

D8125MUX



Installation and Operation Guide
Multiplex Bus
Interface

EN



BOSCH

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1.0 Introduction

1.1 Description

Use the D8125MUX Multiplex Bus Interface Module to connect multiplex points to the ZONEX bus on the following Bosch Security Systems control panels: new G Series (B9512G, B9512G-E, B8512G, B8512G-E), G Series (D9412GV4, D7412GV4, D7212GV4, D9412GV3, D7412GV3, D7212GV3, D9412GV2, D7412GV2, D7212GV2, D9412G, D7412G, D7212G), D9412, D7412, D7212, D9112, and D9124 with version 5.22 or greater firmware. Install the D8125MUX on ZONEX 1 and ZONEX 2 (G Series, D9412, and D9112 only). The multiplex bus interface supports two independent multiplex buses; therefore, a fault on one multiplex bus does not prevent the other from operating normally.

The D8125MUX scans the multiplex points connected to it and reports the point status to the control panel.

Also available on the D8125MUX are auxiliary power terminals labeled Power A (+,-), Power B (+,-) that support remote devices requiring an uninterrupted source of power.



The B600 Retrofit (ZONEX) module is required to use the D8125MUX on the B9512G, B9512G-E, B8512G, and B8512G-E control panels.

See the *Control Panel Approved Applications Compliance Guide* or the *Installation and System Reference Guide* to determine the required equipment and enclosures for the application.

1.2 Listings

The D8125MUX is UL Listed as a subassembly in the following categories:

US	
UL 864	Control Units, System (UOJZ)
UL1023	Household Burglar Alarm Systems (NBSX)
UL1610	Central Station Alarm Units (AMCX)
UL609	Local Alarm Units (AOTX)
UL365	Police Station Connect Alarm Units (APAW)
UL1076	Proprietary Alarm Units (APOU)
UL 985	Household Fire Warning System Units
CA	
ULC S303	Local Burglar Alarm Units and Systems
ULC/ORD-C1076	Proprietary Burglar Alarm Units and Systems
ULC/ORD-C1023	Household Burglar Alarm System Units



The D7212GV2 and D7212G are not UL Listed for UL 864 commercial fire applications.

1.3 Specifications

Table 1: Specifications

Table 1: Specifications	
Operating Voltage	Nominal 12 VDC
Current Requirements	D8125MUX only: 140 mA
Maximum Current Draw (using both MUX bus outputs and both power outputs)	678 mA
Operating Temperature	+32°F to +120°F (0°C to +49°C)
Relative Humidity	0 to 93%
Dimensions (H x W x D)	1.0 in. x 3.25 in. x 5.5 in. (25 mm x 8.3 cm x 14.0 cm)

2.0 Operation

The D8125MUX indicates its status using the green Operation LED (Figure 1). Refer to Table 2 for a description of the Operation LED.

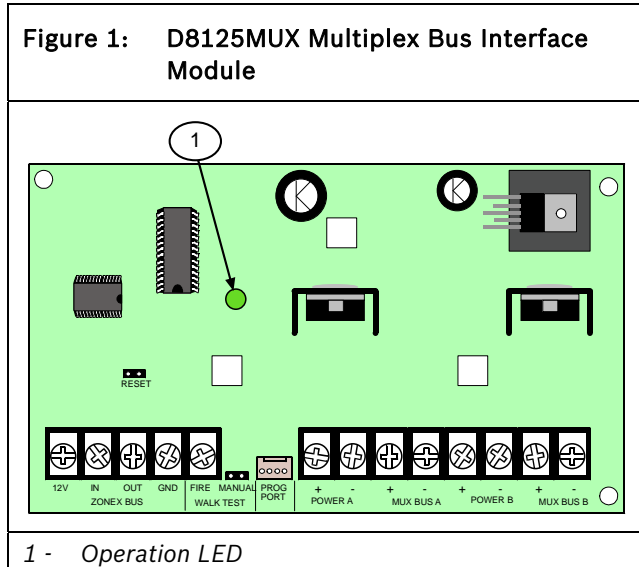


Table 2: Operation LED Descriptions

LED Status	Meaning
Flashing 1/2 second on, 1/2 second off	Indicates normal operation.
Off	A module fault is indicated. Refer to Section 6.0 Troubleshooting on page 25.
On	The Multiplex Point Programmer is connected to the D8125MUX.
Double flash	Reset the D8125MUX EEPROM with the reset pin by plugging in the D5060 Programmer and placing the shorting bar over the reset pin. The LED rapidly flashes twice followed by a pause.

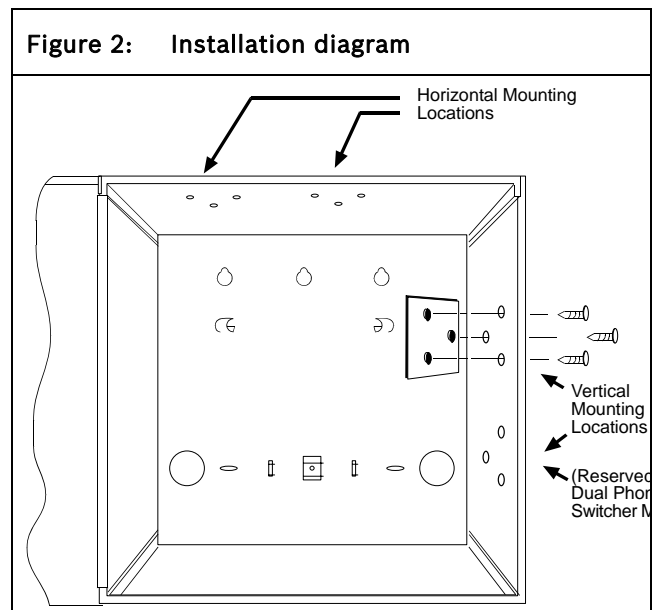
3.0 Installation

The D8125MUX is installed in the control panel enclosure and is connected to either ZONEX 1 or ZONEX 2 on the control panel or the B600 Retrofit (ZONEX) module.

3.1 Installing the enclosure


Follow the procedure below to install the D8125MUX in the enclosure with the control panel or B600.


1. Align the D8125MUX module with any of the four mounting locations in the enclosure. See Figure 2.
2. Use the screws provided with the module to secure it in the enclosure.



3.2 Wiring to the control panel


Follow the procedure below to wire one or two D8125MUX modules to the 9000 Series, and G Series control panels. For the B9512G, B9512G-E, B8512G, B8512G-E control panels, see the *Control Panels Installation and System Reference Guide*.

 The B600 Retrofit (ZONEX) module is required to use the D8125MUX on the B9512G, B9512G-E, B8512G, and B8512G-E control panels.

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

3.2.1 Disconnecting the Battery and Transformer

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

 Reversed polarity damages the D8125MUX. Make sure you wire the D8125MUX AUX and GND terminals to the control panel.

3.2.2 Wiring Procedure

For Points 9 up to Point 127:

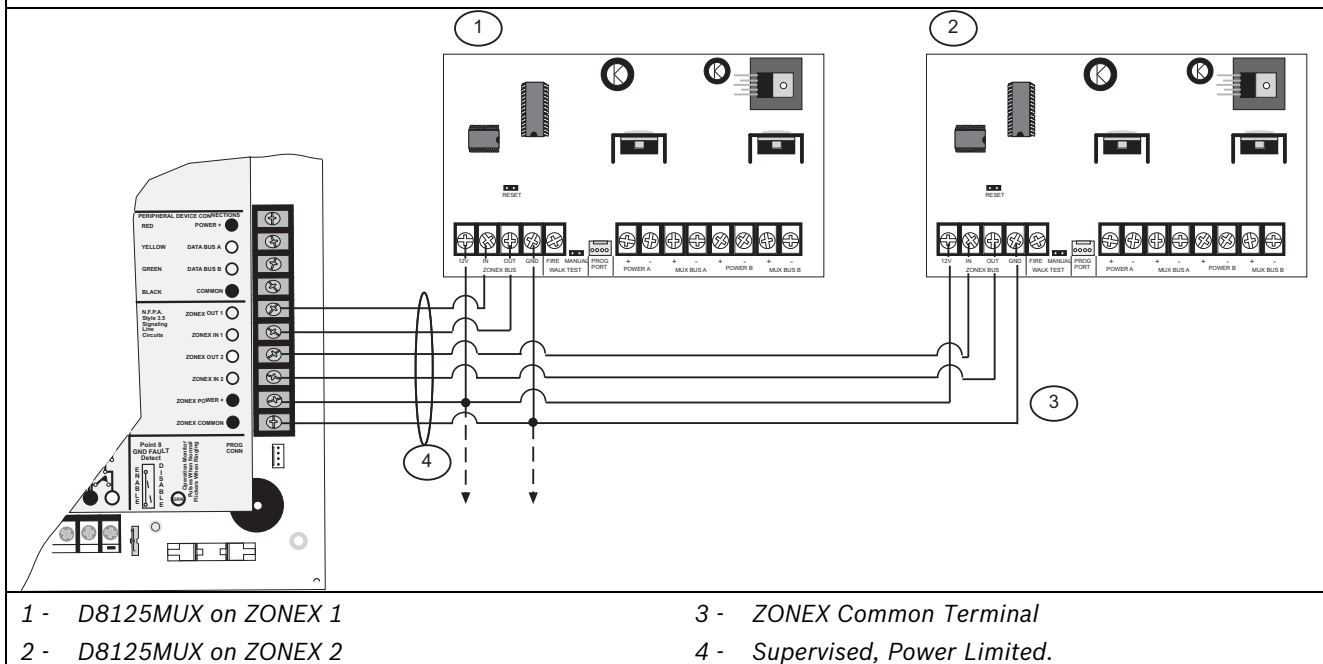
1. Connect the GND terminal of the D8125MUX to the control panel ZONEX COMMON terminal.
2. Connect the OUT terminal of the D8125MUX module to ZONEX IN 1.
3. Connect the IN terminal of the D8125MUX module to ZONEX OUT 1.
4. Connect the AUX terminal of the D8125MUX to ZONEX POWER + terminal.

For Points 129 up to Point 247:

1. Connect the GND terminal of the D8125MUX to the control panel ZONEX COMMON terminal.
2. Connect the OUT terminal of the D8125MUX module to ZONEX IN 2.
3. Connect the IN terminal of the D8125MUX module to ZONEX OUT 2.
4. Connect the AUX terminal of the D8125MUX to ZONEX POWER + terminal.


Do not connect more than one D8125MUX to ZONEX 1 (IN and OUT terminals) or ZONEX 2 (IN and OUT terminals).

Figure 3: D8125MUX Wiring Diagram

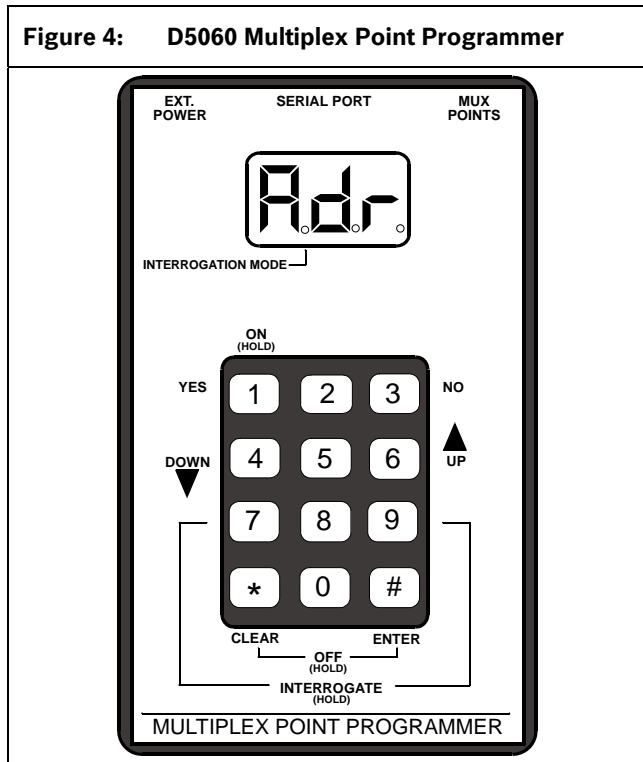


4.0 Program Multiplex Bus Points

Use the D5060 Programmer (Figure 4 and Table 3) to program multiplex bus points for the B9512G, B9512G-E, B8512G, B8512G-E, D9412GV4, D7412GV4, D7212GV4, D9412GV3, D7412GV3, D7212GV3, D9412GV2, D7412GV2, D7212GV2, D9412G, D7412G, D7212G, D9412, D7412, D7212, and D9112 control panels. In addition to programming points, the D5060 can also be used to program and read information from a D8125MUX.

 The B600 Retrofit (ZONEX) module is required to use the D8125MUX on the B9512G, B9512G-E, B8512G, and B8512G-E control panels.

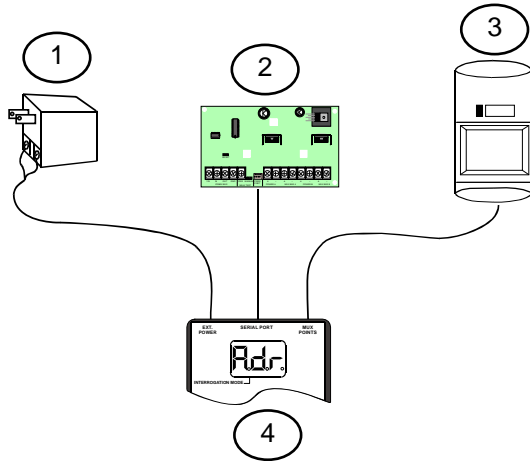
Display	Definition
Adr	Enter address.
A.dr	Enter address for Interrogation Mode.
bAd	Battery voltage is below 15 V.
Err	Point was not programmed correctly.
Lob	Battery voltage is below 16 V.
noP	No response from point.
PnL	Communications with the D8125 failed.
rSP	Point responds to address.
tYP	Enter point type.
t.YP	Enter point type for Interrogation Mode



4.1 Connecting the D5060 Programmer

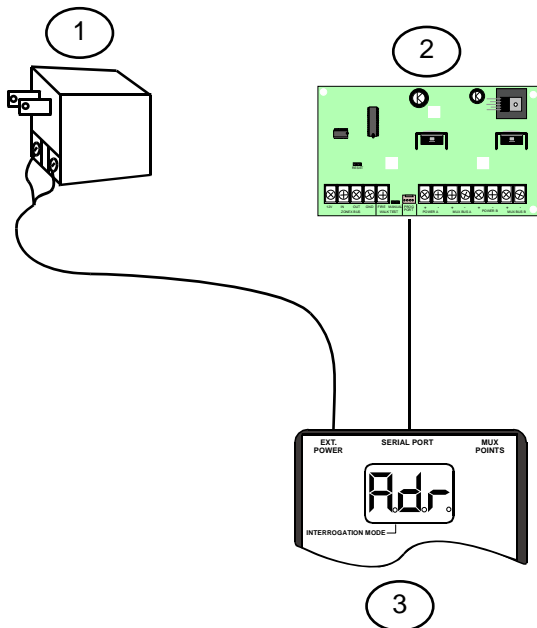
1. When using external power, attach the flying leads of the included power cable to the output terminals of a 16.5 VAC transformer. Insert the plug end into the jack labeled EXT. POWER on the programmer. Refer to Figure 5, Figure 6, and Figure 7.
2. Use the serial cable provided to connect the D8125MUX to the jack labeled SERIAL PORT on the programmer.
3. For multiplex devices without DIP switches, use the multiplex programmer cable provided to connect the point to be programmed to the port labeled MUX POINTS as shown in Figure 5. Use the appropriate connector, either the alligator clips or the probes, to connect the programmer to a point. For multiplex points with programmable DIP switches, program the point using the DIP switches. Connect the programmer to the D8125MUX as shown in Figure 6.

Figure 5: Installing Multiplex Points without DIP Switches Wiring Diagram



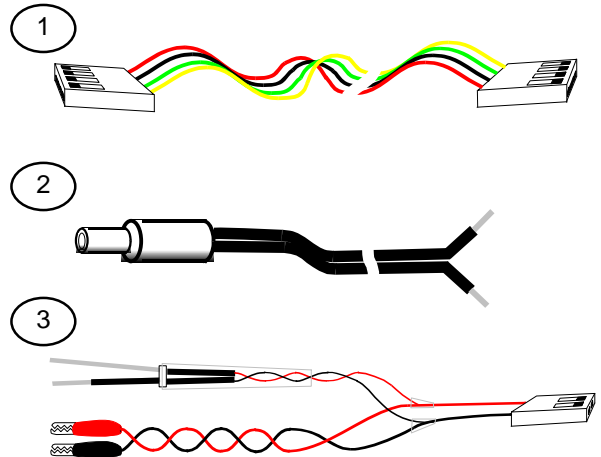
- 1 - External power
- 2 - D8125MUX
- 3 - Multiplex point without DIP switches (non-i models)
- 4 - D5060 Multiplex Point Programmer

Figure 6: Installing Multiplex Points with DIP Switches Wiring Diagram



- 1 - External power
- 2 - D8125MUX
- 3 - D5060 Multiplex Point Programmer

Figure 7: Programmer Cables (included)



- 1 - C310 Serial Cable
- 2 - C319 External Power Supply Cable
- 3 - C320 Multiplex Programmer Cable

4.2 Programming

4.2.1 Powering the D5060

Turn on the D5060 by pressing and holding the [1] key until the unit beeps. To turn the unit off, press and hold the [#] and [*] keys simultaneously until the unit beeps.



After 5 minutes of inactivity, the programmer powers down automatically to conserve power.

4.2.2 Programming Points

1. The D5060 shows the prompt **Adr** after it is powered. This indicates that it is ready to begin programming.
2. If the multiplex device has no DIP switches, connect the D5060 to the point to be programmed as shown in *Figure 5* on page 7. If the multiplex device has DIP switches, program the device using its DIP switches.



If the multiplex device has no DIP switches, connect the D8125MUX and the multiplex device to be programmed to the D5060 for simultaneous programming (*Figure 5*). If the multiplex device has DIP switches, program the device using its DIP switches, and program the D8125MUX using the D5060 (*Figure 6* on page 7).

3. Enter the point's three-digit address. The address must be between 1 and 255. Press [#]. The programmer shows **tyP**.
4. Enter the number corresponding to the point type you are programming as shown in *Table 4* and press [#]. The programmer alternately shows the address and the point type.



When you program for a multiplex smoke device by entering decimal value 4 or 5 *Table 4*, an 18-second timer starts counting. Do not disconnect the multiplex smoke device until after the timer counts down to zero.

Table 4: Point Type Entry Code

Decimal Value	Point Type
0	Remove point from D8125MUX
1	Contact
2	Sensor (or single point module)
3	I/O module
4	Multiplex smoke without low temperature
5	Multiplex smoke with low temperature (0°C)
6	Dual point

5. Press [#] to program a point connected to the D5060 and the D8125MUX (if connected), or press [1] to program the D8125MUX only. If the multiplex device has DIP switches, program the device using its DIP switches.



Press [*] at any time to return to a previous step in the procedure.

6. If the point is programmed correctly, the unit beeps once and shows **Adr**, indicating it is ready to program the next point. If the point was not programmed correctly, the unit sounds a three-beep error tone and one of the following messages appears:
 - Err:** The point was not programmed correctly.
 - PnL:** Communications with the D8125MUX failed.
7. Press [*] to clear the entry, or press [#] to reprogram.

If programming the D8125MUX and multiplex device simultaneously and only one receives the program, the D5060 shows **Adr**. If having troubles with the point after installation, try programming the D8125MUX and multiplex devices separately.

4.2.3 Removing a Point from the D8125MUX


1. Apply power to the D5060 and connect the programmer to the D8125MUX only.
2. Enter the address of the point you want to remove.
3. When prompted for a point type, press [0]. Refer to *Table 4*. Then press [#].
4. Press [1] to remove the point.
5. If the point is programmed correctly, the D5060 beeps once and **Adr** appears.

4.2.4 Interrogation Mode

You can also use the programmer to read information from the D8125MUX and multiplex points. Refer to Section 4.1 *Connecting the D5060 Programmer* on page 6 to install the D5060.


4.2.4.1 Reading Information from the D8125MUX

1. To enter Interrogation Mode, press and hold [7] and [9] simultaneously until the unit beeps.
2. The LED marked INTERROGATION MODE lights. **A.dr** appears prompting you to enter a starting address.
3. Enter an address followed by [#]. The Interrogation LED flashes.
4. Press [#] to read point information from the D8125MUX at that address.
5. Press [4] to read the previous address information from the D8125MUX.
6. Press [6] to read the next address information from the D8125MUX.

 If communication between the unit and the D8125MUX fails, the unit sounds a three-beep error tone and shows **PnL**.


7. Exit Interrogation Mode by pressing and holding [*] until the unit beeps.

4.2.4.2 Reading Information from MUX Points

 Disconnect all multiplex points from the D8125MUX and the multiplex bus before reading multiplex point information.

1. To enter Interrogation Mode, press and hold [7] and [9] simultaneously until the unit beeps. The LED marked INTERROGATION MODE lights.
2. The display reads **A.dr** prompting you to enter a starting address. Enter an address and press [#].
3. Press [1].
4. When **t.YP** appears at the keypad, enter the point type of the multiplex point as shown in *Table 4* on page 8 and press [#].
5. If a point responds to the address, the programmer beeps once and **rSP** appears. If the point does not respond, the unit beeps three times and the display reads **noP**.
6. Exit Interrogation Mode by pressing and holding [*] until the unit beeps.

4.3 Wiring the D8125MUX to Multiplex Points

 Do not use shielded or twisted pair cable.

1. Connect Power A+ and Power A- on the D8125MUX to multiplex devices that require uninterrupted auxiliary power. Refer to Figure 8 on page 9. Up to 200 mA is available at these terminals.
2. Connect MUX BUS A+ and A- on the D8125MUX to the positive and negative bus wires of the multiplex points. The maximum allowable current on MUX BUS A is 75 mA.


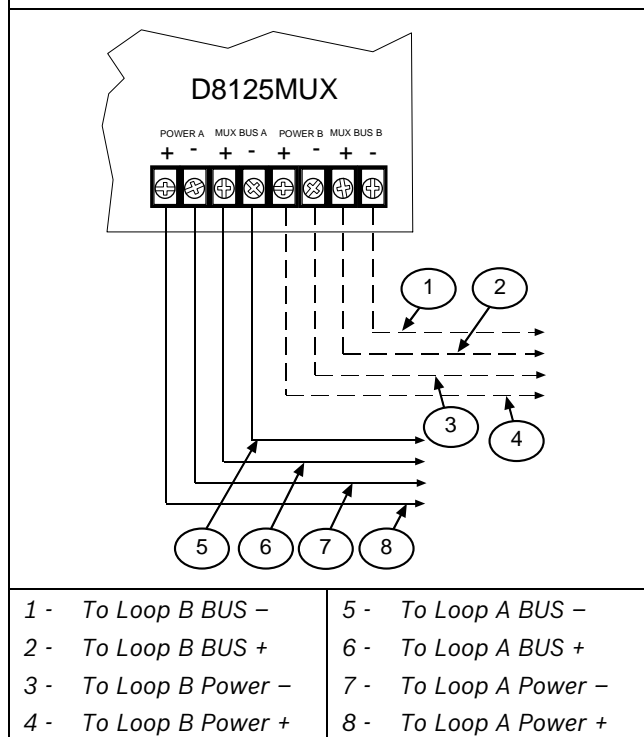
 Remove power from the D8125MUX before connecting or disconnecting multiplex devices. Connecting or disconnecting a multiplex device while the D8125MUX is powered could cause the multiplex device address setting to reprogram or scramble.

Figure 8: Wiring the D8125MUX to Detection Systems Multiplex Points



4.4 Using Power B and MUX BUS B (Optional)

It might be necessary to use the Power B (+, -) and MUX BUS B (+, -) terminals for isolation purposes. For example, an Authority Having Jurisdiction (AHJ) might require that fire points and burglar points be on independent buses.

1. Connect Power B+ and Power B- on the D8125MUX to multiplex devices that require uninterrupted auxiliary power. Up to 200 mA is available at these terminals.
2. Connect MUX BUS B + and B - on the D8125MUX to the positive and negative bus wires of the multiplex points. The maximum allowable current on MUX BUS B is 75 mA.

4.5 Wiring Multiplex Devices to the Multiplex Bus

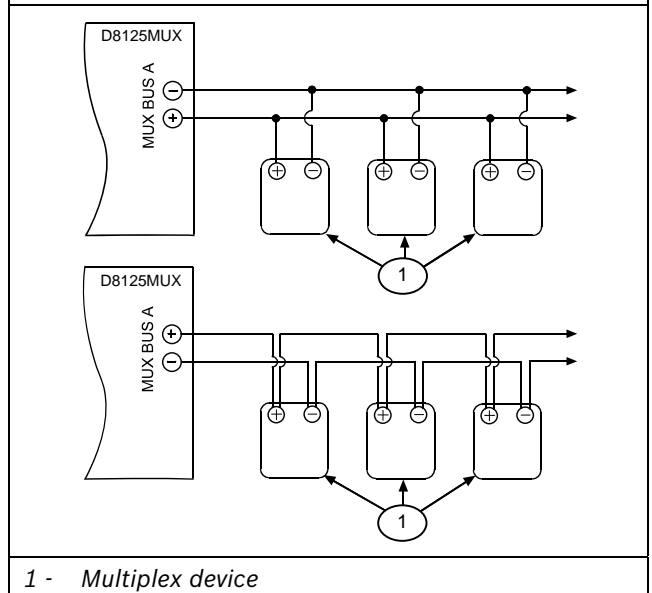
Use one two-wire data expansion loop using MUX BUS A, or distribute the devices on both MUX BUS A and B. *Table 5* shows the maximum distance per MUX bus output - each D8125MUX has two multiplex bus outputs. *Table 6* shows the maximum distance between the control panel and the D8125MUX. Determine the required wire gauge for each multiplex bus expansion loop (*Table 5*). Programming the individual multiplex points with the D5060 assigns them to point numbers. Daisy chain and T-tapping configurations are acceptable. Refer to *Figure 9*.

Table 5: D8125MUX Line Length	
MUX BUS A	
Maximum Wire Impedance: 33 Ω	
AWG (mm)	Length in Ft (m)
22 (0.8 mm)	2000 (610)*
18 (1.2 mm)	5000 (1524)*
MUX BUS B	
Maximum Wire Impedance: 33 Ω	
AWG (mm)	Length in Ft (m)
22 (0.8 mm)	2000 (610)*
18 (1.2 mm)	5000 (1524)*
* Current requirements for multiplex points vary. The maximum allowable distance you can locate remote points might be reduced. Do not exceed 75 mA maximum on each MUX bus output.	

Table 6: Control Panel to D8125MUX Distance

Maximum Impedance: 4.0 Ω at +68°F (+20°C) nominal	
Maximum Distance	Size
250 ft	22 AWG
600 ft	18 AWG
76 m	0.65 mm
193 m	1.02 mm
Fire applications require 18 AWG.	

Figure 9: Wiring Multiplex Devices to MUX Bus



4.6 Installing a Multiplex Device

As shown in *Table 7*, several types of multiplex devices are available. Each multiplex accessory device is packaged with instructions connecting to the multiplex bus output.

Product	Point Type
DS7432 Eight Input Remote Module	6
DS7450 Flush Mount Single Multiplex Contact Point	1
DS7452 Surface Mount Single Multiplex Contact Point	1
DS7457 Single Multiplex Input Module	2
DS7460 Dual Zone Input Module	6
DS7465 Input/Output Module	3
MX775 (DS7470) Multiplex PIR Intrusion Detector – 50 ft (15 m) Mirror	2
MX934 (DS7471) Multiplex PIR Intrusion Detector – 35 ft (11 m) Mirror	2
MX938 (DS7472) Ceiling Mount Multiplex PIR Intrusion Detector	2
MX540 (DS7473) Multiplex PIR Intrusion Detector – 40 ft (12 m) Fresnel Lens	2
MX794 (DS7474) Multiplex Long Range PIR Intrusion Detector	2
MX950 (DS7476) Multiplex PIR/Microwave TriTech Intrusion Detector	2
MX835 (DS7477) Multiplex PIR/Microwave TriTech Intrusion Detector with Pet Immunity	2
MX250 Photoelectric Smoke or Photo with Heat Detector and MXB2W Base	4
D7050/D7050TH Photoelectric or Photo with Heat Detector and D7050-B6 Base Lot #249 and greater	4

4.6.1 Adding Multiplex Devices to the Control Panel

Off board points for G Series, D9124, D9412, and D9112 are numbered 9 through 127 and 129 through 247 (G Series, D7412, and D7212 use off board Points 9 through 75 only; G Series use off board Points 9 through 40 only). G Series, D9412, and D9112 reserves Points 128 and 248 for internal use. The D8125MUX connected to ZONEX 1 monitors Points 9 through 127, whereas the D8125MUX connected to ZONEX 2 monitors Points 129 through 247.



The D8125MUX and multiplex points connected to ZONEX 2 must be programmed in the D8125MUX with DIP switches as Points 9 through 127. Refer to *Table 8* on page 12.

4.6.2 Removing Multiplex Devices from the Control Panel

To remove a multiplex device from the system:

1. Connect the device to the D5060.
2. Enter the address.
3. Enter **0** for the point type.



Ensure that the D8125MUX is not powered before connecting or disconnecting multiplex devices. Connecting or disconnecting a multiplex device while the D8125MUX is powered causes the multiplex device address setting to reprogram or scramble.



After any programming or hardware change, do a functional test of the system as required by local codes.

Table 8: Point Conversion Table

If ZONEX 2 Pt. # is	Program as	If ZONEX 2 Pt. # is	Program as	If ZONEX 2 Pt. # is	Program as	If ZONEX 2 Pt. # is	Program as	If ZONEX 2 Pt. # is	Program as
129	9	153	33	177	57	201	81	225	105
130	10	154	34	178	58	202	82	226	106
131	11	155	35	179	59	203	83	227	107
132	12	156	36	180	60	204	84	228	108
133	13	157	37	181	61	205	85	229	109
134	14	158	38	182	62	206	86	230	110
135	15	159	39	183	63	207	87	231	111
136	16	160	40	184	64	208	88	232	112
137	17	161	41	185	65	209	89	233	113
138	18	162	42	186	66	210	90	234	114
139	19	163	43	187	67	211	91	235	115
140	20	164	44	188	68	212	92	236	116
141	21	165	45	189	69	213	93	237	117
142	22	166	46	190	70	214	94	238	118
143	23	167	47	191	71	215	95	239	119
144	24	168	48	192	72	216	96	240	120
145	25	169	49	193	73	217	97	241	121
146	26	170	50	194	74	218	98	242	122
147	27	171	51	195	75	219	99	243	123
148	28	172	52	196	76	220	100	244	124
149	29	173	53	197	77	221	101	245	125
150	30	174	54	198	78	222	102	246	126
151	31	175	55	199	79	223	103	247	127
152	32	176	56	200	80	224	104		

4.7 Point Matrix Tables

Only use one D8125MUX per ZONEX output. Refer to *Table 9* beginning on page 14 for ZONEX 1. Refer to *Table 10* beginning on page 17 for ZONEX 2

If configuring the system with DS7457i, DS7461i, or DS7465i MUX devices. Refer to *Table 11* on page 19 if configuring the system with the DS7460iMUX device.

The type of multiplex device used determines the quantity of devices you can connect to the D8125MUX. Do not program two multiplex points to the same point number. After programming all the points, perform a Service Walk Test. Refer to the control panel's operation and installation guide for information on the Service Walk Test. If a multiplex point is not functioning, check for duplicate addresses.

Two sheets of peel-off labels are supplied with the D8125MUX. Each label has two parts. Place the smaller part (with the point number) on the multiplex point. Throw away the larger part. Use the sheet marked **Bank 1** for Points 9 through 127 and the sheet marked **Bank 2** for Points 129 through 247. G Series, and D7212 Control Panels use the sheet marked **Bank 1**.

Table 9: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 1

Point (Relay) Address	Switch Number (• = ON)							
	1	2	3	4	5	6	7	8
009					•			•
010					•		•	
011					•		•	•
012					•	•		
013					•	•		•
014					•	•	•	
015					•	•	•	•
016				•				
017				•				•
018				•			•	
019				•			•	•
020				•		•		
021				•		•		•
022				•		•	•	
023				•		•	•	•
024				•	•			
025				•	•			•
026				•	•		•	
027				•	•		•	•
028				•	•	•		
029				•	•	•		•
030				•	•	•	•	
031				•	•	•	•	•
032			•					
033			•					•
034			•				•	
035			•				•	•
036			•			•		

Note: When using the DS7465i Input/Output Module, only Addresses 009 through 064 support the relay option (009 through 024 on the D7212GV2 and D7212G).

Table 9: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 1 (continued)

Point (Relay) Address	Switch Number (• = ON)							
	1	2	3	4	5	6	7	8
037			•			•		•
038			•			•	•	
039			•			•	•	•
040			•		•			
Maximum Number of Points (D7212G)								
041			•		•			•
042			•		•		•	
043			•		•		•	•
044			•		•	•		
045			•		•	•		•
046			•		•	•	•	
047			•		•	•	•	•
048			•	•				
049			•	•				•
050			•	•			•	
051			•	•			•	•
052			•	•		•		
053			•	•		•		•
054			•	•		•	•	
055			•	•		•	•	•
056			•	•	•			
057			•	•	•			•
058			•	•	•		•	
059			•	•	•		•	•
060			•	•	•	•		
61			•	•	•	•		•
062			•	•	•	•	•	
063			•	•	•	•	•	•
064		•						

Note: When using the DS7465i Input/Output Module, only Addresses 009 through 064 support the relay option (009 through 024 on the D7212GV2 and D7212G).

Table 9: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 1 (continued)

Point (Relay) Address	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
Maximum for DS7465i								
065		*						*
066		*					*	
067		*					*	*
068		*				*		
069		*				*		*
070		*				*	*	
071		*				*	*	*
072		*			*			
073		*			*			*
074		*			*		*	
075		*			*		*	*
Maximum for D7412G, D7412, and D7212								
076		*			*	*		
077		*			*	*		*
078		*			*	*	*	
079		*			*	*	*	*
080		*		*				
081		*		*				*
082		*		*			*	
083		*		*			*	*
084		*		*		*		
085		*		*		*		*
086		*		*		*	*	
087		*		*		*	*	*
088		*		*	*			
089		*		*	*			*
090		*		*	*		*	
091		*		*	*		*	*
092		*		*	*	*		
Note: When using the DS7465i Input/Output Module, only Addresses 009 through 064 support the relay option (009 through 024 on the D7212GV2 and D7212G).								

Table 9: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 1 (continued)

Point (Relay) Address	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
083		*		*			*	*
084		*		*		*		
085		*		*		*		*
086		*		*		*	*	
087		*		*		*	*	*
088		*		*	*			
089		*		*	*			*
090		*		*	*		*	
091		*		*	*		*	*
092		*		*	*	*		
093		*		*	*	*		*
094		*		*	*	*	*	
095		*		*	*	*	*	*
096		*	*					
097		*	*					*
098		*	*				*	
099		*	*				*	*
100		*	*			*		
101		*	*			*		*
102		*	*			*	*	
103		*	*			*	*	*
104		*	*		*			
105		*	*		*			*
106		*	*		*		*	
107		*	*		*		*	*
108		*	*		*	*		
109		*	*		*	*		*
110		*	*		*	*	*	
Note: When using the DS7465i Input/Output Module, only Addresses 009 through 064 support the relay option (009 through 024 on the D7212GV2 and D7212G).								

Table 9: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 1 (continued)

Point (Relay) Address	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
111		*	*		*	*	*	*
112		*	*	*				
113		*	*	*				*
114		*	*	*			*	
115		*	*	*			*	*
116		*	*	*		*		
117		*	*	*		*		*
118		*	*	*		*	*	
119		*	*	*		*	*	*
120		*	*	*	*			
121		*	*	*	*			*
122		*	*	*	*		*	
123		*	*	*	*		*	*
124		*	*	*	*	*		
125		*	*	*	*	*		*
126		*	*	*	*	*	*	
127		*	*	*	*	*	*	*
128	NOT USED							

Note: When using the DS7465i Input/Output Module, only Addresses 009 through 064 support the relay option (009 through 024 on the D7212GV2 and D7212G).

Table 10: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 2

Zone (Point) Address	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
129					*			*
130					*		*	
131					*		*	*
132					*	*		
133					*	*		*
134					*	*	*	
135					*	*	*	*
136				*				
137				*				*
138				*			*	
139				*			*	*
140				*		*		
141				*		*		*
142				*		*	*	
143				*		*	*	*
144				*	*			
145				*	*			*
146				*	*		*	
147				*	*		*	*
148				*	*	*		
149				*	*	*		*
150				*	*	*	*	
151				*	*	*	*	*
152			*					
153			*					*
154			*				*	
155			*				*	*
156			*			*		
157			*			*		*
158			*			*	*	

Table 10: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 2 (continued)

Zone (Point) Address	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
159			*			*	*	*
160			*		*			
161			*		*			*
162			*		*		*	
163			*		*		*	*
164			*		*	*		
165			*		*	*		*
166			*		*	*	*	
167			*		*	*	*	*
168			*	*				
169			*	*				*
170			*	*			*	
171			*	*			*	*
172			*	*		*		
173			*	*		*		*
174			*	*		*	*	
175			*	*		*	*	*
176			*	*	*			
177			*	*	*			*
178			*	*	*		*	
179			*	*	*		*	*
180			*	*	*	*		
181			*	*	*	*		*
182			*	*	*	*	*	
183			*	*	*	*	*	*
184		*						
185		*						*
186		*					*	
187		*					*	*
188		*				*		

Table 10: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 2 (continued)

Zone (Point) Address	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
189		*				*		*
190		*				*	*	
191		*				*	*	*
192		*			*			
197		*			*	*		*
198		*			*	*	*	
199		*			*	*	*	*
200		*		*				
201		*		*				*
202		*		*			*	
203		*		*			*	*
204		*		*		*		
205		*		*		*		*
206		*		*		*	*	
207		*		*		*	*	*
208		*		*	*			
209		*		*	*			*
210		*		*	*		*	
211		*		*	*		*	*
212		*		*	*	*		
213		*		*	*	*		*
214		*		*	*	*	*	
215		*		*	*	*	*	*
216		*	*					
217		*	*					*
218		*	*				*	
219		*	*				*	*
220		*	*			*		
221		*	*			*		*
222		*	*			*	*	

Table 10: DS7457i, DS7461i, and DS7465i Switch Settings When Using D8125MUX on ZONEX 2 (continued)

Zone (Point) Address	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
223		*	*			*	*	*
224		*	*		*			
225		*	*		*			*
226		*	*		*		*	
227		*	*		*		*	*
228		*	*		*	*		
229		*	*		*	*		*
230		*	*		*	*	*	
231		*	*		*	*	*	*
232		*	*	*				
233		*	*	*				*
234		*	*	*			*	
235		*	*	*			*	*
236		*	*	*		*		
237		*	*	*		*		*
238		*	*	*		*	*	
239		*	*	*		*	*	*
240		*	*	*	*			
241		*	*	*	*			*
242		*	*	*	*		*	
243		*	*	*	*		*	*
244		*	*	*	*	*		
245		*	*	*	*	*		*
246		*	*	*	*	*	*	
247		*	*	*	*	*	*	*
248	NOT USED							

Table 11: DS7460i Switch Settings When Using D8125MUX

Address Zone/Relay	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
009/010					*			*
011/012					*		*	*
013/014					*	*		*
015/016					*	*	*	*
017/018				*				*
019/020				*			*	*
021/022				*		*		*
023/024				*		*	*	*
025/026				*	*			*
027/028				*	*		*	*
029/030				*	*	*		*
031/032				*	*	*	*	*
033/034			*					*
035/036			*				*	*
037/038			*			*		*
039/040			*			*	*	*
041/042			*		*			*
043/044			*		*		*	*
045/046			*		*	*		*
047/048			*		*	*	*	*
049/050			*	*				*
051/052			*	*			*	*
053/054			*	*		*		*
055/056			*	*		*	*	*
057/058			*	*	*			*
059/060			*	*	*		*	*

Table 11: DS7460i Switch Settings When Using D8125MUX (continued)

Address Zone/Relay	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
061/062			*	*	*	*		*
063/064			*	*	*	*	*	*
065/066		*						*
067/068		*					*	*
069/070		*				*		*
071/072		*				*	*	*
073/074		*			*			*
075/076		*			*		*	*
077/078		*			*	*		*
079/080		*			*	*	*	*
081/082		*		*				*
083/084		*		*			*	*
085/086		*		*		*		*
087/088		*		*		*	*	*
089/090		*		*	*			*
091/092		*		*	*		*	*
093/094		*		*	*	*		*
095/096		*		*	*	*	*	*
097/098		*	*					*
099/100		*	*				*	*
101/102		*	*			*		*
103/104		*	*			*	*	*
105/106		*	*		*			*
107/108		*	*		*		*	*
109/110		*	*		*	*		*
111/112		*	*		*	*	*	*
113/114		*	*	*				*
115/116		*	*	*			*	*
117/118		*	*	*		*		*
119/120		*	*	*		*	*	*
121/122		*	*	*	*			*
123/124		*	*	*	*		*	*

Table 11: DS7460i Switch Settings When Using D8125MUX (continued)

Address Zone/Relay	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
125/126		*	*	*	*	*		*
127/128	NOT USED							
129/130					*			*
131/132					*		*	*
133/134					*	*		*
135/136					*	*	*	*
137/138				*				*
139/140				*			*	*
141/142				*		*		*
143/144				*		*	*	*
145/146				*	*			*
147/148				*	*		*	*
149/150				*	*	*		*
151/152				*	*	*	*	*
153/154			*					*
155/156			*				*	*
157/158			*			*		*
159/160			*			*	*	*
161/162			*		*			*
163/164			*		*		*	*
165/166			*		*	*		*
167/168			*		*	*	*	*
169/170			*	*				*
171/172			*	*			*	*
173/174			*	*		*		*
175/176			*	*		*	*	*
177/178			*	*	*			*
179/180			*	*	*		*	*
181/182			*	*	*	*		*
183/184			*	*	*	*	*	*
185/186		*						*
187/188		*					*	*

Table 11: DS7460i Switch Settings When Using D8125MUX (continued)

Address Zone/Relay	Switch Number (* = ON)							
	1	2	3	4	5	6	7	8
189/190		*				*		*
191/192		*				*	*	*
193/194		*			*			*
195/196		*			*		*	*
197/198		*			*	*		*
199/200		*			*	*	*	*
201/202		*		*				*
203/204		*		*			*	*
205/206		*		*		*		*
207/208		*		*		*	*	*
209/210		*		*	*			*
211/212		*		*	*		*	*
213/214		*		*	*	*		*
215/216		*		*	*	*	*	*
217/218		*	*					*
219/220		*	*				*	*
221/222		*	*			*		*
223/224		*	*			*	*	*
225/226		*	*		*			*
227/228		*	*		*		*	*
229/230		*	*		*	*		*
231/232		*	*		*	*	*	*
233/234		*	*	*				*
235/236		*	*	*			*	*
237/238		*	*	*		*		*
239/240		*	*	*		*	*	*
241/242		*	*	*	*			*
243/244		*	*	*	*		*	*
245/246		*	*	*	*	*		*
247/248	NOT USED							

4.8 Single Input Multiplex Devices

The devices listed in Table 12 reserve a single point on the MUX bus. Single Input Multiplex points can be programmed as Points 9 through 127 (ZONEX 1) and 129 through 247 (ZONEX 2) (238 devices) on G Series, D9412, and D9112; Points 9 through 75 (67 devices) on G Series, D7412, and D7212; Points 9 through 40 on G Series (32 devices). When programming the point type for Single Input Multiplex points using a D5060 Programmer, refer to *Table 12* for information on how to configure the point type. Tamper conditions on multiplex points are treated as Missing conditions by the control panel.

Table 12: Single Input Multiplex Device Point Response Configuration		
Device Type	Point Type	Point Response
DS7450 Flush Mount Single Multiplex Contact Point	1	NO
DS7452 Surface Mount Single Multiplex Contact Point	1	NO
DS7457 Single Multiplex Input Module	2	Configurable (NO or NC)
MX775 (DS7470) Multiplex PIR Intrusion Detector - 50 ft (15 m) Mirror	2	NO
MX934 (DS7471) Multiplex PIR Intrusion Detector - 35 ft (11 m) Mirror	2	NO
MX938 (DS7472) Ceiling Mount Multiplex PIR Intrusion Detector	2	NO
MX540 (DS7473) Multiplex PIR Intrusion Detector - 40 ft. (12 m) Fresnel Lens	2	NO
MX794 (DS7474) Multiplex Long Range PIR Intrusion Detector	2	NO
MX950 (DS7476) Multiplex PIR/Microwave TriTech Intrusion Detector	2	NO
MX835 (DS7477) Multiplex PIR/Microwave TriTech Intrusion Detector with Pet Immunity	2	NO

4.9 MX250 Photoelectric Smoke Detectors and MXB2W Base or D7050 Photoelectric Smoke Detector and D7050-B6 Base

The MX250 and MX250TH Photoelectric Smoke Detectors with MXB2W Base or D7050 and D7050TH Photoelectric Smoke Detectors and D7050-B6 Base reserve a single point on the multiplex bus. Single input Multiplex points can be programmed as points 9 through 127 (ZONEX 1) and 129 through 247 (ZONEX 2) (238 smoke detectors) on G Series, D9124, D9412, or D9112; points 9 through 75 (67 smoke detectors) on G Series, D7412, and D7212; and (32 smoke detectors) points 9 through 40 on G Series. Other wiring restrictions can reduce the maximum number of photoelectric smoke detectors on the multiplex bus. Refer to the *MX250 Installation Guide* (P/N: 45253) and the *D7050 Installation Instructions* (P/N: 47458) for additional information.

When programming an MX250 Series or D7050 Series Photoelectric Smoke Detector and base with a D5060 Programmer, refer to *Table 13* for information on configuring the point type.


Table 13: MX250, MX250TH, D7050, and D7050TH Point Type Configuration		
Device Type	Point Type	Point Response
Photoelectric Smoke Detector and Base	4	NO




The rotary address switches must be set to the “B” range address to work with the D8125MUX.

4.10 DS7460(i) Dual Input Multiplex Module

The DS7460(i) reserves two points on the MUX bus. Dual input multiplex points can be programmed as Points 9 through 127 (ZONEX 1) and 129 through 247 (ZONEX 2) (59 per ZONEX, 118 modules) on G Series, D9412, and D9112: Points 9 through 75 (33 modules) on G Series, D7412, and D7212; Points 9 through 40 on G Series (16 modules). When programming dual points, they occupy first an odd point number, then an even point number. For example, DS7460(i) Modules must be programmed to occupy Points 9 and 10, not 10 and 11.

 When using the D5060 programmer, only program the odd or first point on the module. The even or second point is automatically added.

 The DS7460i cannot be used for Point 75 on G Series, D7412, and D7212 or for Points 127 or 247 on G Series, D9412, and D9112. Failure to observe these programming requirements will result in intermittent missing conditions.


In addition, both points on the DS7460i must have a Point Index assigned to it when programming the control panel. If one of the two points is not required on the device, simply place the 47 kΩ end-of-line (EOL) resistor on the point input terminals and program the unused point with the same Point Index. When programming the point type for the DS7460(i), using the D5060 Programmer refer to *Table 14* for information on configuring the point type. Tamper conditions on multiplex points are treated as Missing conditions by the control panel.

Device Type	Point Type	Point Response
DS7460i Dual Input Multiplex Module	6	Configurable (N/O or N/C)

4.11 DS7432 Eight Input Remote Module

This device type reserves eight points on the multiplex bus. Each D8125MUX supports fifteen DS7432s on G Series, D9412, and D9112 Control Panels, up to eight on G Series, D7412, and D7212 Control Panels, and up to four on G Series Control Panels. The DS7432s occupy groups of eight points; however, when programming the DS7432 with the multiplex point programmer, program them as four sets of dual points. For example, if using a DS7432 on the system for Points 9 through 16, program Points 9, 11, 13, and 15 as dual points with the even points being added automatically. Program starting point locations for the DS7432 on G Series, D9412, and D9112 Control Panels as follows: 9, 17, 25, 33, 41, 49, 57, 65, 73, 81, 89, 97, 105, 113, 121. Refer to *Table 15*.

ZONEX 1/ ZONEX 2	DIP Switch				
	1	2	3	4	5
9/129	Open	Open	Open	Open	Closed
17/137	Open	Open	Open	Closed	Open
25/145	Open	Open	Open	Closed	Closed
33/153	Open	Open	Closed	Open	Open
41/161	Open	Open	Closed	Open	Closed
49/169	Open	Open	Closed	Closed	Open
57/177	Open	Open	Closed	Closed	Closed
65/185	Open	Closed	Open	Open	Open
73/193	Open	Closed	Open	Open	Closed
81/201	Open	Closed	Open	Closed	Open
89/209	Open	Closed	Open	Closed	Closed
97/217	Open	Closed	Closed	Open	Open
105/225	Open	Closed	Closed	Open	Closed
113/233	Open	Closed	Closed	Closed	Open
121/241	Open	Closed	Closed	Closed	Closed


 Points 127/128 and 247/248 cannot be programmed when using DS7432s (G Series, D9412, or D9112).

Program starting point locations for the DS7432 on G Series, D7412, D7212 as follows: 9, 17, 25, 33, 41, 49, 57, and 65. Program starting point locations for the DS7432 on G Series as follows: 9, 17, 25, and 33. Failure to observe this programming requirement will result in intermittent missing conditions. All eight points on the DS7432 must also have a Point Index assigned to them. If any of the eight point inputs are not required on the device, place the 47 kΩ EOL resistor on the point input terminals. Refer to *Table 16* for information on configuring the point type. Tamper conditions on multiplex points are treated as Missing conditions by the control panel. Removing the cover and activating the tamper results in a missing condition for all eight points.

Table 16: DS7432 Point Type Configuration		
Device Type	Point Type	Point Response
DS7432 Eight Input Remote Module	6	Configurable (NO or NC)

4.12 DS7465(i) Input/Output Module

This device type reserves a single point on the MUX bus and provides a Form C (NO, C, NC) relay output. The relay output number assigned to this module is the same as the point number assigned to it. For example, if this device was programmed as Point 27, the relay number is also 27.



The relay output on this module is a fully programmable relay and follows the relay programming of the control panel.

The maximum number of DS7465i Modules that can be placed on the control panels is 56 as points 9 through 64 for G Series, D9412, D7412, D7212, and D9112; and 16 as points 9 through 24 for G Series. Place the DS7465(i) on the D8125MUX connected to ZONEX 1.


If only the relay is required for the installation, assign a Point Index for the programmed point location, and place a 47 kΩ EOL resistor on the point input terminals. Refer to *Table 17* for point type configuration.

Table 17: DS7465(i) Point Type Configuration		
Device Type	Point Type	Point Response
DS7465(i) Input/Output Module	3	Configurable (NO or NC)

Tamper conditions on multiplex points are treated as Missing conditions by the control panel. Using DS7465i Input and Output Modules on the system does not interfere with the use of D8129 OctoRelay Modules.

Control the relay output on each DS7465 using any of the following control panel options:

- Relay follows Point for Points 9 through 64 (Points 9 through 34 for G Series) (refer to the Relay Response Type section in the control panel’s program entry guide).



When the DS7465i is programmed to follow a point, the relay can have a delayed response of 2 to 5 sec.

- Area or Panel Wide Relay functions
- Schedules (skeds)
- [Command] [5] [4]
- Remote Programming Software control
- Enter Key Relay Number (refer to Command Center Assignments in the control panel’s program entry guide)
- BFSK Relay (G Series, D7412, and D7212 only)

5.0 Testing the System

5.1 Local Walk Test (Command 44)

While disarmed, check the security system's status by entering [COMMAND] [4] [4] at the D1255 or D1260 Keypad. This command initiates a System Walk Test. Each point of protection is scanned by the control panel, and points are displayed on the D1255 as they are activated. An accompanying tone is heard from the keypad to alert the user of an activated point. When all the burg points are tested, **0 POINTS TO TEST** appears and the system returns to normal operation. Points failing to report during the Walk Test can be viewed by pressing [NEXT] until the display reads **VIEW UNTESTED ?** Press [NEXT] to view the faulty points.

Refer to the *Security System Owner's Manual* (P/N: 71-06633-000) for more details on the Local Walk Test features.

5.2 Missing Multiplex Points

Multiplex points appearing as missing on the display are usually not connected properly to the multiplex bus, not programmed correctly, nor have incorrect DIP switch settings.

Check the multiplex bus wiring to the missing point and its programming.

5.3 Extra Multiplex Points

Extra Points occur when the D8125MUX sends point transitions back to the control panel and the control panel does not have a Point Index programmed for it.

Extra multiplex points are reported to the control panel as a trouble event at the keypad or central station. The keypad shows the default custom text for the point number as programmed in the RADXPNTS (handler).

When an extra point is activated during the Service Walk Test, it appears as an extra point in the control panel's event log and at the local printer (if installed). Use **VIEW LOG** to view the control panel's event log. Once an extra point is identified, check the programming to see if it has a Point Index programmed. Determine if the point belongs in the system.

Refer to *Section 6.0 Troubleshooting* on page 25 for more information.

5.4 Ground Fault Notification on Multiplex Devices

When the Loop Input (+) is in a normal condition, a ground fault on the Loop Input (+) terminal is initially signaled as a point trouble. A ground fault condition is signaled by the system after the normal 30 second ground fault detect time. To witness the ground fault indication on the keypad, the point trouble must be cleared from the display by pressing [Command] [4] on a D1255 and D1260 or [Trouble Silence] on a D1256. The control panel History Log, shown on a keypad or sent to the central station, also indicates the ground fault detection. An Alarm condition is still indicated even during the occurrence of a ground fault condition.

When the loop is in an open position, a ground fault on the Loop Input (+) terminal disrupts supervision. An open on the loop does not indicate a new fault, because the ground fault is interpreted as an open. A short might indicate an Alarm condition depending on the control panel's programming.

6.0 Troubleshooting

Table 18: Troubleshooting

Symptom	Diagnosis	Remedy
Multiplex point appears as missing at the keypads.	<p>Multiplex point is not connected to MUX bus. Check wiring.</p> <p>Multiplex point not programmed.</p> <p>MUX bus wires not connected to D8125MUX.</p>	<p>Verify that a multiplex point programmed for the missing multiplex point is connected to the MUX bus wiring. Make sure its polarity is correct. Check the Green Operation LED on the D8125MUX. It should be flashing. An LED OFF indicates no power, a D8125MUX PCB failure, or an EEPROM failure on the D8125MUX.</p> <p>Verify the missing point's programming with the Multiplex Point Programmer.</p> <p>Verify the MUX bus wires are connected to the correct terminals on the D8125MUX. Verify correct polarity.</p>
Points intermittently appear as missing.	<p>Noise problem on MUX bus loop.</p> <p>Intermittent shorts or opens on the MUX bus wires.</p>	<p>Make sure MUX bus wires do not run over fluorescent lighting or near large AC power transformers or conduits.</p> <p>Verify the wiring to the multiplex points and the D8125MUX does not have nicks or cuts in the insulation that can short to nearby conduit. Make sure wires are tight under terminals of multiplex points and on the D8125MUX.</p>
One or more multiplex points remain in trouble or alarm when all devices appear normal.	<p>The MUX bus is open, shorted or grounded.</p> <p>Opens, shorts, or grounds at various points in the MUX bus can cause alarms and troubles depending on multiplex point programming.</p>	<p>Remove the sensor wiring from the multiplex point and meter it for continuity.</p> <p>There should be no more than 100 Ω of resistance, plus the EOL resistance. If you read less than the EOL resistance look for shorts in the wiring.</p> <p>With the wires for the sensor removed, use a meter to check them for continuity to ground.</p> <p>A ground before the EOL resistor on a multiplex points' sensor loop is interpreted as a short. If the multiplex point is programmed for trouble on short, a ground before the EOL causes the multiplex point to send a trouble report.</p>
Faulted multiplex points do not generate alarms or troubles as programmed.	<p>Control panel's reset hook switch is down when event was generated.</p> <p>Two multiplex points are programmed for the same address.</p>	<p>The control panel ignores events generated while the programming or reset switch is down.</p> <p>Multiplex points programmed for the same address do not function correctly. Check the programming of each multiplex point with the multiplex point programmer.</p>

Table 18: Troubleshooting (continued)

Symptom		
Control panel transmits PT BUS TROUBLE reports. Erroneous alarm or trouble reports might follow. Erroneous alarm or trouble reports appear at keypads.	<p>Short on D8125MUX, MUX bus terminals, or short on control panel ZONEX data terminals (25 & 26, 27 & 28).</p> <p>A multiplex point is programmed for address 128 or 248 or a D8128D OctoPOPIT on the same system has address switches set for Points 121 through 128 or Points 241 through 248.</p>	<p>A short on either MUX BUS A or MUX BUS B terminals generates a PT BUS TROUBLE report. A short on BUS A or BUS B does not prevent the other from normal operation. Determine what series of points is wired to BUS A and BUS B. Check wiring for shorts.</p> <p>Confirm that a multiplex point is not programmed as Point 128 or 248. Multiplex points cannot be used as Points 128 or 248 (these are reserved for control panel functions). OctoPOPITs cannot be used for Points 121 to 128 or 241 to 248.</p>
All off-board points report as MISSING.	<p>Short on Aux power, Terminal 3 or ZONEX power, Terminal 24.</p> <p>If only one D8125MUX is connected to the control panel, the D8125MUX might be incorrectly connected to the control panel, or MUX bus wiring might be disconnected from the D8125MUX.</p>	<p>Terminals 3 and 24 share a common circuit breaker.</p> <p>Check wiring and devices connected to these terminals for shorts or grounds. Check connections to D8125MUX and control panel for errors. Check the green Operation LED on the D8125MUX to see if it is flashing.</p>
Points on the DS7432 all appear missing.	<p>Multiplex power terminals or MUX bus terminals on DS7432 might be incorrectly wired.</p> <p>Address switches on DS7432 set for Points 121 through 128.</p>	<p>Verify the wiring on DS7432 is correct.</p> <p>Ensure address switches on DS7432 are not set for Points 121 through 128. These points are reserved for control panel functions.</p>

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