SILENT KNIGHT

MODEL 2820

CONTROL/COMMUNICATOR

INSTALLATION MANUAL

MAY 1991 - REV. A

PART NUMBER 150492

**SILENT KNIGHT**
SECURITY SYSTEMS

# QUALITY POLICY

Quality at Silent Knight is each employee providing customers and co-workers with products and services that meet established requirements on time.

This statement is a formal commitment that represents the practices of every Silent Knight employee.

Kit Vail
President

THE QUALITY EDGE

# Table of Contents

# 1 INTRODUCTION

The Silent Knight Model 2820 is a combined control and communicator system. It can be used for both fire protection and burglary protection. The Model 2820 can monitor up to 16 internal zones. This capability can be expanded to a maximum of 32 zones by using the Model 4130 RF Zone Expander. Each zone can be programmed for a wide variety of functions. The Model 2820 Control/Communicator is designed to be used in both commercial and residential applications.

All programming options are stored in an Electrically Erasable Programmable Read-Only Memory (EEPROM). The EEPROM retains information even if all electrical power is removed, and can be reprogrammed more than 1000 times without losing its ability to store information. The Silent Knight Model 5521 programmer can be used to program the EEPROM. Programming can also be accomplished through downloading from a computer, using the Model 5541 Downloading Software and the Model 5530 Modem.

This manual discusses the capabilities and the installation and programming procedures for the Model 2820. In the first section, the 2820's features and accessories are described. Sections 2 through 14 explain how to install the 2820 and its accessories. Programming and system operation are discussed in sections 15 through 19. Reporting formats are explained in sections 20 and 21. Sections 22 and 23 address troubleshooting concerns.

## 1.1 FEATURES

### 1.1.1 STANDARD FEATURES

The features listed below are available when the 2820 is used with the Model 2250 or 2240 keystation. (See section 17 for descriptions of programmable options.)

EEPROM Option Memory * Downloading Capability * Separate Computer Phone Number * Built-In Ring Detector * 16 Built-In Zones * All Zones Fully Programmable * Smoke Detector Power (4-wire) * Up to 7 Keystations (4-wire) * Audible Keystation Annunciation * English Language Zone Annunciation * Backlit Keystation and Liquid Crystal Display (LCD) * Alarm Memory Display * Chime/Interior Key * Instant Key * System Test * Keystation Panic Zone * Door Strike Access * 50 Access Codes * Temporary (Maid) Codes * Programmable Code Access Restrictions * Mechanical Key Option * Programmable Time Delays * Exit/Entry Delays * Follower Zones * Siren Shutdown * Swinger Bypass * 4 Central Station Phone Numbers * Touch-Tone$^R$ or Rotary Dialing * 4 Dialer Formats, including SIA Format * 11 Zone Reporting Types * Automatic Dialer Test * Removable Terminal Strips * Built-In Siren/Bell Driver * Built-In Battery Charger * Automatic Battery Test * Underwriters Laboratories Listing for Residential Fire and Burglary Applications.

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

*Silent Knight was one of the first security equipment manufacturers to offer the SIA standard reporting format, and favors the benefits that standardization offers to the installer and monitoring companies.*

The following accessories are supplied with the Model 2820:

Model 7630 15-K End-of-Line Resistors (16 supplied)
Model 9220 Power Transformer (16.5 V$_{AC}$, 40 VA)

### 1.1.2 EXPANSION CAPABILITIES

The following features are available when the 2820 is used with the appropriate accessories described in section 1.2:

UL Listing for Commercial Fire Applications * UL Listing for Commercial Burglary Applications * On-Site Printer * 2nd Phone Line * Phone Line Monitor(s) * Long-Range RF or Derived Channel Interface * Central Station Listen-In * 16 RF Zones for Total of 32 Zones.

## 1.2 <u>ACCESSORIES</u>

*NOTE:    The Model 2200 Slimline Keystation is being replaced by the Model 4203 Weather Resistant Slimline Keystation.*

| | |
|---|---|
| Model 2240 | Commercial Keystation with LCD Display. |
| Model 2250 | Residential Keystation with LCD Display. |
| Model 4130 | RF Zone Expander (16 Zones) - This unit must be used with the Model 4135 Remote Receiver (Model 4130 is connected to the 4135 via 4 conductor cable). |
| Model 4160 | Supervised Bell Module. |
| Model 4165 | Transformer Housing for installations that are required to comply with NFPA regulations. |
| Model 4175 | Dual Phone Line Monitor. - Used in applications where two phone lines are required. |
| Model 4180 | Status Display Module. (Interface to Long Range RF or Derived Channel.) |
| Model 4203 | Slimline Keystation - Weatherproof for outside use.  Used for arming and disarming (formerly Model 2200; not UL Listed). |
| Model 4205 | Slimline Keystation with door access - requires Model 4420 (not UL Listed). |
| Model 4300 | Card reader - requires Model 4420 (not UL Listed). |
| Model 4420 | Interface for Models 4205 and/or 4300 (not UL Listed). |
| Model 5260 | Interface for on-site parallel or serial printer (not UL Listed). |
| Model 5521 | EEPROM Programmer (revision 880707 or later). |
| Model 5530 | MODEM (allows downloading from the 5521 Programmer and/or downloading computer). |
| Model 5541 | Downloading Software - requires Model 5530 MODEM (revision 890731 or later) and an IBM PC or compatible. |
| Model 6712 | 12-Volt 6.5-AH Rechargeable Battery. |
| Model 7367 | Two-Way Audio Listen-In Module. |
| Model 7610 | Attack shield for UL 365 (Grade A Mercantile) installations. |

# 2 PRECONNECTION REQUIREMENTS

## 2.1 TELEPHONE REQUIREMENTS

1.  If requested by the telephone company, the following information must be provided before the Model 2820 can be connected to the phone lines:

    A: Manufacturer:  Silent Knight
    B: Model Number:  2820
    C: FCC Registration number AC6USA-61402-AL-E
    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 the manufacturer.

    > Silent Knight Security Systems
    > 7550 Meridian Circle
    > Maple Grove, MN 55369-4927
    > Phone 1-800-328-0103

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 2820 Control/Communicator in a UL installation.

### 2.3.1 HARDWARE

#### 2.3.1.1 HARDWARE REQUIREMENTS

All door strike 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 | Model 4203 (2200) | Model 4300 | Model 7367 |
| Model 4135 | Model 4205 | Model 4420 | Model 5260 |

3

### 2.3.2 PROGRAMMING OPTIONS

#### 2.3.2.1 PROGRAMMING REQUIREMENTS

The following options **MUST** be set as described:

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 minutes (240 seconds)
    Household Burglary:  4 minutes (240 seconds)
    Commercial Burglary:  15 minutes (900 seconds)
    Commercial Fire:  5 minutes (300 seconds)

4.  The BELL TEST AT ARMING or RINGBACK AT CLOSING option must be selected.

#### 2.3.2.2 PROGRAMMING RESTRICTIONS

1.  The following options may **NOT** be selected for any UL installations:

    FORCE ARM
    AUTO CLOSE
    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

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 following models are required:

    Model 2240          Model 4165

2.  All wiring to and from the 2820 cabinet must be enclosed in conduit.

3.  The AC LOST HOURS option must be set between 6 and 12 hours.

4.  Total standby current must not exceed 200 mA.

5.  The two ⊛ (panic) keys must be disabled for commercial fire applications.  To do this, program zone 82 as LOCAL AUX and SILENT ALARM.

6.  Because codes 0 and 1 can activate the WALK TEST Mode, which prevents the system from responding to genuine alarms, these codes must **NOT** be given to the user in UL fire applications.

7.  Each Model 9220 must be installed inside of a Model 4165 transformer housing.

#### 2.3.3.1 NFPA 71 INSTALLATIONS

The following additional requirements must be met for UL 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 2240          Model 4160          Model 4165          Model 4184

2. The Model 4160 must be used to supervise the bell(s).

3. The Model 4184 must be used to provide an audible trouble in case the keystation wiring is faulted or the control chip's program cycle is interrupted.

### 2.3.4 GRADE A MERCANTILE (UL 365)

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

1. A Listed tamper switch must protect the inside front door of the enclosure; this switch must be connected to a zone that is programmed as 24-hour alarm, perimeter (not interior), instant (not delayed) and tamper.

2. Only the Model 2240 Keystation may be used in commercial applications.

3. A separately Listed "ADEMCO AB-12 Bell In Box" must be used with the control unit.

4. The tamper switches of the alarm bell must be connected to a 24-hour tamper 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.

5. All bell wiring must be run in its own conduit and it must be connected to the control unit using its own knockout hole.

6. The 2820 may be used with any UL Listed receiver that can accept one of the four Model 2820 formats.

7. The EXCEPTION OP/CL option may not be used.

8. All unused knockout holes must be plugged using bolts and washers. A package of bolts and washers, with 6 sets in the package, is available as Silent Knight Model 7600. Follow the directions below for using the washers.

   A. Remove all unused knockouts.

   B. Install the carriage bolt and three washers as shown in the diagram below.

   C. Firmly tighten the wing nut.

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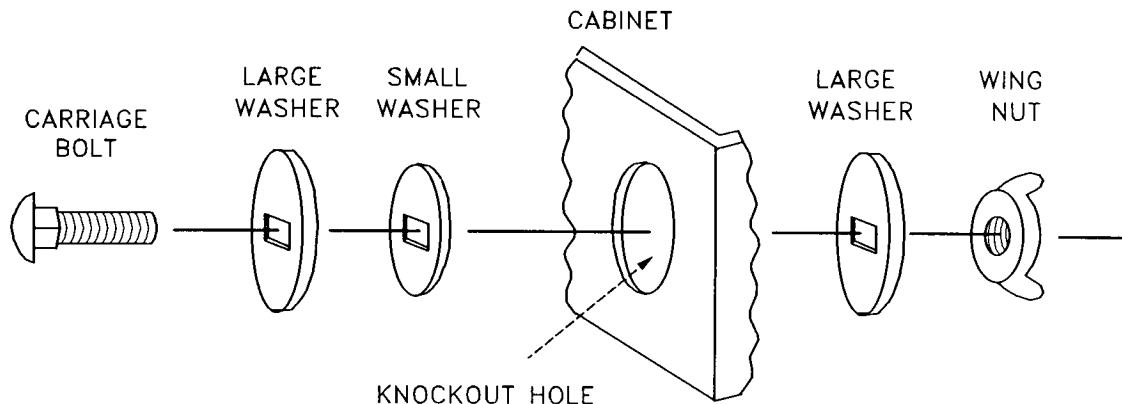


**FIGURE 2.3.4A: KNOCKOUT PLUG INSTALLATION**

9. The Model 7610 Attack Shield must be installed, to allow the panel to withstand mechanical attack during the

entry delay time. If a burglar manages to pry the edge of the 2820's hinged cover away from the cabinet, the shield will protect the 2820 PC board.

The shield is positioned by foam rubber blocks--no screws are needed to secure it. With the 2820 cabinet open, hold the shield with the rectangular opening down. This opening will fit over the SNAP-TRACK when the door is closed. Place the shield over the PC board, with the 4 small foam blocks against the terminal strips and the long foam block resting on the battery. Wiring to the SNAP-TRACK should be routed through the 2-inch notch on the left side. The shield should stand by itself while the door is closed and locked.

*NOTE:* *Because of the tamper switch on the 2820 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 the cover. Go to a keystation and press* (MUTE) (MUTE) *then enter your code to reset the alarm. To reset the dialer, press* (3) (TEST) *followed by your access code. Finally, to set the time, press* (9)(TEST) *followed by your access 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) *followed by your access code.* (WALK TEST) *will appear on the display. In this mode, all zone inputs are ignored, and you may open the 2820 cabinet and connect the battery. After closing the cover, press* (MUTE) (MUTE) *to resume normal operation.*

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

## 2.3.5 SPECIAL TEST PROCEDURE FOR UL HOUSEHOLD FIRE SYSTEMS

In a household fire system, it is required to periodically test the bell or bells on standby 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 screw that secures the 9220 transformer to the outlet.

4. 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.

5. Replace the transformer retaining screw. This completes the test procedure.

## 2.3.6 UL 864 INSTALLATIONS

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 following models are required:
   Model 2240          Model 4165

2. All wiring to and from the 2820 cabinet must be enclosed in conduit.

3. The AC LOST HOURS option must be set between 6 and 12 hours.

4. The two Panic keys ( (*) (*) ) must be disabled for commercial fire applications. To do this, program zone 82 as LOCAL AUX and SILENT ALARM.

5. Total standby current must not exceed 200 mA, to maintain a 24-hour standby battery capacity.

## 3 CONTROL PANEL DESCRIPTION

**CAUTION:** To avoid the risk of electrical shock, DO NOT apply power to the Model 2820 until told to do so in this manual.

Figure 3A is an illustration of the Model 2820 printed circuit board. This board contains the switches, fuses, electronic components and connectors that are 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.
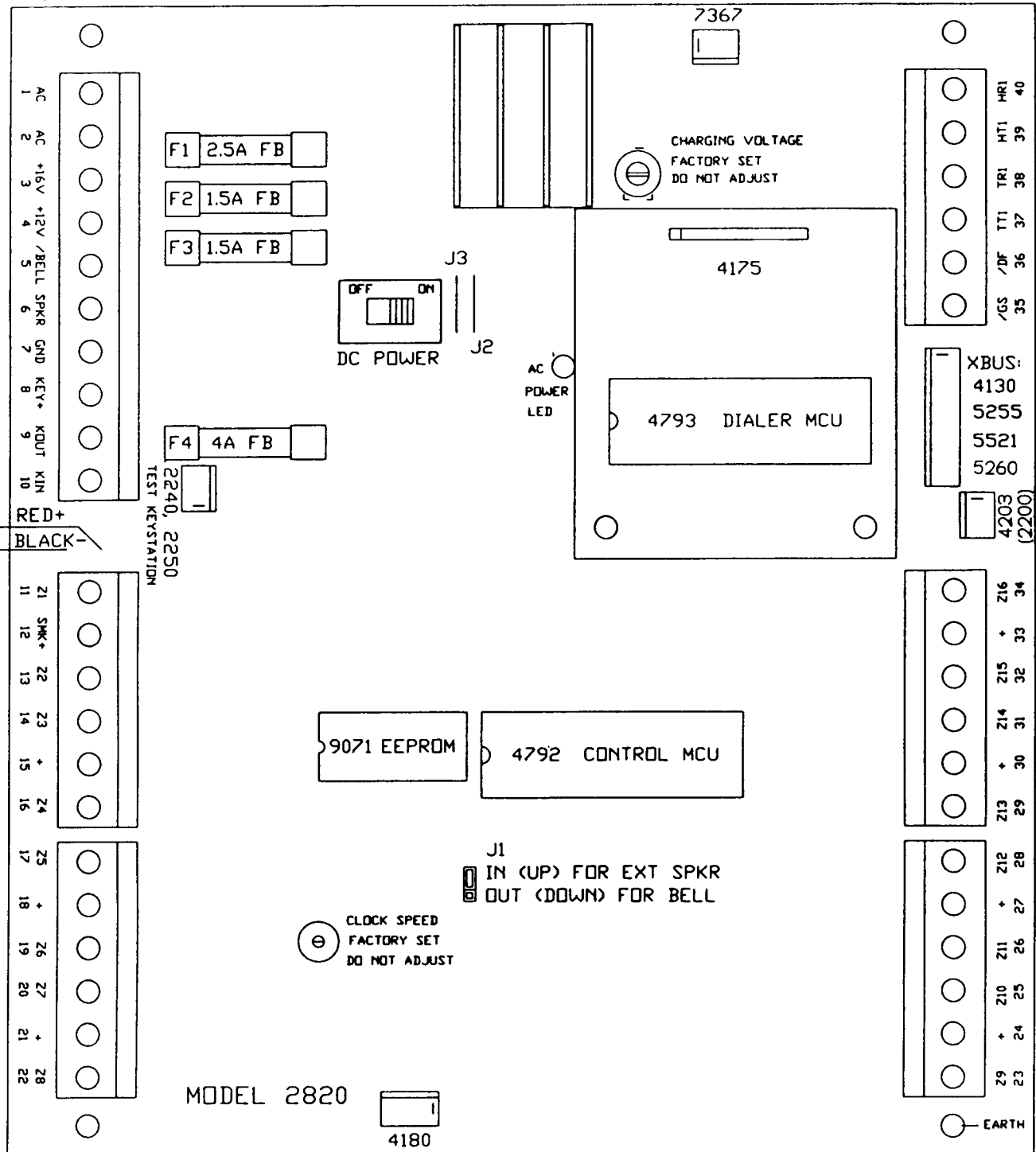
FIGURE 3A: 2820 PRINTED CIRCUIT BOARD

## 3.1 BATTERY CABLES

The Red (+) and Black (-) Battery Cables are used to connect a 12-$V_{DC}$ rechargeable battery (Silent Knight Model 6712--not included) to the system. The battery provides backup power to the 2820 in the event of AC power interruptions.

**CAUTION:** **Observe proper polarity when connecting the battery cables of the 2820.**

*NOTE 1:* *The Model 6712 12-V, 6.5 AH battery will provide at least 24 hours of standby operation to the basic 2820 system. The use of accessories may reduce this time so that additional battery capacity may be needed.*

*NOTE 2:* *If the AC transformer is unplugged for more than 24 hours, the battery must be disconnected to prevent it from being discharged.*

*NOTE 3:* *Electric door strikes and magnetic door holders are a potential source for damaging electrical impulses. The auxiliary power from the 2820 should not be used for these devices. A separate power source should be used, and a reverse polarity diode should be connected across the devices to suppress the impulses.*

## 3.2 DC POWER SWITCH

The DC power switch is used to remove DC power from the circuitry of the 2820. 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 standby battery should not be connected, as leakage current through the charging circuit could discharge the battery over a period of time. See section 3.9.2 for information on enabling and disabling the DC power switch.

Table 4A lists the various remote modules available for use with the 2820 and the current drain of each module. To determine the current load of your 2820, add all of the current drains of the modules that you will be using including the 2820.

## 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 3 of the 2820.

F2 is a 1.5-A fast-blow fuse that provides over-current protection for keystations, internal speakers and any accessories connected to terminal 4 of the 2820, and for the 4180 status module.

F3 is a 1.5-A fast-blow fuse that provides over-current protection for smoke detectors connected to terminal 12 of the 2820, and for devices connected to the XBUS connector.

F4 is a 4-A fast-blow fuse that provides over-current protection to the Model 6712 battery.

**CAUTION:** **To avoid fire hazards, the 2820 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 AMPERE rating as the old fuse. If you replace a fuse with a higher-rated or slow-blow 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 power to 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 into the wiring of an alarm system. Even distant strikes can affect the panel through the AC or telephone wiring. The 2820 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 2820 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 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 information must be programmed into the EEPROM using the Model 5521 Programmer or the downloading function.

## 3.7 CABLE CONNECTORS

### 3.7.1 KEYSTATION TEST CONNECTOR

This 4-pin connector can be used to quick connect a Model 2240 or 2250 to the Model 2820 printed circuit board. This procedure requires a cable with P/N 130294. To order the cable, call Silent Knight Technical Support Services at 1-800-328-0103.

### 3.7.2 4203 (2200) CONNECTOR

This 4-pin connector is used to interface the 2820 to the 4203 Slimline Keystation.

### 3.7.3 STATUS CONNECTOR (4180)

This 5-pin connector is used to connect the Model 4180 Status Display Module to the Model 2820.

### 3.7.4 DUAL PHONE LINE MONITOR CONNECTOR (4175)

This 12-pin connector is used to mount the Model 4175 Dual Phone Line Monitor Module onto the 2820 PC board.

### 3.7.5 LISTEN-IN MODULE CONNECTOR (7367)

This 4-pin connector is used to connect the Model 7367 Listen-in Module P5 connector to the Model 2820 PC board.

## 3.8 EXPANSION CONNECTOR (XBUS)

This 12-pin connector is used to connect the Model 4130 RF Zone Expander and/or the printer (Model 5260 Printer Interface or Model 5255 On-Site Printer). It can also be used to connect the 2820 to the Model 5521 while programming. The Model 4130 and 5260 have 2 connectors, allowing them to be daisy-chained to the Model 2820. Expansion bus wiring should not exceed 4 feet in length and must be run in conduit.

NOTE:    The Model 5255 printer is no longer sold.

## 3.9 JUMPERS

NOTE:    If J1 is a shunt block instead of a jumper, then instead of cutting the jumper you would move the shunt block to the down ("out") position.

### 3.9.1 JUMPER J1

This jumper is left in place (shunt block in up position) if a siren (speaker) is used, and removed (shunt block in down position) if a DC bell or DC siren is used.

### 3.9.2 JUMPERS J2 & J3

With jumpers J2 and J3 left in place, the DC Power switch does not function. This is necessary for NFPA applications. For burglary applications, these jumpers may be cut to enable the DC power switch.

## 3.10 PLUG-ON TERMINAL STRIPS

The Model 2820 uses plug-on terminal strips, which allow the panel to be exchanged without unscrewing each terminated wire.

### 3.10.1 TERMINAL STRIP REMOVAL

1. Tag each of the six terminal block wire bundles so that the blocks can be reinstalled in the correct positions.

2. Disconnect the 9220 AC transformer and the battery cables.

3. Each terminal block is retained by two catches on the outside. To remove, pull up and out on the inside of the block.

### 3.10.2 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.

## 3.11 MODEL 2820 TERMINAL STRIP DESCRIPTION

### TABLE 3.11A: TERMINAL STRIP DESCRIPTION

| TERMINAL # | TERMINAL DESCRIPTION | ELECTRICAL RATINGS |
|---|---|---|
| 1 | AC Input | $16.5 \text{ V}_{AC}$, 60 Hz, 40 VA |
| 2 | AC Input | $16.5 \text{ V}_{AC}$, 60 Hz, 40 VA |
| 3 | Siren Power | $16 \text{ V}_{DC}$, Unregulated, 2 A Max. (Fused 2.5 A)[*1] |
| 4 | Auxiliary (Bell) Power | $10.2 \text{ V}_{DC}$ - $13.7 \text{ V}_{DC}$, 1 A Max. (Fused 1.5 A)[*2*3] |
| 5 | External Speaker/Bell Output (Active Low) | |
| 6 | Internal Speaker Output (Active Low) | |
| 7 | Circuit Ground | |
| 8 | Keystation Power | $9.5 \text{ V}_{DC}$ - $13.1 \text{ V}_{DC}$, 1 A Max. (Fused 1.5 A)[*3] |
| 9 | Data to keystations | |
| 10 | Data from keystations | |
| 11 | Zone 1 Input | |
| 12 | Smoke Detector Power | $9.5 \text{ V}_{DC}$ - $13.1 \text{ V}_{DC}$, 1 A Max. (Fused 1.5 A)[*2] |
| 13 | Zone 2 Input | |
| 14 | Zone 3 Input | |
| 15 | Loop Power (Current Limited) | $12 \text{ V}_{DC}$, 15 mA Max. |
| 16 | Zone 4 Input | |
| 17 | Zone 5 Input | |
| 18 | Loop Power (Current Limited) | $12 \text{ V}_{DC}$, 15 mA Max. |
| 19 | Zone 6 Input | |
| 20 | Zone 7 Input | |
| 21 | Loop Power (Current Limited) | $12 \text{ V}_{DC}$, 15 mA Max. |
| 22 | Zone 8 Input | |
| 23 | Zone 9 Input | |
| 24 | Loop Power (Current Limited) | $12 \text{ V}_{DC}$, 15 mA Max. |
| 25 | Zone 10 Input | |
| 26 | Zone 11 Input | |
| 27 | Loop Power (Current Limited) | $12 \text{ V}_{DC}$, 15 mA Max. |
| 28 | Zone 12 Input | |
| 29 | Zone 13 Input | |
| 30 | Loop Power (Current Limited) | $12 \text{ V}_{DC}$, 15 mA Max. |
| 31 | Zone 14 Input | |
| 32 | Zone 15 Input | |
| 33 | Loop Power (Current Limited) | $12 \text{ V}_{DC}$, 15 mA Max. |
| 34 | Zone 16 Input/Mechanical Key Input | |

(Table 3.11A continued)

| | | |
|---|---|---|
| 35 | Ground Start Output (Active Low) | 100 mA Max. |
| 36 | Dialer Failed Output (Active Low) | 100 mA Max. |
| 37 | Telco Tip | |
| 38 | Telco Ring | |
| 39 | House Tip | |
| 40 | House Ring | |
| | Green Wire (attached to mounting screw): Earth Ground | |

*NOTE 1:   Terminal 3 (16 V) will be at 20 V under normal standby (nonalarm) conditions.

*NOTE 2:   Devices connected to terminals 4, 8 and 12 must operate over the range 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:   Total current drain of terminal 4, terminal 8, all keystations, and all XBUS expansion devices, must not exceed 1.2A (see table 4A in section 4).

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

**FIGURE 3.11A: NON-UL WIRING DIAGRAM**

USE THIS BLOCK DIAGRAM TO SELECT ACCESSORIES.
AND TO DETERMINE WIRING NEEDS.

RF TRANSMITTERS

(64 ZONES)

RF RCVR 4135

RF CTRL 4130

(2) 1501   MAG 1501S   HAND 1502

SMOKE 1504   PIR 1507

FIRE BELL

4165 9220   115VAC

TRBL AUD 4184   BELL MON 4160 (2)   SNAP-TRACK

LISTEN 7367   (2.) (SHIELDED)   SPKR MIC   (2.) (SHIELDED)

(2.) (SHIELDED)

-OR- BELL (2)   (6)

-OR- 15W SPKR (2)

INT SPKR (2)

(4)

(4)

2820

LINE2 4175

6712

RS-232 serial   COMPUTER

5260   parallel   PRINTER

(4) RJ31X

(4) RJ31X

(12) XBUS   XBUS

SLIM-LINE   4203

(6)

(2) MECH KEY

(2 EACH) 16 ZONES

(2) SMOKE DETECTOR POWER

(7 STATIONS MAX)

DOOR (2-6)   2240 COMMERCIAL

2250 RESIDENTIAL

DOOR (2-6)   4420   4205

4301   4300   (5)   (6)

(5)

4180

4 RELAYS
LONG RANGE RF,
STROBE LIGHTS,
DERIVED CHANNEL,
ETC.

ORDER CHECKLIST

| UL | MODEL | DESCRIPTION | UL | MODEL | DESCRIPTION |
|----|-------|-------------|----|-------|-------------|
| Y | 2240 | COMMERCIAL KEYPAD | Y | 6712 | 6.5AH 12V BATT |
| Y | 2250 | RESIDENTIAL KEYPAD | | 6812 | 4.5AH 12V BATT |
| | 4130 | RF EXPANDER | | 7367 | LISTEN-IN |
| | 4135 | RF RCVR | Y | 7600 | KNOCKOUT PLUGS |
| | 1501 | CONTACT XMIT | Y | 7610 | ATTACK SHIELD |
| | 1501S | MAGNET XMIT | | | |
| | 1502 | HANDHELD XMIT | Y | 2820 | PANEL WITH: |
| | 1504 | SMOKE XMIT | Y | 7630 | 15K EOLR (16) |
| | 1507 | PIR XMIT | Y | 7800 | BELL SUPPRESSOR |
| | | | Y | 9220 | 16.5VAC 40VA XFMR |
| Y | 4160 | BELL MONITOR | | | |
| Y | 4165 | XFMR ENCLOSURE | | | |
| Y | 4175 | DUAL LINE MONITOR | Y | ESL 445AT | 4-WIRE SMOKE |
| Y | 4180 | STATUS RELAYS | Y | ESL 204A | EOL RELAY |
| Y | 4184 | TROUBLE WATCHDOG | Y | WHEELOCK 46TG10-12 | BELL |
| | | | Y | ADEMCO AB-12 | BELL+BOX |
| | 4203 | SLIM-LINE KEYPAD | Y | ADEMCO 713 | 30W SPKR |
| | 4205 | DOOR ACCESS KEYPAD | | | |
| | 4300 | CARD READER | | | |
| | 4420 | DOOR ACCESS MODULE | | | |
| | 5260 | PRINTER INTERFACE | | | |

OTHER ITEMS

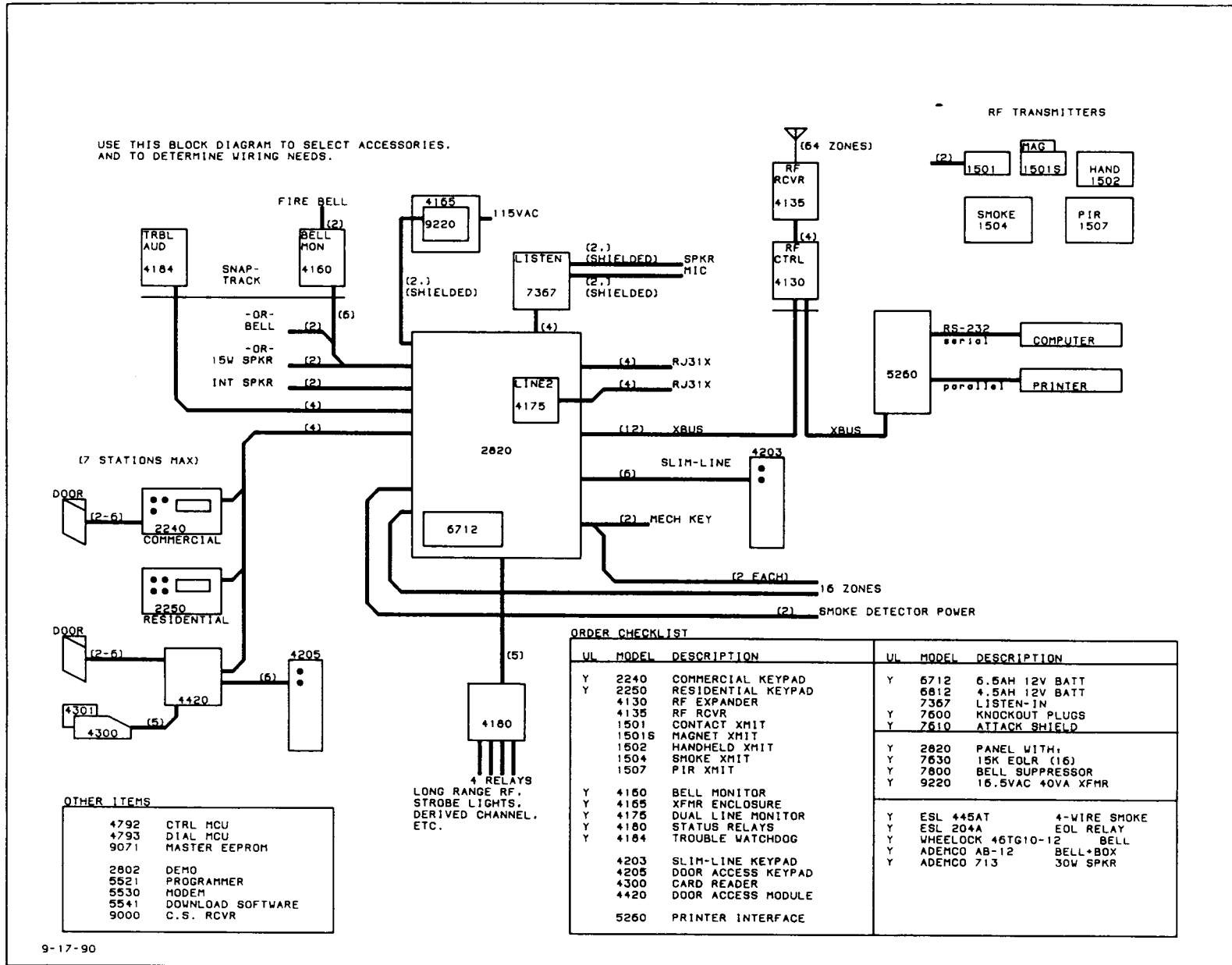| | |
|---|---|
| 4792 | CTRL MCU |
| 4793 | DIAL MCU |
| 9071 | MASTER EEPROM |
| 2802 | DEMO |
| 5521 | PROGRAMMER |
| 5530 | MODEM |
| 5541 | DOWNLOAD SOFTWARE |
| 9000 | C.S. RCVR |

9-17-90

FIGURE 3.11B:  MODEL 2820 SYSTEM PLANNER

13

# 4 INSTALLATION OVERVIEW

Table 4A lists the various accessories available for use with the 2820, the fuse through which each draws power, and their standby (idle) and active (alarm) current draws. Where no fuse is shown, the accessory is resistively current limited.

## TABLE 4A: ACCESSORY CURRENT DRAINS

| MODEL # | FUSE # | STANDBY | ACTIVE (TROUBLE & ALARM) | MAX. # OF DEVICES |
|---|---|---|---|---|
| 2820 | -- | 75 mA | 110 mA | 1 |
| 4203 (2200) | -- | 10 mA | 10 mA | 4 (Not UL*) |
| 2240 or 2250 | F2 | 35 mA | 120 mA | 7 |
| 4130 | F3 | 30 mA | 30 mA | 1 (Not UL) |
| 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 |
| 5255 (no longer available) | F3 | 40 mA | 190 mA | 1 |
| 5260 | F3 | 25 mA | 25 mA | 1 |
| ESL 445AT | F3 | 1.5 mA | 60 mA | 7 |
| Wheelock Bell | F2 | 0 | 125 mA | 3 |
| 8-Ω Speaker | F2 | 0 | 750 mA | 1 |
| 45-Ω Speaker | F2 | 0 | 133 mA | 6 |
| Zone input | -- | 0.8 mA | 5 mA | 16 |
| 4420 | F2 | 20 mA | 20 mA | 7 (Not UL) |
| 4300 | F2 | 60 mA | 60 mA | 7 (Not UL) |
| 4310, 4312 | F2 | 130 mA | 130 mA | 7 (Not UL) |

* Not UL = Not acceptable in UL installations.

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

A: For UL installations, the total standby current drain must not exceed 200 mA, to obtain 24-hour battery standby.

B: The total combined active current drain on F2 and F3 must not exceed 1200 mA.

# 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 2820 CONTROL PANEL INSTALLATION

## 6.1 SELECTING A LOCATION

When selecting a location to mount the 2820 control panel, consider the following factors. The unit should be mounted where it will not be exposed to extremes in temperature and where it will be free from moisture. The panel should be accessible to "Main Drop" wiring runs. The 2820 should be located well within the secured area but should be accessible for testing and service.

## 6.2 MOUNTING THE 2820

Mount the 2820 so it is firmly secured to the wall surface. When mounting on concrete, especially when moisture is expected, attach a piece of 3/4 inch plywood to the concrete surface and then attach the 2820. Mount all other desired components to the plywood interface.
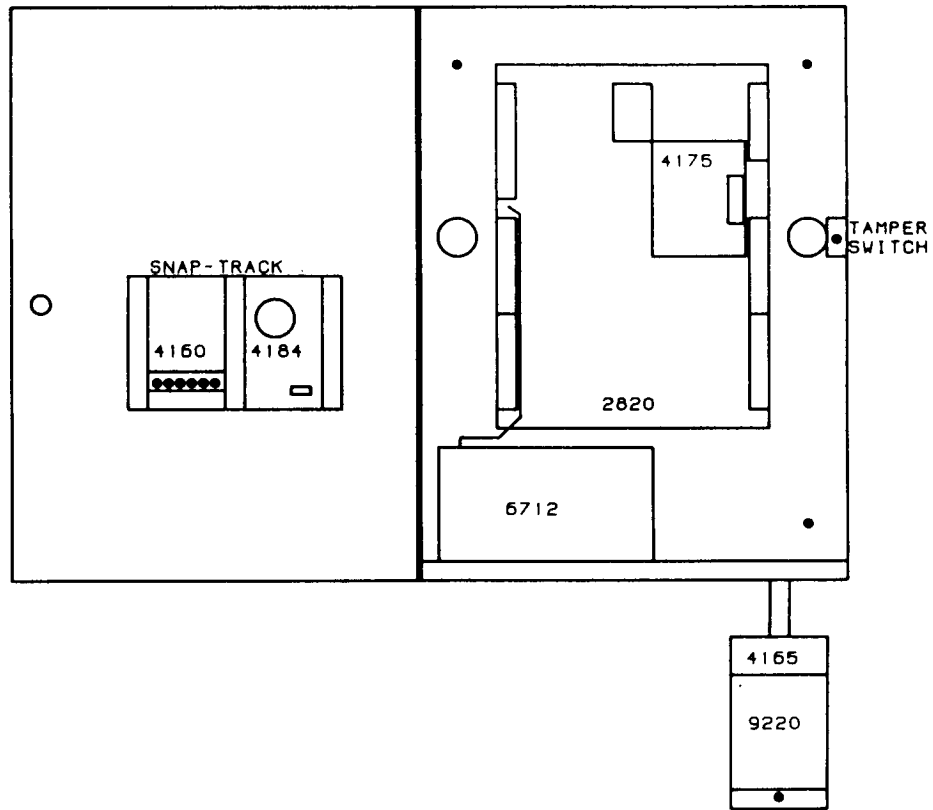


**FIGURE 6.2A: SUGGESTED MOUNTING**

## 6.3 INSTALLING THE MODEL 9220 POWER TRANSFORMER

An external transformer (Model 9220 UL Listed Class II Power Transformer) is included 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-$V_{AC}$, 60-Hertz continuous duty (unswitched) grounded outlet. The secondary is wired into terminals 1 and 2 of the 2820 with a two-conductor cable (preferably shielded). (See figure 6.3.2A.) Use 18-gauge wire or larger (i.e., 16, 14, etc.).

### 6.3.1 MODEL 4165 TRANSFORMER HOUSING

You must install the power transformer inside of the Model 4165 when installing the 2820 in accordance with NFPA Standards.

1. Remove all power from the electrical outlet before attaching the 4165.

2. Remove the two screws that hold the outlet to the single gang box.

3. Using the two screws that were removed, attach the 4165 plate to the outlet and the single gang box.

4. The secondary of the transformer must be run in conduit which may be attached to any of the knockout holes.

5. Plug the transformer into the outlet.

6. Attach the housing cover to the mounting plate using the screws provided.

### 6.3.2 AC POWER TRANSFORMER

**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.

**CAUTION:** Make sure that the AC outlet which you will be using for the Model 9220 has a good connection to earth ground. This can be done at the outlet, using a digital voltmeter, by measuring 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 2 $V_{AC}$, 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.


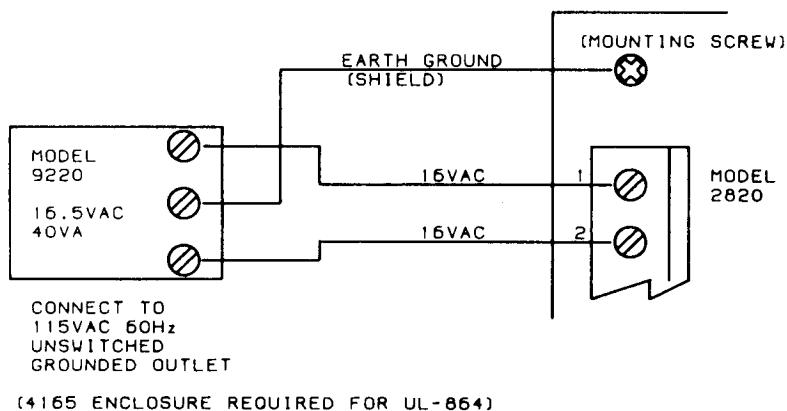
FIGURE 6.3.2A: MODEL 9220 CONNECTION

# 7 INSTALLING THE KEYSTATIONS

## 7.1 MOUNTING THE MODEL 2240 OR 2250

To mount the keystations you must first remove the rear mounting plate. To do this, insert a dime into the slots located on the bottom edge of the keystation. (Use a dime rather than a screwdriver, to avoid nicking the frame.) Gently turn the dime 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 1:    *You may have to squeeze the keystation gently (top to bottom) to align it while snapping the bottom edge into place.*

NOTE 2:    *Before permanently installing the 2240 or 2250 keystations, you must first set their identification codes.*

NOTE 3:    *KEYSTATION JUMPERS: Cutting jumper J2 (BEEP) will disable the PZT buzzer.*

NOTE 4:    *In UL installations, the keystations must be mounted on a dual-gang electrical box.*

## 7.2 ID CODES

Each keystation needs its own identification code in order to function properly. The ID numbers must start at 1 and then progress in sequence to the last keystation. There is a small 4- or 5-position DIP (dual inline) switch on the back of each keystation. Use the chart below in order to find the position to which you have to set each switch in order to generate a specific ID number. When you are using the chart, the letter "D" indicates that the related switch should be in the DOWN/OFF position. The letter "U" indicates that the switch should be in the UP/ON position. (Switch #5 is used to bypass the door contact inputs.)

**U = UP/ON**
**D = DOWN/OFF**

| ID# | SW #1 | SW #2 | SW #3 | SW #4 |
|-----|-------|-------|-------|-------|
| *0  | 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     |

*NOTE:    Stations set to ID# 0 will **NOT** be supervised.*
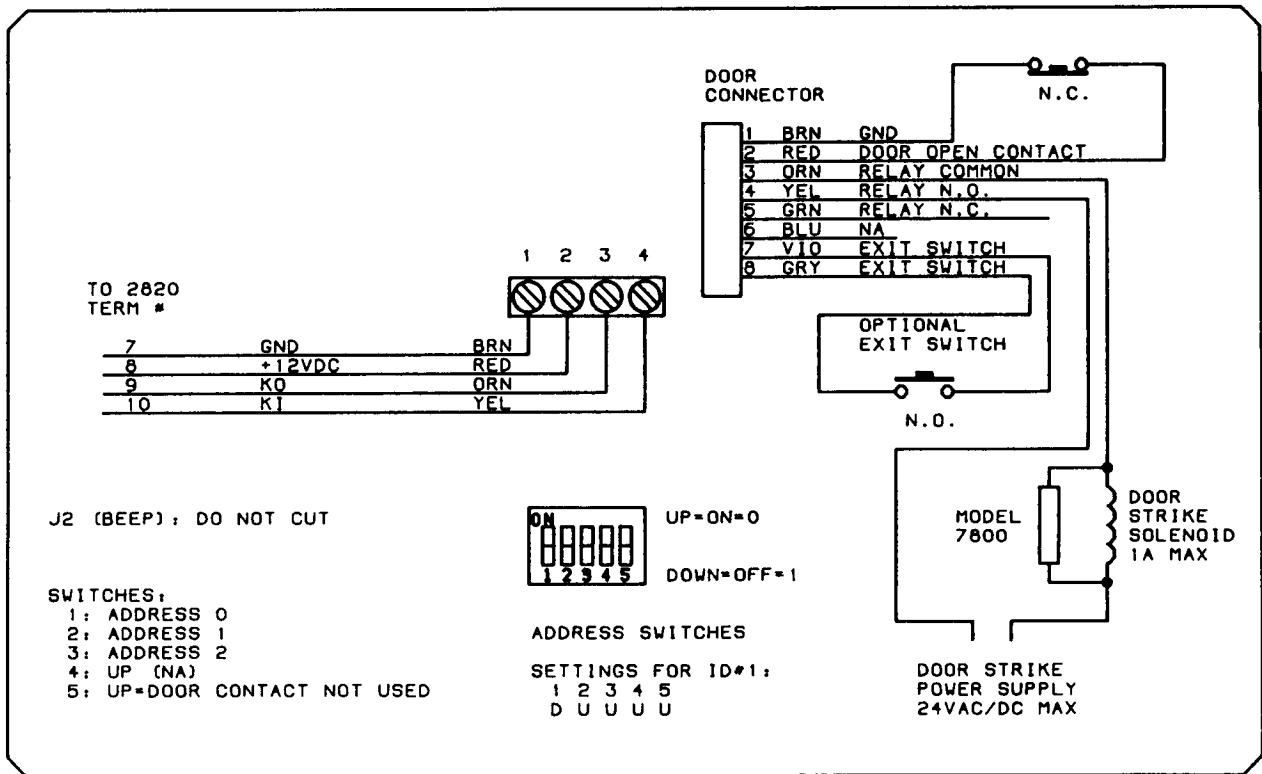
**FIGURE 7A: MODEL 2240 BACK VIEW**

DOOR CONNECTOR

| | | |
|---|---|---|
| 1 | BRN | GND |
| 2 | RED | DOOR OPEN CONTACT |
| 3 | ORN | RELAY COMMON |
| 4 | YEL | RELAY N.O. |
| 5 | GRN | RELAY N.C. |
| 6 | BLU | NA |
| 7 | VIO | EXIT SWITCH |
| 8 | GRY | EXIT SWITCH |

N.C.

OPTIONAL EXIT SWITCH

N.O.

MODEL 7800

DOOR STRIKE SOLENOID 1A MAX

DOOR STRIKE POWER SUPPLY 24VAC/DC MAX

1 2 3 4

TO 2820 TERM #

| 7 | GND | BRN |
| 8 | +12VDC | RED |
| 9 | KO | ORN |
| 10 | KI | YEL |

J2 (BEEP): DO NOT CUT

SWITCHES:
1: ADDRESS 0
2: ADDRESS 1
3: ADDRESS 2
4: UP (NA)
5: UP=DOOR CONTACT NOT USED

ON
1 2 3 4 5

UP=ON=0
DOWN=OFF=1

ADDRESS SWITCHES

SETTINGS FOR ID#1:
1 2 3 4 5
D U U U U



**FIGURE 7B: MODEL 2250 BACK VIEW**

1 2 3 4

TO 2820 TERM #

| 7 | GND | BRN |
| 8 | +12VDC | RED |
| 9 | KO | ORN |
| 10 | KI | YEL |

ADDRESS SETTINGS:

| SWITCHES 1 2 3 | ID# |
|---|---|
| D U U | 1 |
| U D U | 2 |
| D D U | 3 |
| U U D | 4 |
| D U D | 5 |
| U D D | 6 |
| D D D | 7 |

J2 (BEEP): DO NOT CUT

SWITCHES:
1: ADDRESS 0
2: ADDRESS 1
3: ADDRESS 2
4: UP (NA)

ON
1 2 3 4

UP=ON=0
DOWN=OFF=1

ADDRESS SWITCHES

18

## 7.3 <u>MODEL 2240 COMMERCIAL KEYSTATION</u>

### 7.3.1 <u>MODEL 2240 WIRING</u>

On the Model 2240, a 4-position terminal block is provided to connect the 2240 to the 2820 (see figure 7A).

*NOTE: Maximum wiring distance is 1000 feet. For UL installations, wire gauge must be #18 or larger.*

### 7.3.2 <u>DOOR STRIKE WIRING</u>

The 8-position connector located next to the 4-position terminal block is used for connection of a door strike. The door strike will be active, once accessed from the keystation, for the amount of time programmed for this option in the 2820 EEPROM memory (see figure 7A).

*UL NOTE: All door strike wiring must be restricted to the same room in UL applications. If the door strike circuitry is used, it is considered supplementary to the 2820 Control's UL Listed application. The Model 2820 is not listed as an Access Control Unit (UL 294).*

If you wish to know when the door has been forced or propped open, set DIP switch #5 down (off) and connect the normally closed door monitor contact to pins 1 and 2 of the door connector. When the contact is used, the strike will de-energize one second after the door has been opened.

If you want the door troubles to be reported to the central station or on-site printer, select the REPORT DO/DF option.

The optional exit switch, if used, should be mounted within the protected area. Pressing it will activate the door strike without needing any code. The pair of wires to this switch must not exceed 3 feet in length.

*NOTE 1: The maximum ratings of the door strike relay contacts are: 24 $V_{AC}$/24 $V_{DC}$, 1 A.*

*NOTE 2: Each station can have its own door strike, and each user can be restricted to the use of specific doors.*

## 7.4 <u>MODEL 2250 RESIDENTIAL KEYSTATION</u>

On the Model 2250, a 4-position terminal block is provided to connect the keystation to the Model 2820 (see figure 7B).

*NOTE: Maximum wiring distance is 1000 feet. Minimum wire gauge is #22. Preferred gauge is #18.*

## 7.5 <u>MODEL 4203 (2200) SLIMLINE KEYSTATION</u>

### 7.5.1 <u>WIRING THE MODEL 4203 KEYSTATION</u>

*NOTE: The last 4 zones on the 2820 are used as inputs from the 4203 and mechanical key. You will lose the use of these zones for alarms.*

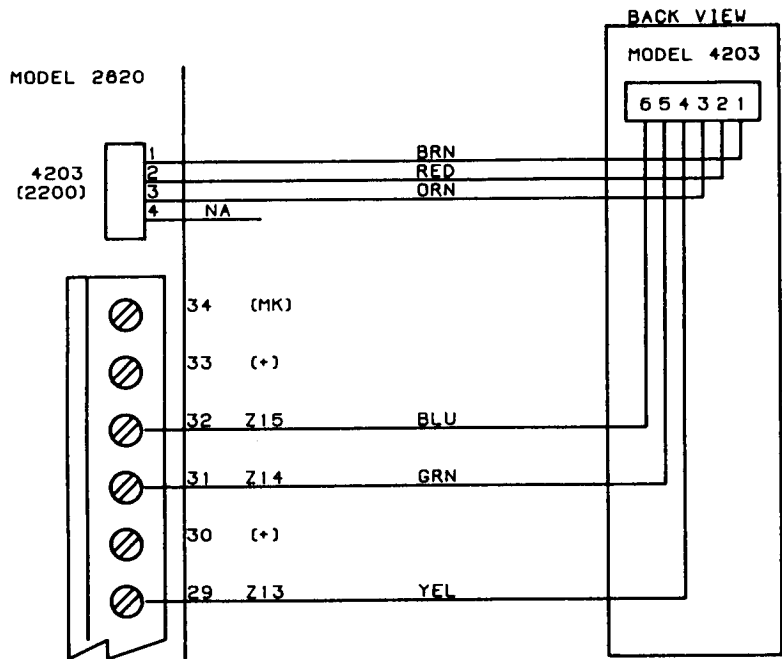The Model 4203 is provided with a 6-wire pigtail for connection to the 2820 (see figure 7.5.1A).

**FIGURE 7.5.1A: MODEL 4203 (2200) CONNECTION**

### 7.5.2 MOUNTING THE MODEL 4203 (2200) KEYSTATION

The Slimline design of the 4203 allows it to be mounted on the doorjamb between the screen door and the entry door. Using the screws provided, screw the keystation to the doorjamb. 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.

*NOTE:*    *The maximum wiring distance is 500 feet. Wire gauge must be #22 or larger (#20, #18, etc.). The maximum number of 4203 keystations is 6.*

### 7.6 MECHANICAL KEYSWITCH

A Normally Open mechanical keyswitch may be wired between terminals 33 (loop power) and 34 (zone 16). The diagram below shows a mechanical keyswitch connected to the 2820 along with READY and ARMED LEDs.

*NOTE 1:*    *If a mechanical key is used, you must select the 4203 (2200) OR MK option during system programming.*

*NOTE 2:*    *When a mechanical key is used, you lose the use of zones 13 through 16.*

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

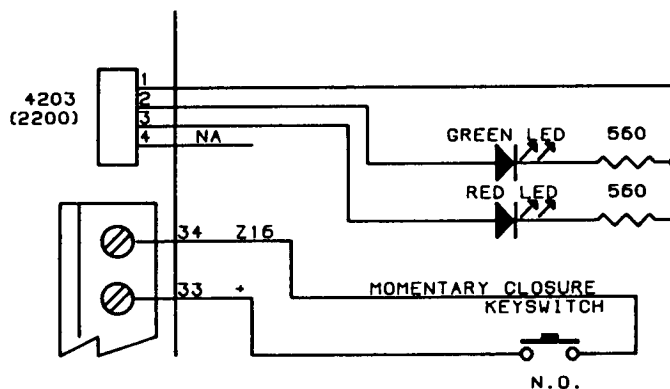*NOTE 4:*    *Maximum wiring distance is 500 feet. Minimum wire gauge is #22.*



**FIGURE 7.6A: MECHANICAL KEY CONNECTION**

20

# 8 MODEL 4300 ACCESS SYSTEM

## 8.1 DESCRIPTION

*NOTE:  The Model 2820 is **not** UL Listed for door access control.*

The Access 4300 and 4312 Card Readers allow or prevent entry to a building or area by reading magnetically encoded Model 4301 or 4302 Access Cards that cannot be copied or altered.  The Model 4310 is a lower-cost card reader that controls access in interior applications only.

The system can be used with many types of entrances, including standard and sliding doors, parking lot gates and elevator doors.  The read head and circuitry are fully encapsulated to withstand tampering and environmental damage (see figure 8A).  For operation information, see the Model 2820 user's manual (P/N 150493).

The card reader is interfaced to the 2820 system by the 4420 Door Access Module.  The card reader receives its power supply from the interface, and may be mounted up to 100 feet away from it.  The 4420 also allows use of the weather-resistant Model 4205 keystation.

All the features of keypad door access are also available in the card access mode.  Each user code can be programmed to give access to only a limited number of doors, and/or only during certain time periods each day.

The Silent Knight 2820 Control/Communicator has the capability of recording each door access event on a printer connected to the control panel (using the Model 5260 interface).  It can also send this information over a telephone line to a central alarm station to be recorded and monitored.
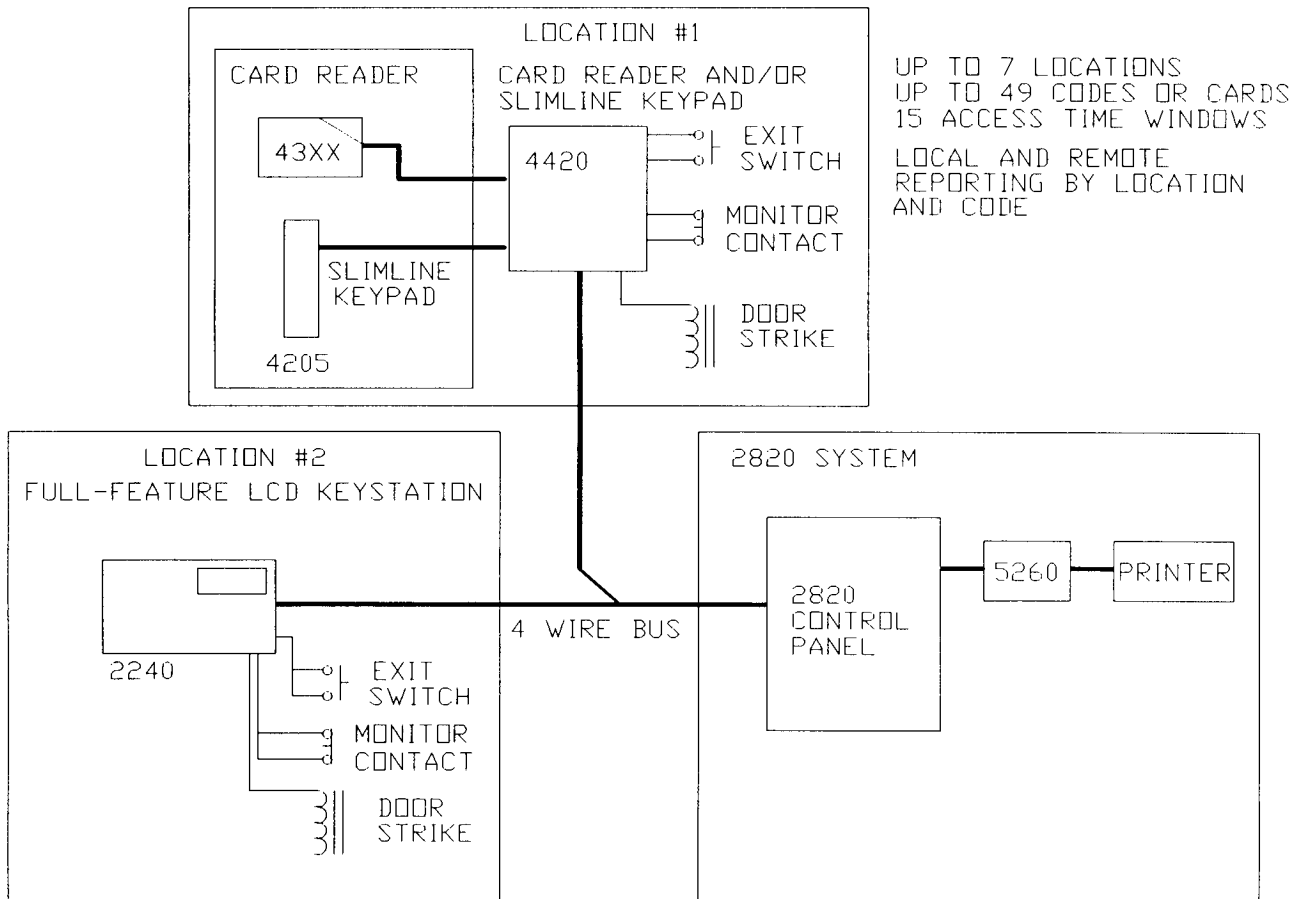


**FIGURE 8A:  ACCESS 4300 SYSTEM COMPONENTS**

*NOTE:  The installing company must provide the door strike or magnetic holder and the power supply to operate it.*

# 8.2 ACCESS 4300 PRODUCT SPECIFICATIONS

## 8.2.1 4420 INTERFACE

| Power input:<br>Relay contacts: | 12 V_DC<br>4420: 5 A, 24 V_AC/DC |
|---|---|
| Card reader power:<br>Data 1,0 input:<br>LED output: | 5 V_DC, 100 mA max.<br>12 V_DC max.<br>open collector, 12 V_DC, 100 mA max. |
| Data input pulse:<br>Maximum bit rate:<br>Minimum bit rate:<br>Format: | 11 $\mu$s min., 250 $\mu$s max.<br>3300 B/S<br>7 B/S<br>26 bit, 24 data + 2 parity Wiegand format |

## 8.2.2 CARD READERS

| CARD READER | SUPPLY VOLTAGE | SUPPLY CURRENT | OUTPUT SINK CURRENT | OUTPUT SOURCE CURRENT | OUTPUT PULSE WIDTH | OPERATING TEMP. | MAX. READER TO RECEIVER DISTANCE |
|---|---|---|---|---|---|---|---|
| 4300 | 5 V_DC (+ or - 5%) | 25 mA | 8 mA | 5 mA | 20 $\mu$s. typ. | -40° F to +130° F | 100 feet |
| 4310 | 12 V_DC (+ or - 5%) | 130 mA | 8 mA | 5 mA | 20 $\mu$s. typ. | -22° F to +149° F | 100 feet |
| 4312 | 12 V_DC (+ or - 5%) | 130 mA | 8 mA | 5 mA | 20 $\mu$s. typ. | -22° F to +149° F | 100 feet |

## 8.3 MOUNTING THE CARD READER

The Access 4300, 4310 or 4312 Card Reader can be mounted on any flat, vertical surface. Use two #10 bolts to mount the 4300 (see figure 8.3A). Once the reader is mounted, cover the front by applying the pressure-sensitive dress panel or label (see figure 8.3B).

When mounting the 4310 or 4312, use flat-head screws. Drill a ¼-inch (0.6 cm) or larger hole for the cable (see figure 8.3C).

If the 4300 or 4312 will be in a location where it will be exposed to snow, it should be mounted in a vertical position to prevent accumulated snow from clogging the card slot.
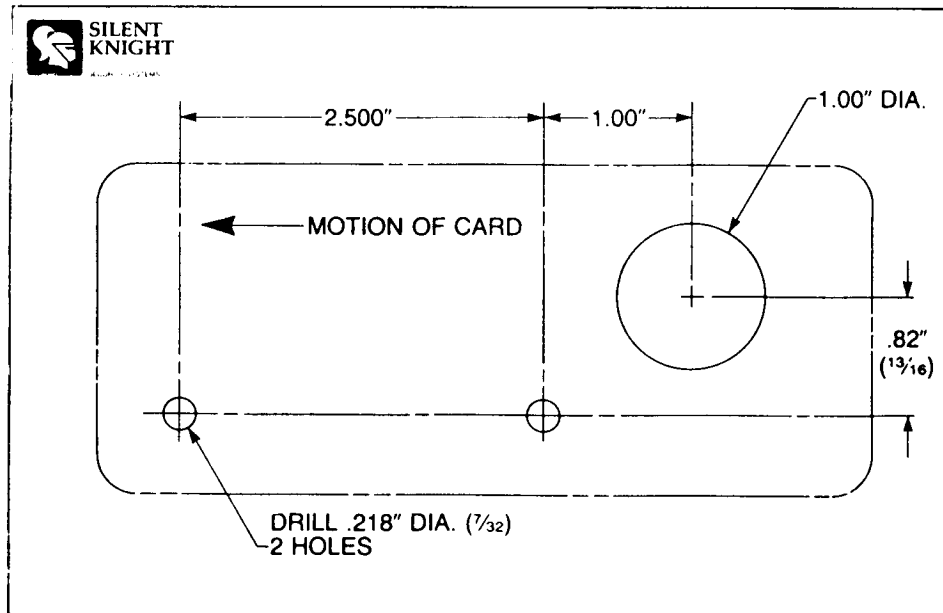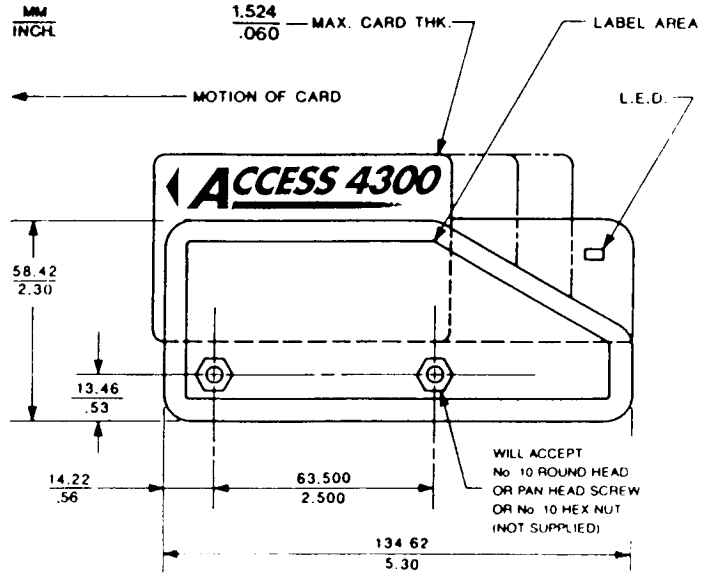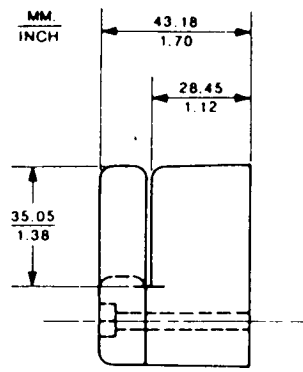


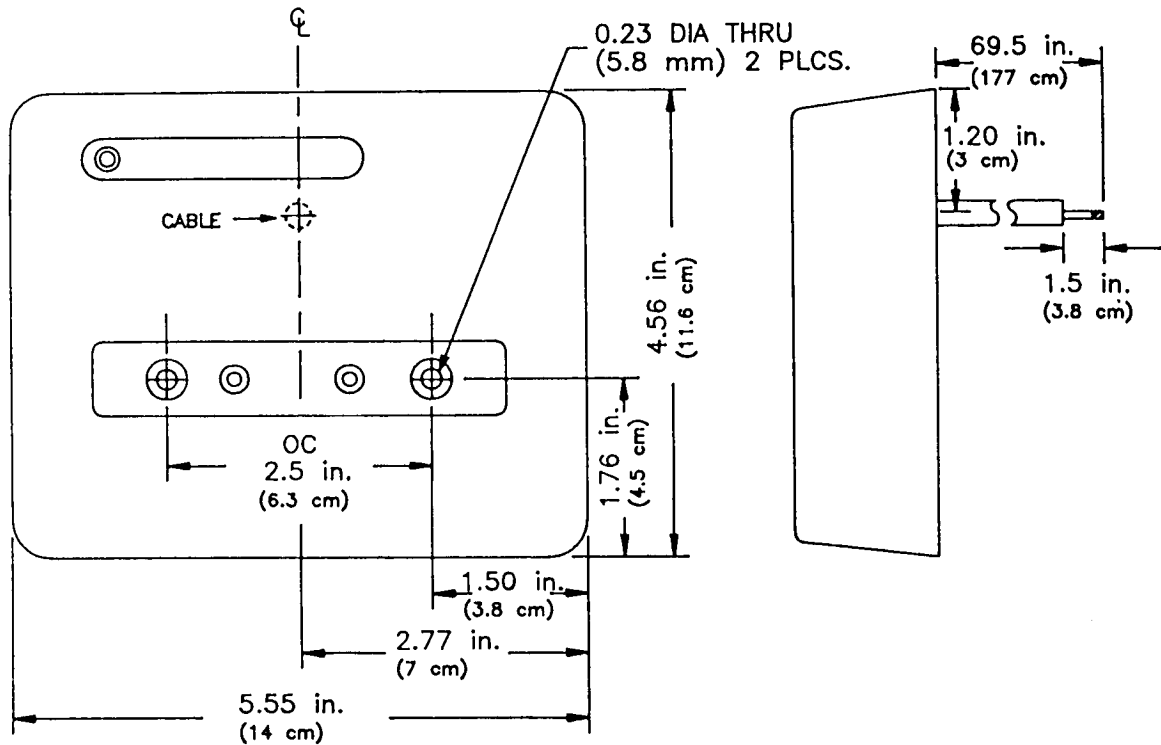**FIGURE 8.3A: ACCESS 4300 CARD READER MOUNTING TEMPLATE<br>SEEN LOOKING THROUGH READER FROM FRONT**

**The Silent Knight Access 4300 System is Composed of:**

- Card Reader, Model 4300, 4310 and/or 4312*
- Access Cards, Model 4301 and/or 4302*
- Card Reader Interface, Model 4420
- Keystation, 4205*

* Optional or interchangeable

**FIGURE 8.3B: ACCESS 4300 MOUNTING DIMENSIONS**

**FIGURE 8.3C: ACCESS 4310/4312 CARD READER MOUNTING DIMENSIONS**

## 8.4 <u>WIRING</u> <u>THE</u> <u>ACCESS</u> <u>4300</u> <u>SYSTEM</u>

The Model 4420 Door Access Module is connected to the 2820 Control/Communicator panel through a 4-wire keystation bus, up to 1000 feet from the control panel.

The card reader is connected to the Model 4420 module by a 5-wire cable*. See figure 8.4A if installing the 4300 and 8.4B if installing the 4310 or 4312. A Model 4205 keypad can be used instead of the card reader. The card reader or keypad can be installed up to 100 feet from the Model 4420 Door Access Module.
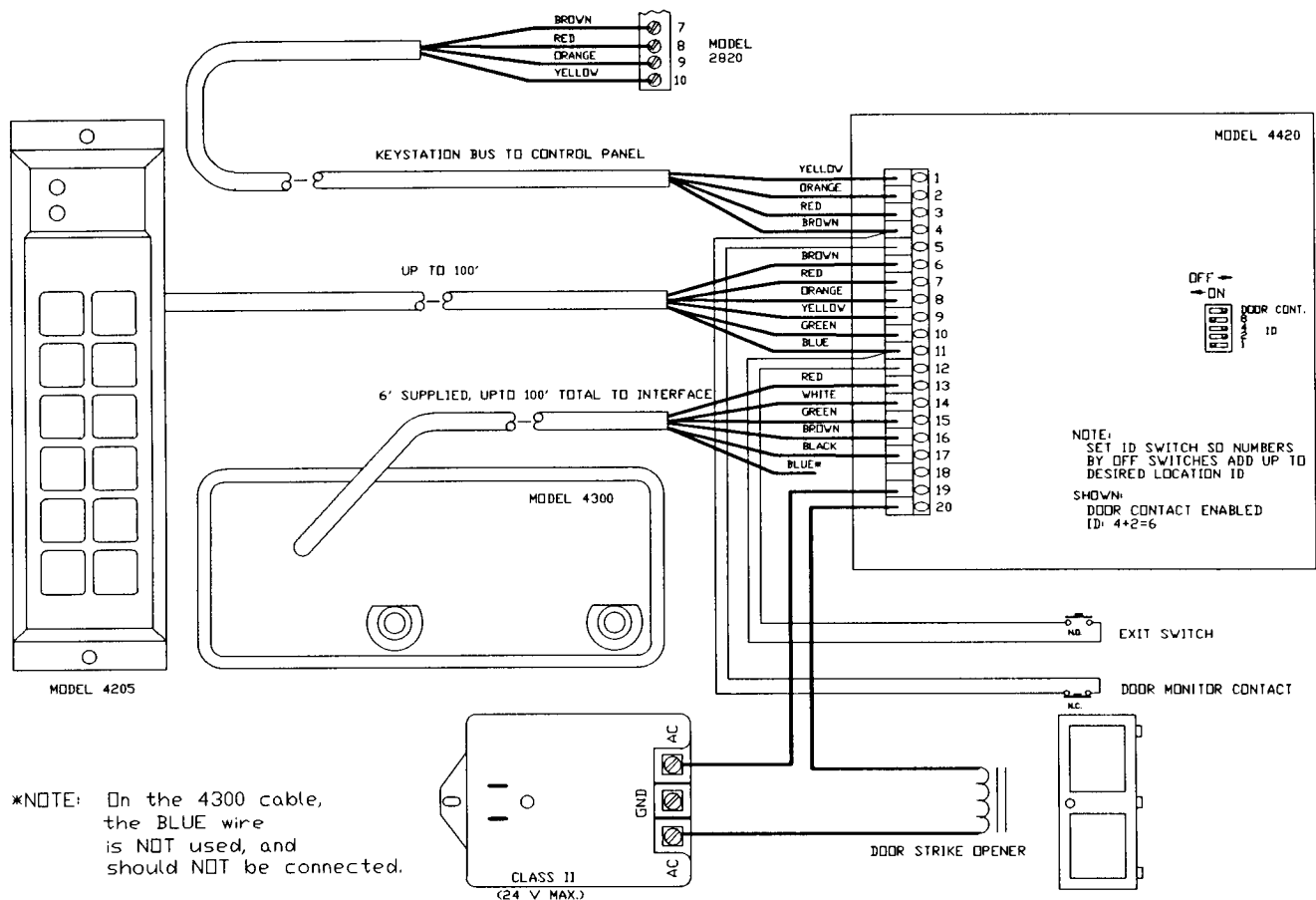
*NOTE: If the card reader cable has 6 wires, the blue wire is not used, and should **NOT** be connected to anything.

The control panel can be connected to a maximum of 7 Model 4420 interfaces. However, only one card reader and one Model 4205 keypad can be connected to each Model 4420 Door Access Module.
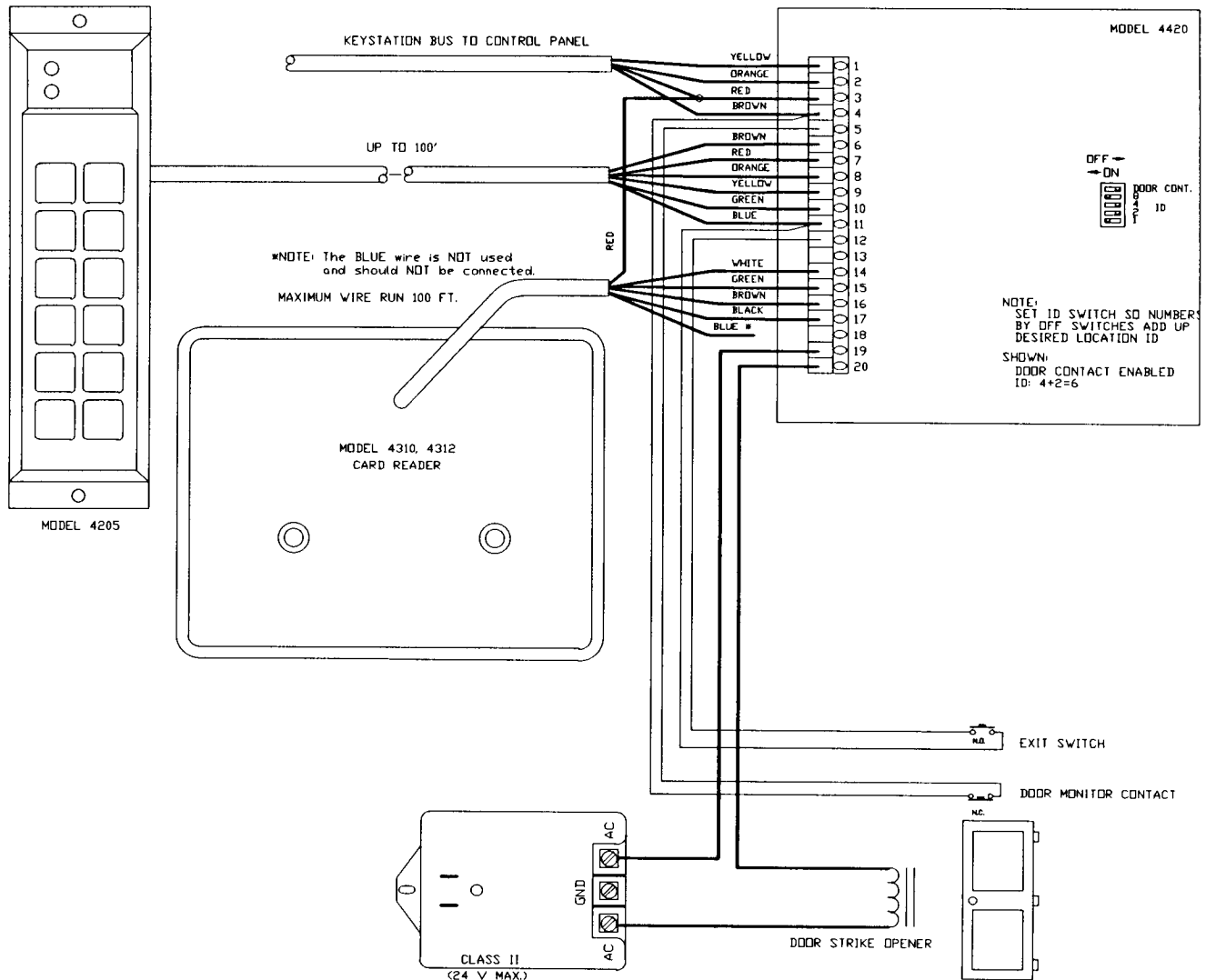
The 4420 has an input for an exit switch and an input for a normally closed door contact. The exit switch is a normally open contact that will activate the door relay manually. The auxiliary connector allows the installer to connect a keypad temporarily to the door access module so that the keypad can be used for the programming procedure.

NOTE 1:   The door contact is used for reporting trouble conditions on the door. If the door contact is **NOT** used, DIP switch 5 should be placed in the **ON** position.

NOTE 2:   A maximum of 7 door stations may be used.



**FIGURE 8.4A: MODEL 4300 READER CONNECTION TO 4420 ACCESS INTERFACE**

24

KEYSTATION BUS TO CONTROL PANEL

MODEL 4420

UP TO 100'

*NOTE: The BLUE wire is NOT used and should NOT be connected.

MAXIMUM WIRE RUN 100 FT.

MODEL 4310, 4312
CARD READER

MODEL 4205

YELLOW
ORANGE
RED
BROWN
BROWN
RED
ORANGE
YELLOW
GREEN
BLUE
WHITE
GREEN
BROWN
BLACK
BLUE *

OFF →
→ ON

DOOR CONT.
ID

NOTE:
SET ID SWITCH SO NUMBERS
BY OFF SWITCHES ADD UP
DESIRED LOCATION ID

SHOWN:
DOOR CONTACT ENABLED
ID: 4+2=6

EXIT SWITCH

DOOR MONITOR CONTACT

CLASS II
(24 V MAX.)

DOOR STRIKE OPENER

**FIGURE 8.4B: MODEL 4310/4312 READER CONNECTION TO 4420 ACCESS INTERFACE**

## 8.5 ACCESS 4300 INITIAL PROGRAMMING (PERFORMED BY THE INSTALLER)

### 8.5.1 PREPARATION

Up to 48 different card codes can be programmed into the 2820 Control/Communicator panel. Before programming the system, reserve separate blocks of code location numbers for card and keypad entry.

EXAMPLE:   You could assign locations 6-49 to people who use cards and locations 0-5 to people who enter their codes on a keypad.

NOTE:   Codes 0 (installer's code) and 1 (the main user code) must be reserved for programming access for the system.

Within the card and keypad blocks, reserve separate blocks for the various options.

EXAMPLE:   When assigning time windows, you could set code numbers 0, 1 and 6 for ALWAYS and the remaining code numbers for weekday business hours only. If access is to be restricted to certain doors, group the door selections together within the card and keypad blocks. Keeping the options together in blocks makes it easier to maintain the system.

In the space provided in the Model 2820 Programming Record (P/N 150491), write the options selected for each code number.

### 8.5.2 PROGRAMMING

To program time windows and door restrictions, use the Silent Knight Model 5521 Desk Top Programmer or the Model 5541 Downloading Software. The default settings allow access to all stations at all times. See sections 15 through 17 for further information on programming.

### 8.5.3 SETTING ID CODES

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 or 4420 Door Access Module. Table 8.5.3A shows the positions of the switches for specific ID numbers.

**TABLE 8.5.3A:KEYSTATION SWITCH POSITIONS**

| ID # | SW #1 | SW #2 | SW #3 | SW #4 |
|------|-------|-------|-------|-------|
| 0*   | ON    | ON    | ON    | ON    |
| 1    | OFF   | ON    | ON    | ON    |
| 2    | ON    | OFF   | ON    | ON    |
| 3    | OFF   | OFF   | ON    | ON    |
| 4    | ON    | ON    | OFF   | ON    |
| 5    | OFF   | ON    | OFF   | ON    |
| 6    | ON    | OFF   | OFF   | ON    |
| 7    | OFF   | OFF   | OFF   | ON    |

*NOTE:   Stations set to ID #0 will NOT be supervised, and cannot be used with a door strike.*

## 8.6 ACCESS 4300 ON-SITE PROGRAMMING

### 8.6.1 ADDING CARDS TO THE SYSTEM

Use the following procedure to program or add cards to the system:

1.  A keystation with a display is required to initiate the programming sequence. Use a keystation near the card reader or connected to the 4420 interface to initiate programming.

2.  Set the DIP switch on the back of the programming keystation to the same ID code as that of the Model 4420.

3.  To go into the program mode, enter ⑦ (TEST) followed by the main user code (assigned to code location 1).

4.  Enter the location number (2-49) at which you wish to program the first card user code and press the (TEST) key. If you prefer, press the (TEST) key to advance to the desired number.

5.  Slide the cards through the card reader one by one. As you do, write the user name and the "hot stamp number" (imprinted on the back of each card) in the space in section 8 of the Model 2820 Programming Record (P/N 150491). Cards will be programmed into successive code locations following the location you selected in step 4.

6.  Return to the keystation and press the (MUTE) key twice to exit the program mode. If you are using a keystation temporarily plugged into the 4420, remove it or reprogram the DIP switches to their final settings.

*NOTE 1:   If you make an error in programming the cards, restart the procedure from step 1.*

*NOTE 2:   The secret codes may be viewed and recorded by restarting the programming procedure and pressing the (TEST) key to advance to each code.*

### 8.6.2 REMOVING CARDS FROM THE SYSTEM

To remove a card from the system, first press ⑦ (TEST) followed by the main user code. Then advance to the card you wish to remove, press (CLEAR) (TEST) then press the (MUTE) key **twice**.

## 8.7 ACCESS 4300 OPERATION

See the Model 2820 User Manual (P/N 150493) for operating instructions.


## 9 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 keystation, 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.


## 10 ZONE CONFIGURATION AND WIRING

### 10.1 WIRING THE INTERNAL ZONES

This section applies to the 16 internal zones of the 2820 only. For information on wiring of the expansions zones, refer to section 11 of the manual. Zones 1 through 16 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 15, 18, 21, 24, 27, 30 and 33. Smoke detector power is available on terminal 12.

Supervision of either N.O. or N.C. contacts is optional (see programming options).

NOTE 1:   When supervising Normally Open contacts, a 15-K$\Omega$ end-of-line (EOL) resistor must be used, across the last contact in the loop.

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

NOTE 3:   When using a combination of contacts, a 15-K$\Omega$ 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. Maximum loop wiring resistance is 100 $\Omega$
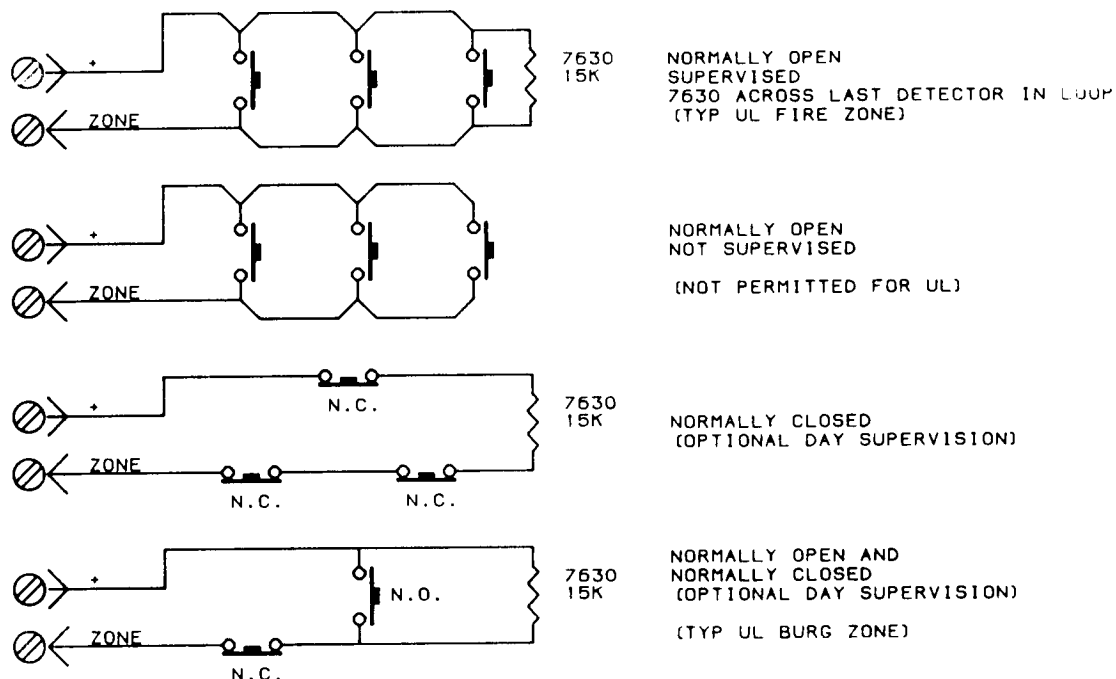


FIGURE 10.1A:  INTERNAL ZONES

## 10.2 SMOKE DETECTOR WIRING

An ESL Model 445AT or 440A Smoke Detector should be used when wiring fire zones on the 2820. Figure 10.2A shows how it should be wired. The Model 445AT Smoke Detector is rated at 1.5 mA in the normal supervisory condition and 60 mA in the alarm condition. A maximum of 7 smoke detectors may be used. An ESL 204A Power Supervision Unit must also be used. For UL installations, the 7630 EOL (end-of-line) resistor and ESL 204A Supervision Unit must be installed across the last detector in the loop.

*NOTE: For UL installations, minimum wire gauge is #18. Maximum loop wiring resistance is 100 Ω. The 7630 EOL resistor and ESL 204A must be mounted at the last detector in the loop.*
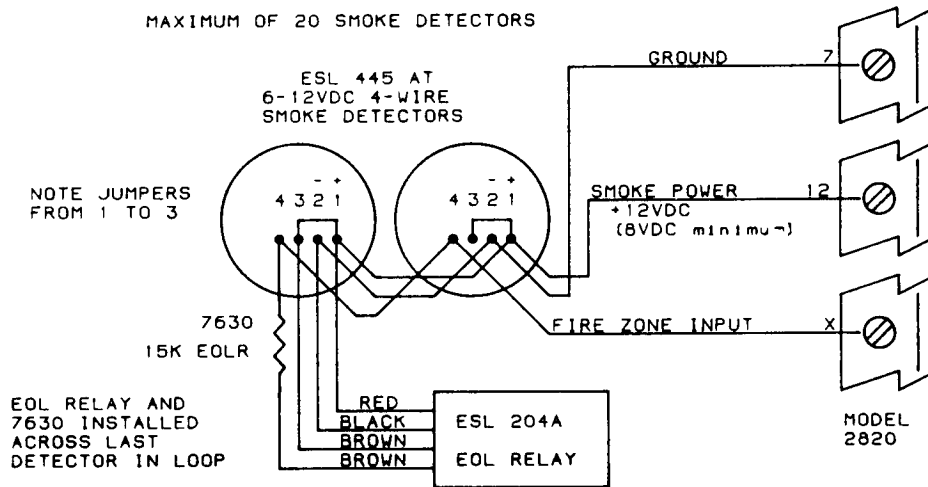


**FIGURE 10.2A: SMOKE DETECTOR CONNECTION**

## 10.3 MODEL 7181 UNIVERSAL ZONE CONVERTER

The Model 7181 Universal Zone Converter is scheduled to be available mid-to-late summer 1991. The 7181 will allow you to connect style D (class A) sensors to style A (class B) zones. It will also allow you to connect 2-wire smoke detectors to 4-wire zones. For instructions on installing the Model 7181, refer to the 7181 installation manual (P/N 150632).

## 11 MODEL 4130 ZONE EXPANDER

The Model 4130 is an RF (Radio Frequency) zone expander. This module mounts inside of the 2820 cabinet and is then connected to the Model 4135 Remote Receiver. This expander can provide up to 16 additional zones to the 2820. Each RF Transmitter becomes a separate zone which reports to the remote receiver. The 4135 receiver communicates to the 4130 via a 4-wire, 22-gauge cable, up to 100 feet in length, allowing placement of the 4135 for optimum RF reception. Refer to the Model 4130 RF Zone Expander manual (P/N 150474) for detailed installation and programming instructions.
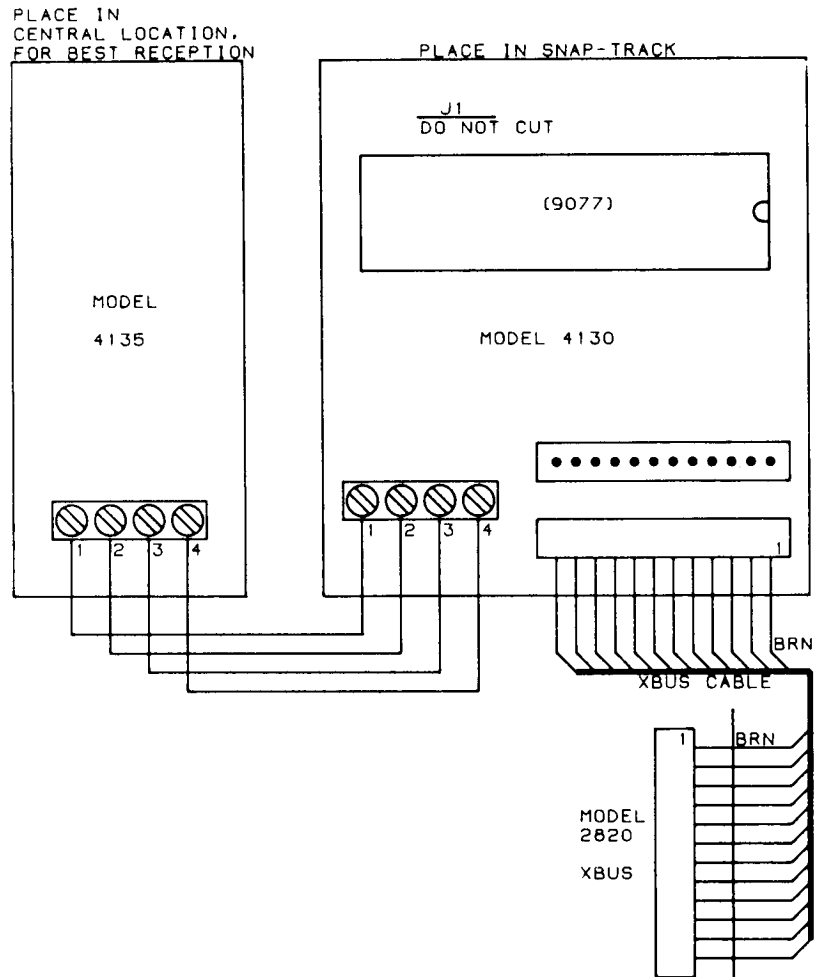


**FIGURE 11A: MODEL 4130 RF ZONE EXPANDER INSTALLATION**

## 12 LOCAL ANNUNCIATION

Types of local annunciation include polarized fire bells, burglary bells with tamper-proof enclosures, external and internal speakers, the Model 4180 Status Display Module, and the Model 4184 Watchdog Module.

The Model 4160 Supervised Bell Module is required for NFPA 72A - UL 864 (Local Fire Alarm) Listed installations. An Ademco Model AB-12 "Bell in Box" must be used in Grade A Mercantile (UL 365), Grade A Local (UL 609) and Grade B Central Station (UL 1610) installations. For UL residential installations, an Ademco 713 Siren is required.

NFPA commercial fire protection equipment standards require that all equipment trouble conditions be reported. The Model 4184 Watchdog Module is used to monitor trouble conditions, and also provides local annunciation of such conditions.

### 12.1 FIRE BELL WIRING WITH MODEL 4160 SUPERVISED BELL MODULE

Figure 12.1A shows the wiring of a polarized fire bell. You must install the supplied transient suppressor Model 7800 as close as possible to the bell contacts.

The 4160's bell output is rated 12 $V_{DC}$, 300 mA and is fused at 500 mA. The 4160 utilizes polarity reversing supervision, and a polarized bell is required: the Wheelock Model 46T-G10-12.

*NOTE 1:*    *The Wheelock Model 46T-G10-12 will provide 85 dB at 10 feet.*

*NOTE 2:*    *A 15-KΩ end-of-line resistor (SK Model 7630) must be connected across the coil of the last bell in the loop.*

*NOTE 3:*    *This zone must be programmed as 24-HOUR TROUBLE, N.O. CONTACT, 24-HOUR ALARM. This zone may **NOT** be used as an ALARM input.*
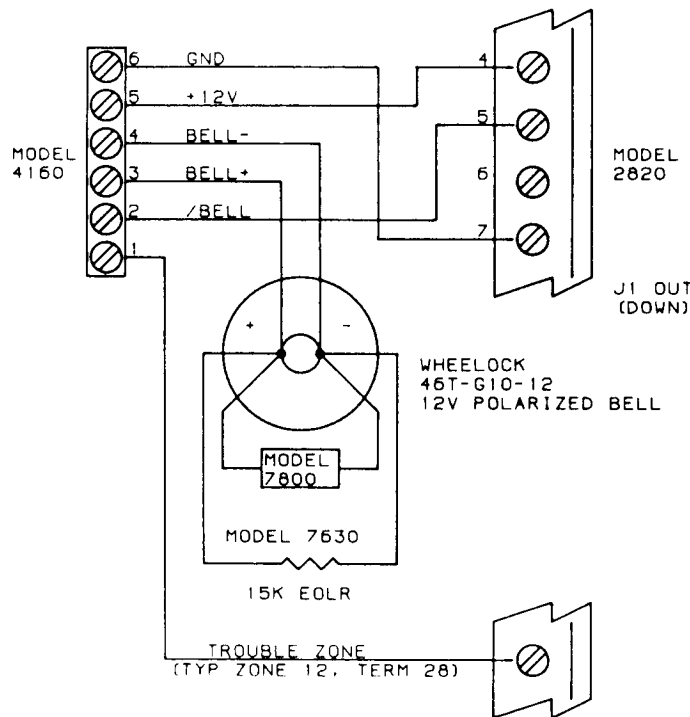


**FIGURE 12.1A: FIRE BELL CONNECTION**

## 12.2 COMMERCIAL BURGLARY BELL WIRING

For Grade A Mercantile (UL 365), Grade A Local (UL 609) and Grade B Central Station (UL 1610), an Ademco Model AB-12 "Bell in Box" must be used. The AB-12 is NOT polarity sensitive. The housing must be connected to a tamper zone as shown in figure 12.2A. The zone must be programmed as 24-Hour, N.O. and N.C.
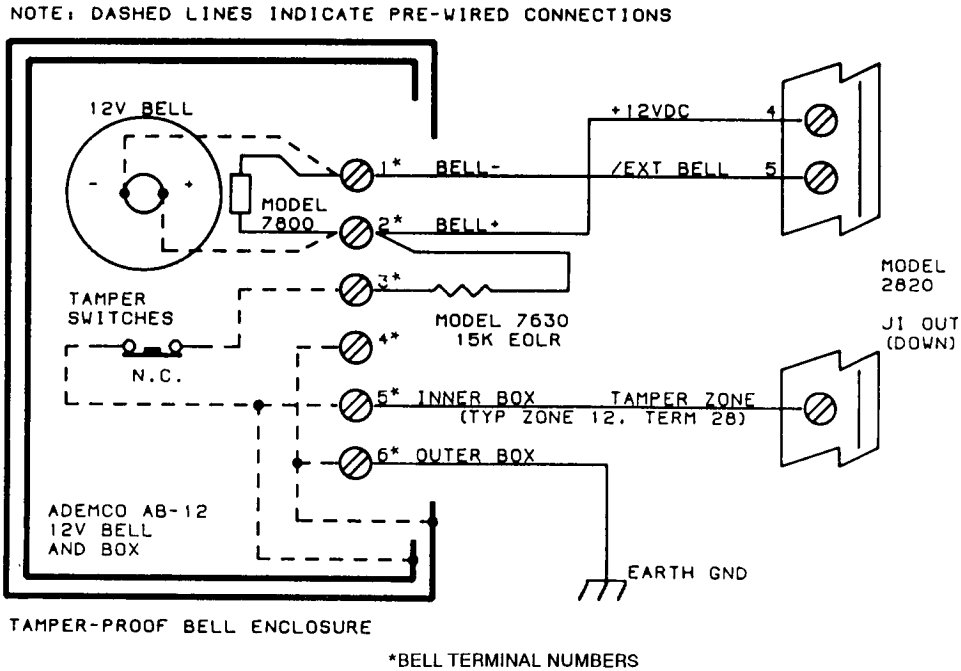
NOTE: DASHED LINES INDICATE PRE-WIRED CONNECTIONS



TAMPER-PROOF BELL ENCLOSURE

*BELL TERMINAL NUMBERS

**FIGURE 12.2A: COMMERCIAL BELL CONNECTION**

## 12.3 EXTERNAL SPEAKER

Terminal 3 (+16 V$_{DC}$) of the 2820 is designed for use with an 8-$\Omega$, 15-watt speaker. Connect the speaker between terminals 3 and 5 as shown in figures 12.3A or 12.3B. Leave shunt block J1 in the up (in) position. For UL residential installations, an Ademco 713 Siren must be used. In UL commercial installations, a bell must be used.
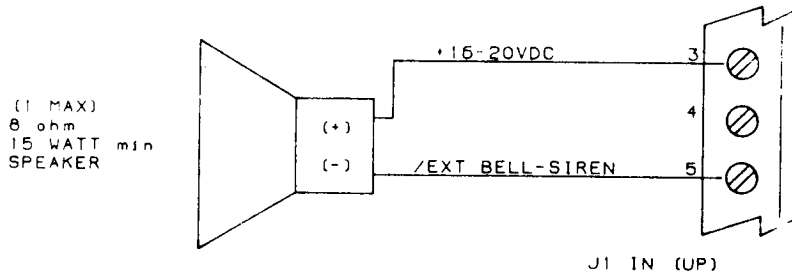


**FIGURE 12.3A: EXTERNAL SPEAKER**
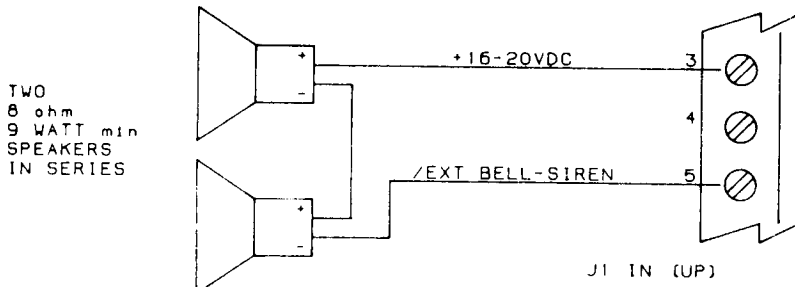


**FIGURE 12.3B: ALTERNATE EXTERNAL SPEAKERS**

31

## 12.4 INTERNAL SPEAKER

If an internal speaker is to be used--near a keystation, for example--it must be connected between terminal 4 (auxiliary power) and terminal 6 (speaker output). The 2820 was designed for use with an 8-$\Omega$, 9-watt internal speaker or up to six 45-$\Omega$, 2-watt speakers.
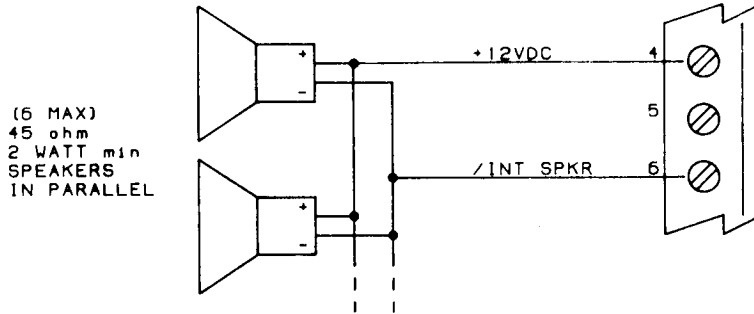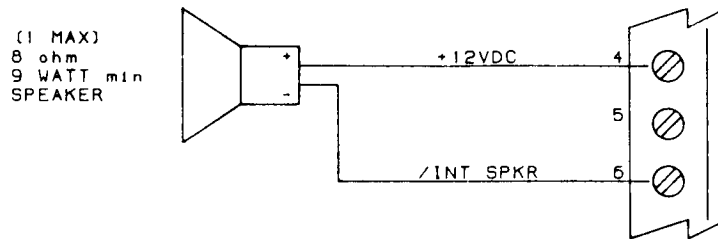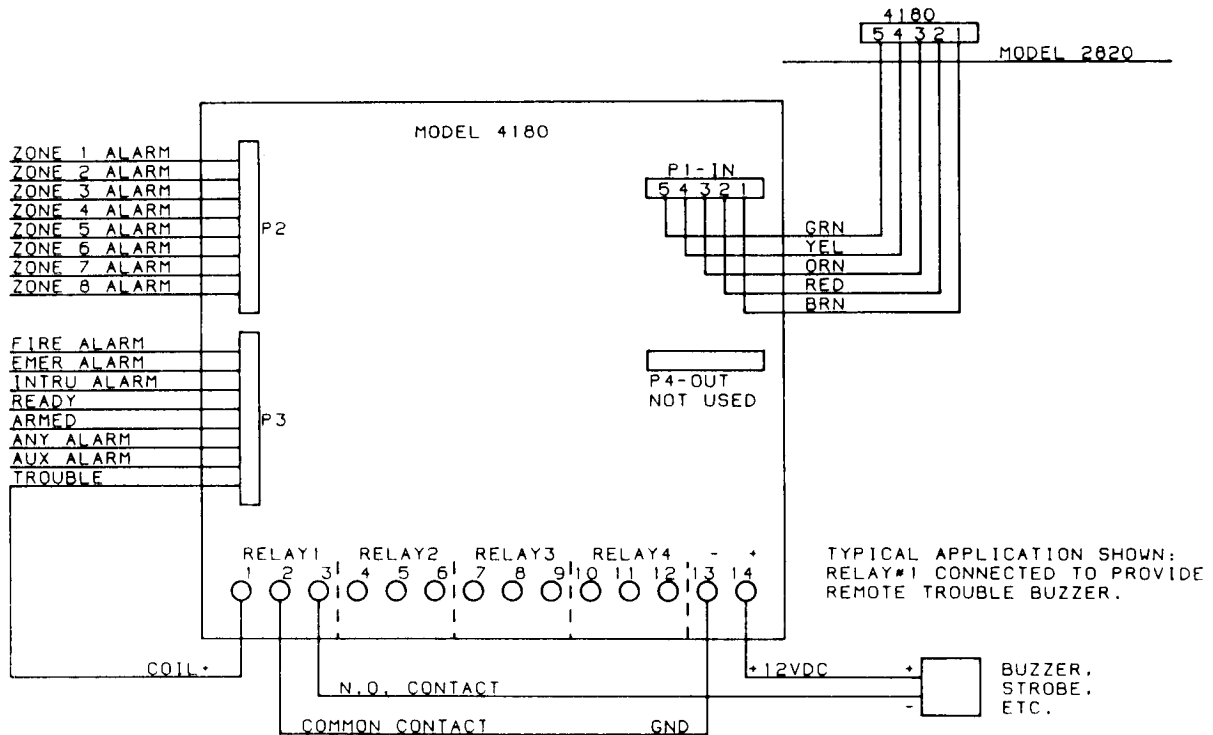


**FIGURE 12.4A: 45-$\Omega$ INTERNAL SPEAKERS**



**FIGURE 12.4B: 8-$\Omega$ INTERNAL SPEAKER**

## 12.5 MODEL 4180 STATUS RELAYS

The Model 4180 Status Display Module is used to interface the 2820 with Long Range RF and Derived Channel communications systems. Figure 12.5A shows how to wire the 4180 to the 2820. Table 12.5A provides a description of each terminal on the 4180.

**FIGURE 12.5A: MODEL 4180 STATUS RELAY WIRING**

| 4180 TERMINAL | DESCRIPTION | |
|---|---|---|
| 1 | RELAY#1 | COIL |
| 2 | | COMMON CONTACT |
| 3 | | NORMALLY OPEN CONTACT |
| 4 | RELAY#2 | COIL |
| 5 | | COMMON CONTACT |
| 6 | | NORMALLY OPEN CONTACT |
| 7 | RELAY#3 | COIL |
| 8 | | COMMON CONTACT |
| 9 | | NORMALLY OPEN CONTACT |
| 10 | RELAY#4 | COIL |
| 11 | | COMMON CONTACT |
| 12 | | NORMALLY OPEN CONTACT |
| 13 | CIRCUIT GROUND | |
| 14 | +12VDC (SAME AS 2820 TERMINAL 4) | |

**TABLE 12.5A: MODEL 4180 TERMINAL DESCRIPTIONS**

33

## 12.6 MODEL 4184 WATCHDOG TROUBLE MODULE

The Model 4184 Watchdog Module connects to the Silent Knight Model 2820 Control/Communicator in order to comply with NFPA commercial fire protection equipment standards.

NFPA Standards require that all equipment trouble conditions be reported. The Model 4184 Watchdog Module monitors failures of all keystations or failures in the control microprocessor 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.

### 12.6.1 MODEL 4184 WATCHDOG MODULE WIRING

The Model 4184 Watchdog Module is installed in the SNAP-TRAK, and connects to the Model 2820 through a 4-conductor cable (Silent Knight P/N 130235) in the following manner:

Brown -       Terminal 7 of the 2820 (circuit ground)
Orange -      Terminal 9 of the 2820 (serial data to keystations)
Yellow -      Terminal 10 of the 2820 (serial data from keystations)
Red -         Terminal 12 of the 2820 (+12 $V_{DC}$ fused by F3)
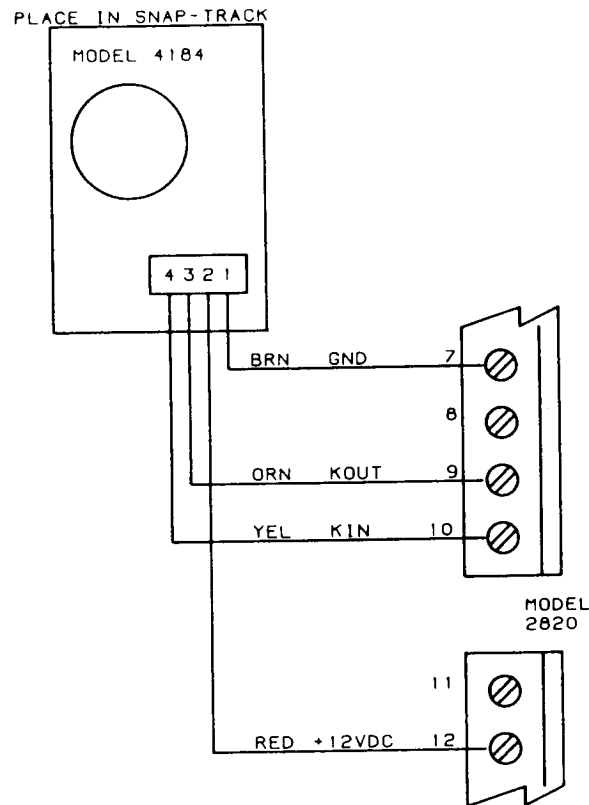


FIGURE 12.6.1A:  MODEL 4184 CONNECTION

## 12.6.2 MODEL 4184 WATCHDOG MODULE OPERATING PROCEDURE

If a short or open should develop in keystation power (terminal 8 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 9), 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 within 2 minutes of the failure.

If a short should occur in the data from the keystations (terminal 10), the following events will occur: The Model 2820 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 10), 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 2 minutes.

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

## 13 TELEPHONE LINE CONNECTION

### 13.1 LINE #1 WIRING

The Model 2820 communicates to the central station over the same telephone line already installed in the building. Connect the 2820 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 2820 as shown in figure 13.1A.
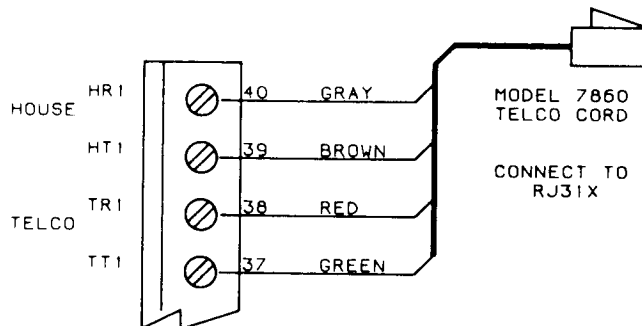


FIGURE 13.1A: PHONE LINE CONNECTION

## 13.2 GROUND START RELAY

The Model 2820 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 2820 will accommodate Ground Start trunks with the addition of a 12-$V_{DC}$ relay. Figure 13.2A shows the wiring of the Ground Start relay. If you use the Ground Start feature you must select it when programming the EEPROM.

NOTE:    In UL installations, a Ground Start telephone network may not be used because it cannot be supervised.
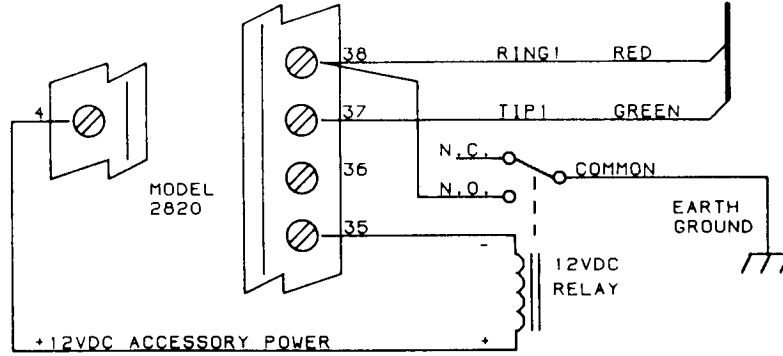


**FIGURE 13.2A:  GROUND START CONNECTION**

## 13.3 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 4 (auxiliary power) and the negative side to terminal 36 (dialer failed).

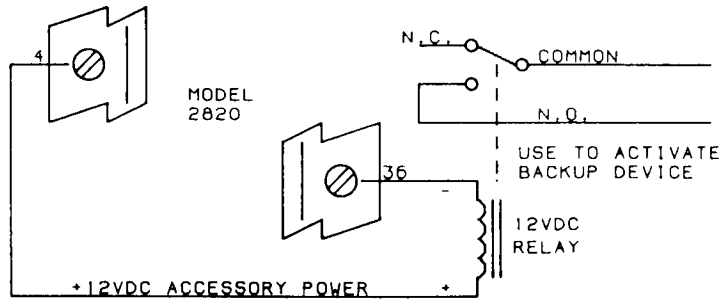In UL applications, this signal is provided from the keystations.



**FIGURE 13.3A:  DIALER FAILED OUTPUT**

## 13.4 MODEL 4175 DUAL PHONE LINE MONITOR

The 4175 Dual Phone Line Monitor allows the use of two phone lines.

### 13.4.1 MODEL 4175 INSTALLATION

1.  Plug the 4175 onto the Phone Line Monitor connector on the 2820 printed circuit board (see figure 3A).

2.  Connect the second phone cord as shown in figure 13.4.1A below. (The first phone cord for line 1 should be connected directly to the 2820 as described earlier).
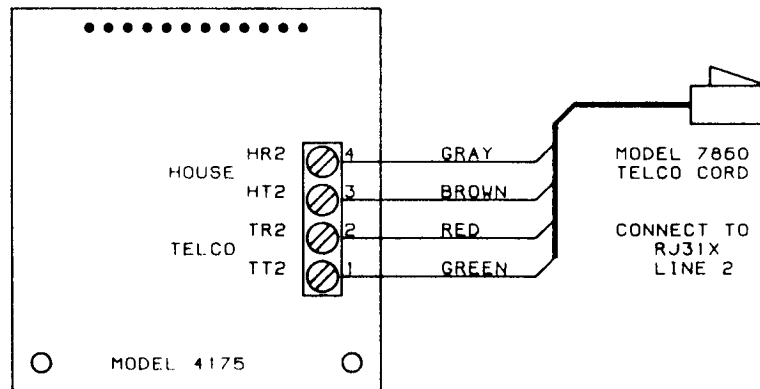


**FIGURE 13.4.1A: 4175 CONNECTION**

### 13.4.2 MODEL 4175 OPERATION

The 2820 will always try to use phone line #1 unless it is bad. If phone line #1 is bad, the 2820 automatically chooses line #2. If the 2820 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.

The Model 4175 will also monitor both phone lines to detect cut or shorted phone wires. If line #2 is not used, the 4175 can monitor just line #1. For NFPA 71 installations, you must use both phone lines and enable the monitor feature.

*NOTE:*    *The 2820 is equipped with* **line seizure** *capability. Any time the panel needs to communicate with the central station (to report a fire alarm or trouble condition, for example), the dialer will seize the telephone line so that it can report to the central station immediately. During this time, it will **NOT** be possible to use any telephones that are on the same line(s) as the panel. Normally, this condition will last approximately one minute. If the dialer is unable to communicate with the central station, the phones will be unavailable for up to 20 minutes.*

## 14 OTHER EXPANSION DEVICES

### 14.1 MODEL 5260 PRINTER INTERFACE

The Model 5260 Printer Interface is used to connect a standard parallel or serial printer to the 2820 control panel, to print activity reports. It can also be used to send information to a serial computer port.

For installation information, refer to the Model 5260 installation manual (P/N 150591).

## 14.2 MODEL 5255 ON-SITE PRINTER

*NOTE:    The Model 5255 is no longer being manufactured.*

For installation information, refer to the Model 5255 printer manual (P/N 150296).  The printer paper part number is P/N 005257.

## 14.3 MODEL 7367 TWO-WAY AUDIO LISTEN-IN MODULE

Figure 14.3A shows how to wire the Model 7367 Two-Way Audio Listen-In Module.  Refer to the Model 7367 Installation Instructions (P/N 150572) for additional information.
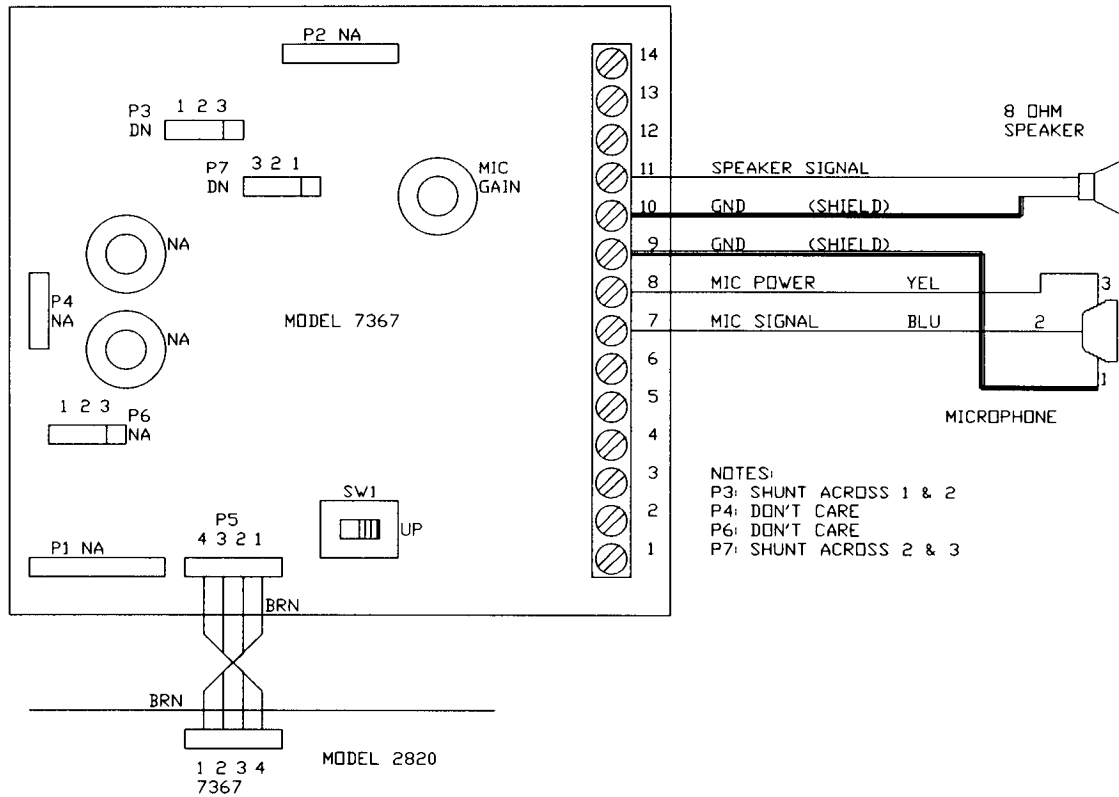


**FIGURE 14.3A:  MODEL 7367 TWO-WAY AUDIO LISTEN-IN MODULE WIRING**

# 15 PREPROGRAMMED EEPROMs

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. For descriptions of these options, see section 17.

The 2820 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."

**SYSTEM OPTS:**

> DEFAULT MODE = Force Close
> SWINGER BYPASS = YES
> DELAYED BYPASS = YES
> MAX SKEY ID = 1
> DISP TIME = 1.5 sec.

**INTERNAL ZONES:**

> 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 (4130):**

> LAST EXP Z# = 32
> RESIDENCE CODE = 0123
> Zones 17-32 (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 DOOR to Ph #1
> REPORT TEST to Ph #1

> MUST REPORT to Ph #1
> PHONE #1 = 5551234567890
> ACCOUNT #1 = 002820
> FORMAT #1-4 = SIA8
> 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 = 5 sec.
> ALM REP DELAY = 15 sec.
> SPECIAL DAYS = Saturday and Sunday.

**ACCESS OPTS:** All functions (DR, BY, CL, OP) enabled for all codes (0-49).

**SECRET CODES:**

> DURESS TRIGGER = 99
> CODE 0 = 123456.

**DOOR STATIONS:** All codes (0-49) may use all doors (1-7). This default value is for software revision 9071.C and later.

> *NOTE:* The default programming for rev. 9071.B allowed codes 0-29 to use door #1 only. The 9071.A default programming did not allow any users to use any doors.

**WINDOW TIMES:**

> NORM OPEN = from 06:30 until 09:30
> NORM CLOSE = from 16:00 to 20:30
> SPEC OPEN = FROM Never UNTIL Never

> SPEC CLOSE = FROM 00:00 UNTIL 00:00
> NORM, SPEC TIMES = 00:00 until 00:00
> NORM, SPEC groups = all codes always enabled.

**SYSTEM MESSAGES:** (The preprogrammed system messages are listed in the 2820 Programming Record, P/N 150491.)

**ZONE TYPES:**

> Zone 1 = Fire, No Shutdown
> Zones 2-32 = Intrusion
> Zone 82 ( (EMER) or (*) ) keys = Panic.

# 16 PROGRAMMING

To change the options, you must reprogram the EEPROM using the Model 5521 Field Programmer or the Model 5541 Downloading Software. Before you begin programming, write down the options you want in the Model 2820 Programming Record (P/N 150491).

*NOTE:    Be sure to use the software revisions noted for the 5521 and 5541. Updates can be ordered from Silent Knight Technical Support Service, 800-328-0103 or 612-569-3555.*

## 16.1 MODEL 2820 DOWNLOADING (WITH 5541 DOWNLOADING SOFTWARE)

*NOTE:    5541 version 3.1 or later is required.*

The instructions below give you an overview of the 5541 programming procedure. Figure 16.1A shows the menu structure of the 5541 software. For additional information, see the Model 5541 Downloading Software manual (P/N 150497).

### INITIAL DOWNLOAD

The Model 2820 was programmed at the factory to ANSWER RING DETECT after 10 rings. After installing the Model 2820, the downloading computer can call the Model 2820. After 10 rings, the 2820 will answer the call and downloading will begin.

### SUBSEQUENT DOWNLOADS

If the ANSWER RING DETECTOR option is still enabled, the computer can call the Model 2820 as described above. Downloading can also be initiated by pressing ④ (TEST) followed by code 0 or code 1.

During uploading or downloading, ( UP/DOWNLOAD ) will be displayed. During the downloading of options to the EEPROM, the LCD will also show address numbers. Downloading all the options takes approximately 4 minutes.

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

### RING DETECTOR

The Model 2820 has a built-in ring detector. This ring detector, when enabled, allows the remote computer to call up the 2820 for downloading or status changes.

## 16.1.1 GETTING STARTED

If you have just powered up the computer, enter the word **MODEM** at the DOS prompt. Then enter the word **PANEL**. Enter your user name and password when the prompts direct you to do so.

On the **Panel Interface** menu, select Ⓑ to program the 2820.

The **2820 Panel** menu will appear. If you want to reprogram any of the options, select Ⓐ (**Edit Account**).

## 16.1.2 REPROGRAMMING THE OPTIONS

On the **Edit Account** menu, select the type of options you wish to program. When you finish programming the options on one of these submenus, press (PgDn) to get to the next set of options. If you prefer, you can press (Esc) to get back to the **Edit Account** menu, then choose another set of options to program. After you have reprogrammed all the options you wish to change, press (Esc) again. Then follow the screen prompts to download the new data.

## 16.1.3 DOWNLOADING THE DATA

After you have entered the subscriber's phone number, the number will appear on the screen, followed by the message **"Press ESC to Terminate, Waiting for Answer..."**

Several seconds will elapse before the call goes through and the screen indicates that downloading is taking place.

## 16.1.4 PRINTING THE OPTIONS

To print data from a particular options menu, go to the menu and press (F3).

### 16.1.5 <u>VERIFYING</u> <u>THE</u> <u>SELECTIONS</u>

To make sure the correct data has been downloaded to the subscriber's 2820, you may wish to have the 2820 send the data back (upload) so you can review it.

On the **2820 Panel** menu, select Ⓔ (**Request Upload**). Then follow the prompts to upload the data from the 2820 to the computer. To view the uploaded data, select Ⓑ on the **2820 Panel** menu. To save the uploaded data, press Ⓒ.

**CAUTION:  Before editing or modifying an upload, you must SAVE it.**

### 16.1.6 <u>LEAVING</u> <u>THE</u> <u>PROGRAM</u>

To exit the Model 5541 downloading program, press (Esc) repeatedly until you see the prompt that asks if you want to leave the program.
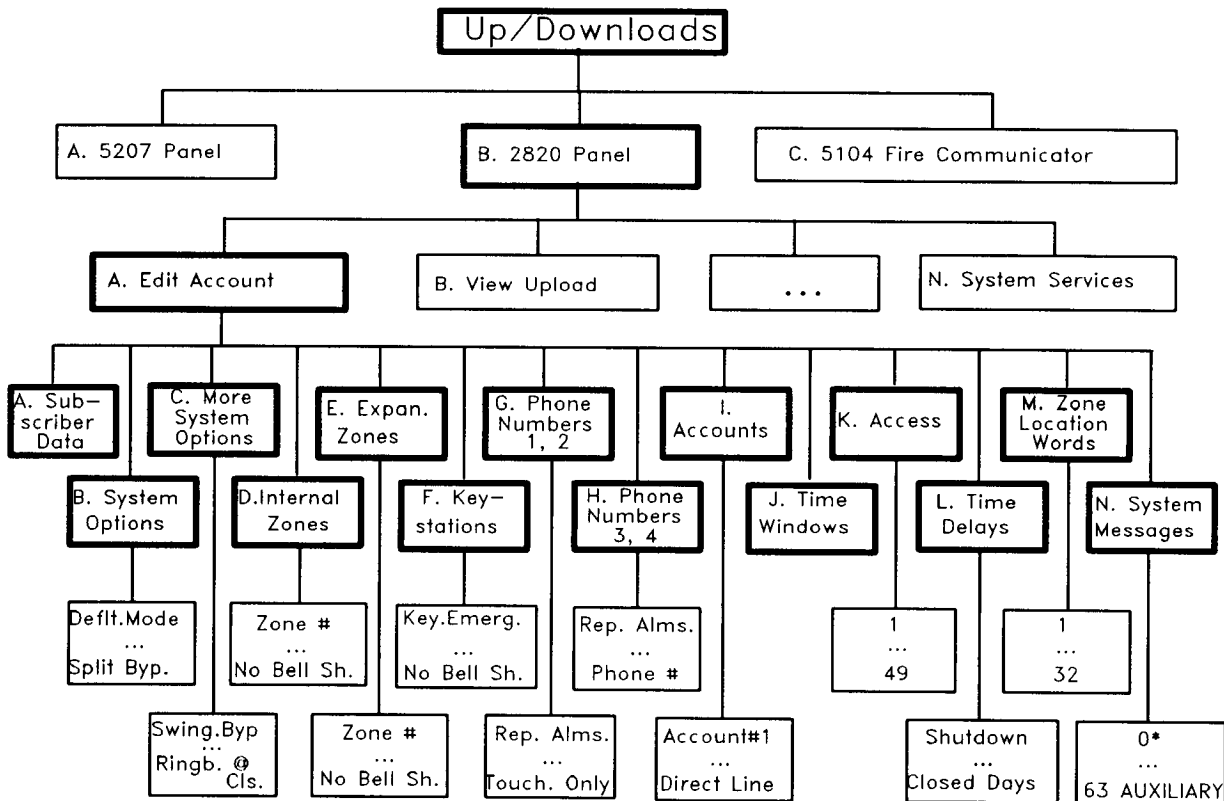


**FIGURE 16.1A:  MODEL 5541 DOWNLOADING SOFTWARE MENUS**

## 16.2 MODEL 5521 FIELD PROGRAMMER

*NOTE: 5521 revision 901009 or later is required.*

Figure 16.2A shows the 5521 menu structure. See the Model 5520/21 Programmer manual (P/N 150479) for complete instructions on using the programmer.

**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.

### 16.2.1 HARDWARE CONNECTIONS

**Before** you turn on the programmer, you must do **ONE** of the following:

1.  Connect the 5521 programmer to the 2820 using the expansion bus cable. Apply power to the 2820 **ONLY.** (The programmer will be powered from the XBUS.)

    **OR**

2.  Remove the EEPROM from the 2820 and insert it into the programmer.

    **Observe the following precautions when handling the EEPROM:**

    a.  Touch a grounded surface before touching the EEPROM. Handling the EEPROM without first discharging any static electricity from your person will cause damage to the device.

    b.  Turn the DC power switch OFF before removing or inserting the EEPROM. Failure to do so will damage the device.

    c.  When inserting the EEPROM, check that all 8 pins are seated, that the device is properly oriented (see figure 3A), with the notch pointing to the left on the 2820 circuit board, and that all 8 pins are in the socket (not shifted right or left).

    With the DC power off and after discharging yourself, remove the EEPROM from its socket in the 2820 by gently prying up one side at a time, using a small screwdriver or the chip puller provided with the 5521.

    Insert the EEPROM into the programming socket of the 5521, plug the programmer into a 120-V$_{AC}$ outlet using the supplied AC adaptor, and turn on power to the programmer.

### 16.2.2 GETTING STARTED

When you first turn on the programmer, the display will show the programmer's software revision and model number. Press (ENTER). A model number for one of Silent Knight's systems will appear. Use the arrow keys to select (2820). Press (ENTER) again. Next, select (LOAD) and then (XBUS).

At this point, the programmer may request a (PASSCODE) to prevent unauthorized persons from reprogramming the system. Enter code 0 to load the preprogrammed information. The factory programmed code 0 is 123456.

### 16.2.3 REPROGRAMMING THE OPTIONS

This display will read (EDIT). Press (ENTER), then use the arrow keys to select the set of options you wish to program. Press (ENTER).

The programmer will display the first option and the preprogrammed data for that option. If you don't want to change this option, press (MENU SKIP) to go to the next option. If you want to change an option, key in the new data--(Y) for YES or (N) for NO, or numbers if required--then press (ENTER). The programmer will advance to the next option.

If you want to return to a previous step, press (SHIFT) and the (←) key until you reach the desired step.

While you are programming numbered options, such as **ACCESS OPTS.**, you can go to whichever numbered item you wish (**ACCESS FOR #12**, for example) by pressing (SHIFT) (STEP), then the number of the item.

## 16.2.4 LEAVING THE PROGRAM

Once you have reprogrammed the options you want, you can leave the program at any point. Press (SHIFT) (MENU SKIP). The display will show the name of the options menu in which you were just programming. Press (SHIFT) (MENU SKIP) again.

The display will read (EDIT). Use the arrow keys to go to the word (SAVE). Press (ENTER) to save the data onto the EEPROM.

The programmer will display (PASS) to indicate that the data was saved. If the display shows (FAIL), repeat the programming procedure, making sure you are following it correctly. If the display shows (FAIL) again, the EEPROM is defective. Replace it and try again.
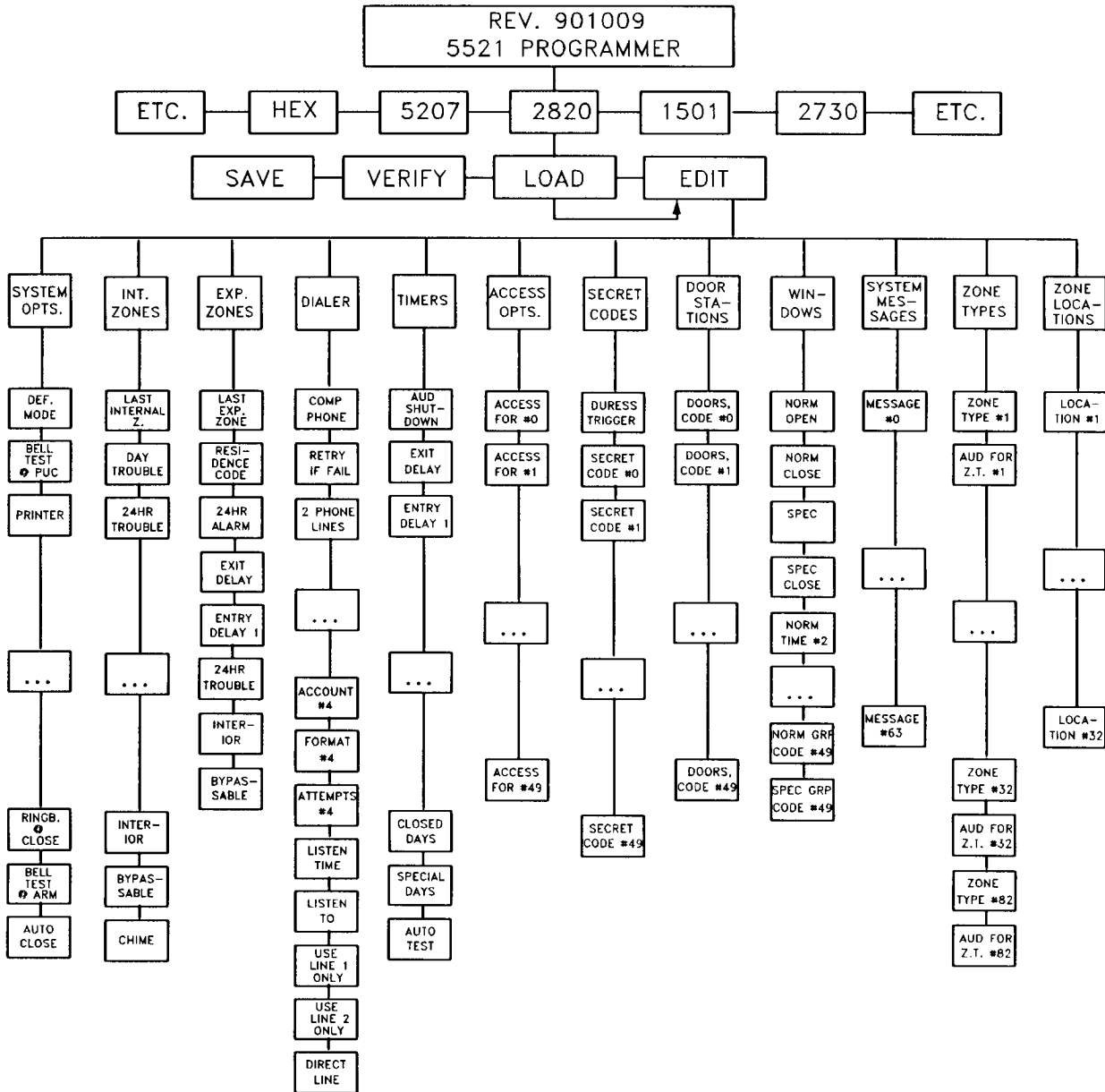


**FIGURE 16.2A: MODEL 5521 DESK TOP PROGRAMMER MENUS**

43

# 17 PROGRAMMING OPTIONS DESCRIPTION

This section explains the programming options available when using the Model 5521 programmer. The underlined titles at the beginning of each paragraph will appear on the top line of the programmer display. Refer to the 5521 operation manual for instructions on operating the 5521 programmer.

**IMPORTANT:** Before you EDIT any options, you *must* first LOAD from the default EEPROM.

*NOTE: See section 2.3 for programming requirements for UL installations.*

## 17.1 SYSTEM OPTS.

### DEFAULT MODE

This option is used to determine what the system will do when it times out of the program mode. This would occur after a prolonged power loss, if no one is present to control the system. The choices are displayed on the second line of the display. Choose one of the options by pressing the arrow keys.

1. **OPEN** - Selecting this option causes the unit to default to the disarmed mode and generate an Open report.

2. **FORCE CLOSE** - When this option is selected, the unit will default to the armed mode and will automatically BYPASS any zones that are *not ready* to be armed. The unit will also generate a Close report.

*NOTE: For the following options, enter a Ⓨ to select an option or an Ⓝ Not to select an option.*

### BELL TEST @ PUC (Bell Test at Power Up Clear)

When selected, a 2-second bell test will sound whenever the system is reset.

### PRINTER

Select this option if you are using a Model 5255 On-Site Printer or 5260 Printer Interface.

### ZONE EXP1

If a zone expander (Model 4130) is to be used with the system, this option must be enabled.

### 4203 (2200) OR MK

This option must be selected if you are using the Model 4203 (2200) keystation, or a mechanical key. Using these keystations prevents the use of zones 13 through 16.

### SYSTEM TYPE

Choose either "RESIDENTIAL" or "COMMERCIAL" depending on the type of installation. Residential systems may not use the door access feature and commercial systems may not use the CODE 2 feature.

### INSTANT IF ALARM

When this option is selected, all zones become Instant zones whenever any alarm occurs. INSTANT IF ALARM does not apply to expansion zones.

### FORCE ARM

Choosing this option causes any zones that are *not ready* to be bypassed when the system is armed. Upon arming, a "CF" (forced closing) report will be generated.

### INT ON @ INTRU

With this option selected, all Interior zones will automatically be enabled when there is an intrusion alarm.

### INT FOLLOWERS

Selecting this option causes the Interior zones to be delayed when an Entry zone is violated. The INT FOLLOWERS option does not apply to expansion zones.

### ARM LOCK INT KEY

When this option is selected it will disable the (INTERIOR) touch switch whenever the system is armed (after the exit delay).

## INT OFF @ DISARM

When selected, this option will automatically disable the Interior zones when the system is disarmed.

## AUTO INTERIOR

When selected, this option will automatically enable the Interior zones when the system is armed. The system will not arm unless the Interior zones are ready. If the interior is subsequently turned off by the user, a Forced Close report will be generated.

## EXIT BEEPS

When this option is activated, you will be given an audible exit warning tone (typically commercial).

## SILNT NIGHT TRBL

Audible trouble tones will not be sounded while the panel is armed (typically residential).

## SWINGER BYPASS

If you select this option, the system will automatically bypass zones that cause repeated (4 times) alarms within a specified time window.

## DELAYED BYPASS

When this option is selected, the system will not report bypasses to the central station until the panel is armed.

## AUTO UNBYPASS

This option will automatically unbypass the bypassed zones when the panel is disarmed.

*NOTE:   This option should be selected if the Force Arm option was chosen.*

## BYPASS CODE

When this option is enabled you must enter your access code to bypass a zone even if the panel is disarmed (typically commercial).

## ACCESS WINDOWS

Select this option if you will be using access windows. The access windows restrict all functions requiring an access code to certain times of the day. If NO is selected, the programmer will skip the Normal Window and Special Window programming.

## REPORT DO/DF*

If this option is selected, the 2820 will send a report every time the door sensor is violated. It will send a report if the door was forced or propped open. These reports will be sent to the phone numbers selected for the REPORT DOOR option (see section 17.4).

## REP ALL OP/CL*

This option would be activated if you wish the system to send Opening and Closing reports for every type of opening and closing.

## REP EXCPTN OP/CL*

If you choose this option, the system will not report Openings and Closings during specified window times, but will report Openings and Closings occurring at unusual times.

## REPORT OT/CT*

This option causes the system to send an Open Trouble or Close Trouble report to the central station if you fail to arm or disarm during the specified time window.

## REPORT DG*

When this option is selected, the system will send a report indicating that the door was accessed using a valid code number (door access granted).

*\*NOTE:   If you wish to have these events printed on-site by the 5255/5260 but not reported to the central station, select YES here in SYSTEM OPTS, but do **not** select any phone numbers for the REPORT DOOR option in the DIALER section (section 17.4).*

## MILITARY TIME

If this option is selected, the Time display will be in military time. If MILITARY TIME is not selected, the Time will be displayed in AM and PM.

## MAX SKEY ID

For this option, you must enter the highest keystation ID number that will be supervised. You must give your supervised keystations ID numbers in sequential order starting at 1. Select Ⓞ for this option if you do not want keystation supervision.

*NOTE:  The 4203 (2200) Keystation will **not** be supervised.*

## DISPLAY RATE

You are given four choices for the amount of time that the display will show specific information before it will move to the next display. The four choices are: .5 seconds, 1 second, 1.5 seconds, and 2 seconds. Use the arrow keys to select. (The recommended speed is 1.5 seconds.)

## SPLIT BYPASS

Selecting this option allows codes 0 and 1 to bypass all zones. Codes 2 through 32 can only bypass their corresponding zones. (Code 2 can bypass only zone 2, code 3 can only bypass zone 3, etc.) Codes 33-49 cannot bypass.

## FAST RESTORES

This option allows the system to report restores as soon as the alarm has been reported, instead of waiting for the shutdown time.

## DURESS

Enabling this option allows the use of the DURESS feature.

## RINGBACK @ CL

When this option is selected, there will be a short bell test after kiss-off when a Closing report is sent.

## BELL TEST @ ARM

When enabled, this option causes a 2-second Bell Test every time the system is armed.

## AUTO CLOSE

Selection of this option will cause the system to arm automatically if it is not armed at the end of the programmed closing time window.

## 17.2 INTERNAL ZONES

All options in this category refer to zones 1 through 16 only. Expansion zones are covered in the next section.

## LAST INTERNAL Z.

In this step enter the zone number of the Last internal zone. This will let the system know where to start the expansion zones (typically 16).

In the following steps, press 1-9 and A-G to toggle the options for each zone. The letters A-G correspond to zones 10-16. The arrow keys can be used to turn all zones ON or OFF. A dash indicates that the option is NOT selected for that zone.

## DAY TROUBLE

Select zones that are to be supervised only while the panel is disarmed. Day trouble loop response is always .062 seconds. Day troubles will not restore until silenced from a keystation. These zones should also have N.C. contact selected. Typical Day Trouble zones are window foils or emergency exits.

## 24HR TROUBLE

Select zones that will be supervised 24 hours a day such as Fire zones. (All supervised zones require a 15K EOL.) 24Hr trouble loop response is always 10 seconds. 24HR troubles will restore as soon as the loop is restored. These zones must use N.O. contacts.

## N.C. CONTACT

Select each zone that will use Normally Closed contacts. (All N.C. zones require a 15K EOL). DO NOT select 24HR trouble and N.C. contact for the same zone. For UL Burglary zones, select both N.C. and N.O.

*NOTE: A normally closed contact conducts (closed circuit) when a door or window is closed.*

## N.O. CONTACT

Select each zone that will be using Normally Open contacts (typically all zones).

*NOTE: A normally open contact does not conduct (open circuit) when a door or window is closed.*

## SPEED 2 OR 4

### LOOP RESPONSE SPEEDS

| SELECTION # | SPEED |
|---|---|
| 1 | 0.010 seconds |
| 2 | 0.062 seconds |
| 3 | 1 second |
| 4 | 10 seconds |

Both this step and the following step are used to select the loop response speed of zones 1-16. Do NOT enter the zone number of any zones that will be using a speed of either 0.010 seconds or 1 second.

Select each zone that will have a loop response speed of 0.062 seconds or 10 seconds.

## SPEED 3 OR 4

Select each zone that will have a loop response speed of 1 second or 10 seconds.

*NOTE: Zones that will use a loop response speed of 10 seconds must be entered in both this step and the previous step.*

## 24HR ALARM

Select zones that will be monitored for alarm conditions 24 hours per day (Fire, Panic, Tamper etc.).

## EXIT DELAY

Select each zone that will have an Exit Delay time. Also select any interior zones that are in the exit route.

## ENTRY DELAY 1

The 2820 has the capability of having two separate Entry Delay times. Select each zone that would be controlled by Entry Delay 1.

*NOTE: Delay 1 will also be used by expansion zones.*

## ENTRY DELAY 2

Select each zone that would be controlled by Entry Delay 2. This could be a longer delay for a more distant door.

## INTERIOR

Select each zone that will be an Interior zone. These zones can be bypassed as a group using the interior key.

## BYPASSABLE

Select each zone that you may want to bypass. If a zone is not selected, you will not be able to bypass that zone.

*NOTE: Fire zones SHOULD NOT be bypassable.*

## CHIME

Select each zone that will be able to use the CHIME function (typically exterior doors).

Revised 5/91

## 17.3 <u>EXPANSION ZONES</u>

All options in this category refer to the expansion zones. When programming the expansion zones, there are a few items to remember:

1.  The expansion zones do not have all of the features of the internal zones.

2.  When entering zone numbers, the second line of the display will show (IX:) for zones 17 through 19, (2X:) for zones 20 through 29 etc. Enter the last digit of each zone that you wish to program.

EXAMPLE:   To select zones 25 and 26, press the digits (5) and (6) when line 2 of the display shows (2X:).

### <u>LAST EXP1 ZONE</u>

In this step enter the zone number of the last zone on the expander (maximum is 32).

### <u>RESIDENCE CODE</u>

A residence code must be entered when using the RF zone expander. This code must be the same as the residence code programmed in the transmitters.

### <u>24HR ALARM</u>

Select each zone that will be monitored for alarm 24 hours a day (Fire, Panic, Tamper, etc.)

### <u>EXIT DELAY</u>

Select each zone that will be Exit Delayed.

### <u>ENTRY DELAY 1</u>

Select each zone that will be controlled by Entry Delay 1. For expansion zones, you do not have the option of using two Entry Delay times.

### <u>24HR TROUBLE</u>

Select each zone that will be supervised for trouble conditions 24 hours per day.

### <u>INTERIOR</u>

Select each zone that will be part of the Interior.

### <u>BYPASSABLE</u>

Select each zone that you will want to be able to bypass.

*NOTE:    Day Trouble, Chime and the second Entry Delay are not available for the expansion zones.*

## 17.4 <u>DIALER</u>

### <u>COMPUTER PH#</u>

If you will be using the downloading feature of the 2820, you must enter the phone number that the computer will be connected to. The number entered may be up to 16 digits long. If a pause is needed, such as after dialing "1" for a long distance number, enter an "A". If an internal phone system is being used where you must dial a special number to establish an outside line (and wait for a second dial tone), enter a "D" after the number dialed to establish the outside line.

EXAMPLE:    If you must dial "9" before being able to dial the outside number of 555-1234, you would enter the number in this manner:
(9) (D) (5) (5) (5) (1) (2) (3) (4)

### <u>RETRY IF FAIL</u>

For this option the dialer will make another attempt to send a report 15 minutes after it has failed its maximum number of attempts. If it fails all attempts again, it will not try again.

### <u>2 PHONE LINES</u>

Select this option if you are using two phone lines (requires the Model 4175 Dual Phone Line Monitor).

## GROUND START

Choose this option if you are using a Ground Start telephone network. (**Not** acceptable for UL installations).

## LINE MONITOR

Select this option if you will be using the Model 4175 Dual Phone Line Monitor. You can monitor line 1 only, if you do not have a second phone, but you cannot have both a monitored line and an unmonitored line.

## ANSWER RING

Select this option if you wish the 2820 to answer and download instead of calling back the computer.

## UP/DOWN USED

When the 2820 receives a signal for downloading it will dial the number selected above and use the account number that is programmed for phone number #4.

## DIALER MODE

Select LOCAL ONLY or REPORT C.S. If you select LOCAL ONLY, the dialer will never call the central station. This is useful while setting up the system. Selecting LOCAL ONLY will also skip over the next two options.

## FAIL ATTEMPTS

Enter the number of attempts (1-15) that the dialer will try to dial out before it gives a Dialer Failed signal.

## TOTAL ATTEMPTS

Enter the overall number of attempts (1-15) that the dialer will try to dial out using all phone numbers. You must use at least 5 attempts in a UL installation.

## # RINGS

This option is used in conjunction with the downloading feature. You would program the number of times (1-15) that the phone will ring before the dialer will answer or dial out for downloading information. If you do not wish to use this feature, enter a Ⓞ. If you also selected ANSWER RING DET. and REP. ALL OP/CL, the dialer will answer after 4 fewer rings if the system is armed.

*NOTE: The dialer will never answer until at least 2 rings.*

## AC LOSS HOURS

For this option, program the number of hours (1-15) that the AC power must be OFF before a Loss Of AC report is generated. You must select between 6 and 12 hours in a UL installation.

## REPORT ALARM

Select the phone numbers (1-4) that alarms can be reported to.

## REPORT TROUBLE

Select the phone numbers (1-4) that troubles can be reported to. Trouble restorals will automatically report to these numbers.

## REPORT BYPASS

Select the phone numbers (1-4) that bypasses can be reported to.

## REPORT RESTORE

Select the phone numbers (1-4) to which alarm or bypass restores can be reported. Restores will report only to the same numbers as the alarm or bypass did.

## REPORT OP RESET

Select the phone numbers (1-4) that can be reported to when the panel is disarmed from an alarm condition. Include any numbers that are also selected in the next step.

## REPORT OP/CL

Select the phone numbers (1-4) that can be reported to for normal or exception Open and Close reports.

## REPORT DOOR

Select the phone numbers (1-4) to which door access events can be reported.

## REPORT TEST

Select the phone numbers (1-4) to which test signals can be reported.

## MUST REPORT

Select the phone numbers (1-4) that the dialer MUST report to. Numbers NOT selected will be used only as backups - if an event cannot report to another number. Phone #1 should always be the first MUST REPORT number.

## TOUCHTONE LINE 1

Select YES if phone line #1 is a Touch-Tone$^R$ (DTMF) line.

## TOUCHTONE LINE 2

Select YES if line #2 is Touch-Tone$^R$.

## TOUCHTONE ONLY

If you select YES, the Touch-Tone$^R$ lines will be Touch-Tone$^R$ only. Otherwise, they will switch to rotary whenever a Touch-Tone$^R$ dialing attempt is unsuccessful.

## PHONE #1

Enter phone #1, up to 16 digits, enter Ⓐ for a pause, Ⓓ for a second dial tone.

## PHONE #2

Enter phone #2.

## PHONE #3

Enter phone #3.

## PHONE #4

Enter phone #4.

## ACCOUNT #1

Enter account #1, (6 digits MAX.).

## FORMAT #1

From the list below, choose the format that account #1 will use. Use the arrow keys to select it. The compatible Silent Knight receivers are shown in parenthesis.

SIA8 (9004, 9004I)                     BFSK 2300HZ (9002, 9032)
FSK 1 (8520, 9002, 9032)               SIA20 (9004I) *
BFSK 1400HZ (9002, 9032)               SK 4/2 (8520, 9002, 9032)

**\*IMPORTANT:**     **Do NOT select the SIA20 format unless reporting to a 9004I line card. The older 9004 line card can only accept SIA8.**

## ATTEMPTS #1

Enter the number of attempts (1-15) that the 2820 will try to report to this account # before switching to the next number (typically 1 attempt).

## LISTEN TIME

Enter (in seconds) the Listen-In Time (20 - 255, 0 if not used).

## LISTEN TO:

Use the arrow keys to select between ALL REPORTS or ALARMS and TEST only.

## USE LINE 1 ONLY

Select this option if you wish to use phone line #1 ONLY.

## USE LINE 2 ONLY

Select this option if you wish to use phone line #2 ONLY.

## DIRECT LINE

Select this option if you will be connecting the 2820 directly to a Model 9000 Receiver without using the switched telephone network. You must also select a SIA format (requires a Model 9103 line card).

Repeat the above steps for accounts 2, 3, and 4.

*NOTE:   Account #4 will be sent to the downloading computer.*

## 17.5 TIMERS

### AUD SHUTDOWN (1-255)

Decide the number of seconds that you wish to have the audible alarms active. Divide the number of seconds by 10 before entering.

EXAMPLE:    If you entered 50, the audio shutdown time will be 500 seconds.

### EXIT DELAY (1-255)

Enter (in seconds) the length of the Exit delay.

### ENTRY DELAY 1 (1-255)

Enter (in seconds) the length of the entry delay for zones controlled by entry delay 1.

### ENTRY DELAY 2 (1-255)

Enter (in seconds) the length of the Entry Delay for zones controlled by entry delay 2.

### SWINGER WINDOW (1-24)

Enter (in hours) the length of the **swinger window**. A **swinger bypass** will occur on the 5th trip when a zone has caused 4 alarms within the swinger window.

### RF SUPERVISION (2-24)

Enter the **supervision interval** (in hours--minimum of 2 hrs.).

EXAMPLE:    If you enter a ③, the 4130 will check for supervisory transmissions from the RF transmitters every 3 hours.

### DOOR STRIKE (1-15)

For this step enter the time that the door strike stays activated. The table below shows the actual seconds for each selection.

| SELECTION # | SECONDS |
|:-----------:|:-------:|
| 1 | 0.8 |
| 2 | 1.6 |
| 3 | 2.4 |
| 4 | 3.2 |
| 5 | 4 |
| 6 | 4.8 |
| 7 | 5.6 |

| SELECTION # | SECONDS |
|:-----------:|:-------:|
| 8 | 6.4 |
| 9 | 7.2 |
| 10 | 8 |
| 11 | 8.8 |
| 12 | 9.6 |
| 13 | 10.4 |
| 14 | 11.2 |
| 15 | 12 |

## DOOR OPEN MAX (1-255)

Enter the number of seconds that the door may remain open after the door strike is activated. If the door is still open when the time runs out, a DOOR LEFT OPEN TROUBLE will be annunciated.

## ALM REP DELAY (1-255)

Enter (in seconds) the amount of delay that you wish to have between the time that an alarm condition is sensed and when the dialer will actually report the alarm. Delayed reporting is selectable by zone in the ZONE TYPES section.

## CLOSED DAYS (SMTWTFS)

This option will allow you to specify certain days when the building should be closed. All OP/CL will be reported on these days.

## SPECIAL DAYS (SMTWTFS)

This option will allow you to select certain days to use the Special Window Times (programmed in a later section). Use the digits 0-6 to select Special days Sunday through Saturday respectively.

EXAMPLE:     If you wish Saturday and Sunday to have different Opening and Closing times than the weekdays, select ⓪ and ⑥ for this option ( S-----S ).

## AUTO TEST

If you will be using one of the test features below, you MUST select this option. If "NO" is selected, the programmer will skip the next three options.

## DAILY TEST

To send a Test report every day select this option. If "YES" is selected, the programmer will skip the TEST DAY option.

## TEST DAY

This option allows you to select which day of the week that the system will send a Test report to the central station. Only one day may be selected. The choices are as follows:

| SELECTION # | DAY |
|---|---|
| 0 | Sunday |
| 1 | Monday |
| 2 | Tuesday |
| 3 | Wednesday |
| 4 | Thursday |
| 5 | Friday |
| 6 | Saturday |

## TEST TIME

Enter (in military time) the time of day that you wish to send the Test report to the central station.

## 17.6 ACCESS OPTS.

## ACCESS FOR #0

For this step choose the specific functions that code 0 can perform. The choices are as follows:

| SELECTION # | CODE 0 FUNCTION |
|---|---|
| 1 | Door |
| 2 | Bypass |
| 3 | Close (Arm) |
| 4 | Open (Disarm) |

Press ①, ②, ③, ④ or ⑩, ⑧, ⓒ, ⓞ to toggle the corresponding options.

A dash indicates the option is off. The default is all options on.

The arrow keys can be used to turn all 4 options ON or OFF.

EXAMPLE:    If you want code 0 to be able to arm and disarm only, you would select the digits ③ and ④.

If you want access code 0 to be able to perform all functions, you would select ①, ②, ③ and ④

Repeat for each code being used (up to 49).

## 17.7 SECRET CODES

### DURESS TRIGGER

If the Duress option was selected earlier, you must enter a 1- or 2-digit code which will activate a Duress alarm. The digits entered MUST NOT be the same as the beginning digits of any access code.

### SECRET CODE #0

This step is where you enter the actual access code for code 0. The code can be from 3 to 6 digits in length. Repeat for each code being used (up to 49). Keep unused codes blank. It is recommended that all codes be the same length.

*NOTE:*    *When programming code 0, be sure to program the number correctly and keep a record of it.*

*If the EEPROM is soldered into the circuit board, you must send the board back to Silent Knight to have a new code 0 programmed. There is a $25 charge for this service.*

*If the EEPROM is removable, you can use the Model 5521 Desk Top Programmer to program a new code 0. If you do not have a 5521 and must send the EEPROM back to Silent Knight to be reprogrammed, there is a $25 charge.*

## 17.8 DOOR STATIONS

For each access code that has the DR (door) ACCESS option enabled, select the door(s) to which the user will have access.

## 17.9 WINDOWS

The LCD will show:

```
┌─────────────────────┐
│ NORM OPEN TIME      │
│ FROM __ __ : __ __  │
└─────────────────────┘
```

If you selected ACCESS WINDOWS in the SYSTEM OPTIONS, continue programming this section. If you did **not** select ACCESS WINDOWS, skip to the next section, SYSTEM MESSAGES.

At this point, you will specify when each code is valid. Rather than assign unique time windows to each user code, you will first enter up to 14 Normal time windows. Then you will assign each code to use one of those 14 windows, or to be valid **ALWAYS** or **NEVER**. Another 14 windows are used on **Special** days.

For each Normal and Special window, enter starting and ending times BETWEEN 00:00 AND 23:59. The Model 2820 Programming Record (P/N 150491) contains a complete version of the form shown on the next page, so you can write down these times before you begin programming.

## NORMAL TIME WINDOWS

| WINDOW # | FROM | UNTIL |
|----------|------|-------|
| 0 | ALWAYS | |
| 1 | NEVER | |
| 2 | | |
| 3 | | |
| ... | | |
| 15 | | |

## SPECIAL TIME WINDOWS

| WINDOW # | FROM | UNTIL |
|----------|------|-------|
| 0 | ALWAYS | |
| 1 | NEVER | |
| 2 | | |
| 3 | | |
| ... | | |
| 15 | | |

## NORM OPEN

For this option you will enter a "Time Window" during which the system should be disarmed. An example of this window might be from 8:00AM to 9:00AM. If the system is disarmed within the time window selected, no report will be generated. If the system is not disarmed by 9:00 AM and REP OT/CT was selected, the dialer will send a Close Trouble report meaning that the system is still **armed** when it should have been **disarmed**. When the system is eventually disarmed, it will generate an Opening report. If the system is disarmed any time outside of the time window selected, and the REP EXCPTN OP/CL option was selected (see section 17.1), it will also generate an Opening report.

## NORM CLOSE

For this option you will enter the Normal Close time window. If the system is armed within this time window, there will be no report to the central station. If the system is not armed by the end of the window selected and REP OT/CT was selected, an Open Trouble Report will be generated indicating that the system is still disarmed. If the system is armed early or late, a Closing report will be generated.

If AUTO CLOSE was selected, the system will arm automatically at the "UNTIL" time.

## SPEC OPEN

For this option you will enter the SPECIAL OPEN time window to be used on SPECIAL days. Press Ⓝ to select NEVER if the system is not to be disarmed on Special days. Operation is the same as for the NORM OPEN window.

## SPEC CLOSE

For this option you will enter the SPECIAL CLOSE time window to be used on Special days. Operation is the same as for the NORM CLOSE window.

Codes that use the same time windows belong to the same **group**. For each code, select which windows it will use. First select the windows for Normal days, then for Special days. Besides windows 2-15, you may also select Ⓞ if the code can be used during all of the Normal (or Special) days, or Ⓛ if the code is not to be used on any of the Normal (or Special) days. For example, an employer may not want employees to be able to gain access on weekends.

A representation of the programming form used for window groups is shown below.

### WINDOW ASSIGNMENTS FOR EACH CODE

| CODE # | NORMAL GROUP # (0-15) | SPECIAL GROUP # (0-15) |
|--------|-----------------------|------------------------|
| 0* | | |
| 1* | | |
| 2 | | |
| ... | | |
| 49 | | |

*NOTE: Access codes 0 (installer's code) and 1 (main user's code) can always be used, regardless of how you program this option.

## 17.10 SYSTEM MESSAGES

**CAUTION:** These messages are displayed on the keystation LCD. If your new message has more characters than the original, it may not be accepted by the 5521. These messages have been placed in the EEPROM as default values. They may be changed, but remember to use words that have a similar meaning as the default word.

**EXAMPLE:** One of the first default values is the word "BYPASSED". If for some reason you do not like this word, you may want to change it to "REMOVED". Now when you bypass a zone, the LCD will show `[ REMOVED ]`.

## 17.11 ZONE TYPES

For each zone, program the **ZONE TYPE #___** option and the **AUD FOR ZONE #___** option.

**ZONE TYPE #1** (Use the arrow keys to select the zone types, then press `[ ENTER ]` )

HOLDUP, FIRE, PANIC, INTRUSION, TAMPER, GAS, *UNDEF AUX, *WATER, *HEAT, *COLD, *LOCAL AUX

*NOTE: These zones will be displayed as `[ AUXILIARY ]` on the LCD. If LOCAL is selected, the panel will not dial out or print at the 5260 or 5255.

Repeat for zones 2 - 32 and zone 82.

NOTE: Do **NOT** select MEDICAL or EMERGENCY for a zone type, even though some 5521 programmer revisions may show these choices.

### AUD FOR ZONE #1

For this step you will select how the audible signals will react to alarms. Press `1`, `2`, `3`, `4` or `S`, `R`, `B`, `N` to toggle the options.

SA = Silent Alarm (no audible)
RD = Delayed Report (alarm report will be delayed - allows user time to abort a false alarm) programmable 1-255 seconds.
BD = Delayed Bell (no external bell unless the dialer fails to communicate)
NS = No Shutdown (bell will not shut down until the panel is disarmed)

Repeat for zones 2 - 32 and zone 82.

NOTE 1: Holdup zones must be selected as Silent Alarm.

NOTE 2: Fire zones must be selected as No Shutdown for UL installations.

## 17.12 ZONE LOCATIONS

### LOCATION #1

For this option, enter the location description of zone 1, such as `[ BEDROOM ]` or `[ GARAGE ]` You may use any description that you want but the description must not be more than 13 characters in length including spaces.

Repeat for zones 2 - 32 MAX.

NOTE 1: The LCD will show the zone # in front of the location, such as `[ 3 BEDROOM ]`

NOTE 2: You can enter lower-case letters by pressing `[ SHIFT ]` and the letter.

NOTE 3: To erase all of the locations, press `[ Ctrl ]` and `E` then press `Y` if you are sure you want to erase.

# 18 KEYSTATION FUNCTIONS

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.

## 18.1 LED INDICATORS

**ARMED** LED

ON = System is ARMED.
OFF = System is DISARMED.

*NOTE:* A flashing **ARMED** LED (Model 4203/2200 only) indicates that the system is in alarm.

**READY** LED

ON = System is DISARMED and all zones are ready to be armed.

OFF (system disarmed) = One or more zones are in a *not ready* condition.

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.

**CHIME/INTERIOR** LED (Residential Only)

ON (system disarmed) = Audible 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.
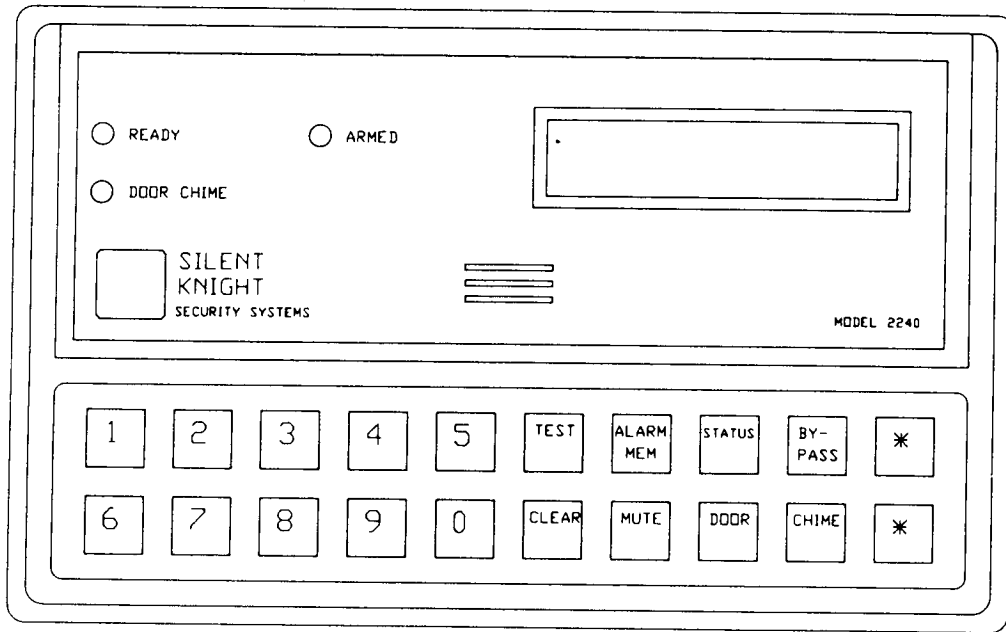
**FIGURE 18A: MODEL 2240 KEYSTATION**
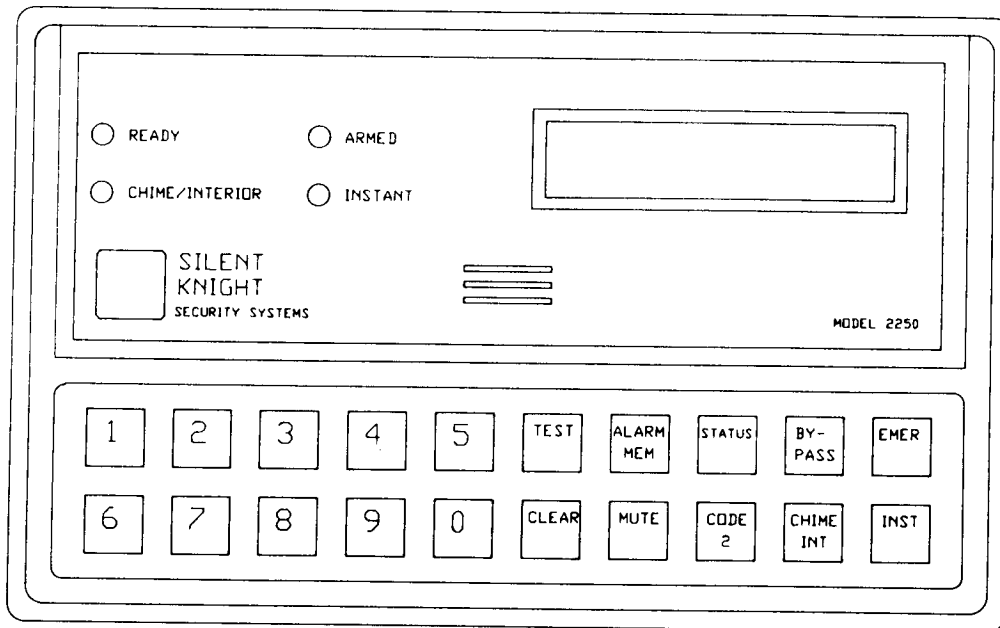


**FIGURE 18B: MODEL 2250 KEYSTATION**

## 18.2 **KEYSWITCHES**

DIGITS ⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ 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)

1.  Used to **bypass** zones that you wish to be disabled when the system is armed.

2.  Used to display the bypassed zones.

3.  Used to **unbypass** previously bypassed zones.

(CODE 2) (Residential Only)

Allows secondary access codes to be used.

(STATUS)

Used when the system is disarmed to display the zone number of zones that are *not ready* to be armed, or to display troubles.

(CHIME/INTER) (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 MEM)

Used to display zones that were previously in alarm.

*NOTE:    Zones are displayed by zone number, **not** by the order in which they occurred.*

(MUTE)

Used to silence the trouble alert tone, clear the alarm memory, or exit from a programming mode.

(INST)

Used to toggle entry zones between Delayed and Instant.

(EMER) (Residential Only)

Used to activate an alarm from the keystation (zone #82).

(DOOR) (Commercial Only)

Used to activate the door strike relay.

(CHIME) (Commercial Only)

Used to toggle the CHIME feature on and off.

# 19 KEYSTATION OPERATION

## 19.1 STATUS KEY

When this 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 the ( STATUS ) key and the display will show what type of trouble condition exists. Trouble conditions will be displayed first if both trouble conditions and *not ready* zones exist.

## 19.2 BYPASS KEY

When the system is disarmed and the ( BYPASS ) key is pressed, the LCD will show the zone number(s) of the zones that are currently bypassed. 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 ) key, followed by your access code. If there are no bypassed zones, the display will remain in the normal state.

### 19.2.1 HOW TO BYPASS A ZONE (system disarmed)

1. Enter the number of the zone that you wish to bypass.

2. Press the ( BYPASS ) key.

3. The LCD will show ( BYPASSED ) or ( RESTRICTED ) indicating that the zone cannot be bypassed. If the zone is restricted, a warning tone will be sounded.

### 19.2.2 HOW TO UNBYPASS A ZONE (system disarmed)

1. Enter the number of the zone that you wish to unbypass.

2. Press the ( BYPASS ) key. (Zone is now unbypassed.)

3. If there is a warning tone and the zone does not unbypass, it means that the zone would go into alarm if it was unbypassed.

*NOTE:* *You may be required to enter your access code when bypassing zones, even when the system is disarmed (if the BYPASS CODE option has been selected).*

### 19.2.3 HOW TO BYPASS/UNBYPASS WHEN ARMED

When the system is armed you must enter the zone #, press the ( BYPASS ) key, then enter your access code.

## 19.3 CHIME KEY (commercial keystations only)

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

## 19.4 CHIME/INTERIOR KEY (residential keystations only)

1. ( CHIME )

   Press this key while the panel is disarmed to toggle the CHIME function.

2. ( INTERIOR )

   Press this key to toggle the Interior zones. When the **INTERIOR** light is off, the Interior zones are **not** part of the system (sensors are ignored).

   This key may be disabled once the system is armed. If the Interiors will not turn on when armed, it indicates that one or more of the Interior zones are *not ready*.

## 19.5 INSTANT KEY (residential keystations only)

Press the (INST) key to toggle the Delayed zones between Instant and Delayed.

## 19.6 ALARM MEMORY KEY

1.  DISPLAY ALARM MEMORY

    Press this key when the panel is disarmed to display zone alarms which occurred since the last arming of the system or to display the zones that were violated during the WALK TEST.

2.  CLEAR ALARM MEMORY

    To clear the alarm memory, press the (MUTE) key followed by the (ALARM MEM) key.

## 19.7 MUTE KEY

1.  SILENCE A TROUBLE

    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.

2.  CLEAR ALARM MEMORY

    See (ALARM MEM) key.

## 19.8 DOOR KEY (commercial keystations only)

Pressing the (DOOR) key followed by your access code will cause the door strike output to activate.

## 19.9 CODE 2 KEY (residential keystations only)

Code 2 refers to secondary access codes (codes 10-49). 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 primary (0-9) access code. At this time, the CODE 2 function will be enabled and the system will be armed.

2.  TO DISABLE CODE 2

**Disarm** the system using a primary (0-9) access code. This will disable the CODE 2 function.

## 19.10 * KEYS (commercial keystations only)

When both of these keys are pressed and held for 1 full second, a panic alarm will be generated. The alarm type--e.g., panic, holdup,not used--is programmable.

## 19.11 EMERGENCY KEY (residential keystations only)

The (EMER) key will generate an alarm when held for 1 full second.

## 19.12 PROGRAMMING ACCESS CODES

**CODE 0** is the installer's access code.

**The Model 2820 control/communicator is shipped from the factory with access code 0 preprogrammed as (1-2-3-4-5-6). This number should be changed. Record and file the new number in a safe place.**

*NOTE 1:*  *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.)*

*NOTE 2:*  **CODE 1** *is the only other code that will allow access to the code programming mode.* **Code 1 cannot be used to change code 0.**

*NOTE 3:*  *In UL Listed applications, a minimum of 4 digits must be used.*

*NOTE 4:*  *When programming code 0, be sure to program the number correctly and keep a record of it (see section 17.7).*

### PROCEDURE:

1.  Press the digit 7, then the (TEST) key, followed by either access code 0 or 1. Press (TEST) again.

2.  The display will show the code you entered.

3.  If you do not wish to change this code, go to step 7 or 8.

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 (return to step 3).

8.  To jump over more than one code, press the (CHIME) key, then the ID 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.


## 19.13 CLEAR KEY

The (CLEAR) key is used to erase incorrect entries.

Suppose you have started entering your access code and you realize that you have made a mistake. Press the (CLEAR) key. You can now enter the correct code. This use of the (CLEAR) key is the same as starting a function over. If a partial entry was made and you wait 2.5 seconds, the entry will automatically be cleared, and the LCD will show

( TRY AGAIN )

## 19.14 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.

The following paragraphs describe different test modes. These modes can only be accessed by code 0 or 1, when the system is disarmed. **To return to the normal operating mode from a test mode, press the (MUTE) key twice.** The following table shows the ID# for each test mode. During normal operation you would press the ID# then (TEST) then enter either code 0 or 1.

| PRESS KEYS | | | FUNCTION |
|---|---|---|---|
| ID# | | | |
| (0) | (TEST) | Code 0 or 1 | DIALER TEST |
| (1) | (TEST) | Code 0 or 1 | NOT USED |
| (2) | (TEST) | Code 0 or 1 | WALK TEST |
| (3) | (TEST) | Code 0 or 1 | RESET DIALER AND SMOKES |
| (4) | (TEST) | Code 0 or 1 | REQUEST DOWNLOAD |
| (5) | (TEST) | Code 0 or 1 | NOT USED |
| (6) | (TEST) | Code 0 or 1 | NOT USED |
| (7) | (TEST) | Code 0 or 1 | PROGRAM ACCESS CODES |
| (8) | (TEST) | Code 0 or 1 | SET DATE (FOR 5255 OR 5260) |
| (9) | (TEST) | Code 0 or 1 | SET TIME |

The system will always power up in the SET TIME mode.

## 19.15 TEST MODES

0.  DIALER TEST - When activated, the 2820 will send a Dialer Test report to the central station receiver (same as if you didn't press any digit before the (TEST) key).

1.  NOT USED

2.  WALK TEST MODE - The WALK TEST Mode disables alarm reporting allowing the installer to test all of the zones. A two-second alarm will be sounded with each zone violation. Each violation will be stored by the 2820 and can be viewed at the keystation by pressing the (ALARM MEMORY) key. If the installation includes a 5255 printer or 5260 printer interface, it will print a list of the violated zones.

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

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

4.  REQUEST DOWNLOAD - When activated, the dialer will request downloading from the remote computer.

5.  NOT USED

6.  HEX EEPROM DISPLAY (available only to code 0) - DO NOT USE.

7.  PROGRAM ACCESS CODES--See section 19.12.

8.  SET DATE - If you are using a printer, you will be prompted to set the correct date. The display will show (DATE?).

EXAMPLE:  To set a date of July 1, 1989, you would enter (0) (7) (0) (1) (8) (9)

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

    A.  Press the digit (9), then the (TEST) key, followed by a valid access code (0 or 1). The display will now show (TIME?).

    B.  The time setting is 6 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 zeros before single-digit entries).

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

| SELECTION | DAY |
|---|---|
| ⓪ or ⑦ | Sunday |
| ① | Monday |
| ② | Tuesday |
| ③ | Wednesday |
| ④ | Thursday |
| ⑤ | Friday |
| ⑥ | Saturday |

D. 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.

EXAMPLE: To set the time for Tuesday at 9:00 AM you would enter ② ⓪ ⓪ ⑨ ⓪ ⓪

E. Upon pressing the sixth digit, the panel will return to its normal operating state.

## 20 MODEL 2820 REPORTING FORMATS

**SIA -** The SIA format must be used with a Silent Knight Model 9000 Digital Alarm Receiver. Each message will be displayed in English followed by the zone number. (See the SIA reporting format in section 21 of this manual.)

**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 type 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 or 31.

CODE 15 = Burglary alarm in zone 5, 15 or 25.

**RADIONICS BFSK -** The Model 2820 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 2820 will send a restoral for zone 9.*

The list on the next page shows all of the possible codes.

The Radionics BFSK format can only report 8 zone codes. Zones 9 through 16 will report as zones 1 through 8, zones 17 through 24 will report as zones 1 through 8, etc. Because of this limitation, programming the 2820 to report in **both** the RADIONICS BFSK and either the FSK or SK 4/2 formats is **not** advised.

| FSK & SK 4/2 | DESCRIPTION | RADIONICS BFSK CODE | RADIONICS BFSK ENGLISH |
|---|---|---|---|

## Intrusion Zone Codes:

| | | | |
|---|---|---|---|
| 1Z | Burglary alarm | 0X | Alarm Zone X |
| 2Z | Alarm Restore or Bypass Restore (Burglary) | EX | Restore Zone X |
| 5Z | Burglary Bypass | FX | Trouble Zone X was Force Armed |

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

| | | | |
|---|---|---|---|
| 0Z | Alarm | 0X | Alarm Zone X |
| 20 | Bypass Restore | E0 | Restore Zone 0 |
| 50 | Bypass | F0 | Trouble Zone 0 was Force Armed |
| 6Z | Supervisory or Trouble alarm | FX | Trouble Zone X |
| 7Z | 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 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 | E9 | Restore Zone 9 |
| 35 | Phone Line 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 | E9 | * N/A |
| 8Y | Door Access | E9 | * N/A |
| 9Y | Open or alarm Reset | BY | Open Zone Y |

X = See NOTE below.

Y = Last digit of the user ID number.

Z = Last number of the zone.

*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 will be a digit that **represents** every 8th zone number:

| Digit Reported ("X") | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| **Zone Numbers** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | 17 | 18 | 19 | | . . . | | | |

# 21 SIA (SEIA) REPORTING FORMAT

This section shows the messages that are printed at the Silent Knight Model 9000 Digital Alarm Receiver when using the SIA format for data transmission.

| SIA CODE | 9000 PRINTER | STATUS OF 2820 |
|---|---|---|
| YT | LOW BATTERY 0 | System battery is low. |
| YR | BATTERY RESTORE 0 | Battery voltage is back to normal. |
| | | |
| AT | AC TROUBLE 0 | AC house power is off. |
| AR | AC RESTORE 0 | AC house power has come back on. |
| | | |
| LT | PHONE LINE TROUBLE 1 | Phone line 1 is not working. |
| LT | PHONE LINE TROUBLE 2 | Phone line 2 is not working. |
| LR | PHONE LINE RESTORE 1 | Phone line 1 is back to normal. |
| LR | PHONE LINE RESTORE 2 | Phone line 2 is back to normal. |
| ET | EXPANSION TROUBLE 0 | Dialer trouble. |
| ET | EXPANSION TROUBLE 1 | Printer (5255/5260) trouble. |
| ET | EXPANSION TROUBLE 2 | Zone expander trouble. |
| ET | EXPANSION TROUBLE 7 | EE memory trouble. |
| ET | EXPANSION TROUBLE 8 | XBUS trouble. |
| ET | EXPANSION TROUBLE 17 | Keystation 1 trouble. |
| ET | EXPANSION TROUBLE 18 | Keystation 2 trouble. |
| ET | EXPANSION TROUBLE 19 | Keystation 3 trouble. |
| ET | EXPANSION TROUBLE 20 | Keystation 4 trouble. |
| ET | EXPANSION TROUBLE 21 | Keystation 5 trouble. |
| ET | EXPANSION TROUBLE 22 | Keystation 6 trouble. |
| ET | EXPANSION TROUBLE 23 | Keystation 7 trouble |
| ER | EXPANSION RESTORE 0 | Dialer is back to normal. |
| ER | EXPANSION RESTORE 1 | Printer (5255/5260) is back to normal. |
| ER | EXPANSION RESTORE 2 | Zone expander back to normal. |
| ER | EXPANSION RESTORE 17 | Keystation 1 is back to normal. |
| ER | EXPANSION RESTORE 18 | Keystation 2 is back to normal. |
| ER | EXPANSION RESTORE 19 | Keystation 3 is back to normal. |
| ER | EXPANSION RESTORE 20 | Keystation 4 is back to normal. |
| ER | EXPANSION RESTORE 21 | Keystation 5 is back to normal. |
| ER | EXPANSION RESTORE 22 | Keystation 6 is back to normal. |
| ER | EXPANSION RESTORE 23 | Keystation 7 is back to normal. |
| CA | AUTO CLOSE 0 | System automatically armed. |
| | | |
| CL | CLOSE ID 0 | System armed by access code 0. |
| CL | CLOSE ID 1 THRU 49 | System armed by codes 1 through 49. |
| | | |
| OP | OPEN ID 0 | System disarmed by access code 0. |
| OP | OPEN ID 1 THRU 49 | System disarmed by codes 1 through 49. |
| | | |
| CF | FORCE CLOSE ID 0 | System force armed by access code 0. |
| CF | FORCE CLOSE ID 1 THRU 49 | System force armed by codes 1 through 49. |

| SIA CODE | 9000 PRINTER | STATUS OF 2820 |
|---|---|---|
| CT<br>OT | SUPERVISORY CLOSE 0<br>SUPERVISORY OPEN 0 | Failed to open (still armed).<br>Failed to close (still disarmed). |
| OR<br>OR | OPEN RESET ALARM ID 0<br>OPEN RESET ALARM ID 1 THRU 49 | Alarm reset by access code 0.<br>Alarm reset by codes 1 through 49. |
| DG<br>DG | DOOR ID 0<br>DOOR ID 1 THRU 49 | Door access granted to code 0.<br>Access granted to codes 1 through 49. |
| DS | DOOR STATION 1 | Access granted at door 1. |
| DO<br>DF | DOOR LEFT OPEN 1 THRU 7<br>DOOR FORCED 1 THRU 7 | Access door was propped open.<br>Access door was opened without using code. |
| RP | AUTO TEST 0 | Automatic dialer test. |
| RX<br>RX | MANUAL TEST 0<br>MANUAL TEST 1 THRU 49 | System tested by code 0.<br>System tested by code 1 through 49. |
| RT | DATA LOST 0 | Previous event could not be reported<br>and the information was lost. |

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

| | | |
|---|---|---|
| (B)A<br>(B)T | (BURGLARY) ALARM 1 - 32<br>(BURGLARY) TROUBLE 1 - 32 | Zone is in alarm.<br>Loop faulted or rf transmitter failed. |
| (B)B | (BURGLARY) BYPASS 1 - 32 | Zone has been bypassed. |
| (B)U | (BURGLARY) UNBYPASS 1 - 32 | Zone has been unbypassed. |
| (B)S | (BURGLARY) SUPERVISORY 1 - 32 | RF transmitter low battery. |
| (B)R | (BURGLARY) RESTORE 1 - 32 | Zone restored to normal, due to:<br>Reset/Shutdown<br>Loop Fault repaired<br>Transmitter battery replaced |
| HA<br>PA | HOLDUP ALARM 0<br>PANIC ALARM 82 | Duress<br>EMER or * PANIC KEY |

**The Model 2820 is compatible with the following UL Listed Receivers (the format for each receiver is also shown):**

Silent Knight Model 9000 (SIA, 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 by the keystation LCD.

### TROUBLE MESSAGES

( 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 2820 has deleted the message it was trying to send.

( FAILED ) - One of the options in programming requires you to program the number of attempts before the 2820 will display a "FAILED" condition. If this number is lower than the total number of attempts, the keystation will display "FAILED" but will continue dialing until the total number of attempts has been reached.

( BATTERY ) - Indicates a Low 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 (when using two phone lines).

( DEVICE 0 ) - Indicates a problem with the Dialer micro.

( DEVICE #1 ) - Indicates a problem with the printer (Model 5255 or 5260).

( DEVICE #2 ) - Indicates a problem with the zone expander.

( DEVICE #7 ) - Indicates a memory problem with the EEPROM.

( KEYSTATION (1-7) ) - Indicates a problem with the indicated keystation.

( DOOR (1-7) ) - Indicates an access door that is open when it shouldn't be.

**Zone # and location -** Indicates which zone is in trouble.

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

### ERROR MESSAGES

( TRY AGAIN ) - This message means either an invalid code was used or the 2820 did not understand the command.

( RESTRICTED CODE ) - Indicates that the code entered either may not be used at that particular keystation or may not be used to access the particular function.

( RESTRICTED ZONE ) - Indicates that a particular zone cannot be bypassed.

( RESTRICTED DOOR ) - Indicates that the code entered cannot be used to open that particular door.

## 23 SYSTEM 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, that may cause shorts.

Malfunctions in the system are often caused by problems in the accessories, detectors and sensors that are attached to the Model 2820. Make sure that all accessories and external devices are in good working order before you begin to troubleshoot the Model 2820 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 cable.

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.

# Index

**IMPORTANT:** Silent Knight products should be tested weekly, to insure complete and proper operation and proper input and output connections.

# LIMITED WARRANTY

Silent Knight Security Systems warrants that the product of its manufacture shall be free from defects in materials or workmanship for one year from the date of factory invoice if such goods have been properly installed, are subject to normal proper use, and have not been modified in any manner whatsoever. Upon return of the defective product to the nearest Silent Knight dealer, Silent Knight will, at its sole discretion, either repair or replace, at no cost to the customer, such goods as may be of defective material or workmanship. Customers outside the United States are to return products to their distributor for repair.

SILENT KNIGHT SECURITY SYSTEMS SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM LOSS OF PROPERTY OR OTHER DAMAGE OR LOSSES OWING TO THE FAILURE OF SILENT KNIGHT SECURITY SYSTEMS PRODUCTS BEYOND THE COST OF REPAIR OR REPLACEMENT OF ANY DEFECTIVE PRODUCTS.

SILENT KNIGHT SECURITY SYSTEMS MAKES NO WARRANTY OF FITNESS OR MERCHANTABILITY AND NO OTHER WARRANTY, ORAL OR WRITTEN, EXPRESS OR IMPLIED, BEYOND THE ONE YEAR WARRANTY EXPRESSLY SPECIFIED HEREIN.

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## Only Silent Knight guarantees every system sold against lightning strikes!

We'll even repair or replace the Silent Knight equipment, if necessary, should lightning disable it during the one-year warranty period.

It's just another reason why Silent Knight has been a nation-wide leader in electronic security for 20 years.

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### WARRANTY EXCHANGE

1. Silent Knight offers an exchange program for defective products with a date stamp less than 60 days old. A new product will be shipped to replace the defective unit, with credit to your account when the defective product is returned.

2. **Warranty exchange** units will be shipped to the customer via normal U.P.S., free of charge to customers who have an account with Silent Knight. Alternative shipping methods are available at the customer's expense.

3. To expedite processing for customers who do not have an account with Silent Knight, **warranty exchange** products will be shipped C.O.D. Upon receipt of the defective product, Silent Knight will issue an immediate refund.

4. Products with a date stamp over 60 days old will be repaired and returned promptly.

5. To expedite your credit or product return, be sure the RA (return authorization) number is clearly marked on the box when you ship the defective unit. To obtain the RA number, call Silent Knight Technical Support Services at 1-800-328-0103. If no RA number is shown on the box, the product will be repaired and returned promptly.

6. To avoid restocking fees or the possibility of paying the full invoice price for the product, please return the defective unit within 15 days after receiving the replacement equipment.

7. To avoid additional charges, be sure the equipment being returned is free of modifications and not missing any parts.

8. To minimize freight charges, please return the PC boards **without** the metal cabinet whenever possible.