Control Panels

D9412GV4/D7412GV4 v2.00

BOSCH

en   Installation and System Reference Guide

Certifications and Approvals

The D9412GV4/D7412GV4 v2.00 Literature Pack includes an *Approved Applications* chapter in this guide. Refer to this chapter for additional guidelines on installing the control panels in Underwriters Laboratories Inc. (UL) and fire-specific applications.

Listings and Approvals

UL

The D9412GV4 and D7412GV4 are listed as UL 864 Commercial Fire control panels. The D9412GV4 and D7412GV4 are also UL Listed for Central Station, Local, Auxiliary, Proprietary, and Household Fire Alarm, and Central Station, Local, Police Station Connect, Holdup, Household Burglar Alarm and Encrypted line Security when communicating via a network.

cUL

The D9412GV4 and D7412GV4 are cUL listed for Local Burglar Alarms, Signal Receiving Centre and Premise Alarm, Residential Fire, Household Burglar, Propriety Burglar, and Digital Apparatus.

Department of Defense (DOD)

The D9412GV4/D7412GV4 was granted approval for Department of Defense (DoD) installations in Sensitive Compartmented Information Facilities (SCIF).

Federal Communications Commission (FCC) Rules

Part 15

This equipment was tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy; and if not installed and used according to the instructions, can cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user is required to correct the interference at his or her own expense.

Part 68

This equipment complies with Part 68 of FCC rules. A label contains, among other information, the FCC registration number and ringer equivalence number (REN). If requested, this information must be provided to the telephone company.

The D9412GV4 and D7412GV4 Control Panels are registered for connection to the public telephone network using an RJ38X or RJ31X jack.

The REN is used to determine the number of devices that can be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five. To be certain of the number of devices that may be connected to the line, as determined by the RENs, contact the telephone company to determine the maximum REN for the calling area.

If you experience trouble with the control panel, please contact Bosch Security Systems Customer Service for repair and warranty information. If the trouble is causing harm to the telephone network, the telephone company might request that the equipment be removed from the network until the problem is resolved. User repairs must not be made, and doing so will void the user's warranty.

If the D9412GV4, or D7412GV4 Control Panels causes harm to the telephone network, the telephone company attempts to notify you in advance. If advance notice is not practical, the telephone company notifies you as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company might make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company provides advance notice in order for the necessary modifications to be made, resulting in uninterrupted service.

This equipment cannot be used on public coin service provided by the telephone company. Connection to Party Line service is subject to state tariffs. (Contact your state public utilities commission for information.)

FCC Registration Number:
US:ESVOT00BD9412GV3

Service Center in USA:
　　Bosch ST Service Center
　　8601 East Cornhusker Hwy
　　Dock B
　　Lincoln, NE 68507 - 9702 USA

Ringer Equivalence: 0.0B

Contents

1.0 Introduction

This manual addresses the operation and installation of the D9412GV4/D7412GV4 v2.00 Control Panels. Throughout this guide, the words "control panel" refer to all control panels (D9412GV4 and D7412GV4). *Table 2* on page 11 provides an overview of the differences in the control panels.

> To obtain any of the documents in *Table 1*, contact Bosch Security Systems, Inc. Customer Service at (800) 289-0096 and request the documentation by its corresponding part number.

Table 1: Related Documentation

Product Type	Name of Documentation	Part Number
Control Panels	*Control Panels (D9412GV4/D7412GV4 v2.00) Release Notes*	F01U265461[1]
	Control Panels (D9412GV4/D7412GV4 v2.00) Installation and System Reference Guide (this document)	F01U265457[2]
	UL Certificated Bank Safe and Vault Applications Technogram	73-07302-000[3]
	Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide	F01U265459[2]
	Control Panels (D9412GV4/D7412GV4 v2.00) UL Installation Guide	F01U265462[1]
	Control Panels (D9412GV4/D7412GV4 v2.00) Quick Reference Guide	F01U265463[1]
	Control Panels (D9412GV4/D7412GV4 v2.00) SIA Quick Reference Guide	F01U265466[1]
Keypads	*D279A Operation and Installation Instructions*	46458[5]
	Two-line Alphanumeric Keypad (B920) Installation Guide	F01U265450[4]
	ATM Style Alphanumeric Keypad (B930)Installation Guide	F01U265451[4]
	Control Panels (D9412GV4/D7412GV4 v2.00) Control Panel Owner's Manual	F01U265452[1]
Expansion Devices	*Octo-input Module (B208) Installation and Operation Guide*	F01U265456[5]
	Octo-output Module (B308) Installation and Operation Guide	F01U265458[5]
	RADION receiver SD (B810) Reference Guide	F01U261839[5]
	SDI2 Inovonics Interface Module (B820) Installation Guide	F01U265460[5]
	Conettix Ethernet Communication Module (B420) Installation and Operation Guide	F01U215236[6]
	Conettix Ethernet Communication Module (B426) Installation and Operation Guide	F01U266226[6]
	Auxiliary Power Supply Module (B520) Installation and Operation Guide	F01U265445[5]
	D8128D Installation Guide	F01U070537[5]
	D8125MUX Operation and Installation Guide	F01U034973[5]
	ISW-D8125CW-V2 Installation and Operation Guide	F01U161691[5]
	D9210C Installation and Operation Guide	F01U215232[5]

[1]Shipped with the control panel. [2]Located on the documentation CD shipped with the control panel. [3]Located on www.boschsecurity.com. [4]Shipped with the keypad. [5]These documents ship with the modules. [6]Find these documents on the documentation CD shipped with the module.

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Trademarks

All hardware and software product names used in this document are likely to be registered trademarks and must be treated accordingly.

Determine Bosch Security Systems, Inc. Product Manufacturing Date

Use the serial number located on the product label and refer to the Bosch Security Systems, Inc. web site at http://www.boschsecurity.com/datecodes.

The following image shows an example of a product label and highlights where to find the manufacturing date within the serial number.
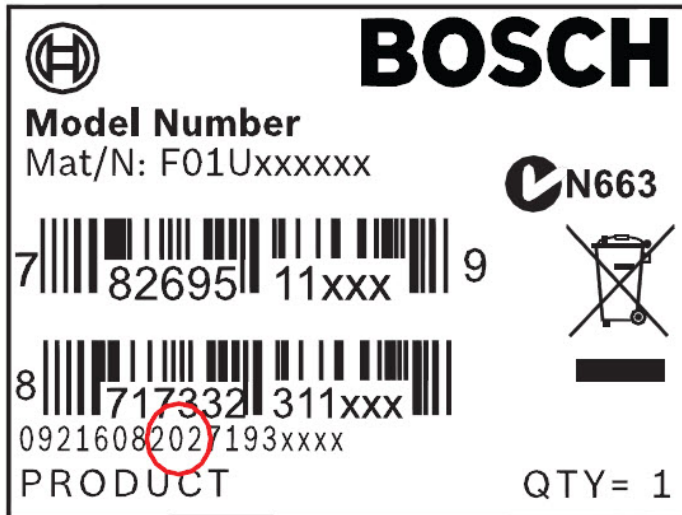
2.0   Lightning Strikes

The control panels are designed to significantly reduce electromagnetic interference and malfunction generally caused by lightning.

2.1   Effects

Any electronic system can be struck directly by lightning or be adversely affected by a lightning strike near the system. When lightning strikes, several things happen:

- An electromagnetic wave spreads from the point of the strike inducing high voltages in nearby conductors.
- The voltage changes substantially on electrical grounds near the lightning strike.
- High voltages are induced in anything directly struck by lightning.

The effects of a lightning strike can include Missing Trouble, Missing Alarm, or Point Bus Trouble events. Occasionally, Reboot and Watchdog events might be sent because the control panel tried to reset itself.

Electronic systems, including control panels, cannot be completely immune to direct or indirect lightning strikes; however, some proven installation practices might greatly reduce the risk of undesirable affects.

2.2   Precautions during Installation

To minimize the risk of undesirable effects from lightning strikes on high risk installations that use a point-bus technology:

- Do not run wiring outside the building.
- If you must install the unit in a metal building, keep the wiring at least 0.61 m (2 ft) away from external metal surfaces.
- Earth ground the unit correctly. Do not use an electrical ground or telephone ground.
- Avoid running wires near telephone, data, or power lines inside a building. Historical evidence shows that locating control panel wiring at least 0.61 m (2 ft) away from telephone, data, or power lines is successful at minimizing lightning damage. When your data lines must cross the path of AC or other wiring, cross the lines perpendicularly.

3.0 Overview

3.1 Configuration and Parts

Figure 1:   System Configuration
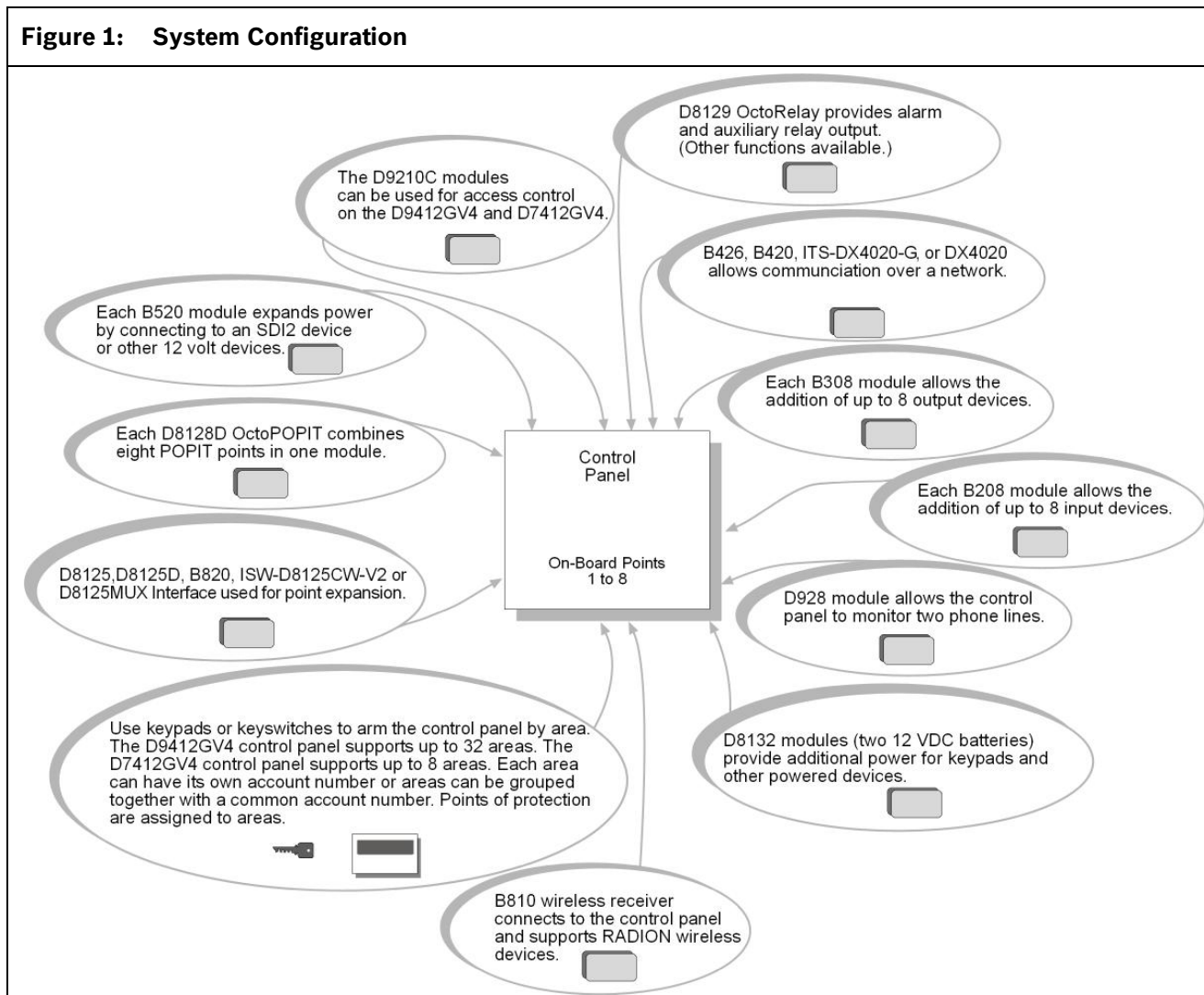
Table 2: Control Panel Comparrisons		
Features	**D9412GV4**	**D7412GV4**
Access Control	Yes - 8 doors	Yes - 2 doors
Arm/Disarm Users	999	399
Cards/Tokens	999	399
Passcode-Protected Custom Functions	16	4
Number of Points	246	75
Number of Off-board Relays	128	64
Number of Areas	32	8
Number of B920 Two-line Alphanumeric Keypads	16	16
Number of B930 ATM Style Alphanumeric Keypads	16	16
Number of D1255 Keypads	16	16
Number of D1260 Keypads	8	8
Number of Phone Lines Supported	2	2

3.1.1 Parts List

The control panels are shipped assembled from the factory with the following parts:

Literature Pack

- *7000/9000 Series Point Chart Label* (P/N: 79-06660-000)

Assembly

- PC board
- Faceplate shield
- Mounting skirt
- One #6 x 3/4-in screw

3.1.2 Parts Available by Separate Order

Order the following components separately to complete a basic eight-point installation.

> The D1260 and D1260B Keypads must have firmware version 1.04 or higher for use with the D9412GV4/D7412GV4 v2.00 Control Panels.

- B520 Auxiliary Power Supply Module
- B420, B426 Ethernet Communication Modules
- B920, B930 Keypad
- D1255B, D1255, D1260, D1260B Keypad, or D720 Keypad
- D1255RB Fire Keypad, D1256RB Fire Keypad, or D1257RB Fire Alarm Annunciator
- D1640 Transformer
- D1640-CA Transformer (for Canada)

- D126 or D1218 Battery
- D162 Phone Cord (order two cords if using the D928 Dual Phone Switcher)
- D8103, D8108A, or D8109 Enclosure

Configured packages are also available. Please consult the Bosch Security Systems, Inc. Product Catalog.

- *Control Panels (D9412GV4/D7412GV4 v2.00) Installation and System Reference Guide* (P/N: F01U265457)

3.2 Accessories

Refer to the Bosch Security Systems, Inc. product catalog for additional information.

The compatible accessories listed in the table below are specific to the D9412GV4/D7412GV4 with firmware v2.00 or greater.

Table 3:	Compatible Accessories[1]				
Model	**Title**	**UL 864**	**UL 985**	**Intrusion**	**cUL Intrusion**
B208	Octo-input Module	X	X	X	X
B308	Octo-output Module	X	X	X	X
B420	Ethernet Communication Module	X	X	X	X
B426	Ethernet Communication Module	X	X	X	X
B520	Auxiliary Power Supply Module	X	X	X	X
B810	RADION receiver SD		X	X	
B820	SDI2 Inovonics Interface Module		X	X	
B920	Two-line Alphanumeric Keypad		X	X	X
B930	ATM Style Alphanumeric Keypad		X	X	X
D113	Battery Lead Supervision Module	X	X	X	X
D122/D122L	Dual Battery Harness	X	X	X	
D125B	Powered Loop Interface Module	X	X	X	X
D126	Standby Battery (12V, 7Ah)				
D129	Dual Class A Initiation Circuit Module	X	X	X	
D130	Relay Module	X	X	X	
D185	Reverse Polarity Module	X	X	X	
D161	Phone Cord				
D162	Phone Cord				
D192G	Bell Circuit Supervision Module	X	X	X	
D279A	Independent Zone Control (On-Board and OctoPOPIT Points)			X	
D720R	LED Keypad (red)		X	X	X
D720W	LED Keypad (white)		X	X	X
D928	Dual Phone Line Switcher	X	X	X	X
D1255RB	Fire Keypad	X	X	X	X
D1256RB	Fire Keypad	X	X	X	
D1257RB	Fire Alarm Annunciator	X	X	X	X
D1218	12 V, 17.2 Ah Rechargeable Battery				
D1255/D1255B	Keypads (General Purpose)		X	X	X
D1255W	Text Keypad (white)		X	X	X
D1260/D1260B[2]	Keypads		X	X	X
D1640	16.5 VAC 40 VA Transformer	X	X	X	
D1640-CA	16.4 VAC 40 VA Transformer for Canada				X
D8004	Transformer Enclosure	X	X	X	
D8125	POPEX Module	X	X	X	X
D8125MUX	Multiplex Bus Interface	X	X	X	
D8128D	OctoPOPIT Module	X	X	X	X
D8129	OctoRelay Module	X	X	X	X
D8130	Release Module	X	X	X	
D8132	Battery Charger Module		X	X	X
D9127U/T	POPIT Module	X	X	X	X
D9210C	Access Control Interface Module	X	X	X	X
DX4010V2	USB/Serial Interface Module				

DX4020	Network Interface Module	X	X	X	X
ITS-DX4020-G	GPRS/GSM Communicator	X	X	X	
ICP-SDI-9114	SDI Splitter	X	X	X	
ITS-EZTS	Tamper Switch		X	X	X
ISW-D8125CW-V2	Commercial Wireless Interface Module				
ZX776Z	PIR Motion Sensor [15 m (50 ft)] with POPIT			X	
ZX794Z	PIR Motion Sensor [24 m (80 ft)] with POPIT			X	
ZX865	PIR/Microwave Motion Sensor [+1.7°C (+35°F)] with POPIT			X	
ZX938Z	PIR Motion Sensor [18 m (60 ft)] with POPIT			X	
ZX970	PIR/Microwave Motion Sensor [+1.7°C (+35°F)] with POPIT			X	
RFBT-A	RADION speciality			X	
RFDL-11-A	RADION tritech			X	
RFDW-SM-A	RADION contact SM			X	
RFDW-RM-A	RADION contact RM			X	
RFSM-A	RADION smoke		X	X	
RFRP-A	RADION repeater		X	X	
RFPR-12-A	RADION PIR			X	
RFPR-C12-A	RADION PIR C			X	
RFUN-A	RADION universal transmitter			X	

[1]Where the fire alarm transmitter is sharing on premise communications equipment, the shared equipment must be UL Listed (ITE or fire protective signaling).
[2]Refer to for compatible Inovonics devices.
[3]Version 1.04 or above.

No wireless detectors have been approved for use with alarm verification points.

For specific installation and operation instructions, please refer to manufacturers' manuals.

UL requires that the DX4010v2 be used as a temporary programming interface only.

3.3   Features in the GV4 Series Control Panels

3.3.1   SDI Interconnect Wiring

Use interconnect wiring to easily connect an SDI bus device to the SDI bus or an SDI2 device to the SDI2 bus without needing to disconnect wires connected to the bus terminals. Possible applications include:

- Connecting a DX4010v2 to program the control panel with Remote Programming Software (RPS) at the premises.
- Connecting a keypad to test the control panel.

3.3.2   Tip and Ring Posts

The tip and ring posts allow connecting a phone or buttset for the purpose of troubleshooting communications between the control panel and the central station. This connection allows monitoring of the dial tone, handshaking tones from the receiver, and communications signals.

3.3.3   Telephone Line Sniff

The control panels monitor the phone line for the programmed supervision interval before indicating phone line trouble.

3.3.4 Points

The Bosch Security Systems, Inc. D9412GV4 Control Panel provides up to 246 points of protection. The D7412GV4 Control Panel provides up to 75 points of protection. Point programming parameters determine the control panel's response to open and shorted conditions on the sensor loop for the point. Several options allow individual point programming to custom-fit the protection to the installation.

Points 1 to 8 are located on the circuit board (on-board points). They are standard sensor loops. The remaining off-board points can be located on point expansion modules on a ZONEX bus, an SDI bus, and/or an SDI2 bus. The ZONEX bus supports any combination of POPIT points using D8128D OctoPOPITs, D8125 POPEX Modules and D9127 POPITs, a ISW-D8125CW-V2 Zonex Inovonics Interface Module, or D8125MUX Modules. The SDI2 bus supports any combination of B208 Octo-input modules, B810 wireless receiver, or a B820 Inovonics Interface Module.

> Any points programmed as fire supervisory points are latching.

3.3.5 Areas and Accounts

The D9412GV4 supports up to 32 areas. The D7412GV4 supports up to 8 areas. You can assign all points to a single area or distribute them over all supported areas.

The control panel is armed and disarmed by area, and several areas can be armed and disarmed with one menu function. A passcode can also be assigned an authority level that allows a user to arm an area from a remote keypad in another area. Assigning each area its own account number creates up to 32 separate accounts in the D9412GV4 and up to 8 separate accounts in the D7412GV4. Assigning the same account number to different areas, groups them together in a single account.

Area options include exit tone and delay, separate fire and burglary outputs, and multiple opening and closing windows. Area type can be used to create area interdependencies for arming purposes.

3.3.6 Digital Communicator

The control panel uses a built-in digital communicator to send reports to the receiver. The control panel sends reports in either the Modem4 or ANSI-SIA Contact ID format.

The control panel connects to an RJ31X or RJ38X jack for telephone line seizure. Connecting to the RJ31X complies with FCC regulations for using the public telephone network. The control panel can be programmed to direct reports to four separate telephone numbers. Adding the D928 Dual Phone Line Switcher Module to the D9412GV4 or the D7412GV4 allows connection and supervision of a second telephone line.

The system can route groups of Event Reports to four different destinations through the phone or over a network. Each report group can be programmed to send reports to one or more destinations. Primary and backup reporting paths can be programmed for each destination and each report group. A custom option allows specification of individual Event Reports to be sent.

3.3.7 Keypads

Up to 32 unsupervised keypads can be connected to the system. The available power, number of supervised keypads, and number of areas covered affect the total number of keypads that can be connected.

The system can supervise up to sixteen D1255 keypads, and up to eight D1260 keypads. If the control panel loses communication with the keypad, it sends SDI FAILURE in the Modem4 format or Expansion Module Failure (333) in Contact ID format. The system can support more SDI keypads (up to 32 unsupervised).

In addition to the SDI keypads, the system can support up to 16 B920 and B930 keypads on the SDI2 bus. The control panel supervises all keypads on the SDI2 bus. Any failure to receive an expected response from an SDI2 keypad results in a system fault display on all keypads and an SDI Fault event is sent to the central station if programmed to do so.

Table 4 on page 15 shows the keypads that are compatible with D9412GV4/D7412GV4 v2.00 Control Panels. Refer to 18.0 *Keypad* Installer Menu for complete details on programming keypad options.

UL requires all Fire System keypads to be supervised.

Table 4:   Compatible Keypads

Model	Display	Application
B930	5-line LCD display	Burglary/Access
B920	2-line LCD display	Burglary/Access
D1255RB	16-character alphanumeric	Fire
D1256RB	16-character alphanumeric	Fire
D1257RB	16-character alphanumeric	Fire
D1255/ D1255B/	16-character alphanumeric	Burglary
D1260/ D1260B	4-line by 20-character	Burglary
D1265*	LCD Touch screen	Burglary
*D1265 keypad has not been investigated by UL.		

3.3.8   Keyswitch

Maintained or momentary closure devices such as keyswitches allow any of the available areas to be armed or disarmed. Point programming determines the loop response and which area a keyswitch controls.

3.3.9   Access Control

The D9412GV4 can control eight access doors (each requiring the optional D9210C Access Control Interface Module) with up to 999 uniquely identified cards or tokens. The D7412GV4 can control two access doors with up to 399 uniquely identified cards or tokens. Any of the following can grant access:

- Wiegand-style access control device (card reader) connected to the D9210C Access Control Interface Module
- Request to enter (RTE) or request to exit (REX) input
- Unlock command on a B920/B930

The access control features of the D9412GV4 and D7412GV4 can deny access during armed periods. The control panel can also grant access only to certain authorized users depending on whether the area is all on, part on, or off. Programming for automatic disarming when designated authorized users are granted access is also possible.

The Dual Authentication feature can optionally require passcode entry with presentation of door credentials before access authorization is granted.

3.3.10 Event Memory

The control panel retains point alarm and trouble events in memory for each area. A B930, B920, D1255 (any model), as well as a D1260 (any model) can be used to view event memory by using the Events menu. The control panel clears the previous events for an area from the event memory when the area is turned off.

3.3.11 Event Log

The system stores 1023 events from all areas in its event log. For example, the system adds at least two items to the log each time an area is turned on (arm) or off (disarm), the open (or close) event also contains the previous arming state.

All events can be stored even if the control panel does not send a report for them. The log can be viewed at a keypad, or uploaded using Remote Programming Software (RPS).

3.3.12 Ground Fault Detection

The Earth Ground Terminal on the control panels is electrically isolated from all other terminals to allow the control panels to detect ground fault conditions. A Ground Fault Detect Enable switch (S4) is located just under Terminal 10, Earth Ground, on the control panel. Refer to *Section 4.5.2 Ground Fault Detect Enable* on page 18 for information on operating this function.

3.3.13 Ground Fault Detection Added Feature

When Ground Fault Detect is enabled (S4 closed), Points can be used for non-powered fire-initiating devices such as heat detectors, four-wire smoke detectors, and pull stations. A D125B Powered Loop Interface or a D129 Dual Class A Interface Module is not required when connecting the non-powered fire-initiating devices to Points.

3.3.14 Conettix Functions

The D6600/D6100i/D6100IPV6 Conettix System supports data network communications. Conettix allows the D6600/D6100i/D6100IPV6 Receiver/Gateway devices to connect to various network technologies including Ethernet, UDP/IP, and GPRS (General Packet Radio System).

Connecting to a data network is possible using the COM4 or COM1 connection from the D6600/D6100i Receiver to the D6680 Network Adapter. Control panels can send reports through telephone lines, Ethernet, UDP/IP, or GPRS networks to the D6600/D6100i/D6100IPV6 receiver to the central station. Once events are received, they can then be issued to automation software or a network printer through a local area network (LAN) or wide area network (WAN).

Sending events to the central station over a LAN or WAN requires a network interface module (NIM), such as the B426, B420, or DX4020. Sending events over GPRS requires a special NIM, the ITS-DX4020-G.

3.3.15 Programming

Use the RPS, or the Keypad Installer menu, to program the control panels. Refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for programming options.

3.3.16 Dual Authentication

The D9412GV4 and D7412GV4 control panels can be configured to require two forms of identification before processing certain system commands. This feature requires a door controller and a keypad to be installed within proximity to each other for user convenience.

> ☑ Dual Authentication requires a D9210C door controller module even though the configured operation may not be access.

A standard system user has authority to use Dual Authentication if they have a passcode, a door credential (token or card), and appropriate command authority permissions assigned in the door and keypads assigned area. When enabled at a keypad, only the following Passcode Functions require access credentials with passcode entry, Arm / Disarm, Cycle Door (Grant Access), Cycle Relay, and Auto Re-arm. Refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry*

*Guide (P/N: F01U265459)*and *D9210C Installation and Operation Guide* (P/N: F01U215232) for details on installation, configuration and operation of this feature.

3.3.17 Other Features

The D9412GV4/D7412GV4 v2.00 Control Panels have many programmable features. Some of the features are listed below. Complete details on all features are in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*:

- Supervision of AC (primary power), battery (secondary power), Zonex, SDI and SDI2 buses, central processing unit (CPU), and two telephone lines
- Automatic System Test Reports
- Remote access for programming, diagnostics, and log uploads using the remote programming software (RPS)
- Fire alarm verification
- Programmable alarm outputs
- Programmable relay outputs
- Opening and closing windows
- Skeds (scheduled events)
- Limited local programming

4.0   Installation

4.1   Installation Preparation

This section contains a general installation procedure and refers to other sections of the document for detailed instructions.

Review this document and the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*before beginning the installation to determine the hardware and wiring requirements for the features used.

Have the following documentation available when reading through this guide:

- *Control Panels (D9412GV4/D7412GV4 v2.00) Control Panel Owner's Manual*.

Before installation, become familiar with the operation of RPS or the local Programmers menu.

4.2   Enclosure Options

Mount the control panel assembly in any of the Bosch Security Systems, Inc. enclosures listed:

- D8103 Universal Enclosure (tan)
- D8109 Fire Enclosure (red)
- D8108A Attack Resistant Enclosure (tan)

Refer to chapter 17.0 *Approved Applications* in this guide to determine if the application requires a specific enclosure.

4.3   Mounting Enclosure

1. Run the necessary wiring throughout the premises.
2. Mount the enclosure in the desired location. Use all five enclosure mounting holes. Refer to *Figure 2*.
3. Pull the wires into the enclosure.

Electromagnetic interference (EMI) can cause problems on long wire runs.

Figure 2:   Enclosure Mounting
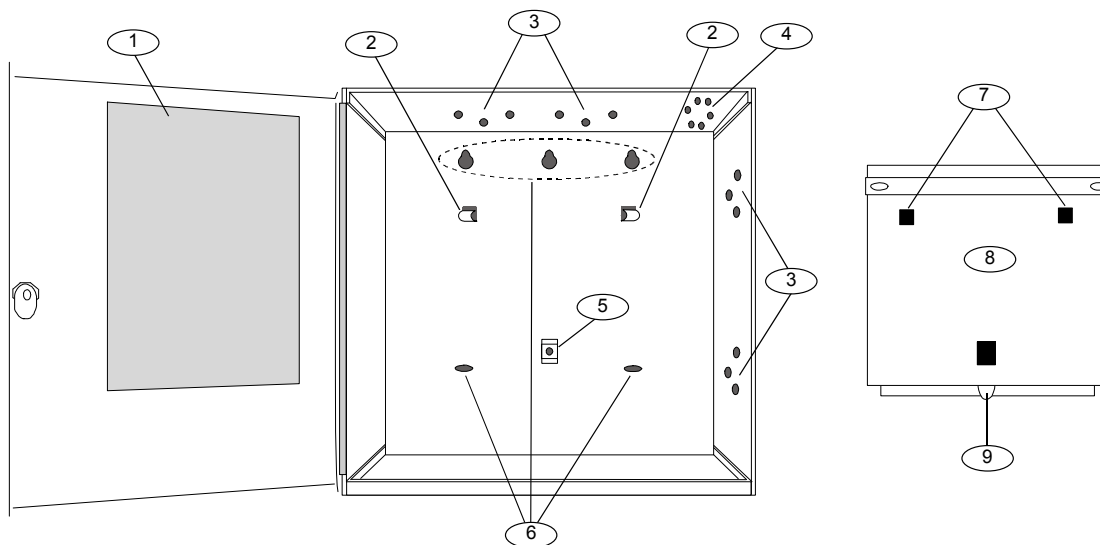
1 -	Point chart label	6 -	Enclosure mounting holes (5)
2 -	Mounting skirt hooks (2)	7 -	Mounting skirt hook holes (2)
3 -	Module mounting holes (12)	8 -	Back of D9412GV4/D7412GV4 Control Panel
4 -	Tamper switch mounting holes (5)	9 -	Lock down tab
5 -	Skirt mounting hole (1)		

4.4 Installing the Control Panel

1. Place the control panel over the inside back of the enclosure, aligning the large rectangular openings of the mounting skirt with the mounting hooks of the enclosure. Slide the control panel down so that it hangs on the hooks. Refer to *Figure 2, Item 2* on page 17.
2. Remove the tape from the #6 x 1/4-in screw in the mounting tab on the control panel. The screw passes through the mounting tab and into the skirt mounting hole in the enclosure. Tighten the screw to secure the control panel in the enclosure.
3. Connect earth ground to the control panel before making any other connections. Refer to *Section 4.5 Connecting Earth Ground*.

4.5 Connecting Earth Ground

4.5.1 Terminal 10

To help prevent damage from electrostatic charges or other transient electrical surges, connect the system to earth ground at Terminal 10 before making other connections. Recommended earth ground references are a grounding rod or a cold water pipe.

> **Caution: Do not use** telephone or electrical ground for the earth ground connection. Use 14 AWG (1.8 mm) to 16 AWG (1.5 mm) wire when making the connection.
>
> **Do not connect** other control panel terminals to earth ground.

4.5.2 Ground Fault Detect Enable

> To meet UL 864 requirements, enable Ground Fault Detect.

A ground fault is a circuit impedance to earth ground. The control panel has a ground fault detection circuit that, when enabled, detects ground faults on Terminals 1 to 9 and 11 to 32. The control panel also detects and annunciates ground faults on any device connected to it.

If a ground fault condition occurs, the keypads display SERVC GND FAULT and the control panel transmits a GROUND FAULT TROUBLE, AREA 1.

When the control panel recognizes that the ground fault condition is corrected, and remains corrected for between 5 to 45 consecutive sec, a Restoral Report is sent.

> The D9412GV4 and D7412GV4 control panels log and print a Ground Fault event as GROUND FAULT. If communicating in Modem4 format. If communicating in Contact ID format, the control panels generate a Ground Fault (310) event.

4.5.3 Enabling Ground Fault Detection

To enable Ground Fault Detect Enable, lock (close) the S4 Ground Fault Detect Pin on the control panel (*Figure 3*).

Figure 3:   Enabling Ground Fault Detection
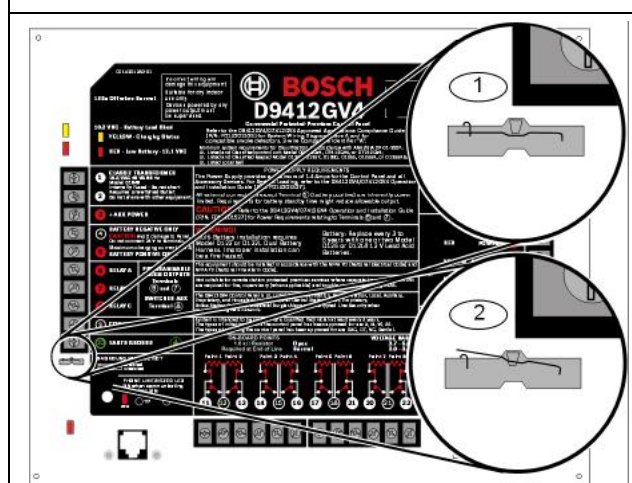
1 - *S4 Locked (Closed). Control panel detects ground faults.*
2 - *S4 Unlocked (Open). Control panel does not detect ground faults.*

4.5.4 Ground Fault Specifications

Table 5 provides the impedance specifications for detecting ground faults when any terminal or field wiring is shorted to ground.

Table 5:	Ground Fault Impedance Specifications
Impedance	**Control Panel Detects Ground Fault**
≤ 300 Ω	Yes
300 Ω to 200 k Ω	Detection depends upon the terminal
≥ 200 k Ω	No

4.5.5 Locking the Reset Pin

Locking the reset pin disables the control panel (*Figure 4*). When the control panel is disabled, the system ignores most keypad commands and points. Call for Service appears in some keypad displays when the pin is locked down. SDI2 keypads display "Installation Passcode" when the pin is locked down.

On-board outputs (Terminals 6 and 7) and off-board outputs deactivate when the control panel is reset. Terminal 8 has power when the output is deactivated. Activation interrupts power at that terminal. The on-board output (Terminal 8) remains deactivated when the reset pin is locked in the disable position.

Releasing the reset pin from the closed position resets the control panel. The control panel resets all its timers, counters, indexes, and buffers. Any points that restore after a reset do not generate Restoral Reports.

If the reset pin is placed in the Lock position and all areas are armed, the control panel will not answer RPS over a phone line unless Answer Armed program item has a value other than zero in it. No entry is required for network or RPS Enhanced direct connect communication. Refer to *RPS Parameters* in *RPS Help*.

Figure 4:   Reset Pin

1 - *Reset pin locked (closed)*
2 - *Reset pin normal (open)*
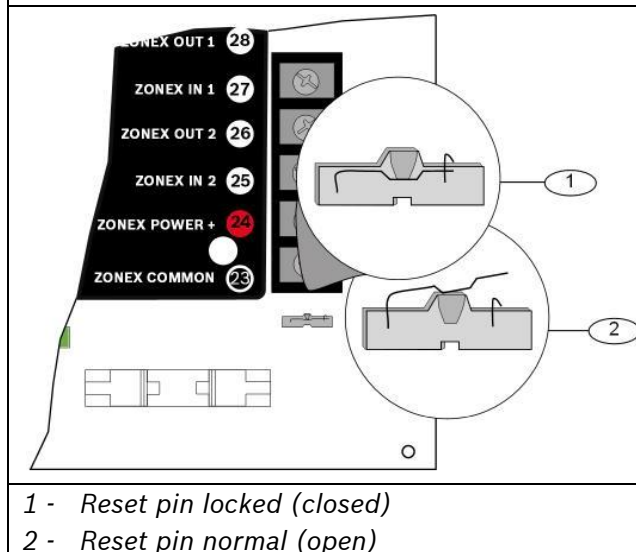
4.6 Completing the Installation

If not already complete, make the earth ground connection to Terminal 10 and lock the reset pin in the closed position.

4.6.1 Charging the Battery

Connect the battery, then the transformer to allow the control panel to charge the battery while you complete the installation. Refer to *Section 5.0 Power Supply* on page 24 for instructions.

On-board Buzzer Sounds at Power Up and Reset:
The system performs a series of self-diagnostic tests of hardware, software, and programming at power up and at reset. The buzzer on the control panel sounds during the tests. The self-diagnostics tests complete in approximately 1 to 3 sec.

If the control panel fails any test, the buzzer continues sounding and a System Trouble message appears at the keypads.

⚠	Avoid electrostatic discharge. Always touch Terminal 10, the earth ground connection, before beginning work on the control panel.

If the control panel receives an electrostatic discharge, it might generate Watchdog Reset and Param Fail events.

4.6.2 Installing and Wiring Detection Devices

Install and wire detection devices and keypads at their locations throughout the premises. **Do not** connect the control panel yet.

Section 8.0 On-Board Points on page 37 contains instructions for wiring the on-board points to detection devices. *Section 11.0 Arming Devices* on page 60 contains instructions for wiring the keypads.

Instructions for wiring the off-board point POPIT sensor loops are found in the instructions packaged with the POPIT modules.

4.6.3 Installing Modules and Outputs

1. Power down the unit by unplugging the transformer and disconnecting the battery.

☑	Always power down the unit when installing modules or outputs, or when making wiring connections to the control panel.

2. Install and wire any modules required for the installation as described in the module's installation instructions.

   Instructions for the D8125 POPEX Module, D8128D OctoPOPIT Module, D8129 OctoRelay Module, D811 Arm Status Relay Module, and D928 Dual Phone Line Switcher appear in this guide.

   Refer to *Section Off-Board Points* on page 41 for D8125 and D8128D instructions. Refer to *Off-Board Outputs* on page 55 for D8129 and D811 instructions. Refer to *Section 7.11 D928 Dual Phone Line Switcher* on page 34 for D928 instructions.

3. If using the power outputs at Terminals 7 or 8, refer to *Section Programmable Power Output Terminals 6, 7, and 8* on page 30 for instructions.

4.6.4 Connecting the On-board Points and Keypads

Connect the on-board points and keypad wiring to the system. Refer to *Section 8.0 On-Board Points* on page 37 and *Section 11.0 Arming Devices* on page 60 for instructions.

4.6.5 Powering Up

Reconnect the battery, then plug in the transformer. The buzzer sounds for two sec when the control panel is powered up. Leave the reset pin in the locked position.

Yellow Charging Status LED Remains Lit: If the yellow charging status LED remains lit after five minutes of powering up the control panel, either the battery is deeply discharged or too many powered devices were connected to the control panel. Combined continuous current draw for Terminals 3, 8, 24, and 32, and the accessory connector cannot exceed 1.4 A. Refer to *Section 6.0 Power Outputs* on page 30 for help.

4.7 Updating Control Panel Firmware

When a firmware update is available, installation of the update is performed using either a ROM Update Key or using RPS. Refer to the *GV4 Series Control Panel ROM Update Key Instructions* on the underside of the control panel faceplate, or refer to *RPS Online Help*.

4.8 Programming the Control Panel

If the control panel is not already programmed, review the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*. Ensure that all accessory modules for desired features are available for installation.

Use RPS to load a custom program into the control panel as needed.

4.9 Installing the Point Chart Label

☑	The point chart label is required for fire systems with verifications points.

A point chart label is included in the literature pack. Install the point chart label for fire or combined fire-and-burglary systems that use verification points.

Use the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Record Sheet* (P/N: F01U265460) to gather the necessary information for completing the point chart. Fill out the label and install it on the inside of the enclosure door (refer to *Figure 2* on page 17).

☑	Avoid smearing the entries on the chart. Use the peel-off backing to press the label in place.

4.10 Testing the System

After installing and programming the control panel, test the system completely. Test the control panel and all devices for proper operation.

☑ Test after initially programming the control panel.

Test after initially programming the control panel.

To meet UL 864 requirements, perform a full system test after any subsequent programming session.

Refer to *Section 4.11 Service Walk Test* on page 21 for complete Service Walk Test instructions.

Clear after Test: To clear the event memory and report buffer, momentarily close the reset pin. Events stored in the control panel's event log are not cleared.

4.11   Service Walk Test

The Service Walk Test differs from the standard Walk Test. In the standard Walk Test, point expansion modules whose switches are set for a point number not programmed in the control panel **do not** appear in the test. In the Service Walk Test, POPITs whose switches are set for a point number that is not programmed in the control panel **do** appear in the test.

The Service Walk Test allows a user to walk test all 246 points from a control-panel-wide keypad, regardless of the point index type.

A Service Walk Test can also be initiated by account-wide or area-wide keypads but test only those points that are within the scope of the keypad that initiated the function. The Service Walk Test does not test points in armed areas.

☑ Only Walk Test Start and Walk Test End are reported to the central station.

☑ During a Service Walk Test, the summary alarm and summary fire remain off, because there are no Fire or Burg alarm conditions to summarize. The P# Output Response Type feature operates as programmed.

☑ The D7412GV4 **does not** include the Service Walk Test in the Service Menu. To enable the Service Walk Test function for any GV4 Series Control Panel, add its function code to the Function List of a keypad.

Service Walk Test Procedure (B920/B930)

Refer to Walk Test procedures for Service Walk Test options in compatible keypad documentation when using a B920 or B930 Keypad.

1. Choose a keypad to conduct the test. Ensure that the display shows the idle disarmed text.
2. Press the [MENU] key and then go to the [3] Actions > [3] Test > [1]Walk Test > [3] Service menu option.
3. Enter your passcode and press [ENTER]. The keypad shows the number of points that remain to be tested.
4. To view the points, press [ENTER] on a B920 keypad or press the **View untested points** softkey on a B930 keypad. To scroll through the list of points, use the [PREV] or [NEXT] key.
5. When you fault a point (move in front of a motion sensor for example), the keypad emits a brief tone and shows the point name and information (for example, **Area-1 Point-7 Onboard: Short**).

Extra Points display default text: If the switches on a POPIT are set incorrectly to a point number that is not in the program for the control panel, the default text for that point number (PT ###) appears when the point is faulted.

Faulting the point a second time produces the tone and shows the point text, but does not decrease the count in the ## PTS TO TEST message.

To see the points that remain untested during the Service Walk Test:

   a. Press [ESC] when point text appears. The display shows ## PTS TO TEST.
   b. Press the [ESC] key. VIEW UNTESTED ? appears.
   c. Press [ENT]. ## PTS UNTESTED appears.
   d. Press [NEXT] to see a list of the points that have not yet been tested. Move through this list by pressing the [NEXT] key.
   e. To resume the Service Walk Test, press [ESC]. ## PTS UNTESTED appears.
   f. Press [ESC]. ## PTS TO TEST appears.
   g. Resume testing points. To end the Service Walk Test, press [ESC] twice.

6. After the last point is tested, 0 PTS TO TEST appears. Press [ESC]. The display shows ALL PTS TESTED briefly before returning to idle text.

| | The Service Walk Test, when performed on a D7412GV4, cannot show "0 PTS TO TEST" because the D7412GV4 is physically unable to connect to the second POPEX Module (used for Points 129-247). |

| | Automatic time-out returns the system to idle text: If there is no point or keypad activity for 20 min., the Service Walk Test ends automatically. The keypad returns to idle text. |

4.11.1 Program the Control panel

Use RPS or the keypads to program the control panel. Refer to:

- *Control Panels (D9412GV4/D7412GV4 v2.00)) Program Entry Guide* (P/N: F01U265459).
- *Keypad Installer menu*
- *RPS Help*

4.11.2 Service Bypass

To facilitate system maintenance for service personnel, a special point bypass option is provided through this menu to remove any point from service. The status of points in Service Bypass can be viewed through the Service Bypass Menu. For details in navigation and operation of this function refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

4.11.3 RF Points and Repeaters

With a B810 wireless receiver, the control panels can support up to 238 wireless points, 1000 key fobs, and 8 repeaters within the RADION wireless portfolio. The RF Points menu provides the tools necessary to enroll, remove or replace wireless points. For details in navigation and operation of these functions refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

With a B820 SDI2 Inovonics Interface Module, the control panels can support up to 350 RF devices and up to eight RF Repeater modules. The RF Points menu provides the tools necessary to

enroll, remove or replace wireless points. For details in navigation and operation of these functions refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

| | The RF Points menu does not affect the RFIDs learned by the D8125INV Wireless Interface Module nor the ISW-D8125CW-V2 Commercial Wireless Interface Module if installed on the Zonex bus. |

4.11.4 RF Diagnostics

With a B810 wireless receiver, or B820 SDI2 Inovonics Interface Module installed, the control panel can show detailed wireless communication information for RF points, keyfobs and repeaters. The RF Diagnostics menu can show real-time signal strength information for enrolled RF devices. By monitoring the signal strength of an individual RF device, the optimal position for installation can be found.

RF device diagnostic information also includes AC status, battery status, supervision status, and tamper status for all supporting devices. For details in navigation and operation of these functions refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

4.11.5 IP Diagnostics

With at least one B420 Ethernet Communication Module, or B426 Ethernet Communication Module installed on the SDI2 bus, the control panels can use the diagnostic functions of this menu to retrieve the auto-configured settings from the module and perform a series of network communication tests. This menu does not apply to the DX4020 modules on the SDI bus.

The **Settings** option retrieves the following from the selected B420 module: Unit Host Name, MAC ID, and current IPV4 Address. For the B426 module, the **Settings** option retrieves: Unit Host Name, MAC ID, and current IPv6 Address.

The **Connection Test** option performs the following automated tests for the selected B426/B420 module:

Link	[OK] if Ethernet cable is detected [Missing] if Ethernet cable is not detected.
Gateway	[OK] if an ICMP echo request (PING) response is received from the Gateway

	Address. [Failure] if response is not received.
Internet	[OK] if an ICMP echo request (PING) response is received from the IP Test Address. [Failure] if response is not received.

Refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)* for details on the B426/B420 Ethernet Communication Module configuration.

Figure 5: Service Walk Test Flow Chart Example
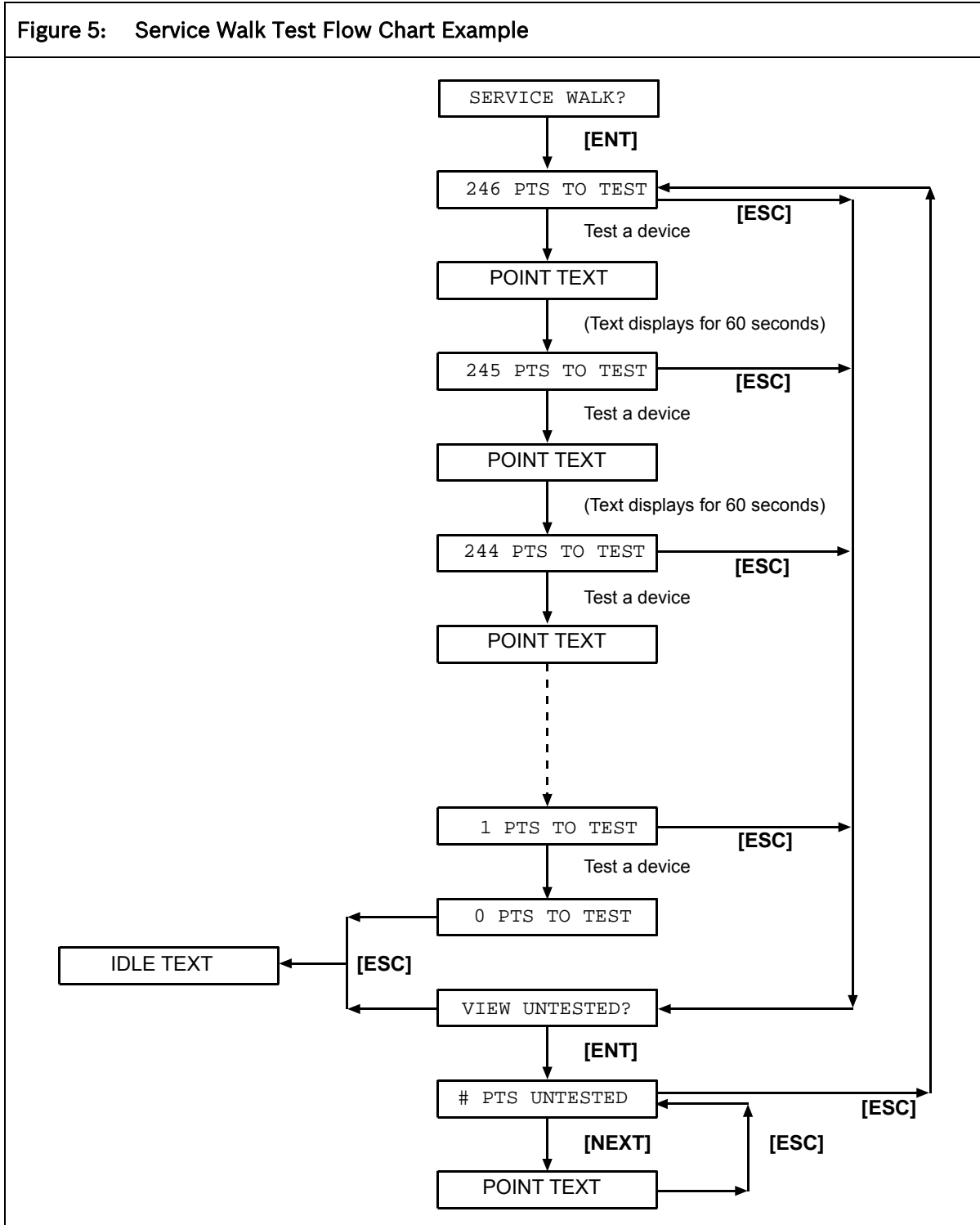
5.0 Power Supply

5.1   Primary Power Terminals 1 and 2

① , ②

5.1.1   Primary (AC) Power Circuit

The primary source is a 16.5 VAC, 40 VA, internally-fused transformer (Bosch Security Systems, Inc. Model D1640). The control panel draws 200 mA when idle and 300 mA when in an alarm state. The total available auxiliary current is 1.4 A.

Transient suppressors and spark gaps protect the circuit from power surges. This protection relies on the ground connection at Terminal 10. Ensure that you connect Terminal 10 to a proper ground. Refer to *Section 4.5 Connecting Earth Ground* on page 18.

AC Power Fail

The system indicates an AC power failure when Terminals 1 and 2 do not have power. The AC Fail Time parameter sets the number of minutes or secs without AC power before the control panel acknowledges the failure and the number of minutes or secs after the power returns before the control panel acknowledges restored power. Refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for additional information about AC Fail Time and UL 864 requirements.

5.1.2   Installing the Transformer

> ⚠ **Do not short-circuit the terminals of the transformer:** Shorting the terminals opens the internal fuse, causing permanent failure. Connect the transformer to Terminals 1 and 2 of the control panel before plugging it into the power source.

1. Use 18 AWG (1.22 mm) wire (minimum) to connect the transformer to the control panel.

    The wire length should be as short as possible. The maximum length is 50 ft (15 m). Connect the battery and plug in the transformer.

2. Route telephone and sensor loop wiring away from any AC conductors, including the transformer wire.

    AC wiring can induce noise and low level voltage into adjacent wiring. Route data wiring away from AC and telephone wiring.

> ☑ Always connect the battery first and then plug in the transformer.

3. Connect the battery. Refer to *Section 5.2.2 Installing the Battery* on page 25.
4. Plug the transformer into an unswitched, 120 VAC, 60 Hz power outlet only.
5. Secure the transformer to the outlet with the screw provided.

D8004 Transformer Enclosure Required for Fire Systems

Use the D8004 Transformer Enclosure for the D1640 Transformer in fire and combined fire and burglary applications.

> ☑ Check with the Authority Having Jurisdiction (AHJ) about mounting transformers on specific circuits.

5.2   Secondary Power Terminals

5.2.1   Secondary (DC) Power

A 12 V sealed lead-acid rechargeable battery (D126) supplies secondary power for auxiliary and alarm outputs, and powers the system during interruptions in primary (AC) power.

> ☑ **Use Lead Acid Batteries Only:** The charging circuit is calibrated for lead-acid batteries. Do not use gel-cell or nicad batteries.

Extra Batteries Increase Back-up Time

To increase battery back-up time, connect a second 12 V battery in parallel to the first battery. Use a D122 Dual Battery Harness to ensure proper and safe connection. Refer to the *Standby Battery and Current Rating Chart* in 17.0 Approved Applications in this guide for battery standby time calculations.

D1218 Battery

The D1218 is a 12 V, 18 Ah battery for use in applications requiring extended battery standby time. Up to two D1218 batteries can be connected when used with a D122 Dual Battery Harness.

> ⚠ **Caution:** When connecting two D1218 Batteries to the control panel, both must have the same capacity (use two 17.2 Ah batteries or two 18 Ah batteries).

	When using two D1218 batteries, use a separate enclosure, a D122L Dual Battery Harness, and long leads.

5.2.2 Installing the Battery

1. Place the battery upright in the base of the enclosure.
2. Locate the red and black leads supplied with the control panel.
3. Connect the black battery lead to Terminal 4, and then to the negative (-) side of the battery.
4. Connect the red battery lead to Terminal 5, and then to the positive (+) side of the battery.

	Warning: High current arcs are possible. The positive (red) battery lead and Terminal 5 can create high current arcs if shorted to other terminals or the enclosure. Use caution when working with the positive lead and Terminal 5. Always disconnect the positive (red) lead from the battery before removing it from Terminal 5.

	Caution: The battery terminals and wire are **not** power limited. A 0.25 in (6.4 mm) space must be maintained between the battery terminals, battery wiring, and all other wiring. Battery wiring cannot share the same conduit, conduit fittings, or conduit knock-outs with other wiring.

Figure 6:   Battery Terminals
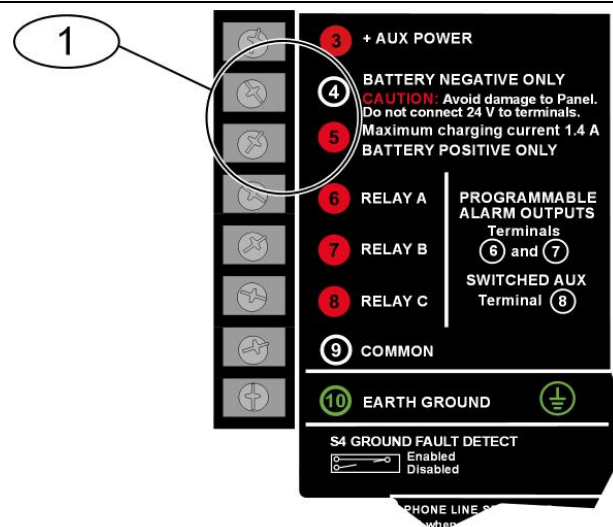
1 - Battery terminals. Terminal 5 is non-power limiting.

Figure 7:   Non-Power-Limited Wiring
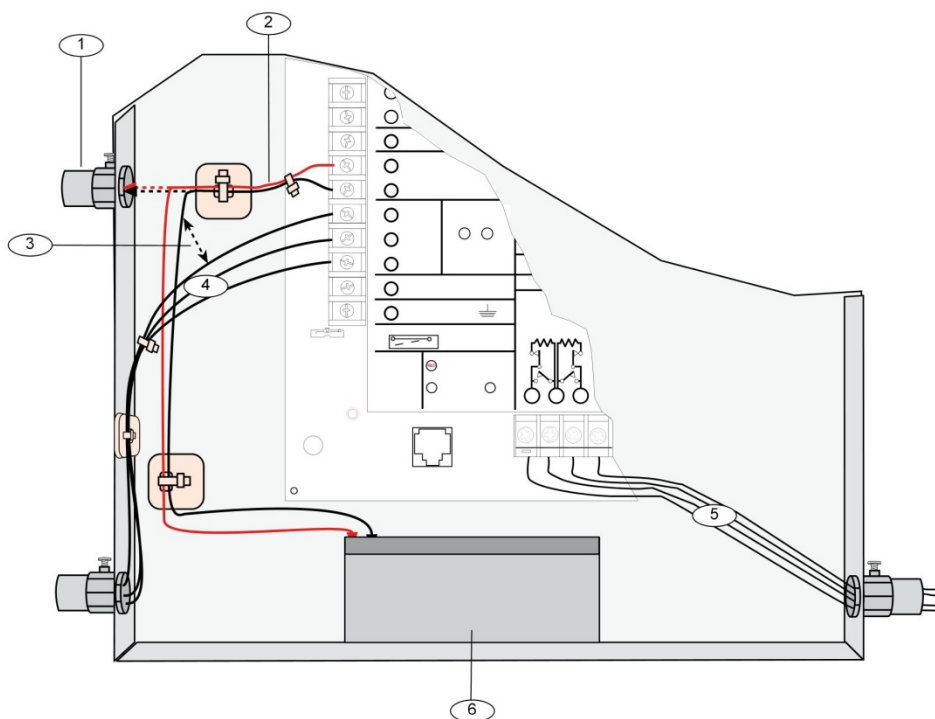
1 -	*Conduit required for use with external batteries.*	*4 -*	*Output wires*
2 -	*Battery wires*	*5 -*	*Input or Point wires*
3 -	*0.25 in (6.4 mm) minimum. To ensure proper spacing, use tie-wraps or similar devices to secure wires.*	*6 -*	*Standby battery 12 V sealed lead-acid rechargeable battery D1246/D1218*

5.2.3   Replacing the Battery

Replace batteries every 3 to 5 years under normal use. Record the date of installation directly on the battery.

⚠ **Caution:** Exceeding the maximum output ratings or installing the transformer in an outlet that is routinely switched off causes heavy discharges. Routine heavy discharges can lead to premature battery failure.

D8132 Boost Battery Backup: Adding a D8132 Battery Charger Module supports additional batteries of up to 27 Ah capacity, if required.

The control panel, plus any connected D8132 Modules and/or a auxiliary power supply, must be on the same AC circuit to discharge evenly if AC power fails. The B520 does not need to be on the same AC circuit as the control panel.

Refer to the *Standby Battery and Current Rating Chart* in the 17.0 Approved Applications of this guide for battery standby time calculations.

D8132 Specifications

Operating Voltage	16.5 VAC supplied from D1640 transformer
Operating Current	1200 mA of rectified AC
Float Voltage	13.9 VDC maximum
Dimensions (H x W x D)	0.75 in x 3.0 in x 5.0 in (1.9 cm x 7.6 cm x 12 cm)

> ☑ **The control panel and the D8132 (or B520 Auxiliary Power Supply Module) must share COMMON.**
>
> Figure 26 on page 61 shows the common form of the D8132 Module connected to the common on the keypad and the common on the control panel. Any stand-alone power supply powering any device connected to the control panel must also be connected to a common terminal on the control panel.
>
> If using the ground fault detection capability on the control panels with an external power supply, ensure that the external selected power supply isolates its earth ground connection from the negative side of the auxiliary power output. External power supplies that do not isolate earth ground can cause ground fault conditions on the control panel.

5.2.4 Battery Supervision

When battery voltage drops to 13.8 VDC, the yellow Charging Status LED illuminates. When the battery voltage drops to 12.0 VDC to 11.8 VDC, the red Low Battery LED lights, and the keypad or keypads display SERVC LOW BATT on the keypad display. The control panel (if programmed for power supervision) sends a BATTERY LOW report in the Modem4 communication format. It sends a Low System Battery (302) report in the Contact ID format.

If the battery is missing or shorted, the red Low Battery LED flashes at the same rate as the green Operation Monitor LED. If the control panel is programmed for power supervision, it sends a BATTERY MISSING report in the Modem4 communication format, or Control Panel Battery Missing (311) report in the Contact ID format.

When battery voltage returns to 13.7 VDC, the Low Battery LED turns off and the keypad or keypads clear the SERVC LOW BATT message on the keypad display. If the control panel is programmed for power supervision, it sends a BATTERY RESTORAL report in the Modem4 communication format or a Control Panel Battery Restored to Normal (302) report in the Contact ID format. At 13.9 VDC, the yellow Charging Status LED stops lighting.

Figure 8: Charging and Battery LEDs
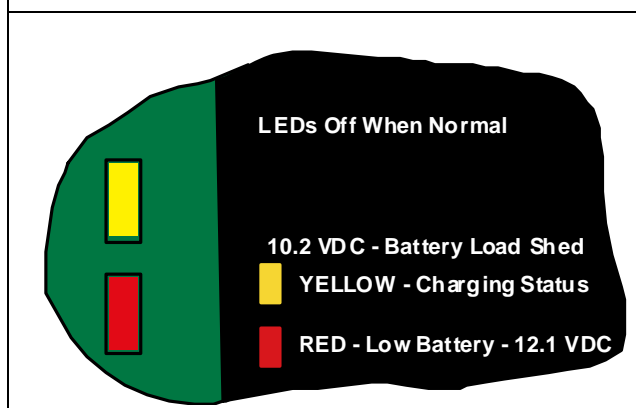
Investigate Low Battery reports immediately: If primary (AC) power is off and the discharge continues, the control panel becomes inoperative when the battery voltage drops below 10.2 VDC.

5.2.5 Battery Charging Circuit Float Charge

The float voltage for the battery charging circuit is 13.9 VDC at a maximum current of 1.4 A, less any devices connected to the control panel. If the float voltage drops below 13.8 VDC due to overload or battery discharge, the yellow Charging Status LED lights.

Loss of AC Load Shed Output protects battery: During an AC power loss, the battery supplies all power to the security system. If the battery voltage falls below 10.0 V during an AC power loss, a load shed output isolates the battery from the control panel and disables the control panel. Load shed protects the battery from being damaged by deep discharge.

When AC power restores, the load shed output reconnects the charging circuit on the control panel to the battery and the battery begins to recharge.

Overcharge Load Shed With AC Present: If more than 1.4 A of auxiliary current draw from the control panel occurs, the battery supplies the current and begins to discharge. If this situation is not corrected, the battery continues to discharge and at 11.8 VDC to 12.0 VDC, SERV LOW BATT appears on the keypad display.

When the battery voltage drops below 10.0 VDC, the control panel shuts down. Remove all loads to the control panel and disconnect AC power. Fix the condition creating the over current. Add a new battery and reconnect AC power.

A shorted battery condition is created either by a shorted cell inside the battery or by a short on Terminals 4 and 5. A shorted battery might cause the control panel to operate in an unsafe way. This condition generates WATCHDOG RESET reports.

Reset the control panel by momentarily placing the reset pin in the disable position. Refer to *Figure 4* on page 19. The red Low Battery LED continues flashing until the control panel resets.

5.2.6   Battery Discharge and Recharge Schedule

Table 6: Battery Discharge and Recharge Schedule	
Discharge Cycle	
AC Off:	AC Fail Report when AC fails, if control panel is programmed to report AC failure at occurrence.
13.9 VDC:	Charging float level.
13.8 VDC:	Charging status LED on.
12.0 VDC:	Low Battery and AC Fail Reports if programmed. Low battery LED on.
< Ω 10.0 VDC:	Battery load shed (processing functions continue if AC is present).
Recharge Cycle	
AC On:	Load shed output reset; battery charging begins; Battery Trouble and AC Restoral Reports sent.
13.7 VDC:	Battery Restoral Reports sent. Low battery LED off.
13.9 VDC:	Changing status LED off; battery float charged.

Table 7:	Charging Status and Low Battery LEDs		
	LED		
Type	**Color**	**State**	**Action**
Charging Status LED	Yellow		Shows the charging status of the battery. Refer to *Figure 8* on page 27 for location.
	Yellow	Off	Battery is fully charged. If the battery is missing, shorted, or reversed, the Charging Status LED is off, but the red Low Battery LED is flashing.
	Yellow	On	Battery float charge is below 13.8 VDC. If AC is present, the battery is charging. Indicates the combined current draw from all outputs exceeds 1.4 A. This is normal under alarm conditions for non-fire systems with sirens or bells drawing more than 1.4 A. If the LED lights regularly for extended periods or does not go out, check the current draw for devices connected to the power outputs. Refer to *Section* 6.0 *Power Outputs* on page 30 for instructions.
	Yellow	Flash once per minute	System is checking the battery.
Low Battery LED	Red		Shows the condition of the battery. Refer to *Figure 8* on page 27 for location.
	Red	Off	Battery is fully charged.
	Red	On	Battery voltage dropped to between 12.0 VDC and 11.8 VDC. LED turns off when voltage reaches 13.7 VDC.
	Red	Flash	Battery is missing or shorted.

6.0   Power Outputs

6.1   Circuit Protection

Three self-resetting circuit breakers protect the control panel from short circuits on the continuous and programmable power outputs. If the control panel is programmed for power supervision and a short circuit occurs on one of the power outputs, the control panel sends BATTERY LOW and BATTERY MISSING when using Bosch Security Systems, Inc. Modem4 communicator format. Under the same conditions when using Contact ID communicator format, the control panel sends Control Panel Battery Low (302) and Control Panel Battery Missing (311).

One self-resetting circuit breaker protects:

- Terminal 3: Auxiliary Power
- Terminal 24: Zonex Power

> ☑ A short circuit on one terminal disrupts power to the other terminal.

Another self-resetting circuit breaker protects:

- Terminal 6: Alarm Power Output
- Terminal 7: Alternate Alarm Power Output
- Terminal 8: Switched Auxiliary Power.

> ☑ A short circuit on one of the terminals disrupts power to the other two terminals.

The third self-resetting circuit breaker protects Terminal 32: Power +.

> ☑ UL requires any device powered from a power output to be supervised.

> ☑ UL requires that power outputs are not shared between fire and non-fire devices unless all devices are in conduit within 20 ft and are in the same room.

6.2   Total Available Power

The system produces up to 1.4 A of combined power at 12.0 VDC nominal for special application use. The outputs listed below share the available power. These outputs are shown as red circles on the faceplate.

(3) Auxiliary Power: Use this terminal to power devices requiring continuous power.

(6) (Output A) - Alarm Power Output: Programmable output normally open, power on alarm.

(7) (Output B) - Alternate Alarm Power Output: Programmable output normally open, power on alarm.

(8) (Output C) - Switched Auxiliary Power: Programmable output normally closed, switches power off when the Sensor Reset command is executed.

(24) Zonex Power: Use this terminal to power Zonex modules such as the D8125, D8128D, and D8129 Modules.

(32) SDI Power +: Use this terminal to power serial device interface (SDI) devices such as keypads, or the D9210C Access Control Interface Modules.

(36) SDI2 Power +: Use this terminal to power serial device interface (SDI2) devices such as the B208 Octo-input Module, the B308 Octo-output Module, the B426/B420 Ethernet Communication Module, RADION wireless receiver, B920 Two-line Alphanumeric Keypad, B930 ATM Style Alphanumeric Keypad, and the B820 Inovonics Interface Module.

Accessory Connector: The D928 Dual Phone Line Switcher connects to the accessory connector.

6.3   Continuous Power Output Terminals 3, 8, 24, and 32

(3) , **(8)** , **(24)** , **(32)**

The continuous current draw for powered devices connected to Terminals 3, 8, 24, and 32, and the accessory connector must not exceed 1.4 A. Devices powered from these outputs operate at 12.0 VDC Nominal.

Power Restricted for Fire and Combined Fire and Burglary Systems: Use the Fire System Power Formula to calculate the current available for fire and combined fire and burglary systems (refer to *Section* 6.4 *Programmable Power Output Terminals 6, 7, and 8*).

6.4   Programmable Power Output Terminals 6, 7, and 8

(6) , **(7)** , **(8)**

6.4.1   Programming

The power outputs at Terminals 6, 7, and 8 are programmed as Outputs A, B, and C. All outputs are programmed in the Outputs section.

Outputs are assigned a output type, (Fire Bell, for example) when they are assigned to an area. Outputs can be assigned to one or more areas.

The Bosch Security Systems, Inc. defaults set Output A (Terminal 6) as a Steady Alarm Bell output, Output B (Terminal 7) as a Pulsed Fire Bell output, and Output C (Terminal 8) as a Verification or Reset output for smoke detectors. The *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*contains complete instructions for programming outputs. Refer to *Sections 6.4.2 Terminals 6 and 7*, *6.4.3 Fire System Power Formula*, and *6.4.4 Terminal 8* on page 31 for descriptions of the functions of each terminal.

Refer to the Bell Parameters section of the program to set the Fire Bell, Alarm Bell output responses for outputs. Four annunciation patterns are available: Steady, Pulsed, California Standard, and Temporal Code 3.

Voltage Output at Terminals 6, 7, and 8

If Terminals 6, 7, and 8 do not provide the expected output, check:

- Programming for Outputs A, B, and C in the outputs section of the program.
- Bell Parameters section of the program to confirm that the Alarm and Fire Bell responses are programmed for the expected duration and pattern.
- Point Assignments section to confirm that each point is programmed for the expected local response.

6.4.2   Terminals 6 and 7

When activated, Terminals 6 (Output A) and 7 (Output B), provide positive (+) 12.0 VDC Nominal power output. Use the power at Terminals 6 and 7 to power bells, siren drivers, piezoelectric fire sounders, electronic horns, or other devices.

Programming determines the format of the output and the conditions that activate it. One self-resetting circuit breaker protects Terminals 6, 7, and 8 against shorts.

When using Output A or Output B to activate notification appliance circuits in UL Listed fire alarm applications, install a D192G Indicating Circuit Module.

Power Restricted for Fire and Combined Fire and Burglary Systems: Fire systems are prohibited from using the battery for determining alarm power. Use the fire system power formula that follows to calculate the current available for fire and combined fire and burglary systems.

6.4.3   Fire System Power Formula

To calculate the current available at Terminals 6 and 7 for fire and combined fire and burglary systems:

1. Add together the current draws for all devices connected to Terminals 3, 8, 24, and 32, and the accessory connector. This is the total current required for the normal standby condition (NSC).
2. The current available for NSC is 1.4 A. Subtract the NSC current required calculated in *Step 1* from the NSC current available, 1.4 A. The difference is the alarm current available for Terminals 6 and 7.

In formula format:

1.4 A – NSC current required (Step 1)	=	Alarm current available

Refer to the *Approved Applications* chapter of this guide for module or accessory current requirements.

6.4.4   Terminal 8

Terminal 8 provides continuous positive (+) 12.0 VDC Nominal power. Output C interrupts the power at Terminal 8 when activated. Use Terminal 8 to power smoke detectors or other devices that are reset by interrupting power. One self-resetting circuit breaker protects Terminals 6, 7, and 8 against shorts.

Verification and Reset Output

The default program sets Output C (Terminal 8) as a verification and reset output. Refer to *Output Parameters* and *Point Assignments* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)* for instructions on programming verification and reset outputs and points.

Performing a sensor reset at a keypad produces a five-sec output activation of verification and reset outputs. The control panel ignores verification and resettable points during the five sec.

7.0 Telephone Connections

7.1 Registration

The Bosch Security Systems, Inc. D9412GV4 and D7412GV4 Control Panels are registered with the Federal Communication Commission (FCC) under Part 68, for connection to the public telephone system using an RJ31X or RJ38X jack installed by the local telephone company.

7.2 Notification

Do not connect registered equipment to party lines or coin-operated telephones. Notify the local telephone company and provide the following information before connecting the control panel to the telephone network:

- The particular line to which the control panel will be connected
- Make (Bosch Security Systems, Inc.), model (D9412GV4 or D7412GV4), and serial number of the control panel
- FCC registration number: US:ESVOT00BD9412GV4
- Ringer equivalence for the control panel: 0.0B

7.3 Location

To prevent jamming of signals, wire the RJ31X or RJ38X jack before the in-house telephone system to support line seizure (*Figure 9*). Install the jack on the street side of the telephone switch, wired ahead of any PBX equipment. Line seizure temporarily interrupts normal telephone usage while the control panel sends data. After installation, confirm that the control panel seizes the line, acquires dial tone, reports correctly to the receiver, and releases the telephone line to the in-house telephone system.

Figure 9: RJ31X/RJ38X Wiring (RJ31X shown)

1 - *Outside Telco*
2 - *Premises telephone*
3 - *Bar short removed on Telco connector block insertion – positions 1 and 4 and 5 and 8*
4 - *RJ31X/RJ38X jack*
5 - *Telco connector jack*
6 - *To control panel*
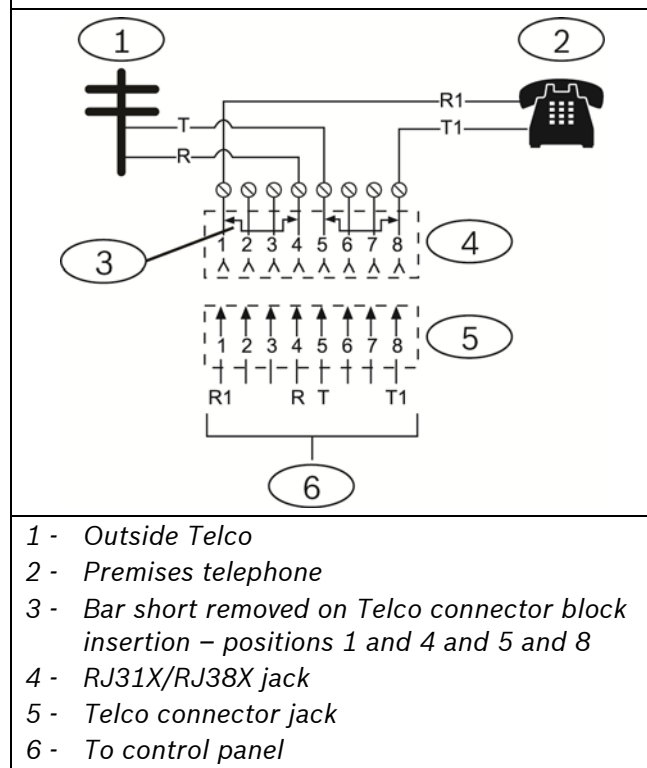
7.4 Telephone Cord Connection

Connect one end of a D162 [2 ft (61 cm)] Telephone Cord to the telco cord connector located on the bottom left corner of the control panel. Refer to *Figure 10*. Connect the other end to the RJ31X or RJ38X jack.

> To supervise the phone cord, use an RJ38X jack.

Figure 10: Phone Connector, Phone LED, and Operation Monitor LED Locations
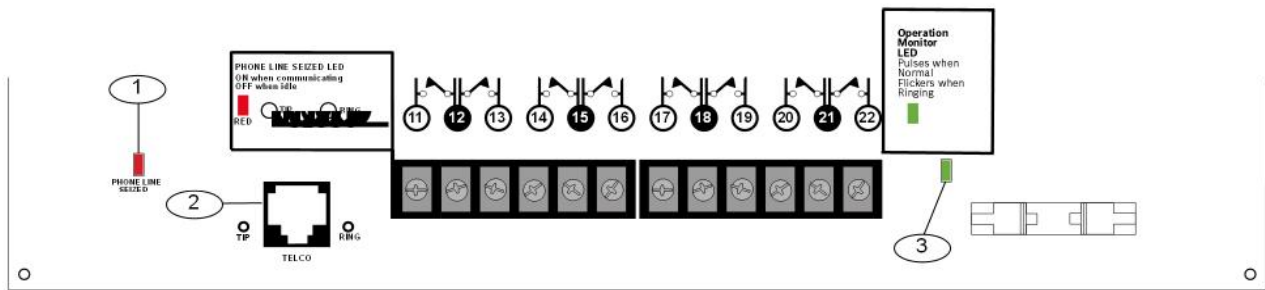
1 - Phone LED (red)	3 - Operation Monitor LED (green)
2 - Telephone cord connector	

7.5 Phone LED (Red)

The red Phone LED illuminates when the control panel seizes the telephone line and remains illuminated until the control panel returns the telephone line. Refer to *Figure 10* on page 33 for the location of the red LED.

7.6 Operation Monitor LED (Green)

The green Operation Monitor LED indicates the operation of the central processing unit (CPU). When the CPU is operating normally, the LED flashes 0.5 sec on, 0.5 sec off.

This green LED also serves as a ring indicator. The Operation Monitor LED is located on the lower right side (*Figure 10* on page 33). When there is ring voltage on the telephone line (the telephone is ringing), the green LED flashes at a faster rate for the duration of each ring. Ring voltage must reach a minimum of 45 VAC before the system detects it.

7.7 Dialing Format

The system can be programmed to use dual tone multi-frequency (DTMF) or pulse dialing. Refer to *Phone Parameters* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

7.8 Telephone Line Monitor

The control panel has a built-in telephone line monitor that tests the telephone line for voltage and current. If the D928 Dual Phone Line Switcher is used to connect two telephone lines to the control panel, both lines are monitored. The normal voltage on a telephone line is approximately 48 VDC (24 VDC for some telephone systems).

If the control panel senses trouble, it starts a programmable telephone line trouble timer, which continues to run as long as the monitor detects trouble. It resets to zero when the control panel senses a normal line. If the timer reaches the delay time in the Phone Supervision program item, it begins a telephone line trouble response. Programming determines what the response is. For programming information, refer to *Phone Parameters* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

Any time the control panel uses the telephone line to make a call or is on-line with the remote programming software (RPS), it stops monitoring the telephone line during this process. When the telephone line on the control panel is no longer in use, it begins to monitor the telephone line again.

Bad Line Might Test OK: The telephone line monitor uses voltage levels to test the status of the telephone line. In some instances, a given telephone line might be out of service without affecting the voltage on the line. The telephone line monitor cannot recognize this trouble condition.

7.9   Called Party Disconnect

Telephone companies provide "called party disconnect" to allow the called party to terminate a call. The called party must go on hook (hang up) for a fixed interval before a dial tone is available for a new call. This interval varies with telephone company equipment. Control panel firmware allows for "called party disconnect" by adding a 35-sec, "on hook" interval to the dial tone detect function. If the control panel does not detect a dial tone in 7 sec, it puts the telephone line on hook for 35 sec to activate "called party disconnect," goes off hook, and begins a seven-second dial tone detect.

If no dial tone is detected, the control panel dials the number anyway. Each time the number is dialed, the control panel records this as an attempt.

7.10   Communication Failure

If a backup route is configured and the first two attempts to reach the receiver over the phone line fail, the system switches to the backup route. When it switches to the backup route, a COMM TROUBLE PH # event is sent, and the event that triggered the telephone call to the central station follows.

After ten unsuccessful attempts to reach the receiver, the control panel enters communication failure. The control panel clears any reports queued for the failed route and a COMM FAIL # event is generated and display at the keypads. A trouble sounder can be programmed to annunciate at the keypads.

One hour after the COMM FAIL # is generated, the control panel attempts to send a restoration event. If a communication failure still occurs, the keypad trouble sounds again.

If the D928 Dual Phone Line Switcher is used, the control panel makes a total of ten attempts before entering communication failure.

Enhanced Communication

The control panels can send events over the SDI Bus through a DX4020 Network Interface Module (NIM) or over the SDI2 bus through a B426/B420 NIM. For more information on the enhanced communications capabilities, refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

7.11   D928 Dual Phone Line Switcher

7.11.1 Description

The optional D928 Dual Phone Line Switcher allows the D9412GV4 and D7412GV4 Control Panels to send reports over two separate telephone lines. If a telephone line is not within the operating range, the control panel attempts to use the other telephone line to send the message. If trouble is detected, the control panel keeps the faulty telephone line in memory.

Set the Ring Count above 2 on Answering Machines: The control panel's RPS line monitor feature might not operate correctly if an answering machine with a ring count of less than two rings is connected to a telephone line used by the D928 Module.

7.11.2 Operation

Refer to *Phone* and *Phone Parameters* section of the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)* for telephone supervision and reporting options. To use the D928, set the *Two Phone Lines* prompt to **Yes**.

When the D928 is installed, the control panel alternates between Phone Line 1 and Phone Line 2 to send its first report. For example, on day one, the control panel first attempts to communicate on Phone Line 1. On day two, the control panel switches and attempts to communicate on Phone Line 2.

☑	Any time the control panel resets or is powered down or up, the next reported event always attempts to call out on Phone Line 1 first.
☑	If Phone Line 2 is not in service on "Day 2", the control panel switches to the primary phone line to send the report.

With the D928 Dual Phone Line Switcher installed, the control panel uses two telephone lines (primary and secondary) to dial up to four telephone numbers.

When using a primary and a backup device within a *Route Group #*, the control panel makes two attempts on the primary telephone line using the *Primary Device #* as programmed. If these two attempts fail, the control panel switches to the secondary telephone line using the *Backup Device #* as programmed. This pattern continues for a total of ten attempts. After ten unsuccessful attempts, the control panel generates a Comm Fail event for the given *Route Group #*.

Figure 11: D928 Dual Phone Line Switcher
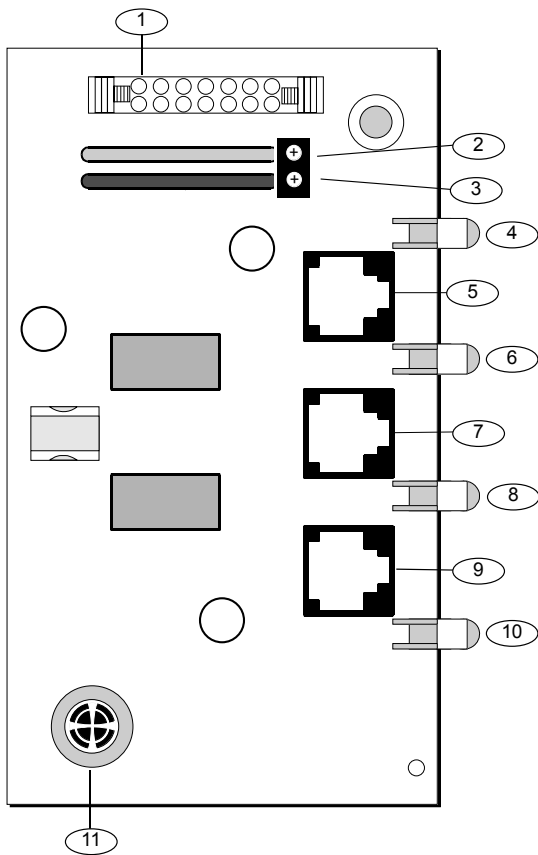
1 - *Connect to ACCESSORY CONNECTOR with ribbon cable.*
2 - *Green to Terminal 1*
3 - *Black to Terminal 9*
4 - *AC Power LED (green)*
5 - *Phone jack to primary phone line*
6 - *Primary Fail LED (yellow)*
7 - *Phone jack to secondary phone line*
8 - *Secondary Fail LED (yellow)*
9 - *Phone jack to telco connector*
10 - *Communications Fail LED (yellow)*
11 - *Buzzer*

7.11.3 Installing the D928

Mounting

Mount the D928 on the lower right side of the enclosure using the screws provided with the switcher.

Wiring

The D928 has two flying leads. The green lead monitors AC power. The black lead is the ground reference for the AC Power LED.

1. Connect the green lead from the D928 to Terminal 1.
2. Connect the black lead from the D928 to Terminal 9.

Telephone Connections

1. Plug one end of the ribbon cable provided into J4 on the D928. Plug the other end of the ribbon cable into the ACCESSORY connector on the control panel.
2. Plug one end of the D162 phone cord provided into the TELCO jack. Plug the other end of the phone cord into the TELCO jack on the control panel. Refer to *Table 8* for phone cord lengths.

Table 8:	Phone Cord Lengths
Phone Cord	**Length**
D162	2 ft (61 cm)

3. Plug one end of a D162 phone cord into J1 on the control panel. Plug the other end of the phone cord into the RJ31X or RJ138X for the primary telephone line.
4. Plug one end of a D162 phone cord into J2 on the control panel. Plug the other end of the phone cord into the RJ31X or RJ138X for the secondary telephone line. Refer *Table 8* for phone cord lengths.

7.11.4 D928 Status LEDs

Four LEDs mounted on the front edge of the D928 Module show the status of AC power for the control panel, the status of the two telephone lines, and communication failure (*Figure 11* on page 34). When programmed and operating normally, only the green AC power status LED is lit.

AC Power LED

The green AC Power Status LED lights when AC power is applied to Terminals 1 and 2 on the control panel.

Phone Line Fail LEDs

Two yellow Phone Line Status LEDs (one for the primary telephone line, one for the secondary telephone line) light if the telephone line is not within the operating range. The control panel monitors the faulty telephone line for the programmed interval before indicating a trouble condition. Refer to *Section 7.8 Telephone Line Monitor* on page 33 for a description of phone line monitor operation.

Communication Failure LED

The yellow Communication Failure LED lights when the system is in communication failure. The LED turns off when communication restores. Refer to *Section 7.10 Communication Failure* on page 34.

	Dedicated telephone lines might be required for UL 864 Commercial Fire applications. Check with your Authority Having Jurisdiction (AHJ).

8.0 On-Board Points

8.1   Terminals 11 to 22 Description

The control panel provides eight on-board points. Each point functions independently and does not interfere with the operation of the others. The control panel monitors the sensor loops for normal, shorted, or open conditions between an input terminal (11, 13, 14, 16, 17, 19, 20, or 22) and any of the point common terminals (12, 15, 18, and 21). The programming for the point determines how the control panel responds to those conditions. Refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for point programming options. The control panel also monitors the sensor loops for ground fault conditions if S4 is latched (ground fault detect enabled).

8.2   Point Sensor Loops

☑	Not for use in Fire Applications.

When wiring the on-board points (*Figure 12*), install a 1 k Ω resistor at the far end of the sensor loop to provide a reference for supervision. Dry-contact sensing devices can be connected in series (normally-closed) or in parallel (normally-open) to any of these loops.

The number of normally-open and normally-closed detection devices each sensor loop can supervise is limited only by the resistance on the loop. The total resistance for the wire length and contacts, minus the end-of-line (EOL) resistor, must not exceed 100 Ω.

8.3   Point Parameters

The condition of on-board Points 1 to 8 is determined by measuring the voltage across the point input terminal and one of the common terminals. The sensor loops must be connected and the 1 k Ω EOL resistor in place.

Table 9:	Point Parameters
Loop	**Voltage Range**
Open	Greater than 3.7 VDC, but less than 5.0 VDC.
Normal	Greater than 2.0 VDC, but less than 3.0 VDC.
Shorted	Greater than 0.0 VDC, but less than 1.3 VDC.

Figure 12: On-board Point Sensor Loop Wiring
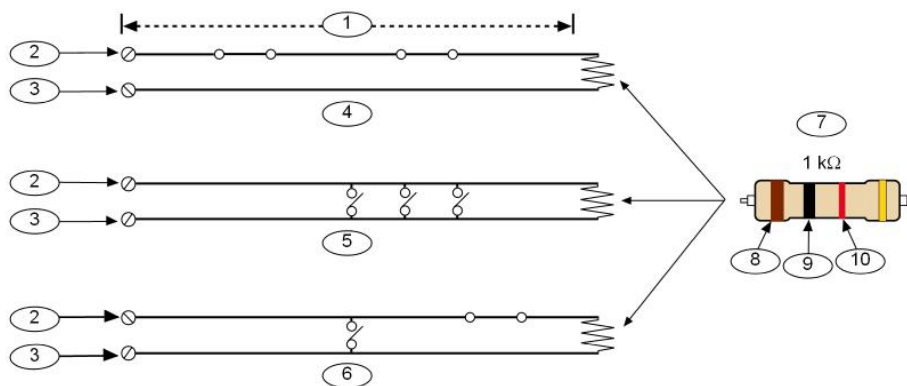
1 -   100 Ω maximum Loop resistance
2 -   Point input terminal
3 -   Point common terminal
4 -   Normally-closed contacts (NC)*
5 -   Normally-open contacts (NO)
6-   Combination: Normally-open contacts and normally-closed contacts (NO/NC)

7 -   P105F (Package of 8 EOL resistors) or P105BL (Package of 8 UL Listed EOL resistors) (P/N: 15093130-0040) or ICP-1K22AWG-10 (This is a listed 10 pack of 1K ohm resistors)
8 -   Brown
9 -   Black
10 - Red

*   UL does not allow normally-closed loops for commercial fire applications.

8.4   Point Response Time

The control panel scans on-board and off-board point sensor loops every 300 ms. The Debounce program item in the Point Assignment section of the software determines point response time by setting the number of times the control panel scans a point before generating an alarm.

The debounce count can range from 2 to 15; therefore, point response time ranges from 600 ms to 4.5 sec. The Bosch Security Systems, Inc. default for debounce count is 2.

⚠	Increasing debounce might cause missed alarms. If you increase the debounce count, detection devices can enter alarm and reset without exceeding the point response time.

Use a debounce count of 2 for all points **except**:

- Use 3 for Interior Follower points.
- Use 4 for door points connected to a D9210C Access Control Interface Module.

8.5   Wiring Information for Installations Using the Rothenbuhler 5110/4001-42 High Security Bell

⚡	**Warning:** Wear ear protection when installing and testing the Rothenbuhler High Security Bell.
	Sound levels greater than 95 dBA at 3 m (10 ft) can occur.

The UL Listed Model 5110 Bell and Model 4001-42 External Line Balancer (both made by Rothenbuhler) must be used for the bell and balanced line module in bank safe and vault applications.

1. Remove all power from the control panel.
2. Use six-conductor 18 AWG (1.2 mm) shielded stranded wire between the control panel and the 5110 Logic Board (located in the bell enclosure).
3. If you do not have a Silence switch, temporarily install a 1 Ω resistor across TB1-1 and TB1-6 on the 5110 Logic Board. The resistor keeps the 5110's bell silent during the installation and alignment procedures. Also place a temporary wire jumper across the TB1-6 Bell Relay and TB1-7. Refer to *Figure 14* on page 40 for wiring a Silence switch.

4. Mount the D8108A's 4001-42 External Balanced Line Module and wire it to the 5110 Logic Board using two-conductor 22 AWG (0.8 mm) cable.
5. Wire the 4001-42 to the control panel. Refer to *Figure 14* on page 40 and the Rothenbuhler installation manual.
6. Before supplying AC and DC power to the control panel and bell, ensure you are wearing ear protection. The bell sounds for 2 sec and then silences during power up.

For additional information about bell requirements, refer 17.3   Bank Safe and Vault Applications found in 17.0 Approved Applications.

Figure 13: Rothenbuhler 5110/4001-42 High Security Bell Wiring Configuration

0.64 mm (1/4 in.)
minimum distance
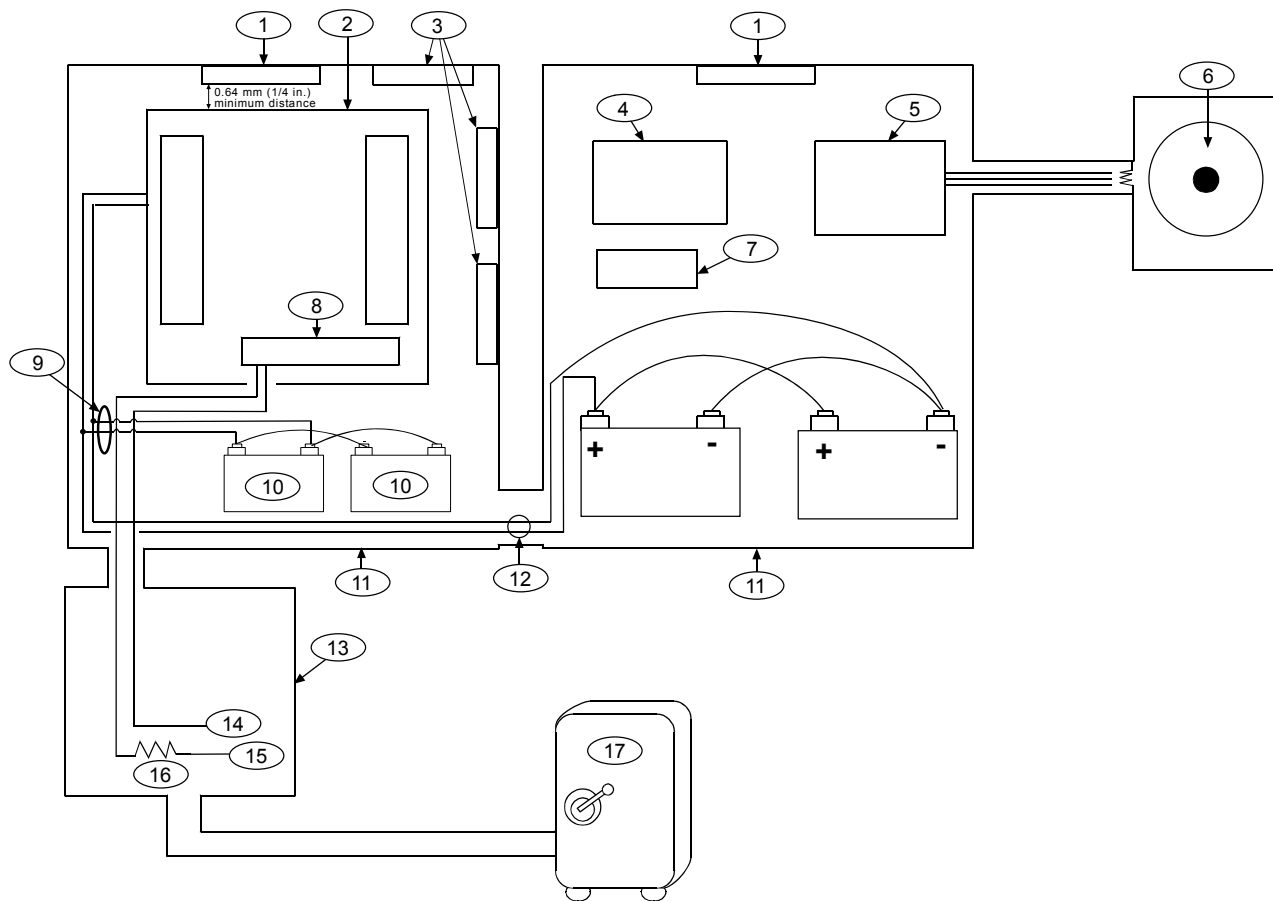
1 - Self-contained vibration sensor	10 - D126 Battery
2 - Control panel	11 - D8108A Enclosure
3 - Accessory modules	12 - D122/D122L Battery Harness[2]
4 - High line security module	13 - Proximity/control unit
5 - 4001-42 Balanced Line Module	14 - Normally open (NO)
6 - 5110 Bell	15 - Normally closed (NC)
7 - D133 Relay	16 - End-of-line (EOL) resistor
8 - Alarm zone input[1]	17 - Safe
9 - D122/D122L Battery Harness[2]	

[1] Use Terminal 11, 13, 14, 17, 19, 20, or 22. (Select only one.)

[2] Use a D113 Battery Lead Supervision Module to supervise the battery connections.

Figure 14: Wiring the Rothenbuhler 5110/4001-42 High Security Bell to the Control Panel

1 - 5110 Logic Board	8 - Alarm zone input*
2 - 4001-42 External Line Balancing Module	9 - 10 kΩ resistor
3 - D9412GV4 or D7412GV4 Control Panel	10 - Optional Silence switch
4 - Alarm output	11 - D133 Relay Module
5 - Alternate alarm	12 - BBL In 4
6 - Common	13 - BBL Out 5
7 - +12.0 VDC	14 - Terminal TB1

* Use Terminal 11, 13, 14, 17, 19, 20, or 22. (select only one.)

9.0 Off-Board Points

9.1 Zonex Buses

9.1.1 POPIT Modules

The D9412GV4 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 D9412GV4 can monitor to 246. The D7412GV4 provides up to 67 off-board points, bringing the total number of points the D7412GV4 monitors to 75. Each off-board point requires a POPIT Module.

☑	The expansion bus can be shared between fire and non-fire devices where the POPIT module provides data isolation between the input and the bus connections.

9.1.2 POPEX Modules

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 have power and data connections to the point bus on the control panel (*Table 10*).

Table 10:	POPEX Modules	
Model	**Power**	**Data**
D9412GV4	Terminals 23 and 24	Terminals 25 and 26 or Terminals 27 and 28
D7412GV4	Terminals 23 and 24	Terminals 27 and 28

9.1.3 Missing Conditions

If a programmed POPIT is disconnected from the expansion loop, a missing condition appears immediately and the event is logged. The missing condition might also be sent to a central station or printed to an on-site printer, if programmed to do so. Refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)* for programming options.

9.1.4 Control Panel Responses to Missing Point Conditions

D9412GV4 and D7412GV4 respond to missing point conditions based on the point's programming and the turned on (armed) state of the point's area. For example, if an interior motion detector point is missing during a turned off (disarmed)state, a Missing Trouble event is generated; however, if the point is missing while the area is 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.

9.2 D8125 and D9127 POPIT Modules

D9127 POPITs use the D8125 POPEX Module to report to the control panel. Each D8125 supports up to 119 POPIT points. Connect two D8125 Modules to the D9412GV4 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 D9412GV4 reserves Points 128 and 248 for internal use.

The control panel annunciates activity only for each POPIT, not for each detection device connected to the sensor loop.

D9127 Module enclosures are made of UL Listed fire resistant material. D9127T Modules contain tamper switches. D9127U Modules include untampered covers. Unless the module is mounted in a tampered enclosure, UL requires D9127T Modules for certificated accounts.

Listings

D8125 POPEX 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.

Refer to 17.0 Approved Applications to determine the required equipment and enclosures for the application.

Figure 15: Connecting the D8125 POPEX to the D9412GV4 Control Panel
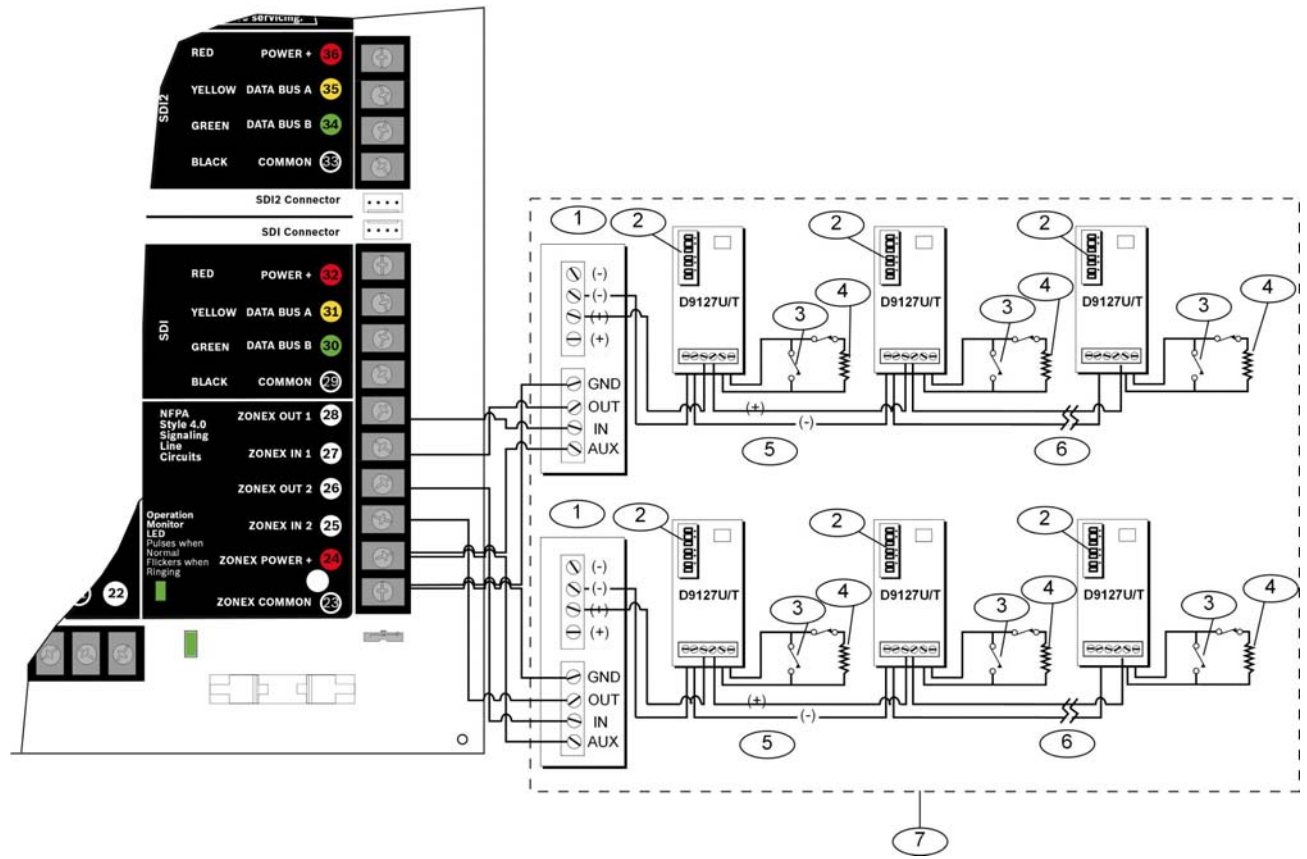
1 -	D8125 POPEX Module	5 -	Point expansion loop
2 -	Switch block	6 -	Up to 119 POPITs
3 -	D9127 Sensor Loop	7 -	Expansion points
4 -	33 k Ω EOL resistor (P/N: P106F [15-03130-002], package of eight)		

For system supervision, do not use looped wire terminals. Break the wire run to provide supervision of the connections.

Figure 16: Connecting the D8125 POPEX to the D7412GV4 Control Panel

1 - D8125 POPEX Module	5 - Point expansion loop
2 - Switch block	6 - Up to 119 POPITs
3 - D9127 Sensor Loop	7 - Expansion points
4 - 33 k Ω EOL resistor (P/N: P106F [15-03130-002], package of eight)	

For system supervision, do not use looped wire terminals. Break the wire run to provide supervision of the connections.

9.3 Installing the D8125 POPEX Module

For information on the Multiplex Bus Interface, refer to the *D8125MUX Multiplex Bus Interface Operation and Installation Guide* (P/N: F01U034973).

Save the POPIT Label Sheets: The D8125 is packaged with two sets of POPIT label sheets. One set is marked "Bank 1" for use with the D7412GV4. The other set is marked "Bank 2" for use with the D9412GV4 and D9112. Use the sheets later to label the POPITs. Refer to *Section 9.3.6 POPIT Module Point Assignments* on page 45.

9.3.1 Mounting

To install the D8125 in the enclosure with the control panel:

1. Align the D8125 POPEX Module with any of the four mounting locations in the enclosure (*Figure 2* on page 17).
2. Using the screws provided with the module, secure it in the enclosure.

9.3.2 Wiring the D8125 to the Control Panel

To wire one or two D8125 Modules to the control panel (*Figure 15* on page 42 or *Figure 16* on page 43):

Power Down the Control Panel: Disconnect the positive (red) battery lead at the battery and unplug the transformer.

For Points 9 to 127 (9 to 75 on D7412GV4):

1. Connect the GND terminal of the D8125 to Terminal 23 on the D9412GV4 or to Terminal 9 on the D7412GV4.

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 D9412GV4 or to Terminal 3 on the D7412GV4.

For Points 129 to 247 (D9412GV4 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.

Refer to *Section 9.3.4 Wiring Data Expansion Loops to POPEX Modules* on page 44 for instructions on connecting POPITs to the D8125 POPEX Module.

9.3.3 Wiring POPITs to the Data Expansion Loop

Use one two-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 9.3.6 POPIT Module Point Assignments* on page 45.

Review *Section 4.6.2 Installing and Wiring Detection Devices* on page 19 to determine if shielded wire is required. Refer to *Table 11* to determine the wire gauge for the length of each data expansion loop.

Table 11: Data Expansion Loop Wire Specifications	
Maximum Length of All Data Expansion Loops Combined	
AWG	Length in Feet (Meters)
22	1800 (548)
20	2890 (881)
18	4600 (1402)
16	7320 (2231)
14	11,650 (3551)

Combine Data Expansion Loops

The maximum lengths shown in *Table 11* are for all data expansion loops connected to the same POPEX Module combined.

Wiring POPITs Together

☑	Do not connect POPITs to each other in series or with a T-tap. Doing so might cause random missing POPIT conditions.
☑	Before installing the POPITs, ensure that the resistance on the data expansion loop is no more than 40 Ω.

To connect POPITs to one another in parallel:

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. It is not necessary 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 in (7.6 cm) apart to prevent the tamper magnets from interfering with each other.

9.3.4 Wiring Data Expansion Loops to POPEX Modules

Each POPEX Module has two positive (+) and two negative (-) data expansion loop terminals. Up to 119 POPITs can be connected to one D8125 on the D9412GV4; up to 67 POPITs for the D7412GV4 (*Figure 15* on page 42 or *Figure 16* on page 43).

To connect the data expansion loops to the D8125 POPEX Module:

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

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

9.3.5 POPIT Sensor Loops

The number of normally-open and 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 EOL resistor.

☑ Certain UL and NFPA applications can 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 send the condition of their loops to the control panel. A ground on the sensor loop sends a general system ground-fault condition report. Each POPIT is programmed and sends signals to the control panel separately.

Terminate each POPIT sensor loop with the 33 k Ω end-of-line (EOL) resistor (D106F) included with each POPIT.

Use a twisted-pair wire (six twists per foot) in all POPEX and POPIT installations for 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. Refer to *Section 9.3 Installing the D8125 POPEX Module* on page 43.

9.3.6 POPIT Module Point Assignments

Six switches on each POPIT assign the module to a point number. For POPIT switch settings, refer to *Appendix B.1 Zonex 1 Points* on page *145*.

9.3.7 Program Record Sheet

The Appendix B.1 Zonex 1 Points *on page 145* contains the **POPIT Switch Settings** for the D9127 POPITs. On the D9127T/U POPIT, switches are numbered 0 to 6, from left to right. Set the indicated switches to the ON position. If a dash (−) appears in the switch position, set the switch to the OFF position.

The second column contains the **Translation** of the point number into the Zonex format. Refer to *Point User Flag* in the *D9412GV4/D7412GV4 Program Entry Guide (P/N: F01U265459)* for an explanation of this feature.

The third column contains the **Point Number** as shown at keypads.

The fourth column contains the **Point Index**. Refer to *Point Index Parameters* in the *D9412GV4/D7412GV4 Program Entry Guide (P/N: F01U265459)* for an explanation of the point index.

The fifth column, **Area Assign**, shows the area to which the point is assigned.

The sixth column shows the **Debounce Count** for the point. Refer to *Debounce Count* in the *D9412GV4/D7412GV4 Program Entry Guide (P/N: F01U265459)*.

The seventh column shows the BFSK/Relay report code, which associates a output to an individual point.

The eighth column contains the **Custom Point Text** displayed at keypads for the point. The text is sent to the receiver when the control panel uses the Modem4 format.

9.3.8 POPIT Labels

D9412GV4 off-board points are numbered 9 to 127 and 129 to 247. The D7412GV4 uses Points 9 to 75 only. The D9412GV4 reserves Points 128 and 248 for internal use. POPITs must be connected for Points 129 to 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 only the point number) 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 programming all the points, perform a Service Walk Test. Refer to *Section 4.11 Service Walk Test* on page 47. If a point does not test, check the programming for a duplicated address.

Walk Test and Service Walk Test Do Not Show Extra Points: If the point assignment switches on a POPIT or OctoPOPIT are set incorrectly, missing and extra points can occur. If the same point number is assigned to two or more POPITs or OctoPOPITs, none of the points with that number test correctly. Refer to *Section 9.1 Zonex Buses* on page 41.

☑ For UL 864 Commercial Fire applications, refer to *Installing Combination Fire and Intrusion Alarm Systems* in the *Approved Applications* chapter found in this guide for important information about combination fire and intrusion systems.

9.4   D8128D OctoPOPIT Module

> ✅ Modules D8128, D8128A, or D8128B are incompatible with the D9412GV4 or D7412GV4. Use only the D8128D OctoPOPIT Module. Using Modules D8128, D8128A, or D8128B can cause intermittent Missing and Restoral Reports.

9.4.1   Description

The D8128D OctoPOPIT Module combines the functions of the D8125 POPEX Module and the D9127 POPIT Modules to provide eight off-board points in a single module. You can wire both D8128D OctoPOPIT and D8125 POPEX Modules in parallel to the Zonex Bus terminals on the same control panel.

Review *Section 6.0 Power Outputs* on page 30 to ensure that there is enough power for the OctoPOPITs and other powered devices that will be connected to the system.

Up to thirty D8128D Modules can be connected to the D9412GV4 Control Panel. Up to nine D8128Ds can be connected to the D7412GV4 Control Panel (three points can be used on the last OctoPOPIT).

9.4.2   Listings

The D8128D OctoPOPIT Module is UL Listed for Local or Police Connected Burglary Alarm, Central Station Burglary Alarm, Household Burglary Alarm applications, and commercial fire applications (UL 864 and NFPA 72).

The D8128D is also suitable for fire supervisory applications, such as indicating circuit supervision (using the D192G Bell Circuit Supervision Module), sprinkler supervision, and valve tamper protection.

Requirements for Fire Initiation Applications

The D125B Dual Powered Loop Interface Module or the D129 Dual Class "A" Module zone outputs can be connected directly to the point inputs on the D8128D. Use the D125B to connect two-wire smoke detectors. Typically, the D129 is used for connecting waterflow switches.

The D125B or D129 and the OctoPOPIT can be mounted in the same enclosure with the control panel or in a separate enclosure connected to the control panel's enclosure by a conduit not more than 6 m (20 ft) in length.

Figure 17:   D8128D OctoPOPIT Layout
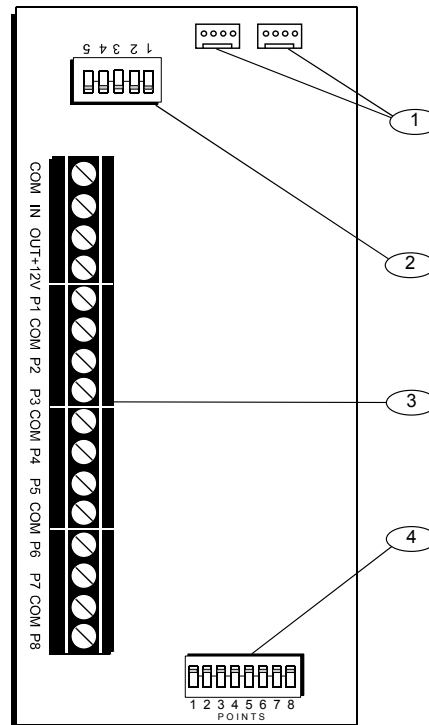
1 -   *Interconnect wiring connectors*
2 -   *Address DIP switches*
3 -   *Terminal strip*
4 -   *Point DIP switches*

> ✅ Non-powered, fire initiating devices such as pull-stations, heat detectors, and UL Listed four-wire smoke detectors can be connected directly to the point inputs on the D8128D.

9.4.3   Installation

For the most effective installation, use the following four-step process:

1. Set the OctoPOPIT switches. Refer to *Section 9.4.4 Setting the OctoPOPIT Switches.*

2. Physically mount the OctoPOPIT in the enclosure. Refer to *Section 9.4.5 Mounting OctoPOPITs,* page 47.

3. Wire the OctoPOPIT. Refer to *Section 9.4.6 Wiring OctoPOPITs* on page 48.

4. Wire the OctoPOPIT sensor loops. Refer to *Section OctoPOPIT Sensor Loops* on page 52.

9.4.4   Setting the OctoPOPIT Switches

The D8128D OctoPOPIT has two sets of DIP switches (*Figure 17* on page 46). Use the DIP switches on the top of the unit (with the terminal strip along the left edge) to set the address for the OctoPOPIT. Use the DIP switches at the bottom of the unit to enable or disable individual points connected to the OctoPOPIT.

Address Switches

The switches on the D8128D OctoPOPIT set point assignments and line termination. These switches are easier to set before mounting the D8128D in the enclosure.

Switches 1, 2, 3, and 4 assign the OctoPOPIT sensor loops to point numbers on the control panel. *Table 12* shows the OctoPOPIT switch settings for point assignments.

Switch 5 sets line termination. Refer to *Table 13: Switch 5 Settings for Line Termination.*

Table 12: D8128D OctoPOPIT Switch Settings						
ZONEX 1	**D8128D Address Switches**					ZONEX 2
Points 9 to 127	1	2	3	4	5	Points 129 to 247
9 to 16	ON	ON	ON	ON	*	129 to 136
17 to 24	ON	ON	ON	OFF	*	137 to 144
25 to 32	ON	ON	OFF	ON	*	145 to 152
33 to 40	ON	ON	OFF	OFF	*	153 to 160
41 to 48	ON	OFF	ON	ON	*	161 to 168
49 to 56	ON	OFF	ON	OFF	*	169 to 176
57 to 64	ON	OFF	OFF	ON	*	177 to 184
65 to 72	ON	OFF	OFF	OFF	*	185 to 192
73 to 80	OFF	ON	ON	ON	*	193 to 200
81 to 88	OFF	ON	ON	OFF	*	201 to 208
89 to 96	OFF	ON	OFF	ON	*	209 to 216
97 to 104	OFF	ON	OFF	OFF	*	217 to 224
105 to 112	OFF	OFF	ON	ON	*	225 to 232
113 to 120	OFF	OFF	ON	OFF	*	233 to 240
121 to 127	OFF	OFF	OFF	ON	*	241 to 247
* Line Termination Switch						

> ☑ For the D8128D OctoPOPITs assigned to Points 121 to 127, 241, and 247, set Point Input Switch 8 to the OPEN position.
>
> D9412GV4 uses Points 9 to 127 on Zonex 1 and Points 129 to 247 on Zonex 2.
>
> D7412GV4 uses Points 9 to 75 on Zonex 1 only.

Table 13: Switch 5 Settings for Line Termination	
Is a D8125 POPEX Module connected?	**Switch 5 Setting(s) on D8128D OctoPOPIT(s)**
No	Set Switch 5 of only **one** D8128D to **ON**
Yes	Set Switch 5 of **all** D8128Ds to **OFF**

Point DIP Switches

Each point connected to the D8128D is enabled by closing the respective DIP switch, or disabled by opening the DIP switch. For example, to disable a device connected to the P3 Terminal (Point 3), move DIP switch number 3 to the OPEN position.

Use the point DIP switches to disable conflicting points, such as when a D9210C Access Control Module must be assigned to a point that falls within the range of the D8128D OctoPOPIT. In this example, a D9210C is assigned to Point 20. On the same system, a D8128D OctoPOPIT is assigned to Points 17 through 24. Moving the DIP switch for Point 4 to the OFF position would effectively disable Point 20, allowing normal operation of the D9210C and the OctoPOPIT. Through panel configuration the Point Source prompt further protects from possible point addressing conflicts. A point can be ZONEX, Octo-input, SDI2 Wireless, or Door Point.

Terminate each OctoPOPIT sensor loop with a 1 k Ω EOL resistor. Attach a resistor even if you do not enable the loop.

9.4.5   Mounting OctoPOPITs

The D8128D OctoPOPIT Module can be installed in the enclosure with the control panel using standard four-conductor 22 AWG (0.8 mm) wire, or in a separate enclosure (Model D8103, D8103A, or D8109) up to 200 ft (61 m) from the control panel using shielded (recommended) standard four-conductor 22 AWG (0.8 mm) wire. If using the D125B or D129, refer to the *Specifications* section of the *D8128D Installation Guide* (P/N: F01U070537) for cabling requirements.

For UL Listed systems, mount the D8128D in a tamper-proof enclosure. To install OctoPOPITs in the control panel's enclosure, complete the following procedure. Use the D137 Mounting Bracket to install OctoPOPITs in enclosures with no module-mounting locations available.

1. Align the OctoPOPIT module using any of the four mounting locations in the enclosure. Refer to *Figure 2* on page 17.
2. Use the screws provided with the module to secure it in the enclosure.

9.4.6 Wiring OctoPOPITs

> ⚡ **Warning:** Disconnect all power to the control panel before beginning any work with the internal components. Serious injury could result from electrical shock.

1. Power down the control panel:
   a. Disconnect the positive (red) battery lead at the battery.
   b. Unplug the transformer.

> ☑ A D8128D OctoPOPIT can be installed up to 200 ft (61 m) from the control panel.

2. Connect the D8128D to the control panel using either of the following methods:
   a. Wire the D8128D to the terminal strip on the side of the POPEX Module, or
   b. Connect the D8128D using the interconnect wiring connectors (P1 and P2). Refer to Using Interconnect Wiring on page 51.

> ⚠ **Caution - AC induction:** Avoid installing Zonex data wires and Zonex input (sensor loop) wires around any AC conduit, wiring, or electrical devices that emit fields of electromagnetic interference (EMI).

Using the Terminal Strip

Refer to *Table 14*, *Figure 18* on page 49, and *Figure 19* on page 50 when using the terminal strip to connect the D8128D OctoPOPIT to the control panel.

Table 14:	Terminal Strip Connections	
D8128D	**D9412GV4**	**D7412GV4**
Common	Terminal 23	Terminal 23
Out	Zonex 1 = Terminal 27 Zonex 2 = Terminal 25	Terminal 27
In	Zonex 1 = Terminal 28 Zonex 2 = Terminal 26	Terminal 28
+12 V	Terminal 24	Terminal 24

Figure 18: Connecting D8128D OctoPOPITs to the D9412GV4
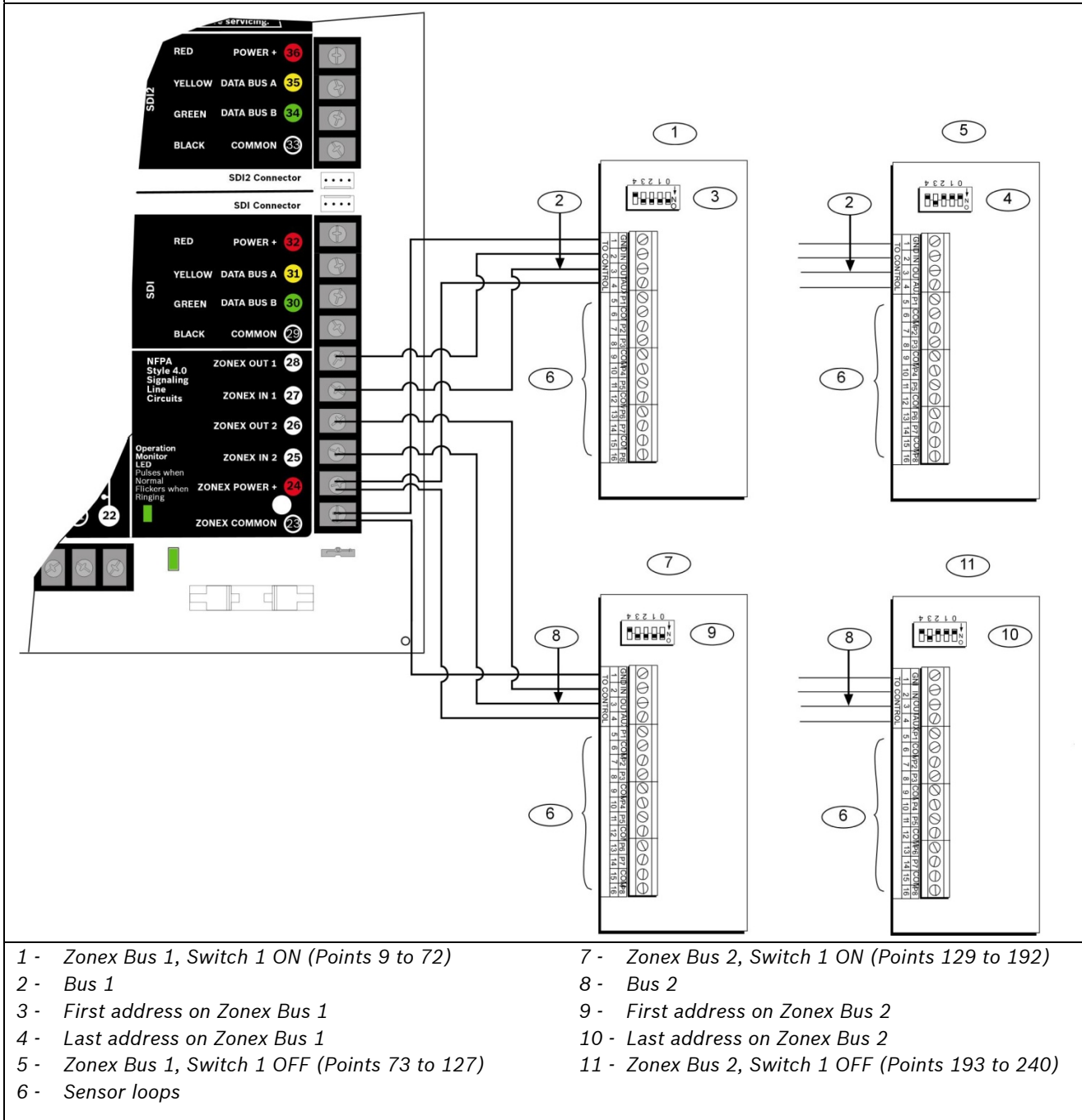
1 -   Zonex Bus 1, Switch 1 ON (Points 9 to 72)
2 -   Bus 1
3 -   First address on Zonex Bus 1
4 -   Last address on Zonex Bus 1
5 -   Zonex Bus 1, Switch 1 OFF (Points 73 to 127)
6 -   Sensor loops

7 -   Zonex Bus 2, Switch 1 ON (Points 129 to 192)
8 -   Bus 2
9 -   First address on Zonex Bus 2
10 - Last address on Zonex Bus 2
11 - Zonex Bus 2, Switch 1 OFF (Points 193 to 240)

Refer to *Address Switches* in *Section 9.4.4 Setting the OctoPOPIT Switches* on page 47 for information about making these switch settings. Refer to *Table 13* on page 47 for information about setting Switch 5.

For system supervision, do not use looped wire terminals. Break the wire run to provide supervision of the connections.

Figure 19: Connecting D8128D OctoPOPITs to the D7412GV4
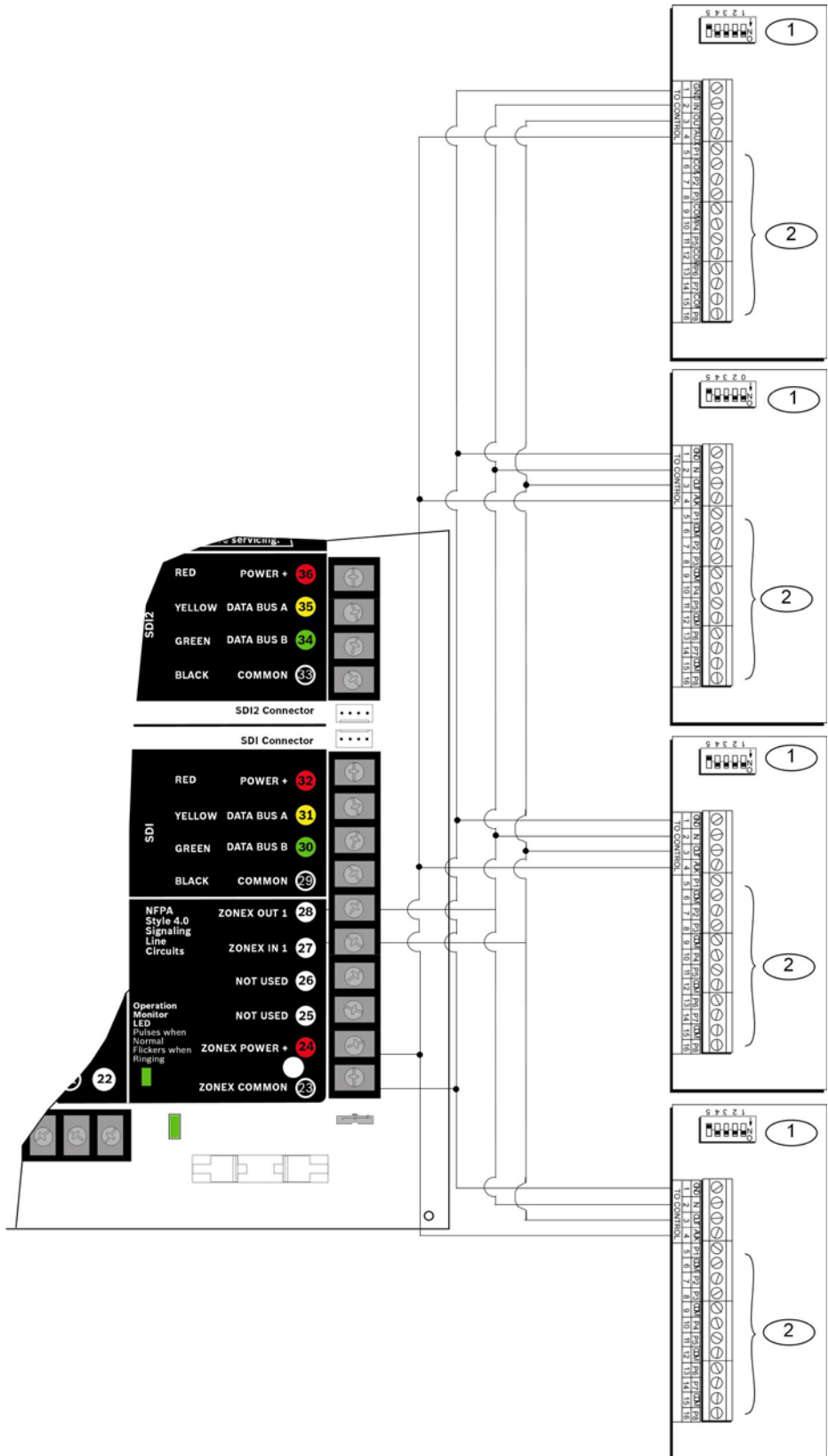
1 - Zonex 1 address	2 - Sensor loops

> ☑ Refer to *Address Switches* in *Section 9.4.4 Setting the OctoPOPIT Switches* on page 47 for information about making these switch settings. Refer to *Table 13* on page 47 for information about setting Switch 5.

> ☑
>
> For system supervision, do not loop wires under terminals. Break the wire run to provide supervision of the connections.

Using Interconnect Wiring

Each D8128D Module is supplied with a 30 cm (12 in) female-to-female interconnect wiring cable.

P1 and P2 are interconnect wiring connectors that parallel the COM, IN, OUT, and +12.0 VDC terminals on the terminal strip. In installations with multiple D8128Ds, use these connectors (as opposed to terminals) with the supplied cable; however, when connecting D8128D Modules directly to the control panel, the terminal strip is easier to use.

The interconnect wiring connectors provided are "keyed" (interconnect wiring plug can fit in only one direction). Ensure that the connector is attached correctly: the red wire is on the bottom of P1 (or P2) and the black wire is on the top.

When connecting multiple D8128Ds to a control panel, you can connect the control panel terminals to P1 or the COM, IN, OUT, and +12V terminals on the first D8128D. Then connect P2 of the first D8128D to P1 of the second D8128D and so on (*Figure 20* on the following page).

Figure 20:   Wiring Multiple D8128Ds Using Interconnect Wiring
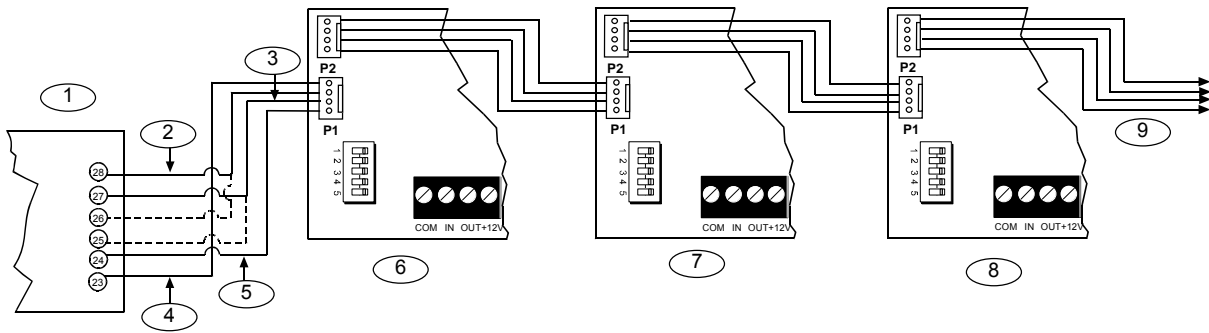
1 - *D9412GV4 Control Panel*	6 - *First D8128D*
2 - *Yellow*	7 - *Second D8128D*
3 - *Green*	8 - *Third 8128D*
4 - *Black*	9- *Up to 15 per Zonex Bus*
5- *Red*	

9.4.7   OctoPOPIT Sensor Loops

Only the resistance on the loop limits the number of normally-open or normally-closed detection devices each sensor loop can supervise. Resistance on each sensor loop must be less than 100 Ω with the detection devices connected.

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

The OctoPOPIT detects open, short, closed, normal, and grounded circuit conditions on its sensor loops and sends the conditions to the control panel. Each sensor loop has an assigned point number and sends signals to the control panel separately.

Use twisted-pair wire for the OctoPOPIT sensor loops to avoid EMI problems. Run wires away from the premises telephone and AC wiring. If you suspect a noisy environment, use shielded cable.

The OctoPOPIT has two rows of terminal numbers. In the row nearest to the terminal blocks, the positive outputs for the sensor loops are labeled P1 to P8. Sensor loop outputs P1 and P2, P3 and P4, P5 and P6, and P7 and P8 share common terminals. The common terminals for each pair are labeled COM.

Terminate each OctoPOPIT sensor loop with a 1 kΩ.

EOL resistor. Attach a resistor even if you do not enable the loop. The OctoPOPIT includes a D105BL resistor for each sensor loop. Refer to *Figure 21* on page 52.

Do not duplicate point assignments. Points do not function properly if assigned to an OctoPOPIT sensor loop and a POPIT, to two OctoPOPIT sensor loops, or to two POPITs.

Figure 21:   D8128D OctoPOPIT Sensor Loops
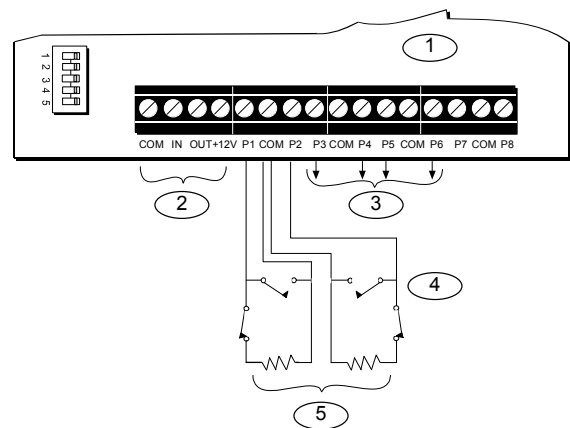
1 -   *D8128D OctoPOPIT*
2 -   *To control panel*
3 -   *To additional OctoPOPIT sensor loops*
4 -   *OctoPOPIT sensor loops*
5 -   *1 k Ω EOL resistor (P/N: P105BL, package of eight), ICP-1K22AWG-10 (This is a listed 10 pack of 1K ohm resistors)*

9.5   Testing Off-Board Points

Use the Service Walk Test to test off-board points. Test to ensure that all off-board points operate properly.

Walk Test and Service Walk Test Do Not Show Extra Points: If the point assignment switches on a POPIT or OctoPOPIT are set incorrectly, missing and extra points can occur. If the same point number is assigned to two or more POPITs or OctoPOPITs, none of the points with that number test correctly. Refer to *Section 9.1 Zonex Buses* on page 41.

9.6   SDI2 Octo-input Point Modules

The D9412GV4 can use up to 24 B208 Octo-input point expansion modules to provide 191 of the 239 possible off-board points. The D7412GV4 can use up to 7 B208 Octo-input point expansion modules to provide 53 of the 67 possible off-board points.

The B208 Octo-input point expansion modules provide a non-contiguous support of available off-board control panel points to allow concurrent use of Zonex or Wireless RF points.

9.7   Extra Point Events

Extra Point events are generated when the control panel detects a fault for a point that is enabled, but does not have a Point Index assigned. A point is considered enabled when its Point Source is set to Zonex, Octo-input (SDI2), or Door Point. A SDI2 Wireless point is considered enabled when its Point Source is Wireless and it has an RFID assigned.
On-board points cannot produce Extra Point events. Points in Service Bypass cannot produce Extra Point events. *Table 15* on page 53 shows when an Extra Point event is or is not generated. Table 16 on page 53 shows additional error conditions that can occur for the off-board points.

Table 15:   Extra Point Events

An enabled point does not have an assigned Point Index and:	Extra Point event?	Additional Information
Data expansion bus is disconnected	No	Keypad does not annunciate or display a trouble condition.
Data expansion bus restores to normal condition after an open condition	Yes	Keypad annunciates and displays a trouble condition Extra Point is logged and might be programmed to send reports to the central station or to an on-site printer.
Point input changes status from normal to open or shorted	No	Keypad does not annunciate or display a trouble condition.
During a Service Walk Test, the point input changes status from normal to open or shorted	Yes*	Keypad annunciates and displays a trouble condition Extra Point is logged and might be programmed to send reports to the central station or to an on-site printer.

*   The Service Walk Test never shows the electrical state of a point as "Extra."

Table 16:   Off-Board Point Errors

Error Condition	Result	Additional Information
+/- leg of the data expansion bus has a short circuit to earth ground, with Ground Fault Detect enabled	Ground Fault event	
+/- leg of the data expansion bus is disconnected	All POPITs beyond the disconnection send Missing report	
Data expansion bus has a short circuit	All POPITs send Missing report Pt Bus Trouble event	When the data expansion bus restores, Pt Bus Restore event occurs. If any POPIT is connected to the data expansion bus without an assigned Point Index, an Extra Point event occurs.
+/- leg of the data expansion bus has a short circuit to the Common terminal on the control panel	All POPITs send Missing report Pt Bus Trouble event	
Terminal 26, 28, or 94 has a short circuit to a Common terminal	No Pt Bus Trouble event occurs	
Terminal 25, 27, or 94 has a short circuit to a Common terminal	Pt Bus Trouble event Keypad displays: SERVC ZONEX 1	
Terminals 27 and 28 have a short circuit together	Pt Bus Trouble event Keypad displays: SERVC ZONEX 1	

10.0 Off-Board Outputs

10.1   D8129 OctoRelay

Use the D8129 OctoRelay to add relay outputs to the system in groups of eight. On the D9412GV4, up to 128 OctoRelay outputs (output numbers 1 to 128) can be added to the system using 16 OctoRelays. D7412GV4 allows up to 64 output outputs. Review *Section 6.0 Power Outputs* on page 30 to ensure that enough power is provided for the OctoRelays and other powered devices that are connected to the system.

OctoRelays for output numbers 1 to 64 connect to Zonex 1, Terminal 28. OctoRelays for output numbers 65 to 128 connect to Zonex 2 (D9412GV4 only), Terminal 26. Refer to *Figure 22* or *Figure 23* on page 56.

Alarm output, auxiliary relay, sensor reset, arming status, point status, alarm memory, or remote functions can be assigned to the OctoRelay outputs individually. Refer to *Relay Parameters* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for programming details.

D8129 Restricted for Fire Systems: D8129 relay outputs are not supervised and cannot be used in fire or combined fire and burglary installations for primary indicating devices.

Figure 22: D8129 Connections to the D9412GV4
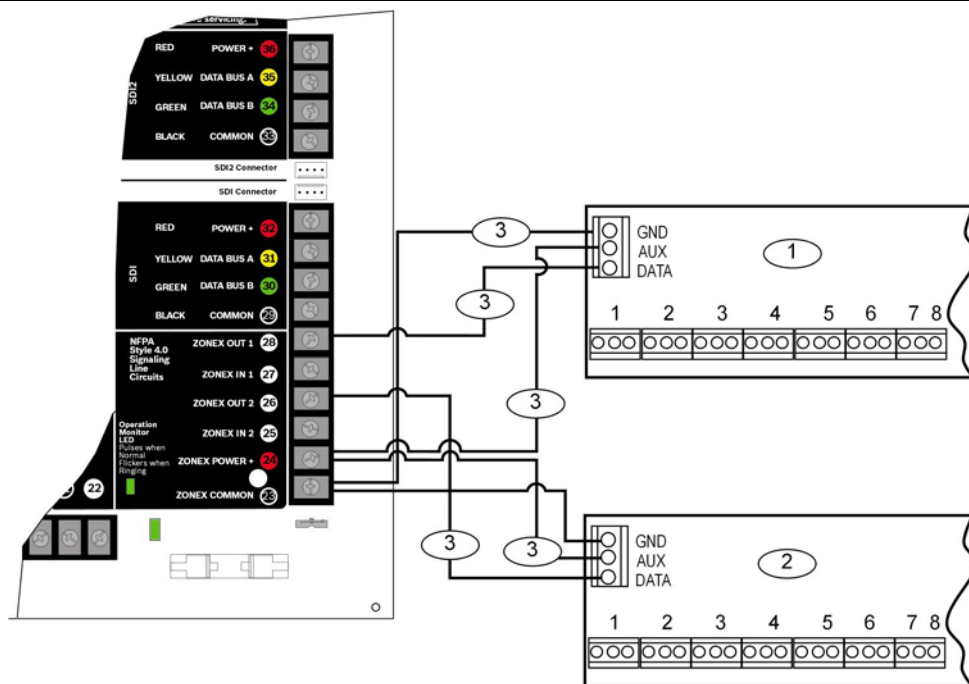
1 - D8129 OctoRelays for relay numbers 1 to 64. Connect OctoRelays in parallel.

2 - D8129 OctoRelays for relay numbers 65 to 128. Connect OctoRelays in parallel.

3 - Power limited

Figure 23: D8129 Connections to the D7412GV4
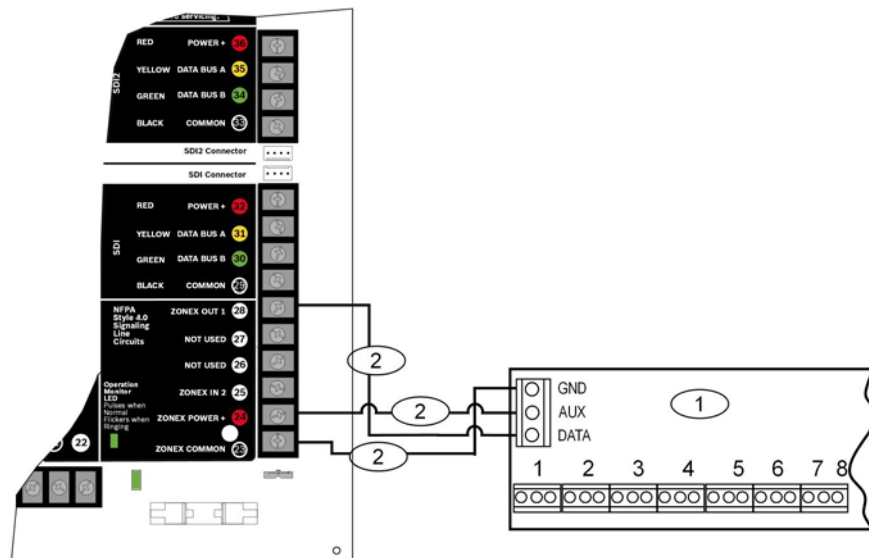
1 - D8129 OctoRelays for output numbers 1 to 64. Connect OctoRelays in parallel.

2 - Power limited

10.1.1 Configuring the D8129 OctoRelay

Five switches on the OctoRelay determine the relay numbers for the eight relay outputs (*Table 17*).

Table 17:	D8129 OctoRelay Switch Settings	
Panel Relay Number	**D8129 OctoRelay Switch Setting**	**On Panel, Connect D8129 to:**
1 to 8	Off-On-On-On-On	Zonex 1 Terminal 28
9 to 16	On-Off-On-On-On	Zonex 1 Terminal 28
17 to 24	Off-Off-On-On-On	Zonex 1 Terminal 28
D7412G Maximum		
65 to 72	Off-On-On-On-On	Zonex 2 Terminal 26
73 to 80	On-Off-On-On-On	Zonex 2 Terminal 26
81 to 88	Off-Off-On-On-On	Zonex 2 Terminal 26
89 to 96	On-On-Off-On-On	Zonex 2 Terminal 26
97 to 104	Off-On-Off-On-On	Zonex 2 Terminal 26
105 to 112	On-Off-Off-On-On	Zonex 2 Terminal 26
113 to 120	Off-Off-Off-On-On	Zonex 2 Terminal 26
121 to 128	On-On-On-Off-On	Zonex 2 Terminal 26

10.1.2 Relay Outputs

> Relay outputs can activate when you are setting the OctoRelay switches or programming the control panel.
>
> Disconnect equipment connected to relay outputs when you perform these functions.

Each OctoRelay output provides a Form C dry contact rated for 1.0 A at 12.0 VDC. Normally-open, common, and normally-closed terminals are available for each relay output. When an individual output is activated, continuity exists between the normally-open and common terminals. When the output is not activated, continuity exists between the normally-closed and common terminals.

10.1.3 Installation

Set the switches on the OctoRelay before installing it in the enclosure. Refer to *Section 10.1.1 Configuring the D8129 OctoRelay.*

Install the OctoRelay in the enclosure with the control panel (*Figure 2* on page 10) or in an adjacent enclosure that is no more than 5 ft (1.5 m) from the control panel. Use 16 AWG (1.5 mm) to 22 AWG (0.8 mm) wire.

To install OctoRelays in the enclosure with the control panel:

1. Align the module with one of the mounting locations in the enclosure (refer to *Figure 2* on page 10).

2. Using the screws provided with the module, secure the module in the enclosure.

   Use the D137 Mounting Bracket or D9002 Mounting Skirt to install OctoRelays in enclosures with no available module mounting locations.

10.1.4 Wiring Connections

Power down the control panel to connect OctoRelays. Refer to *Figure 22 or Figure 23* on page 56.

> OctoRelays for Relays 1 to 24 connect to Zonex 1.
>
> OctoRelays for Relays 1 to 64 connect to Zonex 1, Terminal 28 on the D7412GV4 only.
>
> OctoRelays for Relays 65 to 128 connect to Zonex 2, Terminal 26 on the D9412GV4 only.

Only one OctoRelay is shown wired to each Zonex bus in *Figure 22* on page 56. Wire additional OctoRelays in parallel. Review *Section 6.0 Power Outputs* on page 30 for information about providing enough power for the relays.

The number of D8129 OctoRelays that can be connected to each Zonex terminal on the D9412GV4 control panels is limited by the number of D8128D OctoPOPITs connected.

> Using D8129 OctoRelays and D8128D OctoPOPITs together on the same Zonex terminals is limited and depends on the number of D8128 OctoPOPITs and D8129 OctoRelays connected to a single Zonex Bus.
>
> Refer to *Table 18* for information about the maximum number of D8128Ds and D8129s you can connect to a single Zonex bus.

Table 18: Number of D8128Ds Used with D8129s	
If the number of D8128Ds connected to a single Zonex bus is:	**Do not connect more than this number of D8129s:**
9	6
10	5
11	4
12	3
13	1
14	1

10.2 D811 Arm Status Relay Module

The D811 Arm Status Relay Module allows the addition of a single off-board relay output to the system. Alarm output, auxiliary relay, sensor reset, arming status, point status, alarm memory, or remote functions can be assigned to the D811 relay output. It is not restricted to the Arming Status Mode only.

Relay Numbers for D811 Not Programmable: If the D811 is connected to Zonex 1, Terminal 28, use relay number 53 for the relay output. If the D811 is connected to Zonex 2, Terminal 26 on the D9412GV4, use relay number 117 for the relay output.

D811 Modules connect as shown in *Figure 24* and *Figure 25* on page 59. Review *Section 6.0 Power Outputs* on page 30 to ensure that enough power is provided for the powered devices that connect to the system. Refer to *Relay Parameters* in the *D9412GV4/D7412GV4 Program Entry Guide (P/N: F01U265459)* for programming details.

D811 Restricted for Fire Systems: The D811 relay output is not supervised and cannot be used in fire or combined fire and burglary installations for primary indication devices.

10.2.1 Relay Output

> Relay outputs can activate when you are programming the control panel.
>
> Disconnect equipment connected to relay outputs when you perform this function.

Each D811 relay output provides a Form C dry contact rated for 1.0 A at 12.0 VDC. Normally-open, common, and normally-closed terminals are available.

When an individual output is activated, continuity exists between the normally-open and common terminals. When the output is not activated, continuity exists between the normally-closed and common terminals.

10.2.2 Installation

Install the D811 in the enclosure with the control panel or in an adjacent enclosure no more than 5 ft (1.5 mm) from the control panel. Use 16 AWG (1.5 mm) to 22 AWG (0.8 mm) wire.

To install D811 Modules in the enclosure with the control panel:

1. Align the D811 Module with any of the four mounting locations in the enclosure (*Figure 2* on page 17).

2. Using the screws provided with the module, secure it in the enclosure.

   Use the D137 Mounting Bracket or D9002 Mounting Skirt to install D811 Modules in enclosures with no available module mounting locations.

10.2.3 Wiring Connections

Power down the control panel to connect D811 Modules as shown in *Figure 24* and *Figure 25* on page 59.

> The D811 for Relay 53 connects to Zonex 1.
>
> The D811 for Relay 117 connects to Zonex 2 on the D9412GV4.

10.3 SDI2 Octo-output Relay Modules

The D9412GV4 can use up to 12 B308 Octo-output modules to provide 96 of the 128 supported off-board outputs.

The D7412GV4 can use up to 6 B308 Octo-output modules to provide 48 of the 64 supported off-board outputs.

The B308 Octo-output modules provide a non-contiguous support of available off-board control panel relays to allow concurrent use of Zonex relays. For example, off-board output numbers 9 and 10, 20 and 21 can only be on a Zonex OctoRelay module. Refer to Table 24 on page 68 for output number to module assignments.

Figure 24: D811 Arm Status Relay Module Wiring to the D9412GV4
1 - *D811 for Relay 53*   3-   *On-board points*   2- *D811 for Relay 117*
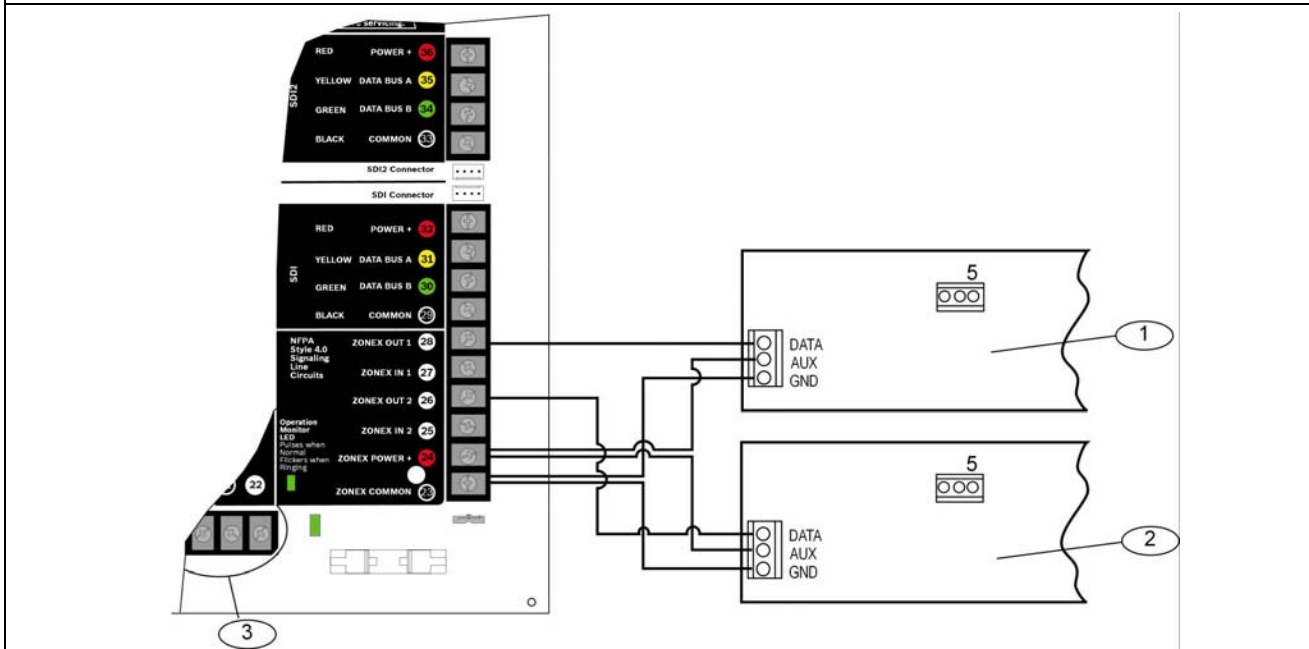
Figure 25: D811 Arm Status Relay Module Wiring to the D7412GV4
1 - *D811 for Relay 53*
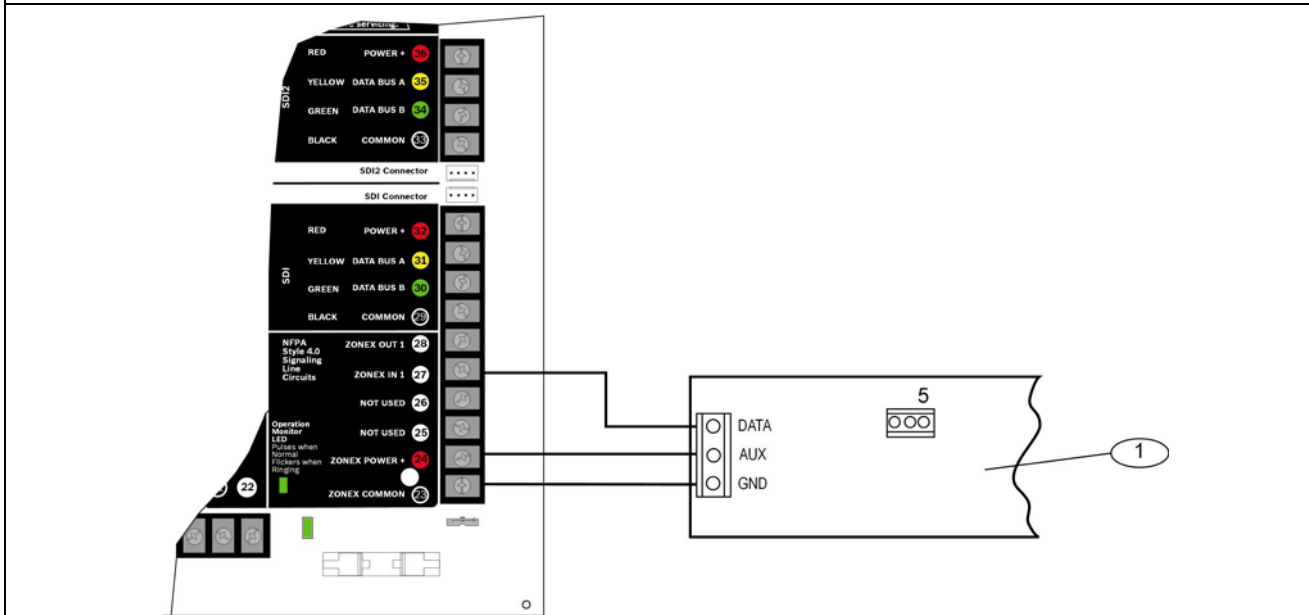
11.0 Arming Devices

11.1 Description

Keypads, maintained or momentary contact keyswitches, or a combination of the two are used to arm and disarm areas. The D9412GV4 can support up to 32 areas. The D7412GV4 can support up to 8 areas. Refer to 3.3.5 Areas and Accounts on page 14 for a description of areas.

> For UL 864 Commercial Fire applications, refer to *Installing Combination Fire and Intrusion Alarm Systems* in the *D9412GV4/D7412GV4 Approved Applications* chapter found in this guide for important information about combination fire and intrusion systems.

11.2 SDI/SDI2 Bus Terminals 29 to 36

The Bosch Security Systems, Inc. keypad is a four-wire powered device used to arm and disarm areas, annunciate complete system status, initiate system tests, and control many functions of the security system.

The control panel sends a Serial Device Trouble Report, SDI FAILURE, in the Modem4 format or Expansion Module Failure (333) in Contact ID format, if it loses communication with a supervised keypad. CALL FOR SERVICE appears in any keypad that loses communication with the control panel, if the keypad has text display capability. SERVC KEYPAD appears at all other keypads connected to the system.

Seven types of keypads are available for use with the system.

- **B920:** Terminals 33-36, LCD display keypad 32 Character Alpha-numeric display appropriate for use as a multi area keypad.
- **B930:** Terminals 33-36, ATM style keypad 5 line Alpha-numeric display, appropriate for use as a multi area keypad.
- **D1255/D1255B/D1255RB:** 16-character alphanumeric display for general use. Addressable to all 16 SDI addresses.
- **D1256RB:** Text display keypad with keys designated for local fire alarm control. Addressable to all 16 SDI addresses.
- **D1257RB:** Terminals 29-32, Text display keypad for fire annunciation. Addressable to all 16 SDI addresses.

- **D1260/D1260B:** Terminals 29-32, Easy-to-read, 4-line by 20-character LCD display with eight "soft" keys to display simple selections. Addressable SDI Addresses 1-8.
- **D1265:** Terminals 29-32, LCD Touch screen keypad. Addressable to all 16 SDI addresses.

> D1265 has not been investigated by UL.

For operational information, refer to the user's guide for the specific keypad.

11.2.1 Shortcuts and Custom Functions

Both the B920 and B930 keypads include a Shortcuts feature. Shortcuts allow you to assign a keypad menu option to a Shortcuts menu which is easily accessible. On a B920, the user enters the Shortcuts menu in two key presses, and then uses the [PREV] or [NEXT] key to scroll through a list of shortcuts. On a B930, the user enters the Shortcuts menu by pressing the idle text screen's **Shortcuts** softkey and then views the softkeys for each shortcut. You create and assign shortcuts to keypads using RPS.

Custom Functions

Custom Functions allow you to simplify the use of complex keystroke sequences that users might enter at the keypad. Custom Functions can automatically initiate through the keypad's **Shortcuts** menu when you create and assign a shortcut for the function to a keypad. You can have up to 4 Custom Functions, and you can restrict the use of these by area and authority level.

Each custom function appears on assigned keypads with a name you programmed in RPS. Each custom function has a 16 character programmable text limit (CF### Text), plus a character limit for Spanish. When you assign a custom function as a keypad's **Shortcuts** menu option, the user can use the [PREV] or [NEXT] key to scroll through the list of custom functions on a B920, or view the softkeys for each function on the B930.

The user must have the appropriate authority level enabled for the L## C Function 128-131 to use the custom function. For more information on creating custom functions, assigning authority levels to the functions, and assigning custom

functions to a keypad's Shortcuts menu, refer to *RPS Help* or the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

Custom Functions and RADION keyfobs

Using RPS, you can assign two custom functions to a RADION keyfob, allowing a user to initiate the functions wirelessly. For more information, refer to *RPS Help* or the *D9412GV4/D7412GV4 Program Entry Guide* (P/N: F01U265459).

11.2.2 Assigning an Address for the Keypad

Switches on the keypad assign an address (1 to 16). The address determines if the keypad is supervised, the scope of the keypad, and to what area the keypad is assigned. Refer to keypad programming topics found in the compatible keypad installation guide for a complete description of addresses.

Table 19 shows the correct switch setting for each address.

11.2.3 Installation

Refer to the keypad installation manuals for installation and mounting instructions. Keypads connect to the control panel in parallel (*Table 20*).

Table 20:	SDI Keypad Connections		
Terminal	**Function**	**Keypad Wire Color**	**Function**
32*	POWER +	Red	+12.0 VDC
31	DATA BUS A	Yellow	Data
30	DATA BUS B	Green	Data
29	COMMON	Black	Common

* Connect with at least 5 ft (1.5 m) of 22 AWG (0.8 mm) wire (14 ft [4.3 m] of 18 AWG [1.2 mm] wire).

Switching the Green and Yellow Wires Affects Other Keypads: Connecting the green wire incorrectly from the keypad to Terminal 31 and the yellow wire to Terminal 30 causes other keypads connected to the control panel to go blank or to sound random beep tones.

You can connect devices to the data bus (Terminals 30 and 31) by parallel wire run from the control panel to each device, wire from device to device, or a combination of the two using a maximum of 15000 ft (4572 m) of 22 AWG (0.8 mm) wire for all devices connected to the SDI Bus combined.

Wire Limits for Individual Devices

Refer to the installation instructions for each device for wire length specifications.

Extra Power for More Keypads

The D1255 and D1255B Keypads draw 104 mA when idle. They draw 206 mA with the keys lit and the sounder activated. Review *Section 6.0 Power Outputs* on page 30 to determine the total power output requirements for the system.

One or more B520 Auxiliary Power Supply Modules can be added for the number of keypads used. *Figure 26* on page 62 shows the B520 powering keypads.

Table 19:	SDI Keypad Address Settings					
Address	**Switch**					
	1	2	3	4	5	6
Address #1	ON	ON	ON	ON		ON
Address #2	OFF	ON	ON	ON		ON
Address #3	ON	OFF	ON	ON		ON
Address #4	OFF	OFF	ON	ON		ON
Address #5	ON	ON	OFF	ON		ON
Address #6	OFF	ON	OFF	ON		ON
Address #7	ON	OFF	OFF	ON		ON
Address #8	OFF	OFF	OFF	ON	Encoding Tone ON/OFF	ON
Address #9	ON	ON	ON	OFF		ON
Address #10	OFF	ON	ON	OFF		ON
Address #11	ON	OFF	ON	OFF		ON
Address #12	OFF	OFF	ON	OFF		ON
Address #13	ON	ON	OFF	OFF		ON
Address #14	OFF	ON	OFF	OFF		ON
Address #15	ON	OFF	OFF	OFF		ON
Address #16	OFF	OFF	OFF	OFF		ON

For UL Certificated accounts, use a UL Listed auxiliary 12.0 VDC or 24 VDC regulated, power-limited power supply for Fire Protective Signaling Units and Commercial or Residential Burglar Units, such as the B520.

Figure 26: External Power to SDI2 Devices
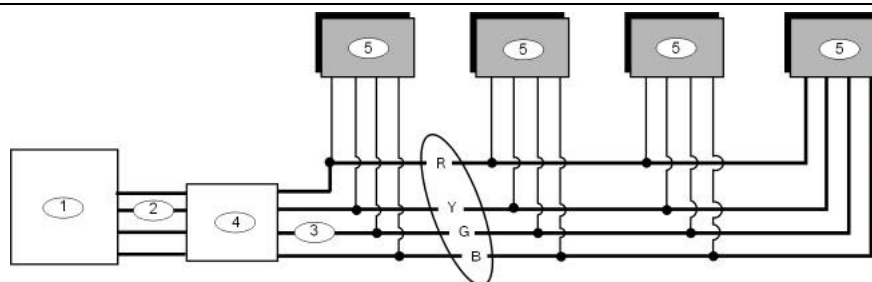
1 - GV4 control panel	4 - B520 Auxiliary Power Supply Module
2 - SDI2	5 - Device to be powered by external source
3 - SDI2 Out	

11.3 D279A Independent Zone Control

Any point can be programmed so that the D279A Independent Zone Control operates as independent point control (turning on and off the point).

Refer to *Point Assignments* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for programming information. Refer to the *D279A Operation and Installation Instructions* (P/N: 46458) for wiring and operation instructions.

11.4 Keyswitch

11.4.1 Description

A maintained or momentary contact arming station (keyswitch) can be connected to turn all on (arm) or off (disarm) any of the areas in the system. The keyswitch is connected to an input point (on-board, D9127U/T, D8128D, or B208). Outputs can be programmed to activate arming status LEDs for keyswitch arming stations. Refer to *Outputs* in the *Control Panels (Control Panels (D9412GV4/D7412GV4 v2.00)) Program Entry Guide (P/N: F01U265459)*.

11.4.2 Programming

Refer to *Point Assignments* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for the correct programming for points used for keyswitches.

11.4.3 Installation

For maintained switches, connect the EOL resistor for the point at the keyswitch so that the switch opens the circuit when it operates. A short on the circuit produces an alarm if the area is turned on (armed) and a trouble if it is turned off (disarmed). Refer to *Figure 27* on page 63 For momentary keyswitches, connect the EOL resistor at the keyswitch point so that when the keyswitch operates, it shorts the resistor. An open on the circuit causes an alarm if the area is turned on and a trouble if it is turned off.

11.4.4 Operation

Maintained Contact

If the point to which the keyswitch is connected is programmed for a maintained contact, an open on the arming circuit arms the area. All faulted points are force armed, regardless of the entry in the FA Bypass Max program item. Returning the circuit to normal disarms the area. Refer to *Area Parameters* and *Point Assignments* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

Momentary Contact

If the point to which the keyswitch is connected is programmed for a momentary contact, shorting the arming circuit toggles the area's arming state between armed and disarmed. All faulted points are force armed, regardless of the entry in the FA Bypass Max program item. Refer to *Point Assignments* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

Silencing the Bell

To silence the bell (stop Alarm Bell output) if the system is armed, position the keyswitch to disarm the area. If the area is disarmed, turn the keyswitch once to start the arming process. Turning the keyswitch a second time stops the arming process and silences the bell.

Figure 27: Keyswitch Wiring
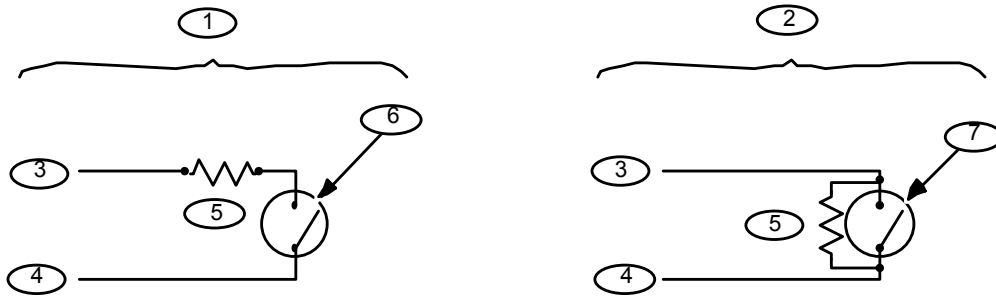
1 - Maintained keyswitch	5 - End of Line (EOL) resistor *
2 - Momentary keyswitch	6- Open on a circuit arms the area
3 - Common	7 - Short on a circuit toggles the arming state
4 - Point input	

Use the proper EOL for the specific device you are using.

12.0 SDI Devices

12.1 Description

The D9412GV4/D7412GV4 V2.00 Control Panels can support a number of accessory devices from the SDI Bus using Terminals 29 through 32. Some devices include the D1255 and D1255B Keypads (refer to *Section 11.0 Arming Devices* on page 60), D9210C Access Control Interface Module, DX4010V2 RS-232 Serial Interface Module, ITS-DX4020-G GPRS/GSM Communicator, and DX4020 Network Interface Module.

☑	For UL 864 Commercial Fire applications, refer to *Installing Combination Fire and Intrusion Alarm Systems* in the *Approved Applications* chapter found in this guide for important information about combination fire and intrusion systems.

12.2 Installation

For complete installation instructions, consult the operation and installation guide for the specific SDI device. SDI devices connect to the control panel in parallel (refer to *Table 21* below).

These devices can share power with the control panel or be powered by a stand-alone power source.

Table 21: SDI Device Connections			
SDI Devices			
Terminal	Function	Wire Color	Function
32	POWER +	Red	+12.0 VDC
31	DATA BUS 1	Yellow	Data
30	DATA BUS B	Green	Data
29	COMMON	Black	Common

☑	A stand-alone power supply powering the SDI device must also be connected to a common terminal on the control panel. Do not connect the earth ground for the stand-alone power supply to Terminal 10 on the control panel.

12.2.1 Open Wire Trouble on SDI

The D9412GV4/D7412GV4 V2.00 Control Panels can detect an open wire fault in the data communication lines of the SDI bus. Any open wire on Terminals 30 or 31 results in a system fault trouble display on all keypads, and a general SDI Fault event sent to the central station.

12.3 D9210C Access Control Interface Module

The Bosch Security Systems, Inc. D9210C Access Control Interface Module is a four-wire powered device providing connections for an access door point and door strike. The D9412GV4 can supervise eight Wiegand Control Modules, the D7412GV4 can supervise two. Each D9210C supports one door to control access. Programming allows each access door to be configured independently.

12.3.1 Access

Using Wiegand style cards or tokens, the D9210C can allow access for up to 999 cards or tokens on the D9412GV4, and up to 399 on the D7412GV4. User access authority can be configured to restrict access to certain doors or to certain periods of time. The reading of access cards, in addition to granting access, can control whether the system disarms.

12.3.2 Switch Settings

Rotary switches on the D9210C assign a unique address to each module. *Table 22* shows the correct switch setting for each D9210C address.

Table 22:	Address Switch Settings for Access Control Module	
Door Controller	**Combined Rotary Switch Settings**	**Fail Safe Response**
Default	0	-
1	81	Unlock
2*	82	Unlock
3	83	Unlock
4	84	Unlock
5	85	Unlock
6	86	Unlock
7	87	Unlock
8	88	Unlock
1	91	Lock
2*	92	Lock
3	93	Lock
4	94	Lock
5	95	Lock
6	96	Lock
7	97	Lock
8	98	Lock

*D7412GV4 supports doors 1 & 2

12.4 SDI Addresses 88 and 92

SDI Addresses 88 and 92 are available with D9412GV4/D7412GV4 v2.00 Control Panels and are used for several different applications. Only one device can be assigned to SDI Address 88 at a time. Likewise, only one device can be assigned to SDI Address 92 at a time. When the Reset Pin (labeled S1) is closed, all SDI communication module addresses are automatically enabled for RPS communication without restriction. Refer to Figure 4: Reset Pin on page 19 to locate the reset pin.

12.4.1 Local RPS Programming

Use the DX4010i or the DX4010V2 serial communication module at SDI Address 88 or SDI Address 92 to locally connect with RPS in Enhanced Direct mode. This connection method also allows diagnostic and history retrieval.

When a serial communication modules is installed at an SDI Address, it cannot be used for central station communications.
UL requires that serial communication modules be used for programming only.

12.5 SDI Network Interface Modules

D9412GV4/D7412GV4 v2.00 Series Control Panels support up to four network interface modules that provide connection for two-way communication over Ethernet networks. up to two Bosch Security Systems, Inc. B426/B420 Ethernet Communication Modules can be installed on the SDI2 bus. Refer to 13.6 B420 Ethernet Communication Module *or* for details regarding the SDI2 network interface modules. Likewise, up to two Bosch Security Systems, Inc. DX4020 Network Interface Modules can be installed on the SDI bus

For programming information on enhanced communications, refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

The B426/B420 modules can be installed on the SDI bus when configured to emulate DX4020 modules. Regardless of bus type, the modules can be up to 1000 ft (305 m) from the control panel or auxiliary power supply using 22 AWG (0.8 mm) wire.

The DX4020 can be installed on the SDI bus up to 1000 ft (305 m) from the control panel or auxiliary power supply using 22 AWG (0.8 mm) wire.

The ITS-DX4020-G GPRS/GSM IP Communicator enables two-way IP or dialed communication over a commercial GPRS/GSM network. Typical applications are event reporting to a central monitoring station and remote access to Bosch intrusion control panels.

The ITS-DX4020-G GPRS/GSM IP Communicator has two modes; GPRS uses Modem4; and GSM uses Contact ID.

For programming information refer to the *ITS-DX4020-G GPRS/GSM IP Communicator Installation and Operation Guide* (P/N: F01U163066).

12.5.1 Address Settings

The DX4020 has specific DIP switch settings for SDI Address 80. The B426, B420, and DX4020 is capable of communication to supported Automation packages, SDI Addresses 88 and 92 when using the DX4020 for Remote Programming Software (RPS) or enhanced communications in a local-area network (LAN) or wide-area network (WAN) environment. Refer to *Figure 28* for the correct switch settings.

12.5.2 Supervision

Supervision of Network Interface Modules at SDI Addresses 88 and 92 are enabled automatically when used to communicate with a central station network receiver. Supervision ensures reliable operation between the module and the control panel.

If supervised and the module does not respond to control panel supervision polls, then a system fault message appears at the keypad. The report to the receiver includes the address of the troubled module indicating which module needs service.

Figure 28: DX4020 DIP Switch Settings

1 - DIP Switches
2 - ON position
3 - OFF position
4 - SDI Address 80 switch settings
5 - SDI Address 88 switch settings
6 - SDI Address 92 switch settings
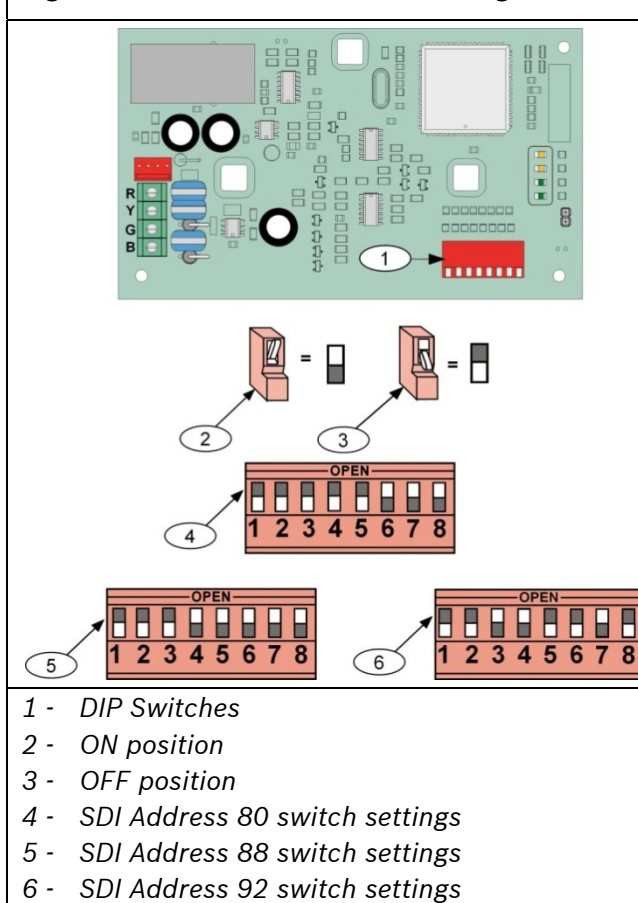
13.0 SDI2 Devices

13.1 Description

D9412GV4/D7412GV4 v2.00 Control Panels can support a number of accessory devices from the SDI2 Bus using Terminals 33 through 36. Some devices include the B208 Octo-input Module, the B308 Octo-output Module, and the B810 wireless receiver.

☑	For UL 864 Commercial Fire applications, refer to *Installing Combination Fire and Intrusion Alarm Systems* in the *Approved Applications* chapter found in this guide for important information about combination fire and intrusion systems.

13.2 Installation

For complete installation instructions, consult the operation and installation guide for the specific SDI2 device. SDI2 devices connect to the control panel in parallel (Table 23).

These devices can share power with the control panel or be powered by a stand-alone power source.

Table 23:	SDI2 Device Connections		
Terminal	**Function**	**Wire Color**	**Function**
36	POWER +	Red	+12.0 VDC
35	DATA BUS 1	Yellow	Data
34	DATA BUS B	Green	Data
33	COMMON	Black	Common

☑	A stand-alone power supply powering the SDI2 device must also be connected to a common terminal on the control panel. Do not connect the earth ground for the stand-alone power supply to Terminal 10 on the control panel.

13.2.1 Open Wire Trouble on SDI2

D9412GV4/D7412GV4 v2.00 Control Panels can detect an open wire fault in the data communication lines of the SDI2 bus. Any open wire on terminals 34 or 35 result in a system fault trouble display on all keypads and a general SDI Trouble event sent to the central station

13.3 B208 Octo-input Module

The Octo-input module is an 8 point expansion device that connects to the control panel through the SDI2 bus. This module is supervised and communicates back to the control panel all point status changes. The module's expansion points work the same as the points on the control panel.

Review the information in *Section 6.0 Power Outputs* on page 30 to ensure that there is enough power for the B208 and other powered devices you want connected to the system.

On the D9412GV4 control panel, you can add up to 24 Octo-input modules. On the D7412GV4 control panel, you can add up to 7 Octo-input modules.

The B208 Octo-input Modules connect to the SDI2 bus on the control panel using Terminals 33 through 36, or using the SDI2 interconnect wiring connector. You can connect more than one module to the control panel by wiring them in parallel. Refer to the *B208 Installation and Operation Guide* (P/N: F01U265456) for wiring instructions.

13.3.1 Address Settings

☑	The control panel reads rotary switch setting changes on power up. If you change the switches after installation and applying power to the control panel, you must cycle the power to the control panel.

The B208 rotary switches provide a tens and a ones setting for the module's address. For single-digit address numbers 0-9, set the tens switch to 0 and the ones digit to the appropriate number. Refer to *Figure 29* below.

Figure 29: B208 Switches Set to Address 9

Valid B208 addresses are dependent on the number of points allowed by a particular control panel. Refer to *B.2   SDI2 Points* on page 146.

B208 Octo-input modules cannot support some point assignments, for example points 9 and 10, 19 and 20, 29 and 30, etc. These inaccessible point assignments can be supported on the ZONEX bus or SDI2 Wireless RF points. On the D9412GV4/D7412GV4 v2.00 Control Panels, each off-board point assignment can be assigned a Point Source to define its bus type.

13.3.2 Supervision

Supervision of B208 Octo-input Modules on the SDI2 bus is enabled automatically when the Point Source of a point assignment is set to Octo-input. Each Octo-input module supports a fixed range of point assignments. Refer to B.2   SDI2 Points on page 146 for point to module assignments. Any failure to receive an expected response from an SDI2 module results in a system fault display on all keypads and a module specific SDI FAULT event sent to the central station.

13.4   B308 Octo-output Module

The B308 Octo-output module is an 8 relay expansion device that connects to control panels through the SDI2 bus. This module is supervised and communicates to the control panel to provide 8 independently controlled outputs. Each output can operate as either normally open or normally closed.

Review the information in *Section 6.0 Power Outputs* on page 30 to ensure that there is enough power for the B308 and other powered devices you want connected to the system.

On the D9412GV4 control panel, you can add up to 12 Octo-output modules. On the D7412GV4 control panel, you can add up to 6 Octo-output modules. Refer to the *B308 Installation and Operation Guide* (P/N: F01U265458) for wiring instructions.

13.4.1 Address Settings

The control panel reads rotary switch setting changes on power up. If you change the switches after installation and applying power to the control panel, you must recycle the power to the control panel.

The B308 rotary switches provide a tens and a ones setting for the module's address. For single-digit address numbers 0 through 9, set the tens switch to 0 and the ones digit to the appropriate number. Refer to *Figure 30*. Only address 01 through 32 are valid for the B308 module.

Figure 30: B308 Switches Set to Address 9

Valid B308 addresses are dependent on the number of relays allowed by a particular control panel.

B308 Octo-output modules cannot support some relay outputs, for example relays 9 and 10, 19 and 20, 29 and 30, etc. These inaccessible outputs can be supported on the ZONEX bus. On the control panels, each off-board relay can be assigned to a destination to define its bus type (SDI2 or ZONEX).

Table 24:   B308 Valid Relay Numbers

B308 Module#	Supported Relays
1	11 - 18
2	21 - 28
3	31 - 38
4	41 - 48
5	51 - 58
6	61 - 68[1]
7	71 - 78
8	81 - 88
9	91 - 98
10	101 - 108
11	111 - 118
12	121 - 128

[1] For the D7412GV4, only 4 outputs are available at address 6.

13.4.2 Supervision

Supervision of B308 Octo-output Modules on the SDI2 bus is enabled automatically when the Relay Destination of an off-board relay is set to Octo-output. Each Octo-output module supports a fixed range of off-board relays. Refer to *Table 24* for relay to module assignments. Any failure to receive an expected response from an SDI2 module results in a system fault display on all keypads and a module specific SDI FAULT event sent to the central station.

13.5 B426 Ethernet Communication Module

B426 Ethernet Communication Modules are four-wire powered SDI2 devices that provide connection for two-way communication over Ethernet networks to the control panels. The B426 uses the standard IPv4 or IPv6 address protocol. You can add up to two B426 Ethernet Communication Modules.

13.5.1 Address and Emulation Settings

The B426 address switches provide a single-digit setting for the module's address. The module uses addresses 0 through 9. Refer to *Figure 31*.

Figure 31: B426 Switch Set to Address 1

The B426 has specific rotary switch settings for SDI Addresses 88 and 92 or SDI2 Addresses 1 and 2 when used to communicate with Remote Programming Software (RPS) or with a central station network receiver. Refer to *Table 26* for the correct switch settings. When the Reset Pin (labeled S1) is closed, all SDI communication module addresses are automatically enabled for RPS communication without restriction.

Table 25: B426 Address and Emulation Settings	
Rotary Switch Setting	**Bus Type and Setting**
0	Default
1	SDI2 – Address 1
2	SDI2 – Address 2
3*	SDI – Address 80
4*	SDI – Address 88
5*	SDI – Address 92
6*	N/A for GV4
7*	N/A for GV4
8*	N/A for GV4
9*	N/A for GV4
* Emulates DX4020 operation.	

13.5.2 Supervision

Supervision of Ethernet Communication Modules at SDI2 Addresses 1 and 2 are enabled automatically when used to communicate with a central station network receiver. Supervision ensures reliable operation between the module and the control panel.

If supervised and the module does not respond to control panel supervision polls, then a system fault message appears at the keypads. A corresponding report is sent to the central station.

13.5.3 Local RPS Programming

Use the B426's IP Direct connect feature to locally connect with RPS. This connection method requires a direct IP connection from the PC to the B426's Ethernet port, which requires you to remove the Ethernet cable that connects the B426 to the Web for the duration of the IP direct connection. Be sure to reconnect the B426 to the internet when you finish.

The IP Direct connection for RPS uses the B426's AutoIP configuration. Refer to the *B426 Installation and Operation Guide* for configuration information. This connection method also allows diagnostic and history retrieval.

13.5.4 Ethernet Communications Module Faults

With a B426 Ethernet Communications Module installed, several services are made available to D9412GV4/D7412GV4 v2.00 control panels. Any break in the Ethernet connection to a supervised B426 results in a system fault at the keypads indicating Open Cable trouble. An SDI

FAULT event is sent to the central station, if enabled.

If a Domain Name Server (DNS) is available on the network, a failure to resolve an individual Network Address host name results in a system fault at the keypads indicating DNS ERROR ##. The error number represents the communication module and path destination combination that failed. Refer to the *CONTROL PANELS (D9412GV4/D7412GV4 V2.00) Program Entry Guide* for details on communication module/path destination combinations. A failure to resolve the domain name used for RPS Network Address is displayed on the keypads as DNS ERROR 99.

If a B426 fails all communication with the DNS, a system fault indicating Network Module # Address Error will be displayed on all keypads and a SDI TROUBLE event is sent to the central stations, if the report has been enabled.

13.6 B420 Ethernet Communication Module

B420 Ethernet Communication Modules are four-wire powered SDI2 devices that provide connection for two-way communication over Ethernet networks to the control panels. You can add up to two B420 Ethernet Communication Modules.

13.6.1 Address and Emulation Settings

The B420 address switches provide a single-digit setting for the module's address. The module uses addresses 0 through 9. Refer to *Figure 32*.

Figure 32: B420 Switch Set to Address 1

The B420 has specific rotary switch settings for SDI Addresses 88 and 92 or SDI2 Addresses 1 and 2 when used to communicate with Remote Programming Software (RPS) or with a central station network receiver. Refer to *Table 25* for the correct switch settings. When the Reset Pin (labeled S1) is closed, all SDI communication module addresses are automatically enabled for RPS communication without restriction.

Table 26: B420 Address and Emulation Settings	
Rotary Switch Setting	**Bus Type and Setting**
0	Default
1	SDI2 – Address 1
2	SDI2 – Address 2
3*	SDI – Address 80
4*	SDI – Address 88
5*	SDI – Address 92
6*	N/A for GV4
7*	N/A for GV4
8*	N/A for GV4
9*	N/A for GV4
* Emulates DX4020 operation.	

13.6.2 Supervision

Supervision of Ethernet Communication Modules at SDI2 Addresses 1 and 2 are enabled automatically when used to communicate with a central station network receiver. Supervision ensures reliable operation between the module and the control panel.
If supervised and the module does not respond to control panel supervision polls, then a system fault message appears at the keypads. A corresponding report is sent to the central station.

13.6.2 Local RPS Programming

Use the B420's IP Direct connect feature to locally connect with RPS. This connection method requires a direct IP connection from the PC to the B420's Ethernet port, which requires you to remove the Ethernet cable that connects the B420 to the Web for the duration of the IP direct connection. Be sure to reconnect the B420 to the internet when you finish.
The IP Direct connection for RPS uses the B420's AutoIP configuration. Refer to the *B420 Installation and Operation Guide* for configuration information. This connection method also allows diagnostic and history retrieval.

13.6.3 Ethernet Communications Module Faults

With a B420 Ethernet Communications Module installed, several services are made available to D9412GV4/D7412GV4 v2.00 control panels. Any break in the Ethernet connection to a supervised B420 results in a system fault at the

keypads indicating Open Cable trouble. An SDI FAULT event is sent to central station, if enabled.

If a Domain Name Server (DNS) is available on the network, a failure to resolve an individual Network Address host name results in a system fault at the keypads indicating DNS ERROR ##. The error number represents the communication module and path destination combination that failed. Refer to the *CONTROL PANELS (D9412GV4/D7412GV4 V2.00) Program Entry Guide* for details on communication module/path destination combinations. A failure to resolve the domain name used for RPS Network Address is displayed on the keypads as DNS ERROR 99.

If a B420 fails all communication with the DNS, a system fault indicating Network Module # Address Error will be displayed on all keypads and a SDI TROUBLE event is sent to the central stations, if enabled.

13.7 B520 Auxiliary Power Supply Module

The B520 Auxiliary Power Supply Module is an auxiliary power supply module that provides the ability to expand power requirements via an SDI2 compatible system by directly connecting to an SDI2 device bus, or other 12 volt devices. The B520 is fully supervised. This module provides auxiliary power to SDI2 modules, or other 12 volt devices which are connected to a compatible control panel. You can add up to eight B520 modules to a control panel.

13.7.1 Address Settings

☑	The control panel reads rotary switch setting changes on power up. If you change the switches after installation and applying power to the control panel, you must recycle the power to the control panel.

Valid B520 address switches determine the internal address of the device. The address switch range for the B520 on a D9412GV4/D7412GV4 v2.00 Control Panel is 1 through 8. Addresses 00 and 09 through 99 are not permissible on the SDI2 device bus. Refer to *Figure 32* and *Table 27 for valid switch setting addresses.*

If you set the switch to an invalid address, the B520 reports as missing.

Figure 33: B520 Switch Set to Address 2
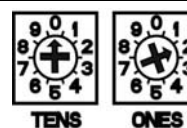
Table 27: B520 Valid Switch Settings and Internal Addresses

Rotary Switch Setting	Corresponding Internal Address
1	176
2	177
3	178
4	179
5	180
6	181
7	182
8	183

13.7.2 Supervision

Supervision of B520 Auxiliary Power Supply Modules on the SDI2 bus is enabled through control panel configuration. Refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide* for details in enabling auxiliary power supply modules. Any failure to receive an expected response from an SDI2 module results in a system fault display on all keypads and a SDI FAULT event sent to the central station.

13.7.3 Auxiliary Power Supply Faults

Each auxiliary power supply module on the SDI2 bus monitors several conditions including AC status, battery status, over current status, and a tamper input. Each of these conditions produces a unique system fault condition at all keypads, and is accompanied by a module specific SDI Failure event sent to the central station.

When the control panel shows a generic trouble condition for a SDI2 bus power supply module, it could mean one of several non-serviceable things has occurred; low power output, module firmware flash error, or battery charger circuit failure.

13.8   B810 wireless receiver

The wireless receiver detects and reports ambient Radio Frequency (RF) interference as a system fault indicated as a jamming condition. This fault is accompanied by an RF Interference event sent to the central station.

The address switch determines the address for the receiver. The control panel requires the receiver's address for communications. The B810 address switches provide a single-digit setting for the module's address. The module uses addresses 1 through 4. Addresses 0 and 5 through 9 are invalid. When connected to a D9412GV4/D7412GV4 v2.00 Control Panel, only addresses 1 and 2 are valid. Refer to *Figure 34*.

Figure 34:   B810 Switch Set to Address 1

13.8.1   Supervision

Supervision of B810 is enabled automatically when at least one RF device is enrolled via a systems keypad or RPS. Available RF devices on the D9412GV4/D7412GV4 v2.00 control panel are RF repeaters, wireless points, or user key fobs. Any failure to receive an expected response from an SDI2 module results in a system fault display on all keypads and an SDI Fault event sent to the central station.

13.8.2   Wireless Receiver Faults

B810 detects and reports ambient Radio Frequency (RF) interference as a system fault indicated as a jamming condition when the ambient noise is above the jamming threshold for a continuous period of 20 secs.

The receiver reports a tamper condition to the D9412GV4/7412GV4 v2.00 control panel when the receiver assembly is removed from the mounting base. The tamper input on the receiver can create a system fault at the keypads. The receiver can also generate a general trouble system fault. This fault indicates a non-recoverable problem has occurred that requires servicing. The control panels reports trouble system fault and module tamper system fault as module-specific fault to the central station.

13.8.3 Wireless Repeater Faults

Each RADION wireless repeater within range of the B810 receives and relays RF packets from the RADION wireless transmitters. The repeater also reports AC status, battery status, and tamper input status. Each of these conditions has a corresponding system fault display at the keypads, and generates a module-specific fault event that the control panel sends to the central station.

13.9   B820 SDI2 Inovonics Interface Module

The B820 SDI2 Inovonics Interface Module allows a control panel to interface with an Inovonics EN4200 EchoStream Serial Receiver through the SDI2 bus. You can add up to 1 B820 module to a control panel.

The address switch determines the address for the B820 module. The control panel requires the module's address for communications. The B820 address switches provide a single-digit setting for the module's address. The module uses addresses 1 through 4. Addresses 0 and 5 through 9 are invalid. When connected to a D9412GV4/D7412GV4 v2.00 Control Panel, only addresses 1 and 2 are valid. Refer to *Figure 35*.

Figure 35:   B820 Switch Set to Address 1

13.9.1   Supervision

Supervision of a B820 SDI2 Inovonics Interface Module is enabled automatically when at least one RF device is enrolled. Available RF devices on D9412GV4/D7412GV4 v2.00 Control Panels are RF Repeaters, wireless points, or user key fobs. Any failure to receive an expected response from an SDI2 module results in a system fault display on all keypads and an SDI Fault event sent to the central station.

13.9.2   Wireless Receiver Faults

The B820 SDI2 Inovonics Interface Module detects and reports ambient Radio Frequency (RF) interference as a system fault indicated as a jamming condition. This fault is accompanied by an RF Interference event sent to the central station.

The tamper input on the B820 module can, if enabled, create a system fault at the keypads. The B820 module can also generate a general trouble system fault. This fault indicates a non-recoverable problem has occurred that requires servicing. The trouble system fault and module tamper system fault are reported as a module specific SDI Fault to the central station.

13.9.3 Wireless Repeater Faults

Each wireless repeater within range of the B820 SDI2 Inovonics Interface Module can report its AC status, battery status, and tamper input status. Each of these conditions has a corresponding system fault display at the keypads, and generates a module-specific SDI Fault event that is sent to the central station.

13.10 B920 Two-lined Alphanumeric Keypad

The B920 is an SDI2 bus compatible device that works with D9412GV4/D7412GV4 v2.00 control panels. Each keypad has 23 keys for data or command entry, a backlit display that shows system messages, and a sounder that emits warning tones.

On the control panel, you can use up to 16 SDI2 keypads. B920 standard keypads connect to the SDI2 bus on the control panel using terminals PWR, A, B, and COM, or using the SDI2 interconnect wiring connector. A total number of B920 and B930 keypads installed must not exceed 16. Wiring terminals on the B920 standard keypad support a wiring gauge range of 12 AWG through 22 AWG.

Refer to the *Two-line Alphanumeric Keypad (B920) Installation Guide* (P/N: F01U265450) for wiring instructions.

13.10.1 LCD Backlit Settings

The B920 supports 7 configurable backlit settings ranging from 0% up to, and including 100% respectively. Reference the table below for the spectrum range.

Table 28: B920 LCD Display Values	
LCD Level	LCD Percentage
1	0% (OFF)
2	17%
3	33%
4	50%
5	67%
6	83%
7	100% (Full ON)

The default intensity level is set to 100%. The LCD backlit intensity value is stored on the D9412GV4/D7412GV4 v2.00 control panel, and is initiated at the keypad during the startup sequence. The LCD display stays illuminated during programming sequences and will automatically shut off following 10 secs of inactivity.

13.10.2 LCD Power Up Status

The B920 displays a "Power Up" status, as well as "Address" and "Firmware versions" in the LCD when powering up the B920. The message displays for a duration of 10 secs during this time.

13.10.3 LCD Communication Status

The B920 displays a communication error during the powering up sequence when communication between the keypad and control panel have not been established with 30 secs of power up. At this time, the "Call for Service" message displays on the LCD. During this time, the keypad will sound the Trouble Tone to inform the user of the communication error. Press any button to silence the Trouble Tone alarm.

13.11 B930 ATM Style Alphanumeric Keypad

The B930 is an SDI2 bus compatible device that works with D9412GV4/D7412GV4 v2.00 control panels. Each keypad has 23, ATM style keys for data or command entry, a backlit display that shows system messages for all areas, and a user-adjustable sounder that emits warning tones.

On the control panel, you can use up to 16 SDI2 keypads. B930 deluxe keypads connect to the SDI2 bus on the control panel using terminals PWR, A, B, and COM, or using the SDI2 interconnect wiring connector. A total number of B920 and B930 keypads installed must not exceed 16. Wiring terminals on the B930 deluxe keypad support a wiring gauge range of 12 AWG through 22 AWG.

Refer to the *ATM Style Alphanumeric Keypad (B930)Installation Guide* (P/N: F01U265451) for wiring instructions.

13.11.1 LCD Backlit Settings

The B930 supports 7 configurable backlit settings ranging from 0% up to, and including 100% respectively. Reference the table below for the spectrum range.

Table 29: B930 LCD Display Values	
LCD Level	LCD Percentage
1	0% (OFF)
2	17%
3	33%
4	50%
5	67%
6	83%
7	100% (Full ON)

The default intensity level is set to 100%. The LCD backlit intensity value is stored on the D9412GV4/D7412GV4 v2.00, and is initiated at the keypad during the startup sequence. The LCD display stays illuminated during programming sequences and will automatically shut off following 10 secs of inactivity.

13.11.2 LCD Power Up Status

The B930 displays a "Power Up" status as well as "Address" and "Firmware versions" in the LCD when powering up the B930. The message displays for a duration of 10 secs during this time.

13.11.3 LCD Communication Status

The B930 displays a communication error during the powering up sequence when communication between the keypad and control panel have not been established with 30 secs of power up. At this time, the "Call for Service" message displays on the LCD. During this time, the keypad will sound the Trouble Tone to inform the user of the communication error. Press any button to silence the Trouble Tone alarm.

14.0 Accessory Connector

Use the accessory connector to connect the D9412GV4 or D7412GV4 control panel to the D928 Dual Phone Line Switcher. The accessory connector is on the bottom right corner of the I/O board (*Figure 36*). The D928 lets the control panel use two telephone lines to send reports.

Refer to *Section 7.11 D928 Dual Phone Line Switcher* on page 34 for installation and operating instructions.

Figure 36: Accessory Connection on D9412GV4 and D7412GV4
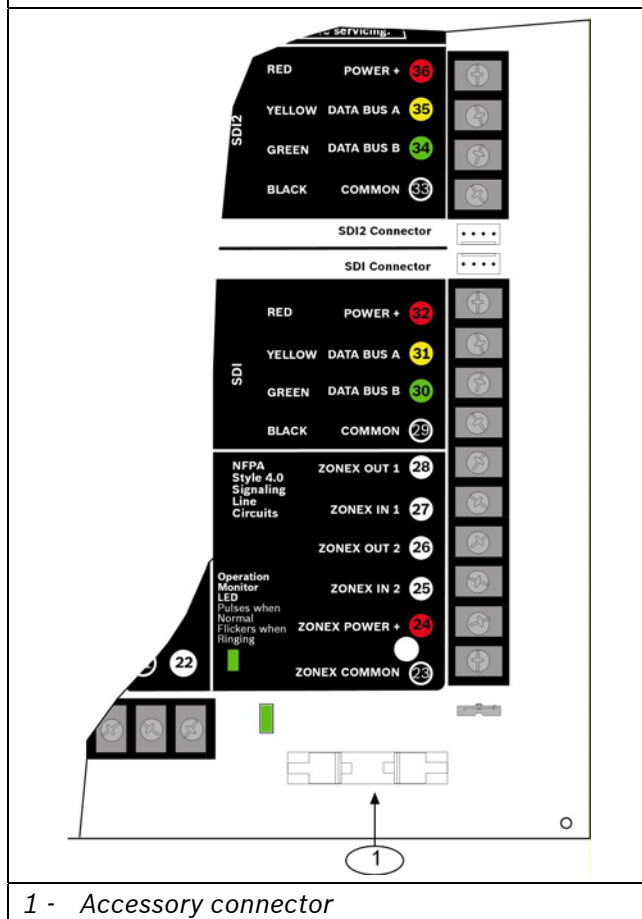
1 - *Accessory connector*

15.0 Faceplates

15.1 D9412GV4/D7412GV4 v2.00 Faceplate

Figure 37: D9412GV4/D7412GV4 v2.00 Faceplate
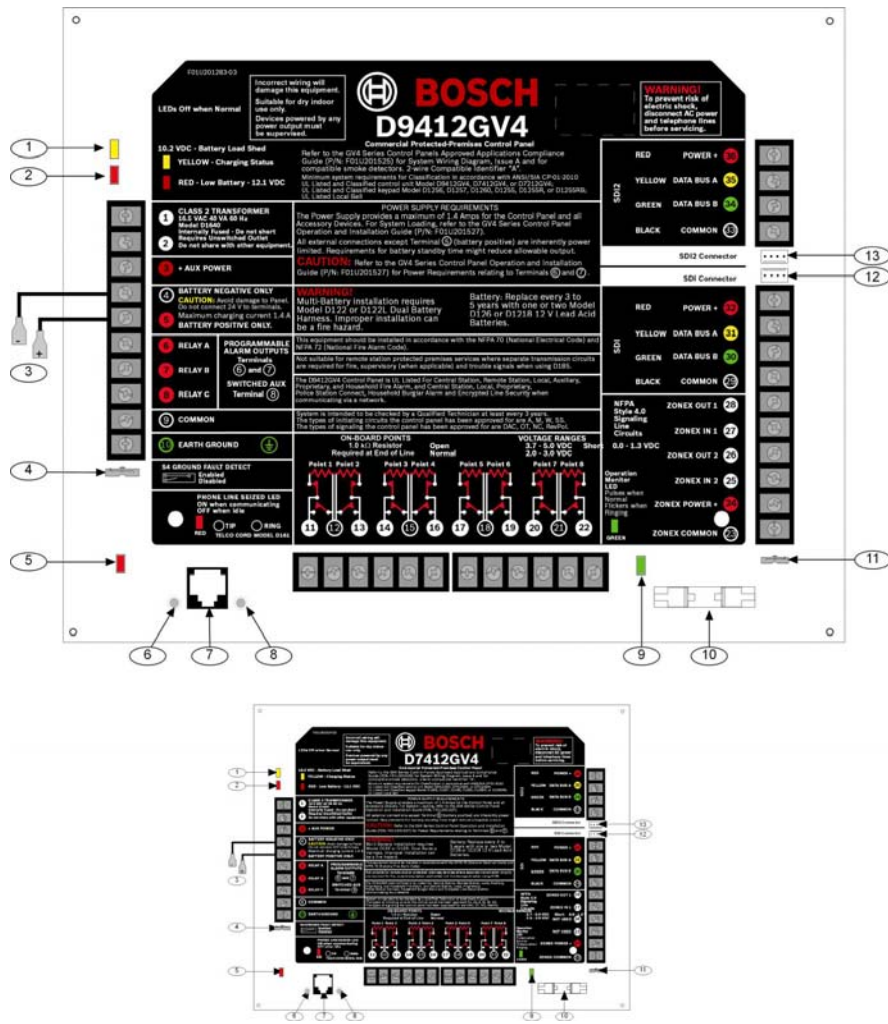
1 - Charging status LED (yellow)	8 - Ring
2 - Low battery LED (red)	9 - Operation monitor LED (green)
3 - Color-coded battery leads	10 - Accessory connector
4 - Ground fault detect enable	11 - Reset pin
5- Phone LED (red)	12 - SDI interconnect wiring connector
6 - Tip	13 - SDI2 interconnect wiring connector
7 - Telephone cord connector	

16.0 Specifications

16.1 Control Panel Power Supply

Table 30: Control Panel Power Supply Specifications

Voltage Input (Power Supply)	Primary:	Terminals 1 and 2	16.5 VAC 40 VA class 2 plug-in transformer (D1640)
	Secondary:	Terminals 4 and 5	Sealed lead-acid rechargeable battery (12.0 VDC, 7 Ah or 12.0 VDC, 17.2 or 18 Ah). The control panel supports up to two 12.0 VDC, 7 Ah batteries using the D122/D122L Dual Battery Harness or two D1218 (12.0 VDC, 17.2 or 18 Ah).
Current Requirements	Control Panel: Idle 225 mA; Alarm 300 mA Refer to the *Current Rating Chart for Standby Battery Calculations* section in Chapter 21 of this guide for the current draw requirements of other system components.		
Power Outputs²	All external connections are power-limited except battery terminals.		
	Continuous Power Outputs	Terminals 3, 24, 32, 36	1.4 A maximum at 12.0 VDC nominal (continuous supply) total for all devices and outputs supplied at Terminals 3, 24, and 32 and 36.
	Alarm Power Output	Terminals 6 and 7	2.0 A maximum at 12.0 VDC nominal output. Output can be steady or one of four pulsed patterns depending on programming. Refer to *Relays* in *RPS Help*.
	Switched Aux Power	Terminal 8	1.4 A maximum at 12.0 VDC nominal output. Continuous output is interrupted by Sensor Reset or alarm verification depending on programming. Refer to *Relays* in *RPS Help*.
	Fire and Fire/Burglary Systems	¹To comply with UL 985 and 864 listing standards for fire alarm systems, the total combined continuous and alarm current draw for the system during alarm conditions must be limited to 1.4 A provided by the primary power supply (rectified AC). If current draw for the system exceeds 1.4 A, use a UL Listed 12 VDC regulated, power limited auxiliary power supply module such as the B520.	
¹Requires a UL Listed power supply. **²For UL 864 applications, refer to *Table 3* on page 12 for compatible devices.**			
Minimum Operating Voltage	10.2 VDC		
SDI Bus	SDI Bus A+: SDI Bus B-:	9 VDC 15000 ft (4572 m) maximum 9 VDC 15000 ft (4572 m) maximum	
SDI2 Bus	SDI2 Bus A+: SDI2 Bus B-:	12 VDC nominal, Congregate wire length 2000 ft (609.6 m) maximum single run 12 VDC nominal, Congregate wire length 2000 ft (609.6 m) maximum single run	
Telephone Connections	Connection: Two Telco lines:	RJ31X or RJ38X jack can connect the control panels. Bosch Security Systems, Inc. D928 Dual Phone Line Module required for two phone line service on D9412GV4 and D7412GV4. Supervision supplied by the control panel.	
Battery Discharge/ Recharge Schedule	Discharge Cycle	13.9 VDC 13.8 VDC 12.1 VDC 10.2 VDC 10.0 VDC	Charging float level. Charging status LED on. Low Battery Reports if programmed. Low Battery LED on. Minimum operational voltage Battery load shed.
	Recharge Cycle	AC ON	Load shed relay resets, battery charging begins, and AC Restoral Reports sent.
		13.7 VDC	Battery Restoral Report sent, Low Battery LED off.
		13.9 VDC	Charging status LED off, battery float charged.
Environmental	Temperature:	0°C to +49°C (+32°F to +120°F)	
	Relative Humidity:	Maximum 93% non-condensing	
Arming Stations	B920/B930 Keypads D1255/D1255B/D1255RB Keypads, D1256RB Fire Keypads; D1257RB Fire Alarm Annunciators; D1260/D1260B Keypads; Keyswitch; Keyfobs.		
Point Thresholds	On-board Points 1 to 8	Open Normal Short	Greater than 3.7 VDC, but less than 5.0 VDC. Greater than 2.0 VDC, but less than 3.0 VDC. Greater than 0.0 VDC, but less than 1.3 VDC.
Compatible Enclosures	D8103 Universal Enclosure, D8109 Fire Enclosure, D8108A Attack Resistant Enclosure, BATB-40 and BATB-80 Battery Boxes.		

16.2 B520 Power Supply

Table 31: B520 Specifications			
Voltage Input (Power Supply)	Primary:	18 VAC	18.0 VAC 50 VA class 2 plug-in transformer (TR1850)
	Secondary:	Batt 1, Batt 2 terminals	The B520 Auxiliary Power Supply Module supports the connection of two independently monitored sealed lead-acid rechargeable batteries (12.0 VDC, 7 Ah through 12.0 VDC, 36 Ah).
Current Requirements	Refer to the *B520 Auxiliary Power Supply Module Battery Standby Chart* section in the *B520 Auxiliary Power Supply Module Installation and Operation Guide* (P/N: F01U265445) for the current draw requirements of other system components.		
Power Outputs*	All external connections are power-limited except battery terminals.		
	Continuous Power Outputs	SDI2 Out, AUX PWR terminals	2.0 A maximum at 12.0 VDC nominal (continuous supply) total for all devices and outputs supplied.
	Fire and Fire/Burglary Systems	To comply with UL 985 and 864 listing standards for fire alarm systems, the total combined continuous and alarm current draw for the system during alarm conditions must be limited to 2.0A provided by the primary power supply (rectified AC). If current draw for the system exceeds 2.0 A, remove connected devices until the current draw falls below 2.0 A. Then, connect the removed devices to an additional B520 Auxiliary Power Supply Module or to an external power supply.	
*For UL 864 applications, refer to the Compatible Accessories section for compatible devices.			
Minimum Operating Voltage	10.2 VDC		
SDI2 Bus	SDI2 Bus A:	8 VDC – 2000 ft (610 m) maximum	
	SDI2 Bus B:	8 VDC – 2000 ft (610 m) maximum	
Battery Discharge/ Recharge Schedule	Discharge Cycle	13.2 VDC	Charging float level.
		12.0 VDC	Low Battery and AC Fail Reports if programmed. Low Battery LED on.
		10.2 VDC	Minimum operational voltage
		9.8 VDC	Battery load shed (operation continue if AC is present).
	Recharge Cycle	AC ON	Load shed relay resets, battery charging begins, Battery Trouble and AC Restoral Reports sent.
		12.6 VDC	Battery Restoral Report sent, Low Battery LED off.
Environmental	Temperature:	+32°F to +120°F (0°C to +49°C)	
	Relative Humidity:	Maximum 93% non-condensing	
Compatible Enclosures	D8103 Universal Enclosure, D8004 Transformer Enclosure, B10 Medium Control Panel Enclosure, D2203 Standard Enclosure, BATB-40 Enclosure, BATB-80 Enclosure, AE1 and AE2 Enclosures.		

16.3   Control panel Terminal Wiring

Table 32: Terminal Wiring Requirements		
Terminal No	**Terminal Description**	**Requirements**
1	AC	18 AWG min (up to 14 AWG max)
2	AC	18 AWG min (up to 14 AWG max)
3	+ AUX POWER	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on current
4	BATTERY -	Bosch supplied wire lead, included with panel
5	BATTERY +	Bosch supplied wire lead, included with panel
6	RELAY A	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on current
7	RELAY B	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on current
8	RELAY C	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on current
9	COMMON	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on current
10	EARTH GROUND	14 to 16 AWG
11	POINT 1	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
12	POINT 1/2 COMMON	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
13	POINT 2	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
14	POINT 3	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
15	POINT 3/4 COMMON	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
16	POINT 4	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
17	POINT 5	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
18	POINT 5/6 COMMON	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
19	POINT 6	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω

20	POINT 7	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
21	POINT 7/8 COMMON	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
22	POINT 8	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on loop resistance less than 100 Ω
23	ZONEX COMMON	22 AWG min (up to 14 AWG max)
24	ZONEX POWER	22 AWG min (up to 14 AWG max)
25	ZONEX IN 2*	22 AWG min (up to 14 AWG max)
26	ZONEX OUT 2*	22 AWG min (up to 14 AWG max)
27	ZONEX IN 1	22 AWG min (up to 14 AWG max)
28	ZONEX OUT 1	22 AWG min (up to 14 AWG max)
29	SDI COMMON	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on peripheral device current
30	SDI DATA BUS B	22 AWG min (up to 14 AWG max)
31	SDI DATA BUS A	22 AWG min (up to 14 AWG max)
32	SDI POWER	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on peripheral device current
33	SDI2 COMMON	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on peripheral device current
34	SDI2 DATA BUS B	22 AWG min (up to 14 AWG max)
35	SDI2 DATA BUS A	22 AWG min (up to 14 AWG max)
36	SDI2 POWER	Terminal accommodates 14 to 22 AWG, use appropriate wire size based on peripheral device current

*D9412GV4 only. Terminals 25 and 26 are NOT USED on the D7412GV4 Control Panel.

17.0 Approved Applications

The UL System Chart (*Table 35* on page 130) references the components that are evaluated and listed by UL for compatibility with the D9412GV4/D7412GV4 v2.00 control panel. These components meet the basic system requirements for the applicable standard.

The System Wiring Diagrams, (refer to Appendix A: System Wiring Diagrams on pages 99 to 104) show the relationship between the control panel and the accessory components referred to in *Figure 39* on page 138.

17.1 Optional Compatible Equipment

UL Listed components not requiring evaluation for electrical compatibility can be used in many applications when installed according to the manufacturer's instructions.

17.2 Burglary Applications

UL Listed burglary alarm sensors not requiring evaluation for electrical compatibility can be used in burglary applications. In some cases, a UL Listed interface module must be used with the sensors. Consult the individual component specification and installation documents to determine suitability.

☑	Test Weekly: UL Standard 1023 requires a weekly test for residential burglary applications.

17.3 Bank Safe and Vault Applications

The UL Listed Model 5110 Bell and Model 4001-42 External Line Balancer (both made by Rothenbuhler) must be used for the bell and balanced line module in bank safe and vault applications. Modify the D8108A Attack-Resistant Enclosure to meet UL Standard 681.

17.3.1 Control Panel Enclosure Requirements

UL Standard 681 for Installation and Classification of Mercantile and Bank Burglary Alarm Systems requires foil lining or equivalent protection of the control unit enclosure. The D8108A Attack-Resistant Enclosure does not have a foil lining, but acceptable protection is provided by mounting electronic vibration sensors inside the enclosure. Refer to *Figure 13* on page 39.

☑	Do not use proximity alarms (capacitance) to protect the control panel enclosure.

Install the same electronic vibration sensors in the D8108A that are used to protect the safe or vault. Mount the Sentrol 5402, Potter EVD-S, or Arrowhead S-3810 electronic vibration detection (EVD) system inside the D8108A to meet the UL 681 requirements.

Mount the EVD sensor directly inside the metal cabinet of the D8108A as shown in *Figure 13* on page 39.

⚠	Do not install the EVD sensor within 6.4 mm (0.25 in.) of the components or traces of the printed circuit assembly.

Install and test the EVD sensor according to the manufacturer's instructions.

17.3.2 Battery Connections

Using a D122 Dual Battery Harness, connect two 12 V batteries in the control panel enclosure. Refer to *Figure 13* Figure 13 for battery placement information.

Use a separate D8108A for the 12 V batteries. When using a D122L Dual Battery Harness, wire the batteries in parallel and connect the harness to Terminals 4 and 5 of the control panel.

☑	Auxiliary power, limited to 300 mA for 72 h, as required by for standby mercantile bank safe, and vault applications.

17.3.3 Bell Requirements

Use the following Rothenbuhler bell and balanced line modules with the control panel:

- UL Listed Model 5110 Bell
- UL Listed Model 4001-42 External Line Balancer

☑	Bell Test at Arming: UL Standard 365 requires a Bell Test at arming for bank safe and vault applications.

17.3.4 System Configuration Requirements

The following configuration and programming options are required for UL Bank Safe and Vault Systems. Refer to the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for programming information.

Safe and Vault Protective Circuits

To test the devices that protect the safe(s) or vault(s) without sounding the bell, specify the devices' points as controlled zones and supervised for trouble conditions. Refer to *Point Index* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for more information.

Bell Configuration

UL 365 requires the bell time to be 15 to 30 min. The Rothenbuhler 5110 Bell provides selectable bell time through manipulation of its jumpers. Refer to the manufacturer's installation instructions for more information.

In addition to the jumper settings inside the bell, you can activate the control panel for a bell time of 15 min.

UL 365 requires a Bell Test at arming and must be enabled in control panel programming.

Refer to *Bell Parameters* in the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*for more bell time and test programming information.

Bell Test

To enable the bell test feature, you enable an unused area of the control panel. Enable the bell test feature for the unused area **only**. Program Relay B as the area bell relay for the unused area.

All pass codes with authority to arm the safe or vault and also send a Closing Report must be valid in this area. Program the area for a five-second exit delay. Refer to *Figure 13* on page 39 for test connections. To complete the installation for this feature, connect the output to a D133 Relay Module.

17.3.5 Exit Delay

The control panel's programmed maximum exit delay must not exceed 30 sec.

17.3.6 Equipment Requirements

- D9412GV4/D7412GV4 V2.00 Control Panel
- Two (2) D126 12 V, 7 Ah batteries
- Two (2) D1218 12 V 18 Ah batteries
- B520 Auxiliary Power Supply Module/or D8132 Battery Charger Module
- Two (2) D8108A Enclosures
- D122 Dual Battery Harness
- D122L Dual Battery Harness
- D133 Relay Module
- EVD System (Listed Safe/Vault)

17.4 Fire Applications

UL Listed fire initiating devices not requiring electrical compatibility evaluation can be used in any application. For example, the four-wire smoke detectors, heat detectors, waterflow switches, and manual pull stations are suitable fire initiating devices. Consult the individual component specification and installation documents to determine suitability.

> ☑ UL requires any device powered from a power output to be supervised.

> ☑ UL requires that power outputs are not shared between fire and non-fire devices unless all devices are in conduit within 20 ft and are in the same room.

> ☑ The expansion bus can be shared between fire and non-fire devices where the POPIT module is providing data isolation between the input and the bus connections.

17.4.1 Four-Wire Smoke Detectors

When using four-wire smoke detectors, install a power supervision device according to the manufacturer's instructions. You can connect any number of four-wire smoke detectors to the D9412GV4/D7412GV4 v2.00 Control Panels (subject to available auxiliary power).

The Reset Sensor command is available from the keypads when the Reset Sensor is enabled. Connect the smoke detectors to a suitable interface such as the D125B or D129, or to the D9127 Modules when used with a D9412GV4/D7412GV4 v2.00 Control Panel. Smoke detectors can also be connected to the on-board points to meet UL and NFPA requirements.

When using four-wire smoke detectors, install a power supervision unit according to the manufacturer's instructions. Refer to *Section 17.4.5 Other Devices*.

17.4.2 Two-Wire Smoke Detectors

Two-wire smoke detectors connect to the control panel only through the D125B Powered Loop Interface. Two-wire detectors must be evaluated for electrical compatibility, and be UL Listed for use with the control panel. Refer to *Table 33* on page 84 for the two-wire smoke detectors that are UL Listed for compatibility and the maximum number of detectors that can be connected to each loop of the D125B Powered Loop Interface Module.

You can also consult the smoke detector manufacturer to determine if a particular smoke detector is UL Listed for use with the D9412GV4 and D7412GV4 Control Panels. The Reset Sensor command is available from the keypads when Reset Sensor is enabled.

> ☑ Consult the *UL Listed Two-Wire Smoke Detectors Compatible with the D125B* table on page 85 to determine which product best fit your smoke application needs.

> ☑ The control panel does not support multiple detectors in alarm. The control panel is intended to handle detectors with optional features. Detectors from different manufacturers cannot be mixed on the same circuit.

17.4.3 Two-Wire Smoke Detector Specifications

- Voltage Range: 8.0 VDC to 14 VDC
- UL Compatibility Identifier: Type A (for control panel, detector, and base)

17.4.4 NFPA Style A (Class "B") Circuit

Loops A and B on the D125B Module are NFPA Style A (Class "B") initiating circuits suitable for connecting any fire alarm initiating device, including two-wire and four-wire smoke detectors. To connect initiating devices to on-board points (1 through 8) on the D9412GV4/D7412GV4 v2.00 Control Panel:

- Use a D125B Powered Loop Interface Module with two-wire initiating devices for a D9412GV4/D7412GV4 v2.00 Control Panel).

- Use a D129 Dual Class "A" (NFPA Style D) Initiating Circuit Module with any type of initiating device, **except** a two-wire smoke detector.

Use the following guidelines when connecting fire alarm initiating devices to off-board points:

- Do not connect two-wire smoke detectors to POPITs or MUX bus inputs.
- Use the D9127U or D9127T POPIT Modules to connect four-wire smoke detectors when using a D9412GV4/D7412GV4 v2.00 Control Panel.

17.4.5 Other Devices

Use a D130 Relay Module, D8129 OctoRelay, or Switched Aux (Terminal 8) to provide reset capability to other initiating devices such as:

- D125B Powered Loop Interface Module (2-wire smoke detector module)
- D129 Dual "Class A" Initiation Circuit Module (4-wire smoke detector)
- D9127T/U POPITs
- On-board points

Install devices according to the manufacturer's instructions. Refer to *Off-Board Outputs* on page 55 for more information.

For battery calculations, refer to *Table 38* on page 132 and *Section 22.0 NFPA 72 Fire Alarm Applications* on page 134.

> ☑ Test Weekly: Perform a Fire Test weekly. Both the AC power and battery are tested according to UL 864 (D9412GV4/D7412GV4).

17.4.6 UL Listed Two-Wire Smoke Detectors Compatible with the D125B

A D125B Powered Loop Interface Module is required to connect smoke detectors to the on-board points (1-8).

Table 33: UL Listed Two-Wire Smoke Detectors Compatible with the D125B				
			Maximum Number of Detectors per Loop	
Manufacturer	**Detector Model**	**Base Model**	**D125B**	
			12 VDC	**24 VDC**[1]
Bosch Security Systems, Inc.	D262	D260	25	N/A
	D263	N/A	10	10
	D263TH	N/A	10	10
	D263S	N/A	10	10
	D263THS	N/A	10	10
	D281	D280	N/A	80
	D282	D280	N/A	80
	D283	D280	N/A	80
	D285	D287, D288	10	10
	D285DH	D340	10[2]	10
	D285TH	D287, D288	10	10
	D340	N/A	10	10
	D286	D287, D288	10	10
	D603	D287, D288	10	10
	D604	D287, D288	10	10
	D605	D287, D288	10	10
	DS230	MB2W, MB2WL	10	10
	DS230F	MB2W, MB2WL	10	10
	DS233F	MB2W, MB2WL	10	10
	DS250	MB2W, MB2WL	10	10
	DS250TH	MB2W, MB2WL	10	10
	DS260	MB2W, MB2WL	10	10
	DS282	N/A	10	10
	DS282TH	N/A	10	10
	DS282S	N/A	10	10
	DS282THS	N/A	10	10
	DS290	N/A	10	10
	F220P	F220-B6	10	10
	F220PTH	F220-B6	10	10
	F220PC	F220-B6	10	10
	F220PTHC	F220-B6	10	10
	F220-135	F220-B6	10	10
	F220-135F	F220-B6	10	10
	F220-190F	F220-B6	10	10

[1] Requires a UL 1481 regulated power-limited Power Supply.
[2] Remote Test Station works only when used at 24 VDC.

Table 33: UL Listed Two-Wire Smoke Detectors Compatible with the D125B (Continued)				
			Maximum Number of Detectors per Loop	
Manufacturer	**Detector Model**	**Base Model**	**D125B**	
			12 VDC	**24 VDC[1]**
Detection Systems	DS200	MB200-2W	20	60
	DS200HD	MB200-2W	20	60
	DS230	MB2W, MB2WL	10	10
	DS230F	MB2W, MB2WL	10	10
	DS233F	MB2W, MB2WL	10	10
	DS250	MB2W, MB2WL	10	10
	DS250DH	DS290	10[2]	10
	DS250TH	MB2W, MB2WL	10	10
	DS260	MB2W, MB2WL	10	10
	DS282	N/A	10	10
	DS282TH	N/A	10	10
	DS282S	N/A	10	10
	DS282THS	N/A	10	10
	DS290	N/A	10	10
Radionics	D262	D260	10	N/A
	D263	N/A	25	10
	D263TH	N/A	10	10
	D263S	N/A	10	10
	D263THS	N/A	10	10
	D281	D280	10	80
	D282	D280	N/A	80
	D283	D280	N/A	80
	D285	D287, D288	N/A	10
	D285DH	D340	10[2]	10
	D285TH	D287, D288	10	10
	D340	N/A	10	10
	D286	D287, D288	10	10
	D603	D287, D288	10	10
	D604	D287, D288	10	10
	D605	D287, D288	10	10
Honeywell	TC805C-1000	14506587 and 14506587-004	10	40
	TC804C-1001	14506587 and 14506587-004	10	40
	TC804C-1019	14506587 and 14506587-004	10	40
System Sensor	1499	N/A	10	40
	2400	N/A	10	40
	2400TH	N/A	10	40
	1451DH	DH400	10	40

[1] Requires a UL 1481 regulated power-limited Power Supply.

[2] Remote Test Station works only when used at 24 VDC.

17.4.7 UL Listed Synchronization (Sync) Modules and Strobes Compatible with the
D9412GV4/D7412GV4

To be UL 864 9th edition compliant, you must use only these models of synchronization modules and strobes with the D9412GV4 and D7412GV4 Control Panels.

Wheelock maximum control panel powered devices:	**4**
Wheelock maximum 12 VDC external powered devices:	**11**
Wheelock maximum 24 VDC external powered devices	**33**
System Sensor maximum control panel powered devices	**4**
System Sensor maximum 12 VDC external powered devices	**11**
System Sensor maximum 24 VDC external powered devices	**33**

These are the maximum number of devices; high-current setting reduces this quantity.

Table 34: Synchronization Module and Strobe Compatibility

Manufacturer	Synchronization Module Model	Strobe Model	Product	Description
System Sensor	MDL3	PC24 Series Ceiling-mount Horn Strobes	PC24115	24 VDC, 115 cd, Red, Ceiling mount
			PC24115W	24 VDC, 115 cd, White, Ceiling mount
			PC2415	24 VDC, 15 cd, Red, Ceiling mount
			PC2415W	24 VDC, 15 cd, White, Ceiling mount
			PC241575	24 VDC, 15 cd (75 cd on axis), Red, Ceiling mount
			PC242575W	24 VDC, 15 cd (75 cd on axis), White, Ceiling mount
			PC24177	24 VDC, 177 cd, Red, Ceiling mount
			PC24177W	24 VDC, 177 cd, White, Ceiling mount
			PC2430	24 VDC, 30 cd, Red, Ceiling mount
			PC2430W	24 VDC, 30 cd, White, Ceiling mount
			PC2475	24 VDC, 75 cd, Red, Ceiling mount
			PC2475W	24 VDC, 75 cd, White, Ceiling mount
			PC2495	24 VDC, 95 cd, Red, Ceiling mount
			PC2495W	24 VDC, 95 cd, White, Ceiling mount
		SC24 Series Ceiling-mount Strobes	SC24115	24 VDC, 115 cd, Red, Ceiling mount
			SC24115W	24 VDC, 115 cd, Round, White, Ceiling mount
			SC2415	24 VDC, 15 cd, Round, Red, Ceiling mount
			SC2415W	24 VDC, 15 cd, Round, White, Ceiling mount
			SC241575	24 VDC, 15/75 cd, Round, Red, Ceiling mount
			SC241575W	24 VDC, 15/75 cd, Round, White, Ceiling mount
			SC24177	24 VDC, 177 cd, Round, Red, Ceiling mount
			SC24177W	24 VDC, 177 cd, Round, White, Ceiling mount
			SC2430	24 VDC, 30 cd, Round, Red, Ceiling mount
			SC2430W	24 VDC, 30 cd, Round, White, Ceiling mount
			SC2475	24 VDC, 75 cd, Round, Red, Ceiling mount
			SC2475W	24 VDC, 75 cd, Round, White, Ceiling mount
			SC2495	24 VDC, 95 cd, Round, Red, Ceiling mount
			SC2495W	24 VDC, 95 cd, Round, White, Ceiling mount
Wheelock	DSM/SM-24	AH Series Wall or Ceiling-mount Electronic Horns	AH-24-R	24 VDC, Red
			AH-24-W	24 VDC, White
			AH-24WP-R	24 VDC, Outdoor, Weatherproof, Red

		AS Series Audible Strobes	AS-241575W-FR	24 VDC, 15 cd, (75 cd on axis), Two-wire, Wall-mount, Red
			AS-24MCC-FR	24 VDC, 15 cd to 95 cd, Ceiling-mount, Red
			AS-24MCC-FR-V	24 VDC, Variable cd, Ceiling-mount, Red
			AS-24MCC-FW	24 VDC, 15 cd to 95 cd, Square, Ceiling-mount, White
			AS-24MCCH-FR	24 VDC, 115/177 cd, Square, Ceiling-mount, Red
			AS-24MCCH-FW	24 VCD, 115/177 cd, Square, Ceiling-mount, White
			AS-24MCW-FR	24 VDC, Variable cd, Wall-mount, Red
			AS-24MCW-FW	24 VDC, Variable cd, Wall-mount, White
			AS-24MCWH-FR	24 VDC, 135/185 cd, Square, Wall-mount, Red
			AS-24MCWH-FW	24 VDC, 135/185 cd, Square, Wall-mount, White
			ASWP-2475W-FR	24 VDC, 75 cd, Red
		CH70 Series Wall-mount Chimes and Chime Strobes	CH70-24-R	24 VDC, Square, Red
			CH70-24-W	24 VDC, Square, White
			CH70-241575W-FR	24 VDC, 15 cd (75 cd on axis), Square, Red
			CH70-24MCW-FR	24 VDC, Variable cd, Red
			CH70-24MCW-FW	24 VDC, Variable cd, White
			CH70-24MCWH-FR	24 VDC, 135 cd to 185 cd, Square, Red
			CH70-24MCWH-FR	24 VDC, 135 cd to 185 cd, Square, White
		HS4 Series Two or Four-wire Horn Strobes	HS4-241575W-FR	24 VDC, 15/75 cd, Four-wire, Red
			HS4-241575W-FW	24 VDC, 15/75 cd, Four-wire, White
			HS4-24MCW-FR	24 VDC, 15 to 110 cd, Four-wire, Square, Red
			HS4-24MCW-FW	24 VDC, 15 to 110 cd, Four-wire, Square, White
			HS4-24MCWH-FR	24 VDC, 135 to 185 cd, Four-wire, Square, Red
			HS4-24MCWH-FW	24 VDC, 135 to 185 cd, Four-wire, Square, White
		NS Series Horn Strobes	NS-241575W-FR	24 VDC, 15/75 cd, Red

			NS-241575W-FW	24 VDC, 15/75 cd, Red
			NS-24MCW-FR	24 VDC, Variable cd, Mini, Wall-mount, Red
			NS-24MCW-FW	24 VDC, Variable cd, Mini, Wall-mount, White
		RSS Series Strobes	RSS-241575W-FR	24 VDC, 15/75 cd, Synchonized, Red
			RSS-241575W-FW	24 VDC, 15/75 cd, Synchonized, White
			RSS-24MCC-FR	24 VDC, 15 to 95 cd, Ceiling-mount, Red
			RSS-24MCC-FR-V	24 VDC, Variable cd, Ceiling-mount, Red
			RSS-24MCC-FW	24 VDC, 15 to 95 cd, Square, White
			RSS-24MCC-NW	24 VDC, 15 to 95 cd, Ceiling-mount, White
			RSS-24MCCH-FR	24 VDC, 115 to 177 cd, Ceiling-mount, White
			RSS-24MCCH-FW	24 VDC, 115 to 177 cd, White
			RSS-24MCCHR-FR	24 VDC, 115 to 177 cd, Ceiling-mount, Red
			RSS-24MCCHR-FW	24 VDC, 115 to 177 cd, Ceiling-mount, White
			RSS-24MCCR-FR	24 VDC, 15 to 95 cd, Ceiling-mount, Red
			RSS-24MCCR-FW	24 VDC, 15 to 95 cd, Ceiling-mount, White
			RSS-24MCW-FR	24 VDC, Variable cd, Wall-mount, Red
			RSS-24MCW-FW	24 VDC, Variable cd, Wall-mount, White
			RSS-24MCWH-FR	24 VDC, 135 to 185 cd, Wall-mount, Red
			RSS-24MCWH-FW	24 VDC, 135 to 185 cd, Wall-mount, White
			RSSP-241575W-FR	24 VDC, 15/75 cd, Plate, Red
			RSSP-24MCW-FR	24 VDC, 15 to 110 cd, Red
			RSSP-24MCWH-FR	24 VDC, 135 to 185 cd, Retrofit, Red
			RSSR-24110C-NW	24 VDC, 110 cd, Ceiling-mount, White
			RSSR-2475C-NW	24 VDC, 75 cd, Ceiling-mount, White
			RSSR-2475W-AAR	24 VDC, 74 cd, Square, Wall-mount, Red

			RSSWP-2475W-FR	24 VDC, 75 cd, Waterproof, Red
			RSSWP-2475W-FW	24 VDC, 75 cd, Outdoor, White
Wheelock	DSM/SM-12/24	HN Series Wall or Ceiling-mount Horns	HN	12/24 VDC, Horn, Wall-mounting
			HN-C	12/24 VDC, Horn, Wall or Ceiling-mount
		HS Series Wall or Ceiling-mount Strobes	HS	12 VDC, 15/15-75 cd, Wall-mount
				24 VDC, 15/15-75/30/75/95/110/135/185 cd, Wall-mount
			HS-C	12 VDC, 15 cd, Ceiling-mount
				24 VDC, 15/30/60/75/115/150/177 cd, Ceiling-mount
		ST Series Wall or Ceiling-mount Strobes and Horns	ST	12 VDC, 15/15-75 cd, Wall-mount
				24 VDC, 15/15-75/30/75/95/110/135/185 cd, Wall-mount
			ST-C	12 VDC, 15 cd, Ceiling-mount
				24 VDC, 15/30/60/75/95/115/150/177 cd, Ceiling-mount
		ZNH Series Wall or Ceiling-mount Horns	ZNH-R	12/24 VDC, Flush, Square, Red
			ZNH-W	12/24 VDC, Flush, Square, White
		ZNS Series Wall or Ceiling-mount Horn Strobes	ZNS-MCW-FR	24 VDC, Selectable 15/30/75/110 cd, Red
			ZNS-MCW-FW	24 VDC, Selectable 15/30/75/110 cd, White
			ZNS-MCWH-FR	24 VDC, 135/185 cd, Square, Red
			ZNS-MCWH-FW	24 VDC, 135/185 cd, Square, White
		ZRS Series Strobe Appliances	ZRS-MCW-FR	24 VDC, Selectable 15/30/75/110 cd, Red
			ZRS-MCW-FW	24 VDC, Selectable 15/30/75/110 cd, White
			ZRS-MCWH-FR	24 VDC, Selectable 135/185 cd, Wall, Red
			ZRS-MCWH-FW	24 VDC, Selectable 135/185 cd, Wall, White
			ZRS-MCC-FR	24 VDC, Selectable 15/30/75/95 cd, Red
			ZRS-MCC-FW	24 VDC, Selectable 15/30/75/95 cd, White
			ZRS-MCCH-FR	24 VDC, Selectable 115/177 cd, Red
			ZRS-MCCH-FW	24 VDC, Selectable 115/177 cd, White

17.5   Enclosures

Bosch Security Systems offers three optional enclosures for the control panel. *Sections 17.5.1 D8103 Enclosure , 17.5.2   D8108A Enclosure, and 17.5.3 D8109 Red Fire Enclosure* describe the three options.

17.5.1 D8103 Enclosure

The D8103 is suitable for residential fire and burglary installations and commercial burglary applications that do not require attack resistance or the approval by Factory Mutual (FM) or New York City – Materials and Equipment Acceptance (NYC-MEA). Refer to *Table 35* on page 130 for acceptable applications.

17.5.2 D8108A Enclosure

The D8108A is attack resistant and intended primarily for UL commercial burglar alarm and mercantile safe and vault applications requiring a local bell. This enclosure can be used in any burglar or fire alarm application where the D8109 Enclosure is suitable.

The D8108A, with some modification, can be used for bank safe and vault applications as described in *Section 17.3   Bank Safe and Vault Applications* on page 81. UL lists the D8108A for all commercial fire alarm applications. It is approved by FM, CSFM, and the NYC-MEA.

17.5.3 D8109 Red Fire Enclosure

Generally, the D8109 is used for fire alarm applications. UL lists the D8109 for all commercial fire alarm applications. It is approved by FM, CSFM, and the NYC-MEA.

All references to NFPA and related requirements are based on compliance with the NFPA 72 National Fire Alarm Code. Because installation specifications are generally based on a specific edition of a standard that was legally adopted by the authority having jurisdiction (AHJ), consult with the appropriate AHJ for confirmation.

18.0 Keypad Installer Menu

D9412GV4/D7412GV4 v2.00 Control Panels do not support the D5200 Programmer. Instead, you can perform limited programming and diagnostics using a keypad. Programming and diagnostics options appear on the keypad when you access the Main menu (Installer) option, which includes the Installer menu. The Main menu (Installer) option becomes available during normal control panel operation only when you enter your installer passcode and press the [Enter] softkey or [ENTER] key.

The available options in the Installer menu include:

- Program menu
- Wireless menu
- Network menu
- Srvc Byp menu
- Versions

The Installer menu is also available from the Service menu when in Service mode. The Service menu is a subset of the Main menu (Installer) option. You can use Service mode at any keypad, but the feature is most useful when you wish to directly connect an Installer keypad to the control panel for keypad programming at the control panel. Set the Installer keypad to address 0, and then connect it to the control panel. The, to access Service mode, put the control panel is in stand-by mode by closing the RESET pin. The keypad shows SERVICE MODE and a request for the installer passcode. Enter your installer passcode and press the Enter softkey or [ENTER] key. To return to normal operation, open the RESET pin.

The Keypad Installer menu, available only with the Installer passcode, includes a series of tools, including tools for programming and diagnostics. The tools within the Installer menu include:

- Program menu. Program several parameters to make your system operational, including phone number and format, enhanced communication options, primary and backup routes, and notifications. Refer to *[1] Program menu* for more detailed information on each programming option, and to *RPS Help* or the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (*P/N: F01U265459).

- Wireless menu. Add, replace, remove, and diagnose points and repeaters. Refer to *[2] Wireless menu* for more detailed information on each programming option, and to *RPS Help* or the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

- Network menu. Program network destinations over communication modules on the SDI2 bus Refer to *[3] Network menu* for more detailed information on each programming option, and to *RPS Help* or the *Control Panels (D9412GV4/D7412GV4 v2.00) Program Entry Guide (P/N: F01U265459)*.

- Service Bypass menu. View the status of points and remove points from service. Refer to *[4] Serv Byp (Service Bypass) menu*.

- Versions menu. View the version information for the control panel, encryption, and more. Refer to *[5] Versions menu*.

Conventions for this section

This guide to the Keypad Installer menu provides instructions for using the keypad, based on the following conventions:

- All instructions access the Installer menu from the Main menu (Installer) option, not, not while in Service mode.
- This section covers B920 and B930 keypads. It provides specific steps for each keypad.
- For simplicity, the Keypad Installer menu tree and instructions combine the 2-line keypad's number selections with the 5-line keypad's softkey text. For example, rather than indicating that the 2-line keypad reads *Press [2] for enhanced comm. Parameters,* and that the 5-line keypad's softkey shows *Enhanced Comm Parms,* this section indicates the selection as *[2] Enhanced Comm Parms*.
- For simplicity and readability of instructions, this section lists menu steps in succession with the > character separating steps. For example, Go to the **[1] Program > [1] Reporting > [2] Network > [2] Enhanced Comm Parms** menu option.

The illustration on the next page depicts the keypad programming menu workflow.

Figure 38: Keypad Installer menu tree

Installer passcode
[1]
Installer menu

[1] Program menu

[1] Reporting
  [1] Phone
    [1] Phone Number
      [1] Contact ID
      [2] Modem 4
      [ESC] Exit menu
    [2] Phone Format
    [ESC] Exit menu
  [2] Network
    [1] Enhanced Comm
    [2] Enhanced Comm Parms
      Address
        IPv4
        Hostname
      Port #
      Poll Rate
      Encryption
        AES Key Size
        AES Encryption Key
      [ESC] Exit
    [ESC] Exit Reporting menu
  [3] Routing
    [1] Primary
    [2] Backup
    [ESC] Exit menu
  [ESC] Exit

[2] IP Module
[3] RPS
  [1] RPS Passcode
  [2] RPS Phone Number
  [3] RPS IP Address
  [4] RPS Port Number
  [ESC] Exit

[1] B42x (1)
  [1] Module Parameters
    [1] DHCP Enable
    [2] UPnP Enable
  [2] Address Parameter
    [1] IP Address
    [2] Subnet mask
    [3] Default gateway
    [4] Port number
  [3] DNS Parameter
    [1] IPv4 Server Addr
    [2] IPv6 Server Addr
    [3] Module Hostname
  [ESC] Exit menu

[2] B42x (2)
  [1] Module Parameters
    [1] DHCP Enable
    [2] UPnP Enable
  [2] Address Parameter
    [1] IP Address
    [2] Subnet mask
    [3] Default gateway
    [4] Port number
  [3] DNS Parameter
    [1] IPv4 Server Addr
    [2] IPv6 Server Addr
    [3] Module Hostname
  [ESC] Exit menu

[4] Area Options
  [1] Enabled
  [2] Account #
  [ESC] Exit menu

[5] Keypad
  [1] Scope
  [ESC] Exit

[6] Users

[7] Points
  [1] Index
  [2] Source
  [3] RFID
  [ESC] Exit menu

[8] Disable Programming
[ESC] Exit

[2] Wireless menu

[1] Points
  [1] Enroll Point RFID
  [2] Replace Point RFID
  [3] Remove Point RFID
  [ESC] Exit

[2] Repeaters
  [1] Add Repeater
  [2] Replace Repeater
  [3] Remove Repeater
  [ESC] Exit

[3] Diagnostics
  [1] Points
    [1] States
    [2] Signal
    [ESC] Exit
  [2] Repeaters
    [1] States
    [2] Signal
    [ESC] Exit
  [ESC] Exit

[ESC] Exit

[3] Network menu

[1] B42x (1)
  [1] Settings
  [2] Connection
  [ESC] Exit

[2] B42x (2)
  [1] Settings
  [2] Connection
  [ESC] Exit
[ESC]

[4] Srvc Byp menu

[ESC] Exit

18.1   [1] Program Menu

With the Program Menu, you can program several parameters to make your system operational, including phone number and format, enhanced communication options, primary and backup routes, and notifications.

18.1.1 [1] Reporting > [1] Phone Menu Parameters

The control panel can dial as many as four different telephone numbers when sending event reports. In this menu, you can program the telephone numbers and the phone format.

Phone 1   Modem4/Contact ID   _____
Phone 2   Modem4/Contact ID   _____
Phone 3   Modem4/Contact ID   _____
Phone 4   Modem4/Contact ID   _____

Phone Number

B920 Configuration of Phone Number

1.   Enter the installer passcode, and then go to the **[1] Installer** menu.
2.   Go to the **[1] Program > [1] Reporting > [1] Phone > [1] Phone Number** menu option. The keypad display toggles between showing the phone number and phone format for the phone path.
3.   Press [ENTER] to edit the phone path and then [ENTER] to edit the phone number for the selected path.
4.   The [ESC] key acts as a [Backspace] key and the [COMMAND] key scrolls through special characters. Press [PREV] to delete the characters of the phone number, and then enter the new phone number. Press [COMMAND] to cycle through the special dialing characters {*, #, C, D}, then press [NEXT] to choose a character.
5.   Press [ENTER] to save the phone number.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Phone Number

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [1] Reporting > [1] Phone > [1] Phone Number** menu option. The keypad shows the phone number for the phone path.
3.   Press the **Edit** softkey to change the phone number.
4.   The [ESC] key acts as a [Backspace] key on the keypad. The **Pause** (3-sec pause – "C") and **DT Detect** (Dial Tone Detect – "D") softkeys enter special characters. The **Backspace** softkey allows you to erase characters. The **Cancel** softkey allows you to cancel the changes. The # and * softkeys allow you to enter an * or a #. Use the softkeys and the number keys to enter the new phone number.
5.   Press the **Save** softkey.
6.   When the keypad shows Parameter Saved, press [ESC] to exit the menu.

Phone Format

B920 Configuration of Phone Format

1.   Enter the installer passcode, and then go to the **[1] Installer** menu.
2.   Go to the **[1] Program > [1] Reporting > [1] Phone > [1] Phone Format** menu option. The keypad display toggles between showing the phone number and phone format for the phone path.
3.   Press [ENTER] to edit the phone path and then [NEXT] to go to the format option.
4.   Press [ENTER] to edit the phone format for the selected path.
5.   Use the [PREV] and [NEXT] buttons to toggle between the Contact ID and Modem4 option.

6. Press [ENTER] while reviewing the desired format to save the new format selection.
7. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Phone Format

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [1] Reporting > [1] Phone > [1] Phone Format** menu option. The keypad shows the phone number for the phone path.
3. Press the **Format** softkey to view and change the phone format, and then press the **Edit** softkey to edit the phone format.
4. Press the softkey for the desired format.
5. Press the **Save** softkey.
6. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.2 [1] Reporting > [2] Network Menu Parameters

Enhanced communications is the ability to communicate by some means other than a standard digital dialer. The control panel can include four separate enhanced communication paths to which the control panel can route events. In this menu, you can enable enhanced communication and edit the network address, network address, poll rate, and port number.

Path 1	Nework Address _____	Poll Rate _____	Port Number _____
Path 2	Nework Address _____	Poll Rate _____	Port Number _____
Path 3	Nework Address _____	Poll Rate _____	Port Number _____
Path 4	Nework Address _____	Poll Rate _____	Port Number _____

Enhanced Comm

B920 Configuration of Enhanced Comm

1. Enter the installer passcode, and then go to the **[1] Installer** menu.
2. Go to the **[1] Program > [1] Reporting > [2] Network > [1] Enhanced Comm** menu option. The keypad displays the Enhanced Comm option as well as the current default value.
3. Press [ENTER] to edit the enhanced comm. menu.
4. Use the [PREV] and [NEXT] buttons to toggle between the Yes and No options.
5. Press [ENTER] while reviewing the desired option to save the new communication selection.
6. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Enhanced Comm

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [1] Reporting > [2] Network > [1] Enhanced Comm** menu option. The keypad displays the enhanced comm option as well as the current default value.
3. Press the **Enhanced Comm** softkey to view and change the enhanced comm option, and then press the **Edit** softkey to edit the enhanced communication option.
4. Press the softkey for the desired format.
5. Press the **Save** softkey.
6. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Enhanced Comm Parms

B920 Configuration of Enhanced Comm Parms

1. Enter the installer passcode, and then go to the **[1] Installer** menu.
2. Go to the **[1] Program > [1] Reporting > NEXT > [2] Network > NEXT > [2] Enhanced Comm Parms** menu option. The keypad displays the Enhanced Comm Parms option.
3. Press [ENTER] to edit the enhanced comm parms option. The options scroll through in succession.
4. Use the [PREV] and [NEXT] buttons to toggle between the address, port #, poll rate, and encryption options.
5. Press [ENTER] to edit the desired parameter.
6. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Enhanced Comm Parms

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [1] Reporting > [2] Network > [2] Enhanced Comm Parms** menu option. The keypad displays the enhanced comm parms option as well as the current default value.
3. Press the softkey for the desired option (Address, Port #, Poll Rate, or Encryption).
4. Press the **Edit** softkey to change programming.
5. Press the **Save** softkey.
6. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Address

B920 Configuration of Address

1. Enter the installer passcode, and then go to the **[1] Installer** menu.
2. Go to the **[1] Program > [1] Reporting > NEXT > [2] Network > NEXT > [2] Enhanced Comm Parms** menu option. The keypad displays the Enhanced Comm Parms option.
3. Press [ENTER] to edit the enhanced comm parms option. The options scroll through in succession.
4. Use the [PREV] and [NEXT] buttons to toggle between the address, port #, poll rate, and encryption options.
5. Press [ENTER] to edit the Address parameter.
6. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Address

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [1] Reporting > [2] Network > [2] Enhanced Comm Parms** menu option. The keypad displays the enhanced comm parms option as well as the current default value.
3. Press the softkey for the Address option.
4. Press the **Edit** softkey to change programming.
5. Press the **Save** softkey.
6. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Port Number (seconds)

B920 Configuration of Port number

1. Enter the installer passcode, and then go to the **[1] Installer** menu.
2. Go to the **[1] Program > [1] Reporting > NEXT > [2] Network > NEXT > [2] Enhanced Comm Parms** menu option. The keypad displays the Enhanced Comm Parms option.

3.   Press [ENTER] to edit the enhanced comm parms option. The options scroll through in succession.

4.   Use the [PREV] and [NEXT] buttons to toggle between the address, port #, poll rate, and encryption options.

5.   Press [ENTER] to edit the Port number parameter.

6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Port number

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [1] Reporting > [2] Network > [2] Enhanced Comm Parms** menu option. The keypad displays the enhanced comm parms option as well as the current default value.

3.   Press the softkey for the Port number option.

4.   Press the **Edit** softkey to change programming.

5.   Press the **Save** softkey.
        When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Poll Rate

B920 Configuration of Network Address, Poll Rate (seconds), and Port Number

1.   Enter the installer passcode, and then go to the **[1] Installer** menu.

2.   Go to the **[1] Program > [1] Reporting > NEXT > [2] Network > NEXT > [2] Enhanced Comm Parms** menu option. The keypad scrolls the Network Address, Port Number, and Poll Rate for the selected Enhanced Comm path.

3.   Use the [PREV] or [NEXT] key to go to the path you wish to edit.

4.   Press [ENTER] to edit the selected Enhanced Comm option. The keypad asks if you wish to edit the address.

5.   Press [ENTER] to edit the network address. The existing address and an editing cursor show.

6.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the characters, and then enter the new letters or numbers. Press a number key repeatedly to scroll through the number and letters shown on the key. Use the [0] key to enter a period or dash.

7.   Press [ENTER] to save the address. The keypad shows *Parameter Saved*, and asks if you wish to edit the address.

8.   Press [PREV]. The currently configured poll rate shows, and the keypad asks if you wish to edit the poll rate.

9.   Press [ENTER] to edit the poll rate. The existing poll rate and an editing cursor show.

10.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the characters, and then enter the new numbers.

11.   Press [ENTER] to save the poll rate. The keypad shows *Parameter Saved* and asks if you wish to edit the poll rate.

12.   Press [PREV]. The currently configured port number shows, and the keypad asks if you wish to edit the port number.

13.   Press [ENTER] to edit the port number. The existing port number and an editing cursor show.

14.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the characters, and then enter the new numbers.

15.   Press [ENTER] to save the port number. The keypad shows *Parameter Saved*, and asks if you wish to edit the port number.

16.   Press [ESC] to return to the list of Enhanced Comms to edit, or press and hold [ESC] to exit the Installer menu.

B930 Configuration of Network Address, Poll Rate (seconds), and Port Number

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.	Go to the **[1] Program > [1] Reporting > [2] Network > [2] Enhanced Comm Parms** menu option. The keypad displays the network address for the selected Enhanced Comm path.

3.	Use the [PREV] or [NEXT] key to go to the path you wish to edit.

4.	Press the **Edit** softkey to change the network address. The existing address and an editing cursor show.

5.	The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters, and then enter the new letters or numbers. Press a number key repeatedly to scroll through the number and letters shown on the key. Use the [0] key to enter a period or dash.

6.	Press the **Save** softkey to save the address. The keypad shows *Parameter Saved*, returns to the previous menu.

7.	Press the **Port #** softkey to view the port number, and then press the **Edit** softkey to edit the port number.

8.	The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters, and then enter the new numbers. Press a number key repeatedly to scroll through the number and letters shown on the key.

9.	Press the **Save** softkey to save the address. The keypad shows *Parameter Saved*, and returns to the previous menu.

10.	Press the **Poll Rate** softkey to view the poll rate, and then press the **Edit** softkey to edit the poll rate number.

11.	The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters, and then enter the new numbers. Press a number key repeatedly to scroll through the number and letters shown on the key.

12.	Press the **Save** softkey to save the address. The keypad shows *Parameter Saved*, and returns to the previous menu.

13.	Press the softkey for the desired option (address, port #, poll rate, encryption).

14.	Press the **Edit** softkey to change programming.

15.	Press the **Save** softkey to save programming.

16.	When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.3 [1] Reporting > [3] Routing Menu Parameters

Use routing to program primary and/or add backup destinations over standard telephone lines, local-area networks (LAN), wide-area networks (WAN), or a general packet radio system (GPRS). In this menu, you can designate the primary and backup destinations for up to four routes.

		Route 1	Route 2	Route 3	Route 4
Primary Device	No Device	_____	_____	_____	_____
Backup Device	No Device	_____	_____	_____	_____

Primary Path Device

B920 Configuration of Primary Path Device

1.	Enter the installer passcode, and then open the **[1] Installer** menu.

2.	Go to the **[1] Program > [1] Reporting > [3] Routing** menu option. The keypad toggles between showing the current primary and backup setting for the routing path.

3.	Press [PREV] or [NEXT] to scroll through the list of route and go to the route you wish to program.

4.	Press [ENTER] to edit the route.

5.	Press [ENTER] to edit the primary route. The keypad shows **Set Route Device** menu.

6.   Press [PREV] or [NEXT] to scroll through the list of devices (for path 1) and go to the Path 1 option you wish to select for the current device (for example, Phone 1).

7.   Press [ENTER] to select the device. The keypad shows **Set Route Path**. To keep path 1, press [ESC] to exit the menu. To change to a different path (2, 3, or 4), continue to *Step 8*.

8.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the number 1, and then enter the new number.

9.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Primary Path Device

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [1] Reporting > [3] Routing** menu option. The keypad displays the primary device for the selected route.

3.   Press [PREV] or [NEXT] to scroll through the list of routes and go to the route you wish to program.

4.   Press the **Edit** softkey to edit the routing programming.

5.   Press [PREV] or [NEXT] to scroll through the list of devices (for path 1) and go to the path 1 option you wish to select for the current device (for example, Phone 1).

6.   To keep path 1, press [ESC] to exit the menu. To change to a different path (2, 3, or 4), press the **Edit Path** softkey and continue to *Step 8*.

7.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the number 1, and then enter the new number.

8.   Press the **Save** softkey to save the change.

9.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Backup Path Device

	Keypads show and allow you to select the Backup Path Device only after you select a Primary Path Device.

B920 Configuration of Backup Path Device

1.   Enter the installer passcode, and then open the [1] Installer menu.

2.   Go to the **[1] Program > [1] Reporting > [3] Routing** menu option. The keypad toggles between showing the current primary and backup setting for the routing path.

3.   Press [PREV] or [NEXT] to scroll through the list of route and go to the route you wish to program.

4.   Press [ENTER] to edit the route.

5.   Press [NEXT] to go to the option to edit the backup route.

6.   Press [ENTER]. The keypad shows **Set Route Device** menu.

7.   Press [PREV] or [NEXT] to scroll through the list of devices (for path 1) and go to the Path 1 option you wish to select for the current device (for example, Phone 1).

8.   Press [ENTER] to select the device. The keypad shows **Set Route Path**. To keep path 1, press [ESC] to exit the menu. To change to a different path (2, 3, or 4), continue to *Step 8*.

9.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the number 1, and then enter the new number.

10.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Backup Path Device

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2. Go to the **[1] Program > [1] Reporting > [3] Routing** menu option. The keypad displays the primary device for the selected route.
3. Press [PREV] or [NEXT] to scroll through the list of routes and go to the route you wish to program.
4. Press the **Backup** softkey to edit the backup path device for the selected route.
5. Press [PREV] or [NEXT] to scroll through the list of devices (for path 1) and go to the path 1 option you wish to select for the current device (for example, Phone 1).
6. To keep path 1, press [ESC] to exit the menu. To change to a different path (2, 3, or 4), press the **Edit Path** softkey and continue to *Step 8.*
7. The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the number 1, and then enter the new number.
8. Press the **Save** softkey to save the change.
9. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.4 [2] IP Module > [1] B42x (1) or [2] B42x (2) Module Parameters

You can use DHCP/AutoIP or UpnP for communication with a B420 module. In this menu, you can enable and disable these protocols. In other B42x menus, you can set other B420 parameters.

	Default	Module settings	Module settings
DHCP/AutoIP Enable	Yes	Yes/No	Yes/No
UpnP Enable	Yes	Yes/No	Yes/No
IPv4 Address	0.0.0.0	_____	_____
IPv4 Subnet Mask	255.255.255.255	_____	_____
Default Gateway	0.0.0.0	_____	_____
HTTP Port Number	80	_____	_____
IPv4 Server Address	0.0.0.0	_____	_____
IPv6 Server Address (B426 only)	0.0.0.0	_____	_____
Module Hostname	Blank	_____	_____

DHCP/AutoIP Enable

B920 Configuration of DHCP/AutoIP Enable

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [2] IP Module > [1] B42x (1)** or **[2] B42x (2) > [1] Module Parameter > [1] DHCP** menu option. The keypad displays the DHCP/AutoIP current configuration
3. Press [ENTER] to edit the DHCP/AutoIP Enable configuration for the module.
4. Use the [PREV] or [NEXT] key to toggle between between **Yes** and **No**.
5. Press [ENTER] while viewing the desired option to save the programming.
6. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of DHCP/AutoIP Enable

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [2] IP Module > [1] B42x (1)** or **[2] B42x (2)> [1] Module Parameter > [1] DHCP** menu option. The keypad displays the DHCP/AutoIP current configuration.

3.   Press the **Yes** or **No** softkey – whichever is available – to change the programming.
4.   Press the **Save** softkey to save the programming.
5.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

UPnP Enable

B920 Configuration of UPnP Enable
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module > [1] B42x (1)** or **[2] B42x (2) > [1] Module Parameter > [2] UPnP** menu option. The keypad displays the UPnP current configuration.
3.   Press [ENTER] to edit the UPnP Enable configuration for the module.
4.   Use the [PREV] or [NEXT] key to toggle between between **Yes** and **No**.
5.   Press [ENTER] while viewing the desired option to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of UPnP Enable
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module > [1] B42x (1)** or **[2] B42x (2)> [1] Module Parameter > [2] UPnP** menu option. The keypad displays the UPnP current configuration.
3.   Press the **Yes** or **No** softkey – whichever is available – to change the programming.
4.   Press the **Save** softkey to save the programming.
5.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.5 [2] IP Module > [1] B42x (1) or [2] B42x (2) [2] Address Parameters

IP Address

B920 Configuration of IP Address
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module > [1] B42x >** or **[2] B42x (2) > [2] Address Parameter > [1] IP Address** menu option.
3.   Press [ENTER] to edit the IP address.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.
5.   When finished, press [ENTER] to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of IP Address
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [2] Address Parameter > [1] IP Address** menu option.
3.   Press the **Edit IP Address** softkey to edit the IP address.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.
5.   Press the **Save** softkey to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Subnet Mask

B920 Configuration of Subnet Mask

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [2] Address Parameter > [2] Subnet Mask** menu option.
3.   Press [ENTER] to edit the subnet mask address.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.
5.   When finished, press [ENTER] to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Subnet Mask

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [2] Address Parameter > [2] Subnet Mask** menu option.
3.   Press the **IP Subnet Mask** softkey to edit the subnet mask address.
4.   Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.
5.   When finished, press the **Save** softkey to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Default Gateway

B920 Configuration of Default Gateway

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [2] Address Parameter > [3] Default Gateway** menu option.
3.   Press [ENTER] to edit the gateway.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.
5.   When finished, press [ENTER] to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Default Gateway

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [2] Address Parameter > [3] Default Gateway** menu option.
3.   Press the **Default Gateway** softkey to edit the subnet mask address.
4.   Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.
5.   When finished, press the **Save** softkey to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

HTTP Port Number

B920 Configuration of HTTP Port Number

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [2] Address Parameter > [4] Port Number** menu option.
3.   Press [ENTER] to edit the port number.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.

5.   When finished, press [ENTER] to save the programming.

6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of HTTP Port Number

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [2] Address Parameter > [4] Port Number** menu option.

3.   Press the **Port Number** softkey to edit the port number.

4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the characters, and then

5.   enter the new numbers.

6.   When finished, press the **Save** softkey to save the programming.

7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.6 [2] IP Module > [1] B42x (1) or [2] B42x (2) [3] DNS Parameters

IPv4 Server Address

B920 Configuration of IPv4 Server Address

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [2] IP Module > [1] B42x >** or **[2] B42x (2) > [3] DNS Parameter > [1] IPv4 Server Address** menu option. The keypad displays the IPv4 Server Address current configuration.

3.   Press [ENTER] to edit the IPv4 Server Address.

4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.

5.   When finished, press [ENTER] to save the programming.

6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of IPv4 Server Address

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [3] DNS Parameter > [1] IPv4 Server Address** menu option. The keypad displays the IPv4 Server Address current configuration.

3.   Press the **IPv4 Server Address** softkey to edit the IP address.

4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.

5.   Press the **Save** softkey to save the programming.

6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

IPv6 Server Address

B920 Configuration of IPv6 Server Address

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [3] DNS Parameter > [2] IPv6 Server Address** menu option. The keypad displays the IPv6 Server Address current configuration.

3.   Press [ENTER] to edit the IPv6 Server Address.

4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.

5.   When finished, press [ENTER] to save the programming.

6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of IPv6 Server Address

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [3] DNS Parameter > [2] IPv6 Server Address** menu option.
3.   Press the **IPv6 Server Address** softkey to edit the IP address.
4.   Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers.
5.   When finished, press the **Save** softkey to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Module Hostname

B920 Configuration of Module Hostname

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [3] DNS Parameter > [3] Module Hostname** menu option.
3.   Press [ENTER] to edit the hostname.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete characters. Use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers. Press the [0] key repeatedly to scroll through the list of special characters.
5.   When finished, press [ENTER] to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Module Hostname

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [2] IP Module> [1] B42x (1)** or **[2] B42x (2) > [3] DNS Parameter > [3] Module Hostname** menu option.
3.   Press the **Module Hostname** softkey to edit the hostname.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the characters. Press a number key repeatedly to scroll through the number and letters shown on the key. Press the [0] key repeatedly to scroll through the list of special characters.
5.   When finished, press the **Save** softkey to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.7 [3] RPS > [1] RPS Passcode Menu Parameters

The control panel verifies the remote programming software at the central station has valid access before connecting using the RPS Passcode. In this menu, you can program the RPS Passcode.

RPS Passcode

B920 Configuration of RPS Passcode

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [3] RPS > [1] RPS Passcode** menu option.
3.   Press [ENTER] to edit RPS passcode.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the characters, and then enter in the new letters or number. Press a number key repeatedly to scroll through the number and letters shown on the key.
5.   Press [ENTER] to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of RPS Passcode
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [3] RPS > [1] RPS Passcode** menu option.
3.   Press the **Enhanced Comm** softkey to view and change the enhanced comm option, and then press the **Edit** softkey to change the passcode.
4.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the characters, and then enter in the new letters or number. Press a number key repeatedly to scroll through the number and letters shown on the key.
5.   Press the **Save** softkey.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.8 [3] RPS > [2] RPS Phone Number Menu Parameters
The RPS Phone Number is the number the control panel dials to contact RPS. In this menu, you can program the RPS phone number.

RPS Phone Number

B920 Configuration of RPS Phone Number
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [3] RPS > [2] RPS Phone Number** menu option.
3.   Press [ENTER] to edit RPS phone number.
4.   The [ESC] key acts as a [Backspace] key, and the [COMMAND] key scrolls through special characters. Press [ESC] to delete the characters of the phone number, and then enter in the new phone number.
5.   Press [ENTER] to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of RPS Phone Number
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [3] RPS > [2] RPS Phone Number** menu option.
3.   Press the **Edit** softkey to change the phone number.
4.   The [ESC] key acts as a [Backspace] key, and the [COMMAND] key scrolls through special characters. Press [ESC] to delete the characters of the phone number, and then enter in the new phone number.
5.   Press the **Save** softkey.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.9 [3] RPS > [3] RPS IP Address Menu Parameters
The control panel allows for enhanced communication to occur over the SDI bus. In this menu, you can program the IP address for RPS communication.

RPS IP Address

B920 Configuration of RPS IP Address
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [3] RPS > [3] RPS IP Address** menu option.
3.   Press [ENTER] to edit RPS IP Address.
4.   Use the [PREV] or [NEXT] key to toggle between the option to edit the address as an IPv4 address or hostname. Press [ENTER] when the keypad shows the option you wish to edit.

5.   The [ESC] key acts as a [Backspace] key. Press [ESC] to delete the characters. For an IPv4 address, use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers. For an host name, press a number key repeatedly to scroll through the number and letters shown on the key.

6.   Press [ENTER] to save the programming.

7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of RPS IP Address

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [3] RPS > [3] RPS IP Address** menu option.

3.   Press the **Edit IPv4** softkey for an IP address, or the **Edit DHCP** softkey for a host name.

4.   For an IPv4 address, use the [PREV] and [NEXT] keys to move to a different byte, and use the number keys to enter the new numbers. For host name, press a number key repeatedly to scroll through the number and letters shown on the key.

5.   Press the **Save** softkey.

6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.10 [3] RPS > [4] RPS Port Number Menu Parameters

In this menu, you can specify the destination port for outgoing RPS session requests to the specified IP address.

RPS Port Number

B920 Configuration of RPS Port Number

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [3] RPS > [4] RPS Port Number** menu option.

3.   Press [ENTER] to edit RPS Port Number parameter.

4.   The [ESC] key acts as a [Backspace] key and the [COMMAND] key scrolls through special characters. Press [ESC] to delete the characters of the port number, and then enter in the new port number.

5.   Press [ENTER] to save the programming.

6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of RPS Port Number

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[1] Program > [3] RPS > [4] RPS Port Number** menu option.

3.   Press the **Edit** softkey to change the phone number.

4.   The [ESC] key acts as a [Backspace] key and the [COMMAND] key scrolls through special characters. Press [ESC] to delete the characters of the port number, and then enter in the new port number.

5.   Press the **Save** softkey.

6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.11 [4] Area Options Menu Parameters

This parameter enables or disables specified areas. A enabled area must have assigned account numbers. In this menu, you can turn on or off areas and assign area account numbers.

For D9412GV4 and D7412GV4

	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8
Area On	**Yes** / No	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**
Account Number (0000)	____	____	____	____	____	____	____	____

For D9412GV4

	Area 9	Area 10	Area 11	Area 12	Area 13	Area 14	Area 15	Area 16
Area On	**Yes** / No	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**
Account Number (0000)	____	____	____	____	____	____	____	____

For D9412GV4

	Area 17	Area 18	Area 19	Area 20	Area 21	Area 22	Area 23	Area 24
Area On	**Yes** / No	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**
Account Number (0000)	____	____	____	____	____	____	____	____

For D9412GV4

	Area 25	Area 26	Area 27	Area 28	Area 29	Area 30	Area 31	Area 32
Area On	**Yes** / No	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**	Yes / **No**
Account Number (0000)	____	____	____	____	____	____	____	____

Area On

B920 Configuration of Area On

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [4] Area Options > [1] Area On** menu option. The keypad display toggles between showing the Area On state and the account number for the selected areas.
3. Press [PREV] and [NEXT] to toggle to the desired area.
4. Press [ENTER] to edit the desired area and then [ENTER] to edit the Area On state for the selected area.
5. Press [PREV] or [NEXT] to toggle between Yes or No.
6. Press [ENTER] while viewing the desired option to save the programming.
7. When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Area On

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [4] Area Options > [1] Area On** menu option. The keypad shows the Area On state for the selected area.
3. Press [PREV] and [NEXT] to go to the desired area.
4. Press the **Edit** softkey to edit the Area On state for the selected area.
5. Press the **Yes** or **No**.

6.   Press the **Save** softkey.
7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Account Number

B920 Configuration of Account Number
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [4] Area Options > [2] Account #** menu option. The keypad display toggles between showing the Area State (enabled) and the Account Number (Account #).
3.   Press [PREV] and [NEXT] to go to the desired area.
4.   Press [ENTER] to edit the area, and then press [NEXT] to go to the account number option.
5.   Press [ENTER] to edit the account number for the selected area.
6.   The [ESC] key acts as a [Backspace] button. Press [ESC] to delete the characters of the account number.
7.   Press [ENTER] to save the programming.
8.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Account Number
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [4] Area Options > [2] Account #** menu option. The keypad shows the Area On state for the selected area.
3.   Press [PREV] and [NEXT] to go to the desired area.
4.   Press the **Account #** softkey to view and edit the account number, and then press the Edit softkey to edit the account number.
5.   The [ESC] key acts as a [Backspace] button. Press [ESC] to delete the characters of the account number.
6.   Enter in the desired account number. The **Cancel** softkey allows you to cancel the changes.
7.   Press the **Save** softkey.
8.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.12 [5] Keypad > [1] Scope Menu Parameters

The scope of a keypad defines which areas the keypad affects when armed, which areas you can view with this keypad, and the areas to which this keypad can move. In this menu, you can choose the keypad's scope.

	Scope (Circle one)
Keypad 1	No Device / Area Wide / Acct Wide / Panel Wide
Keypad 2	No Device / Area Wide / Acct Wide / Panel Wide
Keypad 3	No Device / Area Wide / Acct Wide / Panel Wide
Keypad 4	No Device / Area Wide / Acct Wide / Panel Wide
Keypad 5	No Device / Area Wide / Acct Wide / Panel Wide
Keypad 6	No Device / Area Wide / Acct Wide / Panel Wide
Keypad 7	No Device / Area Wide / Acct Wide / Panel Wide
Keypad 8	No Device / Area Wide / Acct Wide / Panel Wide

Scope

B920 Configuration of Scope
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [5] Keypad** menu option. The keypad shows scope for the selected keypad.
3.   Press [PREV] and [NEXT] to go to the desired keypad.
4.   Press [ENTER] to edit the scope.
5.   Press [PREV] or [NEXT] to go to the desired scope.
6.   Press [ENTER] while viewing the desired scope to save the new format selection.
7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.
8.

B930 Configuration of Scope
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [5] Keypad** menu option. The keypad shows scope for the selected keypad.
3.   Press the **Edit** softkey to edit the scope.
4.   Press the softkey for the desired format.
5.   Press the **Save** softkey.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.13 [6] Users Menu Parameters

The control panel can store up to 999 users. In this menu, you can edit user passcodes.

Users

B920 Configuration of Users
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [6] Users** menu option. The keypad shows the passcode of the currently selected user.
3.   Press [PREV] and [NEXT] to scroll through the list of users.
4.   Press [ENTER] to edit the desired user. The curser flashes at the editing location.
5.   The [ESC] key acts as a [Backspace] button. Press [ESC] to delete the characters, and then enter the new numbers.
6.   Press [ENTER] to save the programming.
7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Users
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [6] Users** menu option. The keypad displays the user passcode for the selected user.
3.   Press the **Prev** and **Next** softkeys to toggle through various users.
4.   Press the **Edit** softkey to change the passcode.
5.   The [ESC] key acts as a [Backspace] button. Press [ESC] to delete the characters, and then enter the new number.
6.   Press the **Save** softkey.
7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

User (Passcode) Worksheet

User ###	Passcode	User Group	Area Authority 1	2	3	4	5	6	7	8	User Name
000	123 __ __ __	___	15	15	15	15	15	15	15	15	INSTALLER PASSCODE
001	123456	___	1	__	__	__	__	__	__	__	USER 1
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
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__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
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__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __
__ __ __	__ __ __ __ __ __	___	__	__	__	__	__	__	__	__	USER __ __

■ Solid box indicates parameter is not user programmable.

18.1.14 [7] Points Menu Parameters

Point indexes determine how points operate, and a point's source gives a description as to the physical location of the point for installation and service personnel. In this menu, you can get program point indexes and sources.

Point Type Selections	
24-Hour	O/C Point
Part On	Fire Point
Interior	Aux AC Supervision
Interior Follower	Gas Point
Keyswitch Maintained	Custom Function
Keyswitch Momentary	

Point Response Selections*		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Armed	Open	I	I	I	I	D	D	I	I	D	I	I	I	I	I	T	
	Short	I	I	I	I	I	I	D	D	D	I	I	I	I	I	I	
Disarmed	Open		T		T				T		I	I	T	I		T	
	Short			T	T		T				I	T	I		I		

24-Hour	Open	I	T	I	T			I	T	S	T	S		S	Not Applicable		
	Short	I	I	T	T	I	T			T	S		S	S			
*Selections: D = Delayed Response, I = Instant Alarm, S = Supervisory, T = Trouble, Blank = No Response																	

	Point Index Description								
Point Index Description Defaults:									
1 24-hr Instant Open/Short									
2 24-hr Inv/Sil on Short									
3 Pull Station									
4 Smoke Detector									
5 Smoke Detector w/ Verification									
6 Bell Supervision - D192G									
7 Part On: Instant N/O									

8 Perimeter: Delay N/O								
Prompt Point Index #	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Type	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(1)__	__(1)__
Point Response	__(0)__	__(1)__	__(1)__	__(1)__	__(1)__	__(9)__	__(1)__	__(7)__
Entry Delay	_(30)_	_(30)_	_(30)_	_(30)_	_(30)_	_(30)_	_(30)_	_(30)_
Entry Tone Off	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Silent Bell	Y/**N**	**Y**/N	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Ring Until Restored	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Audible After Two Fails	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Invisible Point	Y/**N**	**Y**/N	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Buzz on Fault	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__
Watch Point	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	**Y**/N
Relay Response Type	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__
Display as Device	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Local While Disarmed	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Local While Armed	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Disable Restorals	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
FA Returnable	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Bypass Returnable	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Bypassable	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Swinger Bypass	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Report Bypass at Occurrence	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Defer Bypass Report	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Cross Point	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Fire Point	Y/**N**	Y/**N**	**Y**/N	**Y**/N	**Y**/N	Y/**N**	Y/**N**	Y/**N**
Alarm Verify	Y/**N**	Y/**N**	Y/**N**	Y/**N**	**Y**/N	Y/**N**	Y/**N**	Y/**N**
Resettable	Y/**N**	Y/**N**	Y/**N**	**Y**/N	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Alarm Abort	**Y**/N	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	**Y**/N	**Y**/N
Wireless Point Supervision Time** (None)	_____	_____	(4)____	(4)____	(4)____	(4)____	_____	_____

		Point Index Description							
Point Index Description Defaults:									
9	Prt: Inst N/O Local:Dis								
10	Interior: Instant N/O								
11	Interior: Delay N/O								
12	Int: Inst N/O Local:Dis								
13	Interior: Follower N/O								
14	Maintained Keyswitch								
15	Momentary Keyswitch								
16	Open/Close on Fault								
Prompt Point Index #		9	10	11	12	13	14	15	16
Type		__(1)__	__(2)__	__(2)__	__(2)__	__(3)__	__(4)__	__(5)__	__(6)__
Point Response		__(B)__	__(1)__	__(7)__	__(B)__	__(7)__	__(1)__	__(1)__	__(1)__
Entry Delay		_ (30)_	_ (30)_	_ (30)_	_ (30)_	_ (30)_	_ (30)_	_ (30)_	_(30)_
Entry Tone Off		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Silent Bell		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Ring Until Restored		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Audible After Two Fails		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Invisible Point		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Buzz on Fault		__(1)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__
Watch Point		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Relay Response Type		__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__
Display as Device		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Local While Disarmed		**Y**/N	Y/**N**	Y/**N**	**Y**/N	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Local While Armed		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Disable Restorals		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
FA Returnable		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Bypass Returnable		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Bypassable		Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**

Swinger Bypass	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Report Bypass at Occurrence	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Defer Bypass Report	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Cross Point	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Fire Point	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Alarm Verify	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Resettable	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Alarm Abort	**Y**/N	**Y**/N	**Y**/N	**Y**/N	**Y**/N	**Y**/N	**Y**/N	**Y**/N

Wireless Point Supervision Time** (None)	____	____	___	___	___	___	___	____

	Point Index Description							
Point Index Description Defaults:								
17 Gas Point (Non-Priority)								
18 Gas Point (Priority)								
19 Aux AC Supervision								
20 Interior: POPIT Motion								
21 Part On: POPIT Motion								
22 Fire Supervisory on Open								
23 Non-Fire Supervisory Op								
24 Local: Buzz on Fault								
Prompt Point Index #	17	18	19	20	21	22	23	24
Type	__(7)__	__(8)__	__(9)__	__(2)__	__(1)__	__(0)__	__(0)__	__(1)__
Point Response	__(1)__	__(2)__	__(1)__	__(E)__	__(E)__	__(8)__	__(8)__	__(F)__
Entry Delay	_(30)_	_(30)__	_(30)_	_(30)_	_(30)_	_(30)_	_(30)_	_(30)_
Entry Tone Off	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Silent Bell	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Ring Until Restored	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Audible After Two Fails	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**

Invisible Point	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Buzz on Fault	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__
Watch Point	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Relay Response Type	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	__(0)__	(1) ____
Display as Device	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Local While Disarmed	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Local While Armed	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Disable Restorals	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
FA Returnable	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Bypass Returnable	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Bypassable	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Swinger Bypass	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Report Bypass at Occurrence	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Defer Bypass Report	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Cross Point	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Fire Point	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Alarm Verify	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**
Resettable	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**	Y/**N**

Point #	Point Source	Point Index	Area Assign		Point #	Point Source	Point Index	Area Assign	
001	Onboard	(3) __ __	(1) __		__ __ __	Onboard	__ __	(1) __	
002	Onboard	(1) __ __	(1) __		__ __ __	Onboard	__ __	(1) __	
003	Onboard	(25) __ __	(1) __		__ __ __	Onboard	__ __	(1) __	
004	Onboard	(13) __ __	(1) __		__ __ __	Onboard	__ __	(1) __	
005	Onboard	(7) __ __	(1) __		__ __ __	Onboard	__ __	(1) __	
006	Onboard	(7) __ __	(1) __		__ __ __	Onboard	__ __	(1) __	
007	Onboard	(7) __ __	(1) __		__ __ __	Onboard	__ __	(1) __	
008	Onboard	(7) __ __	(1) __		__ __ __	Onboard	__ __	(1) __	
009	Wireless	__ __	(1) __		__ __ __		__ __	(1) __	

			(1)							(1)	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	
___ ___ ___		___ ___	(1)	___		___ ___ ___		___ ___	(1)	___	

Point Index

B920 Configuration of Point Index
1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[1] Program > [7] Points** menu option. The keypad display toggles between showing the point index and point source for the selected phone path.
3. Press [PREV] and [NEXT] to the desired point, or enter the point number.
4. Press [ENTER] to edit the point and then [ENTER] to edit the index for the selected point.
5. The [ESC] key acts as a [Backspace] button. Press [ESC] to delete the characters, and then enter the new numbers.
6. Press [ENTER] to save the programming.

7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Point Index

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [7] Points** menu option. The keypad display toggles between showing the point index and point source for the selected phone path.
3.   Press [PREV] and [NEXT] to the desired point, or enter the point number.
4.   Press the **Edit** softkey to change the index.
5.   The [ESC] key acts as a [Backspace] button. Press [ESC] to delete the characters, and then enter the new numbers.
6.   Press the **Save** softkey.
7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

Point Source

B920 Configuration of Point Source

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [7] Points** menu option. The keypad display toggles between showing the point index and point source for the selected phone path.
3.   Press [PREV] and [NEXT] to the desired source, or enter the point number.
4.   Press [ENTER] to edit the point and then [NEXT] to go to the source option.
5.   Press [ENTER] to edit the source for the selected path.
6.   Use the [PREV] or [NEXT] buttons to toggles between the Not Assigned and Wireless options.
7.   Press [ENTER] while viewing the desired source to save the programming.
8.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Point Source

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [7] Points** menu option. The keypad display toggles between showing the point index and point source for the selected phone path.
3.   Press [PREV] and [NEXT] to the desired point, or enter the point number.
4.   Press the **Source** softkey to view and edit the source, and then press the Edit softkey to edit the source.
5.   Use the [PREV] or [NEXT] buttons to scroll between the Not Assigned, Octo-input, and Wireless options.
6.   Press the **Save** softkey.
7.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

RFID

B920 Configuration of RFID

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [7] Points** menu option. The keypad display toggles between showing the point index and point source for the selected point path.
3.   Press [PREV] and [NEXT] to the desired point, or enter the point number.
4.   Press [ENTER] to edit the point and then [NEXT] to go to the RFID option if the source is Wireless.
5.   Press [ENTER] to edit the RFID for the selected path.
6.   The [ESC] key acts as a backspace key. Press [ESC] to delete the numbers, if applicable, and then enter the new RFID listed on the wireless device.
7.   Press [ENTER] while viewing the desired source to save the programming.

8.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of RFID
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [7] Points** menu option. The keypad display toggles between showing the point index and point source for the selected point path.
3.   Press [PREV] and [NEXT] to go to the desired point, or enter the point number.
4.   Press the **[Source]** softkey to view and edit the source. If the source is Wireless, the **[RFID]** softkey appears.
5.   Press **[RFID]** to edit the RFID.
6.   The [ESC] key acts as a backspace key. Press [ESC] to delete the numbers, if applicable, and then enter the new RFID listed on the wireless device.
7.   Press the **Save** softkey.
8.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.1.15 [8] Disable Programming Menu Parameters

Use of the Keypad Installer menu is enabled by default. When enabled, the Service User (Authority Level 15) has authority to access the menus. If you disable Keypad Programming, the Service User cannot access the menus. In this menu, you can disable Keypad Programming.

	You can continue using the current programming session. Disabling Keypad Programming applies once you exit the current session.

Disable Programming

B920 Configuration of Keypad Programming
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [8] Disable Programming** menu option. The keypad display shows that programming is enabled.
3.   Press [ENTER] to disable keypad programming, and then press [NEXT] to go to the No option.
4.   Press [ENTER] to save the programming.
5.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Keypad Programming
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[1] Program > [8] Disable Programming** menu option. The keypad display shows that programming is enabled.
3.   Press the **Edit** softkey to disable keypad programming.
4.   Press the **No** softkey.
5.   Press the **Save** softkey to save the programming.
6.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.2   [2] Wireless Menu

Use the Wireless menu to add, replace, remove, and diagnose points and repeaters.

18.2.1 [1] Points > [1] Enroll Point RFID Menu Parameters

In this menu, you can enroll RFIP points.

Enroll Point RFID

B920 Configuration of Point RFID enrollment
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[2] Wireless > [1] RF Points > [1] Enroll Point RFID** menu option.
3.   Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to enroll a device, or simply enter the point number.
4.   Press [ENTER] to add the device. The keypad instructs you to reset the device.
5.   Initiate activity for the desired RADION device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, or open the door or window if enrolling a door/window contact), or press the [RESET] button on an Inovonics device.
6.   When the keypad shows *Point Enrolled*, press [ESC] to exit the menu.
7.   Verify the RFID shown on the keypad matches the RFID label on the activated device.

B930 Configuration of Point RFID enrollment
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[2] Wireless > [1] RF Points > [1] Enroll Point RFID** menu option.
3.   Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to enroll a device, or simply enter the point number.
4.   Press the **Yes** softkey to add the device. The keypad instructs you to reset the device.
8.   Initiate activity for the desired RADION device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, or open the door or window if enrolling a door/window contact), or press the [RESET] button on an Inovonics device.
5.   Press the **Save** softkey.
6.   When the keypad shows *Point Enrolled*, press [ESC] to exit the menu.
7.   Verify the RFID shown on the keypad matches the RFID label on the activated device.

18.2.2 [1] Points > [2] Replace Point RFID Menu Parameters

In this menu, you can replace RFIP points.

Replace Point RFID

B920 Configuration of Point RFID replacement
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[2] Wireless > [1] RF Points > [2] Replace Point RFID** menu option.
3.   Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to replace the device, or simply enter the point number.
4.   Press [ENTER] to replace Point RFID. The keypad instructs you to reset the device.
9.   Initiate activity for the desired RADION device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, or open the door or window if enrolling a door/window contact), or press the [RESET] button on an Inovonics device.

5. When the keypad shows *Point RFID Replaced*, press [ESC] to exit the menu.

B930 Configuration of Point RFID replacement

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[2] Wireless > [1] RF Points > [2] Replace Point RFID** menu option.
3. Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to replace, or simply enter the point number.
4. Press the **Edit** softkey to replace the Point RFID. The keypad instructs you to reset the new device.
10. Initiate activity for the desired RADION device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, or open the door or window if enrolling a door/window contact), or press the [RESET] button on an Inovonics device.
5. When the keypad shows *Point RFID Replaced*, press [ESC] to exit the menu.

18.2.3 [1] Points > [3] Remove Point RFID Menu Parameters

In this menu, you can remove RFIP points.

Remove Point RFID

B920 Configuration of Point RFID removal

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[2] Wireless > [1] RF Points > [3] Remove Point RFID** menu option.
3. Press [PREV] or [NEXT] to scroll through the list, and go to the point you wish to remove, or simply enter the point number.
4. Press [ENTER] to remove the device. The keypad removes the device and shows **Point RFID Removed.**
5. Press [ENTER] to save the programming.
6. Press [ESC] to exit the menu.

B930 Configuration of Point RFID removal

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[2] Wireless > [1] RF Points > [3] Remove Point RFID** menu option.
3. Press [PREV] or [NEXT] to scroll through the list, and go to the point you wish to remove, or simply enter the point number.
4. Press the **Remove** softkey to remove the Point RFID. The keypad removes the device and shows **Point RFID Removed.**
5. Press [ESC] to exit the menu.

18.2.4 [2] Repeaters > [1] Add Repeater Menu Parameters

In this menu, you can add repeater points.

Add Repeater

B920 Configuration of Add Repeater

1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[2] Wireless > [2] Repeaters > [1] Add Repeaters** menu option.
3. Press [PREV] or [NEXT] to scroll through the list, and go to the repeater number for which you wish to add a repeater, or simply enter the repeater number.
4. Press [ENTER] to add the device. The keypad instructs you to reset the device.

5.   Initiate activity for the desired RADION device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, or open the door or window if enrolling a door/window contact), or press the [RESET] button on an Inovonics device.

6.   When the keypad shows *Repeater Added,* press [ESC] to exit the menu.

B930 Configuration of Add Repeater

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[2] Wireless > [2] Repeaters > [1] Add Repeaters** menu option.

3.   Press [PREV] or [NEXT] to scroll through the list, and go to the repeater number for which you wish to add a repeater, or simply enter the repeater number.

4.   Press the **Enter** softkey to add the device to the number. The keypad instructs you to reset the device.

5.   Initiate activity for the desired RADION device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, or open the door or window if enrolling a door/window contact), or press the [RESET] button on an Inovonics device.

6.   When the keypad shows *Repeater Added*, press [ESC] to exit the menu.

18.2.5 [2] Repeaters > [2] Replace Repeater Menu Parameters

In this menu, you can replace repeater points.

Replace Repeater

B920 Configuration of Replace Repeater

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[2] Wireless > [2] Repeaters > [2] Replace Repeater** menu option.

3.   Press [PREV] or [NEXT] to scroll through the list of repeaters, and go to the repeater you wish to replace, or simply enter the repeater number.

4.   Press [ENTER] to replace the device. The keypad instructs you to reset the new device.

5.   Initiate activity for the desired RADION device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, or open the door or window if enrolling a door/window contact), or press the [RESET] button on an Inovonics device.

6.   Press [ENTER] to save the programming.

7.   When the keypad shows *Repeater Replaced*, press [ESC] to exit the menu.

B930 Configuration of Replace Repeater

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[2] Wireless > [2] Repeaters > [2] Replace Repeater** menu option.

3.   Press [PREV] or [NEXT] to scroll through the list of repeaters, and go to the repeater you wish to replace, or simply enter the repeater number.

4.   Press the **Enter** softkey to replace repeater points. The keypad instructs you to reset the new device.

5.   Initiate activity for the desired RADION device (walk through the coverage pattern if enrolling a motion detector, or press the button on the keyfob if enrolling a keyfob, or open the door or window if enrolling a door/window contact), or press the [RESET] button on an Inovonics device.

6.   When the keypad shows *Repeater Replaced*, press [ESC] to exit the menu.

18.2.6 [2] Repeaters > [2] Remove Repeater Menu Parameters

In this menu, you can remove repeater points.

Remove Repeater

B920 Configuration of Remove Repeater
1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[2] Wireless > [2] Repeaters > [3] Remove Repeater** menu option.
3. Press [PREV] or [NEXT] to scroll through the list of repeaters, and go to the repeater you wish to remove, or simply enter the repeater number.
4. Press [ENTER] to remove the device. The keypad removes the device and shows **Repeater Removed.**
5. Press [PREV] and [NEXT] to toggle through the list of various repeaters.
6. Press [ESC] to exit the menu.

B930 Configuration of Remove Repeater
1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[2] Wireless > [2] Repeaters > [3] Remove Repeater** menu option.
3. Press [PREV] or [NEXT] to scroll through the list of repeaters, and go to the repeater you wish to remove, or simply enter the repeater number.
4. Press the **Remove** softkey to remove the repeater. The keypad removes the device and shows **Repeater Removed.**
5. Press [ESC] to exit the menu.

18.2.7 [3] Diagnostics > [1] RF Points

You can obtain wireless point diagnostic information using a keypad and this menu.

States (for RF points)

B920 use of States (for RF points)
1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[2] Wireless > [3] Diagnostics > [1] RF Points** menu option. The keypad toggles between showing the option for state and the option for signal strength for the selected point.
3. Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to view diagnostic information, or enter the point number.
4. Press [ENTER] to view the state. The menu scrolls through the following sub-categories, with the results of the diagnostic check:
   - State
   - Tamper
   - Low-Battery
   - Maintenance
5. When you finish viewing the information, press [PREV] and [ESC] to exit the menu.

B930 use of States (for RF points)
1. Enter the installer passcode, and then open the **[1] Installer** menu.
2. Go to the **[2] Wireless > [3] Diagnostics > [1] RF Points** menu option. The keypad toggles between showing the option for state and the option for signal strength for the selected point.
3. Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to view diagnostic information.

4.   Press the **State** softkey to view the state. The menu scrolls through the following sub-categories, with the results of the diagnostic check:

- State
- Tamper
- Low-Battery
- Maintenance

5.   When you finish viewing the information, press [PREV] and [ESC] to exit the menu.

Signal Strength (for RF points)

B920 use of Signal Strength (for RF points)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[2] Wireless > [3] Diagnostics > [1] RF Points** menu option. The keypad toggles between showing the option for state and the option for signal strength for the selected point.
3.   Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to view diagnostic information or enter the point number.
4.   Press [ENTER] to view the state and then press [NEXT] to go to the signal strength option.
5.   Press [ENTER] to view signal strength. The menu scrolls through the following sub-categories, with the results of the diagnostic check:

- Signal Strengths
- Level
- Margin

6.   When you finish viewing the information, press [PREV] and [ESC] to exit the menu.

B930 use of Signal Strengths (for RF points)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[2] Wireless > [3] Diagnostics > [1] RF Points** menu option. The keypad toggles between showing the option for state and the option for signal strength for the selected point.
3.   Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to view diagnostic information, or enter the point number and press the **Enter** softkey.
4.   Press [ENTER] to view the state and then press [NEXT] to go to the signal strength option.
5.   Press the **Signal** softkey to view signal strength. The menu scrolls through the following sub-categories, with the results of the diagnostic check:

- Signal Strengths
- Level
- Margin

6.   When you finish viewing the information, press [PREV] and [ESC] to exit the menu.

18.2.8 [3] Diagnostics > [2] RF Repeaters

You can obtain wireless point diagnostic information using a keypad and this menu.

States (for RF repeaters)

B920 use of States (for RF repeaters)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[2] Wireless > [3] Diagnostics > [2] RF Repeaters** menu option. The keypad toggles between showing the option for state and the option for signal strength for the selected repeater.

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3.   Press [PREV] or [NEXT] to scroll through the list, and go to the repeater for which you wish to view diagnostic information, or enter the repeater number.

4.   Press [ENTER] to view the state. The menu scrolls through the following sub-categories, with the results of the diagnostic check:

- State
- Missing
- Tamper
- Low-Battery
- AC Fail

5.   When you finish viewing the information, press [PREV] and [ESC] to exit the menu.

B930 use of States (for RF repeaters)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[2] Wireless > [3] Diagnostics > [2] RF Repeaters** menu option. The keypad toggles between showing the option for state and the option for signal strength for the selected repeater.

3.   Press [PREV] or [NEXT] to scroll through the list, and go to the point for which you wish to view diagnostic information or enter the repeater number and press the **Enter** softkey.

4.   Press the **State** softkey to view the state. The menu scrolls through the following sub-categories, with the results of the diagnostic check:

- State
- Missing
- Tamper
- Low-Battery
- AC Fail

5.   When you finish viewing the information, press [PREV] and [ESC] to exit the menu.

Signal Strength (for RF repeaters)

B920 use of Signal Strength (for RF points)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[2] Wireless > [3] Diagnostics > [2] RF Repeaters** menu option. The keypad toggles between showing the option for state and the option for signal strength for the selected repeater.

3.   Press [PREV] or [NEXT] to scroll through the list, and go to the repeater for which you wish to view diagnostic information, or enter the repeater number.

4.   Press [ENTER] to view the state and then press [NEXT] to go to the signal strength option.

5.   Press [ENTER] to view signal strength. The menu scrolls through the following sub-categories, with the results of the diagnostic check:

- Signal Strengths
- Level
- Margin

6.   When you finish viewing the information, press [PREV] and [ESC] to exit the menu.

B930 use of Signal Strengths (for RF repeaters)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.

2.   Go to the **[2] Wireless > [3] Diagnostics > [2] RF Repeaters** menu option. The keypad toggles between showing the option for state and the option for signal strength for the selected point.

3.   Press [PREV] or [NEXT] to scroll through the list, and go to the repeater for which you wish to view diagnostic information, or enter the repeater number and press the **Enter** softkey.

4.   Press the **Signal** softkey to view signal strength. The menu scrolls through the following sub-categories, with the results of the diagnostic check:

- Signal Strengths
- Level
- Margin

5.   When you finish viewing the information, press [ESC] to exit the menu.

18.3   [3] Network Menu

Use the Network menu to connect to the control panel over an Ethernet network.

18.3.1 [1] B42x > [1] Settings Menu Parameters

In this menu, you can obtain certain network connection information using a keypad and this menu.

Settings (for the B420)

B920 use of Settings (for the B420)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[3] Network > [1] B42x (1)** or **[2]B42x (2) > [1] Settings** menu option. The keypad scrolls through the following sub-categories, indicating the programming for:

- Hostname
- IPv4 Source IP
- IPv6 Source IP (for B426 only)
- Mac Address

3.   When you finish viewing the information, press [ESC] to exit the menu.

B930 use of Settings (for B420)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to **the [3] Network > [1] B42x (1)** or **[2]B42x (2) > [1] Settings** menu option. The keypad scrolls through the following sub-categories, indicating the programming for:

- Hostname
- IPv4 Source IP
- IPv6 Source IP (for B426 only)
- Mac Address

3.   When you finish viewing the information, press [ESC] to exit the menu.

Connection (for the B420)

B920 use of Connection (for the B420)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[3] Network > [1] B42x (1)** or **[2]B42x (2) > [2] Connection** menu option. The keypad scrolls through the following sub-categories, indicating the programming for:

- Link
- IP Address
- DNS
- WAN IPv4
- WAN IPv6 (for B426 only)
- LAN IPv4
- LAN IPv6 (for B426 only)

3.   When you finish viewing the information, press [ESC] to exit the menu.

B930 use of Connection (for B420)

1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[3] Network > [1] B42x (1)** or **[2]B42x (2) > [2] Connection** menu option. The keypad scrolls through the following sub-categories, indicating the programming for:
    - Link
    - IP Address
    - DNS
    - WAN IPv4
    - WAN IPv6 (for B426 only)
    - LAN IPv4
    - LAN IPv6 (for B426 only)
3.   When you finish viewing the information, press [ESC] to exit the menu.

18.4   [4] Srvc Byp Menu

In this menu, you can edit the Service Bypass points.

Service Bypass

B920 Configuration of Service Bypass
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[4] Srvc Byp** menu option.
3.   Enter the desired point number followed by [ENTER]. The curser flashes at the editing location.
4.   Press [ENTER] again to save the programming.
5.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 Configuration of Service Bypass
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[4] Srvc Byp** menu option.
3.   Enter the desired point number followed by pressing the **Enter** softkey.
4.   Press the **Bypass** softkey to bypass the desired point number.
5.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

18.5   [5] Versions Menu

Use the Versions menu to view control panel version information.

B920 use of Versions
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[5] Versions** menu option.
3.   Press [PREV] or [NEXT] to cycle through the list of items for which you can view the version.
4.   Press [ENTER] to view the version.
5.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

B930 use of Versions
1.   Enter the installer passcode, and then open the **[1] Installer** menu.
2.   Go to the **[5] Versions** menu option.
3.   Press the softkey for the item for which you wish to view the version.
4.   The keypad shows the version.
5.   When the keypad shows *Parameter Saved*, press [ESC] to exit the menu.

19.0 UL/NFPA Compliant Installations

19.1 Required Components

To install a D9412GV4 or D7412GV4 that is UL and NFPA compliant, the following items must be included:

- D8109 Red Fire Enclosure
- D192G Bell Supervision Module
- D928 Dual Phone Line Module
- D8004 Transformer Enclosure
- Ground Fault Detect enabled on the control panel

Refer to *Table 35* on page 130 for specific application installation requirements.

19.2 Installing Combination Fire and Intrusion Alarm Systems

☑ When installing a combination fire and intrusion alarm system, you must adhere to the following requirements in order to comply with Sections 56.1, 56.2, and 56.4 of the 9th Edition of UL 864.

☑ Keypads used in Fire applications must have Idle Scroll Lock enabled.

19.2.1 SDI Bus Devices

Keypads (Command Centers)

Keypads used exclusively for intrusion system operation must be kept separate from fire keypads. The use of an ICP-SDI-9114 is required to separate fire and intrusion devices on the SDI bus. All fire points must be within the scope of a fire keypad (unless otherwise required by local Authority Having Jurisdiction (AHJ).

Interface Modules

- Connect the DX4020 Network Interface Module and the D9210C Access Control Interface Module to the SDI bus only if the interface module is located within the control panel enclosure or in a separate enclosure in the same room within 20 ft (6.1 m) of the main control panel.
- Route all SDI bus wiring in EMT (electrical metallic tubing) conduit.

☑ Fire and Intrusion devices must be on separate circuits. Refer to *ICP-SDI-9114 Installation Instructions* (P/N: F01U030068).

19.2.2 Zonex Bus Devices

☑ When installing a combination fire and intrusion alarm system with built-in POPITs such as the ZX PIR's (ZX776Z, ZX938Z, ZX935Z, ZX970, ZX794Z, or ZX835), these devices cannot be used on the same Zonex as the Fire system with input devices.

D8125 POPEX Modules

The expansion bus can be shared between fire and non-fire devices where the POPIT module provides data isolation between the input and the bus connections.

D8125MUX Multiplex Interface Modules

- When connecting a D8125MUX module to Zonex Bus 1 or 2, all multiplex modules should supervise only all fire or all non-fire devices.
- **Do not connect** fire and non-fire devices to the same D8125MUX module.
- Using Zonex Bus 1 exclusively for fire devices and Zonex Bus 2 exclusively for non-fire devices is acceptable.

D8128D OctoPOPIT Modules

- **Do not connect** fire and non-fire devices to the same D8128D OctoPOPIT Module.
- Using Zonex Bus 1 exclusively for fire devices and Zonex Bus 2 exclusively for non-fire devices is acceptable.

- Install all D8128D OctoPOPIT Modules used for fire devices within the control panel enclosure or in a separate enclosure in the same room within 6.1 m (20 ft) of the main control panel.
- Route all Zonex bus wiring in EMT (electrical metallic tubing) conduit.
- For system supervision, do not use looped wire terminals.

D8129 Octo-relay Modules

- If any fire devices are connected to Zonex Bus 1 (or Zonex Bus 2), you must use all D8129 OctoRelay Modules connected to Zonex Bus 1 (or Zonex Bus 2) only for fire applications.
- Install all D8129 OctoRelay Modules used for fire devices shall be mounted in the same enclosure with the control panel, or in a separate enclosure in the same room connected by conduit no more than 20 ft (6 m) of the panel.
- Route all Zonex bus wiring in EMT (electrical metallic tubing) conduit.

19.2.3 SDI2 Bus Devices

D9412GV4/D7412GV4 v2.00 Control Panels can support a number of accessory devices from the SDI2 Bus using Terminals 33 through 36. Some devices include the B810 wireless receiver, B208 Octo-input Module, B308 Octo-output Module, B426/B420 Ethernet Communication Module, B520 Auxiliary Power Supply Module, B920 Standard LCD Keypad, B930 Deluxe ATM Keypad, and B820 SDI2 Inovonics Interface Module.

B920 Two-lined Alpha Numeric Keypad

- Any total combination of 16 keypads (B920 and B930) can be installed on SDI2 at one time.

B930 ATM Style Alphanumeric Keypad

- Any total combination of 16 keypads (B920 and B930) can be installed on SDI2 at one time.

B810 receiver

- For the B810 (RADION receiver SD) and B820 (SDI2 Inovonics Interface Module), only one device can be installed (either a B810, or a B820) at one time.

B208 Octo-input Module

- **Do not connect** fire and non-fire devices to the same B208 Octo-input Module.
- B208 Octo-input module is fully supervised.

B308 Octo-output Module

- **Do not connect** fire and non-fire devices to the same B308 Octo-input Module.

B426 Ethernet Communication Module

- Only two devices can be installed at one time.

B420 Ethernet Communication Module

- Only two devices can be installed at one time.

B520 Auxiliary Power Supply Module

- A total of 8 modules can be installed at one time.

B820 SDI2 Inovonics Interface Modules

- For the B810 (RADION receiver SD) and B820 (SDI2 Inovonics Interface Module), only one device can be installed (either a B810, or a B820) at one time.

20.0 Compatible UL Listed Components

In *Table 35*, the text in the columns and rows for D9412GV4/D7412GV4 v2.00 Control Panel have the following meanings:

No = Not acceptable for this application

Req. = Required for this application

Opt. = Optional for this application.

[Empty box] = Not used for this application

Table 35:   UL Listed Components Compatible with the D9412GV4/D7412GV4 v2.00 Control Panels

	Household Burglary	Household Fire	Household Fire/Burglary Combined	Central Station Burglary	Police Connected Burglary	Local Burglary	Local Fire/Burglary Combined D9412GV4/D7412GV4	Local Fire D9412GV4/D7412GV4	Station Fire Combined D9412GV4/D7412GV4	Local and Central Station Fire/Burglary D9412GV4/D7412GV4	Central Station Fire/Burglary Combined D9412GV4/D7412GV4	Central Station Fire D9412GV4/D7412GV4	Electrically Actuated Transmitter D9412GV4/D7412GV4
Minimum Hours of Standby Battery	4	24 + 4 min alarm	4	4	4	24 + 5 min alarm							
D8103/D8109 Enclosure	Opt.	Opt.	Opt.	Opt.	No	Opt.	No	Opt.	Opt.	No	No	Opt.	No
D8108A Enclosure	Opt.	Opt.	Opt.	Opt.	Req.	Opt..	Req.	Opt.	Opt.	Req.	Req.	Opt.	Opt.
D113	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
D125B Class B, Style A Powered Loop Interface*	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
D129 Class A, Style D Initiating Module*	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
D928 Dual Phone Line Module**	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Required if using two telephone lines for communication.						
D192G Class "B", Style Y Bell Circuit Supervision	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Req.	Req.	Req.	Req.	Req.	Req.	
D268/D269H Independent Zone Control	Optional. **Only** connect to Zones 1 to 8.						No	No	No	No	No	No	No
DS7432 Eight Input Remote Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
DS7457iF Single Zone Input Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
DS7560i Dual Zone Input Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
DS7461i Single Zone Input Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
DS7465i Input/Output Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
B208 Octo-input Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
B308 Octo-output Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
B420 Ethernet Communication Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
B426 Ethernet Communication Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
B520 Auxiliary Power Supply Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
DX4020 Network Interface Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
ICP-SDI-9114	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
ITS-DX4020-G Network Interface Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
B820 Inovonics Interface Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	NA	NA	NA	NA	NA	NA	NA
B810 Wireless Receiver	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	NA	NA	NA	NA	NA	NA	NA
B920 and B930 Keypads	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	No	No	No	No	No	No	No
D130 Relay Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
D1255 and D1260 Keypads	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	No	No	No	No	No	No	No
D1255B and D1260B Keypads	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	No	No	No	No	No	No	No
D1255RB, D1256RB, D1257RB	No	Opt.	Opt.	No	No	No	Req.	Req.	Req.	Req.	Req.	Req.	
D1640 Transformer	Required for **all** applications.												
D8004 Transformer Enclosure	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Req.	Req.	Req.	Req.	Req.	Req.	
D8125 Class B, Style 4.0 POPEX Module	Required for the D9127T/U POPITs.												
D8125MUX Class B, Style 4.0	Required for MUX devices. Refer to *Section 21.1 D8125MUX* on page 131.												
D9127T/U Class B, Style A POPIT Modules	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
D8128D OctoPOPIT	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
D8129 OctoRelay	Optional. For remote annunciation of system functions.												
D8130 Release Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
D8132 Battery Charger	Refer to Table 38: Current Rating Chart for Standby Battery Calculations						No	No	No	No	No	No	No
D9210C Access Control Interface Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	No

* The D125B is required to connect two-wire fire alarm initiating devices. The D125B provides two powered loops for connecting listed two-wire smoke detectors. The D129 provides two non-powered Class "A" initiating circuits.

21.0 Current Ratings Charts

21.1 D8125MUX

Complete the chart in *Table 36* to determine the maximum currents for the D8125MUX and its accessories. Transfer the total figures to *Table 38* on page 132.

> The maximum current draw for each MUX Bus is 75 mA.

Table 36:   Current Rating Chart for D8125MUX

		AC Power Off Maximum Current (mA)			In Alarm Maximum Current (mA)		
Accessory Module	**Qty Used**	**Each Unit**	**Qty**	**Total System**	**Each Unit**	**Qty**	**Total System**
DS7432	_____	10	x Qty =	_____	10	x Qty =	_____
DS7457i	_____	0.35	x Qty =	_____	0.35	x Qty =	_____
DS7460i	_____	1	x Qty =	_____	1	x Qty =	_____
DS7465i	_____	1	x Qty =	_____	1	x Qty =	_____
Ratings of other devices on the MUX Buses that are not shown above*:							
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
_____	_____	_____	x Qty =	_____	_____	x Qty =	_____
		Column A Total =		_____	**Column B Total =**		_____
* Refer to the device's installation guide for current draw values.							

21.2 Standby Battery Calculations

UL 365 requires 72 h of standby battery capacity. Limit the auxiliary power current for all devices, including keypads, to 300 mA or less to meet this requirement.

Table 37: Standby Battery Requirements

Type	Required Capacity	Calculations
Household Burglary and Commercial Burglary	4 h	
Bank Safe and Vault	72 h (UL 365). Auxiliary power current for all devices, including keypads, must be limited to 300 mA or less to meet this requirement.	
Central Station or Local Fire Alarm	24 h + 5 min of alarm operation.	
Remote Station or Auxiliary Fire Alarm	60 h + 5 min of alarm operation.	
Household Fire Warning Equipment	24 h + 4 min of alarm operation.	

Table 38: Current Rating Chart for Standby Battery Calculations

		A			B			C		
		AC Power On Normal Current (mA)			AC Power Off Minimum Current (mA)			In Alarm Maximum Current (mA)		
Model Number	Qty Used	Each Unit	Qty	Total	Each Unit	Qty	Total	Each Unit	Qty	Total
D9412GV4/ D7412GV4	_____	225	x 1	= 225	225	x 1	= 225	300	x 1	= 300
B208	_____	35	x Qty	= _____	35	x Qty	= _____	35	x Qty	= _____
B308[4]	_____	22	x Qty	= _____	22	x Qty	= _____	22	x Qty	= _____
B420[5]	_____	90	x Qty	= _____	90	x Qty	= _____	90	x Qty	= _____
B426	_____	100	x Qty	= _____	100	x Qty	= _____	100	x Qty	= _____
B520	_____	15	x Qty	= _____	15	x Qty	= _____	15	x Qty	= _____
B810	_____	100	x Qty	= _____	100	x Qty	= _____	100	x Qty	= _____
B820	_____	100	x Qty	= _____	100	x Qty	= _____	110	x Qty	= _____
B920	_____	65	x Qty	= _____	65	x Qty	= _____	65	x Qty	= _____
B930	_____	65	x Qty	= _____	65	x Qty	= _____	65	x Qty	= _____
D125B	_____	25	x Qty	= _____	25	x Qty	= _____	168	x Qty	= _____
D129	_____	23	x Qty	= _____	23	x Qty	= _____	25	x Qty	= _____
D185	_____	245	x Qty	= _____	245	x Qty	= _____	300	x Qty	= _____
D192G	_____	35	x Qty	= _____	35	x Qty	= _____	100	x Qty	= _____
D1255/D1255B	_____	104	x Qty	= _____	106	x Qty	= _____	206	x Qty	= _____
D1255RB	_____	104	x Qty	= _____	106	x Qty	= _____	225	x Qty	= _____
D1256RB	_____	104	x Qty	= _____	106	x Qty	= _____	225	x Qty	= _____
D1257RB	_____	104	x Qty	= _____	106	x Qty	= _____	225	x Qty	= _____
D1260/D1260B	_____	140	x Qty	= _____	140	x Qty	= _____	250	x Qty	= _____
D8125	_____	60	x Qty	= _____	60	x Qty	= _____	60	x Qty	= _____
D8125MUX	_____	140	x Qty	= _____	140	X Qty	= _____	140	x Qty	= _____
D8128D	_____	25	x Qty	= _____	25	x Qty	= _____	50	x Qty	= _____
D8129	_____	20	x Qty	= _____	20	x Qty	= _____	Refer to footnote[1]		= _____
D8130	_____	7	x Qty	= _____	7	x Qty	= _____	60	x Qty	= _____
D9127T/U	_____	0.8	x Qty	= _____	0.8	x Qty	= _____	0.8	x Qty	= _____
D9210C	_____	110	x Qty	= _____	110	x Qty	= _____	110[2]	x Qty	= _____
D928	_____	20	x Qty	= _____	20	x Qty	= _____	100	x Qty	= _____
DX4010V2[3]	_____	50	x Qty	= _____	50	x Qty	= _____	55	x Qty	= _____
DX4020	_____	80	x Qty	= _____	80	x Qty	= _____	84	x Qty	= _____
ITS-DX4020-G	_____	50	x Qty	= _____	50	x Qty	= _____	200	x Qty	= _____

Ratings of other devices in the system that are not shown above:

___	____	____	x Qty	= _____	____	x Qty	= _____	___	x Qty	= _____
___	____	____	x Qty	= _____	____	x Qty	= _____	___	x Qty	= _____
___	____	____	x Qty	= _____	____	x Qty	= _____	___	x Qty	= _____
___	____	____	x Qty	= _____	____	x Qty	= _____	___	x Qty	= _____
			Total A = _____			**Total B**	= _____		**Total C**	= _____

[1] The **In Alarm** calculation for the D8129 is: 20 x Qty + (16.25 x number of relays)
[2] Use 110 mA + reader current. **Do not exceed 260 mA**.
[3] UL requires that the DX4010V2 be used for programming only.
[4] (digital section = 22mA) + (Qty of relays x 16 mA)= total current. (Add 16 mA for each relay being used)
[5] 10BaseT Ethernet: 90mA max, 100BaseT Ethernet: 100mA max

> Because of changing regulations, verify the necessary time with your local authority having jurisdiction (AHJ).

Refer to *Table 38* on page 132 for totals B and C used in the formulas below. When connecting two batteries, use either the D122/D122L Dual Battery Wiring Harness or the D8132 Battery Charger Module.

Table 39:   ULC Standby Battery Requirements

Type	Standby	Alarm	Other Requirements
UL 609 Mercantile	4 h	15 min[1]	NA
UL 609 Bank Safe and Vault	72 h (UL 365). Auxiliary power current for all devices, including keypads, must be limited to 300 mA or less to meet this requirement.	5 min[2]	NA
UL 1610 Mercantile	4 h	None[3]	NA
UL 1610 Bank Safe and Vault	72 h	None[3]	NA
ULC S303 Mercantile	24 h	15 min[1]	NA
ULC S303 Bank Safe and Vault	72 h	5 min[2]	NA
ULC S304	24 h	None[3]	4, 5

[1]This time applies only if an automatic feature is provided to silence the alarm and reset the system if the alarm system has cleared. If no such feature is provided, the alarm time is 30 minutes.

[2]This time applies only if an automatic feature is provided to silence the alarm and reset the system if the alarm system has cleared. If no such feature is provided, the alarm time is 15 minutes.

[3]If DACT communication is used, must be able to perform 5-10 attempts to dial out.

[4]In case of a total power failure, the control unit shall ignore and not transmit alarm supervisory information for a stabilization period of 120 s following restoration of power. Within 60 s at the end of the stabilization period, the control unit shall initiate the transmission of a power restoration signal code.

[5]Following an extended power failure and restoration of power, rechargeable batteries shall recharge to 85% of rated capacity.

22.0 NFPA 72 Fire Alarm Applications

22.1 Household Burglary and Commercial Burglary

Four hours of standby battery capacity are required.

22.2 Bank Safe and Vault

☑	Because of changing regulations, verify the necessary time with your local authority having jurisdiction (AHJ).

UL 365 requires 72 h of standby battery capacity. Limit the auxiliary power current for all devices, including keypads, to 300 mA or less to meet this requirement.

Table 40:   Standby Battery Requirements

Type	Required Capacity	Calculations
Household Burglary and Commercial Burglary	4 h	
Bank Safe and Vault	72 h (UL 365). Auxiliary power current for all devices, including keypads, must be limited to 300 mA or less to meet this requirement.	
Central Station or Local Fire Alarm	24 h + 5 min of alarm operation. Refer to *Table 42* on page 135.	
Remote Station or Auxiliary Fire Alarm	60 h + 5 min of alarm operation. Refer to *Table 43* on page 135.	
Household Fire Warning Equipment	24 h + 4 min of alarm operation. Refer to *Table 44* on page 136.	

22.3 Standby Battery Calculation

☑	Because of changing regulations, verify the necessary time with your local authority having jurisdiction (AHJ).

Refer to *Table 38* on page 132 for totals B and C used in the formulas below. When connecting two batteries, use either the D122 Dual Battery Wiring Harness or the D8132 Battery Charger Module.

Table 41:   General Ampere-Hour (Ah) Calculation Formula

Total B[1]		Hours		Total C[1]		Alarm Operation[2]		Contingency		Total Ah[3]
(_____	x	24)	+	(_____	x	0.083)	+	10%	=	_____

1   Refer to *Table 38* on page 132.

2   Value = $\dfrac{\text{Minutes of alarm operation}}{60}$

3   Total Ah requirements must not exceed the Ah capacity of batteries:
    One D126 Battery = 7 Ah
    Two D126 Batteries = 14 Ah
    One D1218 Battery = 17.2 or 18 Ah
    Two D1218 Batteries = 34.4 or 36 Ah

22.4   Central Station or Local Systems

Central Station or Local Systems require 24 h of standby plus 5 min of alarm operation at the end of the 24-hour period. A single battery is sometimes adequate for central station systems, but two batteries must be installed to meet the basic standby requirements for a local system installation. Use the battery ampere-hour (Ah) calculations to confirm compliance. The formula in *Table 42* includes the calculation for 5 min of alarm operation at the end of the 24-hour period, as well as a 10% contingency factor that allows for depletion of battery capacity with age.

> ☑ Because of changing regulations, verify the necessary time with your local AHJ (authority having jurisdiction).

Table 42:   Central Stations or Local Systems Ah Calculation Formula

Total B[1]		Hours		Total C[1]		Alarm Operation[2]		Contingency		Total Ah[3]
(_____	x	24)	+	(_____	x	0.083)	+	10%	=	_____

1   Refer to *Table 38* on page 132.

2   Value = Minutes of alarm operation
                      60

3   Total Ah requirements must not exceed the Ah capacity of batteries:
     One D126 Battery = 7 Ah
     Two D126 Batteries = 14 Ah
     One D1218 Battery = 17.2 or 18 Ah
     Two D1218 Batteries = 34.4 or 36 Ah

22.5   Remote Station or Auxiliary Systems

Remote Station or Auxiliary Systems require 60 h of standby plus 5 min of alarm operation at the end of the 60-hour period. A D8132 Battery Charger Module with additional batteries installed in a separate D8109 or D8108A Enclosure might be required in the system to meet the basic standby requirements for a remote station or auxiliary system installation. Use battery Ah calculations to confirm compliance. The formula in *Table 43* includes the calculation for 5 min of alarm operation at the end of the 60-hr period, as well as a 10% contingency factor that allows for depletion of battery capacity with age.

> ☑ Because of changing regulations, verify the necessary time with your local AHJ (authority having jurisdiction).

Table 43:   Remote Station or Auxiliary Systems Ah Calculation Formula

Total B[1]		Hours		Total C[1]		Alarm Operation[2]		Contingency		Total Ah[3]
(_____	x	60)	+	(_____	x	0.083)	+	10%	=	_____

1   Refer to *Table 38* on page 132.

2   Value = Minutes of alarm operation
                      60

3   Total Ah requirements must not exceed the Ah capacity of batteries:
     One D126 Battery = 7 Ah
     Two D126 Batteries = 14 Ah
     One D1218 Battery = 17.2 or 18 Ah
     Two D1218 Batteries = 34.4 or 36 Ah

22.6 Household Fire Warning Equipment

The Household Fire Warning Equipment Standard requires 24 h of standby current plus 4 min of alarm operation at the end of the 24-hour period. Use battery Ah calculations to confirm compliance. The formula in *Table 44* includes the calculation for 4 min of alarm operation at the end of the 24-hour period, and a 10% contingency factor that allows for depletion of battery capacity with age.

☑ | Because of changing regulations, verify the necessary time with your local AHJ (authority having jurisdiction).

Table 44: Household Fire Ah Calculation Formula

Total B[1]		Hours		Total C[1]		Alarm Operation[2]		Contingency		Total Ah[3]
(_____	x	24)	+	(_____	x	0.067)	+	10%	=	_____

1. Refer to *Table 38* on page 132.
2. Value = $\dfrac{\text{Minutes of alarm operation}}{60}$
3. Total Ah requirements must not exceed the Ah capacity of batteries:
   One D126 Battery = 7 Ah
   Two D126 Batteries = 14 Ah
   One D1218 Battery = 17.2 or 18 Ah
   Two D1218 Batteries = 34.4 or 36 Ah

22.7 UL 609

The leads providing operating power to the alarm sounding device shall be electrically and mechanically protected as required in the Standard for Installation and Classification of Mercantile and Bank Burglar-Alarm Systems, UL 681, or the circuit shall be constructed so that the system is not defeated by cutting or short-circuiting connections between the control unit and the alarm housing.

The alarm housing for a bank alarm system without a remote alarm transmission connection shall be mounted on the outside of the building, visible from a public street or highway. It shall be accessible for examination and repair. It shall also be located not more than four stories above the street level unless:

a. A second alarm sounding device and housing, intended for outside service [see 3.3(a)], is mounted adjacent to the premises or area of the building in which the alarm system is installed or

b. A second alarm sounding device, intended for inside service [see 3.3(b)], is mounted within the premises.

In either case, the outside alarm sounding device and housing may be mounted as high as the seventh floor.

22.8 UL 365

In a mercantile burglar alarm system, a mercantile alarm sounding device located within a building but outside the protected area, is acceptable, provided it is rated for outside service and alarm conditions are transmitted to:

a. The dispatch location of the law enforcement agency having jurisdiction over the protected property or

b. A central station or residential monitoring station complying with the Standard for Central-Station Alarm Services, UL 827.

In a mercantile burglar alarm system, an alarm sounding device located within the area of greatest protection, or outside the area of greatest protection but within an area protected by an alarm system and that shares a common control unit with the system installed in the area of greatest protection, is acceptable provided it is rated for inside service and alarm conditions are transmitted to:

a. The dispatch location of the law enforcement agency having jurisdiction over the protected property or

b. A central station or residential monitoring station complying with the Standard for Central-Station Alarm Services, UL 827.

An inside sounding device shall be mounted at least 10 feet (3.05 m) above the floor or at the surface of the ceiling. When there is a fixed construction within the area that could provide access for an intruder, the alarm sounding device shall also be mounted at least 4 ft (1.2. m) as measured horizontally, away from the edges of the fixed construction or at least 10 ft (3.05 m) above it so as to minimize access by an intruder.

22.9 UL 636

To comply with UL 636, UL Standard for Holdup Alarm Units and Systems, the D9412GV4/D7412GV4 v2.00 control panels must be installed with either RADION receiver SD: B810 wireless receiver with a RADION panic transmitter: RFPB-A, or the Bosch Model B820 Inovonics Interface Module, Inovonics EchoStream Model EN4200 Serial Receiver and any of the following Inovonics EchoStream transmitters: EN1235SF, EN1235DF, or EN1249.
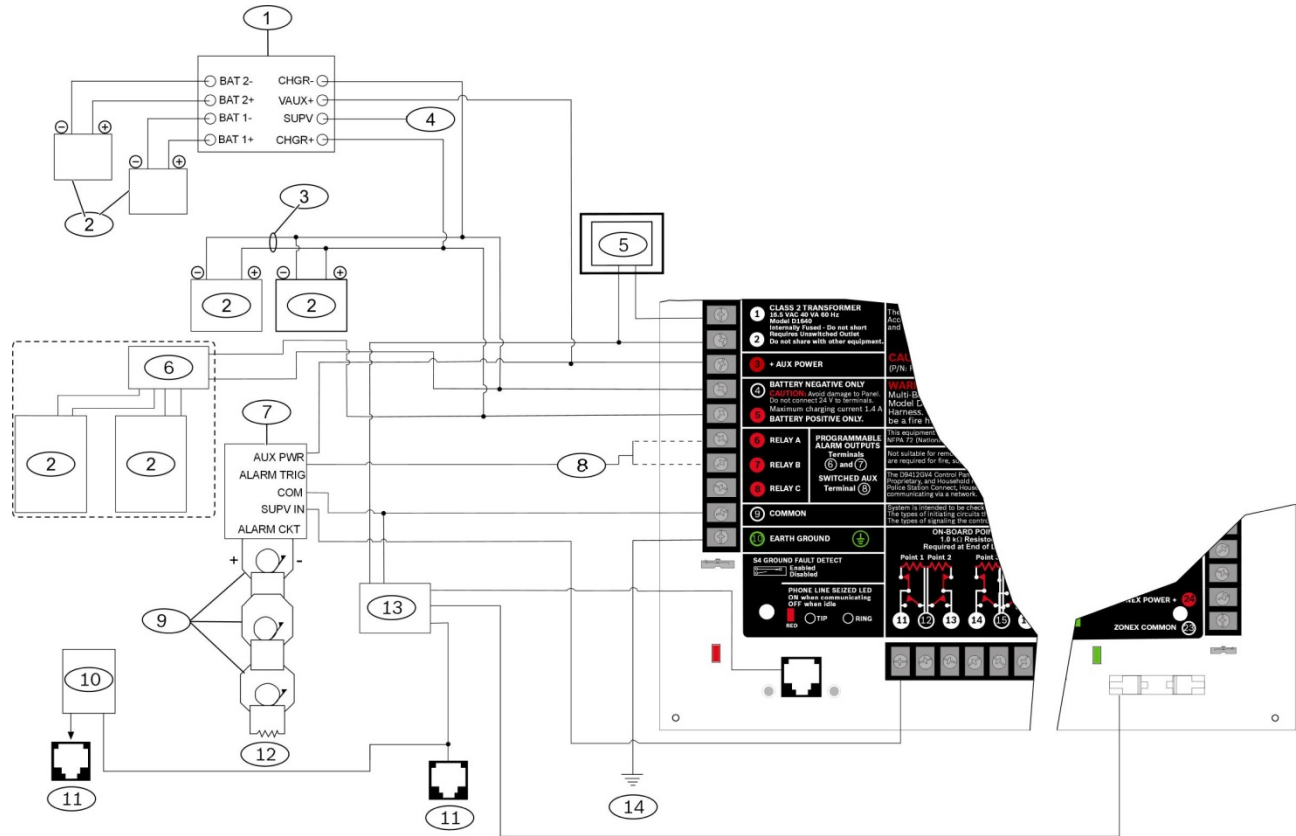
22.10 ULC S304 Requirements

To comply with UCL S304, the D9412GV4/D7412GV4 v2.00 control panels follow the requirements below:

- Auto arming is not allowed for ULC S304 applications.
    - Control units that support auto arming shall provide an audible signal throughout the protected area not less than 10 min prior to the auto arming taking place. The control unit shall allow authorized users to cancel the auto arming sequence and transmit such cancellation to the signal receiving centre with the identification of the authorized user that cancelled the action.
- Force arming is not allowed for ULC S304 applications.
    - The control unit shall be such that attempting to arm with points not secure shall result in audible alerts and visual indications to the user attempting to perform this function at the premises. The control unit shall not arm under these circumstances. Alternatively, the control unit shall give the user the ability to "force arm" (partial protection) provided that the condition of "partial protection" is clearly visible to the user, the user is required to acknowledge the "partial protection", and the identity of the user and the "partial protection" state is transmitted to the signal receiving centre.
- Maximum of 1000 alarm systems connected to the receiving station.
    - The common equipment of each signal receiving centre control unit shall be limited to 1000 alarm systems. If the signal receiving centre equipment is completely duplicated with standby equipment and a switchover can be accomplished in not more than 90 s with no loss of signals during this period, the capacity of the system is unlimited.

Appendix A: System Wiring Diagrams

A.1   Power Supply Side System Wiring

Figure 39:   D9412GV4/D7412GV4 v2.00 Power Supply Side System Wiring (Power and Phone)

1 - If required by local AHJ, connect D113 Battery Lead Supervision Module.	8 - To Relay A or Relay B
2 - Batteries	9 - Listed Audible Signaling Devices rated at 12.0 VDC nominal (do not use vibrating type horns)
3 - D122/D122L Dual Battery Harness, as required	
4 - To Supervision Point	10 - C900V2(optional)
5 - D1640 Transformer (NFPA applications may require the use of a D8004 Transformer Enclosure)	11 - Secondary phone line (part of D928)
	12 - 560 Ω, 2 W EOL Resistor (P/N: 15-03130-005)
6 - D8132 Dual Battery Charger with two batteries (Batteries are not supervised.)	13 - D928
	14 - To earth ground
7 - D192G Bell Supervision Module	

✓ Terminals 1, 2, and 11, and the Accessory Connector are power limited, supervised.
All external connections except Terminal 5 (battery positive) are power limited.

A.2 Input Points and Peripheral Devices Wiring Diagrams

Figure 40: D9412GV4/D7412GV4 v2.00 Input Points and Peripheral Devices System Wiring
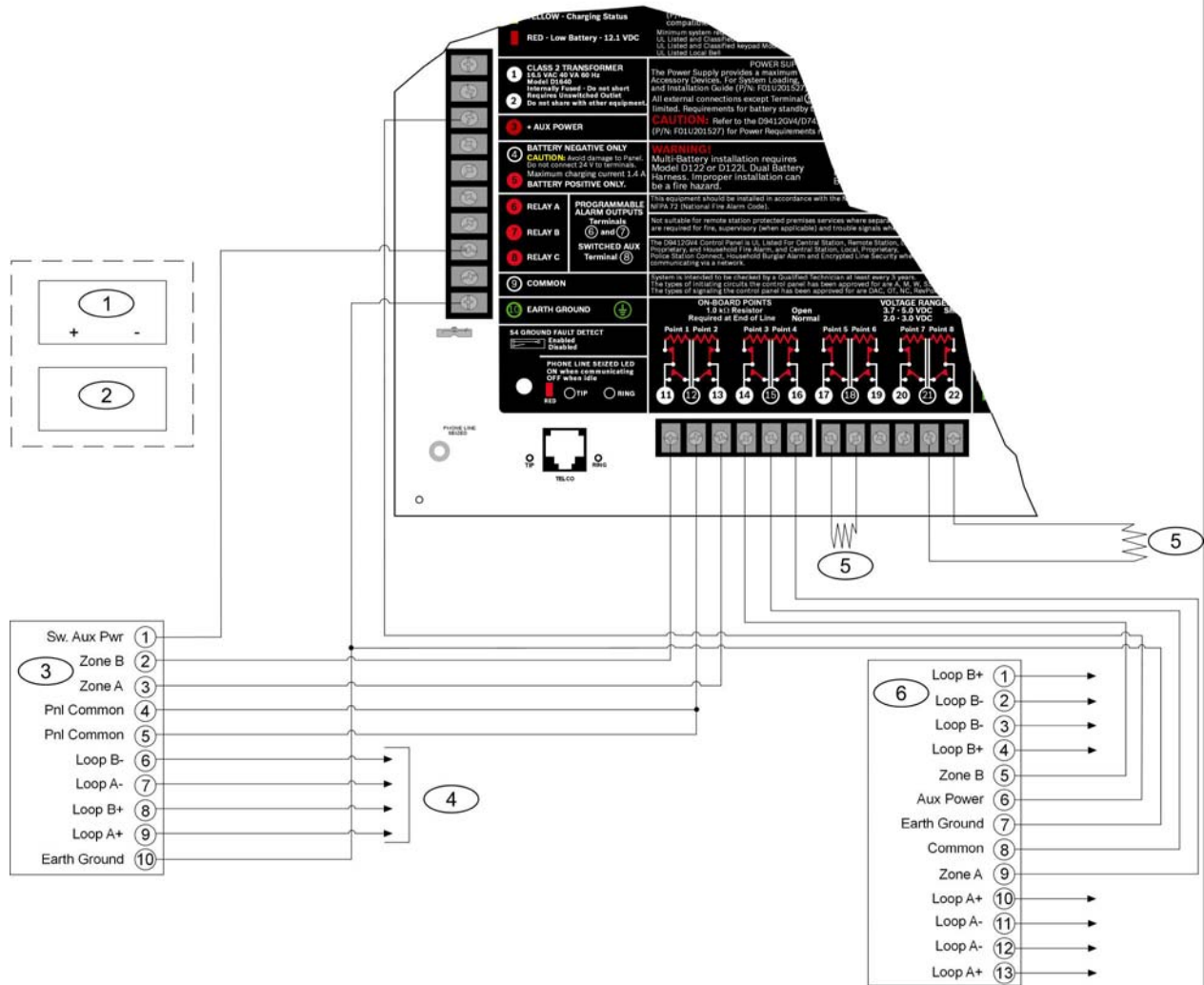
1 - (Optional): For 24 V applications use a UL 1481 listed, regulated, power-limited 24 VDC power supply with a D130 Relay Module. Refer to the D130 Installation Instructions (P/N: F01U072455) for correct wiring requirements.

2 - D130 Relay Module

3 - D125B Powered Loop Interface Module

4 - To UL Listed two-wire smoke detectors with a fire rated EOL resistor. Refer to Two-Wire Smoke Detectors section in the Approved Applications chapter in the CONTROL PANELS (D9412GV4/D7412GV4 V2.00) Installation and System Reference Guide (P/N: F01U265457) for a listing of compatible two-wire smoke detectors.

5 - 1k Ω EOL resistor (P/N: F01U033966): For typical alarm applications.

6 - D129 Dual Class A Initiation Circuit Module: Provides optional Waterflow Alarm Retard feature. Not suitable for two-wire smoke detectors.

☑ For D129, use zero retard except for waterflow devices.
All external connections except Terminal 5 (battery positive) are power limited.

A.3 SDI and Zonex Devices System Wiring

Figure 41: D9412GV4 SDI and Zonex Devices System Wiring
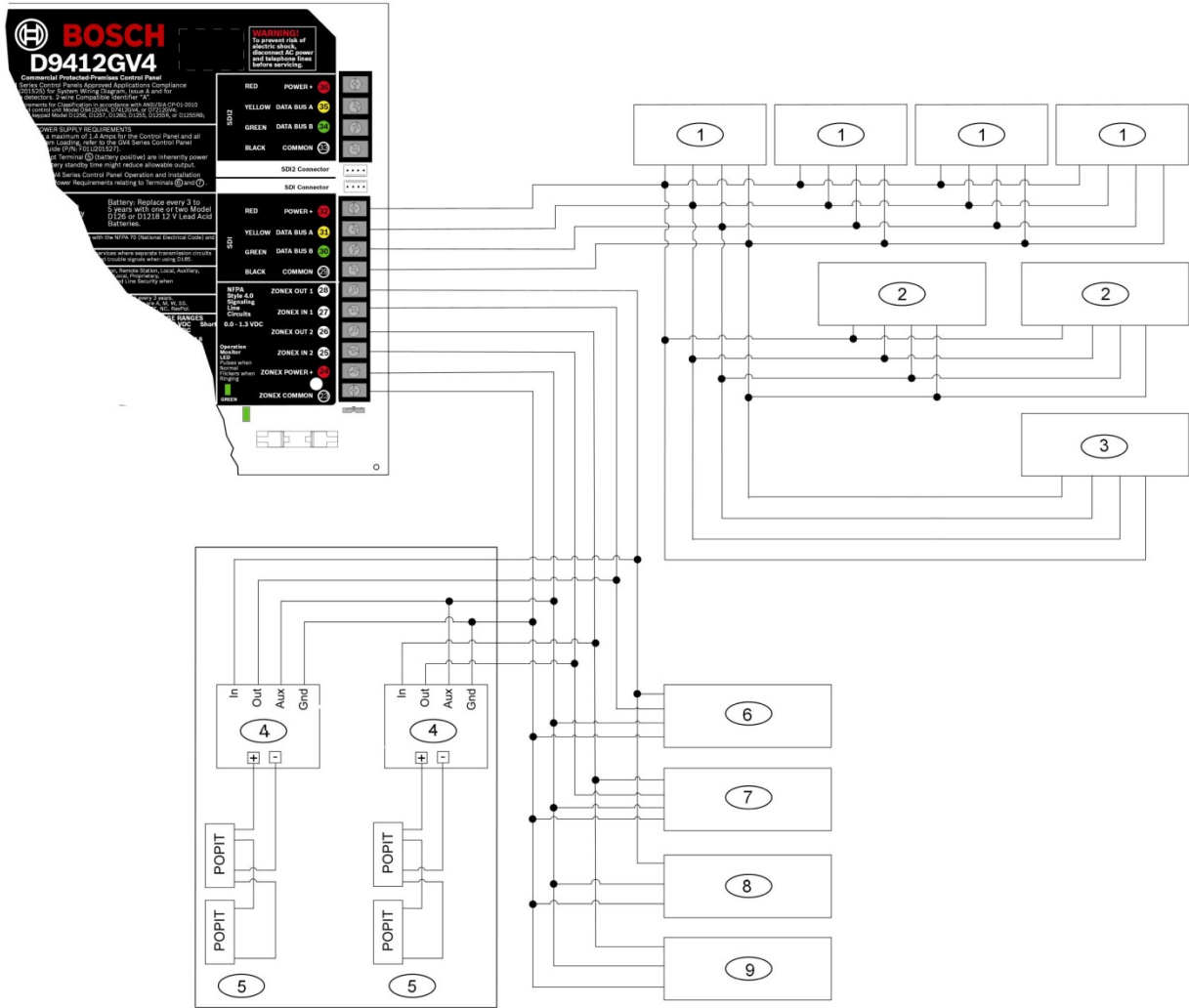
1 - Up to 16 supervised D1265, D1255 (all versions), D1255RB, D1256RB Keypads, or D1257RB Fire Annunciators, or up to 8 supervised D1260 Keypads (all versions)(maximum 16 supervised, maximum 32 unsupervised)
2 - Up to 8 D9210C Access Control Interface Modules
3 - Up to 2 DX4020, ITS-DX4020-G, or 2 B426/B420 Ethernet Communication Modules
4 - D8125 POPEX Module

5 - Up to 119 D9127U/T POPITs
6 - Zonex 1: 15 D8128Ds maximum*
7 - Zonex 2: 15 D8128Ds maximum*
8 - Zonex 1: Up to 8 D8129s maximum*
9 - Zonex 2: Up to 8 D8129s maximum*

* The number of D8129 OctoRelays that can be connected to each zonex terminal on the control panel is limited by the number of D8128D OctoPOPITs connected to the same terminal. Refer to the *D8128D Installation Guide* (P/N: F01U070537) or the *D8129 Operation and Installation Guide* (P/N: F01U036302) for specific information.

☑ Terminals 24 through 36 are power limited, supervised.

Fire and Intrusion devices must be on separate circuits. Refer to *ICP-SDI-9114 Installation Instructions* (P/N: F01U030068).

Figure 42: D7412GV4 SDI and Zonex Devices System Wiring

1 - *Up to 16 supervised D1265, D1255 (all versions), D1255RB, D1256RB Keypads, or D1257RB Fire Annunciators, or up to 8 supervised D1260 Keypads (all versions) (maximum 16 supervised, maximum 32 unsupervised)*

2 - *Up to 2 D9210C Access Control Interface Modules*

3 - *Up to two B426/B420/DX4020 or ITS-DX4020-G Network Interface Modules*

4 - *D8125 POPEX Module*

5 - *Up to 67 D9127U/T POPITs*

6 - *Zonex 1: Up to 9 D8128Ds*

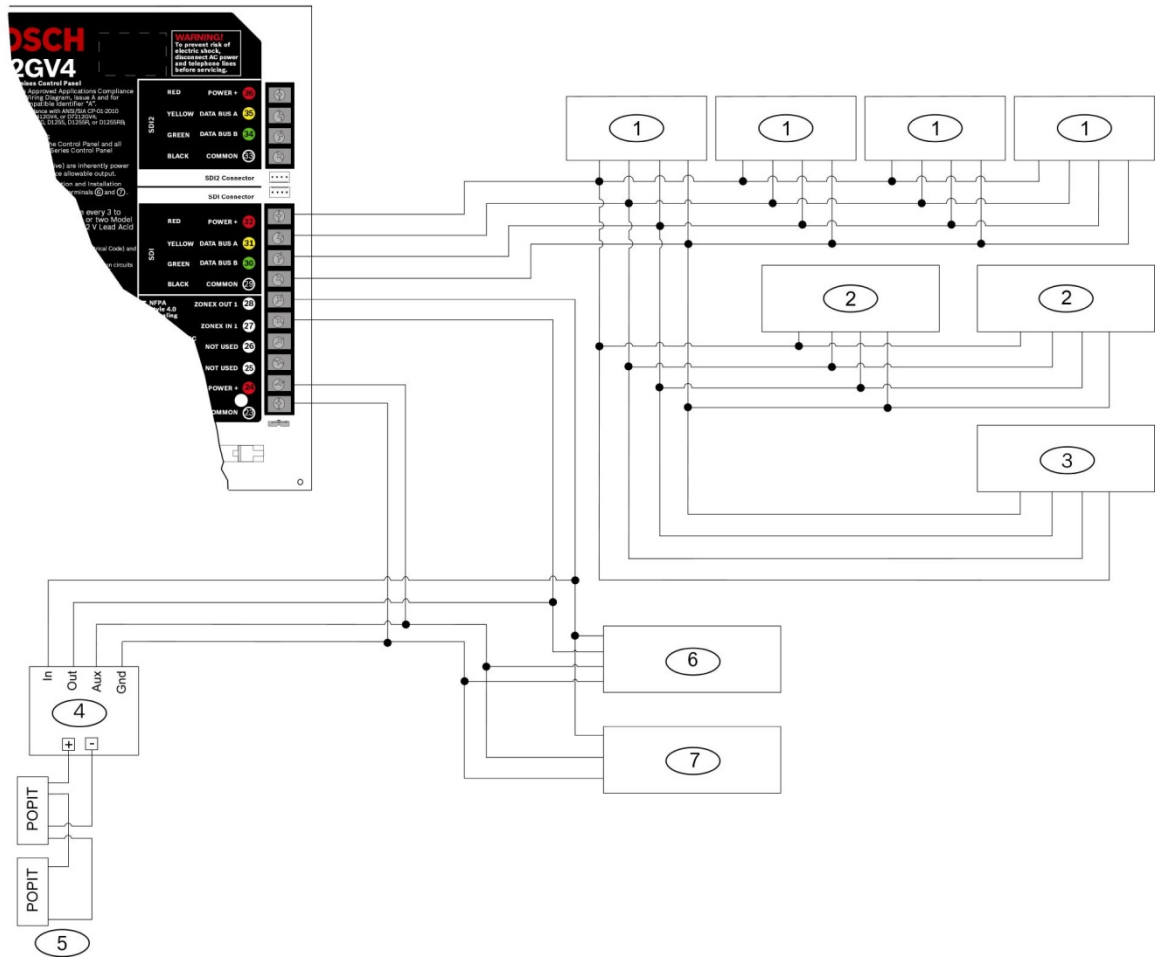7 - *Zonex 1: Up to 8 D8129s maximum*

* The number of D8129 OctoRelays that can be connected to each zonex terminal on the control panel is limited by the number of D8128D OctoPOPITs connected to the same terminal. Refer to the *D8128D Installation Guide* (P/N: F01U070537) or the *D8129 Operation and Installation Guide* (P/N: F01U036302) for specific information.

Terminals 24 through 36 are power limited, supervised.

Fire and Intrusion devices must be on separate circuits. Refer to ICP-SDI-9114 Installation Instructions (P/N: F01U030068).

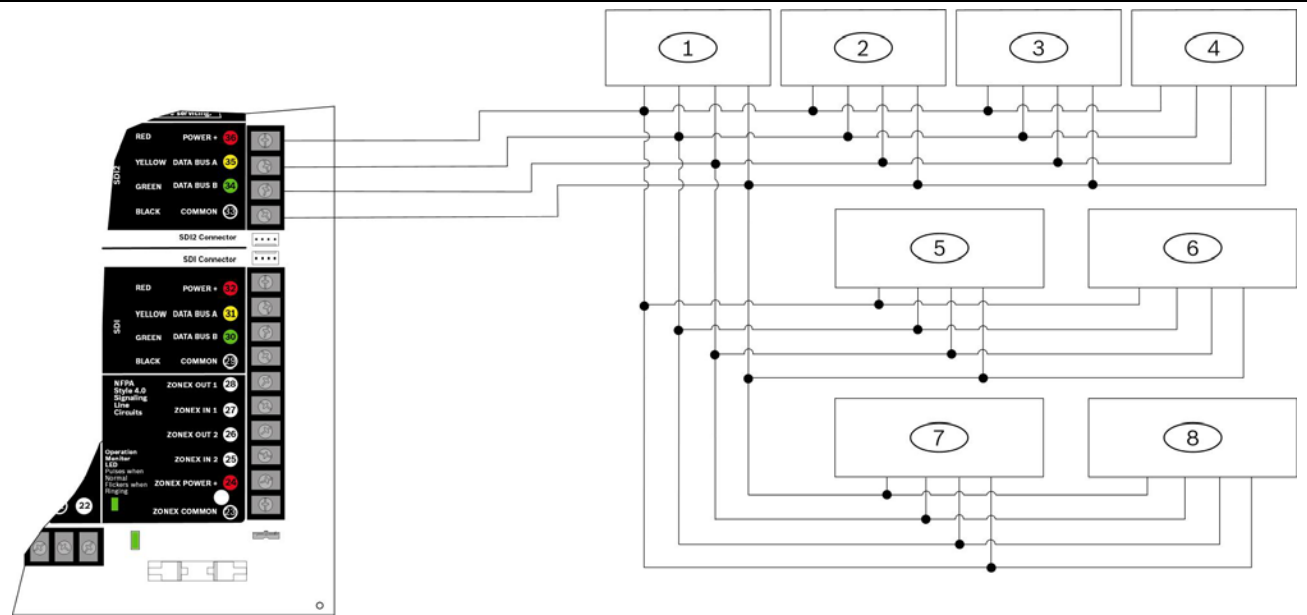**Figure 43: D9412GV4/D7412GV4 SDI2 Devices System Wiring**

1 - Up to 24 B208 Octo-input Modules[1]	5 - Up to 1 B810 wireless receiver
2 - Up to 12 B308 Octo-output Modules[2]	6 - Up to 16 B920 Two-line Alphanumeric
3 - Up to 2 B426/B420 Ethernet Communication	Keypads
Modules	7 - Up to 16 B930 ATM Style Alphanumeric
4 - B820 SDI2 Inovonics Interface Module	Keypads
	8 - Up to 8 B520 AUX Power Supply Modules

[1]The D7412GV4 supports up to 7 Octo-inputs.
[2]The D7412GV4 supports up to 6 Octo-outputs.

SDI2 Power Terminal 36 is power limited. SDI2 data Terminals 34 and 35 are supervised.

Fire and Intrusion devices must be on separate circuits. Refer to *ICP-SDI-9114 Installation Instructions* (P/N: F01U030068).

A.4   SDI2 Bus Wiring Recommendations

Use the following SDI2 Bus wiring recommendations for SDI2 installation. The SDI2 Bus is used by the GV4 Control Panel and corresponding modules to communicate with one another. Modules can be connected via home run, daisy chain, or single level T-Tap anywhere on the SDI2 bus. Please reference *Figure 42* below.

Figure 44: SDI2 Bus Wiring

1 - *Control panel*	4 - *Single-level T-tapped wiring*
2 - *SDI2 module*	5- *Home run wiring*
3 - *Daisy chained wiring*	
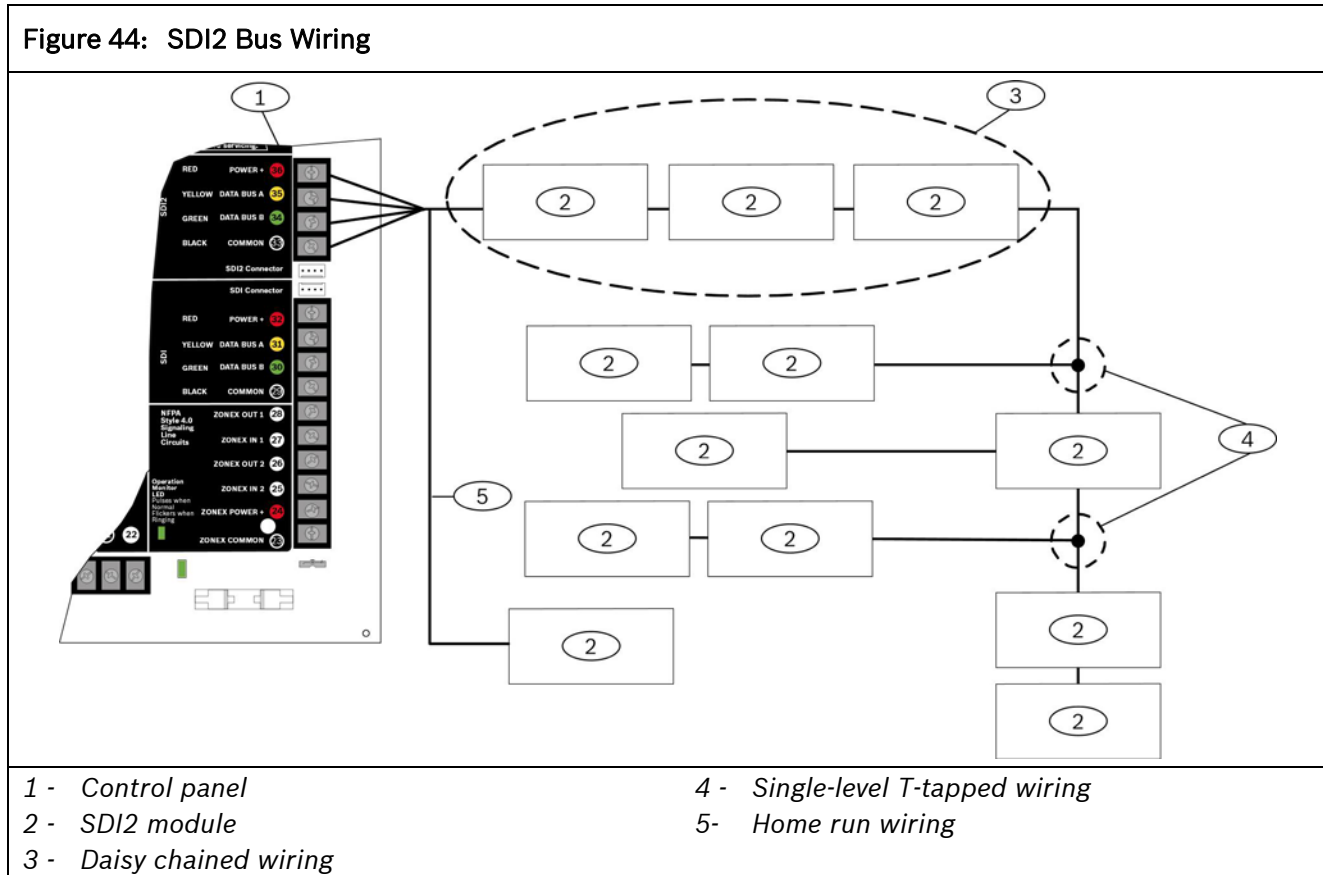
If the voltage at any device is below the minimum, you must add an auxiliary power supply to the system to power these devices.

> ☑ The absolute lowest voltage for the SDI2 devices is 10 VDC at the devices terminals when in normal operation, with a fully charged battery on the system.

Maximum cable lengths

The following rules must be followed when wiring the SDI2 bus.
- The SDI2 bus requires the use of **non-shielded** cable from 12 AWG to 22 AWG.
- Maximum overall cable length based on the table listed below:

Table 45:   Maximum Cable Lengths

Cable Capacitance	Overall Cable Length	Cable Capacitance	Overall Cable Length	Cable Capacitance	Overall Cable Length	Cable Capacitance	Overall Cable Length
Pf/ft	ft	Pf/ft	ft	Pf/ft	ft	Pf/ft	ft
< 17	7500	22	6363	27	5185	32	4400
18	7500	23	6086	28	5000	33	4242
19	7350	24	5800	29	4828	34	4100
20	7000	25	5600	30	4700	35	4000
21	6666	26	5385	31	4516	36	3800

☑ Use Non-shielded cable only.

☑ Maximum capacitance of 140nF (140,000 pf) per system. Contact the wire manufacturer for the capacitance ratings of the wire being used.

Example cable types

Use the following table for examples of cable types and electrical parameters.

Table 46:		Example Cable Types				
AWG	MFG/PN	Capacitance pF/ft	Resistance/ 1000 ft	Max Run	NEC Type	Definition
22	Belden 5541	18	16.3	7500	CL3p, CL3R, CL3, CL3X, CL2P, CL2 CL2R, CL2X, CM	Class 2 and Class 3 remote control, communications, signaling and power limited cables
	Belden 1242	15	17.6	7500		
	Belden 5502	20	16.2	7000		
	Belden 5522	19	15.7	7350		
18	Belden 5302	22	6.5	6363		
	Belden 5322	22	6.4	6363		
16	Belden HC2758	19.9	4.0	7000		
	Belden 5202	23.5	4.2	5800		
12	Belden 5002	32	1.56	4400		

☑ Fire alarm applications require NEC cable type FPLR, FPLP, or FPL or the equivalent power limited fire alarm cables (refer to article 760 of the NFPA 70 code).

Appendix B: Point Address Charts

B.1 Zonex 1 Points

> ☑ Place the labels on the base of the POPIT. Do **not** attach labels to the POPIT cover.

A bullet (●) in the switch column indicates that the switch is set to ON.

D9127 POPITs can be used for Points 9 to 72; however, only D9127 POPITs can be used for Points 73 to 127.

D9127 POPITs have DIP switches 0 to 6.

Table 47: Zonex Point Address Chart

Address[1]	0	1	2	3	4	5	6	Address[1]	0	1	2	3	4	5	6	Address[1]	0	1	2	3	4	5	6
			Switch[2]								Switch[2]								Switch[2]				
009/129	•	•	•	•	•	•	•	049/169	•		•		•	•	•	089/209		•		•	•	•	•
010/130	•	•	•	•	•	•		050/170	•		•		•	•		090/210		•		•	•	•	
011/131	•	•	•	•	•		•	051/171	•		•		•		•	091/211		•		•	•		•
012/132	•	•	•	•	•			052/172	•		•		•			092/212		•		•	•		
013/133	•	•	•	•		•	•	053/173	•		•			•	•	093/213		•		•		•	•
014/134	•	•	•	•		•		054/174	•		•			•		094/214		•		•		•	
015/135	•	•	•	•			•	055/175	•		•				•	095/215		•		•			•
016/136	•	•	•	•				056/176	•		•					096/216		•		•			
017/137	•	•	•		•	•	•	057/177	•			•	•	•	•	097/217		•			•	•	•
018/138	•	•	•		•	•		058/178	•			•	•	•		098/218		•			•	•	
019/139	•	•	•		•		•	059/179	•			•	•		•	099/219		•			•		•
020/140	•	•	•		•			060/180	•			•	•			100/220		•			•		
021/141	•	•	•			•	•	061/181	•			•		•	•	101/221		•				•	•
022/142	•	•	•			•		062/182	•			•		•		102/222		•				•	
023/143	•	•	•				•	063/183	•			•			•	103/223		•					•
024/144	•	•	•					064/184	•			•				104/224		•					
025/145	•	•		•	•	•	•	065/185	•				•	•	•	105/225			•	•	•	•	•
026/146	•	•		•	•	•		066/186	•				•	•		106/226			•	•	•	•	
027/147	•	•		•	•		•	067/187	•				•		•	107/227			•	•	•		•
028/148	•	•		•	•			068/188	•				•			108/228			•	•	•		
029/149	•	•		•		•	•	069/189	•					•	•	109/229			•	•		•	•
030/150	•	•		•		•		070/190	•					•		110/230			•	•		•	
031/151	•	•		•			•	071/191	•						•	111/231			•	•			•
032/152	•	•		•				072/192	•							112/232			•	•			
033/153	•	•			•	•	•	073/193		•	•	•	•	•	•	113/233			•		•	•	•
034/154	•	•			•	•		074/194		•	•	•	•	•		114/234			•		•	•	
035/155	•	•			•		•	075/195		•	•	•	•		•	115/235			•		•		•
036/156	•	•			•			076/196		•	•	•	•			116/236			•		•		
037/157	•	•				•	•	077/197		•	•	•		•	•	117/236			•			•	•
038/158	•	•				•		078/198		•	•	•		•		118/238			•			•	
039/159	•	•					•	079/199		•	•	•			•	119/239			•				•
040/160	•	•						080/200		•	•	•				120/240			•				
041/161	•		•	•	•	•	•	081/201		•	•		•	•	•	121/241				•	•	•	•
042/162	•		•	•	•	•		082/202		•	•		•	•		122/242				•	•	•	
043/163	•		•	•	•		•	083/203		•	•		•		•	123/243				•	•		•
044/164	•		•	•	•			084/204		•	•		•			124/244				•	•		
045/165	•		•	•		•	•	085/205		•	•			•	•	125/245				•		•	•
046/166	•		•	•		•		086/206		•	•			•		126/246				•		•	
047/167	•		•	•			•	087/207		•	•				•	127/247				•			•
048/168	•		•	•				088/208		•	•					128/248[3]							

[1] - Points 9 to127 (D9412GV4); Points 9 to 75 (D7412GV4)
[2] - A dot (●) in the Switch column indicates the switch is set to ON.
[3] - The control panel reserves Point 128/248 for internal use.

B.2   SDI2 Points

Not all off-board points supported by the control panel can be supported on B208 Octo-input modules. Points 9 and 10, 19 and 20, etc. can be supported by ZONEX bus or SDI2 Wireless points.

Table 48: SDI2 Points	
Octo-input Module Rotary Switch Setting	Supported Points
0	Disabled
1	11 - 18
2	21 - 28
3	31 - 38
4	41 - 48
5	51 - 58
6	61 - 68
7	71 - 78[2]
8	81 - 88
9	91 - 98
10	101 - 108
11	111 - 118
12	121 – 128[1]
13	131 - 138
14	141 - 148
15	151 - 158
16	161 - 168
17	171 - 178
18	181 - 188
19	191 - 198
20	201 - 208
21	211 - 218
22	221 - 228
23	231 - 238
24	241 - 248[1]

[1] The D9412GV4 supports points 1 to 247 and modules 1-24. Terminate point 128/248 with an EOL resistor.

[2] The D7412GV4 supports points 1 to 75 and modules 1 - 7. Terminate points 76, 77, and 78 with EOL resistors.

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