
Operation and Installation Guide Addendum

This addendum (P/N: 41740) is intended to replace pages 5, 10, 11, 12, 20, 22, 52, 66, and 78 through 81 of the D7024 Reference Guide (P/N: 31499). Use this addendum to wire the special 220 VAC, 50 Hz transformer in the control panel. For all other accessories, programming instructions and tables, refer to the D7024 Reference Guide (P/N: 31499).

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41740F
O&I Addendum

5/05
D7024-EXP



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1.3 Industry Canada Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together.

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician.

D7024

Overview

2.0 Overview

2.1 System Overview

The D7024 Control/Communicator is a fully integrated hard-wire fire alarm system. It can support four input points (expandable to 255 using D7039 Multiplex Expansion Module and the D7034 Four-Point Expander) and 16 individual users (expandable to 100 with the D7039). The control panel has a built-in LCD keypad, and up to four additional keypads may be used to provide user interface with the system and programming access for the installer. The D7024 also includes the following features:

- Built-in Dual-line Communicator
- Menu Driven Keypad Programming
- Freely Programmable Alpha Display
- 99 Event History Buffer
- 16 User Codes
- Year 2000 compliant

When the D7039 Multiplex Expansion Module is installed, these additional features are available:

- 247 Additional Addressable Input Points (255 Total Points)
- 499 Non-volatile Event History Buffer
- 100 User Codes

See Figure 1 for the location of the major items on the D7024 Control Board.

Note: This guide applies to panels equipped with version 2.04 or higher software.

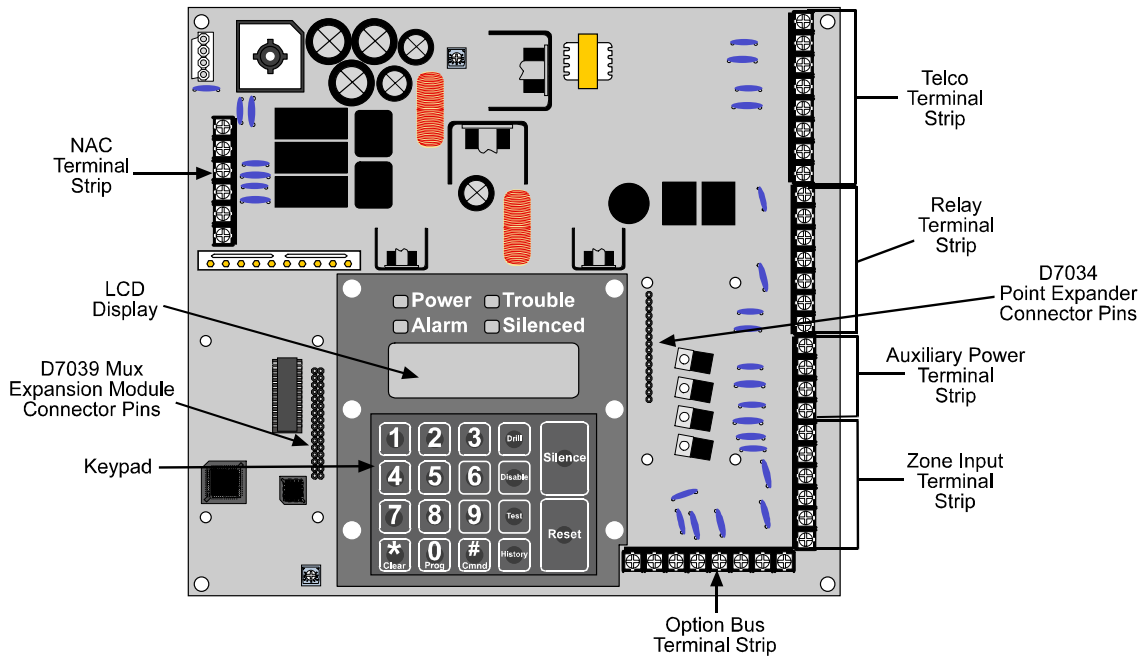


Figure 1: D7024 Control Board

2.2 Specifications

Temperature	Storage and Operating Temperature: +32° to +120°F (0° to +49°C)
Power	Input Power: 120 V, 60 Hz, 1.5 A (max. 2.0 A fused supply circuit)
	Notification Appliance Circuit (NAC) Power: Each NAC has 24 VDC nominal, unfiltered (special application) power with up to 2.5 A capacity (but limited by overall 4.0 A capacity). Refer to Technogram P/N: 34950 for compatible NAC devices.
	Auxiliary Power: 24 VDC nominal, unfiltered, 1.0 A (special application)
	Initiating Circuit (Smoke) Power: 24 VDC nominal, filtered, 1.0 A. Refer to Technogram P/N: 34445 for compatible smoke detection devices.
	Option Bus Power: 12 VDC nominal, 500 mA
	Optional Standby Batteries: Two 12 V (in series), 7 – 40 Ah
Notification Appliance Circuits (NACs)	Two on-board notification circuits - NAC 1 and NAC 2. These are 24 V outputs for notification devices with up to 2.5 A capacity (but limited by overall 4.0 A capacity) on each circuit. Wired for standard Class B, Style Y operation (use model D7015 Class B to Class A NAC Converter to convert to Class A, Style Z as needed).
	Configurable for patterns: steady, pulsing, ANSI "code 3", synchronized Wheelock, synchronized Gentex.
Relays	Local Relays: The main panel includes two Form "C" relays. The relay contacts are rated at 5 A, 28 VDC. No over current limiting is performed on the contacts of these relays. The default selection for the relays is to indicate general alarm and general system trouble. By programming them using point/zone mapping, they can be programmed to activate on a wide variety of conditions.
	Remote Relay Module (D7035): The D7035 is an Octal Relay Module that provides eight Form "C" relay outputs. It connects to the D7024 via the option bus. The outputs are fully programmable, exactly as the local relays are programmed. Each output operates independently of the other seven to provide complete flexibility. Communication with the D7035 is supervised.
	Contact Rating: 5 A @ 28 VDC Number of Modules: 2 units maximum Wiring Requirements: Refer to Section 4.2, Option Bus Wiring Requirements.

D7024

Overview

2.2.1 On-board Conventional Points

All on-board points, and points implemented with the D7034 work with two- or four-wire detectors. The system has an optional alarm verification feature.

Number of 2-wire Circuits	4 circuits, expandable to 8 using a D7034 Expander
Type of Circuit	Class B, Style B (use a D7014 Class A Zone Converter to convert to Class A, Style D as needed)
EOL Resistor	2.21k ohms (P/N: 25899, UL listed)
Supervisory Current	8 to 20 mA
Required Current for Alarm	25 mA
Maximum Short Circuit Current	44 mA
Maximum Line Resistance	150 Ω
Circuit Voltage Range	20.4 - 28.2 VDC
Maximum Detectors per Point	20 detectors (2-wire)
Total Detector Standby Current	3 mA maximum
Response Time	Either fast (500 ms) or programmable (from 1 to 89 seconds)
Dirty Detector Monitoring	Implements Bosch Security Systems Chamber Check™ and CleanMe™ protocol to monitor conventional loops for dirty detectors. CleanMe™ is a Trademark of SLC Technologies Inc..

All onboard points, and points implemented with the D7034 Four Point Expander, are continuously monitored for detectors signaling a dirty condition using the Bosch Security Systems Chamber Check™ and CleanMe™ protocol. To prevent nuisance reports, there is a two-minute delay before a dirty detector is annunciated, and a six-minute delay after the detector restores from the dirty condition before the panel will restore the condition.

2.2.2 Off-board Addressable Points (with D7039 Multiplex Expansion Module)

The D7039 Multiplex Expansion Module adds:

- Two Class B, Style 4 Signaling Line Circuits (SLCs)
- Each point is individually supervised for proper connection to the common bus (when over ten points are troubled, up to ten troubles will be shown per bus and the balance of the troubles will be indicated by a common bus failure message).
- Response time can be set to fast, or programmed from 1 to 89 seconds.

Input points on the SLCs are implemented with a D7042 Eight Input Remote Module.

2.2.3 Enclosure Housing

The standard enclosure is manufactured from 18 Ga., cold-rolled steel, and measures 15 in. (38.1 cm) Wide, by 20.75 in. (52.7 cm) High, by 4.25 in. (10.8 cm) Deep. A keyed lock is included, and the LEDs and LCD display are visible through the door.

2.2.4 Remote LCD Keypads

Maximum number of keypads 4 D7033 keypads.

Wiring Requirements Refer to Section 4.2, Option Bus Wiring Requirements.

Notes:

Installation and Setup

3.0 Installation and Setup

In the shipping box, you should find:

- One D7024 Control/Communicator in static-resistant bag
- One Enclosure with transformer
- One hardware pack
- One enclosure lock, washer, and keys
- Six End-of-Line (EOL) resistors

The hardware necessary for installing the control panel in the enclosure is located in the hardware pack.

3.1 Installing the Enclosure

Using the enclosure as a template, mark the top mounting holes on the mounting surface (see Figure 3).

Pre-start the mounting screws (not supplied) for these two holes. Slide the enclosure onto these screws so that the screws move up into the thinner section of the holes. Tighten the screws.

Screw in the remaining two screws in either set of bottom mounting holes.

Knock out the desired wire entrances on the enclosure.

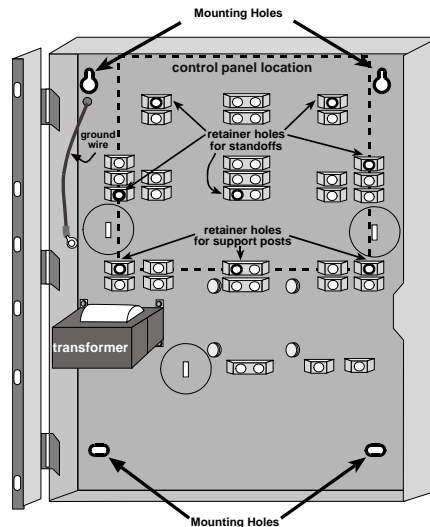


Figure 3: Enclosure Installation

3.2 Installing the Control/Communicator



The D7024 control board is static sensitive. Make sure you touch ground before handling the control board. This will discharge any static electricity in your body. For example, run the ground wire to the enclosure before handling the control board. Continue touching the enclosure while installing the control board.

Insert the three support posts in the retainer holes on enclosure (see Figures 3 and 4).

Press the 1/8" nylon standoffs (P/N: 30503) into the retainer holes (see Figures 3 and 4).

Slide the top of the control into the retainer tabs (the slots under the top of the frame). Once in the retainer tabs, the control will rest on the posts.

Secure the bottom of the control by screwing the two bottom corners through the support posts and through to the control retainer holes (see Figure 4).

Once the control board is installed, be sure to connect the supplied ground wire between the door and the enclosure using the supplied nuts. A second ground wire is provided for connecting AC power ground. Both grounds connect to the stud in the enclosure to the left of the circuit board.

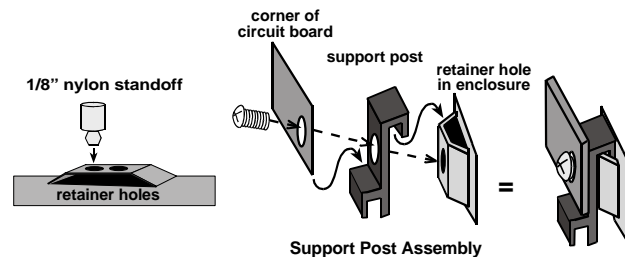


Figure 4: Standoff and Support Post Installation

3.3 Installing Optional Equipment

There are two expansion options that connect directly to the panel, and are automatically detected and supervised when the panel is re-powered:

- D7034 Four Point Expander
- D7039 Multiplex Expansion Module

When the panel is first re-powered after installing one of these options, the panel will display one of the following windows:

4Z EXP DETECTED
PRESS CLEAR KEY

NAC EXP DETECTED
PRESS CLEAR KEY

MUX DETECTED
PRESS CLEAR KEY

Press the **[Clear]** key to confirm the installation of the device and automatically set it up for supervision.

If the **[Clear]** key is not pressed during the power-up time-out period, the panel will resume operation using the last confirmed status of the affected expander, and display an installation error condition.



Expansion devices such as point expanders, NAC expanders and multiplex expanders will be disabled if they are removed from the panel configuration after installation. Once installed, it is not possible to disable supervision of these devices.

Refer to the installation instructions for these expanders for additional information.



When the D7039 Multiplex Expansion Module is first installed, in most cases the system will display an EEPROM fault. It is necessary to run the default procedure to synchronize the EEPROM on the expansion module with the EEPROM in the panel. Cycle power to the panel and re-install option bus devices after the default procedure.



Replacement of a D7039 Multiplex Expansion Module causes programming of expansion points and PINs to be lost. Reprogram all multiplex point and PINs if the D7039 is replaced.

When the D7039 is first installed, or anytime the panel is re-powered with a D7039 that has no points programmed into it, the system will automatically start the multiplex auto-programming process:

AUTO PROGRAM?
:YES(1)/NO(0)

Pressing the **[1]** key will start auto-programming, and pressing **[0]** will allow the panel to continue normal startup. The menu will automatically close with "NO" selected if no key is pressed after several minutes. Refer to Section 7.9.4 for detailed instructions for auto-programming mode.

Control Terminal Connections

4.0 Control Terminal Connections



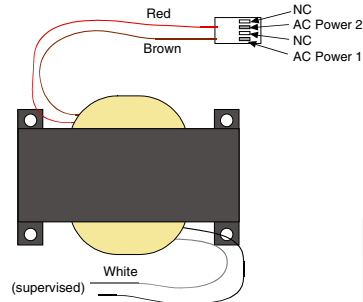
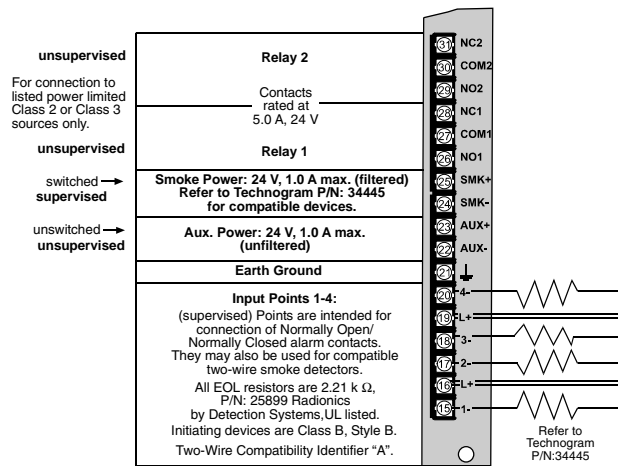
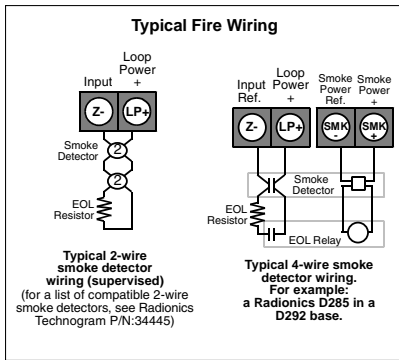
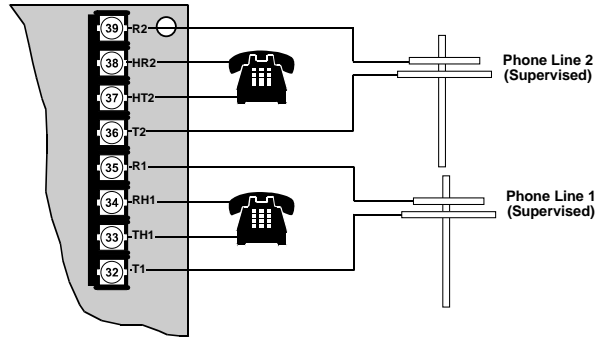
Incorrect connections may result in damage to the unit and personal injury.



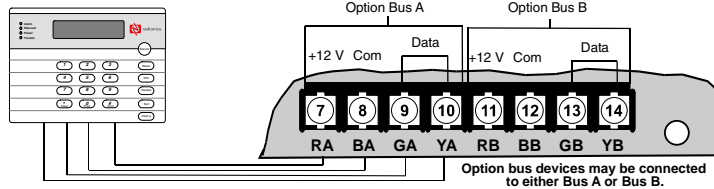
Before servicing this equipment, remove all power including the transformer, battery and phone lines.



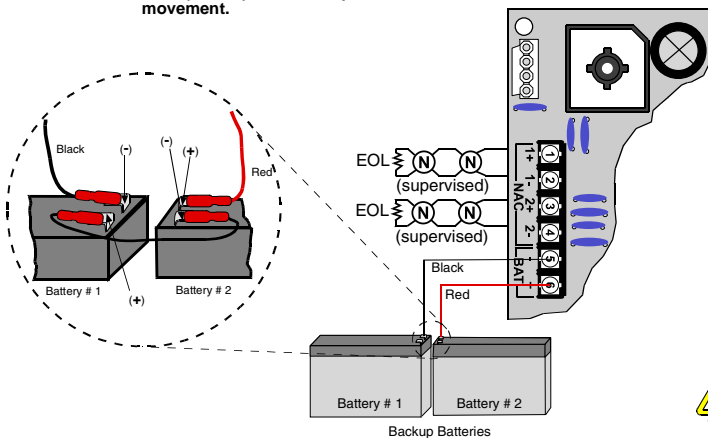
Shared cable is not recommended for option bus, telephone or NAC wiring.



All wiring except battery terminal and primary AC power is power-limited. Primary AC and battery wires must be separated from other wires by at least 1/4 in. (64 mm) and tied to prevent movement.



All option bus devices must be connected to the same bus, either Bus A or Bus B. Do not connect some devices to Bus A data terminals ("YA", "GA") and some to Bus B data terminals ("YB", "GB"). Power ("RA", "RB") and ground ("BA", "BB") terminals may be connected interchangeably to either set of terminals.



NAC 1+	NOTIFICATION APPLIANCE CIRCUIT: +24 V while in alarm; ground while in standby.
NAC 1-	Ground while in alarm; supervisory voltage while in standby.
NAC 2+	NOTIFICATION APPLIANCE CIRCUIT: +24 V while in alarm; ground while in standby.
NAC 2-	Ground while in alarm; supervisory voltage while in standby.
BAT -	BATTERIES: Requires two 12 V batteries, in series, for a combined voltage of 24 V. Charge current = 1.1 A, max.
BAT +	

Use only indicating devices as listed on Technogram P/N: 34950.



Do not short terminals - explosion and burn hazard.

Figure 5: D7024 Control Terminal Connections



These menu items are only allowed at the local keypad.

The following window will appear:

OPTION BUS (M/M)
1- UPDATE BUS 2- SETUP KEYPDS

Press [1] to program system to update bus. After you have programmed Update Bus, the following window will appear:

UPDATE COMPLETE TOT BUS DEVS: X

Then the previous window will appear.

7.3.3.2 Setup Keypad



Shortcut: 0-PROG, 3-PROG SYSTEM, 4-OPTION BUS

This feature tells the system how many keypads should be supervised. It automatically performs an update bus operation as it completes.

OPTION BUS
1- UPDATE BUS 2- SETUP KEYPDS

Press [2] to set up keypads. The following window will appear:

OF KEYPADS (__) (0-4): ____

Enter the desired value and press [#]. The current setting is displayed in parentheses on the first line. After you set up the keypads, the update bus operation proceeds (see above), then the previous window will display.

7.3.4 PIN REQUIRED

7.3.4.1 Local



Shortcut: 0-PROG, 3-PROG SYSTEM, 5-PIN REQUIRED?

A PIN can be required before operations can be performed using the local, built-in keypad.

The following window will appear:

PIN REQUIRED?
1- LOCAL 2- REMOTE

Press [1] to require a PIN at the local keypad. The following window will appear:

LOCAL KEYPD PIN? __:YES(1)NO(2)

Press the number key that corresponds to your selection. The current setting is displayed in front of the colon on the second line. After making your selection, the previous window will display.

7.3.4.2 Remote



Shortcut: 0-PROG, 3-PROG SYSTEM, 5-PIN REQUIRED?

The following window will appear:

PIN REQUIRED?
1- LOCAL 2- REMOTE

D7024

Panel Programming

Press [2] to select remote PIN. The following window will appear:

REMOTE KYPD PIN? ___: YES (1) NO (2)

Press the number key that corresponds to your selection and press [#]. The current setting is displayed in front of the colon on the second line. After you select the PIN requirement, the previous window will display.



A PIN can be required before operations can be performed using the remote keypads on the option bus. If the remote keypads are not otherwise secured, this option must be set to YES to comply with NFPA and Local requirements.

7.3.5 Remote Programming



Shortcut: 0-PROG, 3-PROG SYSTEM, 7-REMOTE PGM

Remote programming allows the panel to be called from a remote site by phone to reconfigure any of the programmable options. When remote programming is disabled, it is still possible to connect to the panel for diagnostics and to view the current program, except for PIN numbers which are suppressed while remote programming is disabled.

REMOTE PGM
0- DISABLE 1- ENABLE

Press [0] to select DISABLE or [1] to select ENABLE, and the previous window will display.



After any programming change, and especially after remote program changes, a complete functional checkout of the operation of the control unit is required. Hazards to life and property may result if the system is not tested to detect possible improper programming.

7.4 PROG INPUTS

PROG INPUTS
1- POINT NUMBER 2- POINT FUNCT 3- POINT COPY



Version 2.0 of the firmware introduces the concept of “point functions.” Point functions allow quick programming of similarly functioning points (for example, pull stations, smoke detectors) with common settings. See Section 6.1.1, “Point Function”, for more information.

7.4.1 Point Number



Shortcut: 0-PROG, 4-PROG INPUTS, 1-POINT NUMBER

POINT NUMBER (1-255): ___

Enter the point number you wish to program and press [#]. Once you have entered the point number, the display will scroll through the following PROG INPUT options:

PROG POINT
0- FUNCTION 1- ALARM/TROUBL 2- OUTPUT ZONE 3- VERIFICATION 4- LATCHING 5- DESCRIPTION
<DRILL> NEXTPNT <HIST> PREV PNT

7.6.2.2 Dialing Type



Shortcut: 0-PROG, 6-PROG ACC'NTS, 2-PHONE CONTROL

This feature determines what format the panel will use for dialing on each phone line. The tone/pulse setting will first try tone dialing, and if that fails, will switch to pulse dialing.

Choose Line 1 or Line 2. The display will scroll through the Phone Control options. Press [2] for DIALING TYPE. The following window will display:

PHONE CONTRO (_)
1- PULSE ONLY
2- TONE/PULSE
3- TONE ONLY

Press the number key that corresponds to your selection. The previous window will be displayed.

7.6.3 Report Steering



Shortcut: 0-PROG, 6-PROG ACC'NTS, 3-RPT STEERING

Different classes of reports can be directed to different phone numbers. Non-supervisory alarms include fire alarms, waterflow alarms and monitor alarms. Supervisory alarms come from points configured as a supervisory type. Non-supervisory restorals include fire, waterflow and monitor restorals. Supervisory restorals come only from points configured as a supervisory type. Trouble reports include all point and system troubles and restorals. Tests include auto tests, manual tests and off-normal at test reports. The panel allows the special reports "silence", "reset" and "drill" to be individually directed.



If any reports are steered to Phone Number 2 (including the default, "phone 2 backup"), a phone number and account number must be programmed for Phone Number 2. The panel will indicate a "comm fault" if it sends a report (using phone number 1 parameters) which references unprogrammed Phone Number 2 parameters.

The display will scroll through the following items:

REPORT STEERING
1- NONSUP ALRM
2- SUPVSRY ALRM
3- NONSUP RSTR
4- SUPVSRY RSTR
5- TROUBLE
6- TESTS
7- SILENCE
8- RESET
9- FIRE DRILLS

Press the number key that corresponds to your selection. The following window will display (with varying headings, depending on your choice. In this example, non-supervisory alarm is selected):

NONSUP ALRM (_)
1- PHONE 1 ONLY
2- PHONE 2 ONLY
3- PHON 1 AND 2
4- PHN 2 BACKUP
5- NO REPORT

- **PHONE 1 ONLY:** Report sent to Phone #1 only.
- **PHONE 2 ONLY:** Report sent to Phone #2 only.
- **PHONE 1 AND 2:** Report sent to Phone Numbers 1 and 2.
- **PHONE 2 BACKUP:** Report sent to Phone #1, then to Phone #2 if #1 fails.
- **NO REPORT:** No report sent.

Press the number key that corresponds with your selection. The previous window will be displayed.

Panel Programming

7.6.4 Ring Count



Shortcut: 0-PROG, 6-PROG ACC'NTS, 4-RING COUNT



IMPORTANT

It is recommended that the number of phone rings before the panel will seize the line to attempt remote programming be left set to "0".

The following window will display:

```
RING COUNT
(01-15, 00=DIS) ____
```

Enter the information and press [#/Cmd]. The previous window will be displayed. An entry of [0] + [0] will disable ring detection.

7.6.5 Communication Tries



Shortcut: 0-PROG, 6-PROG ACC'NTS, 5-COMM. TRIES

The system will always attempt ten times to communicate an event. The parameter determines after which attempt the system will indicate a failure condition. Do not select 1 as a failure will be indicated whenever a report is sent.

The following window will display:

```
COMM ATTMPTS (__)
(01-10): ____
```

Enter the information and press [#]. The previous window will be displayed.

7.6.6 Machine Bypass



Shortcut: 0-PROG, 6-PROG ACC'NTS, 6-MACH BYPASS

The downloading computer can dial back to connect for downloading if an answering machine answered the phone before the control. When this option is selected, if the control detects the phone line ringing within one minute of when the last ringing cycle stopped, then it will answer on the first ring and seize the phone line.

The following window will display:

```
MACHINE BYPASS
____: YES (1) NO (0)
```

Enter the information and press [#]. The previous window will display.

Notes:

Installation Guide for System

8.0 Installation Guide for System

8.1 D7024-EXP

The control panel should be installed in accordance with Local Code for Commercial Fire installations.

8.2 Installation Considerations

Failure to install and program the control in accordance with the requirements in this section voids the listing mark of Underwriters Laboratories, Inc.

The standby battery capacity is 40 Ah @ 24 VDC.

The total nominal current must not exceed 1140 mA in standby nor 4 A when in alarm.

The control must be mounted indoors and within the protected area.

Grounding must be in accordance with article 250 of the NEC (NFPA 70).

Points must be connected to UL Listed, compatible devices.

The ground wire provided with the enclosure must be connected between the door and the enclosure using the supplied nuts.

The ground start feature shall not be programmed.

Phone monitoring must be selected if the DACT (Digital Alarm Communicator Transmitter) feature is used.

8.3 Programming the D7024



The system must be tested after installation and after any re-programming, including programming performed by downloading.

When used in UL Listed installations, the control must conform to certain programming requirements. The following is a list of the required program entries and required accessories for specific UL Listed installations.

8.3.1 Commercial Fire Alarm (Central Station [DACT] and Local)

8.3.1.1 Required Accessories

At least one Bosch Security Systems Model D285 smoke detector with a D287, D288, D292, or D293 Series base; or another Listed compatible smoke detector.

At least one Bosch Security Systems D432A horn/strobe or D443 bell (will provide 85 dB for UL985 and NFPA 72 requirements; other Listed compatible devices with a voltage range of 20 to 31 VDC may be used) is required for this application and must be installed inside the protected area.

Four-wire detectors must be used with Listed power supervision devices. A compatible Listed 4-wire detector is the Bosch Security Systems D285 in a D292 or D293 Series base. A compatible Listed EOL relay is the Bosch Security Systems D275.

All points must be used with the EOL resistor provided.

8.3.1.2 Report Programming

Non-supervisory and supervisory reports must be programmed for those points used.

Trouble reports must be programmed.

AC failure report delay must be set for 25% of estimated standby time, or set to report at 25% depletion of battery capacity.

Automatic test report frequency must be set at least every 24 hours.

8.3.1.3 Timer Programming

Auto silence time must be programmed for not less than five minutes, or to "0" to disable auto-silence operation.

8.3.1.4 Point Programming

For fire points: open = trouble, latching.

8.3.1.5 Alarm Output Programming

Notification appliance circuits must be programmed to activate from the appropriate input points.

8.3.1.6 Communications Programming (if Used for Central Station Service)

A communication format compatible with the central station must be selected.

Monitoring of both phone lines must be enabled.

8.3.2 Accessory Devices

8.3.2.1 D132B Multi-use Reversing Relay Module

The D132B is a multi-purpose, fully configurable, smoke power-reversing module for activating detectors with local annunciation. The D132B will operate both two-wire and four-wire circuits, and it will also work with Class A or Class B initiating circuits. An alarm latch connection is provided to allow an initiating loop to be held in alarm after the detector loop power has been reversed to activate any sounders. The D132B does not affect compatibility between the FACP and detectors, or the FACP and Notification Appliance Circuits (NACs). Refer to the *D132B Installation Guide* (P/N: 40895) for detailed installation instructions for the D132B module. One of the installation options shown in the D132B Installation Guide is also shown below for reference:

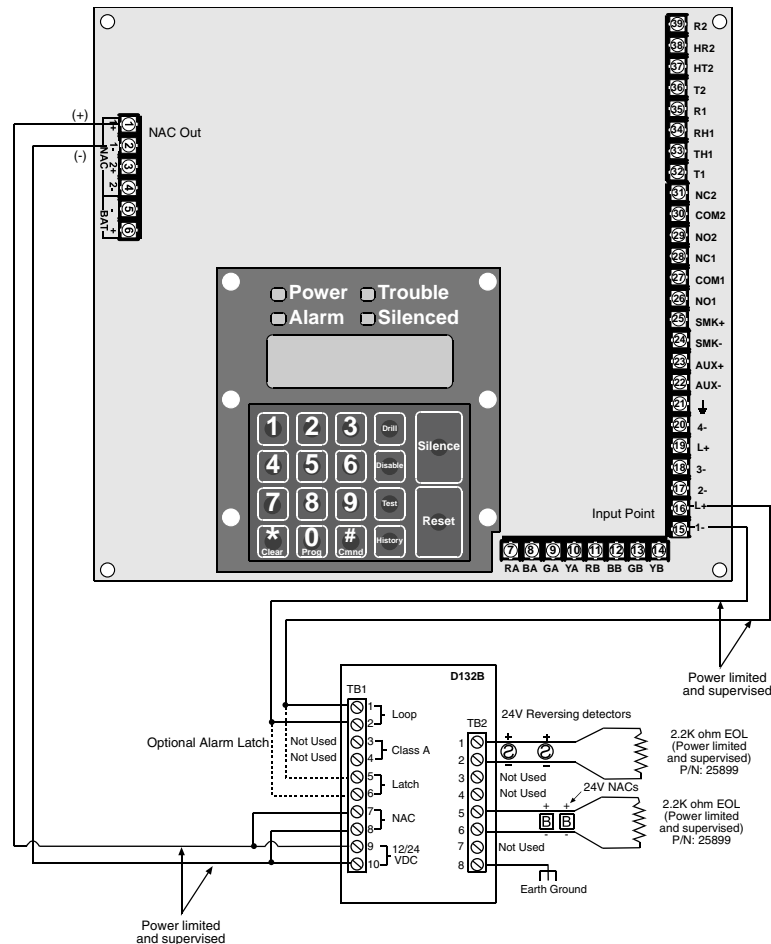


Figure 13: Wiring the D132B

D7024

Installation Guide for System

8.3.2.2 D184A Local Energy Kit

The D184A is a UL Listed module that connects local energy signaling devices to the D7024 for auxiliary service operation. Refer to the *D184A Installation Guide* (P/N: 41175) for more information.

8.3.2.3 D185 Reverse Polarity Module

The D185 Reverse Polarity Module is a UL Listed module that connects the control panel with either a single set or a pair of leased Telephone Company (Telco) lines in NFPA 72 remote station applications. It relays system alarm status information from the panel to a monitoring station. The D185 operates with either 12 or 24 VDC supply.

The module can signal alarm, trouble, and supervisory conditions (refer to *D185 Installation Manual* (32906) for details). The diagram below shows the module being used to signal alarm and trouble conditions only. With a third relay (available from the 8-relay expansion module) and an additional leased line, supervisory conditions can also be signaled.

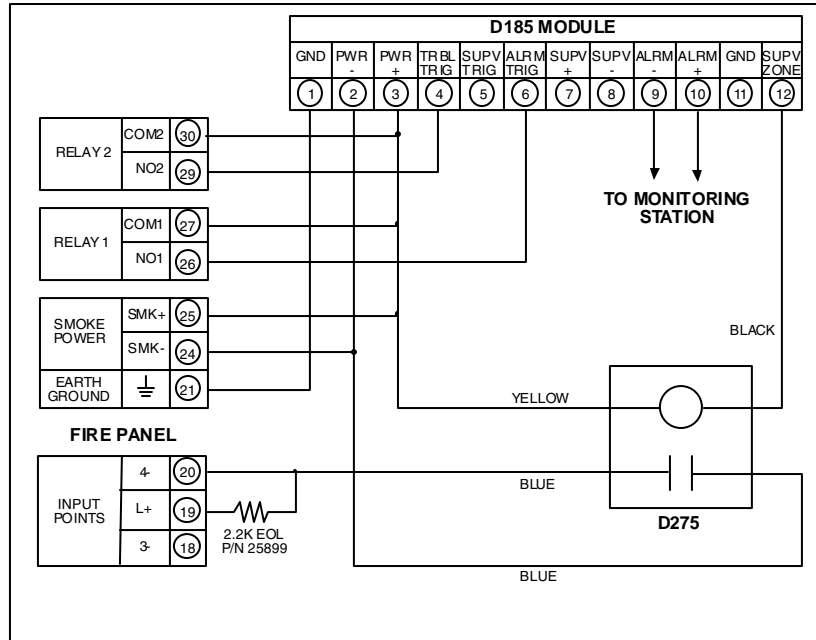


Figure 14: Wiring the D185

- In this example, Relay 1 must be programmed to operate on Alarm (Zone 63) and Relay 2 must be programmed to operate on Trouble (Zone 62). Input 4 should be programmed as a MONITOR point. Any alarm will cause the voltage to the monitoring station to be interrupted. Placing the D185 in test mode will cause a MONITOR TROUBLE 4.

Notes:

Fire Safety

9.0 Fire Safety



No fire detection device or system should be considered 100% foolproof.

This fire alarm system can provide early warning of a developing fire. Such a system, however, does not ensure protection against property damage or loss of life resulting from a fire. Any fire alarm system may fail to warn for any number of reasons (e.g. smoke not reaching a detector that is behind a closed door).



This system must be regularly tested (when installed, when modified and at least annually thereafter) to ensure continued performance.

When considering detectors for residential applications, refer to NFPA Standard 72, "The National Fire Alarm Code." This standard is available at a nominal cost from: The National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

9.1 Smoke Detector Layout

9.1.1 General Considerations

Proper location of detection devices is one of the most critical factors in a fire alarm system.

Smoke detectors should **not** be installed in "dead air" spaces or close to ventilating or air conditioning outlets because smoke may be circulated away from the detector. Locations near air inlets should be favored.

Avoid areas subject to normal smoke concentrations such as kitchens, garages, or near fireplaces.

Do not install smoke detectors where normal area temperatures are above 100°F (38°C) or below 32°F (0°C).

Areas of high humidity and dust concentrations should be avoided.

The edge of ceiling mounted detectors should be no closer than 4 inches (10 cm) from any wall.

Place the top edge of wall mounted detectors between 4 and 12 inches (10 and 30 cm) from the ceiling.

For exact mounting information, refer to the instructions provided with the smoke detectors.

9.1.2 If Installed in Family Residences

Providing a Fire Warning System: Most fire deaths occur in the home, especially during sleeping hours. The minimum level of protection requires smoke detectors to be installed outside of each separate sleeping area and on each additional story of the dwelling.



For added early warning protection, it is recommended that detectors be installed in all separated areas including the basement, bedrooms, dining room, utility room, furnace room, and hallways.

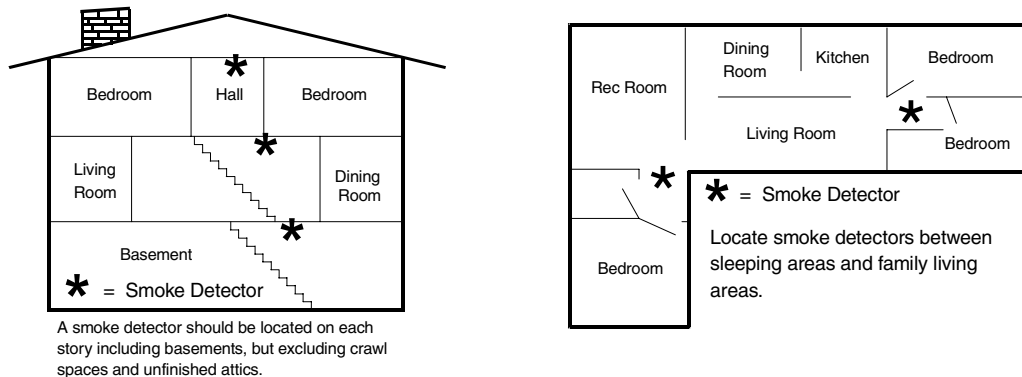


Figure 15: Smoke Detector Location in Residential Settings