Zone Expansion Module D8125

Operation and Installation Guide

Security Systems

BOSCH

D8125

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1.0   Introduction

This guide covers installation of the D8125 POPEX Zone Expansion Module for use with the D8126, D8127 and D9127 POPITs on the following Bosch Security Systems control panels:

• D9412G	•D7212G	• D9112
• D9412	•D7212	• D9112B1
• D7412G	•D7212B1	• D8112G1
• D7412	•D9124	• D8112G2

1.1   Guide Organization

This guide is divided up into four sections, which are summarized in the *Table 1* below.

Section	Description
1	**Introduction** – this chapter
2	**Overview** – This chapter is intended to provide an overview of the Zonex System, including operational specifications.
3	**Installation** – provides installation instructions
4	**Troubleshooting** – provides common problems and solutions to solve them.

Table 1: D8125 POPEX Operation and Installation Guide Organization

1.2   Other Literature Referenced

See the following for a more complete and detailed description of the D8125 POPEX Zone Expansion. They have been included in the table below with their part number for easy ordering. Contact Bosch Security Systems if you need to order additional literature.

Name of Literature	Bosch Security Systems Part Number
D9412G/D7412G Program Entry Guide	47775
D9412G/D7412G Operation and Installation	43488
D7212G Program Entry Guide	4998138538
D7212G Operation and Installation	4998138544
Owner's Manual	varies
POPIT Labels – 9000 Series	79-07675-000
Security System Owner's Manual	74-06633-000
Security System User's Guide	74-06141-000
COMEX Program Entry Guide	74-05073-000
D1252A Security System User's Guide	71-04415-000
D6500 Report Directory	4998132019
Omegalarm D8112 Zonex System Program/Account Record Sheet	74-06608-000
D5060 Multiplex Point Programmer User's Guide	35262

Table 2: Referenced Literature

Introduction

1.3 Documentation Conventions

1.3.1 Type Styles Used in this Guide

We use special type styles to help you identify the objects that we are describing in this guide.

Bold text	Usually indicates selections that you may use while programming your panel. May also indicate an important fact that you should note.
Bold Italicized text	Denotes notes, cautions and/or warnings.
Italicized text	Refers you to a drawing, table, or other section of this document, or to another document. Also used to symbolize names for records that you create.
`Courier New Text`	Indicates what may appear on the XXX Programmer display, command center/keypad, or internal printer.
[CAPITALIZED TEXT]	Indicates a specific key to be pressed.
Italicized Text	Text that appears like this indicates what would be seen in the [Model] Programmer's Display. It is used as a section heading and screen example. Shaded boxes indicate programmer prompts that are only available when Custom or View Events are selected. (Used mainly in the *Program Entry Guide* documents).

1.3.2 Tips, Notes, Cautions and Warnings

Throughout this document helpful tips and notes will be presented concerning the entire application and/or programming the unit. They will be set off as follows:

WARNING — *The possibility of physical damage to the operator, equipment and/or proper execution of the program.*

CAUTION — *Cautions the operator that physical damage to the equipment or improper execution of the program may occur.*

IMPORTANT — *Important Notes should be heeded for successful operation and programming. Helpful tips and/or shortcuts may be included here.*

Programming Note — *This covers notes and clarifications specific to programming the unit.*

1.4 FCC Notice

This equipment generates low level radio frequency energy. If not installed in accordance with the manufacturer's instructions, it may cause interference to radio and television reception. It has been type tested and found to comply with the specifications in Subpart J of Part 15 of FCC rules for Class B Computing Devices. If this equipment causes interference to radio or television reception — which can be determined by turning the equipment on and off — the installer is encouraged to correct the interference by one or more of the following measures: 1) Reorient the antenna of the radio/television, 2) Connect the AC power cord to a different outlet so the control panel and radio/television are on different branch circuits, 3) Relocate the control panel with respect to the radio/television.

If necessary, the installer should consult an experienced radio/television technician for additional suggestions, or send for the "Interference Handbook" prepared by the Federal Communications Commission. This booklet is available from the U.S. Government Printing Office. Washington D.C. 20402, stock no. 004-000-00450-7.

2.0 Overview

2.1 Specifications

Operating Voltage	D8125	10.2 VDC to 14 VDC supplied by AUX POWER
	D8126/D8127	7 VDC to 15 VDC supplied by the POPEX Module
Current	D8125	50 mA per POPEX Module + POPIT current
	D8126/D8127	2.5 mA per POPIT Module
	D9127	0.5 mA per POPIT Module
Operating Temperature	+32˚F to +122˚F (0˚C to +50˚C), @ 86% Relative Humidity	
Resistance	Maximum increase of resistance on the POPIT Loop is 1000 Ω. Maximum resistance between the POPEX Module and any POPIT is 90 Ω.	
Sensor Loop Response Time	Approximately 1 second. POPIT sensor loops are supervised with a 33 kΩ End-Of-Line resistor: Bosch Security Systems D106F	
Low Condition Voltages	Open:	12 VDC
	Normal:	6 VDC
	Shorted:	0 VDC
	The D9412G, D7412G, and D7212G Control Panels indicate SERVC GND FAULT on command centers when a ground fault condition is present on the loop input. All other 9000 Series Control Panels respond to a grounded loop as an open condition.	
Dimensions (H x W x D)	D8125 module:	0.75 in. x 2.88 in. x 5.0 in. (19 mm x 73 mm x 12.7 cm)
	D8126 enclosure:	0.94 in. x 2.88 in. x 4.38 in. (24 mm x 73 mm x 11.1 cm)
	D8127/D9127 enclosure:	0.94 in. x 1.5 in. x 3.2 in (24 mm x 38 mm x 81 mm)
UL Applications	The control panel enclosure and POPIT modules required for specific UL or NFPA ZONEX system applications are listed below. The D8108A Attack-Resistant Enclosure meets or surpasses the requirements for all of these applications. A D8109 Fire Enclosure can be used for fire applications. Any mercantile combination fire and burglar system must use the D8126T/D8127T/D9127 POPIT Module. Refer to UL 681 "Installation and Classification of Mercantile and Bank Burglar Alarm Systems" for further details on installation requirements.	

Application Control D8126/D8127/D9127	Enclosure	Model
Residential		
UL Household Fire	D8103	U or T
UL Household Burglar	D8103	U or T
Commercial		
UL Local Burglar/Police Connected Burglar	D8108A	T*
UL Central Station Burglar Grade C	D8103	T*
UL Central Station Burglar Grades B and A	D8108A	T*
UL Commercial Fire for Local, Central Station, Remote Station, and Electrically Accentuated Transmitter	D8109	U or T

* A model "U" POPIT mounted within a tampered enclosure can be used in place of a model "T" POPIT.

The following describe the classification of the Bosch Security Systems modules. Please reference the NFPA 72 for the specific details of IDC, SLC, NAC conditions.

Module	Class	Style
D125B (Powered Loop Interface)	B	A
D129 (Dual Class A Initiation Module)	A	D
D192C (Bell Supervision Module)	B	W
D192G (Bell Supervision Module)	B	W
D8125 (Zone Expansion Module)	B	3.5
D9127 (Point of Protection Module)	B	A

Table 3: Zonex Expansion Specifications

2.2   D9412G/D7412G Point Expansion

The D9412G can use Point of Protection Input Transponder (POPIT) Modules to provide a maximum of 238 off-board points, bringing the total number of points the D9412G can monitor to 246. The D7412G provides up to 67 off-board points, bringing the total number of points the D7412G monitors to 75. Each off-board point requires a POPIT Module.

POPITs connect to supervised two-wire data expansion loops run from POPIT to POPIT throughout the premises. Data expansion loops connect to a D8125 Point of Protection Expander (POPEX) Module. POPEX Modules connect to the point bus on the panel, Terminals 23 and 24 for power (3 and 9 on the D7412G), and Terminals 25 and 26 (D9412G only), or 27 and 28 for data.

If a programmed POPIT is disconnected from the expansion loop, a missing condition appears immediately and the event is logged. The missing condition may also be transmitted to a central station or printed to an on-site printer, if programmed to do so. See the *D9412G/D7412G Program Entry Guide* for programming options.

Extra Point events are generated when a POPIT is connected to the data expansion bus but does not have a Point Index assigned to it. Shown below are instances when an Extra Point event is or is not generated.

If a POPIT is connected to the data expansion bus but does not have a Point Index assigned to it and…

- the data expansion bus becomes disconnected, no trouble condition is annunciated or displayed at command centers and the Extra Point event is not generated. (However, POPITs programmed with a Point Index immediately go missing.)
- the data expansion bus restores to a normal condition from an open, a trouble condition annunciates and displays at the command center. In addition, an Extra Point event is generated, logged, and may be programmed to be sent to the central station or printed to an on-site printer.
- the point input goes from an electrically normal state to an open or shorted state, the command center neither annunciates nor displays a trouble condition. No Extra Point event is generated.
- the system is presently in a Service Walk Test and the point input goes from an electrically normal state to an open or shorted state, the command center neither annunciates nor displays a trouble condition. However, an Extra Point event is logged and printed to an on-site printer, if programmed. Note: The Service Walk Test never displays a points' electrical state as 'Extra'.

If the positive or negative leg of the data expansion bus is shorted to earth ground and Ground Fault Detect is enabled, a general Ground Fault event is generated.

If the positive or negative leg of the data expansion bus becomes disconnected, all POPITs beyond the break report as a missing condition.

If the data expansion bus becomes shorted, all POPITs report a missing condition and a Pt Bus Trouble event is generated. When the data expansion bus restores from a shorted condition, a Pt Bus Restore event is generated, and if there are POPITs connected to the data expansion bus without a Point Index assigned to it, an Extra Point event is generated.

If the positive or negative leg of the data expansion bus becomes shorted to a Common terminal on the D7212G, all POPITs report a missing condition. In addition, a Pt Bus Trouble event is also generated.

If Terminal 28 becomes shorted to a Common terminal, a Pt Bus Trouble event is not generated. However, a short between Terminal 27 and a Common terminal generates a Pt Bus Trouble event and the command center displays `SERVC ZONEX 1`. If Terminal 27 and Terminal 28 are shorted together, a Pt Bus Trouble event is generated and the command center displays `SERVC ZONEX 1`.

The D7212G responds to missing point conditions based on how the points are programmed and which armed state the area is in the point is assigned to. For example, if an interior motion detector point went missing during a disarmed state, a Missing Trouble event is generated. However, if the point went missing while the area was Master Armed, a Missing Alarm event is generated. Non-fire, 24-hour points always generate a Missing Alarm event whereas Fire points always generate a Missing Fire Trouble event.

2.2.1 D8125 POPEX/D8127 and D9127 POPIT Modules

D8127 and D9127 POPITs use the D8125 POPEX Module to report to the panel. Each D8125 supports up to 119 POPIT points. Connect two D8125 Modules to the D9412G to bring the combined total number of POPIT and on-board points to 246. Points 9 to 127 connect to the first POPEX Module. Points 129 to 247 connect to the second POPEX Module. The D9412G reserves Points 128 and 248 for internal use. The panel only annunciates activity for each POPIT, not each detection device connected to the sensor loop.

There are two versions of the D8127 and D9127 Modules. Both module enclosures are made of UL Listed fire resistant material. D8127T and D9127T Modules contain tamper switches. D8127U and D9127U Modules include untampered covers. Unless the module is mounted in a tampered enclosure, UL requires D8127T and D9127T Modules for certificated accounts.

2.2.1.1 Listings

The D8125 POPEX and the D8127 and D9127 POPIT Modules are UL Listed for Local or Police Connected Burglar Alarm, Central Station Burglar Alarm, Household Burglar Alarm, Central Station Fire, Local Fire, Remote Station Fire, Household Fire, and Electrically Actuated Transmitter Applications.

See the *D9412G/D7412G Approved Applications Compliance Guide* to determine the required equipment and enclosures for the application.

2.3 D7212G Point Expansion

The D7212G can use POPIT (**P**oint **o**f **P**rotection **I**nput **T**ransponder) Modules to provide up to 32 off-board points, bringing the total number of points the D7212G can monitor to 40.

POPITs connect to supervised two-wire data expansion loops run from POPIT to POPIT throughout the premises. Data expansion loops connect to a D8125 POPEX (**P**oint **o**f **P**rotection **Ex**pander) Module. POPEX Modules connect to the point bus on the panel, Terminals 3 and 9 for powerand Terminals 27 and 28 for data.

If a programmed POPIT is disconnected from the expansion loop, a missing condition appears immediately and the event is logged. The missing condition may also be transmitted to a central station or printed to an on-site printer, if programmed to do so. See the *D7212G Program Entry Guide* (P/N: 4998138538) for programming options.

Extra Point events are generated when a POPIT is connected to the data expansion bus but does not have a Point Index assigned to it. Shown below are instances when an EXTRA POINT event will or will not be generated.

If a POPIT is connected to the data expansion bus but does not have a Point Index assigned to it and…

· the data expansion bus becomes disconnected, no trouble condition is annunciated or displayed at command centers and the EXTRA POINT event will not be generated. (However, POPIT's that are programmed with a Point Index will immediately go missing.)

· the data expansion bus restores to a normal condition from an open, a trouble condition will annunciate and display at the command center. In addition, an EXTRA POINT event is generated, logged, and may be programmed to be sent to the central station or printed to an on-site printer.

· the point input goes from an electrically normal state to an open or shorted state, the command center will neither annunciate nor display a trouble condition. No EXTRA POINT event will be generated.

· the system is presently in a Service Walk Test and the point input goes from an electrically normal state to an open or shorted state, the command center will neither annunciate nor display a trouble condition. However, an EXTRA POINT event will be logged and printed to an on-site printer, if programmed. Note: The Service Walk Test will never display a points' electrical state as 'Extra'.

If the positive or negative leg of the data expansion bus is shorted to earth ground and Ground Fault Detect is enabled, a general GROUND FAULT event is generated.

If the positive or negative leg of the data expansion bus becomes disconnected then all POPIT's beyond the break will report as a missing condition.

If the data expansion bus becomes shorted then all POPIT's will report a missing condition and a PT BUS TROUBLE event is generated. When the data expansion bus restores from a shorted condition, a PT BUS RESTORE event is generated and if there are POPIT's connected to the data expansion bus without a Point Index assigned to it, then an EXTRA POINT event will be generated.

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Overview

If the positive or negative leg of the data expansion bus becomes shorted to a Common terminal on the D7212G then all POPIT's will report a missing condition. In addition to this, a PT BUS TROUBLE event will also be generated.

If Terminal 28 becomes shorted to a Common terminal, a PT BUS TROUBLE event will not be generated. However, a short between Terminal 27 and a Common terminal will generate a PT BUS TROUBLE event and the command center will display `SERVC ZONEX 1`. If Terminal 27 and Terminal 28 are shorted together, a PT BUS TROUBLE event is generated and the command center will display `SERVC ZONEX 1`.

The D7212G will respond to missing point conditions based on how the points are programmed and which armed state the area is in that the point is assigned to. For example, if an interior motion detector point went missing during a disarmed state, a MISSING TROUBLE event would be generated. However, if the point went missing while the area was Master Armed, a MISSING ALARM event would be generated. Non-fire 24-hour points always generate a MISSING ALARM event whereas Fire points always generate a MISSING FIRE trouble event.

2.3.1 D8125, D8127 and D9127 POPIT Modules

D8127 and D9127 POPITs use the D8125 POPEX Module to report to the panel. The D8125 supports up to 32 POPIT points (Points 9 to 20). The panel only annunciates activity for each POPIT, not each detection device connected to the sensor loop.

There are two versions of the D8127 and D9127 Modules. Both module enclosures are made of UL Listed fire resistant material. D8127T and D9127T Modules contain tamper switches. D8127U and D9127U Modules come with untampered covers. Unless the module is mounted in a tampered enclosure, UL requires D8127T and D9127T Modules for certificated accounts.

2.3.1.1 Listings

The D8125 POPEX and the D8127 and D9127 POPIT Modules are UL Listed for use with the D7212G for Central Station, Local, Police Connect, Bank Safe and Vault, Mercantile Safe and Vault, and Grade A Household systems, and Proprietary as a Control Unit for Household Fire Warning. The D7212G is not listed for commercial fire applications.

See the *D7212G Approved Applications Compliance Guide* (P/N: 4998138560) to determine the required equipment and enclosures for the application.

2.4 Non-G 9000 Series Point Expansion

On the D9412/D9112, you can use POPIT (**P**oint **O**f **P**rotection **I**nput **T**ransponder) modules to provide up to 238 off-board points, bringing the total number of points the D9412/D9112 can monitor to 246. The D7412/D7212 can provide up to 67 off-board points bringing the total number of points the D7412/D7212 can monitor to 75. Each off-board point requires a POPIT module.

POPITs connect to supervised two-wire data expansion loops run from POPIT to POPIT throughout the premises. Data expansion loops connect to a D8125 POPEX (**P**oint **O**f **P**rotection **EX**pander) module. POPEX module(s) connect to the point buss on the panel, Terminals 23 and 24 for power (3 and 9 on the D7412 and D7212), and terminals 25 and 26 (D9412/D9112 only), or 27 and 28 for data.

If a POPIT is disconnected from the expansion loop, a trouble message appears immediately. See the *D9412G/D7412G Program Entry Guide* (P/N: 47775) for programming options.

If you connect a POPIT to the expansion loop that is programmed for a point number that does not appear in the program for the D9412/D9112, it appears as a trouble condition when the data expansion loop *restores* from a faulted condition. A faulted condition on the data expansion loop includes:

1. Positive leg of the data expansion loop shorted to ground.
2. Negative leg of the data expansion loop shorted to ground.
3. Data expansion loop (positive or negative leg) becomes disconnected.
4. Data expansion loop becomes shorted.

Placing a short on the data expansion loop generates a *PT BUS TROUBLE* report. The panel sees all points on the shorted expansion loop as shorted, and responds according to point programming, except for fire points. The fire points will respond locally as a trouble condition and transmit missing fire reports if programmed during this condition.

POPIT modules monitor their sensor loops for three conditions, loop normal, loop open, and loop shorted. They report these three conditions to the D9412/D9112.

The D9412/D9112 uses point programming to interpret the sensor loop information reported by the POPITs and make the appropriate system response.

2.4.1 D8125 POPEX/ D8127 and D9127 POPIT Modules

D8127 and D9127 POPITs use the D8125 POPEX module to report to the D9412/D9112. Each D8125 supports up to 119 POPIT points. Connect two D8125 modules to the D9412/D9112 to bring the combined total number of POPIT and on-board points to 246. Points 9 to 127 connect to the first POPEX module. Points 129 to 247 connect to the second POPEX module. The D9412/D9112 reserves Points 128 and 248 for internal use. The D9412/D9112 only annunciates activity for each POPIT, not each detection device connected to the sensor loop.

There are two versions of the D8127 and D9127 modules. Both module enclosures are made of UL Listed fire resistant material. D8127T and D9127T modules contain tamper switches. D8127U and D9127U modules come with untampered covers. Unless the module is mounted in a tampered enclosure, UL requires D8127T and D9127T modules for certified accounts.

2.4.1.1 Listings

The D8125 POPEX and the D8127 and D9127 POPIT Modules are UL Listed for Local or Police Connected Burglar Alarm, Central Station Burglar Alarm, Household Burglar Alarm, Central Station Fire, Local Fire, Remote Station Fire, Household Fire, and Electrically Actuated Transmitter Applications.

See the *D9412G/D7412G Approved Applications Compliance Guide* to determine the required equipment and enclosures for the application.

2.5 D9112B1/D7212B1 Point Expansion

The black-on-white and white-on-black circled numbers correspond to the terminal labels on the faceplate of any of the 9000 Series panels.

You can use POPIT modules to provide up to 126 off-board points, bringing the total number of points the D9112B1 can monitor to 134, The D7212B1 can monitor up to 40 off-board points for a total of 48 points.

Each off-board point requires a POPIT module.

POPITs connect to supervised two-wire data expansion loops run from POPIT to POPIT throughout the premises. Data expansion loops connect to a D8125 POPEX module. POPEX modules connect to the point buss on the panel, Terminals 23 and 24 for power (Terminals 3 and 9 for D7212B1) and Terminals 25 and 26 (D9112B1 only), or 27 and 28 for data.

If a POPIT is disconnected from the expansion loop, a trouble message appears immediately.

If you connect a POPIT that is programmed for a point number that does not appear in the program for the D9112B1/D7212B1 to the expansion loop, it appears as an extra point at the command centers when the point is faulted, and during the service walk test.

Placing a short on the data expansion loop generates a *PT BUS TROUBLE* report. The panel sees all points on the shorted expansion loop as shorted, and responds according to point programming.

POPIT modules monitor their sensor loops for three conditions; loop normal, loop open, and loop shorted. They report these three conditions to the control panel. A ground on a POPIT sensor loop reports as an open.

The D9112B1/D7212B1 uses point programming to interpret the sensor loop information reported by the POPITs and make the appropriate system response.

2.5.2 D8125 POPEX Module/D8127 and D9127 POPIT Modules

D8127/D9127 POPITs use the D8125 POPEX Module to report to the D9112B1. Each D8125 supports up to 63 POPIT points (40 for the D7212B1). Connect two D8125 Modules to the D9112B1 (one for D7212B1) to bring the combined total number of POPIT and on-board points to 134 for the D9112B1. Points 9 to 71 connect to the first POPEX module. The D9112B1 reserves Points 72 and 136 for internal use. Points 73 to 136 connect to the second POPEX module. The D9112B1 only annunciates activity for each POPIT, not each detection device connected to the sensor loop. For the D7212B1, Point 9 to 48 connect to the POPEX module.

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Overview

There are two versions of the D8127 and D9127 Modules: D8127T, D8127U, D9127T, and D9127U. The tampered and untampered module enclosures are made of UL Listed fire resistant material. D8127T and D9127T Modules contain tamper switches. D8127U and D9127U Modules come with an untampered cover. Unless the module is mounted in a tampered enclosure, UL requires D8127T and D9127T Modules for certificated accounts.

POPEXs manufactured prior to the expiration date (located on the packaging box) of X9434 may cause POPITs to report as missing after the AC has failed and after the panel goes into a low battery condition but before the panel goes into load shed. POPEXs manufactured after X9434 will not cause missing POPITs prior to load shed on an *AC FAIL*.

2.5.2.1   Listings

The D8125 POPEX and the D8127 and D9127 POPIT Modules are UL Listed for Local or Police Connected Burglar Alarm, Central Station Burglar Alarm, Household Burglar Alarm, Central Station Fire, Local Fire, Remote Station Fire, Household Fire, and Electrically Actuated Transmitter Applications.

See the *D112B1 Operation and Installation Manual* to determine the required equipment and enclosures for the application.

2.6   D8112G1/D8112G2 Point Expansion

2.6.1   D8125 POPEX / D8126 and D8127 POPIT Modules

The D8125 POPEX and D8126/D8127 POPIT Modules are hardware accessories for the Bosch Security Systems Zone Expansion (ZONEX) system.

The D8125 POPEX Module is a Point Of Protection EXpander. One or two POPEX Modules can be used to interface zone expansion loops to the D8112G series. Each POPEX Module can monitor up to 63 D8126/D8127 POPIT Modules, and as many as 126 individual POPIT Modules can be monitored in a ZONEX system with two POPEX Modules. An unlimited number of detection devices can be connected to each POPIT sensor loop; however, annunciation is available only for the *sensor loop*.

The D8127 is a smaller version of the D8126. There are two different versions of the D8126/D8127 POPIT Modules; the D8126T/D8127T plastic enclosure, which contains a tamper switch, and the D8126U/D8127U, which comes in an untampered enclosure. Both enclosures are made of UL Listed fire retardant material.

2.6.1.1   Programming

POPEX/POPIT application programs are developed using the Remote Account Manager or the Bosch Security Systems D5200 Bar Code Programmer containing the *D8112 Handler* . The control panel used for the ZONEX system must be of the D8112"G" Series (referred to in this guide as "D8112G1/G2"). *The POPEX/POPIT Modules will not function with the D8112 "E" or "A" Control/Communicators.* The D8112G contains the ZONEX firmware, and has expanded memory for custom ZONEX text displays on the Bosch Security Systems D1252A Command Center. (Custom alphanumeric text for each expansion point can be programmed with the *D8112 Handler* (see *the Omegalarm D8112 Zonex System Program/Account Record Sheet*). Each POPEX Module is supplied with an *D8112 ZONEX System Program/Account Record Sheet*, used to record both the ZONEX subhandler program file and the physical location of each POPEX and POPIT Module.

2.6.1.2   Listing

The D8125 POPEX and the D8127 and D9127 POPIT Modules are UL Listed for Local or Police Connected Burglar Alarm, Central Station Burglar Alarm, Household Burglar Alarm, Central Station Fire, Local Fire, Remote Station Fire, Household Fire, and Electrically Actuated Transmitter Applications.

See *UL Applications* in *Section 2.1 Specifications* to determine the appropriate POPIT module for each application. The POPEX module can be mounted in any D8103, D8108A or D8109 enclosure.

2.6.2   Operation

Each POPIT Module is assigned to report to a D8112G1/G2 Control Panel "master zone." The POPIT can transmit three conditions to the D8112G1/G2: sensor loop open, shorted, and normal. The D8112G1/G2 receives the condition signals and interprets them as sensor loop alarm, trouble, or normal, missing POPIT module, or extra POPIT module. The D8112G1/G2 "master zone" loop code program (see *D8112 Handler*) determines the system response to each of these sensor loop conditions. When an event occurs on a POPIT, the D1252A sequences through displays which indicate the type of event.

2.7   D9124 Point Expansion

The D9124 Fire Alarm Control Panel (FACP) is currently shipped with the D9412GLTB Control Panel. Refer to *Section 2.2 D9412G/D7412G Point Expansion* for details regarding Popit installation.

You can connect up to four data expansion loops to one D8125 input at the motherboard. Data Loops 1 to 4 connect to the D8125 POPEX 1 input on the motherboard (Terminals 11 through 18). Data Loops 5 to 8 connect to the D8125 POPEX 2 input at the motherboard (Terminals 19 through 26).

Verify the proper setting of motherboard jumpers: Make sure the jumpers above Terminals 18 to 24 on the motherboard are in the D8125 position (*Figure 1*).

2.7.1   POPEX/POPIT Configurations

With the D8125 POPEX Module, you can:

- use D8125 POPEX 1, data loops 1 to 4 (Terminals 11 to 18) on the motherboard.
- install a maximum of 119 POPITs (Points 9 to 127).
- use Points 7 and 8 for power supply and initiation circuit supervision. POPITs are not required for these functions.

With an additional D8125 POPEX Module, you can:

- use D8125 POPEX 2, data loops 5 to 8 (Terminals 19 to 26) on the motherboard.
- install an additional 119 POPITs (Points 129 to 247) for a maximum of 238 POPITs in the system.
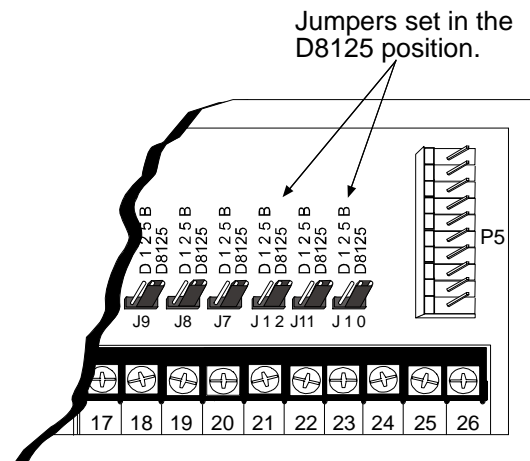
Figure 1: D8125 Jumper Setting

Notes:

3.0 Installation

3.1 D9412G/D7412G/D7212G, D9412/D9112/D7412/D7212

IMPORTANT

Save the POPIT Label Sheets: The D8125 is packaged with two sets of POPIT label sheets. One is marked for use with the D9412/D9112. Save this set. You will use it later to label the POPITs.

3.1.1 Mounting to the Panel

Follow the procedure below to install the D8125 in the enclosure with the panel.

1. Align the D8125 POPEX module with any of the four mounting locations in the enclosure. See *Figure 1*.

2. Use the screws provided with the module to secure it in the enclosure.

3.1.2 Wiring to the Panel

Follow the procedure below to wire one or two D8125 modules to the panel. See *Figure 2*.

WARNING

Remove all power (AC and Battery) before making any connections. Failure to do so may result in personal injury and/or equipment damage.

3.1.2.1 Disconnecting the Battery and Transformer

1. Disconnect the battery by unhooking the positive (red) battery lead from the battery.

2. Unplug the transformer.

WARNING

Reversed polarity damages the D8125. Make sure you wire the D8125 AUX and GND terminals to the panel.
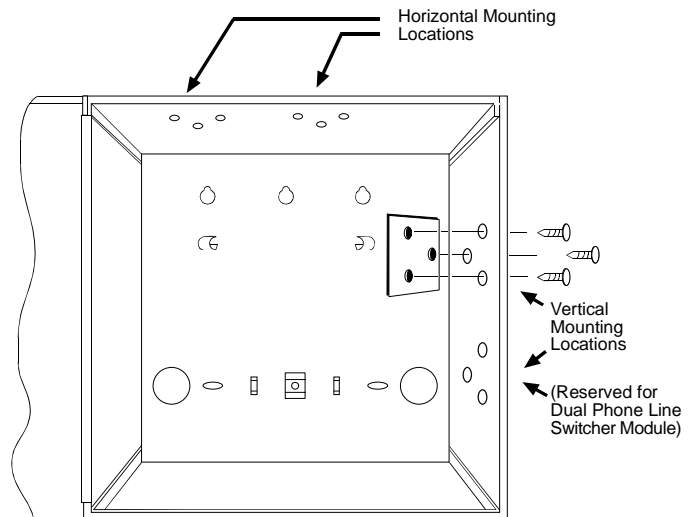
Figure 2: POPEX Installation

3.1.2.2 Wiring Procedure

For Points 9 to 127 (9 to 75 on D7412/D7212):

1. Connect the GND terminal of the D8125 to Terminal 23 on the D9412/D9112. Connect the GND terminal of the D8125 to Terminal 9 on the D7412/D7212.

2. Connect the OUT terminal of the D8125 POPEX module to ZONEX IN 1, Terminal 27.

3. Connect the IN terminal of the D8125 POPEX module to ZONEX OUT 1, Terminal 28.

4. Connect the AUX terminal of the D8125 to terminal 24 on the D9412/D9112. Connect the AUX terminal to Terminal 3 on the D7412/D7212.

For Points 129 to 247 (D9412/D9112 only):

1. Connect the GND terminal of the D8125 to Terminal 23.

2. Connect the OUT terminal of the D8125 POPEX module to ZONEX IN 2, Terminal 25 .

3. Connect the IN terminal of the D8125 POPEX module to ZONEX OUT 2, Terminal 26 .

4. Connect the AUX terminal of the D8125 to Terminal 24.

Do not connect more than one D8125 to ZONEX 1, Terminals 27 and 28, or ZONEX 2 (D9412/D9112 only), Terminals 25 and 26.

See *Section 3.2.2 Wiring the D8125 to the D9112B1/D7212B1* and *Figure 5* for instructions on connecting POPITs to the D8125 POPEX Module.

3.1.3 Wiring POPITs to the Data Expansion Loop

Use one 2-wire data expansion loop or distribute the POPITs on up to three loops. Setting DIP switches on the POPIT modules assigns them to point numbers. Refer to *Section 3.1.6 POPIT Module Point Assignments.*

Determine the required wire gauge for each data expansion loop using *Table 4.*

3.1.3.1 Combine data expansion loops

The maximum lengths shown in *Table 4* are for all data expansion loops connected to the same POPEX module combined.

Before installing the POPITs, make sure the resistance on the data expansion loop is no more than 40 Ω.

3.1.3.2 Wiring POPITs together

Maximum Length of All Data Expansion Loops Combined	
AWG (mm)	Length Ft. (m)
22 (0.8)	1,800 (549)
20 (1.0)	2,890 (881)
18 (1.2)	4,600 (1,402)
16 (1.5)	7,320 (2,231)
14 (1.8)	11,650 (3,551)

Table 4: Data Expansion Loop Wire Specifications

Do NOT connect POPITs to each other in series, or with a T-tap. Doing so may cause random missing POPIT conditions. Follow the procedure below to connect POPITs to one another in parallel. **Figure 3** *shows a typical configuration.*

1. Connect the positive (+) Data terminal from one POPIT to the positive (+) Data terminal on the next POPIT.

2. Connect the negative (-) Data terminal from one POPIT to the negative (-) Data terminal on the next POPIT.

3. Repeat steps 1 and 2 to connect all POPITs to the expansion loop. You don't need to wire the POPITs in any particular order on the loop. The switch setting on each POPIT assigns it a point number, regardless of its physical location.

Three inch clearance for tampered POPITs: Mount tampered POPIT Modules at least 3.0 in. (76 mm) apart to prevent the tamper magnets from interfering with each other.

3.1.4 Wiring Data Expansion Loops to POPEX Modules

There are two positive (+) and two negative (-) data expansion loop terminals on each POPEX module. Follow the procedure below to connect the data expansion loops to the D8125 POPEX Module (refer to *Figure 3*). Remember you can only connect a maximum of 119 POPITs to one D8125 on the D9412/D9112 and 67 for the D7412/D7212.

1. Connect the positive (+) Data terminal from the first POPIT on the data expansion loop to one of the D8125 module's positive (+) terminals.

2. Connect the negative (-) Data terminal from the first POPIT on the data expansion loop to one of the D8125 module's negative (-) terminals.

3.1.5 POPIT Sensor Loops

The number of normally-open and/or normally-closed detection devices each sensor loop can supervise is limited only by the resistance on the loop. Resistance on each sensor loop must be less than 100 Ω not including the End-of-Line Resistor.

Certain UL and NFPA applications may limit the number of detection devices. Consult the appropriate UL or NFPA standards.

Terminate each POPIT sensor loop with the 33 kΩ End-Of-Line resistor (D106F) included with each POPIT.

Bosch Security Systems recommends you use twisted-pair wire (six twists per foot) in all POPEX/POPIT installations for both the data expansion loop wiring and the POPIT sensor loops. Run wires away from AC sources to prevent AC induction. If you suspect a noisy environment, use shielded cable.

Figure 3: Connecting the D8125 POPEX to the 9000 Series Panel

1 - D8125 POPEX Module
2 - Switch block
3 - D9127 Sensor Loop
4 - 33 kΩ EOL resistor
    (P/N: 15-03130-002)
5 - Zone expansion loop
6 - Up to 119 POPITs
7 - On-board points
8 - Expansion zones

Note: Terminals 23 through 26 are available only on the D9412G, D9412, and D9112 Control Panels.
Use Terminals 3 and 9 for power and common when connecting a D8125 to a D7412G, D7412, D7212G, or D7212 Control Panel.

D9412G/D9412/D9112 only

D8125

Installation

3.1.6 POPIT Module Point Assignments

Six switches on each D8127 POPIT assign the module to a point number. D9127 ASIC POPITs have seven switches (0-6) that assign the module to a point number. POPIT switch settings are found in the *Point Assignment* section of the *D9412G/ D7412G Program Record Sheet* (P/N: 47488). See *Figure 6* .

✓ **IMPORTANT** *For the D9412/D9112, point numbers 73 to 127 and 193 to 247 must use D9127 POPITs. Points 9 to 72 and 129 to 192 may use either D8127 or D9127 POPITs. For the D7412/D7212, Points 9 to 72 may use either D8127 or D9127 POPITs; however, D9127 POPITs must be used for Points 73-75.*

3.1.6.1 Program Record Sheet

The first column on the program record sheet contains the switch settings for the POPITs. Switches are numbered 1 to 6, left to right on the D8127 POPIT. Switches are numbered 0 to 6, left to right on the D9127 POPIT. Set switches whose number appears in the setting to the ON position. Set switches with a dash (-) in the switch position to the OFF position (see *Figure 4*).

The second column contains the translation of the point number into the ZONEX format. See *Point User Flag* in the *Panel Wide Parameters* module of the *D9412G/D7412G Program Entry Guide* (P/N: 47775) for an explanation of this feature.

Default values are shown in ( ) and in **bold** — **D9412/D9112**
RADXPNTS Handler

Point Assignments (001 through 045)

POPIT Switch Setting	Trans *	Point #	Point Index	Area Assign	Debounce (1-15)	BFSK/ Relay	Point Text	
Note: D9412 uses points from 001 - 127, 129 - 247								
[		001	__ 3	1 ___	2 ___	1 ___	P1	FIRE
	200	002	__ 1	1 ___	2 ___	2 ___	P2	PANIC
	300	003	2 _5	1 ___	2 ___	3 ___	P3	DELAY
	400	004	1 _3	1 ___	2 ___	4 ___	P4	FOLLOW
	500	005	__ 7	1 ___	2 ___	5 ___	P5	INSTANT
	600	006	__ 7	1 ___	2 ___	6 ___	P6	INSTANT
	700	007	__ 7	1 ___	2 ___	7 ___	P7	INSTANT
	800	008	__ 7	1 ___	2 ___	8 ___	P8	INSTANT
0 1 2 3 4 5 6	101	009	__ __	1 ___	2 ___	1 ___	P9	
0 1 2 3 4 5 -	102	010	__ __	1 ___	2 ___	1 ___	P10	
0 1 2 3 4 - 6	103	011	__ __	1 ___	2 ___	1 ___	P11	
0 1 2 3 4 - -	104	012	__ __	1 ___	2 ___	1 ___	P12	
0 1 2 3 - 5 6	105	013	__ __	1 ___	2 ___	1 ___	P13	
0 1 2 3 - 5 -	106	014	__ __	1 ___	2 ___	1 ___	P14	
0 1 2 3 - - 6	107	015	__ __	1 ___	2 ___	1 ___	P15	

Figure 4: Program Record Sheet

The third column contains the point number as it is displayed at command centers.

The fourth column contains the point index. See the *Point Index Parameters* module in the *D9412G/D7412G Program Entry Guide* (P/N: 47775) for an explanation of the point index.

The fifth column of the *Program Record Sheet* shows the area the point is assigned to. The sixth column shows the Debounce Count for the point. See *Debounce Count* in the *Point Assignments* module in the *D9412G/D7412G Program Entry Guide* (P/ N: 47775).

The seventh column shows the BFSK report code. It is the point number reported for this point when the panel is using the BFSK format. The eighth column contains the text displayed at command centers for the point. The text is transmitted to the receiver when the panel is using the Modem IIIa[2] format.

3.1.6.2 POPIT Labels

Off-board points for the D9412 and D9112 are numbered 9 to 127 and 129 to 247 (D7412 and D7212 use Points 9 through 75 only). The D9412/D9112 reserves Points 128 and 248 for internal use. You must connect POPITs for Points 129 through 247 to expansion loops connected to POPEX #2.

Two sheets of peel-off POPIT labels are supplied with the D8125 POPEX module. Use the sheet marked *Bank1* for Points 9 to 127. Use the sheet marked *Bank2* for Points 129 to 247.

Each label has two parts. Place the smaller part, with just the point number on it, on the chip. Place the larger part with the switch settings on the base of the POPIT. Set the switches and cover the POPIT.

Do not program two POPITs for the same point number. After you program all the points, perform a service walk test. The Troubleshooting section of this document contains instructions for performing a service walk test. If a point does not test, check the programming for a duplicate address switch settings.

3.2 D9112B1/D7212B1

✓ **IMPORTANT** *Save the POPIT Label Sheets: The D8125 is packaged with two sets of POPIT label sheets. One is marked for use with the D9112B1. Save this set. You will use it later to label the POPITs.*

3.2.1 Mounting

Follow the procedures below to install the D8125 in the enclosure with the D9112B1/D7212B1.

1. Align the D8125 POPEX module with any of the four mounting locations in the enclosure. See *Figure 2*.

2. Use the screws provided with the module to secure it in the enclosure.

3.2.2 Wiring the D8125 to the D9112B1/D7212B1

Follow the procedures below to wire one or two D8125 modules. Refer to *Figure 4*.

⚠ **WARNING** *Remove all power (AC and Battery) before making any connections. Failure to do so may result in personal injury and/or equipment damage.*

3.2.2.1 Disconnecting the Battery and Transformer

1. Disconnect the battery by unhooking the positive (red) battery lead from the battery.

2. Unplug the transformer.

⚠ **WARNING** *Reversed polarity damages the D8125. Make sure you correctly wire the D8125 AUX and GND terminals to the control panel.*

3.2.2.2 Wiring Procedure

For Points 9 to 71 (or 9 to 48 for the D7212B1):

1. Connect the GND terminal of the D8125 POPEX module to Terminal 23 on the D9112B1 (use Terminal 9 on the D7212B1).

2. Connect the OUT terminal of the D8125 to ZONEX IN 1, Terminal 27 on the D9112B1/D7212B1.

3. Connect the IN terminal of the D8125 to ZONEX OUT 1, Terminal 28 on the D9112B1/D7212B1.

4. Connect the AUX terminal of the D8125 to Terminal 24 on the D9112B1 (use Terminal 3 on the D7212B1).

For Point 73 to 135 (D9112B1 only):

1. Connect the GND terminal of the D8125 POPEX module to Terminal 23 on the D9112B1.

2. Connect the IN terminal of the D8125 to ZONEX OUT 2, Terminal 26.

3. Connect the OUT terminal of the D8125 to ZONEX IN 2, Terminal 25 on the D9112B1.

4. Connect the AUX terminal of the D8125 to Terminal 24 on the D9112B1.

Do not connect more than one D8125 to ZONEX 1, Terminals 27 and 28, or ZONEX 2, Terminals 25 and 26.

Figure 5: D8125 Connections

3.2.3 Wiring POPITs to the Data Expansion Loop

You can connect up to 63 POPITs (40 maximum for a D7212B1) to each D8125 module. Use one 2-wire data expansion loop or distribute the POPITs on up to three loops. Setting DIP switches on the POPIT modules assigns them to point numbers. Refer to *Section 3.2.6 POPIT Module Point Assignments*.

Determine the required wire gauge for each data expansion loop using *Table 5*.

3.2.3.1 Combine data expansion loops

The maximum lengths shown in *Table 5* are for all data expansion loops that are connected to the same POPEX module.

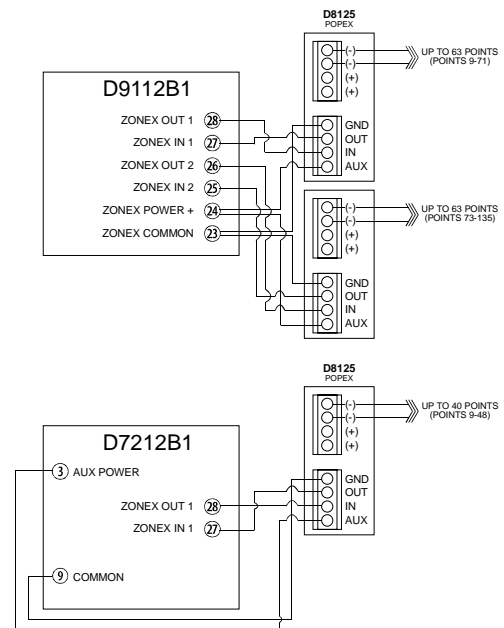Before installing the POPITs, make sure the resistance on the data expansion loop is no more than 60 Ω.

3.2.3.2   Wiring POPITs together

IMPORTANT ✓

Do NOT connect POPITs to each other in series, or with a T-tap. Doing so may cause random missing POPIT conditions. Follow the procedure below to connect POPITs to one another in parallel. Figure 5 shows a typical configuration.

1. Connect the positive (+) Data terminal from one POPIT to the positive (+) Data terminal on the next POPIT.

2. Connect the negative (-) Data terminal from one POPIT to the negative (-) Data terminal on the next POPIT.

3. Repeat steps 1 and 2 to connect all POPITs to the expansion loop. You don't need to wire the POPITs in any particular order on the loop. The switch setting on each POPIT assigns it a point number, regardless of its physical location.

Maximum Length of All Data Expansion Loops Combined	
AWG (mm)	Length Ft. (m)
22 (0.8)	1,800 (549)
20 (1.0)	2,890 (881)
18 (1.2)	4,600 (1,402)
16 (1.5)	7,320 (2,231)
14 (1.8)	11,650 (3,551)

Table 5: Data Expansion Loop Wire Specifications

3.2.3.3   Three inch clearance for tampered POPITs

Mount tampered POPIT modules at least 3.0 in. (76 mm) apart to prevent the tamper magnets from interfering with each other.
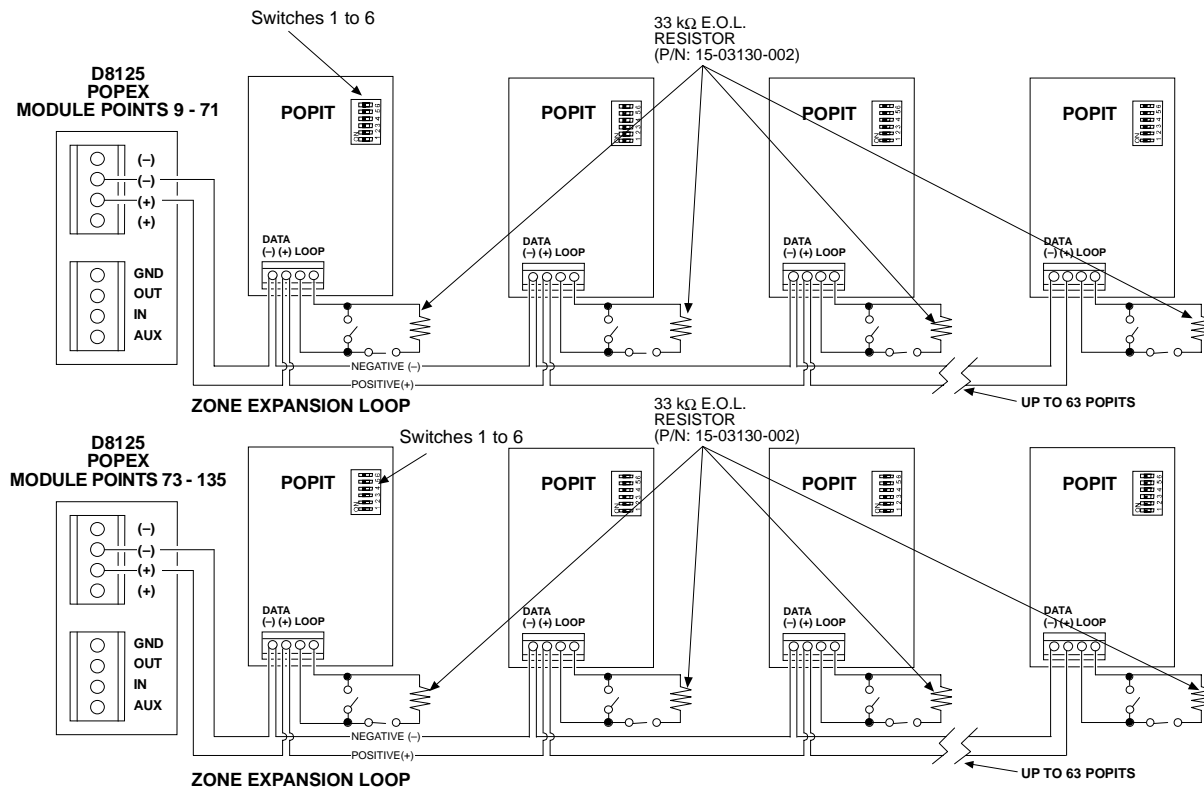
Figure 6: Typical Expansion Loop/POPIT Configuration

3.2.4   Wiring Data Expansion Loops to POPEX Modules

There are two positive (+) and two negative (-) data expansion loop terminals on each POPEX module. Follow the procedure below to connect the data expansion loops to the D8125 POPEX Module. See *Figure 5*. Remember, you can only connect a maximum of 63 POPITs (40 for a D7212B1) to one D8125,

1. Connect the positive (+) Data terminal from the first POPIT on the data expansion loop to one of the D8125 module's positive (+) terminals.

2. Connect the negative (-) Data terminal from the first POPIT on the data expansion loop to one of the D8125 module's negative (-) terminals.

3.2.5   POPIT Sensor Loops

The number of normally-open and/or normally-closed detection devices each sensor loop can supervise is limited only by the resistance on the loop. Resistance on each sensor loop must be less than 100 Ohms with the detection devices connected.

Certain UL and NFPA applications may limit the number of detection devices. Consult the appropriate UL or NFPA standards.

POPITs detect open, shorted, normal, and grounded circuit conditions on their sensor loops. They transmit the condition of their loops to the D9112B1/D7212B1. A ground on the sensor loop reports as an open condition. Each POPIT is programmed and transmits to the D9112B1/D7212B1 separately.

Terminate each POPIT sensor loop with the 33 kΩ end-of-line resistor (Bosch Security Systems D106F) included with each POPIT.

Bosch Security Systems recommends you use twisted-pair wire in all POPEX/POPIT installations for both the data expansion loop wiring and the POPIT sensor loops. Run wires away from AC sources to prevent AC induction. If you suspect a noisy environment, use shielded cable.

3.2.6   POPIT Module Point Assignments

Six switches on each POPIT assign the module to a point number. POPIT switch settings are found in the *Point Assignment* section of the *D9112B Program Record Sheet* (P/N: 74-06100-000). Refer to *Figure 7*.

3.2.6.1   D9112B Program Record Sheet

The first column on the program record sheet contains the switch settings for the POPITs. Switches are numbered 0 to 6, left to right. Set switches whose number appears in the setting to the ON position. Set switches with a dash (-) in the switch position in the setting to the OFF position. See *Figure 7*.

The second column contains the translation of the point number into the D8112 ZONEX format. See *Point User Flag* in the *Panel Wide Parameters* module of the *D9412G/D7412G Program Entry Guide* (P/N: 47775) for an explanation of this feature.

The third column contains the point number as it is displayed at command centers. The fourth column contains the point index. See the *Point Index Parameters* module in the *D9412G/D7412G Program Entry Guide* (P/N: 47775) for an explanation of the point index.

The fifth column shows the area the point is assigned to. The sixth column shows the Debounce Count for the point. See *Debounce Count* in the *Point Assignments* module in the *D9412G/D7412G Program Entry Guide* (P/N: 47775).

The seventh columns shows the BFSK report code. It is the point number reported for this point when the panel is using the BFSK format. The eighth column contains the text displayed at command centers for the point. The text is transmitted to the receiver when the panel is using the Modem II format.

Point Assignments

POPIT Switch Setting	Trans *	Point #	Point Index	Area Assign	Debounce (1-15)	BFSK/ Relay	Point Text
[		001	__ 3	1 ___	2 ___	1 ___	P 1 FIRE
	200	002	__ 1	1 ___	2 ___	2 ___	P 2 PANIC
	300	003	2 _5	1 ___	2 ___	3 ___	P 3 DELAY
	400	004	1 _3	1 ___	2 ___	4 ___	P 4 FOLLOW
	500	005	__ 7	1 ___	2 ___	5 ___	P 5 INSTANT
	600	006	__ 7	1 ___	2 ___	6 ___	P 6 INSTANT
	700	007	__ 7	1 ___	2 ___	7 ___	P 7 INSTANT
	800	008	__ 7	1 ___	2 ___	8 ___	P 8 INSTANT
0 1 2 3 4 5 6	101	009	__ __	1 ___	2 ___	1 ___	P 9

Figure 7: D9112B1 Program Record Sheet

3.2.6.2   POPIT Labels

Off-board points are numbered 9 to 71 (9 to 48 for D7212B1) and 73 to 135. The D9112B1 reserves Points 72 and 136 for internal use. You must connect POPITs for Points 73 to 135 to expansion loops connected to POPEX #2.

Four sheets of peel-off POPIT labels are supplied with the D8125 POPEX module.

To place the POPIT Labels in using a 9000 Series Control Panel, use the sheet marked *POPIT Labels -- D9412*, either *Bank One (Points 9-128)* or *Bank Two (Points 129-248)* depending on the points used, and refer to *Figure 8*.
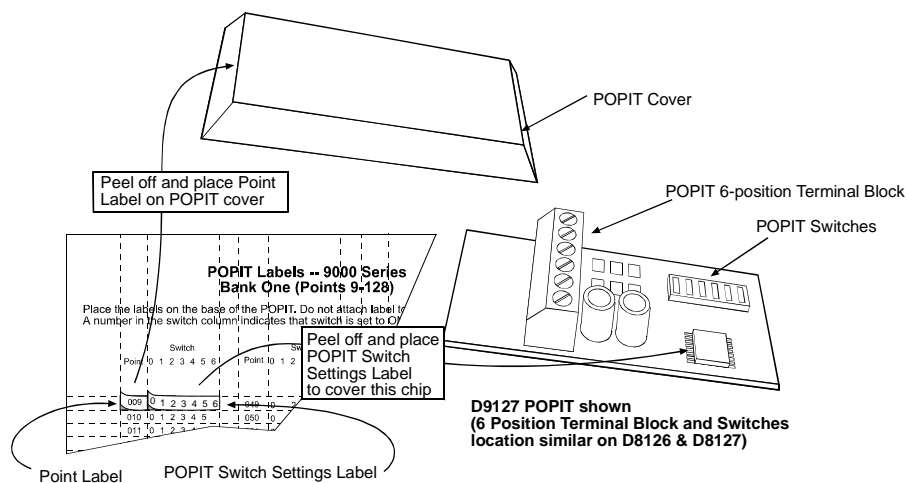
Installation

Figure 8: POPIT Label Placement for 9000 Series Control Panels

To place the POPIT Labels in using the D7212B1 or D9112B1, use the labels with the part number 79-04252-000 and either the sheet marked *Vertical Grid for POPEX #1* for points 9 to 71 or the sheet marked *Vertical Grid for POPEX #2* for Points 73 to 135. Refer to *Figure 9.*
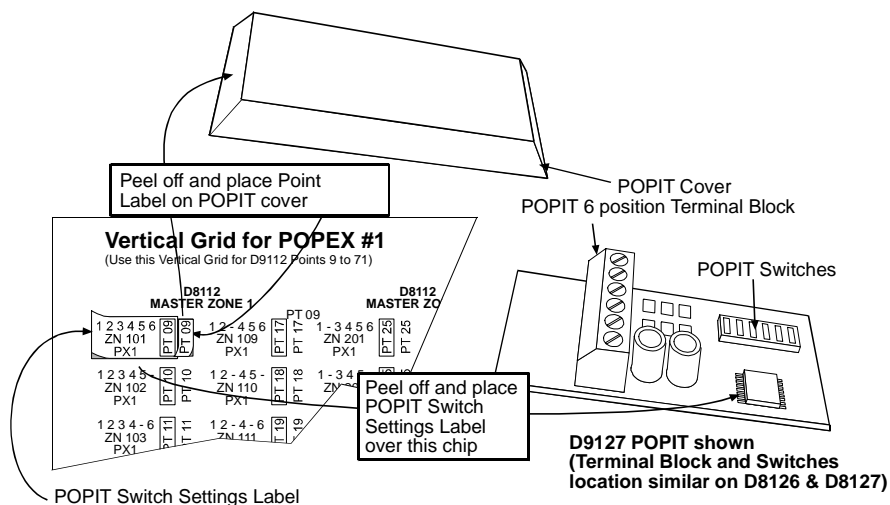

Figure 9: POPIT Label Placement for D9112B1/D7212B1 Control Panels

Each label has two parts. Place the smaller part, with just the point number on it, on the POPIT terminal block as shown in *Figure 8* and *Figure 9.* Place the larger part with the switch settings on the POPIT cover. Set the switches and cover the POPIT.

Do not program two POPITs for the same point number. After you program all the points, perform a walk test. The *Security System Owner's Manual* (P/N: 74-06633-000) and the *Security System User's Guide* (P/N: 71-06141-000) contain instructions for performing a walk test. If a point does not test, check the programming for a duplicated address.

3.3 D8112G1/G2

The POPEX Module is installed in the D8112G1/G2 enclosure, and is connected to the control panel with a four-conductor cable. For proper POPEX installation, follow the steps below.

3.3.1 Mounting to the panel

1. Align the D8125 POPEX Module with any of the four mounting locations (see *Figure 10.*). Fasten the module in place with the three mounting screws provided.

2. Remove AC and DC power from the D8112G1/G2 Control Panel.

3.3.2 Wiring to the panel

⚠️ **WARNING**
Remove all power (AC and Battery) before making any connections. Failure to do so may result in personal injury and/or equipment damage.

3.3.2.1 Disconnecting the Battery and Transformer

1. Disconnect the battery by unhooking the positive (red) battery lead from the battery.

2. Unplug the transformer.

⚠️ **WARNING**
Reversed polarity damages the D8125. Make sure you correctly wire the D8125 AUX and GND terminals to the control panel.

Figure 10: D8112G1/G2 POPEX Installation

Horizontal Mounting Locations

Vertical Mounting Locations

(Reserve for D128 Module)

3.3.2.2 Wiring Procedure

3. Connect D8112G1/G2 Terminal 4 to the POPEX **GND** terminal (see *Figure 11*).

4. Connect D8112G1/G2 Terminal 3 to the POPEX **AUX** terminal.

5. Connect D8112G1/G2 Terminal 31 to the POPEX **IN** terminal.

6. Installing only *one* POPEX:

   Horizontal Mode: Connect the POPEX **OUT** terminal to the D8112G1/G2 Terminal 28; then go to step 8.

   Vertical Mode: Connect the POPEX **OUT** terminal to the D8112G1/G2 Terminal 27 or 28; then go to step 8. If an Independent Zone Control (IZC) (D279 or D268/D269) is used, it is recommended that the POPEX be connected to Terminal 27 on the D8112G2 and the IZC be attached to Zone 1, 2, 3, or 4. This will allow you to maximize your COMEX ID Groups 6-8. For information concerning COMEX refer to the *COMEX Program Entry Guide* (P/N: 74-05073-000).

Note: *If the vertical mode is used, POPEX #2 can be installed without installing POPEX #1.*

7. Installing *two* POPEX Modules (in the horizontal **or** vertical mode):

   Repeat steps 3 through 5 for POPEX #2; then connect D8112G terminal 27 to POPEX #2 **OUT** terminal. **Important:** Step 7 is for POPEX #2 only!

⚠️ **WARNING**
Before powering up the D8112, check terminals 3 and 4 for correct wiring. Reverse polarity WILL damage the POPEX module.
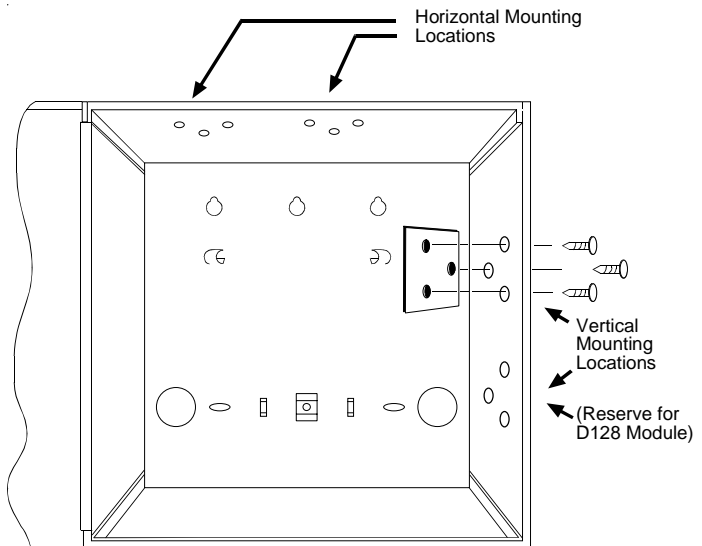
8. Reconnect AC and DC power to the D811G1/G2.

Installation

3.3.3   POPIT Module Installation

3.3.3.1   Wiring POPITs to the Expansion Loop

The *zone expansion loop* is a two-conductor wire interconnecting all POPIT Modules assigned to a single POPEX (see *Figure 11*). **Up to three zone expansion loops can be connected to one D8125 when using shielded or unshielded cable.**

The required wire gauge for the zone expansion loop(s) (up to three max.) can be determined using *Table 6*. When using **unshielded** cable each zone expansion loop can be up to the distance shown in *Table 6*. For **shielded** cable the *combined total length* of all zone expansion loops cannot be more than shown in *Table 5*.

If it is suspected that AC induction may be a problem, use shielded cable and make sure the POPEX module is grounded to Terminal 4 on the D8112G1/G2. The shield drain wire should only be attached to ground at Terminal 4 (there should only be one ground on the shield). Any splices along the zone expansion loop must have the drain wires soldered together and isolated from ground.

Hint: *AC induction or RF interference may occur when a ZONEX system is installed in or near the following:*

- Radio station transmitter site or other broadcast station
- Ham radio transmitter site
- Computer network system
- Heavy machinery and motors
- PBX telephone system
- Welding shop
- High voltage electrical equipment or transformers
- Public service (police, fire department, etc.) using radio communications
- When wires must be run close to electrical lines, fluorescent fixtures or telephone cabling

POPIT Modules do not need to be wired in any particular order on the zone expansion loop. A switch setting on each POPIT (see **POPIT Module Assignments**) identifies the point of protection, regardless of its physical location. D8126T/D8127T POPIT modules must be mounted at least three inches apart. This will prevent the tamper magnets from interfering with each other.

The POPIT modules should be connected to one another in parallel (see **Figure 10***).*

Remember: Up to 63 POPIT modules can be connected to one POPEX module.

1. Connect the positive (+) Data terminal from one POPIT to the positive (+) Data terminal on the next POPIT.
2. Follow step 1 above to connect all POPITs on the same zone expansion loop.
3. Connect the negative (-) Data terminal from one POPIT to the negative (-) Data terminal on the next POPIT.
4. Follow step 3 above to connect all POPITs on the same zone expansion loop.

Maximum Length of Each Zone Expansion Loop			
AWG (mm)	25 POPITs Ft. (m)	40 POPITs Ft. (m)	63 POPITs Ft. (m)
26 (0.02)	900 (274)	600 (183)	400 (122)
24 (0.5)	1,700 (518)	1,000 (305)	600 (183)
22 (0.8)	2,500 (762)	1,500 (457)	900 (274)
20 (1.0)	3,800 (1,158)	2,400 (732)	1,500 (457)
18 (1.2)	6,400 (1,951)	4,000 (1,219)	2,500 (762)
16 (1.5)	9,600 (2,926)	6,200 (1,890)	4,000 (1,219)
14 (1.8)	16,700 (5,090)	10,000 (3,048)	6,000 (1,829)

Table 6: Zone Expansion Loop Wiring Specifications

Figure 11: D8112G1/G2 POPEX and POPIT Module Installation

3.3.3.2 Wiring POPITs to a POPEX Module

Two positive (+) and two negative (-) zone expansion loop terminals are provided on each POPEX Module for wiring convenience.

> **IMPORTANT**
> *When using two POPEX Modules, each module must have its own expansion loop (e.g., POPIT Modules assigned to POPEX #1 cannot be placed on the POPEX #2 Zone Expansion Loop). Limit your zone expansion loop coming back to the POPEX module, to a maximum of three data runs.*

Note: *Up to two POPEX modules can be connected to one D8112G1/G2 Control Panel.*

When connecting the zone expansion loop to the POPEX Module, follow the steps below:

1. Connect the positive (+) wire from the zone expansion loop to the POPEX Module positive (+) loop input.
2. Connect the negative (-) wire from the zone expansion loop to the POPEX Module negative (-) loop input.

3.3.3.3 Wiring POPIT Sensor Loop

Each POPIT Module can supervise an unlimited number of detection devices on its two-wire sensor loop. Each POPIT can monitor normally-open devices wired in parallel, normally-closed devices wired in series, or a combination of devices wired in parallel and series. Open, closed, and normal circuit conditions can be detected and transmitted to the D8112G. A system cannot be armed normally if any of the sensor loops are faulted. (A system with loop faults can be *force-armed*, however.)

All POPIT sensor loops must be terminated with a 33 kΩ End-Of-Line resistor (Bosch Security Systems Model D106F) supplied with each POPIT module.

> **IMPORTANT**
> *The maximum length of 22 AWG (0.8 mm) cable used for each sensor loop is determined by voltage drop. Bosch Security Systems recommends the use of twisted-pair wire in all POPEX-POPIT installations. If a noisy or unstable environment is suspected, or if a long sensor loop wire run is used, the cable must be shielded against AC induction. Refer to the AC induction hint in Wiring POPITs to the Expansion Loop in this section for more information.*

3.3.4 POPIT Module Assignments

Six switches provided on each POPIT assign the module to a D8112G1/G2 master zone. These switches provide a unique expansion point identification for each POPIT Module. In *Table 7* and *Table 8*, numbers indicate which switches must be placed in the ON position for each POPIT. Switches indicated by a dash (-) must be placed in the OFF position.

> **Programming Note**
> *The points of protection must be assigned sequentially. Example: If 12 points of protection are assigned to Master Zone 4, the 12 POPITs must have switch settings corresponding to I.D. Codes 401 through 412.*

3.3.5 POPIT Labels

Four sets of POPIT I.D. labels (similar to *Table 4* and *Table 5*) are provided with each POPEX Module. Each set is associated with either POPEX #1 (PX 1) or POPEX #2 (PX 2), and with either the horizontal or vertical mode. In every POPEX/POPIT installation, at least two sets of these labels are NOT used. For example, when installing a vertical mode ZONEX system, all horizontal mode labels should be discarded. If the ZONEX system uses only one POPEX Module, discard all the POPEX #2 labels.

> **IMPORTANT**
> *Do NOT mix the horizontal and vertical labels. The system can be programmed for only one mode. Do NOT use both types of labels in the same ZONEX system. A label should be attached to each POPIT Module when the switches are set, thereby preventing duplicate switch settings. Do NOT place labels on POPIT covers, attach them directly to the circuit board. This will help to prevent points from being labeled or set incorrectly.*

Here is an example of a POPIT display:

When an event occurs, the POPIT sends a signal to the control panel via the POPEX Module. The D8112G1/G2 decodes the event signal, displays an event status code, and initiates the appropriate system response. The D1252A Command Center can be programmed to display two types of information: programmable and standard. Instructions for programming D1252A Command Center displays are found in Program Items 105 through 120 in the *Omegalarm D8112:MAIN Program Entry Guide* and the *Omegalarm D8112:PTEXT Program Entry Guide*.

3.3.5.1 POPEX/POPIT Configurations

Two configurations, *horizontal* (*Table 7*) and *vertical* (*Table 8*) are used to *organize* points of protection. Both modes provide the ZONEX system with the maximum of 126 points of protection. The two Zone Expansion terminals are typically used to *group* POPITs in a ZONEX system.

The selection of the mode is significant when only *one* POPEX Module is installed. With one POPEX module, an application which requires *no more than eight* points of protection in *as many as eight* zones can use the *horizontal* mode (*Table 7*). An application which requires *more than eight* points of protection in *no more than four* zones can use the *vertical* mode (*Table 8*) displays, refer to the *D1252A Security System User's Guide* (P/N: 71-04415-000). If *two* POPEX Modules are installed, all points of protection are available. Some of the differences between the modes are listed below:

In the **horizontal** mode with **one** POPEX Module:

- All eight zones of the D8112G1/G2 can be used in the ZONEX system.
- Up to eight POPITs can be assigned to D8112G1/G2 Master Zones 1-7.
- A maximum of seven POPITs can be assigned to D8112G1/G2 Master Zone 8.
- A maximum of 63 POPITs can be installed.

In the **horizontal** mode with **two** POPEX Modules:

- Up to 16 POPITs can be assigned to D8112G1/G2 Master Zones 1-7.
- A maximum of 14 POPITs can be assigned to D8112G1/G2 Master Zone 8 (7 POPITs on POPEX #1 and 7 POPITs on POPEX #2).
- POPEX #1 assigns a maximum of 8 POPITs to a D8112G1/G2 zone (ex., Points 101-108).
- POPEX #2 assigns an additional 8 POPITs maximum, to a D8112G1/G2 zone (ex., Points 109-116).
- A maximum of 126 POPITs can be installed.

ZN101S2

Memory of Previous Events: The D1252A displays a memory code to annunciate events which have taken place since the system was last armed.

1	=	Alarm Memory
2	=	Trouble Memory
3	=	Alarm and Trouble Memory
4	=	Missing Memory
5	=	Alarm Memory and Missing
6	=	Trouble Memory and Missing
7	=	Alarm & Trouble Memory Missing

Current State of Sensor Loop

O	=	Sensor loop electrically open or grounded
S	=	Sensor loop electrically shorted
(blank)	=	Sensor loop electrically normal
M	=	Missing POPIT Module (POPIT is programmed to be in the system, but is not responding to polling)
X	=	Extra POPIT Module (POPIT is responding to polling, but is not programmed to be in the system

POPIT Expansion Point: This is the identification of the Module transmitting the event (ex., point 01).

Master Zone Number: The D9112G master zone number assigned to the POPIT (ex. master zone 100).

Zone: This identifies the display as a POPIT status display.

Figure 12: Explanation of POPIT Display

Installation

In the **vertical** mode with **one** POPEX Module:

- Only four zones of the D8112G1/G2 can be used in the ZONEX system.
- Zones must be used in groups (Zones 1 through 4, or Zones 5 through 8).
- Up to 16 POPITs can be assigned to D8112G1/G2 master Zones 1-3 or 5-7.
- A maximum of 15 POPITs can be assigned to D8112G1/G2 Zones 4 and 8.
- A maximum of 63 POPITs can be installed.

In the **vertical** mode with **two** POPEX Modules:

- Up to 16 POPITs can be assigned to D8112G1/G2 Master Zones 1-3 or 5-7.
- POPEX #1 assigns a maximum of 16 POPITs to D8112G1/G2 zones 1 through 3.
- POPEX #2 assigns a maximum of 16 POPITs to D8112G1/G2 Zones 5 through 7.
- Only 15 POPITs can be assigned to D8112G1/G2 Zones 4 and 8.
- A maximum of 126 POPITs can be installed.

Table 7 and *Table 8* display all POPIT assignment switch settings for both the horizontal and vertical modes (e.g., 1 2 3 4 - -). Numbers 1 through 6 indicate switches 1-6 on the POPIT Module. The dash (-) indicates a switch is in the OFF or *open* position. These switches assign each point of protection to a master zone (refer to *Section 3.2.6 POPIT Module Point Assignments* for switch settings). *Table 7* and *Table 8* indicate the maximum number of POPITs that can be assigned to each D8112G1/G2 master zone, with one and two POPEX Modules.

Below the switch setting is the I.D. code (e.g., ZN 104) for each POPIT. The master zone and expansion point (point of protection) are used to cross-reference the POPIT Module to an event displayed on the D1252A Command Center. For example, in the I.D. code *ZN104*, "ZN1" indicates that the POPIT is assigned to master zone 100 of the D8112G1/G2 Control Panel, and "04" indicates that the POPIT reports as expansion point #4.

ZN104

Point of Protection (assigned to Master Zone)
Master Zone

	HORIZONTAL MODE – POPEX AND POPIT MODULES							
	D8112 MASTER ZONE 1	D8112 MASTER ZONE 2	D8112 MASTER ZONE 3	D8112 MASTER ZONE 4	D8112 MASTER ZONE 5	D8112 MASTER ZONE 6	D8112 MASTER ZONE 7	D8112 MASTER ZONE 8
POPEX 1 (D8112G1/G2 TERMINAL 28)	1 2 3 4 5 6 ZN 101	1 2 - 4 5 6 ZN 201	1 - 3 4 5 6 ZN 301	1 - - 4 5 6 ZN 401	- 2 3 4 5 6 ZN 501	- 2 - 4 5 6 ZN 601	- - 3 4 5 6 ZN 701	- - - 4 5 6 ZN 801
	1 2 3 4 5 - ZN 102	1 2 - 4 5 - ZN 202	1 - 3 4 5 - ZN 302	1 - - 4 5 - ZN 402	- 2 3 4 5 - ZN 502	- 2 - 4 5 - ZN 602	- - 3 4 5 - ZN 702	- - - 4 5 - ZN 802
	1 2 3 4 - 6 ZN 103	1 2 - 4 - 6 ZN 203	1 - 3 4 - 6 ZN 303	1 - - 4 - 6 ZN 403	- 2 3 4 - 6 ZN 503	- 2 - 4 - 6 ZN 603	- - 3 4 - 6 ZN 703	- - - 4 - 6 ZN 803
	1 2 3 4 - - ZN 104	1 2 - 4 - - ZN 204	1 - 3 4 - - ZN 304	1 - - 4 - - ZN 404	- 2 3 4 - - ZN 504	- 2 - 4 - - ZN 604	- - 3 4 - - ZN 704	- - - 4 - - ZN 804
	1 2 3 - 5 6 ZN 105	1 2 - - 5 6 ZN 205	1 - 3 - 5 6 ZN 305	1 - - - 5 6 ZN 405	- 2 3 - 5 6 ZN 505	- 2 - - 5 6 ZN 605	- - 3 - 5 6 ZN 705	- - - - 5 6 ZN 805
	1 2 3 - 5 - ZN 106	1 2 - - 5 - ZN 206	1 - 3 - 5 - ZN 306	1 - - - 5 - ZN 406	- 2 3 - 5 - ZN 506	- 2 - - 5 - ZN 606	- - 3 - 5 - ZN 706	- - - - 5 - ZN 806
	1 2 3 - - 6 ZN 107	1 2 - - - 6 ZN 207	1 - 3 - - 6 ZN 307	1 - - - - 6 ZN 407	- 2 3 - - 6 ZN 507	- 2 - - - 6 ZN 607	- - 3 - - 6 ZN 707	- - - - - 6 ZN 807
	1 2 3 - - - ZN 108	1 2 - - - - ZN 208	1 - 3 - - - ZN 308	1 - - - - - ZN 408	- 2 3 - - - ZN 508	- 2 - - - - ZN 608	- - 3 - - - ZN 708	NOT USED

	D8112 MASTER ZONE 1	D8112 MASTER ZONE 2	D8112 MASTER ZONE 3	D8112 MASTER ZONE 4	D8112 MASTER ZONE 5	D8112 MASTER ZONE 6	D8112 MASTER ZONE 7	D8112 MASTER ZONE 8
POPEX 1 (D8112G1/G2 TERMINAL 29)	1 2 3 4 5 6 ZN 109	1 2 - 4 5 6 ZN 209	1 - 3 4 5 6 ZN 309	1 - - 4 5 6 ZN 409	- 2 3 4 5 6 ZN 509	- 2 - 4 5 6 ZN 609	- - 3 4 5 6 ZN 709	- - - 4 5 6 ZN 809
	1 2 3 4 5 - ZN 110	1 2 - 4 5 - ZN 210	1 - 3 4 5 - ZN 310	1 - - 4 5 - ZN 410	- 2 3 4 5 - ZN 510	- 2 - 4 5 - ZN 610	- - 3 4 5 - ZN 710	- - - 4 5 - ZN 810
	1 2 3 4 - 6 ZN 111	1 2 - 4 - 6 ZN 211	1 - 3 4 - 6 ZN 311	1 - - 4 - 6 ZN 411	- 2 3 4 - 6 ZN 511	- 2 - 4 - 6 ZN 611	- - 3 4 - 6 ZN 711	- - - 4 – 6 ZN 811
	1 2 3 4 - - ZN 112	1 2 - 4 - - ZN 212	1 - 3 4 - - ZN 312	1 - - 4 - - ZN 412	- 2 3 4 - - ZN 512	- 2 - 4 - - ZN 612	- - 3 4 - - ZN 712	- - - 4 - - ZN 812
	1 2 3 - 5 6 ZN 113	1 2 - - 5 6 ZN 213	1 - 3 - 5 6 ZN 313	1 - - - 5 6 ZN 413	- 2 3 - 5 6 ZN 513	- 2 - - 5 6 ZN 613	- - 3 - 5 6 ZN 713	- - - - 5 6 ZN 813
	1 2 3 – 5 - ZN 114	1 2 - - 5 - ZN 214	1 - 3 - 5 - ZN 314	1 - - - 5 - ZN 414	- 2 3 - 5 - ZN 514	- 2 - - 5 - ZN 614	- - 3 - 5 - ZN 714	- - - - 5 - ZN 814
	1 2 3 - - 6 ZN 115	1 2 - - - 6 ZN 215	1 - 3 - - 6 ZN 315	1 - - - - 6 ZN 415	- 2 3 - - 6 ZN 515	- 2 - - - 6 ZN 615	- - 3 - - 6 ZN 715	- - - - - 6 ZN 815
	1 2 3 - - - ZN 116	1 2 - - - - ZN 216	1 - 3 - - - ZN 316	1 - - - - - ZN 416	- 2 3 - - - ZN 516	- 2 - - - - ZN 616	- - 3 - - - ZN 716	NOT USED

POPEX #1 (D8112G1/G2 TERM 28)	8	8	8	8	8	8	8	7	63
POPEX #1 (D8112G1/G2 TERM 28)	8	8	8	8	8	8	8	7	63

Table 7: D8112G1/G2 Horizontal Mode - POPEX and POPIT Modules

VERTICAL MODE – POPEX AND POPIT MODULES							
POPEX 1 (D8112G1/G2 TERMINAL 28)				POPEX 2 (D8112G1/G2 TERMINAL 27)			
D8112 MASTER ZONE 1	D8112 MASTER ZONE 2	D8112 MASTER ZONE 3	D8112 MASTER ZONE 4	D8112 MASTER ZONE 5	D8112 MASTER ZONE 6	D8112 MASTER ZONE 7	D8112 MASTER ZONE 8
1 2 3 4 5 6 ZN 101	1 - 3 4 5 6 ZN 201	- 2 3 4 5 6 ZN 301	- - 3 4 5 6 ZN 401	1 2 3 4 5 6 ZN 501	1 - 3 4 5 6 ZN 601	- 2 3 4 5 6 ZN 701	- - 3 4 5 6 ZN 801
1 2 3 4 5 - ZN 102	1 - 3 4 5 - ZN 202	- 2 3 4 5 - ZN 302	- - 3 4 5 - ZN 402	1 2 3 4 5 - ZN 502	1 - 3 4 5 - ZN 602	- 2 3 4 5 - ZN 702	- - 3 4 5 - ZN 802
1 2 3 4 - 6 ZN 103	1 - 3 4 - 6 ZN 203	- 2 3 4 - 6 ZN 303	- - 3 4 - 6 ZN 403	1 2 3 4 - 6 ZN 503	1 - 3 4 - 6 ZN 603	- 2 3 4 - 6 ZN 703	- - 3 4 - 6 ZN 803
1 2 3 4 - - ZN 104	1 - 3 4 - - ZN 204	- 2 3 4 - - ZN 304	- - 3 4 - - ZN 404	1 2 3 4 - - ZN 504	1 - 3 4 - - ZN 604	- 2 3 4 - - ZN 704	- - 3 4 - - ZN 804
1 2 3 - 5 6 ZN 105	1 - 3 - 5 6 ZN 205	- 2 3 - 5 6 ZN 305	- - 3 - 5 6 ZN 405	1 2 3 - 5 6 ZN 505	1 - 3 - 5 6 ZN 605	- 2 3 - 5 6 ZN 705	- - 3 - 5 6 ZN 805
1 2 3 - 5 - ZN 106	1 - 3 - 5 - ZN 206	- 2 3 - 5 - ZN 306	- - 3 - 5 - ZN 406	1 2 3 - 5 - ZN 506	1 - 3 - 5 - ZN 606	- 2 3 - 5 - ZN 706	- - 3 - 5 - ZN 806
1 2 3 - - 6 ZN 107	1 - 3 - - 6 ZN 207	- 2 3 - - 6 ZN 307	- - 3 - - 6 ZN 407	1 2 3 - - 6 ZN 507	1 - 3 - - 6 ZN 607	- 2 3 - - 6 ZN 707	- - 3 - - 6 ZN 807
1 2 3 - - - ZN 108	1 - 3 - - - ZN 208	- 2 3 - - - ZN 308	- - 3 - - - ZN 408	1 2 3 - - - ZN 508	1 - 3 - - - ZN 608	- 2 3 - - - ZN 708	- - 3 - - - ZN 808
1 2 - 4 5 6 ZN 109	1 - - 4 5 6 ZN 209	- 2 - 4 5 6 ZN 309	- - - 4 5 6 ZN 409	1 2 - 4 5 6 ZN 509	1 - - 4 5 6 ZN 609	- 2 - 4 5 6 ZN 709	- - - 4 5 6 ZN 809
1 2 - 4 5 - ZN 110	1 - - 4 5 - ZN 210	- 2 - 4 5 - ZN 310	- - - 4 5 - ZN 410	1 2 - 4 5 - ZN 510	1 - - 4 5 - ZN 610	- 2 - 4 5 - ZN 710	- - - 4 5 - ZN 810
1 2 - 4 - 6 ZN 111	1 - - 4 - 6 ZN 211	- 2 - 4 - 6 ZN 311	- - - 4 - 6 ZN 411	1 2 - 4 - 6 ZN 511	1 - - 4 - 6 ZN 611	- 2 - 4 - 6 ZN 711	- - - 4 - 6 ZN 811
1 2 - 4 - - ZN 112	1 - - 4 - - ZN 212	- 2 - 4 - - ZN 312	- - - 4 - - ZN 412	1 2 - 4 - - ZN 512	1 - - 4 - - ZN 612	- 2 - 4 - - ZN 712	- - - 4 - - ZN 812
1 2 - - 5 6 ZN 113	1 - - - 5 6 ZN 213	- 2 - - 5 6 ZN 313	- - - - 5 6 ZN 413	1 2 - - 5 6 ZN 513	1 - - - 5 6 ZN 613	- 2 - - 5 6 ZN 713	- - - - 5 6 ZN 813
1 2 - - 5 - ZN 114	1 - - - 5 - ZN 214	- 2 - - 5 - ZN 314	- - - - 5 - ZN 414	1 2 - - 5 - ZN 514	1 - - - 5 - ZN 614	- 2 - - 5 - ZN 714	- - - - 5 - ZN 814
1 2 - - - 6 ZN 115	1 - - - - 6 ZN 215	- 2 - - - 6 ZN 315	- - - - - 6 ZN 415	1 2 - - - 6 ZN 515	1 - - - - 6 ZN 615	- 2 - - - 6 ZN 715	- - - - - 6 ZN 815
1 2 - - - - ZN 116	1 - - - - - ZN 216	- 2 - - - - ZN 316	NOT USED	1 2 - - - - ZN 516	1 - - - - 6 ZN 616	- 2 - - - - ZN 716	NOT USED

POPEX #1 (D8112G1/G2 TERM 28)	16	16	16	16	N/A	N/A	N/A	N/A	63
POPEX #1 (D8112G1/G2 TERM 27)	N/A	N/A	N/A	N/A	16	16	16	16	63

Table 8: D8112G1/G2 Vertical Mode - POPEX and POPIT Modules

3.3.6   POPIT Displays

The status of each POPIT Module is transmitted to the D8112G1/G2 Control Panel. The status is recorded and held in the D8112G1/G2 memory buffer until the system is armed and the exit delay time has expired. The D1252A Command Center displays both the current status and the event memory with a special code.

3.3.6.1   Alarm Condition Displays

When an event occurs in the system (an open or shorted loop) that the D8112G1/G2 interprets as an alarm, the system initiates an alarm response, and the D1252A sequences through the following displays:

ALARM WATERFLO

Programmed display* (8112:MAIN)

Standard D8112 alarm display.

ZN102S1 RISER#2

Programmed display* (8112:TEXT)

Standard POPIT status code for POPIT #102

************** (Row of stars)

* This programmed display will appear for all points on this master zone.

3.3.6.2   Fault Condition Displays

When a loop fault occurs, the following displays can appear on the D1252A (rows of stars separate displays pertaining to individual points of protection):

FAULTED DOORS

Programmed display* (8112:MAIN)

Standard display indicating a faulted condition exists on this zone.

ZN204O FRONT

Programmed display* (8112:PTEXT)

Standard POPIT status code for POPIT #204

************** (Row of stars)

* This programmed display will appear for all points on this master zone.

3.3.6.3   Trouble Condition Displays

When a loop trouble occurs, the following displays can appear on the D1252A (rows of stars separate displays pertaining to individual points of protection):

SERVICE WINDOWS

Programmed display* (8112:MAIN)

Standard display indicating a troubled zone.

ZN301S2 KITCHEN

Programmed display* (8112:PTEXT)

Standard POPIT status code for POPIT #301

************** (Row of stars)

NOT READY TO ARM   **Standard** display indicating an abnormal loop condition

* This programmed display will appear for all points on this master zone.

3.3.7   Central Station Reports

3.3.7.1   Pulse and BFSK Reporting

When a POPIT initiates an alarm or trouble report, the D8112G1/G2 transmits the reports indicating the D8112 master zone tripped. Two POPIT reports to the central station (in addition to alarm, trouble, and restoral reports for each master zone) are supported.

> *TROUBLE ZONE D* indicates a "missing" POPIT condition.

> *RESTORAL ZONE D* indicates that a "missing" POPIT condition has been resolved.

These reports may be followed by a *TROUBLE ZONE #* or *RESTORAL ZONE #* report, which indicates the master zone assignment of the missing POPIT.

3.3.7.2   Modem II Reporting

Only D8112G2 supports *expanded* POPIT reports (such as POPIT alarm reports) using Modem II format reporting.

Trouble Reports

When ZONEX is used on a 24 hour master zone or a controlled point in the disarmed state, and a missing condition occurs, the following report is printed out on the D6500 Receiver tape:

```
ACCT 1234 TROUBLE  ZN   D
ACCT 1234 TROUBLE* ZN 101
```

* Indicates that this point is "Missing"

Restoral Reports

When the point is restored from the missing condition, the following report will be printed out on the D6500 Receiver tape:

```
ACCT 1234 RESTORAL ZN   D
ACCT 1234 RESTORAL ZN 101
```

When multiple points on the same master zone go into any trouble condition, **all** of the points on the master zone must be returned to normal before individual restoral reports are sent to the D6500 receiver. A *RESTORAL ZONE D* will, however, be sent when the backbone itself has restored.

Missing Reports (Multiple)

If multiple points assigned to the same master zone go into a missing condition while in the disarmed state, the following reports are printed out on the D6500 Receiver tape:

```
ACCT 1234 TROUBLE* ZN   D
ACCT 1234 TROUBLE* ZN 103
ACCT 1234 TROUBLE* ZN 102
ACCT 1234 TROUBLE* ZN 101
```

* Indicates that this point is "Missing"

Armed Controlled Zone Points

If the D8112G2 is armed, a missing report would be printed out on the D6500 Receiver tape as follows:

```
ACCT 1234 TROUBLE  ZN   D
ACCT 1234 ALARM*   ZN 101
```

* Indicates that this point is "Missing"

When multiple points on the same master zone go into any alarm condition, **all** of the points on the master zone must be returned to normal before individual restoral reports are sent to the D6500 receiver. A *RESTORAL ZONE D* will, however, be sent when the expansion loop itself has restored.

A complete list of reports received by the D6500 Receiver can be found in the *D6500 Report Directory* (P/N: 4998132019).

3.3.8 Local Status Test

3.3.8.1 Operation

While disarmed, the security system status can be checked by entering [COMMAND 44] at the D1252A Command Center. This command also initiates a system walk test (described in the *D1252A Security System User's Guide,* P/N: 71-04415-000) as part of the status test. Each point of protection is polled as the D8112G1/G2 interrogates its eight master zones. The D1252A Command Center displays two small "bird feet" (^^) that "hop" (scroll) across the screen to indicate that a master zone is under interrogation.

If the D8112G1/G2 contains an event (either a current event or an event in memory), the "bird feet" display is replaced by the event held in memory (see *Section 3.3.6 POPIT Displays*). Events begin to accumulate each time the system is armed. System events can be cleared from the D8112G1/G2 memory by arming the system and allowing the exit time to expire or disable/restart the D8112G1/G2.

If a programmed point of protection does not respond to the polling interrogation, a "missing" POPIT condition is displayed (see *Section 3.3.6 POPIT Displays*). An "extra" POPIT display indicates that the ZONEX program does not recognize a POPIT Module transmission. Press any key on the D1252A Command Center to end the test.

3.3.8.2 Missing and Extra POPIT Modules

"Missing" and "extra" POPIT conditions are typically caused by installation or programming errors. In a properly functioning system, all POPIT Modules which are installed are assigned to the appropriate master zone in the ZONEX sub-handler program file. *Figure 12* illustrates a system with six POPITs assigned to each of the first five master zones.

PROGRAMMED	INSTALLED
2.5 Z1POINTS 6	MASTER ZONE 1: 6
2.6 Z2POINTS 6	MASTER ZONE 2: 6
2.7 Z3POINTS 6	MASTER ZONE 3: 6
2.8 Z4POINTS 6	MASTER ZONE 4: 6
2.9 Z5POINTS 6	MASTER ZONE 5: 6
2.10 Z6POINTS 00	
2.11 Z7POINTS 00	
2.12 Z8POINTS 00	

Figure 13: Operative ZONEX System

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Figure 14 illustrates a system with six POPITs assigned in programming to each of five master zones in the ZONEX program file, and only *five* POPITs installed for Master Zone 5. A "missing" POPIT condition will be displayed when COMMAND 44 is entered in the D1252A. If the POPIT is assigned to a D8112G1/G2 protective zone programmed for *controlled zone* response (burglary) and the D8112G1/G2 is armed, the "missing" POPIT condition causes a system alarm. If the D8112G1/G2 is disarmed, the system goes into a trouble condition. If the POPIT is assigned to a D8112G1/G2 protective zone programmed for *24 hour* zone response (fire, panic, holdup, etc.) the "missing" POPIT indicates a trouble condition.

PROGRAMMED	INSTALLED	
2.5 Z1POINTS 6	MASTER ZONE 1: 6	
2.6 Z2POINTS 6	MASTER ZONE 2: 6	
2.7 Z3POINTS 6	MASTER ZONE 3: 6	
2.8 Z4POINTS 6	MASTER ZONE 4: 6	
2.9 Z5POINTS 6	MASTER ZONE 5: 5	← MISSING POPIT
2.10 Z6POINTS 00		
2.11 Z7POINTS 00		
2.12 Z8POINTS 00		

Figure 14: Missing POPIT

Figure 15 illustrates a system with six POPITs assigned in programming to each of five master zones, and *seven* POPITs installed for master zone 5. An "extra" POPIT condition will be displayed when [COMMAND 44] is entered at the D1252A. The "extra" POPIT condition is annunciated only through the D1252A Command Center, and does not initiate a report to the central station.

PROGRAMMED	INSTALLED	
2.5 Z1POINTS 6	MASTER ZONE 1: 6	
2.6 Z2POINTS 6	MASTER ZONE 2: 6	
2.7 Z3POINTS 6	MASTER ZONE 3: 6	
2.8 Z4POINTS 6	MASTER ZONE 4: 6	
2.9 Z5POINTS 6	MASTER ZONE 5: 7	← EXTRA POPIT
2.10 Z6POINTS 00		
2.11 Z7POINTS 00		
2.12 Z8POINTS 00		

Figure 15: Extra POPIT

If six POPITs are assigned in programming to each of five master zones, and one POPIT has erroneous switch settings (see *Figure 16*), Master Zone 5 appears to have only *five* POPITs installed, and Master Zone 7 (which has *no* POPITs assigned in programming) appears to have *one* POPIT installed. Both "missing" and "extra" POPIT conditions will be displayed on the D1252A.

PROGRAMMED	INSTALLED	
2.5 Z1POINTS 6	MASTER ZONE 1: 6	
2.6 Z2POINTS 6	MASTER ZONE 2: 6	
2.7 Z3POINTS 6	MASTER ZONE 3: 6	
2.8 Z4POINTS 6	MASTER ZONE 4: 6	
2.9 Z5POINTS 6	MASTER ZONE 5: 5	← MISSING POPIT
2.10 Z6POINTS 00		
2.11 Z7POINTS 00	MASTER ZONE 7: 1	← EXTRA POPIT
2.12 Z8POINTS 00		

Figure 16: POPIT Switch Setting Error

Figure 17 also displays a system containing one POPIT with erroneous switch settings. Both "missing" and "extra" POPIT conditions will be displayed on the D1252A after entering a [Command 44].

PROGRAMMED	INSTALLED	
2.5 Z1POINTS 6	MASTER ZONE 1: 6	
2.6 Z2POINTS 6	MASTER ZONE 2: 6	
2.7 Z3POINTS 6	MASTER ZONE 3: 6	
2.8 Z4POINTS 6	MASTER ZONE 4: 5	← MISSING POPIT
2.9 Z5POINTS 6	MASTER ZONE 5: 7	← EXTRA POPIT
2.10 Z6POINTS 00		
2.11 Z7POINTS 00		
2.12 Z8POINTS 00		

Figure 17: POPIT Switch Setting Error

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Installation

If an extra POPIT is installed the system will indicate that it is `READY TO ARM`. The "extra" POPIT message will only be displayed when [COMMAND 44] is entered at the D1252A (see *Figure 18*). Non-normal conditions in all POPITs assigned to the master zone with the extra POPIT may not be correctly reported as opens or shorts to the D8112G. If all POPITs assigned to this master are normal, however, a normal condition will be correctly reported.

PROGRAMMED	INSTALLED	
2.5 Z1POINTS 6	MASTER ZONE 1: 6	
2.6 Z2POINTS 6	MASTER ZONE 2: 6	
2.7 Z3POINTS 6	MASTER ZONE 3: 6	
2.8 Z4POINTS 6	MASTER ZONE 4: 6	
2.9 Z5POINTS 6	MASTER ZONE 5: 7	← EXTRA POPIT (not displayed)
2.10 Z6POINTS 00		
2.11 Z7POINTS 00		
2.12 Z8POINTS 00		

Figure 18: Extra POPIT Installed

Installations described in *Figure 17* and *Figure 18* are similar, *Figure 17* will display the "extra" POPIT condition because all POPIT switch settings assigned to master zone 5 are *unique*. In *Figure 19*, the "extra" POPIT condition is not displayed due to the *duplication* of switch settings.

If a POPIT is assigned to the wrong master zone, and it has the *same switch settings* as a POPIT in that master zone, the "missing" POPIT condition will be indicated but the "extra" POPIT will NOT be displayed (see *Figure 19*). Although the installations described in *Figure 17* and *Figure 19* are similar, *Figure 19* will display the "extra" POPIT condition because all POPIT switch settings assigned to master zone 5 are *unique*. In *Figure 19*, the "extra" POPIT condition is not displayed due to the *duplication* of switch settings.

PROGRAMMED	INSTALLED	
2.5 Z1POINTS 6	MASTER ZONE 1: 6	
2.6 Z2POINTS 6	MASTER ZONE 2: 6	
2.7 Z3POINTS 6	MASTER ZONE 3: 6	
2.8 Z4POINTS 6	MASTER ZONE 4: 5	← MISSING POPIT
2.9 Z5POINTS 6	MASTER ZONE 5: 7	← TWO POPITS installed have same switch setting (EXTRA POPIT not displayed)
2.10 Z6POINTS 00		
2.11 Z7POINTS 00		
2.12 Z8POINTS 00		

Figure 19: POPIT Switch Setting Error

4.0   Troubleshooting

4.1   9000 Series Basic Troubleshooting

4.1.1   Service Walk Test Shows Extra Points

The Service Walk Test differs from the standard Walk Test in that POPITs whose switches are set for a point number not programmed in the panel appear in the test.

The Service Walk Test allows a user to walk test all 246 points (75 in the D7412 and D7212 panels) from a panel-wide Command Center regardless of the Point Index type. Service Walk Tests may also be initiated by account-wide or area-wide Command Centers but will only test those points that fall within the scope of the Command Center that initiated the function. The Service Walk Test will not test points in areas that are currently armed.

CAUTION *Fire and other 24-hour points do not transmit reports during Service Walk Test!*

The steps below outline a simple Service Walk Test procedure. *Figure 20* shows all the Service Walk Test options.

1. Choose a command center with panel wide scope to conduct the test. Be certain the display shows the idle disarmed text.

2. Enter a valid service passcode and press [ESC] to enter the Function List. Press [NEXT] repeatedly until you reach the SERVICE WALK ? prompt. Press [ENT].

3. The display shows ### PTS TO TEST. Test the first detection device.

4. As you fault the detection devices, the Command Center emits a brief tone and displays the point text of the point tested for 60 seconds. After 60 seconds, the display returns to the points to test message.
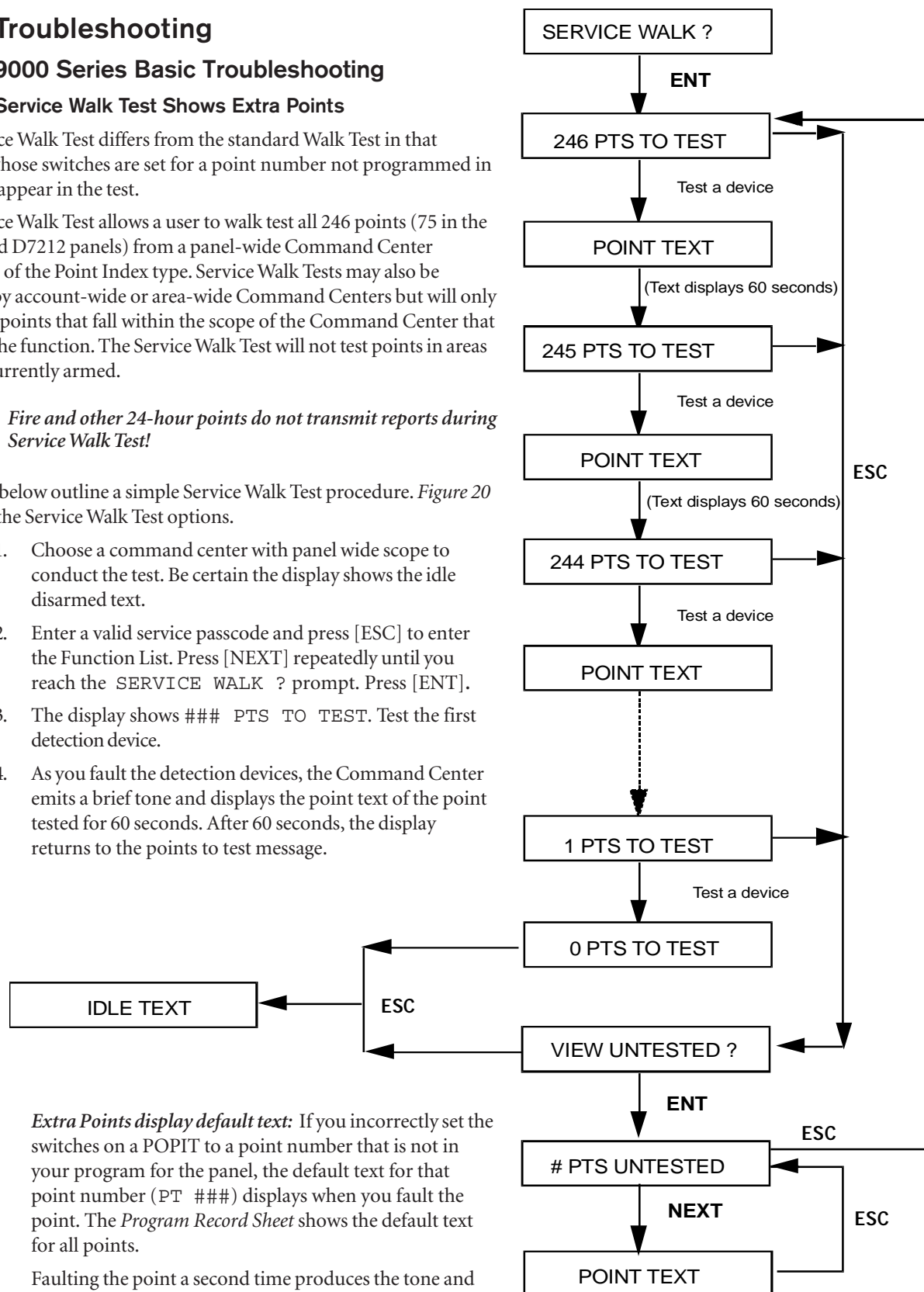
Extra Points display default text: If you incorrectly set the switches on a POPIT to a point number that is not in your program for the panel, the default text for that point number (PT ###) displays when you fault the point. The *Program Record Sheet* shows the default text for all points.

Faulting the point a second time produces the tone and displays the point text, but does not reduce the *PTS TO TEST* count.

Figure 20: Service Walk Test Flowchart

5. During the Service Walk Test you may want to see the points that remain untested. When point text is displayed, press [ESC]. The display shows `### PTS TO TEST`. Press [ESC]. `VIEW UNTESTED ?` is displayed. Press [ENT]. `### PTS UNTESTED` is displayed. Press [NEXT] to see a list of the points that have not yet been tested. Move through this list by pressing [NEXT]. To resume the Service Walk Test, press [ESC]. `### PTS UNTESTED` is displayed. Press [ESC]. `### PTS TO TEST` is displayed. Resume testing points. To end the Service Walk Test, press [ESC] until the Command Center displays idle text.

6. After testing the last point, `0 PTS TO TEST` displays. Press [ESC]. The display momentarily shows `ALL PTS TESTED` before returning to idle text.

Note: *Automatic time-out returns the system to idle text: If there is no point or Command Center activity for twenty minutes, the walk test ends automatically. The Command Center returns to idle text.*

4.1.2 Problems with Points

If you incorrectly set the switches on a POPIT you may create both a missing and extra point. When you find a missing point, perform a Service Walk Test to search for extra points.

System	Diagnosis	Remedy
Point appears as missing at command centers and in reports to the receiver.	POPIT is not connected or incorrectly connected to the data expansion loop.	Verify that a POPIT module programmed for the missing point number is connected to the data expansion loop of the correct ZONEX module. Points 9 to 127 connect to ZONEX module 1. Points 129 to 247 connect to ZONEX module 2. Meter each POPIT to verify the polarity of the data expansion loop. Voltage should be 9 to 13 VDC at each POPIT.
	D8128C OctoPOPIT is installed at the last address on the ZONEX bus.	Install a D8125 POPEX and D9127 POPITs for Points 121-127 on ZONEX 1 and for Points 241-247 on ZONEX 2.
	Sensor loop switch (1 to 8) is turned off on OctoPOPIT.	If the sensor loop switch on an OctoPOPIT is turned off for a programmed point, the point reports as missing.
	POPIT is not programmed correctly.	Verify that the switches on the POPIT are set for the missing POPIT number. Switches set incorrectly can cause both missing and extra POPITs. Performing a Service Walk Test to search for extra points may help diagnose the problem.
Points intermittently appear as missing. Points are erratic.	Problem with data expansion loop.	See *Section 15.7 Problems with D8125 POPEX Data Expansion Loops* in the *D9412G/D7412G Operation and Installation Guide* (P/N: 43448).
	Debounce Count parameter set at 1. If an off-board point is in transition between normal and faulted conditions as the panel scans it, it appears as missing.	It is recommended that the Debounce Count be left at the default of 2, with the exception of Interior Follower Points, where the Debounce Count should be set to 3. Decreasing the Debounce Count to 1 may cause points to appear as missing. Increasing the Debounce may cause missed alarms.
One or more points remain in trouble or alarm with all devices connected to the sensor loops normal.	The sensor loop is open, shorted, or grounded. Opens, shorts, or grounds cause troubles or alarms depending on point programming.	Remove the sensor loop from the D9412/D9112 or POPIT and meter it for continuity. There should be no more than 100 Ω resistance, plus the value of the end of line resistor on the wires. If you meter less resistance than the value of the end of line resistor, check the wiring for shorts. With the wires for the loop removed, meter them for continuity to ground. A ground before the end of line resistor on an on-board point's sensor loop is interpreted as a short. A ground on a sensor loop for a POPIT point is interpreted as an open.

Table 9: 9000 Series to D8125 POPEX Point Problems Troubleshooting

4.1.2   Problems with Points (continued)

System	Diagnosis	Remedy
Faulted points do not generate alarms or troubles as programmed.	Sensor Reset pressed at the time the alarm or trouble was generated.	The D9412/D9112 ignores input from all points in the same area programmed for sensor reset during sensor reset.
	Two points are programmed with the same address.	Points programmed with the same address do not function correctly. Check to be certain that you have not duplicated point addresses.
Panel transmits PT BUS TROUBLE reports. Erroneous alarm and/or trouble reports may follow PT BUS TROUBLE report. Erroneous alarm and/or trouble events for off-board points appear at command centers.	Short on D8125 POPEX module's Data Expansion Loop or short on D9412/D9112 ZONEX data terminals (25 and 26, or 27 and 28).	A short on either the Data Expansion Loop or the ZONEX data terminals generates a PT BUS TROUBLE report. While the short remains, the panel responds as though the sensor loop for each point connected to the POPEX module was shorted. Check wiring for shorts.
	The POPIT address switches are set incorrectly (for Points 128 or 248) or the OctoPOPIT address switches are set incorrectly (for Points 121through 128 or Points 241through 248).	Check to be certain all POPIT and OctoPOPIT address switches are set correctly. POPITs cannot be used for Points 128 or 248 (these are reserved for panel functions). OctoPOPITs cannot be used for Points 121through 128 or 241through 248.
All off-board points are MISSING.	Short on Aux Power, Terminal 3 or ZONEX power, Terminal 24.	Terminals 3 and 24 share a common circuit breaker. Check wiring and devices connected to these terminals for shorts or grounds.
	If only one POPEX module is connected to the panel, POPEX module may be incorrectly connected to the panel or Data Expansion Loop may be disconnected from POPEX module.	Check POPEX module for correct connections to the D9412/D9112 and the Data Expansion Loop. If you find missing points, the Service Walk Test may help you diagnose the problem (see *Section 4.1.2.1 Extra Points* on page 38).
Keyswitch points (*P## Type* programmed as 4, 5, 6, 7, or 9) report as MISSING. If area is armed, the point reports a MISSING ALARM. If the area is disarmed, the point reports a MISSING TROUBLE.	Point is disconnected from the SDI data bus. The POPIT cover may have been removed and not replaced or the cover is not seated properly.	The point will restore when the SDI bus is reconnected or when the POPIT cover is seated firmly on the POPIT.
Connected points show as extra points when the POPIT loop is shorted beyond the programmed debounce time.	The points have no point index programmed.	This will be corrected when the short is returned to normal.

Table 9 (cont'd): 9000 Series to D8125 POPEX Point Problems Troubleshooting

Troubleshooting

4.1.2.1 Extra Points

If the panel is not in the service walk test mode when an extra point trips, the panel responds to it as a local TROUBLE event at the control center or central station (see *Section 2.1.3 Routing* in the *D9412G/D7412G Program Entry Guide* P/N: (47775). It displays the custom text for the point number set in the point's dipswitch or on-board point location.

When an extra point is tripped during the service walk test, it reports as an EXTRA point in the panel's event log and at the local printer (if installed). Once an extra point is identified you can check the programming to see if it has a *Point Index* programmed. You can then determine if the point index is appropriate for the application and that the area assignment is correct.

4.2 D8112G1/G2 Troubleshooting

4.2.1 Introduction

This section is provided to aid in correcting problems with installed POPEX and POPIT Modules. To prevent problems from occurring, read all of the pertinent documentation (*Omegalarm D8112:MAIN* and *Omegalarm D8112:AUX Program Entry Guides*, *Omegalarm D8112:PTEXT Program Entry Guide* if a D1252A display is used, and the previous sections of this guide), and verify that the product handler programs are at the following revision levels (or higher): D8112:MAIN **A7**, D8112:AUX **B1**, D8112:PTEXT **A5**.

4.2.2 D1252A POPIT Activity

If the D1252A Command Center *does not* display POPIT activity:

1. Verify D8112:MAIN product handler program items *122 ExRAM* and *123 16ChDisp* are both programmed [YES].

2. Verify D8112:AUX product handler program item *2.1 ZONEX* is programmed [YES].

3. Verify that the revision level of the 8112:AUX product handler is **B1** or higher. If you are not sure what revision level of the D8112:AUX product handler was loaded into the panel:

   • Verify that your D5100 programmer contains the D8112:AUX.B1 or higher product handler.

   • Disconnect terminals 30 and 31 from the D8112.

   • Copy the D8112:AUX file out of the D8112.

   • Re-Load the same 8112:AUX file into the D8112.

   • Be sure to perform a disable/restart on the D8112 (momentarily connect Terminal 32 to Terminal 29) before or after programming or copying.

4. Verify the assignments of POPIT Modules to master zones in the D8112 Handler program items *2.5 Z1Points* through *2.12 Z8Points*.

5. Verify that D8112:AUX Product Handler program item *6.1 MLogEN* is [YES].

4.2.3 Missing POPIT Modules

If the D1252A Command Center displays a "missing POPIT" status code (Example: ZN101M6):

1. Check the programming of horizontal or vertical mode *2.2 Hrzntl* [**Yes/No**] in the D8112 handler.

2. Verify that the appropriate vertical or horizontal switch setting chart was used (see *Table 7* and *Table 8*) and that the POPIT switch settings are correct (refer to *Section 3.3.3 POPIT Module Installation*).

3. Verify the assignments of POPIT Modules to master zones in the D8112 handler program items *2.5 Z1Points* through *2.12 Z8Points*.

Note: *If all 126 points of protection are used in the horizontal mode,* 2.12 Z8Points *must be programmed with a* [14]. *In Horizontal mode, you are allowed fourteen points on Zone 8, seven on POPEX 1 and seven on POPEX 2. In Vertical mode, you are allowed fifteen points on Zone 8 and fifteen on Zone 4.*

4. Check the wiring of the POPEX Module to the D8112 Control Panel (refer to *Figure 11* and *Section 3.3 D8112G1/G2*.

5. Meter the data terminals of each POPIT to verify correct polarity (refer to *Section 3.3.3 POPIT Module Installation*), and a voltage of 9 VDC to 13 VDC.

6. Meter the positive (+) and negative (-) data terminal wires (disconnected from the POPEX) to verify that they are not shorted or grounded.

7. Check the wire gauge (refer to *Table 6*). Proper wire gauge is determined by the length of the wire run and the number of POPITS installed on the POPEX. Compare the system wiring runs to the recommended wiring chart in *Figure 11*. To determine the maximum resistance between each POPIT and its corresponding POPEX:

    1. Disconnect the Zone Expansion Loop from the POPEX.

    2. Prior to installing the POPITs, twist the two Zone Expansion Loops together and measure the resistance with a volt-ohm meter. Maximum resistance should not be greater than 90 Ω.

    3. After installing the POPITs, meter the backbone wires. The resistance on the backbone should be equal to 920 kΩ divided by the number of POPITs on the wire ($\pm$20%). Each POPIT = 920 kΩ resistance ($\pm$20%).

8. If *all* points in the ZONEX system are missing, verify that the points of protection labeled *DO NOT ENABLE* in *Table 7* and *Table 8* are *not* assigned to a POPIT.

9. If further difficulties are encountered, replace the appropriate POPEX or POPIT Module.

10. Check the tamper switch on the D8126T/D8127T to make sure it is operating properly. D8126T/D8127T POPIT modules should be installed at least 3.0 in. (76 mm) away from each other. This prevents the magnets from interfering with each other.

11. If shielded cable was installed, check that there is not more than one ground on the shield. Shielded cable should be grounded **only** to Terminal 4 at the D8112. Verify by removing the drain wire from Terminal 4 and metering between Terminal 4 and the drain wire. If continuity is found, search for the foreign ground on the drain wire.

4.2.4 Extra POPIT Modules

If the D1252A Command Center displays an "extra POPIT" status code (e.g., `ZN101X`) during a [Command 44]:

1. Check the programming of horizontal or vertical mode in the D8112 handler program item *2.2 Hrzntl* [**Yes/ No**]

2. Verify that the appropriate vertical or horizontal switch setting chart was used (see *Table 7* and *Table 8*, pages 27 and 28, respectively), and that the POPIT switch settings are correct.

3. Verify that each POPIT connected to the same POPEX Module has a *unique* switch setting (refer to *Section 3.3.3 POPIT Module Installation*).

4. Verify the assignments of POPIT Modules to master zones in the D8112 handler program items *2.5 Z1Points* through *2.12 Z8Points*.

4.2.5 Additional Troubleshooting Tips

If you have determined that there are no missing or extra POPIT Modules and the problem has still not been solved, one of the following troubleshooting tips may provide you with additional help.

1. Before loading or copying a file into the control panel, always disconnect the wiring from D8112G1/G2 **Serial Data In** and **Serial Data Out** terminals (**30** and **31**).

2. ZONEX systems can be influenced by very strong RF sources, such as radio stations and HAM radio operations with transmitting antennas located within one mile of the system. Use shielded twisted pair wire for best protection against RF-induced noise.

3. If the system intermittently displays a trouble condition, and transmits Trouble Zone D and Restoral Zone D reports with master zone number to the central station, meter the Zone Expansion Loop wired to the POPITs for high level AC inductance or spikes. Inspect the wiring for intermittent grounds and shorts, and determine if there is a strong AC source located nearby. AC induction on the data line must be less than 0.1 VAC.

4. If the D1252A displays non-programmed information when a master zone is faulted, copy the D8112:PTEXT file for the non-expanded zone displaying the information, delete the information, and reload the file.

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Troubleshooting

5. If some POPITs are missing and some POPITs are present on the same Zone Expansion Loop, check the polarity of the data loop connecting the "missing" POPITs. POPITs with reversed polarity cannot be polled by the D8112G.

6. Certain revision 17.07 D8112G Control/Communicators may not detect POPIT faults even when all programming and wiring has been properly completed. Bosch Security Systems has developed two solutions to this problem:

    1). Restore all POPITs to a normal condition (close all doors and windows), and then disable and restart the system.

    2). Fault a POPIT into a trouble condition (as determined by the master zone code). The D1252A Command Center displays the faulted condition and the system responds to the POPITs.

    3). If unable to resolve the problem, contact Bosch Security Systems Technical Support.

7. Keep all Zone Expansion Loops away from all AC current sources (fluorescent lights, high-voltage transformers, motors, etc.) or sources of RF interference. AC induction or RF interference may occur when a ZONEX system is installed in or near the following:

    *   Radio station transmitter site or other broadcast station
    *   Ham radio transmitter site
    *   Computer network system
    *   Heavy machinery and motors
    *   PBX telephone system
    *   Welding shop
    *   High voltage electrical equipment or transformers
    *   Public service (police, fire department, etc.) using radio communications
    *   When wires must be run close to electrical lines, fluorescent fixtures or telephone cabling

8. If shielded cable is used, verify that the drainwire is connected only to Terminal 4 on the D8112G1/G2. Verify that each splice on the shielded backbone has the drainwires soldered together and isolated from ground.

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