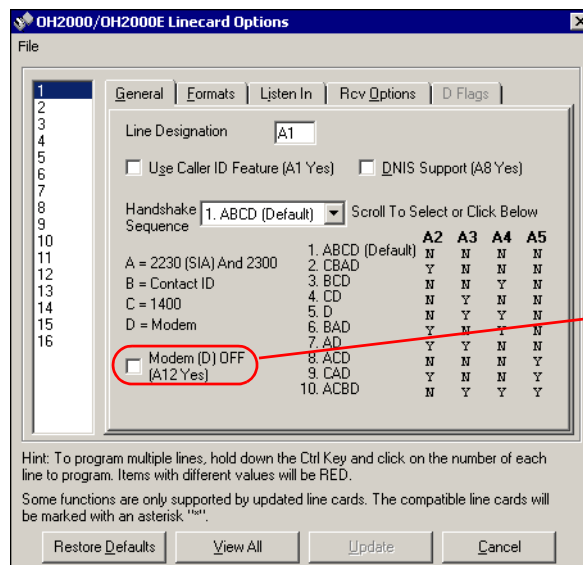
Line card options

Path: Receiver, Options

Use the tabs on the *Line Card Options* window to program the line cards with specific parameters.

General tab

Figure 9. Linecard Options window, General tab



If A12 is Yes, the D (Radionics modem) handshake is suppressed, except for handshake sequence 3, 6, and 9.
 3 - BCD to BCA; D=Y
 6 - BAD to BAC; D=Y
 9 - CAD to CAB; D=Y

To program the OH2000E line cards with general options, do the following:

1. Select the line card you want to program on the left side of the window. To program multiple line cards with the same specifications, press the **Ctrl** key while you click the line card numbers. When you select more than one line card:
 - A red value means it varies among the lines chosen. The value shown is for the first line of the group chosen. An update will not change a value displayed in red.
 - Black values are already identical among the selected group of lines.
 - Blue values have just been selected or modified. The update will affect all selected lines.
2. Use the fields and options on this tab to specify the protocols and other options you want to program into the line card.

In the *Handshake Sequence* field, you can select a standard sequence from the list. For example, if you program the default of ABCD on line card 1, then when a signal is received through that line card, the OH2000E will first check if it's SIA, then CID, then 1400, and lastly Modem. For more information about this option, refer to [Handshake sequence](#) on page 59.

Note: To program a custom handshake sequence using protocols that are not A through D, you must use special linecard firmware.

3. Use **View All** to review all of the receiver options and line designations (maximize for best viewing), and then click **Update** to actually program the options into the line cards.

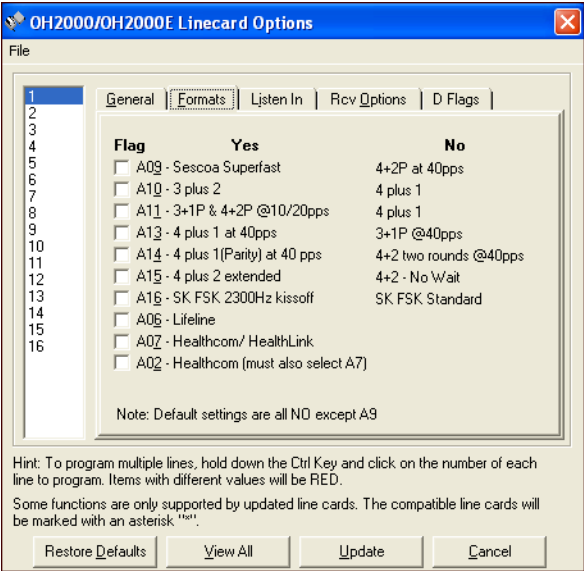
You can use **Restore Defaults** to change the programming for the line card back to the defaults.

Formats tab

Use the options on the *Formats* tab to specify the options for A flags you want to program for the line cards. Select the line cards you want to program on the left.

Path: Receiver, Options, Formats Tab

Figure 10. Linecard Options window, Format tab



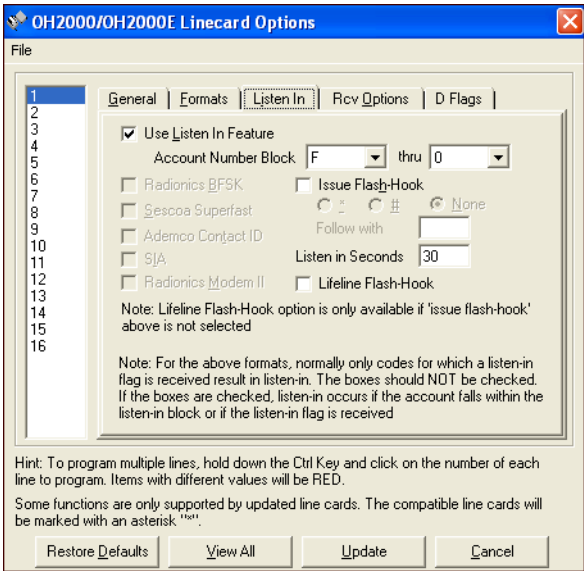
Refer to [A flag options](#) on page 57 for descriptions of the different A flag options.

Listen In tab

Use the *Listen In* tab to set up the OH2000E listen in feature. This feature is a hardware solution to telephony software where the receiver picks up an alarm signal and parks it until someone picks it up later. For more information about the listen-in feature, refer to [Listen-in](#) on page 60.

Path: Receiver, Options, Listen In Tab

Figure 11. Linecard Options window, Listen In tab

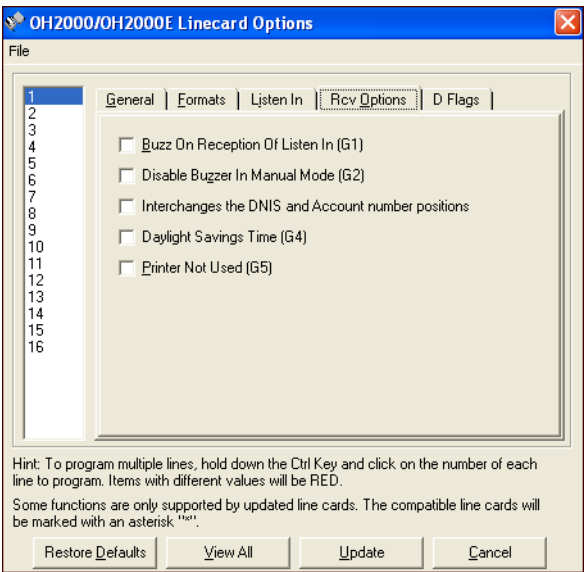


Rcv Options tab

Use this tab to select additional options for the line cards.

Path: Receiver, Options, Rcv Options Tab

Figure 12. Linecard Options window, Rcv Options tab

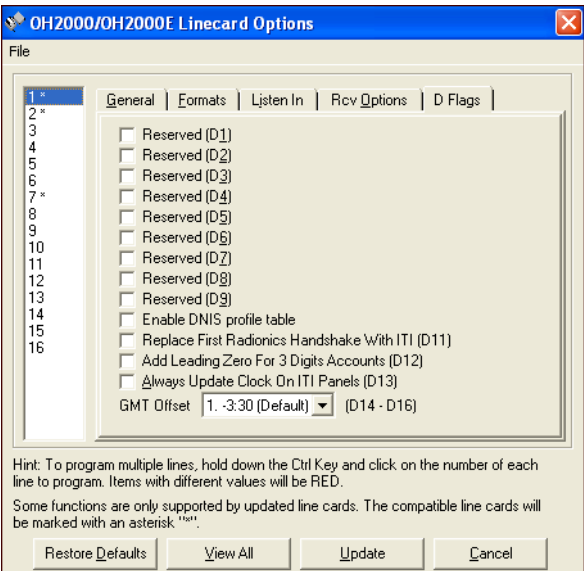


D Flags tab

Use this tab to select options for the D flags.

Path: Receiver, Options, D Flags Tab

Figure 13. Linecard Options window, D Flags tab



Refer to *D flag options* on page 64 for descriptions of the D flags.

Setting the receiver time

Path: Receiver, Set Time

This option will set the time on the OH2000E to the same time as the computer. To change your computer time, select *Start, Settings, Control Panel*, and then *Date/Time*.

Creating DNIS tables

Path: Receiver, DNIS Table

Use the *DNIS Utility* window to set up DNIS tables for line cards. After a DNIS table is downloaded to the OH2000E, the telephone number the alarm panel sending the signal dialed in with is matched with a specific DNIS table with a handshake sequence and options for that alarm signal. If there is no match, then the signal is dealt with normally, using what was programmed using the *Line Card Options* window.

Note: For these DNIS tables to function, you must set up your telephone switch to pass the DNIS data to the OH2000E receiver when a call is received. Also, you must set A1 to N and A8 to Y to receive DNIS data. DNIS profiling requires that D10 is set to Y and appropriate DNIS tables be loaded to the line cards.

Figure 14. DNIS Utility window

Click **Add** to add phone numbers to the DNIS table. Enter the phone number in the window that is displayed, and then click **Add** to include additional phone numbers in the table. You can then specify the handshake sequence and other options for those phone numbers. Click **Save** to save the DNIS table. You must accept the default name of the table.

Click **New** to add a new DNIS table or **Open** to modify an existing table.

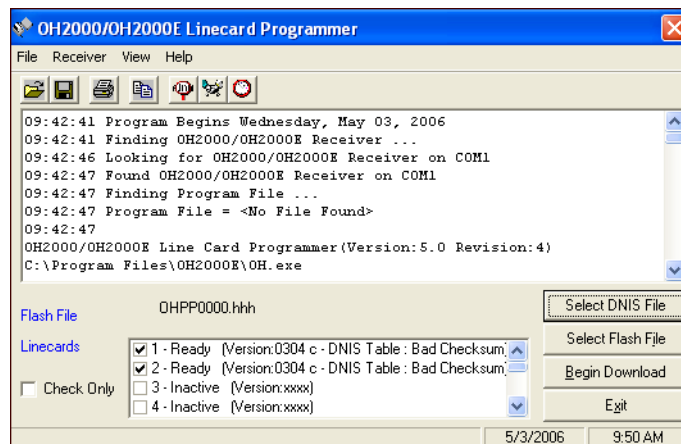
Download the DNIS tables to the OH2000E using the **Select DNIS File** button. See [Updating line cards with DNIS files or new revisions](#) on page 26 for instructions.

Updating line cards with DNIS files or new revisions

To add DNIS tables or update line cards to a new revision, do the following. You can only download one file at a time.

1. In the *Linecard Programmer* window, click **Select DNIS File** to download a DNIS table or **Select Flash File** to download a revision file.

Figure 15. Line Card Programmer window



2. Double-click the .HHH file you want to download.
3. Click **Begin Download**. New revisions are loaded into C:\Program Files\OH2000E.

Eavesdropping feature

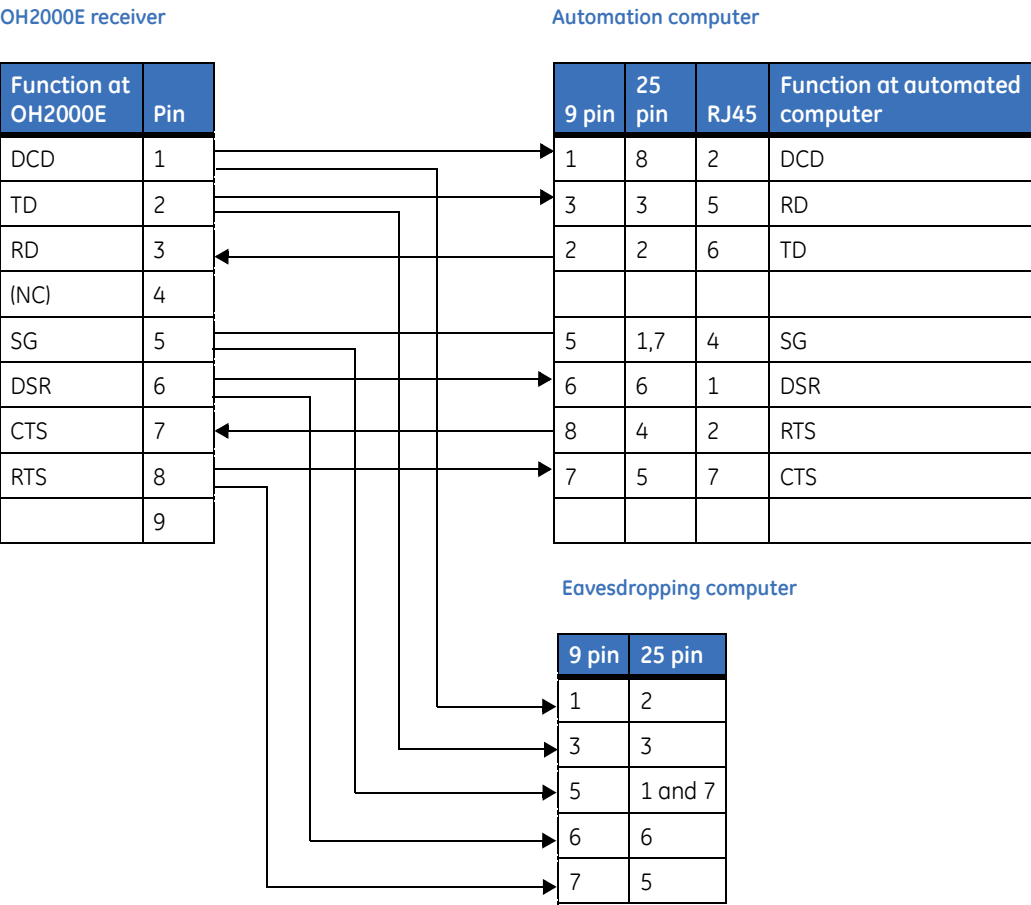
You can use the OH2000/OH2000E WinUtility application to view the receiver automation activity for diagnostics. This program “eavesdrops” on the RS-232 interface between the OH2000E and the computer. When a laptop or desktop running this utility is attached to the computer port of the OH2000E, all signals sent to automation, as well as status flags, are displayed.

Setting up eavesdropping

You will need to use a modified Y-cable to track the communication between the OH2000E and the automation computer by connecting the 9-pin computer port of the OH2000E to the computer running the eavesdropping program and to the computer running the automation program at the same time. In this mode, pin 3 and pin 7 of the 9-pin port on the computer running eavesdrop should be left disconnected. This is to prevent two computer outputs from being tied together.

Figure 16 shows an example of the pin connections from the OH2000E to the automation computer and the eavesdropping computer. Notice the Y connections from the OH2000E to the automation computer and eavesdropping computer. The arrows indicate the signal flow direction.

Figure 16. Pin connections for eavesdropping

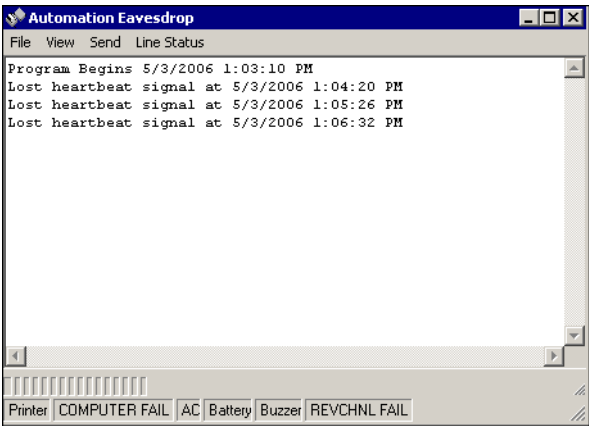


Using eavesdropping

The eavesdrop feature enables you to communicate with an OH2000E, maintain the integrity of the serial link, and present a disk file of event data for the programmer to manipulate.

Click **Eavesdrop on Data** to open the *Automation Eavesdrop* window. You will then be prompted for a COM port number where the OH2000E is plugged in. Upon successful opening of this port, the program will automatically initiate communication with the OH2000E and begin event processing.

Figure 17. Automation Eavesdrop window



You can scroll down to view the event data on the window, and status information about the receiver and each line is displayed at the bottom of the window. A more detailed line status feature is available as a menu item.

In the eavesdrop program, the *View* option allows you to select the level of detail for the display. The *Status Change* option will cause the program to display the status message if it is different from the last status message. The *Full Details* option will show all messages, including the status heartbeat.

The eavesdrop functions available are listed in *Table 6*.

Table 6. Eavesdrop program functions

Function	Character	Key Stroke	Action
Turn off buzzer	BS (08h)	Ctrl+B	Silences buzzer.
Request status	SOH (01h)	Ctrl+R	Updates status display and acts as a communication check function.
Start comm	STX (02h)	Ctrl+S	Tells OH2000 that computer is ready to recieve data. Must be done if the bit flag (A1?) in the heartbeat shows that OH2000E is in manual mode. In manual mode, only heartbeats and not alarms are sent to automation.
Ack heartbeat	ETX (03h)	Ctrl+H	Informs OH2000 that computer is working correctly during quiet times. Must be sent at least every 30 seconds.
Ack alarm	ACK (06h)	Ctrl+A	Acknowledged event transmission should be sent within 8 seconds of receiving event data.

Table 6. Eavesdrop program functions

Function	Character	Key Stroke	Action
NAK alarm	NAK (15h)	Ctrl+N	Tells receiver to resend the last unacked event. Typically done when the checksum fails to compute.

Saving the data

You can save the eavesdrop data two ways. First is a manual method by selecting the **Save As** function under the *File* menu. This will save the current contents of the screen buffer to a file. It will default to *OH2k Computer Data.txt* as the filename, and it will append data if the file currently exists.

The second method is accomplished by selecting **Log To File** under the *File* menu. The Control Program will then begin appending data to a disk file as it arrives. The file name will be *record.txt* in the directory where the OH2000E application was started. The program will open the file, write data, and close the file. This method is suitable for actually handling alarm data. A programmer could check for this file, because event data is available if it exists. The programmer then renames this disk file, reads the data, and deletes the renamed file. The programmer must take into account an error condition of a locked file and recover from this error, wait for a fraction of a second, and then try the rename again.

Note: The rename function eliminates two processes from trying to read and write to the same file. The rename function only has two possible completion codes, success or failure. Failure indicates that the eavesdrop program is currently writing data to the file. The success code indicates that you now have a file ready for reading. Reading this file now has all the error codes (bad disk, bad data format, etc.) to be dealt with by the programmer, but at least you have a finite number of signals and a file that you have exclusive access to.

When using the WinUtility program for event reception, the window should be prominently displayed so the operator can see the current status of the receiver and communication link.

Using the data capture feature

You can use the OH2000/OH2000E WinUtility application to record incoming call data. This feature is helpful to find out which panel is calling in with repeated alarms or bad signals.

Click **Capture Call ID Data** to start this feature. The *Automation Data Capture* window is displayed.

Receiving updates

You will receive updates for line cards and the Linecard Programmer application via e-mail.

Chapter 4 Using the OH2000E

This chapter provides instructions on using the Osborne-Hoffman 2000E in either manual mode or connecting a computer automation system.

In this chapter:

<i>Manual mode</i>	32
<i>Handling events while in manual mode</i>	32
<i>Computer mode</i>	37

Manual mode

When the OH2000E receiver is not connected to a computer automation system, it will not attempt to send signals to the monitoring application.

The OH2000E receiver will also go into manual mode if:

- The dummy plug (2-3 and 7-8) shorted on the computer port. The computer LED is off.
- The CTS from the computer shows it is not ready to communicate. The computer LED is on.
- ACK (hex 06) failed to be received within eight seconds from an alarm and no subsequent hex 02 is received. The computer LED blinks.

You can confirm the receiver is in manual mode when the printer prints the following message:

No Computer

When an event is received while in manual mode:

- The LCD displays and the printer prints the event just received.
- The LCD stores the last 99 events. The printer maintains a permanent record of all events.
- Only heartbeats and not alarms are sent to automation.

Handling events while in manual mode

To manually monitor alarms when in manual mode:

1. The pulsating buzzer and flashing black rectangle in the LCD display indicate the presence of unacknowledged events. The number in the bottom right of the display shows the number of events waiting to be acknowledged.
2. To acknowledge receipt of an event, turn the buzzer OFF by pressing the Buzzer OFF/ACK switch. The buzzer for this event turns OFF, and two seconds later the display will show the next unacknowledged event and the buzzer will pulsate again. When all events have been acknowledged, the pulsating buzzer will remain OFF and the flashing black rectangle turns OFF.
3. Read the Account Number and Code, and then take the appropriate action.
4. After the appropriate action has been completed, delete the event just handled from the LCD.

Deleting events

After handling an event, delete it from the LCD display using the following steps:

1. To enter the menu, press the # switch.
2. Press # to select the delete function.
3. Press Down to delete the alarm.

Handling multiple events in manual mode

The number in the lower right of the display indicates the order in which the event shown in the LCD was received. 01 is the most recent event and 99 is the oldest.

Once every four seconds, the number in the bottom right hand corner of the display will flash the total number of events stored in the display buffer. 99 is the maximum. When the up arrow key is used, the LCD scrolls to older events, while the down arrow key scrolls to more recent events.

Past events, on which the buzzer has been acknowledged and an operator action has not been completed, may be viewed by scrolling through the LCD display using the up and down arrow keys. The LCD prompts the operator to complete action on past alarms. The LCD will return to display the most recent event automatically if a scrolling switch is not activated within 15 seconds.

All past events, including those on which operator action has been completed, are permanently stored on the printout. Each line card stores up to 768 events. If the printer is disconnected, past events are sent to the printer after reconnection.

Interpreting the LCD display of events

The following example shows a sample event received by the OH2000E:

```
1 4 0 4 Q T 0 2
C O D E 9      P99
```

The first line shows:

- Account Number - **1404**
- Line Designation - **QT**
This is the programmable line designation for the physical line listed on the second line.
- Signal received on line - **02**
This is the physical line number.

The second line lists the physical line:

- Received Code - **9**
- Format type - **P**
- Event in Display Memory - **99**

Multiple events sent in the same transmission are indicated by insertion of ^ on first line of LCD:

```
1 4 0 4^Q T 0 1
C O D E 9      P99
```

LCD display for different formats

Table 7 describes what displays on the LCD for various formats.

Table 7. LCD display for different formats

Format	Sample LCD display	Description
Pulse 4+2	9 8 7 6 K P 0 1 C O D E 2 0 P 1 3	This is a transmission from account 9876, received on line 01 with designation KP. You assign the line designations. The code received is 20 (which is normally interpreted as event type 2 from zone 0). The P indicates the format type—20 pps (pulses per second)—and 13 is the rank in the display memory.
SIA	5 2 0 7 K P 1 0 E T 3 5 N Y 7 4	This transmission is from account 5207, received on line 10 with designation KP. The code received is ET 35 (the interpretation of codes in the SIA format is found in a standard issued by the Security Industry Association). In this case, the code ET means Extension Trouble and 35 denotes zone (or module) number 35. N stands for new event block, Y is the format type (SIA), and 74 is the rank in memory. A lower case n would signify a new event block in a multiple transmission.
SIA2	5 5 5 5 K P 1 6 r i 2 U T 9 9 N Y 7 3	This transmission shows the area information followed by the area number. In this case, the event code UT stands for Untyped zone Trouble, zone 99. See the SIA documentation for additional codes and meanings.
Contact ID	1 4 0 4 ^ K P 0 1 Q 3 E 4 0 1 0 0 0 0 2 C 7 1	This transmission was received from account 1404 as part of a multiple transmission on the same call, as indicated by the ^. Q3 is the Event Qualifier transmitted in the Contact ID format. Q1 here would mean a new event or opening; the Q3 shown represents a reset or closing. The interpretation of Event Code 401 is found in a document issued by Ademco. In this case, E401 represents an OPEN BY USER. The next 2 digits (00) indicate the group number, followed by 002, the zone or user number. C indicates the format type, which is Contact ID.
Acron Superfast	D D D A 1 0 1 0 0 0 0 , 4 0 0 0 D 1 4	This transmission was received from account number DDD. This format transmits the status of eight zones, which is 0 in zones 1,2,3,5,6,7,and 8. Code 4 was received in zone 5.
Ademco High Speed	8 7 6 5 A 1 0 2 5 5 5 5 , 1 5 3 5 7 A 1 5	This format sends 8 zones plus a STATUS indicator in position 9. In this case, there is an alarm (1) on zone 5 and a restore (3) on zone 7.
Ademco Express	9 8 7 6 A 1 0 3 C O D E 3 1 B 1 6	The Ademco Express is a 4+2 format, as is the Pulsed 4+2, but is sent in DTMF.
Radionics BFSK	8 7 6 A 1 0 4 C O D E F 5 B 1 7	The Radionics BFSK format is restricted to a 3-digit account number. It is sent as a 3+1, or as a 3+2 format.
Sescoa Superfast	3 3 7 4 B 1 0 5 C O D E 1 0 1 g 1 8	This format sends a 4-digit account and a 3-digit event code. In this case, the last two digits of the code indicate the zone (01) and the first digit, which is 1, indicates an alarm.
FBI Superfast	8 7 6 0 B 1 0 5 C O D E 2 2 0 1 5 F 1 9	This transmission sends a double-digit event code (in this case 22) and a 3-digit zone number (015).
Radionics Modem 2	8 1 1 2 B 2 0 8 R E S T O R E 9 M 2 0	This format has standard English for the event type. The zone in this case is 9.

Table 7. LCD display for different formats (continued)

Format	Sample LCD display	Description
Lifeline	3 6 8 1 A 1 0 1 0 1 5 H E L P U L 2 1	This is a proprietary format. 015 indicates a regional area of origin of the transmitter. The transmitter sends an English code, for example, HELPU (Help initiated from the button on the main <u>U</u> nit), or HELPP (Help initiated from the <u>P</u> endant).
ITI	12345 A707 41106 6_4-8101 1124I 01	Here we see account number 12345, line 07 with A7 as its designation. 4 represents the day, and 1106 is the time (11:06). Reading across the bottom line, the three characters 6_4 all describe the type of panel that sent the signal, where 6 is the panel type, the _ is panel ID, and 4 is the panel qualifier. 81 is the event, 01 is the group number. 11 is the A byte, 24 is the X byte. The lowercase letter I is the format identifier, and 01 shows the signals rank in storage. A bytes and X bytes, are bit-mapped flags. These values and the ITI panel identifiers are defined in a document available by request.

Printout of events

Use this table to interpret the printout of the OH2000E. In addition to the LED indicators and buzzer annunciator, faults and restorations are printed. Typical signals are printed as follows on an 80-column printer:

Table 8. Printout of events

Date	Time	Account#	Line	Data	Computer ACK	DNIS	Format
031705	01:16:56	2806	BE05	RP0 AUTOMATIC TEST		4285000000	Y
031705	01:17:01	8614	BF11	CODE 9 9 k		3983000000	P
031705	01:17:01	9946	BE06	1=NEW 602=PERIODIC TEST G01 ZN000		4285000000	C
092105	11:06:15	12345	A707	6_4-81.01 "ABYTE11"XBYTE=24"4-11:06[11			I

Additional printout information

Table 9 lists additional information included in the OH2000E printout.

Table 9. Additional notes about printout columns

Column	Notes
Line	A two-character line designation precedes the line number (i.e. BE is the line designation programmed for line 05).
Data	A lowercase letter k at the end of the message indicates data format was received with a checksum.
Computer ACK	- Indicates computer acknowledgment was received. \ - Indicates no computer acknowledgment. ^ - Indicates retransmission to the computer after failure to receive a computer acknowledgment.
DNIS	The DNIS is only present when this service is used. This field is usually blank.
Format	The format identifying character indicates the type of transmission received.

Note: When retransmission to the computer has taken place, events are reprinted.

Format for identifying characters

Use *Table 10* to identify specific characters displayed on the OH2000E.

Table 10. Identifying characters

Character	Format
Y	SIA 300 baud
y	SIA 110 baud
B	Radionics BFSK
b	Radionics BFSK with errors
p	10 pps pulsed
P	20 pps pulsed
Q	40 pps pulsed
G	Sescoa Superfast (4+3) +User ID
g	Sescoa Superfast (4+3)
D	Acron/Scantronics DTMF
#	DTMF Errors
A	Ademco High Speed DTMF
E	Ademco Express
F	FBI Superfast
C	Ademco Contact ID
K	Silent Knight 5240 FSK (FSK 1)
k	Silent Knight 7100 FSK (FSK 0)
W	Silent Knight FSK 2
w	Silent Knight FSK 2 continued
N	Radionics Modem2 6112 (110 baud)
M	Radionics Modem2 8112 (110 baud)
m	Radionics Modem2 8112 End of Message (110 baud)
J	Radionics Modem2 7112 (110 baud)
*	Radionics Modem2 6112,8112,7112 errors (110 baud)
t	Radionics Modem2E 9112,7212 (300 baud)
T	Radionics Modem2E 9112,7212 with English (300 baud)
+	Radionics Modem2E 9112,7212 errors (300 baud)
x	No data received
\$	SIA errors
>	SIA raw data
h	Send test report
L	Lifeline
H	Healthlink
I	ITI formats

Note: These designators are case-sensitive.

Computer mode

Connect the receiver to an industry-standard computer automation system. Consult the automation instruction manual for compatibility and UL listing with the OH2000E. Refer to *Chapter 2, [Hardware installation](#)* on page 10 for installation instructions. If you are using MASTerMind Monitoring automation software, also refer to the *MASTerMind Monitoring Guide to Implementation Workbook, Setting Up Receivers* module.

When in computer mode:

- The computer is connected via the computer port.
- The computer port is a serial RS 232 link at 9600 baud, with 8 bits of data, 1 stop bit and no parity.
- The printer prints and the LCD display stores the events as they are received.
- Each line card stores up to 768 events.
- Events that fail to receive a computer acknowledgment are tagged on the printer with a backslash (\), and the OH2000E buzzer will sound. After failure to receive a computer acknowledgment (06h), the OH2000E reverts to manual mode automatically. It will stay in manual mode and buffer all signals until the computer sends a start transmission (02h).
- Reconnection of the computer will cause signals received in the interim, up to 768 events, to be sent to the computer automatically. | will be replaced by ^. The | is in the column just before the DNIS (or 10 spaces if no DNIS is used).
- Computer LED is OFF when the computer is properly connected and ready to receive signals.

Chapter 5 Special features

This chapter provides information about special features for the Osborne-Hoffman 2000E.

In this chapter:

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<i>Proprietary medical formats</i>	40
<i>Flag settings</i>	40
<i>Lifeline format codes</i>	41

Dialed Number Identification Service (DNIS)

When flag A8 is set, the OH2000E sends the DNIS as part of the event information to the computer. The DNIS identifies the telephone number that the transmitter has dialed. The DNIS is not to be confused with Caller ID, which is the telephone number of the transmitter. The DNIS is sent to automation and is printed with the event. If A8 is selected and the DNIS is not present, the receiver will not respond to the call and the printer outputs “No DNIS”. The OH2000E can be programmed through the WinUtility program to give a customized response according to the DNIS presented at the beginning of each call.

Refer to the *Chapter 3, Programming line cards* on page 17 for information about using the WinUtility application to set up DNIS tables for line cards.

Caller ID flag settings

To receive the ANI and DNIS of a call, you need to set the flags as shown in *Table 11*.

Table 11. Caller ID flag settings

Description	Flag setting	Display
Caller ID only	A1 only	In external computer running eavesdropping
ANI only	A1 and A8	In external computer running eavesdropping
DNIS	A8 only	On printer
ANI plus DNIS	A8 only	ANI in external computer DNIS on printer

Proprietary medical formats

Several proprietary medical formats can be received with the OH2000E. The flag settings needed are shown below. The SIA format should not be sent on lines receiving the proprietary Lifeline format and lines receiving Health-link and Health-com are reserved for these formats only.

Flag settings

Table 12. Flag settings for proprietary medical formats

Transmitter	Flag setting	Transmission type	Format symbol
Elcombe (Main Street Messenger)	No special flag	4+2 pulsed	P or p
Health-watch	No special flag	FBI Superfast	F
Lifeline	Set A6 to Y	3+1 pulsed and 4+2 (in proprietary format)	L (in proprietary format)
Health-link	Set A7 to Y	8+2	H
Health-com	Set A7 to Y	4+2 Express	E

Lifeline format codes

Table 13 lists format codes for Lifeline.

Table 13. Lifeline format codes

Event description (in printer)	OH2000E display	Old Quickalert! code
Fire	F	9
Low battery in smoke detector	S	5
Low battery PHB in pendant	B	C
Low battery unit	U	E
Reset	R	7
Still need help	T	B
Help still needed	P	F
Inactive	I	6
Need help from unit	E	4
Need help PHB from pendant	H	2
Inactive/help	L	D

Listen-in for flash-hook

When Lifeline 5500 and 6500 units are used, the Lifeline VR 500 box is used to generate control tones to end listen-in at the transmitter. These tones force the transmitter to hang up when the operator hangs up. Without the VR 500, the 5500 and 6500 do not reset until they time out. The phone on the transmitter will stay in listen-in even when the Reset button is pressed. The time-out can be 5 to 15 minutes. When the VR 500 is used, the OH2000E must be programmed with flags B1, B2, B3, and B4 set to N, N, N, Y respectively. Typically for Lifeline, A6 is set to Y. The OH2000E connects to port 7 “RC400Main” of the VR500 (same as the Lifeline receiver).

Old Lifeline 3+1 pulsed format

Table 14 lists codes for the old Lifeline 3+1 pulsed format.

Table 14. Old Lifeline 3+1 pulsed format

Event description	OH2000E display	Old Quickalert! code
Fire alarm	1	9
Help needed	2	4
Help needed	3	4
Low battery- button (pendant)	4	C
Inactivity alarm	5	6
Low-battery-home-unit	6	E
Home unit reset	7	7
Temperature alarm	8	1
Text message follows	9	
Help still needed	0	

Chapter 6 Troubleshooting, maintenance, and support

This chapter provides information to help you troubleshoot problems, perform simple preventive maintenance procedures, and contact technical support in case you need assistance with your GE equipment.

In this chapter:

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<i>Special format selections</i>	44
<i>Response time to faults</i>	45
<i>Preventive maintenance</i>	46
<i>Line card memory</i>	46
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<i>Battery tests</i>	46
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Troubleshooting

Note that as a general rule, we recommend that a printer or virtual printer (paperless printer) be turned on for diagnostic help. UL has not approved the use of paperless printers with this product.

The following issues are discussed in this section:

- *Line cards*
- *Special format selections*
- *Response time to faults*
- *Error messages*

Line cards

The line cards need to be well-seated. The front door should be closed tightly to insure that the line cards fit snugly into the contacts in the rear.

Special format selections

Format selections are made to distinguish pulsed formats where the number of digits is the same. For example:

- 4+3 format and a 4+2 with checksum format both transmit seven digits. In 4+3 there are 3-digit event codes, and in 4+2 only 2-digit event codes.
- 4+1 and 3+2 formats transmit 5 digits. Normally, 3+2 is sent using an “extension” in which case the transmission is 3+1 extended, and there is no conflict. In the rare case when a 3+2 is actually used, a selection between 4+1 or 3+2 must be made.

Table 15. *Format selections*

Flag	Default selection	Override default
A9	4+3 SESCO Superfast	4+2 checksum at 40 pps
A10	4+1	3+2
A11	4+1 at 20/10 pps	3+1 parity and 4+2 parity at 20/10 pps
A12	D handshake not inhibited	No modem handshake (D handshake) except when sequence 3(BCD), 6(BAD), and 9(CAD) are selected, then D is replaced in 3(BCA), 6(BAC), and 9(CAB).
A13	3+1 parity at 40 pps	4+1 at 40 pps
A14	4+2 two rounds	4+1 parity at 40 pps

Note: When A11 is selected, also set A9 to N. Default selections are N, except A9 which is Y.

Response time to faults

Table 16 describes the response time for various faults that can occur.

Table 16. Fault responses

Fault	Response time
Telephone line fault	Within 90 seconds
Loss of AC or drop to 85% of rated value	Within 90 seconds
DC battery missing or voltage low	Within 4 minutes
Failure to receive a computer ACK	Immediately
Failure to receive a heartbeat from the computer	Within 30 seconds
Failure to detect a presence of a working printer	Immediately

Error messages

The printout of the OH2000E is a very helpful tool in diagnosing the cause of error messages. Another helpful tool is an audio record of the signals.

Table 17 describes some typical signal error messages.

Table 17. Typical signal error messages

Observation	Possible cause
Date, time, and line designation are printed. No other data.	No response to any handshake. - Are the handshakes heard at the panel? If no handshakes are heard at the panel, yet they are heard at the OH2000E side, a likely problem is the link from the panel. - Can you identify the handshake expected by the panel? If you cannot hear the handshake the panel expects, review the handshake sequence programmed in the receiver. - Does the panel respond to a handshake, yet no date is seen at the receiver? If the panel transmits and the receiver does not see any data, listen at the receiver. Can the data from the panel be heard? If yes, record the session on an audio file and e-mail it to customer support.
Error message on the printout with the word "ERROR" printed.	- Noise on the line. Use a handset in the monitor only mode. Do you hear a clean, noise-free signal? Does the signal repeat at periodic intervals? - Misprogrammed transmission format at the panel. Does the transmission format received correspond to the intended format programmed at the transmitting panel? Is the format indicator correct? - Flag settings are incorrect. Compare the error printout, particularly the account digits, to the intended transmission. Are the account digits present partially? Is there a flag setting that needs adjustment? Note: Keep copies of the printouts in question for discussion with technical support.

Preventive maintenance

This section includes basic instructions for maintaining the OH2000E system.

Line card memory

Each line card holds up to 768 past events in each of the two lines. Past events that have not been acknowledged by the computer or by the printer will be transmitted upon resumption of a connection.

You can clear the memory on the line card momentarily removing jumper J1A for the odd-numbered line and J1B for the even-numbered line. Insert the card into the OH2000E for 2 or 3 seconds with the jumpers removed. Remove the card, reinstall jumpers, and plug card back into the OH2000E.

In case the buffer is still not cleared, turn the OH2000E OFF prior to removing the card, reinstall jumpers and plug the card back into the OH2000E. Then turn the OH2000E back ON.

Periodic tests

We recommend that you rotate standby units into service periodically.

Standby periods of over one year are excessive and are not acceptable by UL standards without verification of performance.

During tests, place the unit on line and the reception of signals verified on all lines. Additional tests should include:

- Operation from backup power
- Printer operation
- Computer output port operation

Battery tests

We recommended that you check the standby battery at least once per year.

- Disconnect primary AC power and check for continued operation using standby power.
- Check the capacity of the standby battery. Start with a fully charged battery.
- Attach a 12-ohm resistor rated at 12 watts or more, and measure the battery voltage after a number of hours equal to the listed amp-hour rating of the battery. The voltage should be 85% of 12 V, or 10.2 volts.

Contacting technical support

For assistance installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, you may contact technical support during normal business hours (Monday through Friday, excluding holidays, between 5 a.m. and 5 p.m. Pacific Time).

Table 18. Service and support contact information

	Customer service	Technical support
Phone	Toll-free: 888.GESECURity (888.437.3287) in the US, including Alaska and Hawaii; Puerto Rico; Canada. Outside the toll-free area: 503.885.5700.	
E-mail	gesecurity.customerservice@ge.com	nstechsrv@ge.com
Fax	888.329.0331	888.329.0332

Note: Be ready at the equipment before calling for technical support.

Online publication library

Another great resource for assistance with your GE product is our online publication library. To access the library, go to our website at the following location:

<http://www.gesecurity.com>

In the **Customer Support** menu, select the [Resource Library](#) link. After you register and log on, you may search through our online library for the documentation you need.²

2. Many GE documents are provided as PDFs (portable document format). To read these documents, you will need Adobe Acrobat Reader, which can be downloaded free from Adobe's website at www.adobe.com.

Appendix A Manually programming the OH2000E

This chapter discusses how to program the Osborne-Hoffman 2000E line cards using the switches on the receiver.

In this chapter:

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Overview

All option settings and flag viewing may be done using either the Windows Utility or the receiver switches.

To program the receiver using the WinUtility application, refer to *Chapter 3, Programming line cards* on page 17.



CAUTION: When you want to view, but not change the present option flag settings, select the VIEW OPTION FLAGS option in the menu. Trying to just view them and selecting SET OPTION FLAGS will result in a change back to the default values of the flags. Refer to *Viewing option flags* on page 54 for instructions.

Programming functions

You can perform various functions to program the OH2000E using the switches on the front of the receiver. Refer to *Table 19* and *Table 20* for descriptions of the functions and how to program them.

Basic functions

You can use the buttons on the receiver to program various functions.

- To scroll to a function, press **Down**.
- To select the scrolled function, press **#**.
- Once inside a function, you can select numerical and Y/N values.

Table 19. Basic functions using the programming switches

Select value	Procedure
Numerical functions	• Press Up and Down to increase or decrease units. • Press # to go to next value inside the function. • Press * to go to previous value. • Press # after last value to exit the function.
Y (Yes) or N (No) functions	• Press Up to toggle between Y and N. • Press Down to go right. • Press * to go left. • Press # to enter when finished with all entries.

Programming function definitions

Access the functions using the menu. To enter the menu, press **#**. Use the **Down** arrow/switch to select a function. *Table 20* lists the available functions.

Table 20. Functions available from the OH2000E menu

Function	Description
DEL THIS ALARM	1. Use the Down or Up switch to scroll the display to the alarm to be deleted. 2. Press # to enter the menu. The display shows the DEL THIS ALARM function. 3. Press # to select the delete function. 4. Press Down to delete and Up to cancel. When all alarms have been deleted, the display shows the date and time.
SET DATE AND TIME	1. Press # to enter the menu. 2. Press the Down arrow until the cursor is next to SET DATE AND TIME. 3. Press # to change the date and time. You are first prompted to change the year. • Press the Up arrow to increase a number. • Press the Down arrow to decrease a number. • Press * to go back to previous entry. • Press # to go to next entry. 4. After setting the year, you can then set the month, date, and time. 5. Press # when finished setting the time, and you are taken back to the normal display.
SHOW DATE and TIME	1. Press # to enter the menu. 2. Press Down to scroll to the SHOW DATE and TIME function. 3. Press # to select the function. The screen displays the date and time for about 20 seconds before exiting automatically. 4. Press * to exit immediately.
LINE DESIGNATION	Use this function to program the line cards. 1. Press # to enter the menu. 2. Press Down to scroll to the LINE DESIGNATION function. 3. Press #, and then # again to select the function. The Global Flags are displayed: FLAGS Gx NNNNNN 4. Press Down to move to Flag G6. 5. To be authorized to make changes, set Flag G6 to Y. Use the Up switch to toggle G6 to Y. The display should show: G6 NNNNNY 6. Press # to enter line designation options. The display shows: LINE 1 = A1 7. Press Up to increase, or press Down to decrease the characters. Initially, changes are in increments of 6; for example, A skips to F using the Up switch, or to 4 with Down switch. After changing directions from Up to Down or Down to Up, steps are incremented by 1. 8. Press # to go to the last digit and make any necessary changes. 9. Press # to advance to Line 2. The display shows: LINE 2 = A 2 10. Make any necessary changes for Line 2. 11. Press # to move to the next line. Continue until all 16 lines have been programmed. 12. Press # to exit when finished.
SET OPTION FLAGS	Option flags enable you to configure specific settings on the OH2000E. There are two types of flags, Global flags and individual programmable flags. Refer to Setting option flags on page 54.

Table 20. Functions available from the OH2000E menu (continued)

Function	Description
VIEW OPTION FLAGS	1. Enter menu by pressing #. 2. Scroll to VIEW OPTION FLAGS by pressing Down. 3. Press # twice to begin viewing the flags. • Press Up to look at flags on Line 2, 3, 4, etc. • Press Down to advance cursor to look at A2, A3, A4, A5, A6 etc. • Press * to bring cursor back to look at previous A5, A4, A3, etc. • Press # to cycle to B, then C, and then back to the A flags. • Press * to exit back through (D to C to B to A then exit).
VIEW REVISION #S	Use this option to view the revision numbers of the line cards. 1. Press # to enter the menu. 2. Press Down to scroll to the VIEW REVISION #S function. 3. Press # to select the function. 4. The revision numbers are displayed. 5. Press * to exit. The qualifying characters are: • g = line card is good • y = line busy • l = line inactive • n = does not support DNIS • k = no DNIS Table for this line or bad checksum on this line • B = a "blank" board is installed in this slot . A blank board contains no circuitry and is used to fill unused line card slots in the receiver. Its use prevents the OH 2000E from displaying an "inactive" state; there are will be no lit LEDs which show faults on the line. Also, the "blank" fills the physical hole where a telephone line would connect. Two lines are covered by one blank (one slot). For example: 01g0309 This is a typical display where 01 is the line card number, g indicates that the line card is good (c type board), an d0309 is the line card revision#.

Table 20. Functions available from the OH2000E menu (continued)

Function	Description
VIEW PROFILE R#S	Use this option to display the DNIS profile table entry numbers. 1. Press # to enter the menu. 2. Press Down to scroll to the VIEW PROFILE R#S function. 3. Press # to select the function. The LCD will display the DNIS Table entry number, line by line. The qualifying characters are: • g = line card is good • y = line busy • l = line inactive • n = does not support DNIS • k = no DNIS Table for this line or bad checksum on this line • B = a "blank" board is installed in this slot . A blank board contains no circuitry and is used to fill unused line card slots in the receiver. Its use prevents the OH 2000E from displaying an "inactive" state; there will be no lit LEDs which show faults on the line. Also, the "blank" fills the physical hole where a telephone line would connect. Two lines are covered by one blank (one slot). • f = a separator when looking at the DNIS profile table numbers. A space is used as the separator when looking at line card revision numbers. The two different separators are used to guide the user in recognizing what is being displayed. Capital letters are used when the line card is version b (older card). Lowercase letters are used when the line card is version c (current card). For example, 01g0016f means that for line 01, the DNIS profile table stored in the Windows Utility is table number 16. The lowercase letter g means the checksum is good for the profile table and a lowercase letter f is merely a separator since there are two entries per line 02k7FFFf means that there is no DNIS Profile Table associated with line 2.
MODIFY GMTOFFSET	Use this option to change the Greenwich Mean Time offset hours. 1. Press # to enter the menu. 2. Press Down to scroll to the MODIFY GMTOFFSET function. 3. Press # to select the function. The Greenwich Mean Time offset hours are displayed. 4. Press * to exit after viewing the offset hours, or use Down and Up to adjust the offset time. 5. Press # to save.
RV096 # ->ESCAPE	This line binds the top and the bottom of the menu list in the LCD Display. In this example, RV096 means that revision 096 is used in the master, so can vary depending on the version you're on. Pressing either # or * will exit from the menu.

Setting option flags

Option flags enable you to configure specific settings on the OH2000E. There are two types of flags, Global flags and individual programmable flags.

Viewing option flags



CAUTION: When you want to view, but not to change the present settings, select the VIEW OPTION FLAGS function in the menu. Trying to just view the options and selecting the SET OPTION FLAGS function will result in a change back to the default values of the flags.

Enter the VIEW OPTION FLAGS function from the menu to view the A, B, C, and D flags. There are 16 options for each flag.

To enter VIEW OPTION FLAGS:

1. Enter menu by pressing #.
2. Scroll to VIEW OPTION FLAGS by pressing **Down**. Press # twice to enter the function. The display shows:

```
A 1      LINE 1
NNNNNNNNNNNNNNNN
```

This first flag that is displayed is A1.

- Press **Up** to look at flags on Line 2, 3, 4, etc.
- Press **Down** to advance cursor to look at A2, A3, A4, A5, A6 etc.
- Press * to bring cursor back to look at previous A5, A4, A3, etc.
- Press # to cycle to B, then C, and then back to the A flags.
- Press * to exit back through the flags (D to C to B to A then exit).

Global flags

There are 6 global flags G1 through G6. Global flags are valid for all lines.

- G1 selects buzzer on listen-in even when a computer is used.
- G2 turns the buzzer OFF in manual mode.
- G3 interchanges the DNIS and account numbers on all outputs.
- G4 selects automatic adjustment for daylight saving time.
- G5 is set when no printer is used.
- G6 must be set to Y each time the Set Option Flags or Set Line Designations functions are used. In order to be authorized to make entries in Set Option Flags, global flag G6 must be set to Y.

Use the following steps to set the global flags:

1. Press **#** to enter the menu.
2. Press **Down** to scroll to the SET OPTION FLAGS function.
3. Press **#** to select the function.
4. Press **#** to enter. The display shows:
GLOBAL FLAGS
FLAG G1 NNNNNN
5. In order to be authorized to make entries in Set Option Flags, global flag G6 must be set to Y. Press **Up** to toggle between **Y** and **N**. Press **Down** to go to next entry on the display line. Press ***** to go back to previous entry on the display line.
6. Press **#** to save when all flags requiring a change have been changed.
7. If only global flags are being changed, press ***** four times to exit programming.

Change the following default entries for the flags to change the default functions.

Table 21. Programming global flags

Global function to be added	Flag	Default	Definition
Listen-in buzzer even if computer is used	G1	Y	No buzz with computer
Turn buzzer OFF in manual mode	G2	N	Buzzer ON in manual mode
Interchanges account and DNIS positions	G3	N	Account number listed first
Automatic adjustment for daylight saving time	G4	N	No automatic time adjustments
No printer is used	G5	N	Printer is used
Programming options authorization	G6	N	Access denied

Individual line flags



CAUTION:

When you want to view, but not change the present settings, select the VIEW OPTION FLAGS function in the menu. Trying to just view the options in the SET OPTION FLAGS function will result in a change back to the default values of the flags. Refer to [Viewing option flags](#) on page 54 for instructions.

Individual line programmable flags include A1 through A16, B1 through B16, and C1 through C16. Refer to [Descriptions of individual line flags A, B, and C](#) on page 57 for deciding what options you want to program.

This selection may be entered after programming global flags in previous section, or:

1. Press **#** to enter the menu.
2. Press **Down** to the SET OPTION FLAGS function.
3. Press **#** three times to skip over the GLOBAL FLAGS function. The first prompt specifies which lines are being programmed. The following is initially displayed:

```
{-1  L # 1 16-}  
YYYYYYYYYYYYYYYY
```

4. The L# indicates the selected line. Press **Down** to move across the display (from left to right) to desired line and **Up** to toggle from Y to N. Use ***** to go back (from right to left). Press **#** when finished. When the programming changes apply to all lines, leave all Y. Change lines not being programmed to N.

Descriptions of individual line flags A, B, and C

The three programmable groups of flags (A, B, and C) contain 16 flags each. The 16 receiver lines, in turn, are each individually programmable to the A, B, and C flags.

The lines may be programmed all at once or individually by selecting which lines are being programmed. See [Individual line flags](#) on page 56.

Each of the 16 lines is therefore programmable with 16 different Flags in A, in B, and in C.

A flag options

Table 22 describes programmable options for A flags.

Table 22. Programmable options for A flags

Programmable options for flag A	Flag	Setting	Default
Pick up on second ring for caller ID or DNIS	A1	Y	First ring
1400Hz handshake first (See the Handshake sequence on page 59 for special handshake settings: flags A2, A3, A4, A5, and A12)	A2	Y	2300Hz handshake first
Select Lifeline format (no SIA). Lifeline models 5200, 6200 and 6600 are not supported at this time	A6	Y	SIA (no Lifeline).
Select Healthlink/Healthcom	A7	Y	1400Hz - No Healthlink or Healthcom
Select DNIS	A8	Y	No DNIS
Sescoa 4+3 or 4+2 parity ad 40 pps	A9	N	Sescoa 4+3
Select 3+2 or 4+1	A10	Y	4+1
Select 3+1 parity or 4+1 at 20 pps	A11	Y	4+1
Select D handshake	A12	Y	Suppress D handshake. See Figure 9, Linecard Options window, General tab on page 21.
Select 4+1 or 3+1 parity at 40 pps	A13	Y	3+1 parity at 40 pps
Select 4+1 parity at 40 pps	A14	Y	4+2 two rounds at 40 pps
Select 4+2 Super extended	A15	Y	Normal 4+2 (no wait)
For Health-Watch CS	A15	Y	No listen-in for 4+1 pulsed code 3
2300 Hz kissoff for SK FSK with 2300 handshake	A16	Y	1400 Hz kissoff for SK FSK

Factory defaults for A flags are all N except A9, which is Y. In the majority of cases, no changes from default are needed.

Definition of A flags

Table 23 describes the A flags. Selections are feasible on a per line basis.

Table 23. A flag definitions

Flag	Description
A1	Set to Y for Caller ID pass through to the computer. The telephone network presents the Caller ID data between the first and second ring. The OH2000E passes the Caller ID data through to computer automation as a preview of the signal to come.
A2	Set to Y if you wish to have 1400 Hz rather than 2300 Hz given first. This selection is useful when the majority of signals respond to 1400 Hz. For example, many older Silent Knight and slow format Ademco panels look for 1400 Hz. Some Ademco panels transmit in the slow format when they see 1400 Hz first. Otherwise, they transmit in Ademco High Speed in response to the Contact ID (High Speed) handshake. When transferring from an older receiver, which had 1400 Hz first, it may be useful to retain 1400 Hz first.
A2, A3, A4, A5, and A12	Used for handshake sequence control. See Handshake sequence on page 59.
A6	Set to Y when Lifeline format is received in lieu of SIA format.
A7	Set to Y for Healthlink and Healthcom Handshake in lieu of 1400Hz. (for Healthcom only, also set A2). Healthcom formats are 2-way formats. Set C flags for listen-in or use the WinUtility to select listen-in.
A8	Set to Y for DNIS. The DNIS is related to the telephone number of the receiver line dialed by the transmitting unit. The DNIS is passed on to automation and printed by the OH2000E. IMPORTANT! The DNIS is not to be confused with Caller ID. If A8 is selected, and DNIS is not present, the receiver will not respond.
A9	Set to N if no Sescia Superfast is used. Sescia Superfast is a 4+3 format, which transmits 7 digits at 40 pps. The 4+2 with parity at 40 pps format also transmits 7 digits. Because the Sescia 4+3 is computed on a base of 15 rather than the usual decimal system, and the number of digits in the two formats is identical, a selection must be made to permit the appropriate interpretation of the 7 digits. Note that the selection only applies at 40 pps. Since Sescia Superfast only occurs at 40 pps, transmissions at the more common rates of 20 pps and 10 pps are not affected; neither is 4+2 with 2 rounds.
A10	Set to Y only when receiving 3+2 instead of 4+1. 3+2 sends a 3-digit account number with a 2-digit event code sent in the same round. This format is rare. The standard for transmitting a 2-digit event code for a 3-digit account number is the extended format. The 3+2 extended format is received automatically with the OH2000E at default flag settings.
A11	Set to Y only when 4+1 is not to be received. 3+1 with parity is standard at 40 pps (Radionics Superfast) but at 20 pps or 10 pps it is non-standard.
A12	Suppress D handshake. See Figure 9, Linecard Options window, General tab on page 21.
A13	Set to Y only if 4+1 at 40 pps is used and 3+1 parity at 40 pps is not used. At 40 pps, 3+1 parity is standard (Radionics Superfast).
A14	Set to Y only if 4+1 parity is used at 40 pps. The standard is 4+2, two rounds.
A15	Set to Y when 4+2 Extended is used. For normal 4+2, this flag is set to N. For Health-Watch central, the Y selection prevents code 3, in 4+1 pulsed, from going into listen-in.
A16	Set to Y if the Silent Knight FSK format is used with Silent Knight panels that respond to 2300 Hz handshakes and require a 2300 HZ kiss off. 1400 Hz is standard for Silent Knight FSK. Many of these panels require a 1400 Hz kiss off even when they respond to a 2300 Hz handshake.

Note: When transferring from Radionics receivers, it is usual to set A9 to N, and A11 to Y.

Handshake sequence

The default handshake sequence is ABCD, where flags A2, A3, A4, and A5 are at their default settings (NNNN). The handshakes are defined as follows:

A = 2225 Hz +2300 Hz

B = Contact ID

C = 1400 Hz

D = Radionics modem

You can make changes in the sequence from the Windows Utility or the front switches.

Table 24. Handshake sequences

Handshake sequence	Flag settings			
	A2	A3	A4	A5
ABCD	N	N	N	N
CBAD	Y	N	N	N
BCD ¹	N	N	Y	N
CD	N	Y	N	N
D	N	Y	Y	N
BAD ¹	Y	N	Y	N
AD	Y	Y	N	N
ACD	N	N	N	Y
CAD ¹	Y	N	N	Y
ACBD	N	Y	Y	Y

1. When A12 is selected, the sequence BCD is replaced with BCA, BAD is replaced by BAC, or CAD is replaced with CAB.

B flag options

Programmable options in B and C flags are all associated with listen-in.

Listen-in

UL requires that the loading conditions specified in NFPA 72 be met. The use of flash-hook transfers the listen-in portion of a call to another extension. With flash-hook, the OH2000E becomes immediately available to handle another signal, and NFPA 72 requirements are thus met.

Note: The Osborne-Hoffman Listen-In feature only works with specific telephone switches.

The B flags

B flags select listen-in with or without flash-hook and DTMF tones for flash-hook. All default to N.

Table 25. B flag options

Options	B1	B2	B3	B4	Result
Listen-in without flash-hook	N	N			No flash-hook
Flash-hook without preface	N	Y			Flash-hook, no preface
Flash-hook with * preface	Y	N			
Flash-hook with # preface	Y	Y			
Send no DTMF digits			N	N	
Select one DTMF digit			N	Y	B13, B14, B15, and B16
Select two DTMF digits			Y	N	B9, B10, B11, B12+ B13, B14, B15, and B16
Select three DTMF digits			Y	Y	B5, B6, B7, B8+ B9, B10, B11, B12+ B13, B14, B15, and B16

Flash-hook parameters: On-hook: 700 ms, pause 2 sec, then DTMF digits 100 ms ON, 100 ms OFF.

B flag entries for DTMF tones used with flash-hook

Refer to your telephone switch documentation for instructions on what command to issue.

Table 26. B flag entries for DTMF tones used with flash-hook

B5, 6, 7, and 8 or B9, 10, 11, and 12 or B13, 14, 15, and 16 0 = N entry, 1 = Y entry	Hex #	Telephone digit
0000	0	D
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7
1000	8	8
1001	9	9
1010	A	0
1011	B	*
1100	C	#
1101	D	A
1110	E	B
1111	F	C

Note: By programming the B5 through B16 flags in the order found in the left hand column of the table, you can set the OH2000E to engage flash-hook by transmitting the DTMF tones listed in the right hand column. Flags B3 and B4 determine how many, if any, DTMF tones are used (maximum of three).

Listen-in without flash-hook

When flash-hook is not used, flags B9 through B13 are used for listen-in flags sent by 5 formats. The default setting is N. In this setting, the OH2000E goes into listen-in only when the transmitter sends a listen-in flag. When the setting is Y, the OH2000E will go into listen-in when the account falls in the listen-in block (as determined by C flags), or when the listen-in flag is received.

Table 27. Listen-in without flash-hook

Flag	Format
B9	Radionics BFSK
B10	Sescoa Superfast
B11	Ademco Contact ID
B12	SIA
B13	Radionics Modem

C flag options

C flags defines listen-in block, listen-in time, and listen-in override (with flash-hook). Defaults are: C5 through C8 and C12 through C15 are Y. All others are set to N.

Programmable options in flag C:

1. Define listen-in block based on the most significant digit (MSD) in the account. In account number 5236, 5 is the MSD, and 6 is the LSD, or least significant digit.
2. Set listen-in time for formats which do not send listen-in time with their data. This listen-in time determines how long the OH2000E will keep the line off hook to allow an operator to pick-up on the already established audio connection. If another device or telephone does not go off hook before this time expires, the OH2000E will disconnect and listen-in capabilities are lost until another listen-in call is received.
3. Set listen-in block override with flash-hook for the following formats:
 - Radionics BFSK
 - Sescoa Superfast
 - Ademco Contact ID
 - SIA
 - Radionics Modem2

C flag definitions

You can easily set the C flags through the WinUtility program described in *Chapter 3, Programming line cards* on page 17.

Table 28. C flag definitions

Flag	Description
C1 through C4	Defines upper boundary of listen-in block. Enter MSD of account number.
C5 through C8	Defines lower boundary of listen-in block. Enter MSD of account number.
C9 through C12	Defines listen-in time in hex seconds. Enter MSD in binary form.
C13 through C16	Defines listen-in time in hex seconds. Enter LSD in binary form.

For example, all accounts listen-in, with a listen-in time of 90 seconds. Set the C flags as follows:

Upper boundary MSD: F (binary 1111) Set C1 through C4: YYYY

Lower boundary MSD: 0 (binary 0000) Set C5 through C8: NNNN

90 seconds = $16 \times 5 + 1 \times 10$

MSD 5 (binary 0101)

Set C9 through C12: NYNY

LSD 19(binary 1010)

Set C13 through C16:YNYN

Listen-in when flash-hook is used

When flash-hook is used (see flag B), listen-in time is not applicable. Therefore, flags C9 through C16 become available for override of block assignments for Listen-in.

Table 29. Listen-in for flash-hook

Format	Flag
Radionics BFSK	C9
Sescoa Superfast	C10
Ademco Contact ID	C11
SIA	C12
Radionics Modem2	C13

When the default N is used, listen-in will occur only when the listen-in flag is transmitted. Block assignments are overridden for these formats. If the listen-in flag is not transmitted, listen-in will not occur. If Y is used, listen-in will occur either if the flag is received or if the account is within the listen-in block.

D flag options

These are additional options you can set.

Table 30. D flag definitions

Flag	Description
D1 through D7	Currently reserved.
D8	Disables the acceptance of any DTMF noise prior to issuance of DTMF handshake.
D9	Enables Rollins ITI panels. D11 must also be set. You cannot receive non-Rollins ITI panels on a line with D9 set.
D10	Enables DNIS profile table.
D11	Replace first Radionics handshake with an ITI handshake. When setting the D11 flag, some SIA panels may no longer respond properly.
D12	Add leading zeros to account numbers less than four digits long.
D13	Always update time in ITI panels. If left off, the panel must request a time update.
D14 through D16	These are implemented as GMT offset, so they are not shown with the other D flags. These flags are copied to all 16 lines, making them global. This option only has effect on updating the time in the Ultragard panel.

Appendix B FCC and UL requirements

This chapter includes information regarding the FCC requirements and UL requirements for the Osborne-Hoffman 2000E.

In this chapter:

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<i>UL Requirements</i>	55
<i>UL Tested Panels</i>	56
<i>Manufacturers Declaration of Conformity</i>	57

FCC requirements

The OH2000E complies with part 68 of the FCC rules. On the back of this equipment is the following information which upon request you must provide to your telephone company:

FCC registration number: CENUSA-68592-AL-N

AC REN: 0.8B

The REN (ringer equivalence number) is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed 5.0. To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area. If your telephone equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, you will be notified in advance, but if advance notice is not practical, you will be notified as soon as possible. You will also be notified of your right to file a complaint with the FCC. Your telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service. If you experience trouble with this telephone equipment, please contact GE Security for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. This device is equipped with a RJ31 jack for connection to the telephone line.

UL requirements

The OH2000/E is UL listed for fire and burglary. UL file number S3326. The OH2000/E is also UL listed as a Grade A Proprietary Burglar Alarm System Unit only if used with the GE Picture Perfect 2.0 Supervising Station. The OH receiver must be installed adjacent to the PP2.0 for this UL listed proprietary classification.

- Installation must meet the requirements of NFPA 72. See *Chapter 2, Hardware installation* on page 10.
- For fire protection-signaling, use a UL listed metal rack-mounting cabinet. All wiring exiting the cabinet must be in electrical conduit. A suggested 19-inch rack in a cabinet listed for fire protective signaling is the Atlas Soundolier WA 200-7B (UL file No 181 655N).
- A 12 V, 35 Ah capacity battery is required for 24 hours of stand-by. The battery enclosure must be UL listed for fire protection signaling use. A suggested UL listed battery enclosure is available from Fire-Lite Notifier, part number BB-55 UL file number S635 Code UOXX.
- A UL listed UPS or generator to supply 24 hours of standby can be used. In this case, a smaller battery with a minimum of 7 Ah capacity may be used to provide up to four hours of standby.
- Use UL listed DACTs (transmitters).
- Check the 24-hour test signal from DACTs by computer or by manual means. Failure to receive a 24-hour test is treated as a trouble signal.
- The printer must be UL listed for fire protection signaling use. Printers listed for fire protective signaling include:
 - Digital Monitoring Products part SCS-PTR UL file S3598.
 - Fire Lite Notifier part PRN 4 UL file S635 UOXX.

Note: If you are using MASTerMind Monitoring automation software, refer to the *MASTerMind UL 1981 Requirements for Central Stations Reference Information* document for additional UL requirements information.

UL tested panels

The OH2000E is listed for meeting Industry Approvals UL864 – Control Units for Fire Protective Signaling Systems and UL1610 – Central Station Burglar Alarm Units. *Table 31* lists tests performed with UL on various panels in different formats.

Table 31. UL tested panels

Panel Type	UL file	Format type
Ademco VISTA 4140 XMPT	S1632	C
Ademco 4140	S3126	C
Caddx Ranger 8900	S4018	P
Caddx NX-8	S4018	C
CandK 238	S3801	E, F
CandK 2316	S3801	E
CandK Eclipse	S3801	Q, P
Detection Systems DS 7090	S3819	Q
DSC 4010	S4019	G
DSC Power 832	S4019	Y
Electronics Line Summit 3208	S5455	P
Newbridge Elcombe Main Street Messenger	79U6	S
FBI XL 1218	S1598	P
FBI Legend 7100	S1598	P
Fire Lite 5210	S624	P
Linear CP 90	S4024	g
Napco Magnum 3000	S3594	M
Napco Gemini 3200	S2576	Y
Scantronics Avenger 9000	BP3064	D
Sentrol Moose Z1100E	S1943	P
Sentrol Discovery 5000	S5199	Y
Silent Knight 5207	S2766	Y
Silent Knight 2820	S2766	K
Silent Knight 2730	S2363	K
Radionics 2071	S1871	Q
Radionics 6112	S1871	B
Radionics 8112	S1871	M, m
Radionics 7212	S1871	B
Radionics 9412	S1871	T, t
Radionics 7112	S1871	J

In addition, for ULC listing, the OH2000E should be installed in accordance with the authority having local jurisdiction.

Canadian Electrical Code
National building code of Canada
ULC S527-99, S304-M88, and C693-1994

Manufacturer's Declaration of Conformity



Product identification:

Model	OH2000E (see model listing)
Category	Central Station Alarm Receiving Unit
Brand	Osborne-Hoffman

Manufacturer: GE Security
1275 Red Fox Road
Arden Hills, MN 55112 USA

EU representative: GE Security B.V.
Kelvinstraat 7
6003 DH Weert
The Netherlands

Concerning: RandTTE

EMC

Safety

A sample of the product has been tested by:	Compliance Engineering Ireland Ltd. Raystown, Ratoath Road, Ashbourne, Co. Meath, Ireland	GE Security 1275 Red Fox Road Arden Hills, MN 55112 USA
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Test report reference	CE Qualification Plan: 03DUBCE5001-1 01E565-1 03DREMC001	03DUB_RESOH2000LVD-1
Applied standards	EN55024(1998) EN55022(1998) EN61000-3-2:1994+A12(2000) EN61000-3-3:1995+A1(2001)	EN60950(2000)

Equipment class identifier Not applicable

Means of conformity

We declare under our sole responsibility that this product is in conformity with Directive 93/68/EEC (Marking) and/or complies to the essential requirements and all other relevant provisions of the 1999/5/EC (RandTTE) based on test results using harmonized standards in accordance with the Directives mentioned.

Model listing (list of all product variants or models for which this declaration is valid)

Product	Description	BOM revision level
OH2000	Receiver incl. 2 line cards	January 2002
OH2000-LC	Line card for OH2000 receiver	January 2002
OH2000-RO	Receiver, no cards included	January 2002
OH2000E	OH2000 receiver only	January 2002
OH2000E Complete	OH2000 complete	January 2002
OH2000E-Line-Card	OH2000E line card	January 2002

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