

SILENT KNIGHT
MODEL 4720
CONTROL/COMMUNICATOR
INSTALLATION MANUAL
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1 INTRODUCTION

The Silent Knight Model 4720 is a combination Control/Communicator which features 16 internal zones. Through the use of Zone Expanders, the 4720 can have up to 80 zones. The zones can be programmed for a wide variety of functions. The Model 4720 can be used in both residential and commercial applications depending on the peripherals and programming options selected. All programming options are stored in an Electrically Erasable PROM (EEPROM), which prevents the loss of information when all power is removed, and can be reprogrammed up to 1000 times. Programming is accomplished through the use of full function keystations, the Model 5520 Programmer or downloading from a Computer.

This manual discusses the capabilities and the installation and programming procedures for the Model 4720. This section describes the features and accessories. Sections 2 through 13 explain how to install the Model 4720 and its accessories. Programming and system operation are discussed in Sections 14 through 21. Section 22 explains the various trouble and error messages that may be displayed on the keystation's LCD display. Other troubleshooting concerns are addressed in Section 23.

1.1 FEATURES

Downloading Capability * 100 Access Codes * 15 Door Access Control * 16 Zones Expandable to 80 Zones * Full Zone Annunciation with Zone Number and English Language for Each Zone * 11 Zone Reporting Types * 3 Panic Key Zones * Follower Zone Option * Supervised Zones * Automatic Battery Charging Circuit And Battery Test * 5 Dialer Formats Including New SIA Format (see NOTE below) * 4 Phone Numbers * Touch-Tone and Rotary Dialing * Built In Siren Driver * Maid's Code Option * Lighted Keypads * Audible Touchpad Annunciation * Chime/Interior Touch Switch * Instant Touch Switch * Alarm Memory * Exit/Entry Delay * Dialer Test * System Test * Programmable Delay Times * Alarm Shutdown/Reset * See Programming Manual for a Variety of Programming Options.

NOTE: The Security Equipment Industry Association (SEIA) has changed its name to the Security Industry Association (SIA).

1.2 ACCESSORIES

NOTE: Seven keystations are being replaced by newer models. The Model 4200 is being replaced by the Model 4203, the Model 4220 by the Model 4223, the Model 4320 by the 4323, the Model 4430 by the 4433, the Model 4530 by the 4533, the Model 4550 by the Model 4553, and the Model 4560 by the Model 4563. (Models 4200, 4203, 4220, 4223, 4320 and 4323 are not recognized by Underwriters Laboratories.) The Model 4145 Intercom Station has been replaced by the Model 4143. The Model 4540 keystation has been discontinued.

On the new keystations, the <SHUNT> key has been renamed the <BYPASS> key and the <NOT READY> key has been renamed the <STATUS> key. Throughout this manual, the old key name or model number will be shown in parentheses after the new name or model number.

- | | |
|------------|---|
| Model 4110 | Serial 2 Wire Zone Expander (60 zones) - For use with Model 4100 and 4101 Smart Sensors. |
| Model 4120 | Multiplexed Zone Expander, 8 X 8 matrix (64 zones). |
| Model 4130 | RF Zone Expander (64 Zones) - Must be used with the Model 4135 Remote Receiver (Model 4130 is connected to the 4135 via 4-conductor cable). |

- Model 4135 Remote RF Receiver - Used with the Model 4130 RF Zone Expander.
- Model 4140 Intercom/Telephone Controller - This model must be used if the intercom and/or telephone feature will be used.
- Model 4143 Intercom Station - This model can be used in such places as
(4145) entrances to talk to visitors (Requires Model 4140).
- Model 4150 External Control Module - This module may be used for remote control of doors, timed control of lights and remote sensing of temperature, humidity, fluid level and air flow.
- Model 4160 Supervised Bell Module - This module must be used when installing the 4720 for NFPA 72A.
- Model 4165 Transformer Housing for NFPA installations.
- Model 4175 Dual Phone Line Monitor With Ring Detector - Used in applications where two phone lines are required.
- Model 4180 Status Display Module. (Interface to Long Range RF or Derived Channel.)
- Model 4184 Audible Watchdog Trouble Module. Provides backup supervision of control and keystations. Required for NFPA 72A.
- Model 4190 Power Line Carrier (PLC) Interface - This model must be used in conjunction with the Model 4260 Desk Top PLC Keystation.
- Model 4195 Auxiliary Power Supply and battery Charger - Provides an additional 1.75 A of power in addition to the built-in supply. Required for NFPA 72A.
- Model 4203 Slimline Keystation - Weather resistant for outside use.
(4200) Used for arming, disarming and 4150 Relay Access.
- Model 4205 Weather resistant, Slimline Door Access Keypad.
- Model 4223 Medium-Sized Commercial Remote Keystation with LED Display.
(4220)
- Model 4260 Residential Desk Mount Keystation with LCD Display. Used with the Model 4190 PLC Control.
- Model 4300 Card Reader.
- Model 4323 Medium-Sized Residential Keystation with LED Display.
(4320)
- Model 4360 Desk Top Adapter - This angled back-base adapts the Model 4553 residential wall mount keystation to Desk Top use but does not use the PLC interface.
- Model 4420 Door Access Module.
- Model 4433 Medium-Sized Commercial Remote Keystation with LCD Display.
(4430)
- Model 4533 Medium-Sized Residential Keystation with LCD Display.
(4530)
- Model 4540 Large Residential Keystation with LCD Display and Speaker.
- Model 4553 Large Residential Keystation with LCD Display, and
(4550) Intercom/Telephone capability.
- Model 5255 On-Site Printer.

- Model 5520 Silent Knight EEPROM Programmer.
- Model 5530 MODEM (allows downloading from the 5520 Desk Top Programmer or from a computer).
- Model 5540 Downloading Software - requires Model 5530 MODEM and an IBM PC or compatible.
- Model 6712 6.5-A Rechargeable Battery.
- Model 7367 Two-Way Audio Listen-In Module.

2 PRECONNECTION REQUIREMENTS

2.1 TELEPHONE REQUIREMENTS

1. If requested by the telephone company, the following information must be provided before connecting this device to the phone lines:
 - A. Manufacturer - Silent Knight
 - B. Model Number - 4720
 - C. FCC Registration number - AC698R-69183-AL-R
 - D. Type of jack (to be installed by the telephone company) - RJ31X

NOTE: The telephone company must also be notified if this device is permanently disconnected.

2. This device may not be directly connected to coin telephone or party line services.
3. The telephone company under certain circumstances may temporarily discontinue services and/or make changes in its facilities and services which may affect the operation of this device; however, the telephone company is required to give adequate notice in writing of such changes or interruptions.
4. This device cannot be adjusted or repaired in the field; in case of trouble with the device notify the installing company or return to:

Silent Knight Security Systems
7550 Meridian Circle
Maple Grove, MN 55369-4927
612-493-6455
800-328-0103

5. If installed in accordance with UL 864, this device must be used with loop start systems only.

2.2 FCC REQUIREMENTS

WARNING: This equipment generates and uses radio frequency energy and if not installed and used in strict accordance with this manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required, at his own expense, to take whatever measures may be required to correct the interference.

2.3 UL INSTALLATION REQUIREMENTS

The following is a list of requirements and restrictions which must be followed when installing the Model 4720 Control/Communicator in a UL installation.

2.3.1 HARDWARE

2.3.1.1 HARDWARE REQUIREMENTS

1. The Model 4433 (4430) Commercial Keystation must be used.
2. All doorstrike wiring must be restricted to the same room (30 feet max.) as the keystation.

2.3.1.2 HARDWARE RESTRICTIONS

The following models are **NOT** acceptable in UL applications:

Model 4130 Zone Expander (RF)	Model 4260 Desk Top Remote Keystation
Model 4135 Remote Receiver (RF)	
Model 4190 PLC Interface	Model 4223 and 4323 LED Keystations
Model 4203 (4200) Slimline Keystation	Model 7367 Two-Way Listen In Module

2.3.2 PROGRAMMING OPTIONS

2.3.2.1 PROGRAMMING REQUIREMENTS

1. The TOTAL ATTEMPTS option must be set between 5 and 10 attempts.
2. The AUTO TEST and DAILY TEST options must be enabled in commercial fire and burglary applications.
3. The AUDIBLE SHUTDOWN option must be programmed to the following minimum values:

HOUSEHOLD FIRE: 4 min.	COMMERCIAL BURGLARY: 15 min.
HOUSEHOLD BURGLARY: 4 min.	COMMERCIAL FIRE: 5 min.
4. The BELL TEST AT ARMING option or the RINGBACK AT CLOSING must be selected.
5. Both medical hardwire loops and keypad zones must be programmed as silent.

2.3.2.2 PROGRAMMING RESTRICTIONS

1. The following options **MAY NOT** be selected for any UL installations:
FORCE ARM
AUTO CLOSE
AUTO OPEN
LISTEN TIME
SILENT NIGHT TROUBLE
2. The factory default code (1-2-3-4-5-6) must **NOT** be used as an access code.

2.3.3 NFPA 71 AND 72A INSTALLATIONS (UL 864)

All commercial fire installations must comply with the following, plus the separate requirements for NFPA 71 or NFPA 72A or both; whichever applies.

1. The models listed below are required:

Model 4433 (4430) Remote Keystation (1 or More)	*Model 4195 Auxiliary Power Supply (Includes 1 Model 9220)
*Model 4165 UL Transformer Enclosure (2)	Model 6712 Rechargeable Battery (2)

*These items are available as a kit by ordering one Model 4722.

2. All wiring to and from the 4720 cabinet must be enclosed in conduit.
3. The AC LOSS HOURS option must be set between 6 and 12 hours.
4. The Model 4195 and two batteries must be used.
5. Total stand-by current must not exceed 350 mA.
6. Each Model 9220 must be installed inside of a Model 4165 transformer housing.
7. The two <*> (panic) keys must be disabled for commercial fire applications.
8. Because Codes 0 and 1 can activate the WALK TEST Mode, which prevents alarms from responding, these codes must **NOT** be given to the user in UL fire applications.

2.3.3.1 NFPA 71 INSTALLATIONS

The following additional requirements must be met for UL Certificated fire communicator installations:

1. The following additional model is required:

- Model 4175 Dual Line/Monitor
2. The 2 PHONE LINES option **MUST** be selected.
 3. The GROUND START option **MUST NOT** be selected.
 4. The LINE MONITOR option **MUST** be selected and the Model 4175 Dual Phone Line Monitor must be installed.

2.3.3.2 NFPA 72A INSTALLATIONS

1. The following models are required:

- *Model 4160 Supervised Bell Module
*Model 4184 Watchdog Trouble Module
2. The Model 4160 must be used to supervise the bell(s).
 3. The Silent Knight Model 4184 watchdog module must be used to monitor for the interruption of program cycle and wire-to-wire faults in the keystation wiring.

2.3.4 GRADE A MERCANTILE REQUIREMENTS (UL 365)

The following requirements must be met for UL Certificated Grade A Mercantile installations:

1. A Listed tamper switch must protect the inside front door of the enclosure; this switch must be connected to an intrusion input zone of the control unit which is programmed as a perimeter zone.
2. A separately Listed Ademco AB-12 Bell In Box must be used with the control unit.
3. The tamper switches of the alarm bell must be connected to a 24HR zone. No other initiating devices may be connected to this loop. The outer housing of the bell box must be grounded. The bell circuit should be installed in accordance with UL 861.
4. All bell wiring must be run in its own conduit and it must be connected to the control unit using its own knockout hole.
5. The 4720 may be used with any UL Listed receiver that can accept one of the 6 Model 4720 formats.
6. The Model 5255 printer must be used when the EXCEPTION OP/CL option is selected.
7. All unused knockout holes must be plugged using bolts and washers (available from Silent Knight, Model 7600, 6 sets per package). To do this, follow the directions below (see Figure 2.3.4A).
 1. Remove all unused knockouts.
 2. Install the Carriage Bolt and three washers as shown in the diagram below.
 3. Firmly tighten the wing nut.

NOTE: *The smallest washer should be placed on the inside of the hole in the cabinet.*

8. Four screws #6-32 x 1 $\frac{1}{2}$ " must be placed in the 4720 cabinet cover to increase the panel's attack resistance.

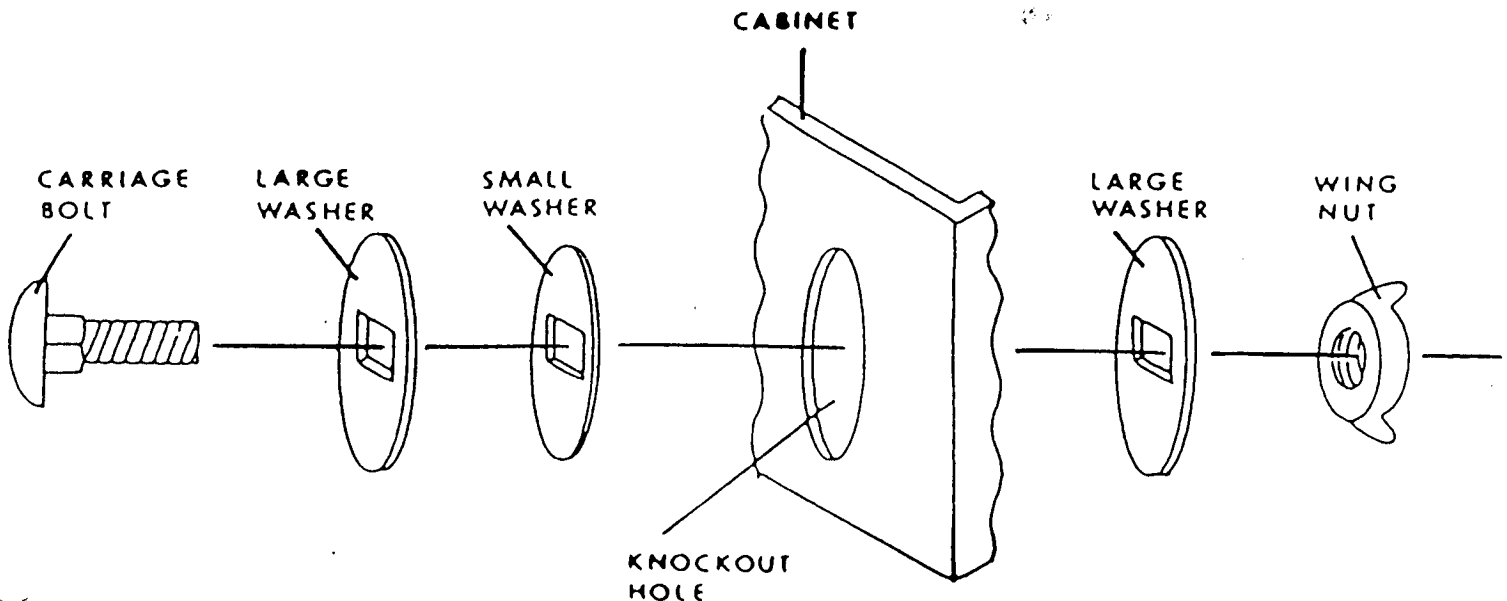


FIGURE 2.3.4A: KNOCKOUT PLUG INSTALLATION DIAGRAM

NOTE: Because of the tamper switch on the 4720 cabinet, an alarm will occur when installing the battery, since the door must be open when power is applied. There are two ways of dealing with this:

- 1. Let the alarm occur, then close and lock cover. Go to a keystation and press <MUTE> <MUTE>, then enter your code to reset the alarm. To reset the dialer, press <3> <TEST> <code>. Finally, to set the time, press <9> <TEST> <code>.*
- 2. Before connecting the battery, close the cover, then connect the 9220 transformer. Go to a keystation and set the time (or press <MUTE> <MUTE>), then press <2> <TEST> <code>. The LCD will display "WALK TEST". In this mode, all zone inputs are ignored, and you may open the 4720 cabinet and connect the battery. After closing the cover, press <MUTE> <MUTE> to resume normal operation.*

NOTE: During a WALK TEST, the system will not respond to real fire alarms.

2.3.5 FIRE SYSTEM TEST PROCEDURE FOR UL-985 SYSTEMS

In a residential fire system, it is required to periodically test the bell or bells on stand-by power only. This test must be performed weekly according to the following procedure:

1. Call the central station and report that you are going to conduct a test.
2. Make sure that the system is not armed.
3. Remove the 2 screws which secure the power transformer enclosure cover (Model 4165 enclosure).
4. Unplug the transformer from the 120-V_{AC} receptacle.
5. Press TEST, followed by the access code, at the keystation. The bell or bells should sound for a few seconds. The test will be recorded at the Central Station.
6. Plug the transformer back into the receptacle.
7. Replace the enclosure cover and secure with the 2 screws. This completes the test procedure.

NOTE: While the transformer is unplugged, the system may sound AC trouble. If this situation should occur, press <MUTE> <MUTE> to silence the trouble. The trouble will automatically clear within 1 minute after the transformer has been reinstalled.

3 CONTROL PANEL DESCRIPTION

CAUTION: To avoid the risk of electrical shock, DO NOT apply power to the Model 4720 until told to do so in this manual.

Figure 3A represents the Model 4720 printed circuit board. This board contains the switches, fuses, electronic components and connectors needed to install, monitor and protect the system. The following paragraphs describe components that the installer will have to connect, program, adjust, or periodically replace.

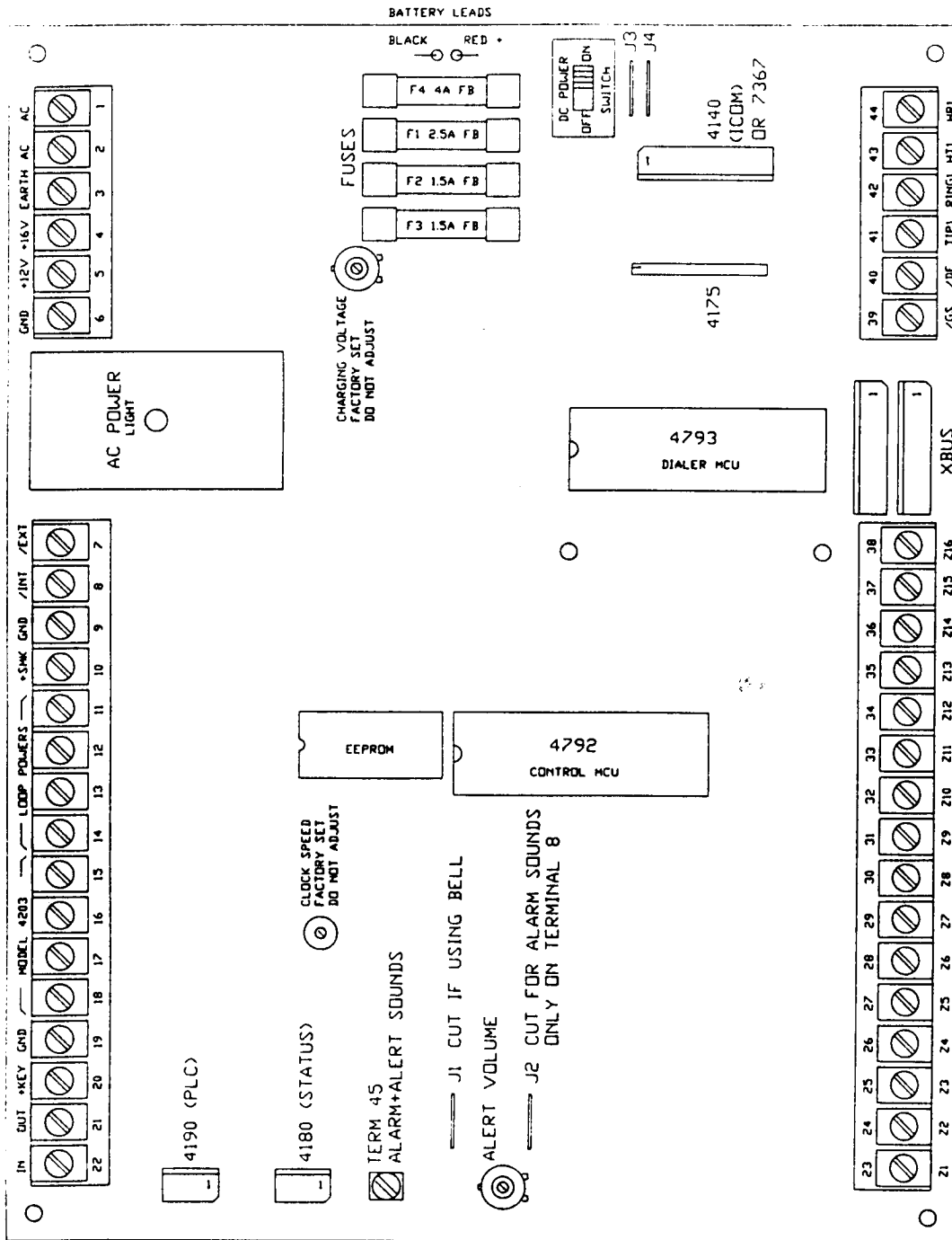


FIGURE 3A: 4720 PRINTED CIRCUIT BOARD

3.1 BATTERY CABLES

The Red (+) and Black (-) Battery Cables are used to connect a 12-V_{DC} rechargeable battery (not provided) (Silent Knight Model 6712) to the system. The battery provides backup power to the 4720 in the event of AC power interruptions.

CAUTION: Observe proper polarity when connecting the battery cables of the 4720.

NOTE: The Model 6712 12-V, 6.5-AH battery will provide at least 24 hours of stand-by operation to the basic 4720 system. The use of accessories may reduce this time so that additional battery capacity may be needed.

NOTE: If the AC transformer is unplugged for more than 24 hours, the battery must be disconnected to prevent it from being discharged.

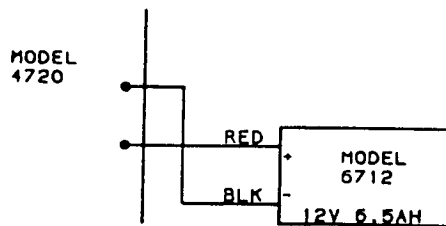


FIGURE 3.1A: BATTERY CONNECTION

3.2 DC POWER SWITCH

The DC power switch is used to remove DC power from the circuitry of the 4720. When this switch is in the OFF position with AC connected, the only thing that remains functional is the battery charging circuit. If AC is not connected, the stand-by battery should not be connected, as leakage current through the charging circuit could discharge the battery over a period of time. See Section 3.11.3 for information on enabling and disabling the DC power switch.

3.3 FUSES

F1 is a 2.5-A Fast Blow Fuse that provides over-current protection for an AC Siren Speaker connected to Terminal 4 of the 4720.

F2 is a 1.5-A Fast Blow Fuse that provides over-current protection for keystations and any accessories connected to Terminal 5 of the 4720.

F3 is a 1.5-A Fast blow fuse that provides over-current protection for expansion modules and smoke detectors connected to Terminal 10 of the 4720.

F4 is a 4-A Fast blow fuse that provides over-current protection to the battery.

CAUTION: To avoid fire hazards, the 4720 is designed with backup nonreplaceable fuses in series with the replaceable fuses (power-limited design). It is **VERY IMPORTANT** that you replace fuses with **FAST-BLOW** type fuses with the **SAME AMP** rating as the old fuse. If you replace a fuse with a higher-rated or slow-blow type fuse, *the nonreplaceable fuse will blow*, and the panel will have to be returned to the factory for repair.

NEVER put a jumper across any fuse. A jumper across a replaceable fuse will cause one of the nonreplaceable fuses to blow. A jumper across a nonreplaceable fuse could cause a fire.

When a replaceable fuse blows, find the cause of the excess current by (1) using an ohmmeter and (2) replacing the fuse, then connecting up one device at a time to see which device causes the fuse to blow. Repair the short, then replace the fuse with the same type and rating. Keep spare fuses in your tool kit.

3.4 EARTH GROUND WIRE

The magnetic field of a nearby lightning strike can induce damaging currents in the wiring of an alarm system. Even distant strikes can affect the panel through the AC or telephone wiring. The 4720 has built-in transient protection devices, but in order to work, they must be able to shunt the transient currents to earth ground. The green Earth Grounding wire (included) must have one end installed under one of the 4 mounting screws of the 4720 printed circuit board. The other end must be connected to a good earth ground. If this is not available via the ground wire of the building's 3-conductor AC wiring, then a separate heavy gauge wire should be run to a metal cold water pipe or grounding stake. This wire should be run as short as possible, and sharp bends should be avoided.

3.5 AC POWER LIGHT

The green AC power light is on whenever AC power is present, the DC power switch is in the ON position and all fuses are intact.

3.6 KEYSTATION VOLUME CONTROL

The Keystation Volume Control is a potentiometer which controls the volume of the trouble alert and annunciator tones at the internal speakers. Rotate the control clockwise to increase the volume.

3.7 CHARGING VOLTAGE ADJUSTMENT (factory set)

Used to adjust the voltage level that charges the back up battery. This potentiometer is adjusted at the factory. DO NOT attempt to adjust the potentiometer in the field as it may result in damage to the battery.

3.8 CLOCK SPEED ADJUSTMENT (factory set)

Used to adjust the accuracy of the real-time clock. This adjustment is made at the factory.

3.9 CABLE CONNECTORS

3.9.1 PLC CONNECTOR (P1)

The PLC connector is a 5-pin connector. It is used to connect the Model 4190 to the Model 4720 printed circuit board. A 4-wire keystation may also be connected to this point for troubleshooting.

The following table lists the 5 pins and shows which terminal each connects to on the 4433 (4430) keystation.

PLC CONNECTOR (5-PIN)	4433 (4430) KEYSTATION
1	1
2	2
3	3
4	4
5	(NOT USED)

3.9.2 STATUS CONNECTOR (P2)

The STATUS connector is a 5-pin connector used to connect the Model 4180 Status Display Module to the Model 4720.

3.9.3 PHONE LINE MONITOR CONNECTOR (P5)

This 12-pin connector is used to mount the Model 4175 Dual Phone Line Monitor Module onto the 4720 printed circuit board.

3.9.4 INTERCOM MODULE CONNECTOR (P6)

This 12-pin connector is used to connect the Model 4140 Intercom Module ICOM connector to the Model 4720 printed circuit board. The 7367 Listen In Module can also be connected here, if the 4140 is not used.

3.10 EXPANSION CONNECTORS (P3 and P4)

The Expansion Bus connectors are used to connect any two of the models listed below. The Models 4110 - 4150 also have two connectors allowing them to be daisy-chained together. Expansion bus wiring should not exceed 4 feet in length and must be run in conduit.

- *Model 4110 Zone Expander (Smart Sensor)
- *Model 4120 Zone Expander (Hard wired)
- *Model 4130 Zone Expander (RF)
- Model 4140 Intercom
- Model 4150 Relay Module
- Model 5520 Programmer
- Model 5255 On-Site Printer

**NOTE: If a combination of these models are used, they must be given unique addresses. This will be explained in the installation section of this manual (Section 10).*

P1: 4190 PLC or Keystation Quick-Connect

- 1 GND (circuit ground)
- 2 +12 V (Fuse F2)
- 3 /SERIAL OUT
- 4 /SERIAL IN
- 5 /PLC BUSY IN

P2: 4180 Status Relay Module

- 1 GND
- 2 +12 V (Fuse F2)
- 3 LATCH ENABLE PULSE OUT
- 4 SERIAL CLOCK OUT
- 5 SERIAL DATA OUT

P3 and P4: XBUS (expansion devices)

- 1 GND
- 2 +12 V
- 3 /DEVICE RESET OUT
- 4 XA0 OUT
- 5 XA1 OUT
- 6 XA2 OUT
- 7 /HS OUT
- 8 XD0
- 9 XD1
- 10 XD2
- 11 XD3
- 12 /HS IN

P5: 4175 Dual Line Monitor Module

- 1 GND
- 2 +12 V (current limited)
- 3 /MONITOR SAMPLE PULSE OUT
- 4 /LINE2 OUT
- 5 /RINGING IN
- 6 /MONITOR2 IN
- 7 /MONITOR1 IN
- 8 EARTH GND
- 9 TIP1
- 10 RING1
- 11 SWITCHED TIP1
- 12 SWITCHED RING1

P6: 4140 Intercom/Telephone/Listen-In or 7367 Listen-In

- 1 GND
- 2 +12 V (Fuse F2)
- 3 LISTEN ENABLE OUT
- 4 /DIAL
- 5 CONTROL AUDIO ENABLE OUT
- 6 CONTROL AUDIO OUT
- 7 TELEPHONE AUDIO
- 8 EARTH GND
- 9 SWITCHED RING1
- 10 HOUSE RING1
- 11 HOUSE RING2

3.11 JUMPERS

NOTE: If J1 and J2 are shunt blocks instead of jumpers, then rather than cutting the jumper, you would move the shunt block to the left ("out") position.

3.11.1 JUMPER J1

This jumper is left in place if a Siren (speaker) is used and removed if a DC Bell or DC Siren is used.

3.11.2 JUMPER J2

When left in place, both Alarm tones and Alert tones will be present on Terminals 8 & 45. When Jumper J2 is cut, only the Alarm tones will be present at Terminal 8 but both tones will be present at Terminal 45.

3.11.3 JUMPERS J3 AND J4

With jumpers J3 and J4 left in place, the DC Power switch does not function. This is necessary for NFPA and California Fire Marshal applications. For burglary applications, these jumpers may be cut to enable the DC Power switch.

3.12 PLUG-ON TERMINAL STRIPS

The Model 4720 uses plug-on terminal strips, which allow you to change the panel without unscrewing each terminated wire.

3.12.1 TERMINAL STRIP REMOVAL

1. Tag each of the 4 terminal block wire bundles, so the blocks can be reinstalled in the correct positions.
2. Disconnect the 9220 AC transformer and the battery cables.
3. Each terminal block is held by 2 catches on the outside. To remove the block, pull up and out on the inside of the block.

3.12.2 TERMINAL STRIP REPLACEMENT

1. Check that each pin on the terminal block is straight, as crooked pins can damage the base portion upon insertion.
2. Position the terminal block directly over its base and press straight in. The block will snap into place.

3.13 MODEL 4720 TERMINAL STRIP DESCRIPTION

- 1 AC Input: 16.5 Vac, 60 Hz, 40 VA
- 2 AC Input: 16.5 Vac, 60 Hz, 40 VA
- 3 Earth Ground
- 4 Siren Power: 16 Vdc Unregulated (1-A Load) Max.*1
- 5 Auxiliary (Bell) Power: 10.2 Vdc - 13.7 Vdc, 1 A Max. (Fused 1.5 A)*2 *3
- 6 Circuit Ground
- 7 External Speaker/Bell Output (Active Low) 500 mA max.
- 8 Internal (Keystation) Speaker Output (Active Low)
- 9 Circuit Ground
- 10 Smoke Detector Power: 9.5 Vdc - 13.1 Vdc, 150 mA Max.*2 *3
- 11 Loop Power: +12 Vdc, 50 mA Max. (Current Limited)
- 12 Loop Power: +12 Vdc, 50 mA Max. (Current Limited)
- 13 Loop Power: +12 Vdc, 50 mA Max. (Current Limited)
- 14 Loop Power: +12 Vdc, 50 mA Max. (Current Limited)
- 15 NOT USED
- 16 Model 4203 (4200) Keystation Pin 1
- 17 Model 4203 (4200) Keystation Pin 2
- 18 Model 4203 (4200) Keystation Pin 3
- 19 Keystation Ground
- 20 Keystation Power
- 21 Keystation Data Input
- 22 Keystation Data Output
- 23 Zone 1 Input
- 24 Zone 2 Input
- 25 Zone 3 Input
- 26 Zone 4 Input
- 27 Zone 5 Input
- 28 Zone 6 Input
- 29 Zone 7 Input
- 30 Zone 8 Input
- 31 Zone 9 Input
- 32 Zone 10 Input
- 33 Zone 11 Input
- 34 Zone 12 Input
- 35 Zone 13 Input
- 36 Zone 14 Input
- 37 Zone 15 Input
- 38 Zone 16 Input/Mechanical Key Input
- 39 Ground Start Output 100 mA Max. Active Low
- 40 Dialer Failed Output 100 mA Max. Active Low
- 41 Telco Tip
- 42 Telco Ring
- 43 House Tip
- 44 House Ring
- 45 Audio Output (Alarm and Alert Tones)(Active Low)

**NOTE 1: Terminal 4 (16 V) will be at 20 V under normal stand-by conditions (non-alarm).*

NOTE 2: Each device connected to terminal 5 or 10 must be rated for the voltage ranges specified. The **minimum voltage occurs when AC power is **off** and the battery is discharging under **load**. The **maximum** voltage occurs when AC power is on and the output is **not** loaded.*

**NOTE 3: The total current drain of Terminal 5, Terminal 10, all keystations, and all XBUS expansion devices, must not exceed 1.3 A (see Table 4A).*

UL NOTE: Refer to wiring diagram on the unit for ratings/connections.

3.14 NON-UL WIRING DIAGRAM

FOR UL INSTALLATIONS, REFER TO THE WIRING DIAGRAM MOUNTED IN THE FRONT COVER OF THE 4720 ONLY. THIS DIAGRAM CONTAINS ITEMS WHICH ARE NOT CURRENTLY ACCEPTABLE FOR UL INSTALLATIONS. THESE ITEMS ARE THE 4203 (4200) KEYSTATION, PLC CONNECTOR, 7140 RELAYS, AND EXTERNAL SIREN DRIVER. THE UL WIRING DIAGRAM ALSO CONTAINS VARIOUS ELECTRICAL RATINGS AND RESTRICTIONS.

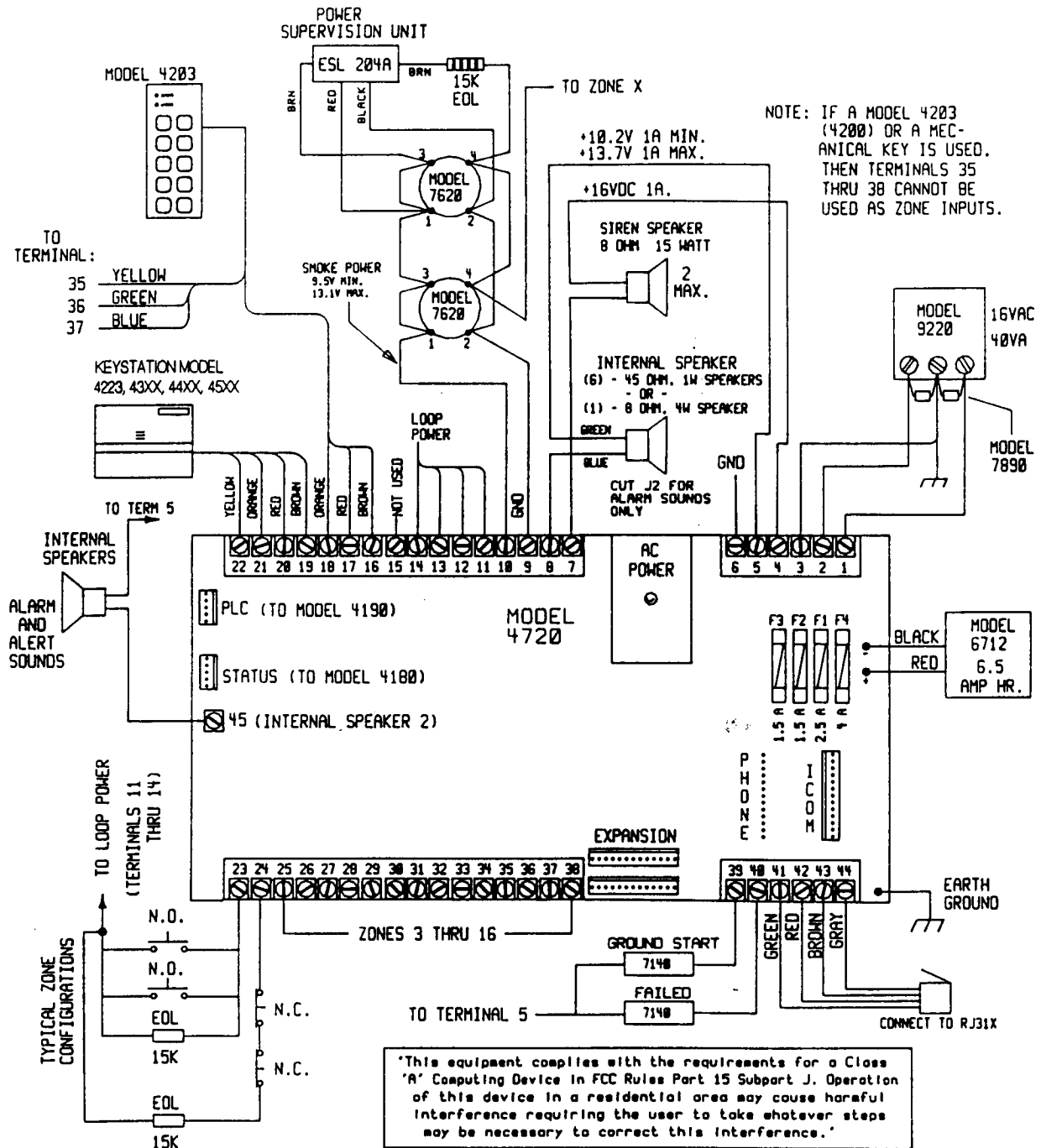


FIGURE 3.14A: MODEL 4720 NON-UL WIRING DIAGRAM

4 INSTALLATION OVERVIEW

Table 4A lists the various accessories available for use with the 4720, which fuse each draws power through, and their stand-by (idle) and active (alarm) current draws. Where no fuse is shown, the accessory is resistively current limited.

TABLE 4A: ACCESSORIES FOR THE 4720

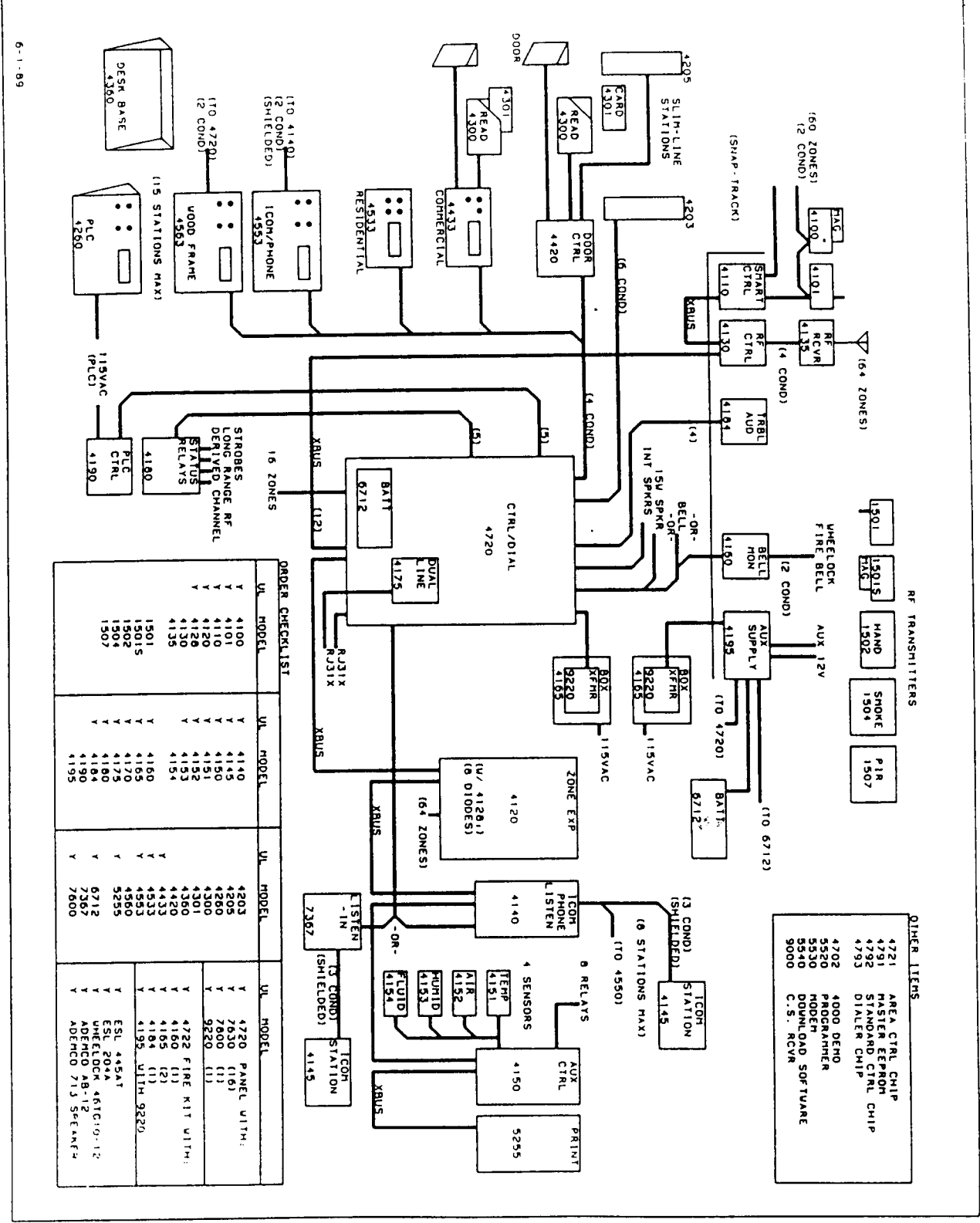
MODEL #	FUSE #	STANDBY	ACTIVE (TROUBLE & ALARM)	MAX. # OF DEVICES
4720		95 mA	130 mA	1
4203 (4200)		10 mA	10 mA	4 (not UL) ¹
4205	F2	10 mA	10 mA	15 (not UL) ²
4300	F2	25 mA	25 mA	15 (not UL) ²
4310, 4312	F2	130 mA	130 mA	15 (not UL) ²
4420	F2	20 mA	20 mA	15 (not UL) ²
4223 (4220) and 4323 (4320)	F2	35 mA	120 mA	15 (not UL) ²
4433 (4430), 4433 (4530), 4553 (4530), 4540, 4553 (4550), or 4563 (4560)	F2	35 mA	120 mA	15 ²
4110 with 60 sensors	F3	105 mA	105 mA	1
4120	F3	100 mA	100 mA	1
4130	F3	30 mA	30 mA	1 (not UL)
4140	F3	100 mA	100 mA	1
4143 (4145)	F3	5 mA	5 mA	8
4150	F3	100 mA	220 mA	1
4160	F2	4 mA	40 mA	1
4175		1 mA	1 mA	1
4180	F2	24 mA	140 mA	1
4184	F3	10 mA	70 mA	1
4190	F2	220 mA	220 mA	1 (not UL)
5255	F3	40 mA	1 Amp	1
5260	F3	25 mA	25 mA	1
ESL 445AT Smoke Detector	F3	1.5 mA	60 mA	7
Wheelock Bell	F2	0 mA	125 mA	3
8-Ω SPKR	F2	0 mA	750 mA	1
45-Ω SPKR	F2	0 mA	133 mA	6
Zone input	—	0.8 mA	5 mA	16

¹NOTE: Not UL = Not acceptable in UL installations.

²NOTE: See B: on next page.

Use table 4A to calculate the total standby and active currents for the system, then check that they are within the following limits:

- A: For UL installations--To obtain 24-hour standby battery power, the total stand-by current drain must not exceed 200 mA when using the 4720 only, and must not exceed 350 mA when one 4195 is being used.
- B: The total combined active current drain on F2 and F3 must not exceed 1300 mA. To obtain more active current, keystations can be powered by the 4195, which provides an additional 1750 mA.



ORDER CHECKLIST

UI	MODEL	UI	MODEL	UI	MODEL	UI	MODEL
Y	4100	Y	4140	Y	4203	Y	1220
Y	4101	Y	4145	Y	4205	Y	PANEL WITH:
Y	4110	Y	4190	Y	4205	Y	7620 (1)
Y	4120	Y	4190	Y	4301	Y	7630 (1)
Y	4125	Y	4190	Y	4301	Y	7630 (1)
Y	4150	Y	4190	Y	4360	Y	9220 (1)
Y	4154	Y	4190	Y	4420	Y	4722 FIRE KIT WITH:
Y	4190	Y	4190	Y	4433	Y	4160 (1)
Y	4195	Y	4190	Y	4533	Y	4165 (2)
		Y	4195	Y	4560	Y	4184 (1)
		Y	4195	Y	4563	Y	4195 WITH 9220
		Y	4195	Y	5255	Y	ESL 445AT
		Y	4195	Y	5255	Y	ESL 2074
		Y	4195	Y	5255	Y	WHEELLOCK 481C10-12
		Y	4195	Y	5255	Y	WHEELLOCK 8-12
		Y	4195	Y	5255	Y	ADMCO 713 S4EANKF
		Y	4195	Y	5255	Y	
		Y	4195	Y	5255	Y	
		Y	4195	Y	5255	Y	
		Y	4195	Y	5255	Y	
		Y	4195	Y	5255	Y	

FIGURE 4B: SYSTEM PLANNING DIAGRAM

5 WIRING PRECAUTIONS

To avoid induced noise (transfer of electrical energy from one wire to another), keep input wiring isolated from high current output and power wiring. Induced noise can interfere with telephone communication, or even cause false alarms. Avoid pulling one multiconductor cable for the entire panel. Instead, separate the wiring as follows:

High current input/output: AC power and speaker and bell wiring

Low current input/output: Keystation and zone loop wiring

Audio input/output: Telephone wiring

Wires from different groups should not be pulled through the same conduit. If you must run them together, do so for as short a distance as possible, or use shielded cable. Connect the shield to circuit ground at the panel.

For the same reasons, wiring within the cabinet should be routed around the perimeter of the cabinet. It should not cross the printed circuit board, where it could induce noise into the sensitive microelectronics, or pick up unwanted RF noise from the high speed circuits.

High frequency noise, such as that produced by the inductive reactance of a speaker or bell, can also be reduced by running the wire through ferrite shield beads, or by wrapping it around a ferrite toroid.

6 MODEL 4720 CONTROL PANEL INSTALLATION

6.1 SELECTING A LOCATION

When selecting a location to mount the 4720 control panel consider the following factors. The unit should be mounted where it will not be exposed to extremes in temperature and it will be free from moisture. The panel should be accessible to "Main Drop" wiring runs. The 4720 should be located well within the secured area but should be accessible for testing and service.

6.2 MOUNTING THE 4720

Mount the 4720 so it is firmly secured to the wall surface. When mounting on concrete, especially when moisture is expected, attach a piece of $\frac{3}{4}$ -inch plywood to the concrete surface and then attach the 4720 to the plywood. Mount all other desired components to the plywood interface.

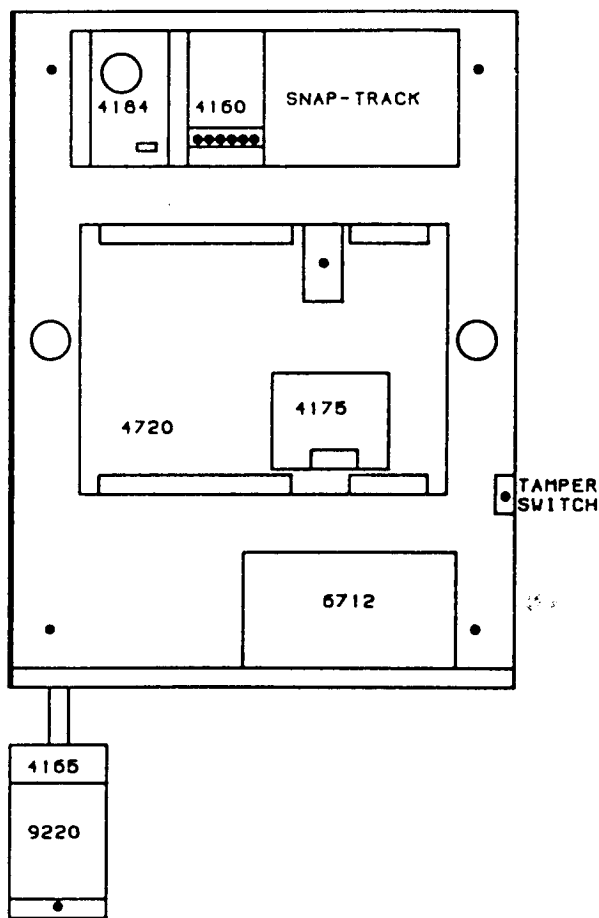


FIGURE 6.2A: SUGGESTED MOUNTING FOR THE CONTROL PANEL

6.3 INSTALLING THE MODEL 9220 POWER TRANSFORMER

An external transformer (Model 9220 included) is used to supply 16.5 V_{AC} (40 VA) to power the system under normal conditions and to supply charging current to the backup battery. The primary of this transformer plugs directly into a conventional 115-V_{AC} unswitched outlet. The secondary is wired into Terminals 1 and 2 of the 4720 with a 2-conductor cable (preferably shielded). Use 18-gauge wire or larger (i.e., 16, 14, 12, etc.).

6.3.1 MODEL 4165 TRANSFORMER HOUSING

You must install the power transformer inside of the Model 4165 when installing the 4720 in accordance with NFPA Standards.

1. Remove all power from the electrical outlet before attaching the 4165.
2. Remove the 2 screws that hold the outlet to the single gang box.
3. Using the 2 screws that were removed, attach the 4165 box to the outlet and the single gang box.
4. Plug the transformer into the outlet.
5. The secondary of the transformer must be run in conduit which may be attached to any of the knockout holes.
6. Attach the housing cover to the housing plate using the 2 screws provided.

NOTE: Electric door strikes and magnetic door holders are a potential source for damaging electrical impulses. The auxiliary power from the 4720 should not be used for these devices. A separate power source (such as Model 4195) should be used, and a reverse polarity diode should be connected across the devices to suppress the impulses.

6.3.2 INSTALLING THE TRANSFORMER

The main wiring diagram shows the connection of shielded 2-conductor cable and the Model 7890 Transient-Surge Protector to the Model 9220 UL Listed Class II Power Transformer (16.5 VAC, 40 VA). Both models are included with the 4720. The transformer should be plugged into a 120-VAC, 60-Hz continuous duty (unswitched) grounded outlet.

WARNING: The Model 9220 contains an internally fused secondary winding. **DO NOT SHORT** the secondary terminals together when power is applied or the internal fuse will blow. Be sure the shield conductor cannot come in contact with the AC output screws.

The Model 7890 Transient-Surge Protector will protectively clamp the AC output of the transformer, reducing transient voltages caused by lightning and other sources. The AC power lines are the most common source of transient/lightning damage in alarm systems. The Model 7890 consists of 2 bipolar transient suppressors with lugs at its connecting points.

CAUTION: Make sure that the AC outlet you intend to use for the Model 9220 has a "good" connection to earth ground. This can be done at the outlet, by using a digital voltmeter to measure the AC voltage between the "hot" side of the outlet and neutral, then comparing that voltage to the voltage reading made between the "hot" side and the ground connection. The difference between these two voltage readings should not exceed 1 V_{AC}. If these voltages are not within 1 V_{AC}, the outlet does not have an earth ground and must be grounded by running a 14-gauge wire from the outlet to a good source of earth ground such as a water pipe.

NOTE: A licensed electrician may be required to perform this procedure.

CAUTION: To reduce the risk of electrical shock or fire, connect directly to a grounded (3-prong) receptacle.

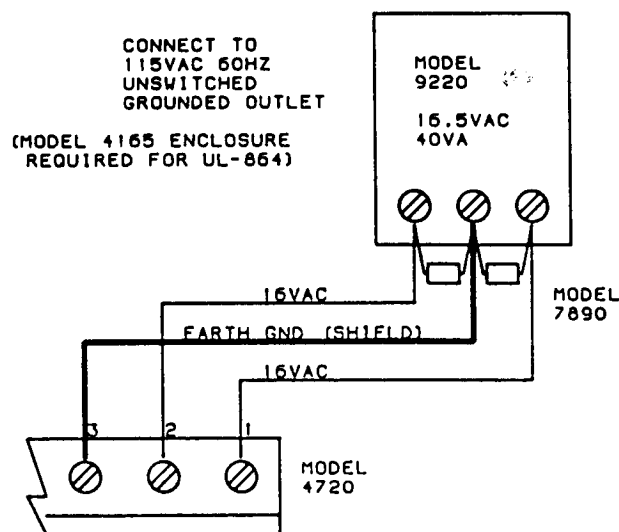


FIGURE 6.3.2A: MODEL 9220 TRANSFORMER CONNECTION

6.4 MODEL 4195 AUXILIARY POWER SUPPLY

The Model 4195 provides an additional 1.75 A of current for accessory items. Terminals 3 and 4 can each provide 1.25 A of current (fused at 1.5 A), for accessory items. The two terminals provide a combined total of 1.75 A. The 4195 contains an AC power light that monitors the transformer. It also allows you to use two (2) stand-by batteries to double the time that the system can function on battery stand-by. The 4195 should be mounted in the plastic board mount above the 4720. Figure 6.4A shows how to wire the 4195. When using the 4195, connect the RED battery lead from the 4720 to the spade lug labeled "+" on the diagram below. Connect the BLACK battery lead from the 4720 to the spade lug labeled "-" on Figure 6.4A below.

If you would like to have the 4195 outputs turn off for smoke detector reset, connect Terminal 6 of the 4195 to terminal 10 of the 4720 instead of to Terminal 5 of the 4720.

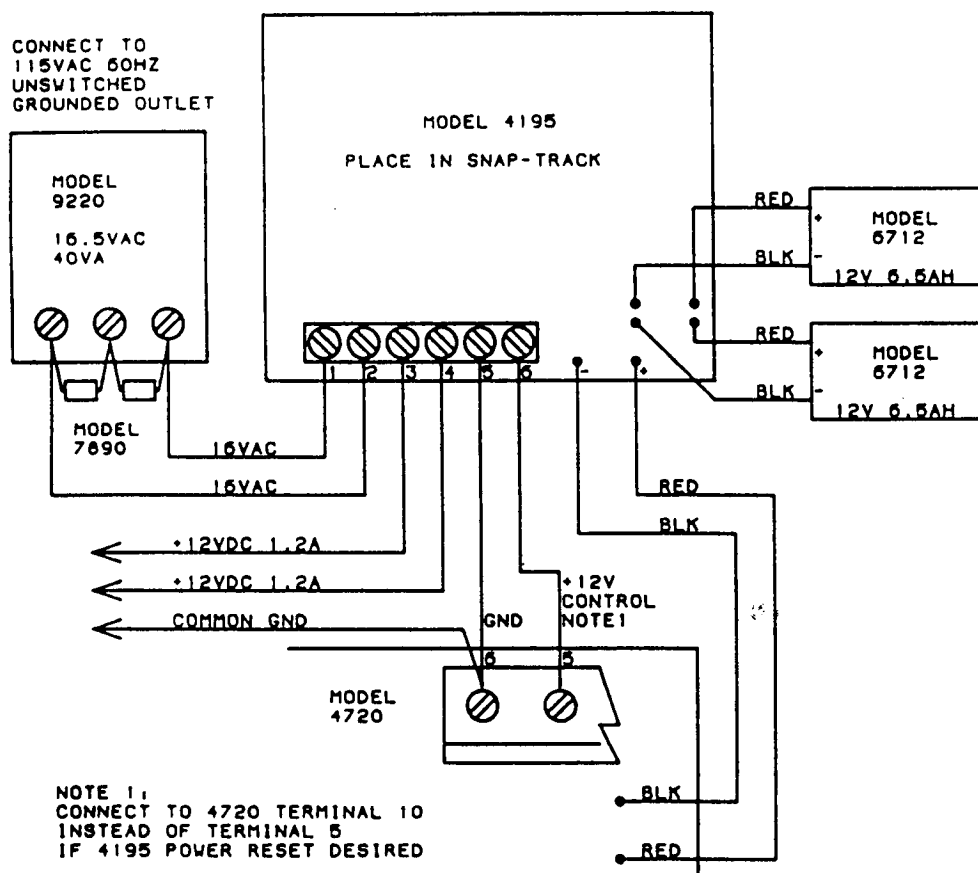


FIGURE 6.4A: WIRING THE MODEL 4195 AUXILIARY POWER SUPPLY

NOTE: Although each terminal can supply 1.25 A, the two terminals together can only supply a total of 1.75 A.

7 KEYSTATION INSTALLATION

NOTE 1: KEYSTATION SWITCH AND JUMPERS

SW5 - Switch 5 is found on Commercial keystations only. This switch must be in the DOWN position if you will be using a reset switch with the doorstrike.

On the Model 4430 keystation, cut Jumper J1 if you will be using a reset switch with the doorstrike (there is no SW 5).

J2 - Jumper J2 ("beep") is found on all keystations using a PZT buzzer. Cutting this jumper will disable the PZT buzzer.

NOTE 2: In a UL installation, the keystations must be mounted on a dual gang electrical box.

7.1 SETTING ID CODES

NOTE: Before permanently installing keystations with model numbers 4323 (4320), 4533 (4530), 4540, 4553 (4550), 4223 (4220), and 4433 (4430), you must first set their Identification Codes. **This section does NOT apply to the Model 4203 Weather Resistant Slimline Keypad or the Model 4263 Desk Top Keystation.**

In order for the 4720 to operate properly, each keystation must have its own identification code. For best results the ID numbers should start at 1 and progress sequentially to the last keystation. On the back of each keystation listed above, you will find a small 4- or 5-position DIP switch. The chart below shows the positions of the first 4 switches for specific ID numbers. When using the chart, the letter "D" means that a particular switch should be in the DOWN/OFF position and the letter "U" means a switch should be in the UP/ON position. (Switch #5 is discussed in Section 7.3.1.2.)

ID#	SW #1	SW #2	SW #3	SW #4
0*1	U	U	U	U
1	D	U	U	U
2	U	D	U	U
3	D	D	U	U
4	U	U	D	U
5	D	U	D	U
6	U	D	D	U
7	D	D	D	U
8	U	U	U	D
9	D	U	U	D
10	U	D	U	D
11	D	D	U	D
12*2	U	U	D	D
13*2	D	U	D	D
14*2	U	D	D	D
15*2	D	D	D	D

U = UP/ON
D = DOWN/OFF

*1NOTE: Stations set to ID #0 WILL NOT be supervised, and cannot be used with a doorstrike or intercom.

*2NOTE: On newer stations (those that display a number rather than a letter when reset), selecting a station ID of 12 or higher will cause that station NOT to sound entry beeps. This allows keystations to be placed in bedrooms without disturbing sleepers when someone comes home late.

7.2 MOUNTING THE KEYSTATIONS

To mount the keystations you must first remove the rear mounting plate. To do this, insert a small flat blade screwdriver into the slots located on the bottom edge of the keystation. Gently turn the screwdriver until the mounting plate pulls away from the frame. Once the mounting plate has been removed you can secure it to the wall using #6 or #8 screws. The mounting plate should be oriented so that the word "TOP" is toward the top of the plate and facing you. A square hole is provided in the mounting plate to run the wiring to the keystation.

When all of the wires have been connected to the keystation, set the top of the keystation over the tabs on the top of the mounting plate and press each corner until you hear it click into place. Make sure that the wires will not get pinched between the frame and the mounting plate. Press each corner of the bottom side of the keystation onto the mounting plate until you hear it "click" into place.

NOTE: You may have to gently squeeze the keystation (top to bottom) to align it while snapping the bottom edge into place.

7.3 INSTALLING THE COMMERCIAL KEYSTATIONS

NOTE: Wire gauge must be #18 or larger (i.e., 16, 14, etc.) Maximum length is 1000 feet.

7.3.1 COMMERCIAL MODELS 4223 (4220) LED AND 4433 (4430) LCD KEYSTATION WIRING

7.3.1.1 MODEL 4223 AND 4433 CONTROL WIRING

On Models 4223 and 4433, a 4-position terminal block is provided to connect the keystation to the 4720 (see figure 7.3.1A).

7.3.1.2 MODEL 4223 AND 4433 DOORSTRIKE WIRING

The 8-position connector located next to the 4-position terminal block is used for connection of a doorstrike. The doorstrike will be active, once accessed from the keystation, for the amount of time programmed for this option in the 4720 EEPROM memory. The doorstrike may be deactivated as soon as the door is opened (1 second delay) by using a Normally Closed contact on the door and setting DIP Switch 5 on the back of the keystation to the Down position. This contact will also be used to detect if the door is forced open without using a proper access code or left open after normal access. A Normally Open switch may be connected between Pins 7 and 8 of the CTRL connector to activate the doorstrike from within the protected premises.

*NOTE 1: All doorstrike wiring must be restricted to the same room in UL applications. If the doorstrike circuitry is used, it is considered **supplementary** to the 4720 controls. The Model 4720 is not UL Listed as an access control unit (UL 294).*

NOTE 2: The Model 4223 (4220) is not UL listed.

NOTE 3: The 4223 is not recommended for use in installations that include the Model 4724 Control Expander, because the 4223 does not have an LCD.

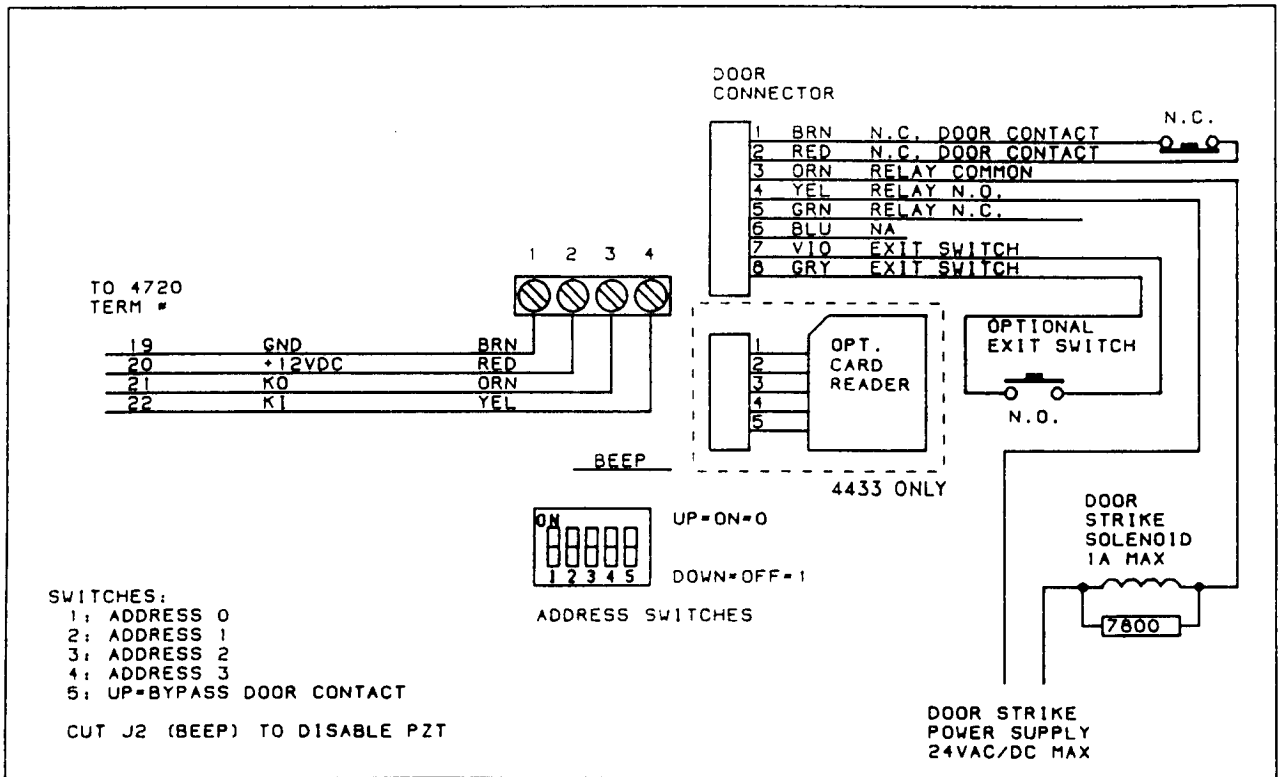


FIGURE 7.3.1A: BACK VIEW OF MODEL 4223 AND MODEL 4433

NOTE: The optional card reader applies to the Model 4433 only.

7.3.2 ACCESS 4300 SYSTEM WIRING (4420, 4205 AND CARD READERS)

Refer to the Access 4300 System Installation and Operation Manual (P/N 150457) for installation instructions for the Model 4420 Door Access Module; the 4300, 4310 and 4312 Card Readers; and the Model 4205 Weatherproof, Slimline Door Access Keypad.

7.3.3 (THIS SECTION NOT USED)

7.4 INSTALLING THE RESIDENTIAL KEYSTATIONS

NOTE: Wire gauge must be #18 or larger. Maximum length is 1000 feet.

7.4.1 RESIDENTIAL MODELS 4323 (4320) LED AND 4533 (4530) LCD KEYSTATION WIRING

On Models 4323 and 4533, a 4-position terminal block is provided to connect the keystation to the 4720 (see figure 7.4.1A).

NOTE 1: The Model 4323 (4220) is not UL listed.

NOTE 2: The 4323 is not recommended for use in installations that include the Model 4724 Control Expander, because the 4223 does not have an LCD.

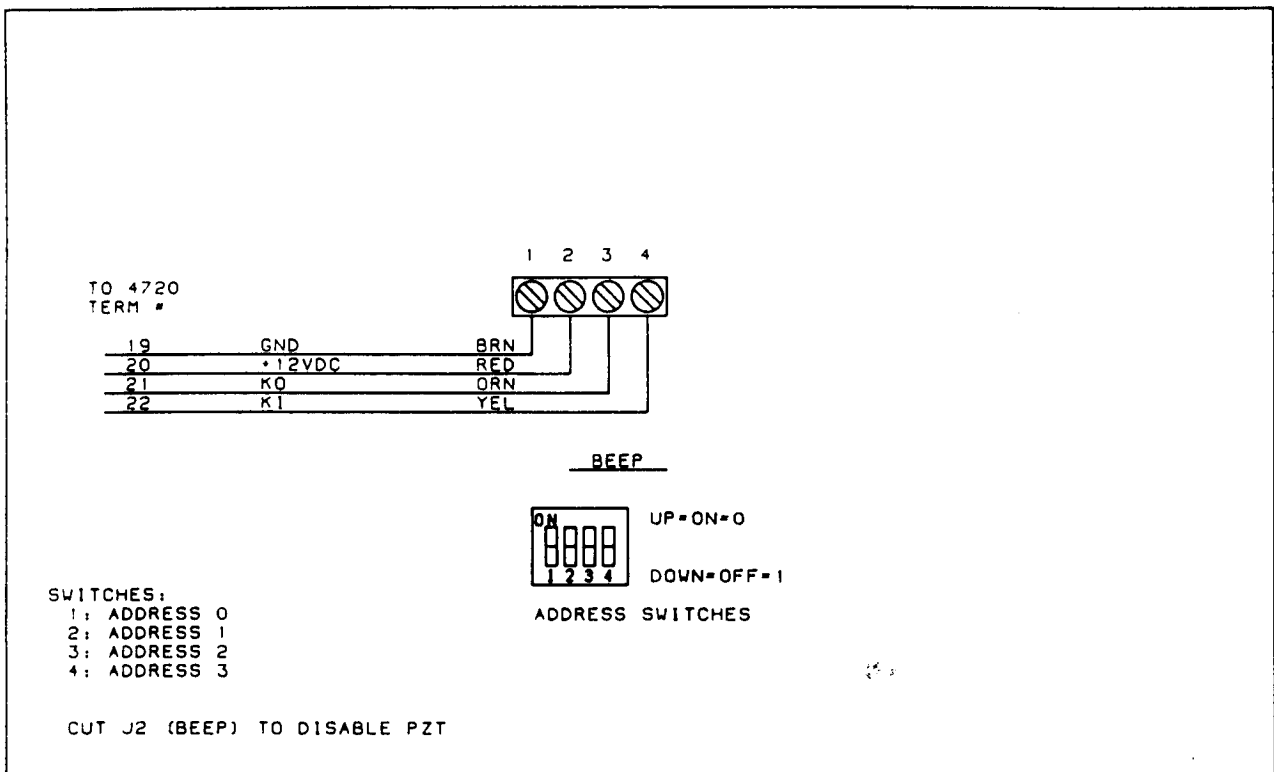


FIGURE 7.4.1A: BACK VIEW OF MODEL 4323 AND MODEL 4533

7.4.2 MODEL 4540 KEYSTATION WIRING (Discontinued)

A 6-wire pigtail is provided with the 4540 to connect it to the Model 4720. The following chart shows the description of each wire and the terminal to which it should be connected on the 4720.

PIN #	WIRE COLOR	DESCRIPTION	TERMINAL #4720
1	BROWN	KEYSTATION GND	19
2	RED	KEYSTATION PWR	20
3	ORANGE	KEYSTATION IN	21
4	YELLOW	KEYSTATION OUT	22
5	GREEN	SPEAKER POWER	5
6	BLUE	SPEAKER SIGNAL	8 OR 45 **

** See description for Jumper J2 in Section 3.11.2 of this manual.

NOTE: Pins 5 and 6 are used only if you will be using the internal speaker of the keystation.

7.4.3 MODEL 4553 (4550) OR 4563 (4560) INTERCOM LCD KEYSTATION WIRING

An 8-wire pigtail is provided with the 4553 (4550) to connect it to the Model 4720. The following chart shows a description of each wire and the terminal that it should be connected to on the 4720 and the 4140 Intercom/Telephone Controller.

PIN #	WIRE COLOR	DESCRIPTION	TERMINAL # 4720
1	BROWN	KEYSTATION GND	19
2	RED	KEYSTATION PWR	20
3	ORANGE	KEYSTATION IN	21
4	YELLOW	KEYSTATION OUT	22
*5	GREEN	SPEAKER GND 4140	G (4140)
6	BLUE	NO CONNECTION	N/C
*7	VIOLET	SPEAKER SIGNAL	S1 (4140)
*8	GRAY	MIC SIGNAL	M1 (4140)

* Pins 5, 7, and 8 are connected to the Model 4140 Intercom/Telephone Controller.

See Section 13.1 for installation instructions for the 4140 Intercom/Telephone Controller.

7.5 MODEL 4263 (4260) PLC KEYSTATION WIRING

The Model 4263 is a desktop keystation. Since it is a PLC Keystation, it must be placed within reach of a 115-V_{AC} 60-Hz unswitched outlet. The Residence Code is set to eliminate interference between your system and someone else's system that uses PLC-type keystations.

7.5.1 MOUNTING THE MODEL 4190 PLC CONTROL

The first thing to do when installing the Model 4190 is to select a location that is both near to the control panel and close to a 115-V_{AC} 60-Hz unswitched outlet. Next, remove the back cover from the case. To do this, grasp the case by the sides. While pressing down on the middle of the upper edge of the front cover, pull the two halves apart. The printed circuit board is mounted in the front half of the case. Using #6 screws, secure the back half of the case to the wall in the desired location.

Before replacing the cover, you must set the maximum PLC Keystation ID (switches 1-3), the Residence Code, and connect the five conductor wire to the PLC Control. The Residence Code is set using the 8-position DIP switch located on the printed circuit board of the 4190. You MUST set this code identical to the code set on Switches 4 through 8 of the Model 4263 Keystation. It is a good idea to verify that the code on the PLC Control matches the code on the keystation before closing the case. After you have set the Residence Code, connect the five wire conductor to the Control. When this is done snap the case together. The other end of the five conductor cable plugs onto the connector on the 4720 labeled PLC. DO NOT plug the 4190 into the wall outlet until you are ready to apply power to the entire system.

7.5.2 SETTING THE RESIDENCE CODE

Looking at the back of the keystation, you will see an 8-position DIP switch. Switches 4 through 8 are used to set the Residence Code. Switches 4 thru 8 may be set in any order that you choose but you must remember to set the 5 switches on the PLC controller in the identical order.

7.5.3 SETTING THE ID CODE

After setting the Residence Code, you must then set the ID Code so that the 4720 will know which keystation it is communicating with. The ID Code must be different from any other keystation code but remain in sequential order with other keystations used in the system. The ID Code is set using switches 1, 2, and 3. The following chart shows the switch settings for each possible code. The letter "D" represents a switch in the OFF position and the letter "U" represents a switch in the ON position.

NOTE: In the table below, U = ON. D = OFF

ID#	SW1	SW2	SW3
0	U	U	U
1	D	U	U
2	U	D	U
3	D	D	U
4	U	U	D
5	D	U	D
6	U	D	D
7	D	D	D

NOTE: Stations set to ID# 0 WILL NOT be supervised.

7.6 MODEL 4203 (4200) WEATHER RESISTANT, SLIM-LINE KEYPAD

7.6.1 MOUNTING THE 4203 (4200)

The slim-line design of the 4203 (4200) allows it to be mounted on the door jamb between the screen door and the entry door. After connecting the wires, place the insulating material behind the keystation. Using the screws provided, screw the keystation to the door jamb. If the keystation is to be mounted on a metal surface, it will be necessary to drill two pilot holes before fastening the station to the jamb.

7.6.2 WIRING THE 4203 (4200)

NOTE: The last 4 zones on the 4720 are used as inputs from the 4203 (4200). You will lose the use of these zones for Alarms.

The Model 4203 (4200) is provided with a 6-wire pigtail for connection to the 4720. Figure 7.6.2A shows how to wire the 4203 (4200) keystation to the 4720.

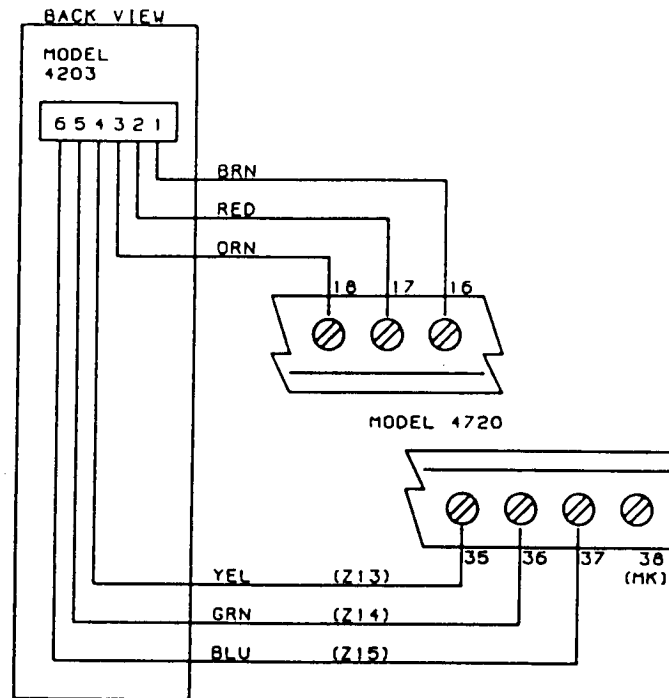


FIGURE 7.6.2A: WIRING THE MODEL 4203 (4200)

7.7 MECHANICAL KEYSWITCH

A Normally Open mechanical keyswitch may be wired between Terminals 5 (auxiliary power) and 38 (Zone 16). Figure 7.7A shows a mechanical keyswitch connected to the 4720 along with **READY** and **ARMED** LEDs.

NOTE 1: When a mechanical keyswitch is used, you lose the use of Zones 13 thru 16.

NOTE 2: If a mechanical key is used, you must select the MUXED (4203 OR 4200) KEYPADS option during system programming.

NOTE 3: The keyswitch option is not to be used in UL Certificated applications since supervision annunciation is not provided.

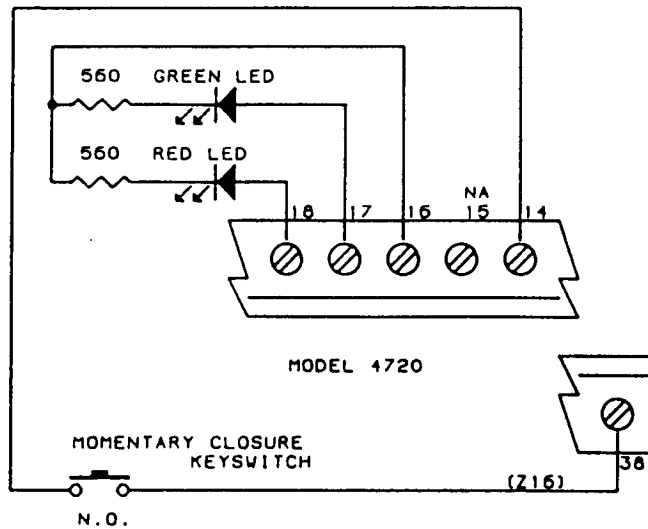


FIGURE 7.7A: MECHANICAL KEYSWITCH WIRING

8 POWERING UP THE SYSTEM

Once you have installed the keystations, test the basic system. To apply power, plug in the transformer and flip the DC power switch.

NOTE: In UL Fire applications, the system will power up as soon as you plug in the transformer. It is not necessary to flip the switch.

Test each keypad, then remove the power again. Wire each accessory and auxiliary device with the power down. After you install each one, test it by applying power again.

9 INTERNAL ZONES

This section applies to the 16 internal zones of the 4720 only. For information on wiring of the expansions zones, refer to Section 10. Zones 1 thru 16 (Terminals 23 thru 38) may be used with Normally Open contacts, Normally Closed contacts, or a combination of both. The illustrations below show the different types of zone configurations. Loop power is available from Terminals 11-14.

9.1 NORMALLY OPEN AND NORMALLY CLOSED CONTACT WIRING

* Supervision of either N.O. or N.C contacts is optional (see the Programming Options Description manual, P/N 150299).

NOTE 1: When Supervising Normally Open contacts, a 15-K Ω End-Of-Line resistor must be used.

NOTE 2: When using Normally Closed contacts, a 15-K Ω resistor must be installed in series with the loop.

NOTE 3: When using a combination of contacts, a 15-K Ω resistor must be installed in series with the Normally Closed contacts and in parallel with the Normally Open contacts.

NOTE 4: For UL installations, minimum wire gauge is 18 or larger (i.e., #16, #14, etc.). Maximum loop wiring resistance is 100 Ω .

LOOP POWER TERMINALS: 11.12.13.14

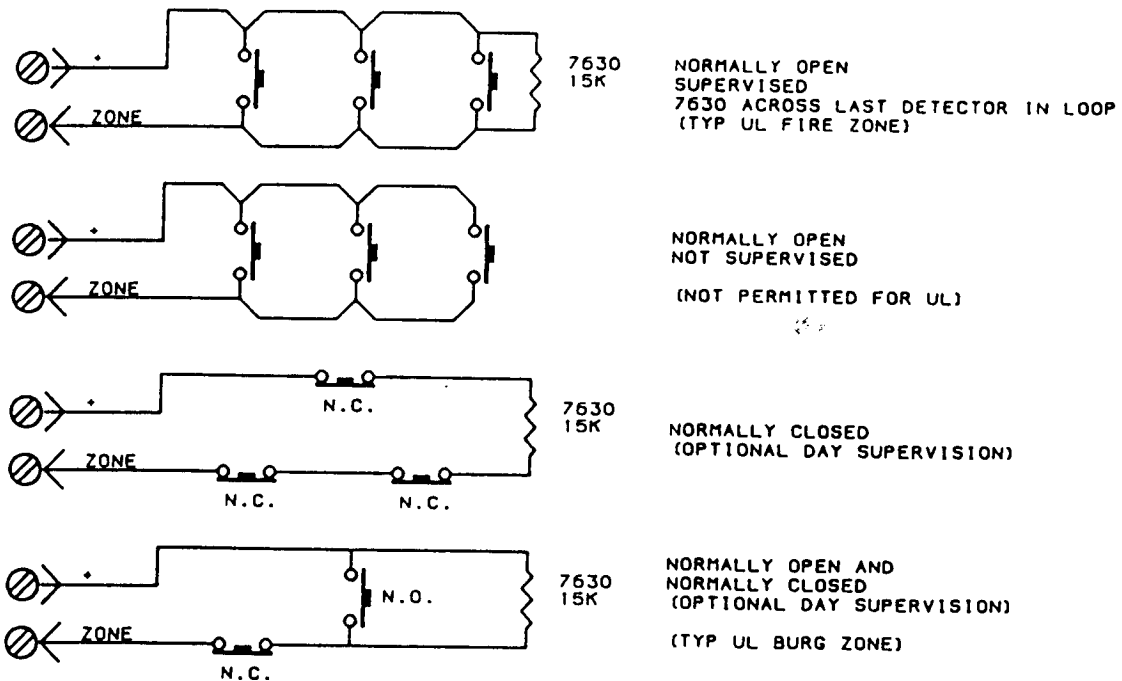


FIGURE 9.1A: INTERNAL ZONE WIRING

9.2 SMOKE DETECTOR WIRING

The ESL 445AT 12-V_{DC}, 4-wire smoke detector must be used when wiring fire zones on the 4720 in a UL installation. Figure 9.2A shows how to wire it. The ESL 445AT Smoke Detector is rated at 1.5 mA in the normal supervisory condition and 60 mA in the alarm condition. Refer to Table 4A for the maximum number of detectors that may be used. The ESL 204A Power Supervision Unit and Model 7630 end-of-line resistor must be mounted across the last detector in the loop.

NOTE 1: If you want to use **more than 7 smoke detectors**, connect terminal 1 of the smoke detector to terminal 3 or 4 of the 4195 Auxiliary Power Supply (instead of terminal 10 of the 4720), and connect terminal 6 of the 4195 to terminal 10 (instead of terminal 5) of the 4720. When the 4720 powers up, terminal 10 of the 4720 will drop to 0 V_{DC} momentarily, which will reset all the smoke detectors. In this configuration, a maximum of 20 smoke detectors may be used.

NOTE 2: Two-wire smoke detectors can **NOT** be used with the 4720.

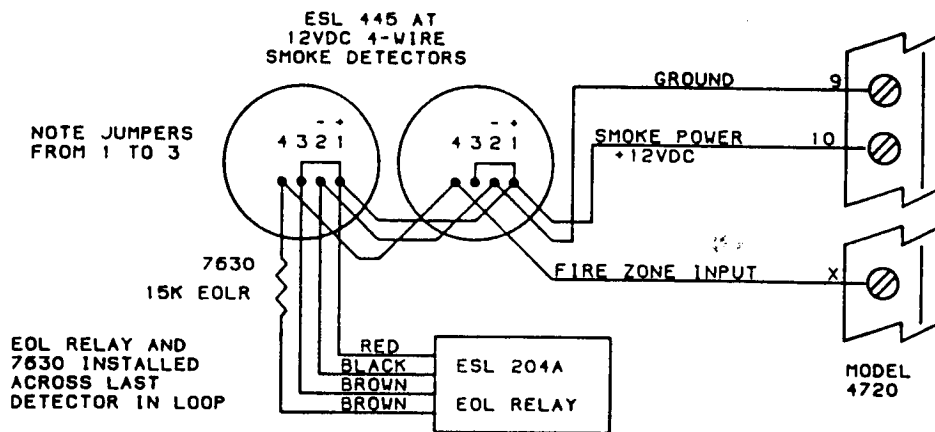


FIGURE 9.2A: ESL 445AT SMOKE DETECTOR WIRING

10 EXPANSION ZONES

*NOTE: Do **NOT** program 24-hour expansion zones as entry delayed. The reason is that 24-hour zones selected as entry delayed do not bypass correctly during the entry time or when they are in alarm.*

10.1 MODEL 4110 ZONE EXPANDER

The Model 4110 is a serial 2-wire zone expander that must be used in conjunction with the Model 4100 or 4101 Smart Sensors. Using the 4110 can add up to 60 expansion zones to the Model 4720. The 4110 has two separate serial loops and each loop can have up to 30 sensors. The sensors can be programmed for Normally Open or Normally Closed contacts. The 4110 looks at individual sensor pairs (one on each loop) to determine if an Alarm condition is present. Each sensor in the loop gets its own identification number. The 4110 must be mounted inside of the 4720 cabinet.

*NOTE: This device can be used in **burglary applications only**, and must be connected with shielded cable with one end of the shield connected to ground (Terminal 6) and the other end left unconnected. Wire gauge must be 18 or larger. Maximum wire length is 1000 feet.*

To connect the Model 4110 to the 4720, follow the steps below:

1. Slide the Model 4110 printed circuit board into the plastic board mount located inside of the 4720 cabinet. Make sure that the terminal screws and 12-pin connectors are positioned towards the 4720 PC board.
2. Connect one end of the 12-wire conductor to either one of the 12-position polarized connectors on the 4110.
3. Connect the other end of the 12-wire conductor to one of the 12-position polarized connectors labeled XBUS on the 4720. Run the 12-wire conductor around the 4720 PC board. Do **NOT** run the conductor over or under the PC board.
4. If you will be using another model that must be connected to the XBUS bus on the 4720, it may be connected to the extra 12-position connector on the Model 4110.

10.1.1 CONNECTING THE SMART SENSORS

Figure 10.1.1 shows how the two serial loops are connected to the Model 4110. Wiring runs should not exceed 1000 ft. For UL installations, each loop must be run in a separate 2-wire cable to eliminate interference. If you use shielded cable, connect one end of the shield to circuit ground (4720 Terminal 6), and leave the other end unconnected.

CAUTION: To avoid equipment damage, ALWAYS observe correct polarity when wiring the Smart Sensors.

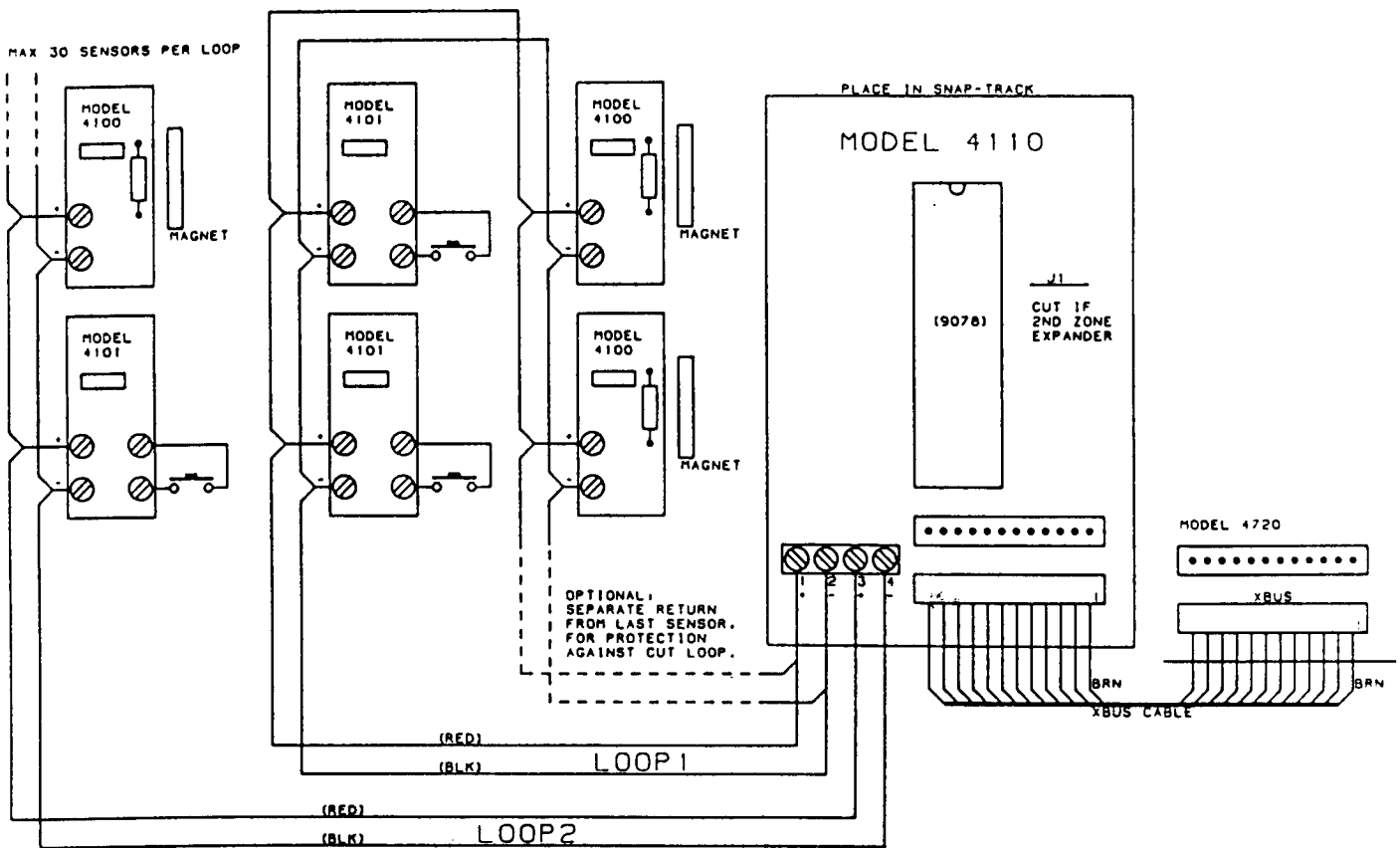


FIGURE 10.1.1A: WIRING THE MODEL 4110 SERIAL ZONE EXPANDER

The Model 4100 Smart Sensor contains a magnetic reed switch for sensing alarms. The Model 4101 provides two (2) terminals for connecting either Normally Open or Normally Closed contacts. Both models provide two terminals for connection to the Model 4110 Zone Expander.

NOTE: When using the Model 4100 Smart Sensor, you must choose the Normally Closed option for that particular zone.

The two diagrams below show the Models 4100 and 4101 Smart Sensors.

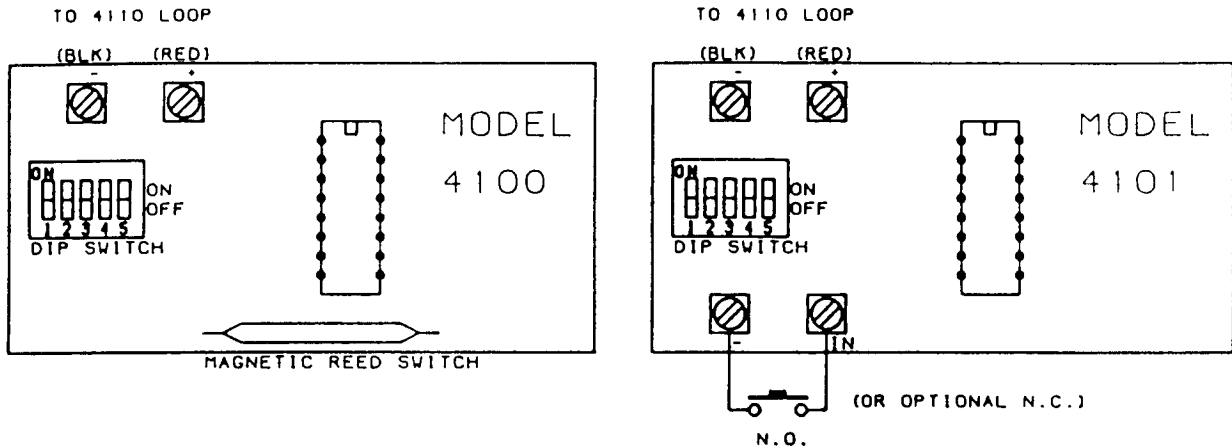


FIGURE 10.1.1B: WIRING THE MODEL 4100 AND 4101 SMART SENSORS

The Model 4110 has 2 serial loops. Each loop may have up to 30 Model 4100 and 4101's in any combination. If you will be using 30 sensors or less, they should all be placed on Loop 1 (Terminals 1 and 2 of the 4110). Terminal 1 is the positive terminal for Loop 1 and Terminal 2 is the negative terminal for Loop 1.

NOTE: If you are using both serial loops on the Model 4110, DO NOT run both loops with the same conductor (i.e., do not use a 4-conductor cable to run both loops). Separate conductors are required to eliminate the possibility of "cross talk" between the two loops.

1. Run a wire from Terminal 1 of the 4110 to the positive terminals on all of the 4100's and 4101's used in Loop 1 (maximum of 30 sensors).
2. Run a wire from Terminal 2 of the 4110 to the negative terminals on all of the 4100's and 4101's used in Loop 1 (maximum of 30 sensors).

IMPORTANT: All positive terminals on the Smart Sensors in a single loop must be connected together and all of the negative terminals in a single loop must be connected together.

3. If more than 30 sensors are used, follow Steps 1 and 2 above but use Terminals 3 (positive) and 4 (negative) on the 4110.

You will notice that there are 5 DIP switches on the Smart Sensors (see Figure 10.1.1B). These switches are used to select the sensor ID #. It is important that no two sensors have the same ID # in the same loop.

The Smart Sensors are shipped with all switches in the ON position. The following chart shows which switches to open (change to the OFF position) for specific ID #'s. The ID #'s are NOT the same as the zone numbers. This will be explained in Section 10.1.2.

On earlier revision sensors, 5 jumpers are used instead of the 5 DIP switches. Jumper 1 corresponds to Switch 1, Jumper 2 to Switch 2, etc. Instead of opening the switches, you would cut the jumpers.

TABLE 10.1.1A: SWITCHES TO OPEN TO SELECT SENSOR ID NUMBERS

ID #	J1	J2	J3	J4	J5
1					
2	OFF				
3		OFF			
4	OFF	OFF			
5			OFF		
6	OFF		OFF		
7		OFF	OFF		
8	OFF	OFF	OFF		
9				OFF	
10	OFF			OFF	
11		OFF		OFF	
12	OFF	OFF		OFF	
13			OFF	OFF	
14	OFF		OFF	OFF	
15		OFF	OFF	OFF	

ID #	J1	J2	J3	J4	J5
16	OFF	OFF	OFF	OFF	
17					OFF
18	OFF				OFF
19		OFF			OFF
20	OFF	OFF			OFF
21			OFF		OFF
22	OFF		OFF		OFF
23		OFF	OFF		OFF
24	OFF	OFF	OFF		OFF
25				OFF	OFF
26	OFF			OFF	OFF
27		OFF		OFF	OFF
28	OFF	OFF		OFF	OFF
29			OFF	OFF	OFF
30	OFF		OFF	OFF	OFF

10.1.2 DETERMINING 4110 ID NUMBERS AND ZONE NUMBERS

10.1.2.1 CALCULATING 4110 ID NUMBERS FROM ZONE NUMBERS

To ensure that the sensors activate the appropriate zones, you must assign the correct ID numbers to the sensors. Zone numbers within the following range can be used with the Model 4110 Zone Expander, if only one zone expander is used:

$$\text{LOWEST 4110 EXPANSION ZONE \#} = \text{LAST INTERNAL ZONE \#} + 1$$

$$\text{HIGHEST 4110 EXPANSION ZONE \#} = \text{LAST INTERNAL ZONE \#} + 60$$

Use the formula below to determine the ID number for each sensor:

$$\text{LOOP 1: ID \#} = (\text{ZONE \#} - \text{LAST INTERNAL ZONE \#})$$

NOTE: If you get an ID # greater than 30, you must use loop 2. Use the formula below to calculate the ID #.

$$\text{LOOP 2: ID \#} = (\text{ZONE \#} - \text{LAST INTERNAL ZONE \#}) - 30$$

The LAST INTERNAL ZONE # is the number you entered in the 4720 Programming Record for the LAST INT Z# option (Internal Zones section). If you have not reprogrammed the last internal zone, the factory-programmed value is 16.

EXAMPLE: If you are programming an ID number for a sensor that, when activated, will trigger an alarm in zone 49 (loop 2), and your last internal zone was 13, the ID number would be determined as follows:

$$\text{ID \#} = (49 - 13) - 30$$

$$\text{ID\#} = 6$$

10.1.2.2 CALCULATING ZONE NUMBERS FROM ID NUMBERS

If you already know a sensor ID number and you need to determine which zone number is displayed when that sensor is activated, use the following formula:

$$\text{LOOP 1: ZONE \#} = \text{ID \#} + \text{LAST INTERNAL ZONE \#}$$

$$\text{LOOP 2: ZONE \#} = \text{ID \#} + \text{LAST INTERNAL ZONE \#} + 30$$

10.1.3 USING TWO ZONE EXPANDERS

When using two zone expanders you must decide which expander will be #1 and which will be #2. If the 4110 is to be #1, no modifications need be made to the PC board. If the 4110 is to be Expander #2, you must first cut Jumper J1 on the 4110 printed circuit board. When this is done, the 4720 will see the 4110 as "Device #3" instead of "Device #2". When using Software Revision 880911 or later, the zone numbers for the two expanders are determined in the same way (see Section 10.1.2).

CAUTION: When the 4110 is being used as Expander #2, the zone numbers selected must start after the zone numbers used on Expander #1.

Total system zones (including internal zones, expander 1 zones and expander 2 zones) may not exceed 80, regardless of how many zone expanders are used.

10.2 MODEL 4120 ZONE EXPANDER

The Model 4120 is a multiplexed zone expander which can add up to 64 expansion zones to the 4720. There are 8 inputs and 8 outputs on the 4120. Each input can be connected to up to 8 zones. In any one zone, all contacts must be either Normally Open or Normally Closed. The Model 4120 is mounted in a separate cabinet not exceeding 3 ft. from the main control unit. The connection must be made in conduit.

The Model 4120 is mounted in its own cabinet as close as possible to the 4720 main control panel. The 4120 provides 8 inputs and 8 outputs for connection of up to 64 zones.

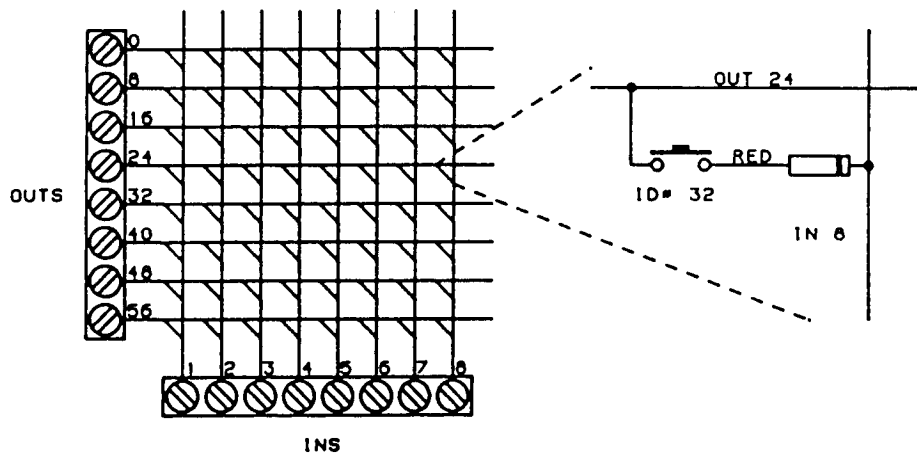


FIGURE 10.2A: MODEL 4120 ZONE EXPANDER 8 X 8 ZONE MATRIX

Notice that the 8 inputs use pairs of terminals. This was done to cut down on the number of wires connected to any single terminal. The 8 outputs are also in pairs located across the board from each other. The outputs are labeled 0, 8, 16, 24, 32, 40, 48, and 56. This type of numbering is used for determining actual zone numbers which will be explained later. Once the 4120 cabinet has been mounted near the 4720, connect one end of the 12-wire conductor to the "XBUS" bus of the 4720. Connect the other end of the cable to the 12-pin connector on the 4120.

NOTE: If another model is used that has an unused 12-pin Expansion connector, the 4120 may be connected to the unused location.

10.2.1 MODEL 4120 ZONE WIRING

There are three possible ways to wire the zones on the 4120. Figure 10.2.1A shows the three basic configurations (Normally Open, Normally Closed, and Normally Open Supervised). Note that a 1N4001 Isolating Diode must be placed in the zone circuit at the terminal input. This diode is required for proper operation. One diode MUST be used with every zone. Eight diodes are provided with the 4120. If more diodes are required they may be obtained from Silent Knight by ordering Part Number 4128 which is a package of 8 diodes. 1N4001 diodes may also be obtained at most electronics parts stores.

NOTE: For UL installations, each zone loop must be wired using shielded 2-wire conductors with a wire gauge of 18 or larger. One end of the shield must be connected to circuit ground. Leave the other end of the shield unconnected. Maximum wire length is 1000 feet.

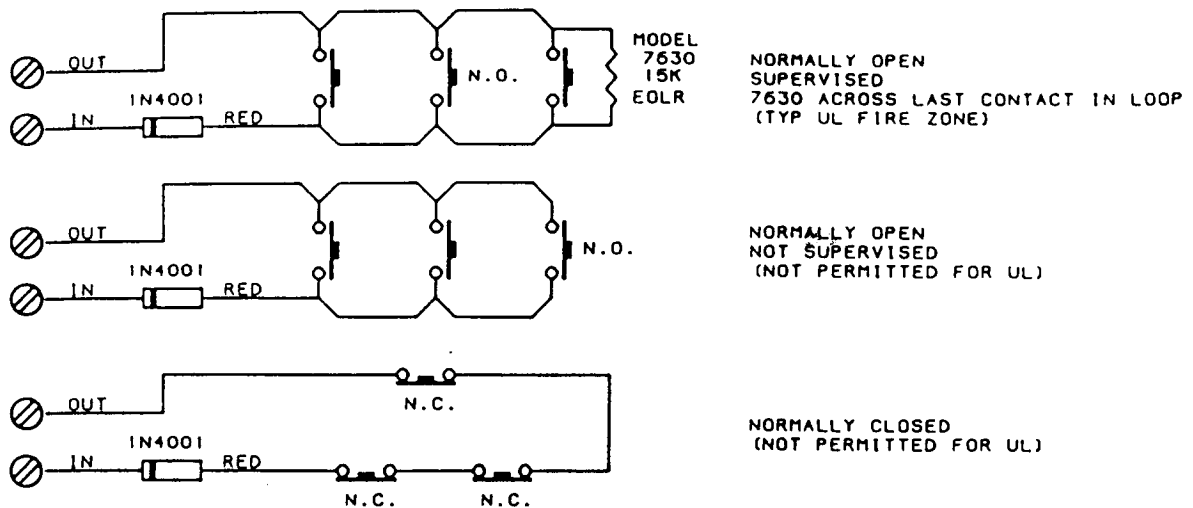


FIGURE 10.2.1A: BASIC ZONE CONFIGURATIONS

Figure 10.2.1B illustrates how one output can be used for 8 separate zones. The 8 zones can be any combination of contact types as long as Normally Open contacts and Normally Closed contacts are not used in the same zone.

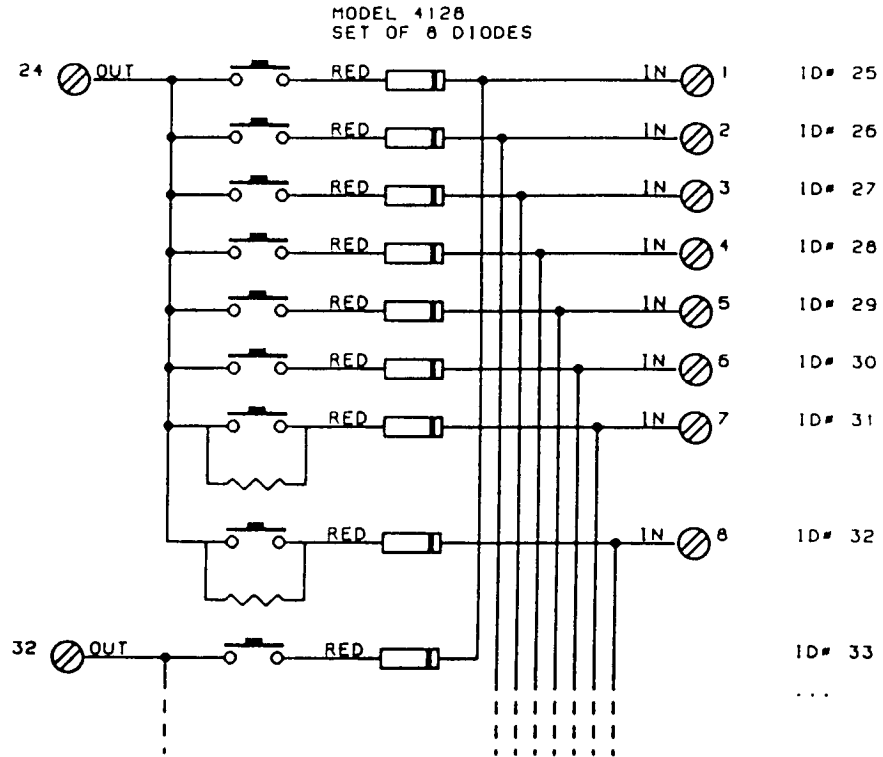


FIGURE 10.2.1B: USING ONE OUTPUT FOR 8 ZONES

NOTE: Contact ID # = Output # + Input #

10.2.2 DETERMINING 4120 INPUT AND OUTPUT #'S AND ZONE #'S

10.2.2.1 CALCULATING 4120 INPUT & OUTPUT #'S FROM ZONE #'S

In order for the correct zone number to be displayed when a contact is activated, it is necessary to determine the correct Input and Output numbers. To do this, follow the steps below:

1. Calculate the Contact ID number using the following formula:

$$\text{CONTACT ID \#} = \text{ZONE \#} - \text{LAST INT Z\#}$$

2. Use Table 10.2.2.1A on the next page to derive the Input and Output numbers.

10.2.2.2 CALCULATING 4120 ZONE #'S FROM INPUT & OUTPUT #'S

If you already know the Input and Output numbers of a contact and you want to know which zone is displayed when that contact is activated, use the following formula to calculate the zone number:

$$\text{ZONE \#} = \text{INPUT \#} + \text{OUTPUT \#} + \text{LAST INT Z\#}$$

10.2.3 USING TWO ZONE EXPANDERS

First determine if the 4120 will be Expander #1 (Device #2) or Expander #2 (Device #3). If it will be Expander #1, no modifications need be made to the PC board. If the 4120 will be Expander #2, you must cut Jumper J1 Jumper J1 on the 4120 printed circuit board. Doing this results in the 4120 being "Device #3". The zone numbers for the two expanders are determined in the same way (see Section 10.2.2).

CAUTION: If the 4120 will be Expander #2, the zone numbers selected must not overlap the zones used on Expander #1.

TABLE 10.2.2.1A: MODEL 4120 INPUT AND OUTPUT NUMBERS

CONTACT ID #	INPUT #	OUTPUT #
1	1	0
2	2	0
3	3	0
4	4	0
5	5	0
6	6	0
7	7	0
8	8	0
9	1	8
10	2	8
11	3	8
12	4	8
13	5	8
14	6	8
15	7	8
16	8	8
17	1	16
18	2	16
19	3	16
20	4	16
21	5	16
22	6	16
23	7	16
24	8	16
25	1	24
26	2	24
27	3	24
28	4	24
29	5	24
30	6	24
31	7	24
32	8	24

CONTACT ID #	INPUT #	OUTPUT #
33	1	32
34	2	32
35	3	32
36	4	32
37	5	32
38	6	32
39	7	32
40	8	32
41	1	40
42	2	40
43	3	40
44	4	40
45	5	40
46	6	40
47	7	40
48	8	40
49	1	48
50	2	48
51	3	48
52	4	48
53	5	48
54	6	48
55	7	48
56	8	48
57	1	56
58	2	56
59	3	56
60	4	56
61	5	56
62	6	56
63	7	56
64	8	56

10.3 MODEL 4130 ZONE EXPANDER

10.3.1 INSTALLING THE MODEL 4130

The Model 4130 is an RF (Radio Frequency) zone expander. This module mounts inside of the 4720 cabinet and is then connected to the Model 4135 Remote Receiver. This expander can provide up to 64 additional zones to the 4720. Each RF Transmitter becomes a separate zone which reports to the remote receiver. The 4135 receiver communicates to the 4130 via a 4-wire cable with a wire gauge of 22 or larger, up to 500 feet in length, allowing placement of the 4135 for optimum RF reception.

NOTE: Any combination of two zone expanders may be used on the 4720 but the maximum number of zones (Including Keystation Panic Switches) cannot exceed 83.

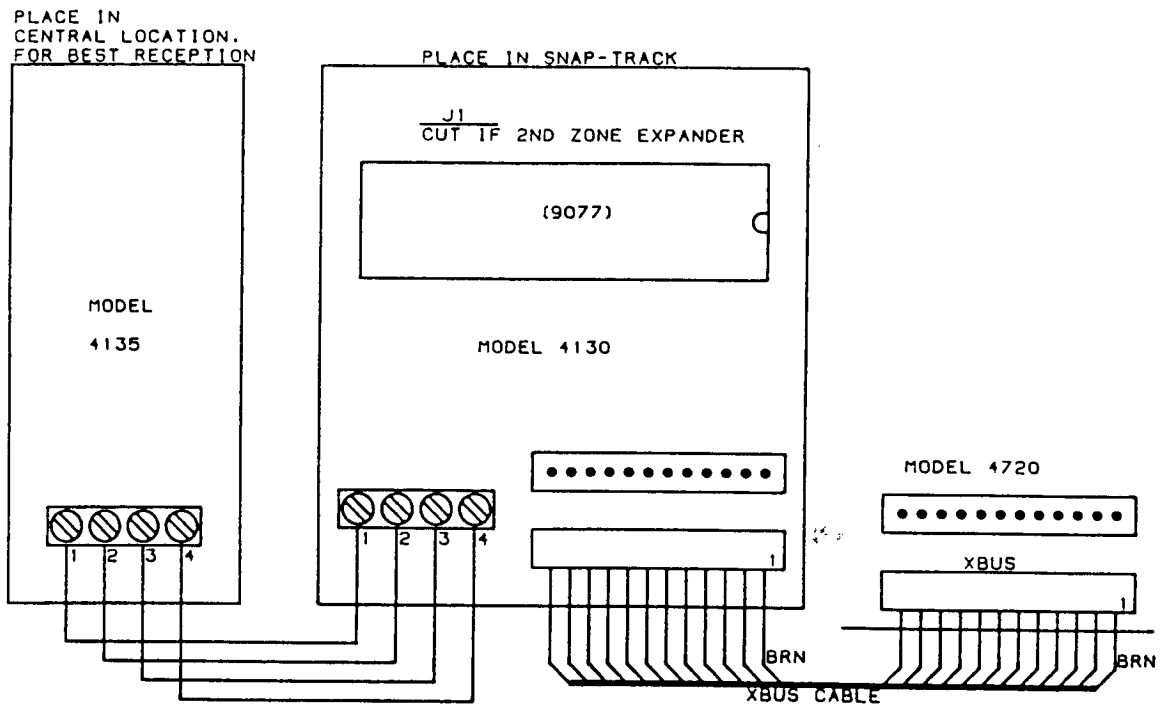


FIGURE 10.3A: WIRING THE MODEL 4130 RF ZONE EXPANDER AND MODEL 4135 REMOTE RECEIVER

10.3.2 PROGRAMMING THE TRANSMITTERS

See the Model 4130/35 Installation Manual (P/N 150474).

11 LOCAL ANNUNCIATION

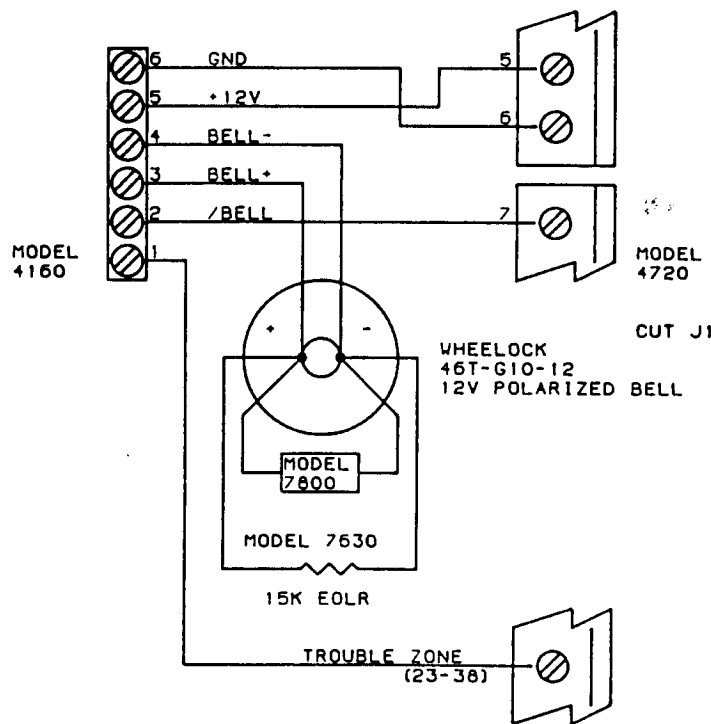
11.1 FIRE BELL WIRING WITH THE MODEL 4160 SUPERVISED BELL MODULE

The Model 4160 Supervised bell module is required for Local Fire Alarm (NFPA 72A, UL 864) installations. You MUST use a Wheelock 46T.G10 polarized bell with this module. Follow the directions below to install the 4160.

NOTE: The Wheelock Model 46T.G10 will provide 85 dB at 10 feet.

1. Attach a 15-K Ω End Of Line resistor (SK Model 7630) across the coil of the last bell in the loop.
2. Wire the Negative (-) side of the bell(s) to Terminal 4 of the 4160.
3. Wire the Positive (+) side of the bell(s) to Terminal 3 of the 4160.
4. If the board has a shunt block, move it to the left ("out") position. If there is no shunt block, cut Jumper J1 on the Model 4720 control panel.
5. Connect Terminal 7 of the 4720 to Terminal 2 of the 4160.
6. Connect Terminal 5 of the 4720 to Terminal 5 of the 4160.
7. Connect Terminal 6 of the 4720 to Terminal 6 of the 4160.
8. Connect Terminal 1 of the 4160 to any unused zone of the 4720.

NOTE: The zone must be programmed as Normally Open, 24HR. Supervised. This zone MAY NOT be used as an ALARM input.



Current rating:

See Table 4A.

FIGURE 11.1A: MODEL 4160 SUPERVISED BELL MODULE WIRING

11.2 COMMERCIAL BURGLARY BELL WIRING

Figure 11.2A shows the wiring of an external DC alarm bell. If you use a DC bell, you must either move the shunt block to the left ("out") position or, if there is no shunt block, cut the jumper labeled "J1" on the PC board. You must also install the supplied transient suppressor Model 7800, as close as possible to the bell contacts.

Note 1: When used in a UL Certificated, Grade A Mercantile (UL 365), Grade A Local (UL 609) or Grade B Central Station (UL 1610) installation, an external alarm bell must be enclosed in UL Listed cabinet with tamper switches. The AB-12 bell and housing manufactured by Ademco is UL approved for this purpose.

Note 2: CSFM listed systems require one (1) listed audible driver to be installed inside of the residence.

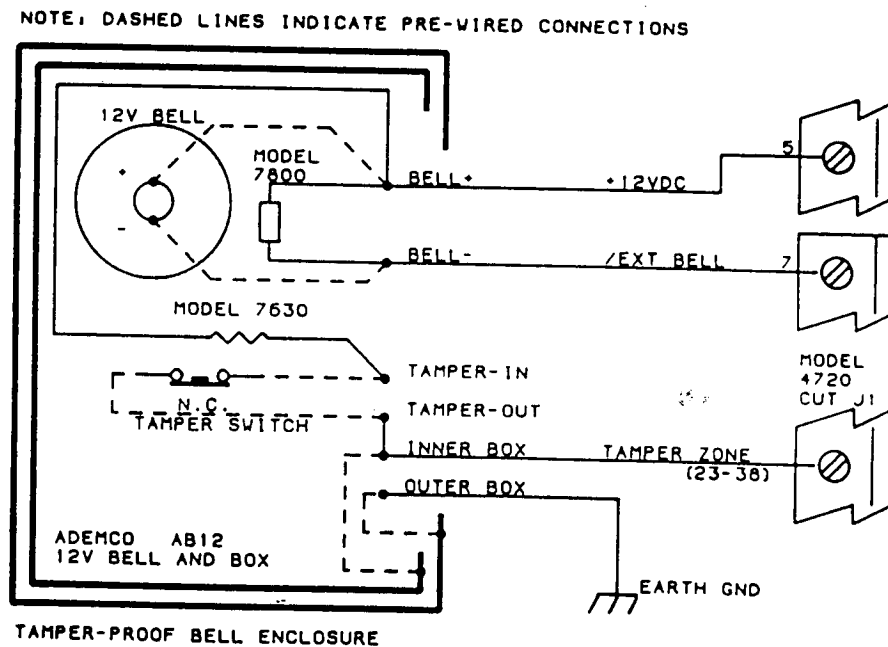


FIGURE 11.2A: COMMERCIAL BELL WIRING

11.3 EXTERNAL SPEAKER WIRING

Terminal 4 (Ext. Spkr.) of the 4720 is designed for use with an 8- Ω 15-W speaker. Connect the speaker between Terminals 4 and 7 as shown in the diagram below. DO NOT cut Jumper J1 on the 4720. If the board has a shunt block, leave it in the right ("in") position. An external speaker is NOT permitted for UL Commercial installations. It is only permitted in UL Residential installations. The Ademco 713 is a suitable UL Listed speaker.

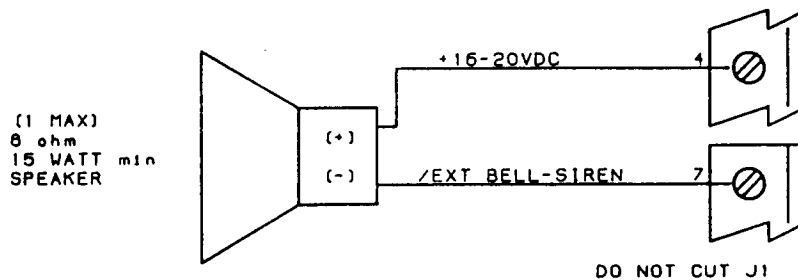


FIGURE 11.3A: EXTERNAL SPEAKER WIRING

11.4 INTERNAL SPEAKER WIRING

If an Internal Speaker is to be used such as in a keystation, it must be connected between Terminal 5 (auxiliary power, speaker +) and Terminal 8 (speaker -). The 4720 was designed for use with an 8- Ω 9-W internal speaker or up to six 45- Ω 1-W speakers.

If you wish to have alarm sounds only on some speakers, then cut Jumper J2 (move shunt block to the left/"out" position). After doing so, speakers connected to Terminal 8 will produce alarm sounds only, but speakers connected to Terminal 45 will still produce both alarm and alert sounds.

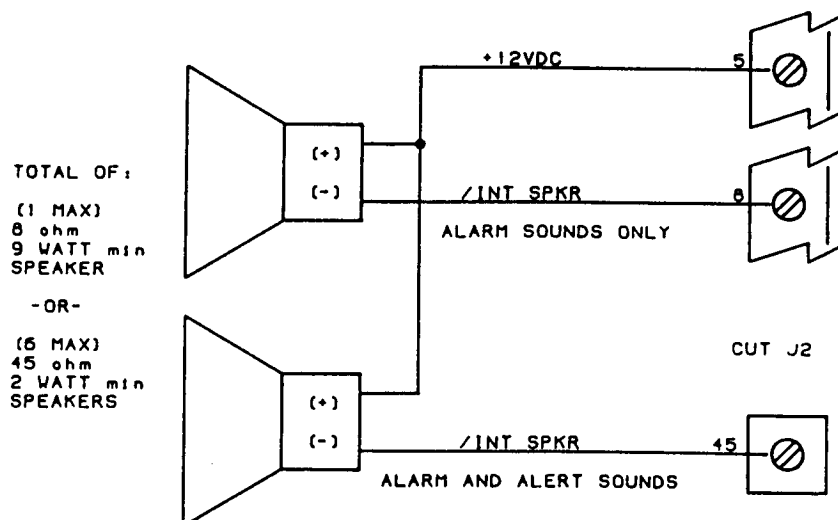


FIGURE 11.4A: INTERNAL SPEAKER WIRING

11.5 MODEL 4180 STATUS RELAYS

See the 4180 Status Display Module Wiring Instructions (P/N 150445) for information on how to install the 4180.

11.6 MODEL 4184 WATCHDOG MODULE

11.6.1 MODEL 4184 WATCHDOG MODULE WIRING

The Model 4184 Watchdog Module connects to the Silent Knight Model 4720 Control communicator in order to comply with NFPA commercial fire protection equipment standards.

NFPA Standards require that all equipment trouble conditions must be reported. The Model 4184 Watchdog Module monitors failures of all keystations or failures in the control micro control unit, as the keystations themselves cannot annunciate these types of malfunctions.

The Model 4184 operates by monitoring the data from the keystations. The control polls each keystation every 70 seconds. If the data signal fails for any reason, the 4184 will time out and begin emitting a steady tone until the signal is restored. The audible signal from the 4184 Watchdog module cannot be silenced.

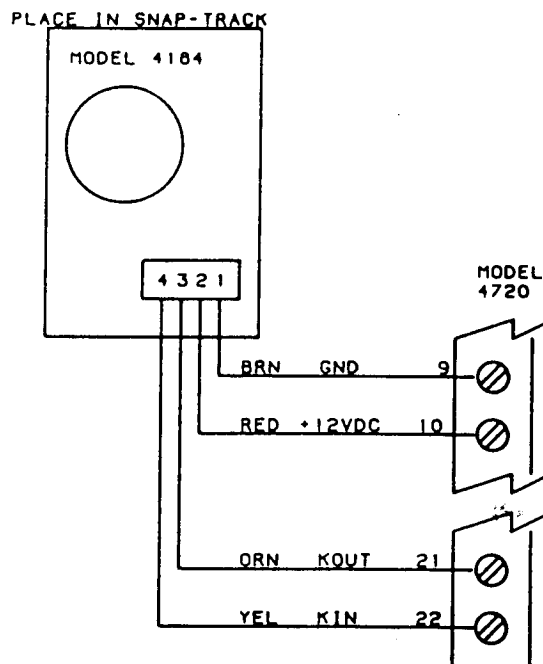


FIGURE 11.6A: MODEL 4184 WATCHDOG MODULE WIRING

The Model 4184 Watchdog Module is installed in the SNAP-TRAK, and connects to the Model 4720 control communicator through a 4-conductor cable (Silent Knight part number 130235) in the following manner:

- | | | |
|--------|-----------------------|--------------------------------|
| Brown | - Terminal 9 of 4720 | (circuit ground) |
| Red | - Terminal 10 of 4720 | (+12 Vdc fused by F3) |
| Orange | - Terminal 21 of 4720 | (serial data to keystations) |
| Yellow | - Terminal 22 of 4720 | (serial data from keystations) |

11.6.2 OPERATING PROCEDURE, 4184 WATCHDOG MODULE

If a short or open should develop in keystation power (Terminal 20 or Fuse F2), the LCD will go blank. The Model 4184 Watchdog module will start its audible alarm within 2 minutes of this event.

If a short or open circuit should develop in the data flow to the keystations (terminal 21), the LCD will not change its displayed information. In this situation, the control communicator will reset the keystations within 70 seconds. A single letter will appear, and all LEDs will be turned on. The 4184 Watchdog module will start its audible alarm at this moment.

If a short should occur in the data from the keystations (terminal 22), the following events will occur. The Model 4720 control communicator will reset the keystations every 4 seconds. This will cause the LEDs to flash and an audible signal will be heard. The Model 4184 Watchdog Module will not be activated.

If an open condition should occur in the data flow from the keystations (terminal 22), the following events will occur. The control communicator will reset the keystations within 70 seconds. A single letter will appear on the keystations and all LEDs will be on. The audible alarm will beep once. The Model 4184 Watchdog module will begin emitting its audible alarm within the next two minutes.

If a failure should develop in the control MCU, the Model 4184 Watchdog module will start emitting its alarm within 2 minutes.

12 TELEPHONE LINE CONNECTION

12.1 LINE 1 WIRING

The Model 4720 communicates to the central station over the same telephone line already installed in your home or building. You should connect the 4720 to the phone line using an RJ31X type phone jack. The telephone company will install an RJ31X jack upon request. The Model 7860 connecting cord will mate to the RJ31X and can be wired into the 4720 as shown in Figure 12.1A below.

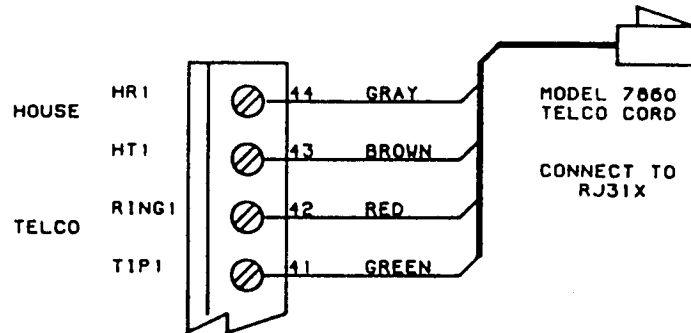


FIGURE 12.1A: TELEPHONE LINE WIRING

12.2 GROUND START RELAY WIRING

The Model 4720 normally communicates to the Central Station over standard "Loop Start" telephone networks. In some instances, it may be necessary to communicate over "Ground Start" telephone networks. Ground Start networks require a momentary connection between one side of the telephone line and earth ground to enable dial tone. The Model 4720 will accommodate Ground Start trunks with the addition of a 12 Vdc relay. Figure 12.2A shows the wiring of the Ground Start relay. If you use the Ground Start feature you must select it when programming the EEPROM.

Note: For an installation to be eligible for certification, it may not use a Ground Start telephone network because it cannot be supervised.

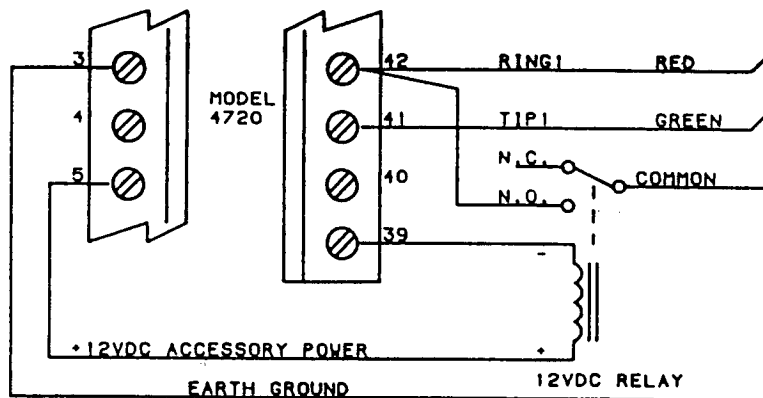


FIGURE 12.2A: GROUND START RELAY WIRING

12.3 EXTERNAL DIALER FAILED INDICATOR

A 12-V_{DC} device such as an indicator lamp or the coil of a 12-V_{DC} relay may be wired as a dialer failed indicator. To use a dialer failed indicator, connect the positive side of the indicator to Terminal 5 (auxiliary power) and the negative side to Terminal 40 (dialer failed).

In UL applications, this signal is provided from the keystations.

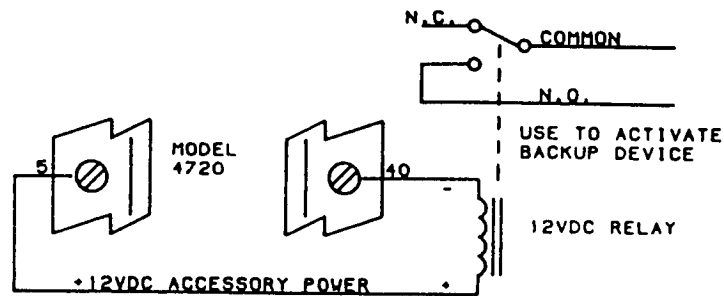


FIGURE 12.3A: EXTERNAL DIALER FAILED INDICATOR WIRING

12.4 MODEL 4175 DUAL PHONE LINE MONITOR WITH RING DETECTOR

12.4.1 MODEL 4175 WIRING

When using two phone lines, you must install the 4175 Dual Phone Line monitor.

1. Plug the 4175 onto the Phone Line Monitor connector on the 4720 printed circuit board (same connector as for the Model 4170).
2. Connect the second phone cord as shown in Figure 12.4A below. (The first phone cord for line 1 should be connected directly to the 4720 as described in Section 12.1).

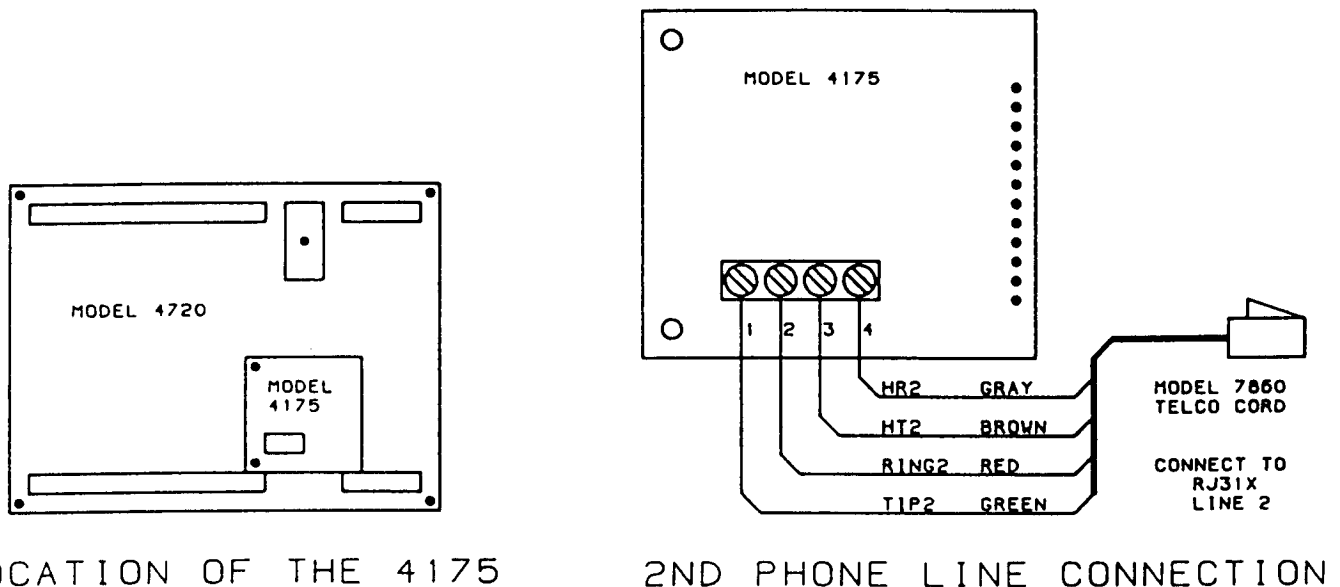


FIGURE 12.4A: MODEL 4175 DUAL PHONE LINE MONITOR WIRING

12.4.2 MODEL 4175 OPERATION

The 4720 will always try to use Phone Line #1 unless it is bad. If Phone Line #1 is bad, the 4720 automatically chooses Line #2. If the 4720 fails to communicate on its first attempt (on either line), it will automatically switch to the alternate phone line. It will repeat this sequence until it reaches a receiver or the total number of attempts (chosen during programming) is exceeded.

13 OTHER EXPANSION DEVICES

13.1 MODEL 4140 INTERCOM/TELEPHONE CONTROLLER

If you will be using the Intercom/Telephone feature of the Model 4553 (4550) Keystation or if you will be using the Listen-In feature of the 4720, you will need to install the Model 4140 Intercom/Telephone Controller. The 4140 may also be used with the Model 4143 (4145) Intercom Station. The 4140 is contained in its own cabinet which should be mounted near the 4720 Control Panel. Two 12-wire conductors are provided with the 4140 to connect it to the 4720. The 4140 must be mounted within 3 feet of the 4720 and the wiring must be run in conduit. Follow the instructions below to connect the 4140 to the 4720 (see figure 13.1A).

1. Connect one end of a 12-wire conductor to the connector labeled "EXPANSION" on the 4140.
2. Connect the other end of the cable to the connector labeled "EXPANSION" or "XBUS" on the 4720.
3. Using the second cable, connect one end to the "ICOM" connector on the 4140.
4. Connect the other end of the cable to the "ICOM" connector on the 4720.

Figure 13.1A shows how to connect the 4140 to the 4553 (4550) keystations and the 4143 Intercom Station.

13.1.1 CONNECTING THE 4140 TO THE 4553 (4550) KEYSTATIONS

There are 22 terminals on the Model 4140 (20 terminals on boards older than Revision D). The terminals labeled M1 through M8 are Microphone Signal terminals for stations 1-8 respectively. The terminals labeled S1 thru S8 are Speaker Signal Terminals for Stations 1-8 respectively. The terminals labeled with the letter "G" are Signal Grounds. On boards with Revision Code D, terminals labeled "+12" are for Model 4143 (4145) power. When connecting the Model 4140 to the Model 4553 (4550) Keystations, **it is very important to use shielded 2-wire cable.** To connect a 4553 as Station #1, connect Pins 1 through 4 of the 4553 to the 4720 as described in the wiring chart. If you were connecting a 4553 as Station #2, you would use terminals M2, S2 and G.

NOTE 1: Use 18-gauge wire or larger (i.e., 16, 14, etc.). Maximum length is 1000 feet.

NOTE 2: Boards with Revision Code D have 2 additional power terminals.

WIRING CHART

PIN #	4720	4140	DESCRIPTION	COLOR
1	19		KEYSTATION GROUND	BROWN
2	20		KEYSTATION POWER	RED
3	21		KEYSTATION IN	ORANGE
4	22		KEYSTATION OUT	YELLOW
5		GND	INTERCOM GROUND	GREEN
6		N/C	NOT USED	BLUE
7		SX *	INTERCOM SPEAKER	VIOLET
8		MX *	INTERCOM MIC	GRAY

* NOTE: The letter "X" after the Terminals S and M refers to Inputs 1-8.

13.1.2 CONNECTING THE 4140 TO THE 4143 (4145) INTERCOM STATION

To connect the Model 4140 to the Model 4143 you must use a 3-conductor shielded cable. The table below shows how to connect the 4143 as station #1. You may connect the 4143 as any Station number from 1 to 8. The digits following the letters S and M indicate which station number you are wiring on the 4140.

4140 TERMINAL #	4143 PIN #	DESCRIPTION
GND	1	GROUND
+12	2	AUXILIARY POWER
S1	3	SPEAKER SIGNAL
M1	4	MIC SIGNAL

NOTE 1: Use 18-gauge wire with a maximum length of 1000 feet.

NOTE 2: On 4140 boards prior to Revision D, Pin 2 of the 4143 must be wired to Terminal 5 on the Model 4720.

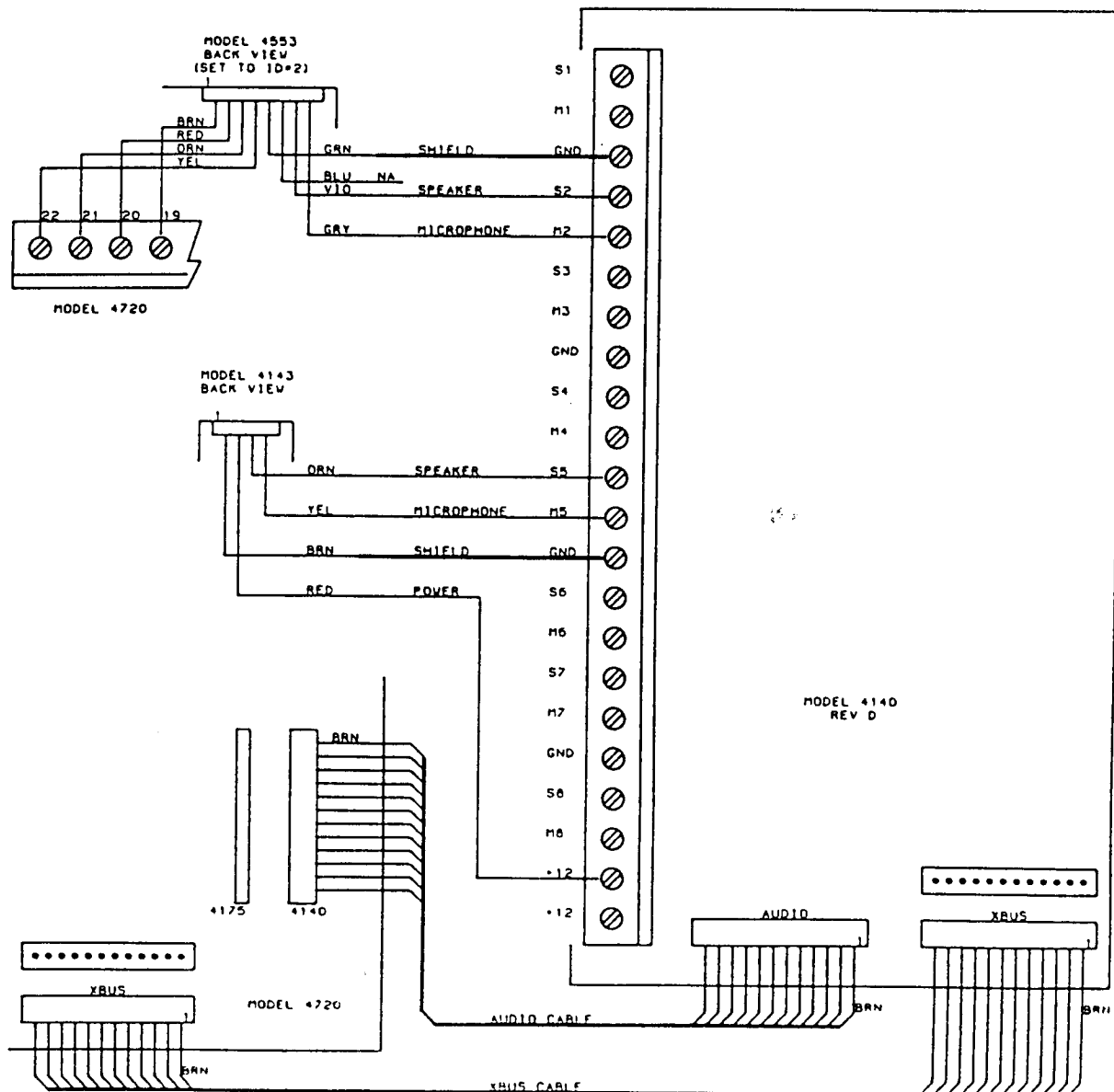


FIGURE 13.1A: MODEL 4140 INTERCOM/TELEPHONE CONTROLLER

13.2 MODEL 4150 ENVIRONMENT CONTROL

See the Model 4150 Auxiliary Control Module installation manual (P/N 150475).

13.3 MODEL 5255 ON-SITE PRINTER

For 5255 installation instructions, refer to the 5255 printer manual (P/N 150296).

NOTE: The 5255 uses printer paper with the part number 005257. The LCD displays the message "PAPER" when the printer runs out of paper.

13.4 MODEL 7367 TWO-WAY AUDIO LISTEN-IN MODULE

Figure 13.4A shows how to wire the Model 7367 Two-Way Audio Listen-In Module using the supplied microphone. Figure 13.4B shows how to wire the 7367 using the Model 4143 (4145) speaker and microphone. Refer to the Model 7367 Installation Instructions (P/N 150572) for additional information.

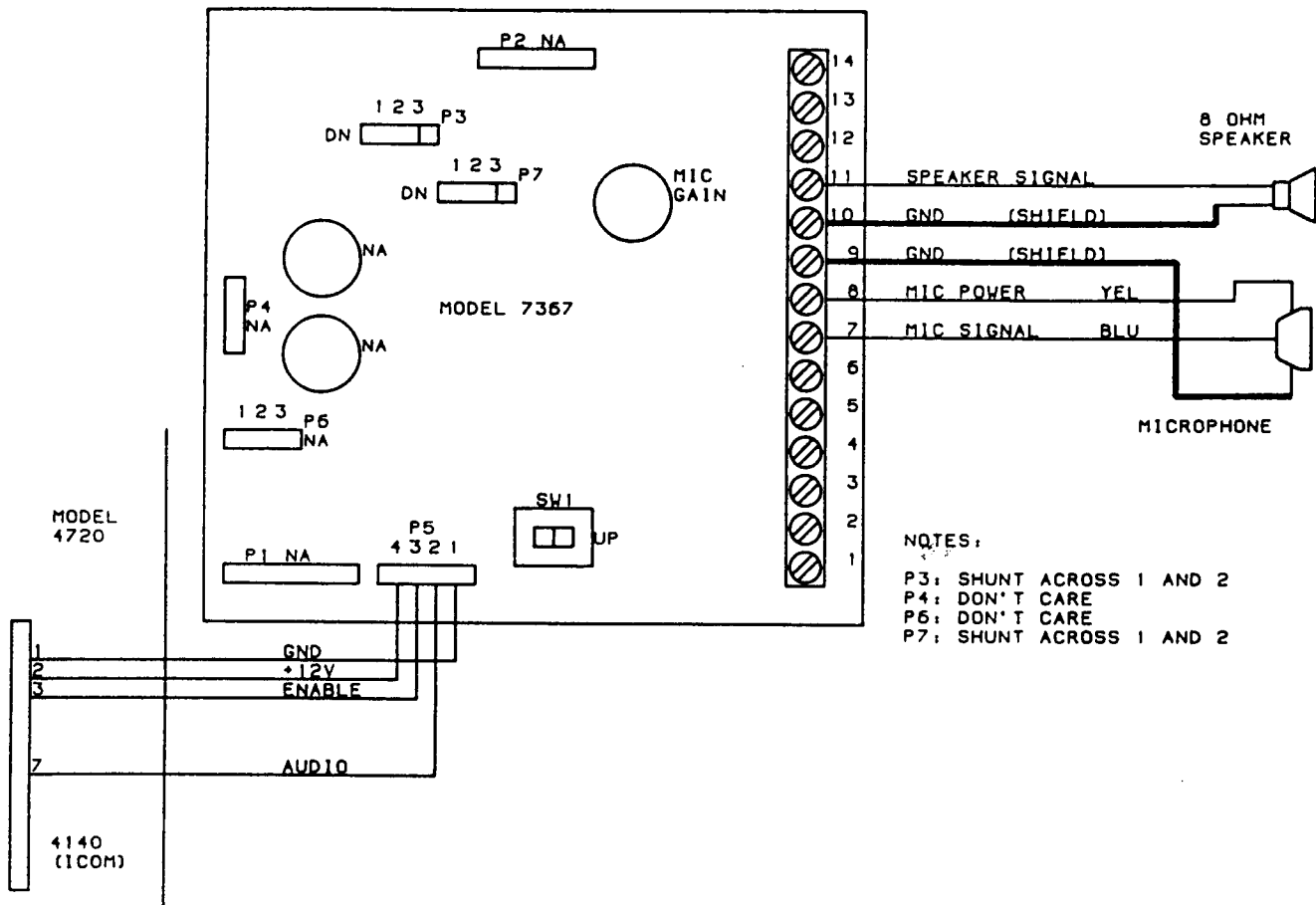


FIGURE 13.4A: MODEL 7367 WITH SPEAKER AND SUPPLIED MICROPHONE

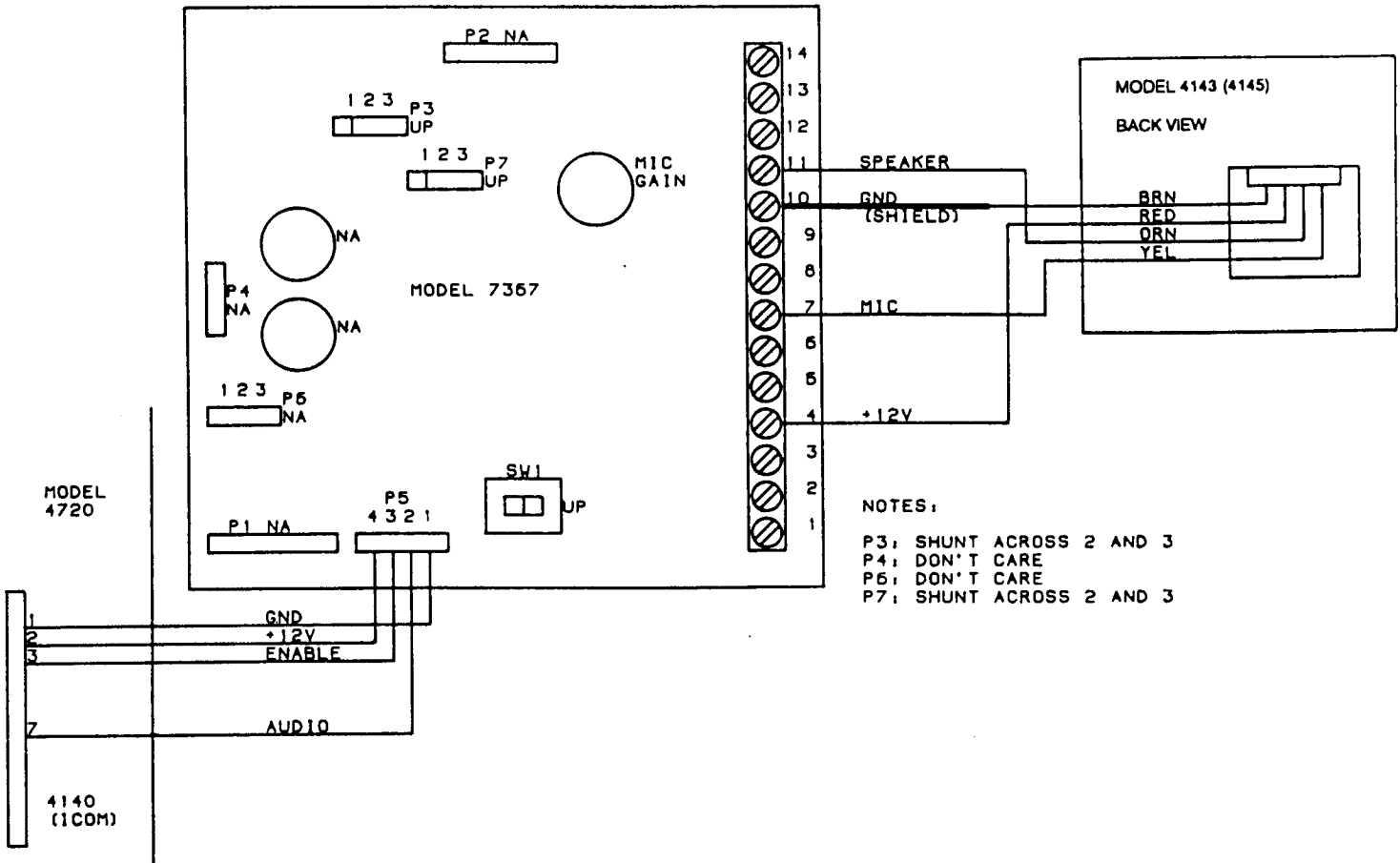


FIGURE 13.4B: MODEL 7367 WITH MODEL 4143 (4145) SPEAKER AND MICROPHONE

13.3 MODEL 7171 CLASS A CIRCUIT MODULE

The Model 7171 allows the conversion of style A (formerly class B) zones to style D (formerly class A) on the Silent Knight Model 4720. The 4720 can be used in UL Fire Alarm Installations as an approved Digital Fire Transmitter by providing style D supervised loops for monitoring waterflow sensors. Each 7171 module converts one style A zone to a style D zone. The style D supervised 4-wire loop of the 7171 can still detect an alarm after any single fault (open circuit or ground fault) has occurred in the loop wiring. The 7171 will detect an open in either of its sub-loops, which will be reported as zone trouble by the control. The 7171 can also detect ground faults. When using more than one 7171 on a 4720 control, all but one should have jumper J1 cut as the method used to detect ground faults will cause all of the 7171's to report trouble if any one detects a Ground Fault. This will prevent confusion at the central station.

NOTE: According to the latest NFPA requirements, class B zones (the type used with the 4720 Control/Communicator) are now designated as "style A."

13.3.1 INSTALLATION

Refer to UL 864 and NFPA 71 when installing a UL Fire Alarm System. Figure 13.3.1A shows the proper wiring of the 7171 to various Silent Knight controls and to the initiating devices. The zone output of the 7171 (terminal 6) can be connected to any of the unused zones on the main control board of the 4720 as long as the zone is programmed for 24 Hour Trouble (see 4720 programming for more information). End-of-line resistors are not required on the zone input as they are built into the 7171. All wiring to and from the 7171 must be run through electrical conduit to comply with UL 864 and NFPA 71. Connect terminal 8 of the 7171 to the conduit.

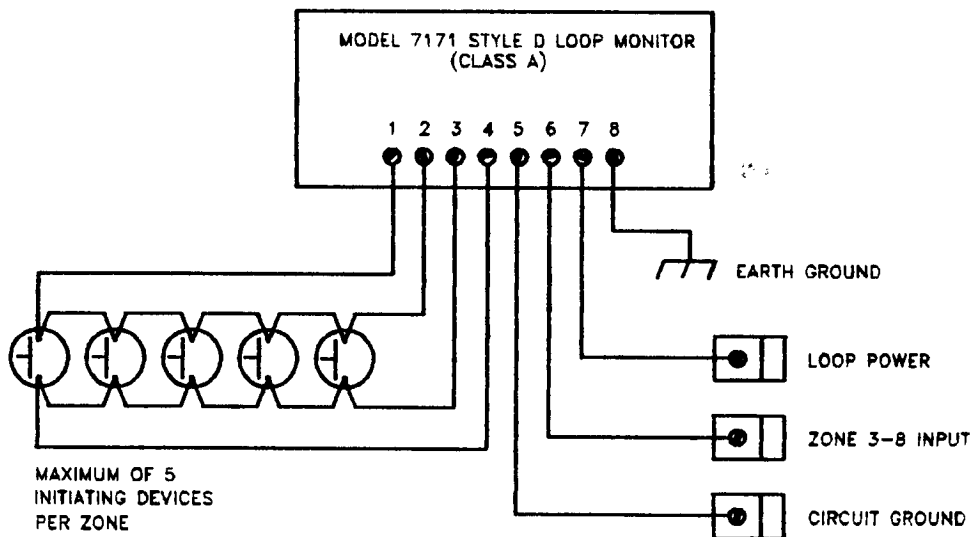


FIGURE 13.3.1A: MODEL 7171

13.3.2 WIRING

Wire the sensors as follows:

1. Run wires from terminals 2 and 3 of the 7171 to the first sensor, connecting one wire to each side of the sensors' Normally Open contacts.
2. Run wires from the first sensor to the second sensor and so on, up to a maximum of 5 sensors on each 7171 module.
3. Run wires from the last sensor back to the 7171 terminals 1 and 4. Be sure that the loops run from terminals 1 to 2 and 3 to 4. Note that all of the sensors are wired in parallel, and each sensor has 4 wires connected to it (2 wires from each side of the contacts).

13.3.3 SPECIFICATIONS

12 V_{DC} - 7 mA Standby, 25 mA Alarm

24 V_{DC} - 15 mA Standby, 50 mA Alarm

INITIATING DEVICES - Maximum of 5

TYPE - Normally Open Contacts

MAXIMUM CONTACT RESISTANCE (each): 200 Ω @ 12 V_{DC}, 100 Ω @ 24 V_{DC}

MAXIMUM WIRING RESISTANCE (total): 400 Ω @ 12 V_{DC}, 200 Ω @ 24 V_{DC}

14 PROGRAMMING

14.1 MODEL 4720 DOWNLOADING (WITH 5540 PC DOWNLOADING SOFTWARE)

14.1.1 INITIAL DOWNLOAD

The Model 4720 was programmed at the factory to Answer Ring Detect after 10 rings. Once the Model 4720 is installed, the downloading computer can call the Model 4720. After 10 rings, the 4720 will answer the call and downloading will begin.

14.1.2 SUBSEQUENT DOWNLOADS

If the Ring Detector option is still enabled, the computer can call the Model 4720 as described above. Downloading can also be initiated by pressing <4>, <TEST>, followed by Code 0 or Code 1.

During uploading or downloading, the LCD will display "UP/DOWNLOAD". During the downloading of options to the EEPROM, the LCD will also display address numbers. Downloading of all options takes approximately 4 minutes. Downloading cannot take place while the system is in alarm.

WARNING: During downloading, the system will NOT respond to alarms.

14.1.3 RING DETECTOR

The Model 4720 has a built-in ring detector. This ring detector, when enabled, allows the remote computer to call up the 4720 for downloading or status changes.

14.2 MODEL 5520 FIELD PROGRAMMER

See the Model 5520 Programmer Manual (P/N 150479) for instructions on using the programmer.

15 PROGRAMMING OPTIONS

15.1 FACTORY PROGRAMMED EEPROM

The EEPROM (Electrically Erasable Programmable Read Only Memory) contains information that is used by the Microprocessors. This information determines what options the system will perform.

The 4720 is shipped with an EEPROM that has been factory programmed with the options listed below, so that the system is operational as soon as it is installed. Any options not listed below have default values of "NO" or "Zero" or "Blank."

For more information on these options, see the Model 4720 Programming Options Descriptions (P/N 150299).

SYSTEM OPTS: DEFAULT MODE = Force Close; DIALER = YES; E/E BEEP PZT = YES; SWINGER BYPASS = YES; DELAYED BYPASS = YES; MAX SKEY ID = 1; DISP SPEED = 1.5 sec.

INTERNAL ZONES: ZONE MODE = STANDARD; LAST INTERNAL Z# = 16; Zone #1 (Fire) = N.O., 24-Hour Alarm, 24-Hour Supervised, Not Bypassable; Zones 2-16 (Intrusion) = N.O., Bypassable; all ZONE SPEEDS = 2 (62 MS); .

EXPANSION ZONES: LAST EXP1 Z# = 80; LAST EXP2 Z# = 80; RESIDENCE CODE = 0123; Zones 17-80 (Intrusion) = Bypassable.

DIALER: ANSWER RING = YES; UP/DOWN USED = YES; FAIL ATTEMPT = 5; TOTAL ATTEMPTS = 10; # RINGS = 10; AC LOSS HOURS = 4; REPORT ALARM to ph#1; REPORT TROUBLE to ph#1; REPORT OP RESET to ph#1; REPORT TEST to ph#1; REPORT TROUBLE to ph#1; MUST REPORT to ph#1; FORMAT #1-4 = SEIA8; ATTEMPTS #1-4 = 1.

TIMERS: AUD SHUTDOWN = 9 (9*10 = 90 sec.); EXIT DELAY = 30 sec.; ENTRY DELAY 1 = 30 sec.; ENTRY DELAY 2 = 60 sec.; SWINGER WINDOW = 4 hours; RF SUPERVISION = 24 hours; DOOR STRIKE = 6 (6*.8 = 5 sec.); DOOR OPEN MAX = 60 sec.; ALM REP DELAY = 15 sec.; SPECIAL DAYS = Saturday and Sunday.

ACCESS OPTS: All functions (DR, BY, CL, OP) enabled for all Codes (0-99).

SECRET CODES: DURESS TRIGGER = 99; CODE 0 = 123456.

WINDOW TIMES: NORM OPEN = from 06:30 until 09:30; NORM CLOSE = from 16:00 until 20:30; SPEC OPEN = FROM Never UNTIL Never; SPEC CLOSE = FROM 00:00 UNTIL 00:00 (always)

SYSTEM MESSAGES: (The preprogrammed system messages are listed in the Model 4720 Programming Record, P/N 150298.)

ZONE TYPES: Zone 1 = Fire, No Shutdown; Zones 2-80 = Intrusion; Zone 81 (FIRE key) = Fire; Zone 82 (EMER or * keys) = Medical; Zone 83 (POLICE key) = Panic.

15.2 REPROGRAMMING THE EEPROM

To change the options, the EEPROM must be reprogrammed using the Model 5520 Programmer, the 5540 Downloading Software or one of the keystations that has an LCD Display. For more information on programming, see Section 14, the Programming Options Description and the Model 4720 Programming Record (P/N 150298).

NOTE: Use of a keystation for system programming is not recommended due to extensive programming options. However, reprogramming (changing) of selected options can be easily accomplished by using the Hexadecimal Programming Manual which is available from Silent Knight.

CAUTION: When reprogramming the EEPROM, you must load the preprogrammed information into the programmer BEFORE editing. If this is not done, valuable default information will be lost.

16 KEYSTATION OPERATION

The following paragraphs describe the functions of the indicators and switches provided on the keystations. Keep in mind that some of the keystations do not provide all of the functions listed. If you are using a keystation that does not have a described function, skip that particular paragraph.

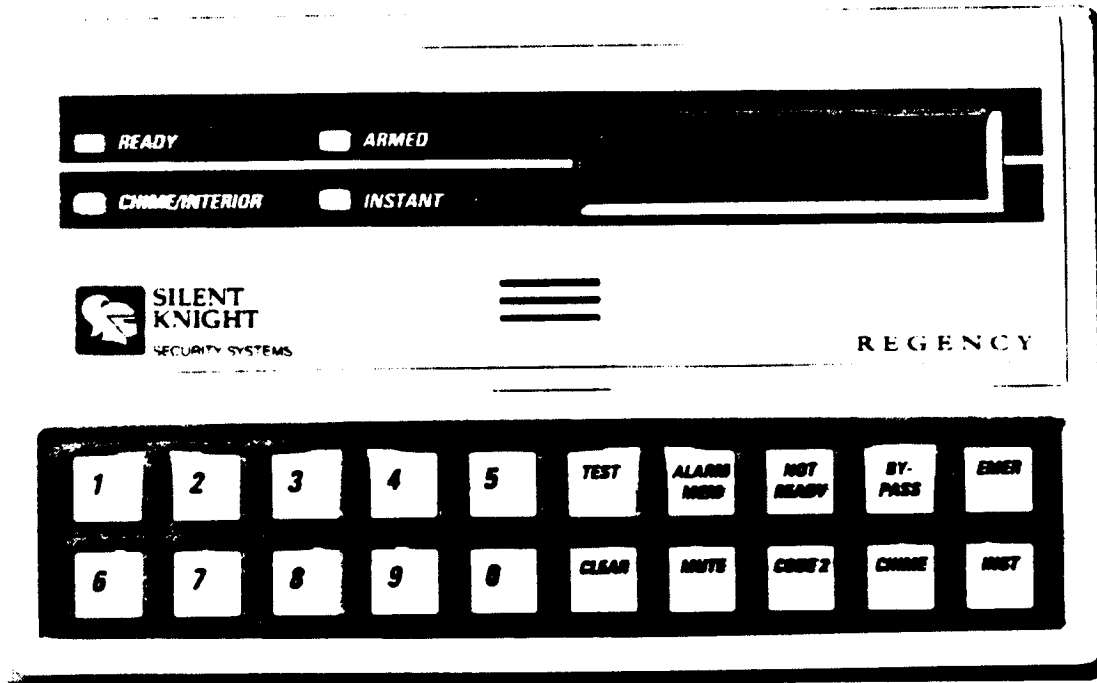


FIGURE 16A: MODEL 4533 KEYSTATION

16.1 LED INDICATORS

READY LED

ON = System is DISARMED and there are no zones in a NOT READY condition (System is "ready" to be armed).

OFF (system disarmed) = *One or more zones are in a NOT READY condition ("Not Ready" to be armed).

OFF (system armed) = Normal operating condition.

FLASHING = System is reporting to the central station.

*NOTE: The system can be armed when the READY light is OFF only if the Force Arming option was selected in programming.

ARMED LED

ON = Indicates that the system is ARMED.

OFF = System is DISARMED.

FLASHING = Indicates an ALARM condition.

CHIME/INTERIOR LED (Residential Only)

ON (system disarmed) = Audible entry/exit tone will be sounded when a chime zone is violated.

OFF (system disarmed) = No tone will be sounded.

ON (system armed) = Interior zones are active and will cause an ALARM if violated.

OFF (system armed) = Violation of an Interior zone will not cause an ALARM.

CHIME LED (Commercial Only)

ON = Audible tone will be sounded when a chime zone is violated.

OFF = No tone will be sounded.

NOTE: The Chime function is not active when the system is ARMED.

INSTANT LED (Residential Only)

ON = Zones that were programmed as Delayed zones will now act as Instant zones with no delay before activating an ALARM.

OFF = Delayed zones will work as programmed.

16.2 KEYSTATION LCD

The 2-line x 16-character, backlit LCD displays system status and time, and will display zone status upon demand.

16.3 KEYSTATION PZT

The PZT beeps when keys are pressed, and also annunciates troubles, entry/exit delays, and alarms.

16.4 SPEAKER SOUNDS

Internal speakers will make the following different sounds:

Fire Alarm - A high-volume, high-pitch intermittent tone.

Emergency Alarm - A high-volume, slowly alternating high/low pitch constant tone.

Intrusion Alarm - A high-volume, alternating high/low pitch constant tone.

Auxiliary Alarm - Short, alternating high/low pitch pulses.

Door Chime - A low-volume, high/low pitch tone similar to a doorbell. Sounds once each time a perimeter sensor is opened or closed.

Trouble Condition - A low-volume, high-pitch tone that sounds for one seconds every few seconds.

16.5 KEYSWITCHES

CAUTION: To avoid damage to the keypad, **NEVER** use sharp objects such as pens or fingernails to activate the keys.

DIGITS 0-9

Used to enter the digits 0-9 respectively.

TEST

Used to enter a variety of TEST modes.

CLEAR

Used to Clear incorrect entries so that the correct information may be entered.

BYPASS (SHUNT)

1. Used to "BYPASS" ("SHUNT") zones that you wish to be disabled when the system is armed.
2. Used to "UNBYPASS" ("UNSHUNT") previously bypassed zones.

CODE 2 (Residential Only)

Allows secondary access codes to be used to arm and disarm the system.

STATUS (NOT READY)

Used when the system is disarmed to display the zones that are NOT READY to be armed or zones that are in "trouble".

CHIME/INTERIOR (Residential Only)

1. When the system is disarmed, this key is used to toggle the entry chime feature ON and OFF.
2. When the system is armed, this key is used toggle the Interior zones ON and OFF.

NOTE: This key can be disabled once the system is armed.

ALARM MEMORY

Used to display zones that were in Alarm since the last arming.

MUTE

Used to "SILENCE" the Trouble Alert Tone, clear the Alarm Memory, or exit from the programming mode.

INSTANT

Used to toggle Entry zones between Delayed and Instant.

POLICE (Large Residential Stations Only)

Used to activate a Panic Alarm from the keystation.

EMERGENCY (Residential Only)

Used to activate a Medical Alarm from the keystation.

***** (Commercial only)

Pressing both * keys will activate an Emergency (Panic or Medical) alarm.

FIRE (Residential Only)

Used to activate a Fire Alarm from the keystation.

DOOR (Commercial Only)

1. Used to activate the doorstrike relay.
2. Used to activate auxiliary devices connected to the keystation via a Silent Knight Model 4150 external control module.

CHIME (Commercial Only)

Used to toggle the Chime feature ON and OFF.

17 KEYSTATION FUNCTIONS

17.1 VIEWING STATUS

When the <STATUS> (<NOT READY>) key is pressed the display will show the zones that are "Not Ready" to be armed. This key is also used to display Trouble conditions: If the display shows "TROUBLE", press this key and the display will show what type of Trouble condition exists.

17.2 SILENCING TROUBLES

Press the <MUTE> key twice to silence the trouble alert tone. The LCD will show "SILENCED" instead of "TROUBLE". If a new trouble condition occurs, the alert tone will be reactivated.

17.3 BYPASSING (SHUNTING) ZONES

When the system is disarmed and the <BYPASS> (<SHUNT>) key is pressed, the LCD or LED display will show the zone number of the zones that are currently bypassed. When using a keystation with an LCD display, the location of the zone will also be displayed. If you wish to display the bypassed zones while the system is armed, you must press the <BYPASS> (<SHUNT>) key, followed by your Access Code. If there are no bypassed zones, the display will remain in the normal state.

17.3.1 HOW TO BYPASS (SHUNT) A ZONE (system disarmed)

- a. Enter the number of the zone that you wish to bypass.
- b. Press the <BYPASS> (<SHUNT>) key
- c. If an LED Keystation is being used, either an LED will turn ON indicating that the zone was shunted or a warning tone will be sounded to indicate that the zone cannot be bypassed.
- d. If an LCD keystation is being used, either the display will show the bypassed zone, the display will show "ENTER CODE", or the display will show "RESTRICTED" indicating that the zone cannot be bypassed. If the zone is restricted, a warning tone will be sounded.

17.3.2 HOW TO UNBYPASS (UNSHUNT) A ZONE (system disarmed)

- a. Enter the number of the zone that you wish to unby pass.
- b. Press the <BYPASS> (<SHUNT>) key. (Zone is now unby passed.)
- c. If there is a warning tone and the zone does not unshunt, it means that the zone would go into Alarm if it were unby passed.

17.3.3 HOW TO BYPASS/UNBYPASS (SHUNT/UNSHUNT) WHEN ARMED

When the system is armed you must enter the zone #, press the <BYPASS> (<SHUNT>) key, and enter your Access Code.

17.4 ALARM MEMORY

TO DISPLAY ALARM MEMORY - Press the **<ALARM MEMORY>** key when the panel is disarmed to display zone Alarms which occurred since the last arming of the system.

During a "WALK TEST", press **<ALARM MEMORY>** to display the zones that were violated. The system will still be armed during the "WALK TEST".

TO CLEAR MEMORY - To Clear the Alarm memory, press the **<MUTE>** key followed by the **<ALARM MEMORY>** key.

NOTE: The Alarm Memory can store alarms from all 80 zones. However, the alarms are displayed in order by zone number, NOT in the order in which they occurred.

17.5 CHIME FUNCTION

17.5.1 RESIDENTIAL KEYPADS (<CHIME/INTERIOR> key)

1. Press the **<CHIME>** key while the panel is disarmed to toggle the CHIME function.
2. Press the **<INTERIOR>** key to toggle the Interior zones. This key may be Disabled once the system is armed. When the **INTERIOR** light is off, the Interior zones are not part of the system (sensors are ignored).

NOTE: If the Interiors will not turn on when armed, it indicates that one or more of the Interior zones are not ready.

17.5.2 COMMERCIAL KEYPADS (<CHIME> key)

Press the **<CHIME>** key while the panel is disarmed to toggle the CHIME function. Even though this key is not labeled "INTERIOR" on commercial keystations, it may be used to control any Interior zones.

17.6 PANIC KEYS

The **<POLICE>**, **<EMER>**, **<*>** and **<FIRE>** keys will generate an Alarm when held for 1 full second.

17.7 RESETTING AN ALARM

To reset an alarm, enter your access code.

17.8 SIGNALING DURESS

To signal Duress, enter the Duress trigger that has been programmed (1 or 2 digits) followed by your access code.

17.9 DOOR ACCESS

17.9.1 DOOR KEY (commercial keypads only)

1. Pressing the <DOOR> key followed by your Access Code, will cause the doorstrike output to activate.
2. If the High Security Access option was selected during programming, you must press the <DOOR> key (display shows "ENTER CODE A"), then the High Security Access Code (Code #99). The display will show "ENTER CODE B". Enter your personal Access Code to activate the doorstrike.
3. The <DOOR> key (commercial models) or the <CODE 2> key (residential models) may be used to activate the 4150 Auxiliary Control Module. This may be done in one of two ways.
 - a. (System Disarmed) - Enter the ID number of the auxiliary device being activated (1-8), then press the <DOOR> key.
 - b. If the system is armed or the option was selected that you always need to use your Access Code, you would follow the instructions for Step 1 then enter your Access Code after pressing the <DOOR> key.

17.9.2 CODE 2 KEY (residential keypads only)

Code 2 refers to secondary access codes (codes 10-99). Under normal operating conditions, these codes can arm the system only. When Code 2 is enabled, these codes may also be used to disarm the system.

1. TO ENABLE CODE 2

Press <CODE 2> followed by your access code (<0>-<9>). At this time, Code 2 will be enabled and the system will be armed.

2. TO DISABLE CODE 2

Disarm the system using a Primary Access Code (0-9). This will Disable the Code 2 function.

17.10 4150 RELAY ACCESS

To toggle a 4150 relay, press the relay number (<1>-<8>), then press either the <DOOR> (commercial) or <CODE 2> (residential) keys, followed by your access code if needed.

17.11 TEST MODES

The various TEST Modes are described below. TEST Modes can only be accessed when the system is disarmed. To access a TEST Mode, press the digit assigned to it (see the table below), then the <TEST> key, followed by Code 0 or Code 1. The system will always power up in the SET TIME Mode.

To return to the NORMAL OPERATING Mode from a TEST Mode, press the <MUTE> key twice.

TEST MODE	PRESS DIGIT	PRESS KEY	ENTER CODE 0 OR 1
DIALER TEST (DIGIT #1 NOT USED)	0	<TEST>	#####
WALK TEST	2	<TEST>	#####
RESET DIALER AND SMOKE DETECTORS	3	<TEST>	#####
REQUEST DOWNLOAD	4	<TEST>	#####
PROGRAM 4150	5	<TEST>	#####
HEX PROGRAMMER (MUST USE CODE 0)	6	<TEST>	#####
PROGRAM ACCESS CODES	7	<TEST>	#####
SET DATE (FOR 5255)	8	<TEST>	#####
SET TIME	9	<TEST>	#####

17.11.1 DIALER TEST

When the DIALER TEST Mode is accessed, the 4720 will send a "Dialer Test" to the central station receiver (same as if you didn't press any digit before the <TEST> key). To activate a Dialer Test, press the <TEST> key followed by a valid access code that can be used to arm the system.

17.11.2 WALK TEST

The WALK TEST Mode disables Alarm reporting allowing the installer to test all of the zones. A 2-second alarm will be sounded with each zone violation. The violated zones will be printed on the Model 5255 printer if one is being used. Each violation will be stored by the 4720 and can be viewed at the keystation by pressing the <ALARM MEMORY> key (see Section 17.4).

WARNING: During a WALK TEST, the system will NOT respond to real fire alarms.

17.11.3 RESET

The dialer will abort any calls in progress and the keystations and smoke detectors will be reset.

17.11.4 REQUEST DOWNLOAD

This mode causes the dialer to request downloading from a computer installed with Model 5540 Downloading Software.

17.11.5 PROGRAM SLOT #5

This mode is used to program the Model 4150 Auxiliary Control Module.

17.11.6 HEX PROGRAMMING

The HEX PROGRAMMING Mode is available only to Code 0 (see Section 18 for an example). All of the options that can be programmed using the Model 5520 programmer can also be programmed through the use of a full-function keystation with an LCD display (Models 4433/4530, 4540, 4553/4550, 4433/4430 or 4453/4450. **DO NOT** attempt to use this feature unless you are familiar with binary and hexadecimal numbering systems. Refer to the Hex Programming Manual available from Silent Knight.

17.11.7 PROGRAMMING ACCESS CODES

Programming of access codes can be accomplished from any LCD keystation.

CODE 0 is the installer's access code. It is the only code that will allow access to the HEX PROGRAMMING Mode, and as such, should be kept confidential.

NOTE: Any time this code is used to disarm the system, it will automatically and unconditionally report its use to the central station. (Dialer must be enabled.)

CODE 1 will not give the user access to the HEX PROGRAMMING Mode but is the only other code which will allow access to the other ACCESS CODE PROGRAMMING Mode.

Code 1 cannot be used to change Code 0.

PROCEDURE:

1. Press the digit **<7>**, then the **<TEST>** key, followed by either Access Code 0 or 1.
2. The display will show the code you entered.
3. If you do not wish to change this code, go to Step 7.
4. If you wish to change this code, press the **<CLEAR>** key followed by the new Access Code (3 to 6 digits).
5. Press the **<TEST>** key to store the new code in memory.
6. The display will now show the next code in the sequence. Repeat Steps 4 & 5 for each code that you wish to change.
7. To bypass a code press the **<TEST>** key. The display will now show the next code in the sequence (See Step 3).
8. To jump over more than one code, press the **<CHIME>** key then the number of the code that you wish to change followed by the **<TEST>** key (see Step 4).

*NOTE: Always remember to press the **<TEST>** key after entering a new access code.*

9. When finished, press **<TEST>**, **<MUTE>**, **<MUTE>** to exit the PROGRAMMING Mode.

17.11.8 SET DATE

If you are using a Model 5255 On-Site Printer you will want to set the correct date. To do this, press the digit **<8>**, then the **<TEST>** key, followed by a valid Access Code (Code 0 or Code 1). The display will show **"SET DATE"**.

EXAMPLE: To set a date of July 1, 1986, you would enter **<0-7-0-1-8-6>**.

Upon pressing the sixth digit in the string, the 4720 will automatically return to the normal operation mode. Always remember to enter leading zero's.

17.11.9 SET TIME

When you first apply power to the system, it will come up in the SET TIME Mode. If you are not in this mode, follow the directions below.

1. Press the digit **<9>**, then the **<TEST>** key, followed by a valid Access Code (0 or 1). The display will now show **"SET TIME"**.

2. The time setting is six digits in length. The first digit corresponds to the day of the week. The second digit will indicate either AM (0) or PM (1). The last four digits are the actual time in hours and minutes (include leading 0's).

3. To set the correct day, use the table below.

0 or 7	= Sunday
1	= Monday
2	= Tuesday
3	= Wednesday
4	= Thursday
5	= Friday
6	= Saturday

4. For the second digit in the time setting, enter a **<0>** if you are entering an AM time or enter a **<1>** if you are entering a PM time.

5. EXAMPLE: To set the time for Tuesday at 9:00AM you would enter **<2-0-0-9-0-0>**.

6. Upon pressing the 6th digit, the panel will return to its normal operating state.

17.12 INTERCOM OPERATION

When using the Intercom, you have a choice of talking to one (1) intercom station, all of the intercom stations, listening only to one station, or listening only to all of the stations.

17.12.1 2-WAY COMMUNICATION

To communicate with one station, follow the instructions below:

1. Enter the Station # (1-8) that you wish to communicate to, then press the <INTERCOM> key.
2. When you are done talking, press <INTERCOM> to turn off the Intercom.

NOTE: During 4720 programming you will select an Intercom Time-Out. This number will be from 15 to 255 seconds. The intercom feature will automatically hang up after the programmed time has elapsed. The Intercom will "BEEP" 10 seconds before it turns off.

17.12.2 INTERCOM PAGING

To call all of the intercom stations at one time, press the <INTERCOM> key without pressing any other key. When this is done, all of the Intercoms will be active.

17.12.3 LISTEN ONLY

1. To listen only to one station, enter the number of the station twice, then press the <INTERCOM> key.
2. When you are finished listening, press the <INTERCOM> key to turn off the Intercom.

EXAMPLE: If you wish to listen only to station #4, enter <4>, <4>, <INTERCOM>. You can now hear station #4 but station #4 cannot hear you.

17.12.4 LISTEN ONLY PAGING

1. To listen only to all of the stations, enter <1>, <0>, <INTERCOM>.
2. Press the <INTERCOM> key a second time to turn off the Intercom.

17.12.5 DO NOT DISTURB

As of Revision 880515 of the 4140 chip, the intercom has a DO NOT DISTURB feature:

1. To activate, press <9>, <INTERCOM>.
2. If anyone tries to contact that station by intercom, they will get a busy tone.
3. To restore normal operation, press <INTERCOM>.

17.13 TELEPHONE

The Telephone feature has the capability to store two (2) phone numbers up to 12 digits in length. It also has an automatic redial feature.

17.13.1 BASIC OPERATION

To answer the phone, simply press the <PHONE> key. To place a call, press the <PHONE> key followed by the phone number you wish to call. When you have finished with your call, press the <PHONE> key to hang up.

To turn off the microphone so that the person on the other end of the line cannot hear you, press the <MUTE> key. To turn the microphone back on, press the <MUTE> key again. The Phone will "BEEP" while in the MUTE Mode.

NOTE: If the Telephone Time-Out option was selected during programming, the telephone will automatically hang up after the time that was chosen for the intercom has elapsed. The phone will "BEEP" 10 seconds before it hangs up.

3. To redial the last phone number called, press the digit <9> followed by the <PHONE> key.

17.13.2 MEMORY DIALING

ENTERING MEMORY PHONE NUMBERS

To store a number in memory, follow the directions below.

1. Press the PHONE key.
2. Dial the number that you wish to store (up to 12 digits).
3. Press the <ALARM MEMORY> key followed by the digit <1> or <2> to store the number in memory location 1 or 2.
4. Press the <PHONE> key if you do not wish to complete the call.

DIALING MEMORY PHONE NUMBERS

1. To dial the phone number in memory location #1, press the digit <1> followed by the <PHONE> key.
2. To dial the phone number in memory location #2, press the digit <2> followed by the <PHONE> key.

18 KEYSTATION PROGRAMMING

All options can be addressed in HEX format. HEX programming is not recommended, except as a handy troubleshooting tool. To obtain a HEX programming form, contact Silent Knight Customer Service.

NOTE: Keystation programming can only be accomplished through the use of a full function keystation with an LCD display.

WARNING: During programming, the system will not respond to alarms.

The following procedure shows how to set up the system for downloading using the 4-TEST method (see Section 14.1.2).

1. Apply power to the 4720. The system will power up in the SET TIME Mode.
2. Press the <MUTE> key twice. You are now in the NORMAL OPERATING Mode.
3. Press the digit <6>, then the <TEST> key followed by Code 0. Code 0 is factory set to "1-2-3-4-5-6". This will place the 4720 into the HEX PROGRAMMING Mode. The display will indicate that you are at address \$000.
4. Press <CHIME>, <6>, <0>, <TEST>. This step takes you to address \$060, the display will show "\$060:\$XX".

At this point you will start entering the Computer Phone #. Each address location \$060 thru \$067 can hold two digits of the phone number. You must fill all of the address locations. If your phone number does not use all of the address locations, enter "FF" in the unused locations. To enter "FF" press <BYPASS> (<SHUNT>), <6>, <BYPASS> (<SHUNT>), <6>. The example below shows how you would enter the phone number 555-1212.

EXAMPLE:

Display = \$060:\$-- --, press <5>, <5>, <TEST>.

Display = \$061:\$-- --, press <5>, <1>, <TEST>.

Display = \$062:\$-- --, press <2>, <1>, <TEST>.

Display = \$063:\$-- --, press <2>, <BYPASS> (<SHUNT>), <6>, <TEST>.

Display = \$064:\$-- --, press <BYPASS> (<SHUNT>), <6>, <BYPASS> (<SHUNT>), <6>, <TEST>.

Display = \$065:\$-- --, press <BYPASS> (<SHUNT>), <6>, <BYPASS> (<SHUNT>), <6>, <TEST>.

Display = \$066:\$-- --, press <BYPASS> (<SHUNT>), <6>, <BYPASS> (<SHUNT>), <6>, <TEST>.

Display = \$067:\$-- --, press <BYPASS> (<SHUNT>), <6>, <BYPASS> (<SHUNT>), <6>, <TEST>.

5. At this point the display will show "\$068:\$XX". Press <STATUS> (<NOT READY>), <CLEAR>, <7>. The display will show "\$068:\$-----7". Press <TEST>. This step selects the UP/DOWN Report Enable.
6. Press <CHIME>, <6>, <BYPASS> (<SHUNT>), <6>, <TEST>, <STATUS> (<NOT READY>), <CLEAR>. The Display will show "\$06F:\$-----". Press the digit <4> if you are using Touch-Tone dialing on Line #1 (<5> for Touch-Tone on Line #2), then press <TEST>. If you ARE NOT using Touch-Tone dialing, just press the <TEST> key.

7. Press **<CHIME>**, **<BYPASS>** (**<SHUNT>**), **<1>**, **<8>**, **<TEST>**. The display will show "**\$0A8:\$XX**". For locations \$0A8 thru \$0AA you must enter the Account # that has been programmed into the downloading computer. Each address location can hold two digits of the Account number. If the Account number is not 6 digits long, you must enter leading 0's. The example below shows how to enter an Account # of 1234.

EXAMPLE:

Display = **\$0A8:\$-- --**, press **<0>**, **<0>**, **<TEST>**.

Display = **\$0A9:\$-- --**, press **<1>**, **<2>**, **<TEST>**.

Display = **\$0AA:\$-- --**, press **<3>**, **<4>**, **<TEST>**.

8. After entering the Account #, press the **<MUTE>** key twice to exit the PROGRAMMING Mode.
9. Press the digit **<4>**, then **<TEST>** followed by Code 0 to begin the downloading process. The display will indicate that the 4720 is downloading. After about 4 minutes the display will show "**READY**". The 4720 has now been programmed by the downloading computer.

19 AREA CONTROL OPERATION

Refer to the Model 4721 Area Control Software Instruction Manual (P/N 150483).

20 MODEL 4720 REPORTING FORMATS

SIA - (SEIA) The SIA (Security Industry Association) format must be used with a Silent Knight Model 9000 receiver. Each message will be displayed in English followed by the zone number.

FSK 2 - The FSK 2 format is similar to the SIA format. This format must also be used with the Model 9000 Receiver. Like the SIA format, all messages will be displayed in English at the 9000. Although FSK 2 reports the same information as the SIA format, it cannot be used to trap on the account number for downloading.

FSK 1

SK 4/2 - If you will be reporting to a Silent Knight Model 8520 Receiver, you must use one of these two formats. Since the 8520 has only two digits for alarm codes, event types and zone numbers are combined into one message. The first digit of the code is the type of report, the second digit is the last number of the zone.

EXAMPLE: Any two digit code beginning with the digit "1" is a Burglary Alarm. The second digit is the last number of the zone.

CODE 11 = Burglary Alarm in zone 1, 11, 21, 31, 41, 51, 61, 71, or 81.

CODE 15 = Burglary Alarm in zone 5, 15, 25, 35, 45, 55, 65, or 75

RADIONICS BFSK - The Model 4720 can transmit using the RADIONICS BFSK format with 1400 or 2300-Hz Acknowledge. The Messages that will be printed are listed with the codes for FSK 1 and SK 4/2.

NOTE: *There are no Door Access Reporting Codes when using the BFSK format. If this option is selected during programming the 4720 will send a Restoral for Zone 9.*

The list on the next page shows all of the possible codes. When the letter "Z" appears in the code, it refers to the last number of the zone. "Y" refers to the last digit of the user ID number.

The RADIONICS BFSK format can only report 8 zone codes. Zones 9 thru 16 will report as zones 1 through 8, zones 17 thru 24 will report as zones 1 thru 8 etc. Because of this limitation, programming the 4720 to report in **both** the RADIONICS BFSK and either the FSK or SK 4/2 formats is **not** advised.

NOTE: *It is recommended that you use no more than 8 zones if your system is programmed to report in RADIONICS BFSK format. However, if you choose to use more than 8 zones with the RADIONICS BFSK format, it is a good idea to make every 8th zone (e.g., Zones 1, 9, 17, etc.; Zones 2, 10, 18, etc.; and so on) the same zone type (e.g., Fire).*

*If you assign the zones in this manner, the letter "X" in the chart on the next page will be a digit that **represents** every 8th zone number, as shown below:*

Zone #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19...
Digit reported ("X")	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3...

FSK & SK 4/2	DESCRIPTION	RADIONICS BFSK CODE	RADIONICS BFSK ENGLISH
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Intrusion Zone Codes:

1Z	Burglary Alarm	OX	Alarm Zone X
2Z	Alarm Restore or Bypass (Shunt) Restore (Burglary)	EX	Restore Zone X
5Z	Burglary Bypass (Shunt)	FX	Trouble Zone X was Force Armed

**Fire, Medical, Panic, Tamper, Gas, Sprinkler, Water,
Heat, Cold, and Holdup codes:**

0Z	Alarm	OX	Alarm Zone X
20	Bypass (Shunt) Restore	E0	Restore Zone 0
50	Bypass (Shunt)	F0	Trouble Zone 0 Was Force Armed
6Z	Supervisory or Trouble	FX	Trouble Zone X
7Z	Alarm Restore, Supervisory Restore, and Trouble Restore	EX	Restore Zone X

Other Codes:

09	Duress/Holdup	09	Alarm Zone 9
30	Dialer Test	E9	Restore Zone 9
31	Phone Line 1 Trouble	FB	Trouble Zone B
32	Phone Line 2 Trouble	FB	Trouble Zone B
33	Expansion Trouble	FC	Trouble Zone C
34	Door Left Open or Door Forced Open		* N/A
35	Phone Line 1 Restore	EB	Restore Zone B
36	Phone Line 2 Restore	EB	Restore Zone B
37	Expansion Restore	EC	Restore Zone C
39	Lost Data		* N/A
4Y	Closing Report	CY	Close Zone Y
60	AC Lost	F0	Trouble Zone 0
69	Low Battery	F9	Trouble Zone 9
70	AC Restore	E0	Restore Zone 0
79	Battery Restore	E9	Restore Zone 9
80	Door Station		* N/A
8Y	Door Access		* N/A
9Y	Open or Alarm Reset	BY	Open Zone Y

21 SIA (SEIA) REPORTING FORMAT

The following paragraphs describe the information that is printed at the Silent Knight Model 9000 Receiver when using the SIA format for data transmission.

The data described under the heading of "9000 PRINTER" refers to Model 9000 with Software Revision 040389 and later.

9000 PRINTER

LOW BATTERY 0
BATTERY RESTORE 0

AC TROUBLE 0
AC RESTORE 0

PHONE LINE TROUBLE 1
PHONE LINE TROUBLE 2
PHONE LINE RESTORE 1
PHONE LINE RESTORE 2

EXPANSION TROUBLE 0
EXPANSION TROUBLE 1
EXPANSION TROUBLE 2
EXPANSION TROUBLE 3
EXPANSION TROUBLE 4
EXPANSION TROUBLE 5
EXPANSION TROUBLE 6
EXPANSION TROUBLE 7
EXPANSION TROUBLE 8
EXPANSION TROUBLE 9
EXPANSION TROUBLE 10
EXPANSION TROUBLE 11
EXPANSION TROUBLE 12
EXPANSION TROUBLE 13
EXPANSION TROUBLE 14
EXPANSION TROUBLE 15
EXPANSION TROUBLE 16
EXPANSION TROUBLE 17
EXPANSION TROUBLE 18
EXPANSION TROUBLE 19
EXPANSION TROUBLE 20
EXPANSION TROUBLE 21
EXPANSION TROUBLE 22
EXPANSION TROUBLE 23
EXPANSION TROUBLE 24
EXPANSION TROUBLE 25
EXPANSION TROUBLE 26
EXPANSION TROUBLE 27
EXPANSION TROUBLE 28
EXPANSION TROUBLE 29
EXPANSION TROUBLE 30
EXPANSION TROUBLE 31

STATUS OF 4720

SYSTEM BATTERY IS LOW
BATTERY VOLTAGE IS BACK TO NORMAL

AC HOUSE POWER IS OFF
AC HOUSE POWER HAS COME BACK ON

PHONE LINE 1 IS NOT WORKING
PHONE LINE 2 IS NOT WORKING
PHONE LINE 1 IS BACK TO NORMAL
PHONE LINE 2 IS BACK TO NORMAL

DIALER TROUBLE
PRINTER (5255) TROUBLE
ZONE EXPANDER 1 TROUBLE
ZONE EXPANDER 2 TROUBLE
INTERCOM (4140) TROUBLE
AUXILIARY CONTROL (4150) TROUBLE
NOT USED

EE MEMORY TROUBLE
CONTROL TROUBLE

NOT USED

NOT USED

NOT USED

NOT USED

NOT USED

NOT USED

NOT USED

NOT USED

KEYSTATION 1 TROUBLE

KEYSTATION 2 TROUBLE

KEYSTATION 3 TROUBLE

KEYSTATION 4 TROUBLE

KEYSTATION 5 TROUBLE

KEYSTATION 6 TROUBLE

KEYSTATION 7 TROUBLE

KEYSTATION 8 TROUBLE

KEYSTATION 9 TROUBLE

KEYSTATION 10 TROUBLE

KEYSTATION 11 TROUBLE

KEYSTATION 12 TROUBLE

KEYSTATION 13 TROUBLE

KEYSTATION 14 TROUBLE

KEYSTATION 15 TROUBLE

9000 PRINTER

EXPANSION RESTORE 0
EXPANSION RESTORE 1
EXPANSION RESTORE 2
EXPANSION RESTORE 3
EXPANSION RESTORE 4
EXPANSION RESTORE 5
EXPANSION RESTORE 6
EXPANSION RESTORE 7
EXPANSION RESTORE 8
EXPANSION RESTORE 9
EXPANSION RESTORE 10
EXPANSION RESTORE 11
EXPANSION RESTORE 12
EXPANSION RESTORE 13
EXPANSION RESTORE 14
EXPANSION RESTORE 15
EXPANSION RESTORE 16
EXPANSION RESTORE 17
EXPANSION RESTORE 18
EXPANSION RESTORE 19
EXPANSION RESTORE 20
EXPANSION RESTORE 21
EXPANSION RESTORE 22
EXPANSION RESTORE 23
EXPANSION RESTORE 24
EXPANSION RESTORE 25
EXPANSION RESTORE 26
EXPANSION RESTORE 27
EXPANSION RESTORE 28
EXPANSION RESTORE 29
EXPANSION RESTORE 30
EXPANSION RESTORE 31

AUTO CLOSE 0

AUTO OPEN 0

CLOSE ID 0

CLOSE ID 1 - 99

OPEN ID 0

OPEN ID 1 - 99

STATUS OF 4720

DIALER BACK TO NORMAL
PRINTER (5255) BACK TO NORMAL
ZONE EXPANDER 1 BACK TO NORMAL
ZONE EXPANDER 2 BACK TO NORMAL
INTERCOM (4140) BACK TO NORMAL
AUXILIARY CONTROL (4150) BACK TO NORMAL
NOT USED
EE MEMORY BACK TO NORMAL
NOT USED
NOT USED
NOT USED
NOT USED
NOT USED
NOT USED
NOT USED
NOT USED
KEYSTATION 1 BACK TO NORMAL
KEYSTATION 2 BACK TO NORMAL
KEYSTATION 3 BACK TO NORMAL
KEYSTATION 4 BACK TO NORMAL
KEYSTATION 5 BACK TO NORMAL
KEYSTATION 6 BACK TO NORMAL
KEYSTATION 7 BACK TO NORMAL
KEYSTATION 8 BACK TO NORMAL
KEYSTATION 9 BACK TO NORMAL
KEYSTATION 10 BACK TO NORMAL
KEYSTATION 11 BACK TO NORMAL
KEYSTATION 12 BACK TO NORMAL
KEYSTATION 13 BACK TO NORMAL
KEYSTATION 14 BACK TO NORMAL
KEYSTATION 15 BACK TO NORMAL

SYSTEM AUTOMATICALLY ARMED

SYSTEM AUTOMATICALLY DISARMED

SYSTEM ARMED BY ACCESS CODE 0

SYSTEM ARMED BY CODE 1 - 99

SYSTEM DISARMED BY ACCESS CODE 0

SYSTEM DISARMED BY CODE 1 - 99

9000 PRINTER

FORCE CLOSE ID 0
FORCE CLOSE ID 1 THRU 99

SUPERVISORY CLOSE 0
SUPERVISORY OPEN 0

CLOSE AREA 1
CLOSE AREA 2
CLOSE AREA 3
CLOSE AREA 4
CLOSE AREA 5
CLOSE AREA 6
CLOSE AREA 7
CLOSE AREA 8

OPEN AREA 1
OPEN AREA 2
OPEN AREA 3
OPEN AREA 4
OPEN AREA 5
OPEN AREA 6
OPEN AREA 7
OPEN AREA 8

OPEN RESET ALARM ID 0
OPEN RESET ALARM ID 1 - 99

DOOR ID 0
DOOR ID 1 - 99

DOOR STATION 1 - 15
DOOR LEFT OPEN STATION 1 - 15

DOOR FORCED OPEN
STATION 1 - 15

AUTO TEST 0
MANUAL TEST 0
MANUAL TEST 1 - 99
DATA LOST 0

STATUS OF 4720

FORCE ARMED BY ACCESS CODE 0
FORCE ARMED BY CODES 1 THRU 99

FAILED TO OPEN (STILL ARMED)
FAILED TO CLOSE (STILL DISARMED)

AREA 1 ARMED
AREA 2 ARMED
AREA 3 ARMED
AREA 4 ARMED
AREA 5 ARMED
AREA 6 ARMED
AREA 7 ARMED
AREA 8 ARMED

AREA 1 DISARMED
AREA 2 DISARMED
AREA 3 DISARMED
AREA 4 DISARMED
AREA 5 DISARMED
AREA 6 DISARMED
AREA 7 DISARMED
AREA 8 DISARMED

ALARM RESET BY ACCESS CODE 0
ALARM RESET BY CODES 1 - 99

DOOR ACCESS GRANTED TO CODE 0
ACCESS GRANTED TO CODES 1 - 99
ACCESS GRANTED AT DOOR 1 - 15
DOOR LEFT OPEN AT KEYSTATION 1 - 15

DOOR FORCED OPEN AT
KEYSTATION #1 - 15

AUTOMATIC DIALER TEST
SYSTEM TESTED BY CODE 0
SYSTEM TESTED BY CODE 1 - 99
PREVIOUS EVENT COULD NOT BE
REPORTED AND THE INFORMATION WAS
LOST

*NOTE: The zone types shown in () can be programmed as any of the following:
HOLDUP, FIRE, MEDICAL, PANIC, BURGLARY, TAMPER, GAS, WATER, HEAT,
COLD, UNDEFINED.*

9000 PRINTER

(BURGLARY) ALARM 1 - 80
(BURGLARY) TROUBLE 1 - 80
(BURGLARY) BYPASS 1 - 80
(BURGLARY) UNBYPASS 1 - 80
(BURGLARY) SUPERVISORY 1 - 80
(BURGLARY) RESTORE 1 - 80

HOLDUP ALARM 0
FIRE ALARM 81
MEDICAL ALARM 82
(PANIC) ALARM 83

TEMPERATURE 0-255F CH.#1

AIR FLOW CH.#2

HUMIDITY 10-90 PRCT CH.#3

FLUID LEVEL 0-180 IN.
CH.#4

STATUS OF 4720

ZONE IN ALARM
LOOP FAULTED or RF TRANSMITTER FAILED
ZONE BYPASSED
ZONE UNBYPASSED
RF TRANSMITTER LOW BATTERY
RESTORE TO NORMAL, due to:
Alarm Reset/Shutdown
Loop Fault repaired
Transmitter battery replaced

DURESS
FIRE PANIC KEY
EMER or * PANIC KEY
POLICE PANIC KEY

[ANALOG TEMPERATURE SENSOR HAS REACHED ITS PRESET LIMIT. THE NUMBER FOLLOWING "TEMPERATURE" IS THE ACTUAL TEMP AT THE TIME OF REPORTING.]

[AIR IS MOVING PAST THE AIR FLOW SENSOR]

[ANALOG HUMIDITY SENSOR HAS REACHED ITS PRESET LIMIT. THE NUMBER FOLLOWING "HUMIDITY" IS THE ACTUAL HUMIDITY AT THE TIME OF REPORTING]

[ANALOG FLUID LEVEL SENSOR HAS REACHED ITS PRESET LIMIT. THE NUMBER FOLLOWING "FLUID LEVEL" IS THE ACTUAL LEVEL (IN INCHES OF WATER) AT THE TIME OF REPORTING]

The Model 4720 is compatible with the following UL Listed Receivers; the formats for each receiver are also shown:

Silent Knight Model 9000 (SIA, FSK2, FSK1, SK 4/2, Radionics BFSK)
Silent Knight Model 8510/8520 (FSK1, SK 4/2)
Radionics Model 6000/6500 (Radionics BFSK)
FBI Model CP220 (SK 4/2, Radionics BFSK)
Osbourne/Hoffman Quickalert (SK 4/2)

22 TROUBLE/ERROR MESSAGES

The following paragraphs describe the possible Trouble and Error messages that can be displayed on keystations using an LCD Display.

TROUBLES

- "PAPER" - Indicates that the printer is out of paper.
- "DATA LOST" - Indicates that the dialer has failed all of its attempts to communicate with the central station and the 4720 has deleted the message(s) it was trying to send.
- "FAILED" - Indicates that the dialer cannot communicate with the central station. Appears in conjunction with "DATA LOST".
- "BATTERY" - Indicates a Low or No Battery Condition.
- "AC" - Indicates a Loss Of AC Power.
- "LINE 1" - Indicates that Phone Line #1 is bad.
- "LINE 2" - Indicates that Phone Line #2 is bad (if using two lines).
- "DEVICE 0"- Indicates a problem with the 4720 Dialer.
- "DEVICE 1" - Indicates a problem with the Model 5255 printer.
- "DEVICE 2" - Indicates a problem with Zone Expander #1.
- "DEVICE 3" - Indicates a problem with Zone Expander #2.
- "DEVICE 4" - Indicates a problem with the Intercom/Telephone Module Model 4140.
- "DEVICE 5" - Indicates a problem with the Auxiliary Control Module Model 4150.
- "DEVICE 7" - Indicates a memory problem with the EEPROM.
- "KEYSTATION (1-15)" - Indicates a problem with the indicated keystation.
- "DOOR (1-15)" - Indicates a Door has been left open (or forced open) when using the door contact feature with commercial keystations (see Note 2 below).
- "1-80" - Indicates which zone is in trouble.

When the RF system is used, the first line of the display will show either "LOW BATTERY" or "TROUBLE". The second line of the display will show which zone has a low battery or which zone is in trouble.

NOTE 1: Trouble Audible may be silenced by pressing <MUTE>-<MUTE>. Troubles will also automatically silence when the trouble condition is corrected--the only exception is Day-Trouble zones, which will latch into trouble until manually silenced.

NOTE 2: The 4180 trouble output should not be used to indicate DOOR-FORCED, because local door trouble indication is inhibited when other doors in the system are accessed. Door troubles will be reported and printed, but local audible annunciation cannot be depended on.

ERRORS

- "TRY AGAIN"** - This message means either an invalid code was used or the 4720 did not understand the command.
- "RESTRICTED CODE"** -Indicates either the code entered may not be used at that particular keystation or it may not be used to Access the particular function.
- "RESTRICTED ZONE"** -Indicates that a particular zone cannot be bypassed (shunted).
- "RESTRICTED TIME"** -Indicates that the code was not entered within the time window selected during programming.
- "RESTRICTED DOOR"** -Indicates that the code entered cannot be used to open that particular door.

23 TROUBLESHOOTING

When troubleshooting this system, it is always best to begin by looking for the simplest possible causes for a malfunction. Check that all wires are properly connected to their terminals. Check for obvious wiring defects such as missing insulation, which may cause shorts.

Malfunctions in the system are often caused by problems in the accessories, detectors and sensors that are attached to the Model 4720. Make sure that all accessories and external devices are in good working order before you begin to troubleshoot the Model 4720 control/communicator cabinet. Also make sure that the telephone line is in good working order.

Among the common problems in a control/communicator are problems with the power supply. Check that all fuses are in good working order. Make sure that the battery and its charger are properly attached and receiving power from the AC line.

Wiring can be checked through simple continuity tests, using your analog or digital multimeter. For 2-wire cables, disconnect the cable at each end. Next, connect each of the probes of your meter to one of the two wires, and switch the meter to the ohmmeter functions. You should now see an almost infinite resistance between the two wires. A low resistance reading means that you have a short somewhere in the middle.

Next, use a clip wire and short the two wires together at the far end of the cable, away from the ohmmeter. You should now see almost no resistance on your ohmmeter. If you continue to see a very high resistance, one or both of the wires have been cut somewhere along the cable run.

Try to determine the location of any cuts or shorts in the cable. Shorts can be repaired with electrical tape, and cuts can usually be spliced. If it is difficult to determine where a cable malfunction is located, it may be best to run a new cable.

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