

# FCI - 7200 SERIES FIRE ALARM CONTROL

## INSTALLATION/OPERATING MANUAL



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# FCI - 7200 Series

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## IMPORTANT INFORMATION

This manual is designed for use by factory trained installers and operators of the Fire Control Instruments, Inc. (FCI) 7200 Series Fire Alarm Control. All illustrations, functional descriptions, operating and installation procedures, and other relevant information are contained in this manual.

The contents of this manual are important, and the manual must be kept with the fire alarm control panel at all times. If building ownership is changed, this manual, including any testing and maintenance information, must be passed along to the new owner(s).

The fire alarm control panel is part of a system. Manuals and instructions for other devices forming part of the system should be kept together. Purchasers who install this system for use by others must leave the instructions with the user. A copy of these instructions is included with each product and is available from the manufacturer.

This equipment is Listed by various listing agencies for use in fire alarm systems. Use only components which are compatible with the FCI system. The installation **MUST** be in accordance with the instructions in this manual.

### THEREFORE:

- DO NOT deviate from the procedures described in this manual.
- DO NOT assume any details not shown in the instructions.
- DO NOT modify any electrical or mechanical features.
- DO comply with all codes and standards set forth by the authority having jurisdiction.

The term "Authority Having Jurisdiction" has become a standard term in the fire alarm industry. An acceptable definition of "Authority Having Jurisdiction" is:

Fire alarm systems installed in the USA fall under the jurisdiction of some authority. In some areas this may be a local fire department; in other areas it may be a building inspector, insurance firm, etc. Different authorities may have their own local requirements for the way the fire alarm system is installed and used. Most local authorities base their requirements on the NFPA codes, but there may be important differences. You must install this system in the way in which the authority having jurisdiction requires. If you do not know which authority has jurisdiction in your area, contact your local fire department or building inspector for guidance.

It is important that you tell users to be aware of any requirements defined by the authority having jurisdiction.

The installation **MUST** be in accordance with the following standards:

- National Fire Alarm Code (NFPA 72)
- National Electrical Code (NFPA 70)
- Life Safety Code (NFPA 101)

**WARNING:** Touching components which are improperly installed, applied or operated could be



hazardous and possibly fatal. Short circuits could cause arcing that could result in molten metal injuries. Therefore, only qualified technicians familiar with electrical hazards should perform checkout procedures. Safety glasses should be worn, and test equipment used for voltage measurements should be designed for this purpose and be in good working order.

### ENVIRONMENTAL CONSIDERATIONS:

It is important that this equipment be operated within its specifications:

Recommended operating temperature range:	60 to 80° F (15 to 27° C)
Absolute maximum operating temperature range:	32 to 120° F (0 to 49° C)
Operating humidity:	not to exceed 85%, non-condensing at 90° F (32° C)

Operating this equipment within the recommended temperature range will extend the useful life of the system standby batteries.

## INSTALLATION CONSIDERATIONS:

Check that you have all the equipment you need to make the installation. Follow the field wiring diagrams and installation notes in this manual.

Install the equipment in a clean, dry environment (minimal dust). Avoid installing equipment where vibrations will occur.

Remove all electronic assemblies prior to drilling, filing, reaming, or punching the enclosure. When possible, make all cable entries from the sides, being careful to separate the power limited conductors from the non-power limited conductors. Before making modifications, verify that they will not interfere with battery, transformer and printed circuit board location.

Do not over-tighten screw terminals. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

Disconnect all sources of power before servicing, removing, or inserting any circuit boards. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized.



**WHEN APPLYING POWER TO THIS FIRE ALARM CONTROL PANEL, FIRST CONNECT THE AC LINE VOLTAGE, THEN CONNECT THE BATTERIES.**

## WIRING CONSIDERATIONS:

This fire alarm control panel contains power limited circuits. You cannot connect external sources of power to these circuits without invalidating their approval.

Verify that wire sizes are adequate for all initiating device and notification appliance circuits. Most devices cannot tolerate more than a 10% drop from the specified device voltage.

The installer must make sure that the wiring and devices installed in the system meet the current National Electrical Code, NFPA 70, and all applicable state and local building code requirements.

Use the conductor size and type required by local codes. (see NFPA 70, Article 760). Wiring resistance must not be more than that shown on the field wiring diagrams.

To reduce errors and help in servicing the system, all conductors should be tagged or otherwise coded and logged at installation to identify circuit assignment and polarity. If the conductors are logged with a code, keep the log that explains the code with the manual, so that it is available to other people working on the panel.

Like all solid state electronic devices, this system may operate erratically or be damaged when subjected to lightning induced transients. Although no system is completely immune to lightning transients and interference, proper grounding will reduce susceptibility. We do not recommend the use of overhead or outside aerial wiring due to the increased susceptibility to nearby lightning strikes. Consult with the FCI Technical Support Department if any problems are anticipated or encountered.

To prevent the spread of fire, use proper patching materials to areas where system wiring passes through fire-rated walls or floors.



**DO NOT RUN LINE VOLTAGE IN THE SAME RACEWAYS WITH FIRE ALARM CONDUCTORS**

## OTHER CONSIDERATIONS:

The equipment was tested according to EC directive 89/336/EEC for Class A equipment and was verified to the limits and methods of EN 55022.

**NOTE:** System Re-acceptance Test after Software Changes: To ensure proper system operation, this product must be tested in accordance with NFPA 1996, Chapter 7 after any programming operation or change in site-specific software. Re-acceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

**FCC WARNING:** This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which is 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 to correct the interference at his own expense.

If these instructions are not clear, or if additional information or clarification is needed, please consult your local authorized Fire Control Instruments, Inc. distributor.

Because of design changes and product improvements, the information in this manual is subject to change without notice. FCI reserves the right to change hardware and/or software design, which may subsequently affect the contents of this manual. FCI assumes no responsibility for any errors that may appear in this manual.

Neither this manual nor any part of it may be reproduced without the advance written permission of Fire Control Instruments, Inc.

## **FIRE ALARM SYSTEM LIMITATIONS**

An automatic fire alarm system - Typically made up of smoke detectors, heat detectors, manual pull stations, audible/visual warning devices, and a fire alarm control panel with remote notification capability - can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

### **Any fire alarm system may fail for a variety of reasons:**

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second floor smoke detector, for example, may not sense a first floor or basement fire. Furthermore, all types of smoke detectors - both ionization and photoelectric types - have sensing limitations. No type of smoke detector can sense every kind of fire caused by carelessness and safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches, or arson.

Audible/visual warning devices such as horns, bells or strobes may not alert people if these devices are located on the other side of closed or partly closed doors or are located on another floor of the building.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time.

Rate-of-rise heat type detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each heat detector should be tested at least once per year by a qualified fire protection specialist.

Equipment used in the system may not be technically compatible with the control panel. It is essential to use only equipment listed for service with this control panel.

Telephone lines required to transmit alarm signals from the premise to a central monitoring station may be out of service or temporarily disabled.

The most common cause of fire alarm malfunctions, however, is inadequate maintenance. All devices and system wiring should be tested and maintained by professional fire alarm installers following written procedures supplied with each device. System inspection and testing should be scheduled monthly or as required by National and/or local fire codes. Adequate written records of all inspections should be kept.

While installing a fire alarm system may make lower insurance rates possible, it is not a substitute for fire insurance!



### **CAUTION**

To keep your fire alarm system in excellent working order, ongoing maintenance is required per the manufacturer's recommendations and UL and NFPA Standards. At a minimum, the requirements of Chapter 7 of NFPA 72, The National Fire Alarm Code, shall be followed. A preventive maintenance agreement should be arranged through the manufacturer's local representative. Though smoke detectors are designed for long life, they may fail at any time. Any smoke detector, fire alarm system or any component of that system which fails shall be repaired or replaced immediately.

## FOREWORD

This manual is designed for use by factory trained installers and operators of the Fire Control Instruments, Inc. (FCI) 7200 Series Fire Alarm Control. All illustrations, installation and operating procedures, functional descriptions, and other pertinent information are contained in this manual.

Information in the manual is organized as follows:

**SECTION ONE** - Is an overview of the 7200 Series control. It describes the system's processor, components, modules, and peripheral devices. It also describes the location and function of the system's switches, indicators, and the functional keys on the system's keyboard.

**SECTION TWO** - Furnishes terminal descriptions of each module/component/peripheral device, including illustrations; supplies tables with relevant specifications for all modules/components/peripheral devices; explains how to wire notification appliance circuits, both Class A, Style Z and Class B, Style Y, initiating device circuits, both Class A, Style D and Class B, Style B, and Signaling Line circuits, Class A, Style 6/7 and Class B, Style 4.

**SECTION THREE** - Describes the proper method of application of power and testing the newly installed system.

**SECTION FOUR - GLOSSARY** - Furnishes a glossary of the most commonly used terms in the manual.

**SECTION FIVE** - Describes the proper method of routing field wiring and installing transient overload protection.

**NOTE:** For information on the FireVac<sup>®</sup>7200 Emergency Voice/Alarm Communication System, see addendum, FCI P/N 9000-0405. This manual addresses the audio portion of the 7200 Series Fire Alarm System.



### CAUTION

Before testing systems equipped with Releasing Device Units (RDU), either disconnect all sources of power to the system and be sure that all solenoids are disconnected, or disable all releasing devices via the procedure in Section 3.4.1, in order to avoid accidental discharge of suppression agent.

After testing is complete, again disconnect all sources of power before reconnecting solenoids.

## **SECTION ONE**

# **OVERVIEW**

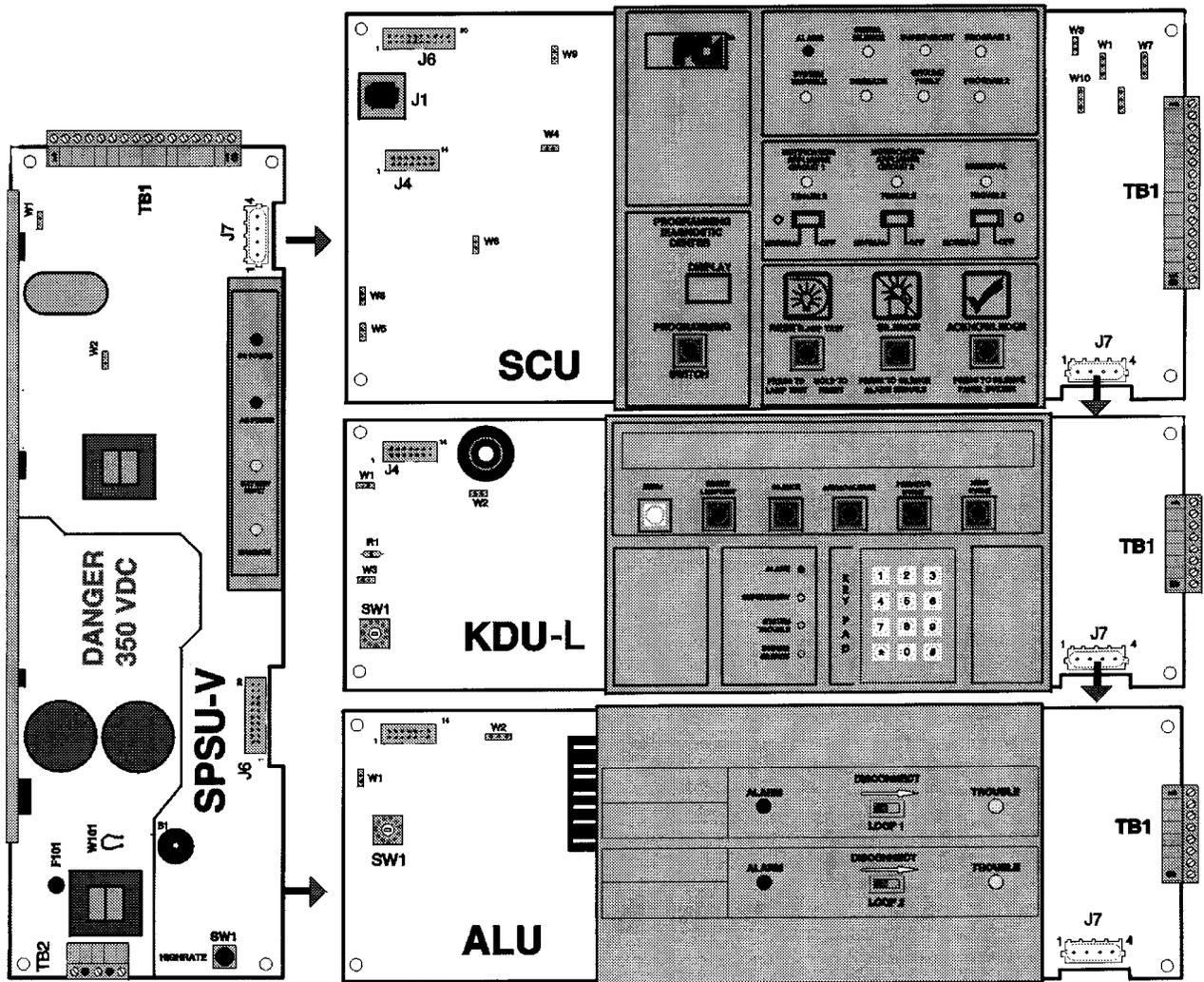


Figure 1-1 7200 Series CAB-B, -C, -D Configuration

# SECTION 1.0: OVERVIEW

## 1.1 Description

The 7200 Series Fire Alarm Control is multiprocessor-based and designed for commercial, industrial, and institutional fire alarm applications. Figures 1-1 and 1-2 illustrate typical system configurations. The 7200 Series is field expandable by means of units/modules which are software programmable and perform a variety of functions.

The operating system resides in an EPROM (Erasable Programmable Read Only Memory). The system functional program, which is defined by the user, is stored in an EEPROM (Electrically Erasable and Programmable Read Only Memory). Both forms of storage are non-volatile (data is not erased if the power supply is interrupted). Volatile memory for the system is provided by RAM (Random Access Memory).

The 7200 Series incorporates an ADAC<sup>®</sup> degrade mode of operation. In the event of processor failure, the control will perform basic fire alarm functions including operation of notification appliances and city circuits. Distributed intelligence is possible with a Distributed Intelligence Unit (DIU) via the FCINET<sup>®</sup> communication network.

The 7200 Series Fire Alarm Control is Factory Mutual Approved, Listed by Underwriters' Laboratories of Canada, and Listed to UL Standard 864. It is suitable for the following signaling services:

- Automatic Fire Detector Alarm
- Manual Fire Alarm
- Waterflow Alarm
- Sprinkler Supervisory
- Automatic Smoke Alarm
- Coded, non-coded and master coded operation.
- Releasing device service.
- Emergency Voice/Alarm Communications
- Paging and Firefighter's Telephone

The 7200 Series complies with the requirements of the following National Fire Protection Association (NFPA) Standards:

- NFPA 12 - Carbon Dioxide Extinguishing Systems
- NFPA 12A - Halon 1301 Fire Extinguishing Systems
- NFPA 13 - Installation of Sprinkler Systems
- NFPA 15 - Water Spray Fixed Systems
- NFPA 16 - Deluge Foam-Water Sprinkler Systems
- NFPA 16A - Installation of Closed Head Foam-water Sprinkler Systems
- NFPA 17 - Dry Chemical Extinguishing Systems
- NFPA 17A - Wet Chemical Extinguishing Systems
- NFPA 72 - National Fire Alarm Code:
  - Central Station Fire Alarm Systems
  - Local Fire Alarm Systems
  - Auxiliary Fire Alarm Systems
  - Remote Station Fire Alarm Systems
  - Proprietary Fire Alarm Systems
- NFPA 750 - Water Mist Fire Protection Systems
- NFPA 2001 - Clean Agent Fire Extinguishing Systems

**NOTE:** For information concerning the Emergency Voice/Alarm Communication system or Paging/Firefighter's Telephone system, refer to the FireVac<sup>®</sup> 7200 Installation/Operating Manual, P/N 9000-0405.

## 1.2 System Components

The minimum panel configuration of the 7200 Series consists of the following components:

- Cabinet, Backplate (CAB, 7200-MP)
- Switching Power Supply Unit (SPSU/SPSU-V)  
or  
Power Supply Unit (PSU/ACU/XFMR)
- System Control Unit (SCU)

Optional expansion components include:

- Analog Loop Unit (ALU)\*§
- Abort/Timer Unit (ATU)
- Audio Evacuation Unit (AEU) and associated voice evacuation signaling components
- Distributed Intelligent Unit (DIU)
- Dual Signal Unit (DSU)
- Eight Zone Unit (EZU)\*
- Eight Zone Daughter Board (EZD)
- Eight Zone Annunciator Board (EZA)
- High Current Relay Unit (HRU)
- Addressable Interface Module (IDU) §\*
- Keyboard Display Unit (KDU/KDU-L) ‡
- Panel Bus Adapter (PBA)
- Quad Relay Unit (QRU/QRU-EOL)
- Quad Zone Unit (QZU)\*
- Remote Annunciator Unit (RAU/RAU-FV)
- Releasing Device Unit (RDU)§
- Sprinkler Supervisory Unit (SSU)\* (Canada only)
- Zone Coder Unit (ZCU)

‡ The KDU-L is not approved for use in Canada

§ If the ALU, IDU, or RDU are installed, a KDU/KDU-L is also required.

\* At least one of these units is required

FCINET<sup>®</sup>, FireVac<sup>®</sup>7200 and ADAC<sup>®</sup> are registered trademarks of Fire Control Instruments, Inc.

**NOTE:** The minimum releasing system configuration is as follows:

- Switching Power Supply Unit, Vertical (SPSU-V)
- System Control Unit (SCU)
- Analog Loop Unit (ALU) or QZU/EZU
- Keyboard Display Unit (KDU-L/KDU)
- Releasing Device Unit (RDU)

**NOTE:** The RDU may be used as an optional unit in a standard 7200 Series System with an SPSU-V installed.



### NOTICE

Use only Listed and Approved methods and devices indicated in this manual to actuate a fire suppression system. Refer to the suppression system installation manual for the proper application of the system. Suppression agents that operate by oxygen dilution must be provided with Listed and Approved mechanical time delays and stop valves to control the discharge to a protected area.

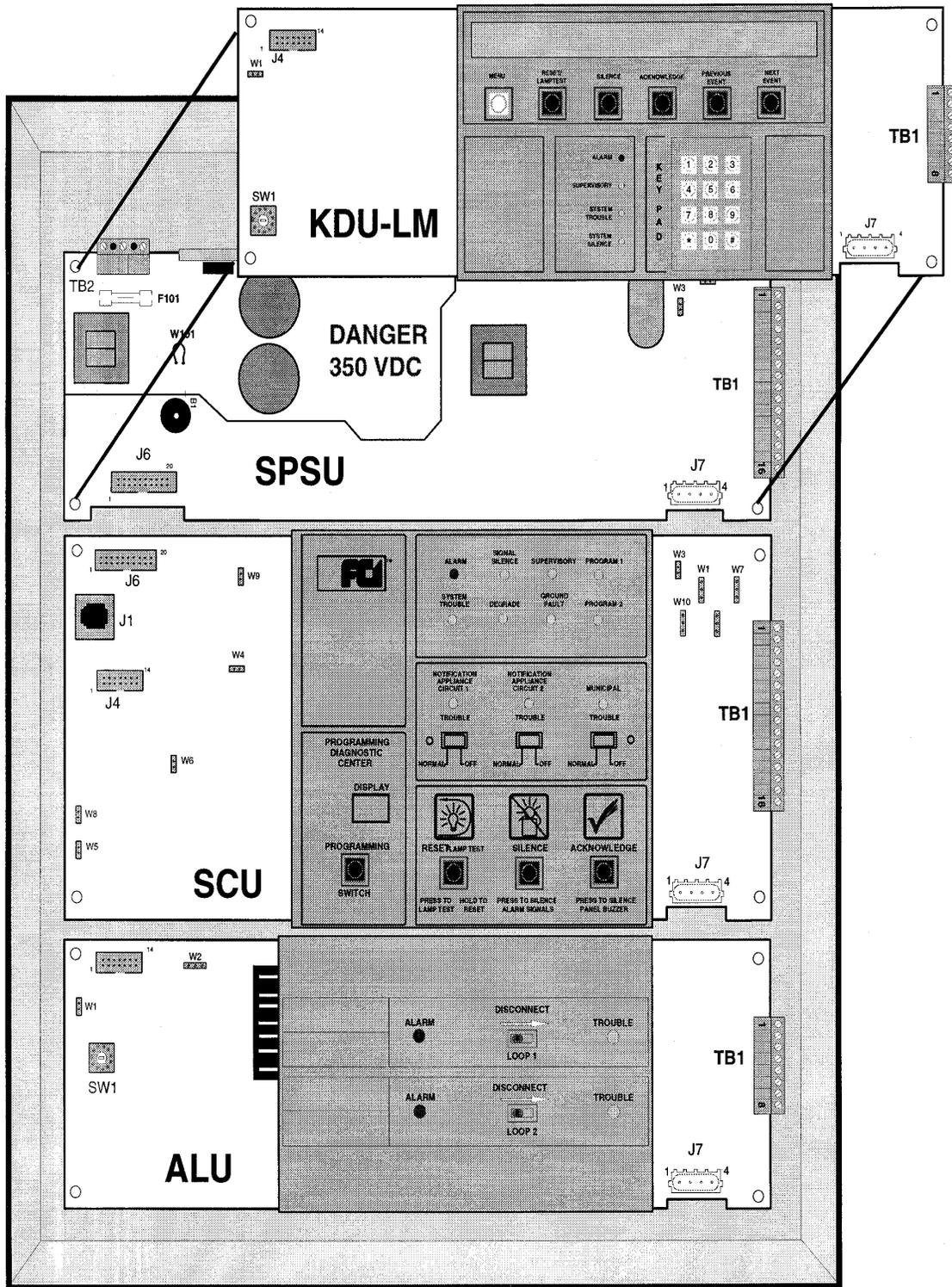


Figure 1-2 7200 Series CAB-A Configuration

### 1.2.1 Cabinets

The system cabinet consists of a backbox, cabinet door, and a mounting plate. It is made of 16 gauge steel, with an acrylic window in the door. Access to the control panel switches is via a standard FCI key, which is keyed alike with other FCI controls and stations. The cabinet is available in four models, the CAB-A, CAB-B, CAB-C and CAB-D.

- **CAB-A** cabinet is 19 3/8" H x 15" W x 4" D. It can accommodate one (1) each SPSU, SCU, KDU/KDU-L and ALU or RDU. (Only the KDU/KDU-L is visible through the Plexiglas window). When used for remote applications, the CAB-A can accommodate only one (1) each SPSU, KDU/KDU-L, DIU and ALU, or one (1) each SPSU, DIU and two (2) ALUs.

**NOTE:** The Cabinet CAB-A can accommodate only 7200 Series SPSU, SCU, KDU/KDU-L, ALU and DIU units.

- **CAB-B** cabinet is 28 1/4" H x 21" W x 4" D and can accommodate the SPSU-V, SCU and three (3) optional full-size units such as the QZU (or equivalent half-size units).
- **CAB-C** cabinet is 38" H x 21" W x 4" D and accommodates five (5) optional full-size units or equivalent half-size units.
- **CAB-D** cabinet is 38" H x 30" W x 6" D and accommodates five (5) optional full-size units or equivalent half-size units.
- The Main FireVac<sup>®</sup>7200 Cabinet is 44" H x 22 7/8" W x 4" D and houses the audio modules used in the FireVac<sup>®</sup>7200 Emergency Voice/Alarm Communication system.
- The Expansion FireVac<sup>®</sup>7200 Cabinet is 44" H x 22 7/8" W x 4" D.

A single unit extender plate is available to mount in the CAB-B, -C, or -D cabinets. However, any units installed on this plate will occupy the space available for batteries and will not be visible through the door window.

### 1.2.2 Switching Power Supply Unit (SPSU-V, SPSU)

The Switching Power Supply Unit (SPSU, SPSU-V) is a transformerless, six (6) ampere supply (four or five amperes for system operation and one or two amperes to maintain the system batteries at full charge) which contains system power fuses and a dual-rate battery charger, capable of charging sealed lead-acid/lead-calcium batteries.

The Switching Power Supply Unit, Vertical, (SPSU-V) mounts vertically on the left side of the CAB-B, CAB-C, or CAB-D cabinet next to the System Control Unit (SCU) or Distributed Intelligent Unit (DIU).

The Switching Power Supply Unit (SPSU) is used only in the CAB-A configuration and mounts horizontally at the top of the cabinet directly beneath the Keyboard Display Unit, (KDU-KDU-L).

**NOTE: Power supply outputs are power limited.**

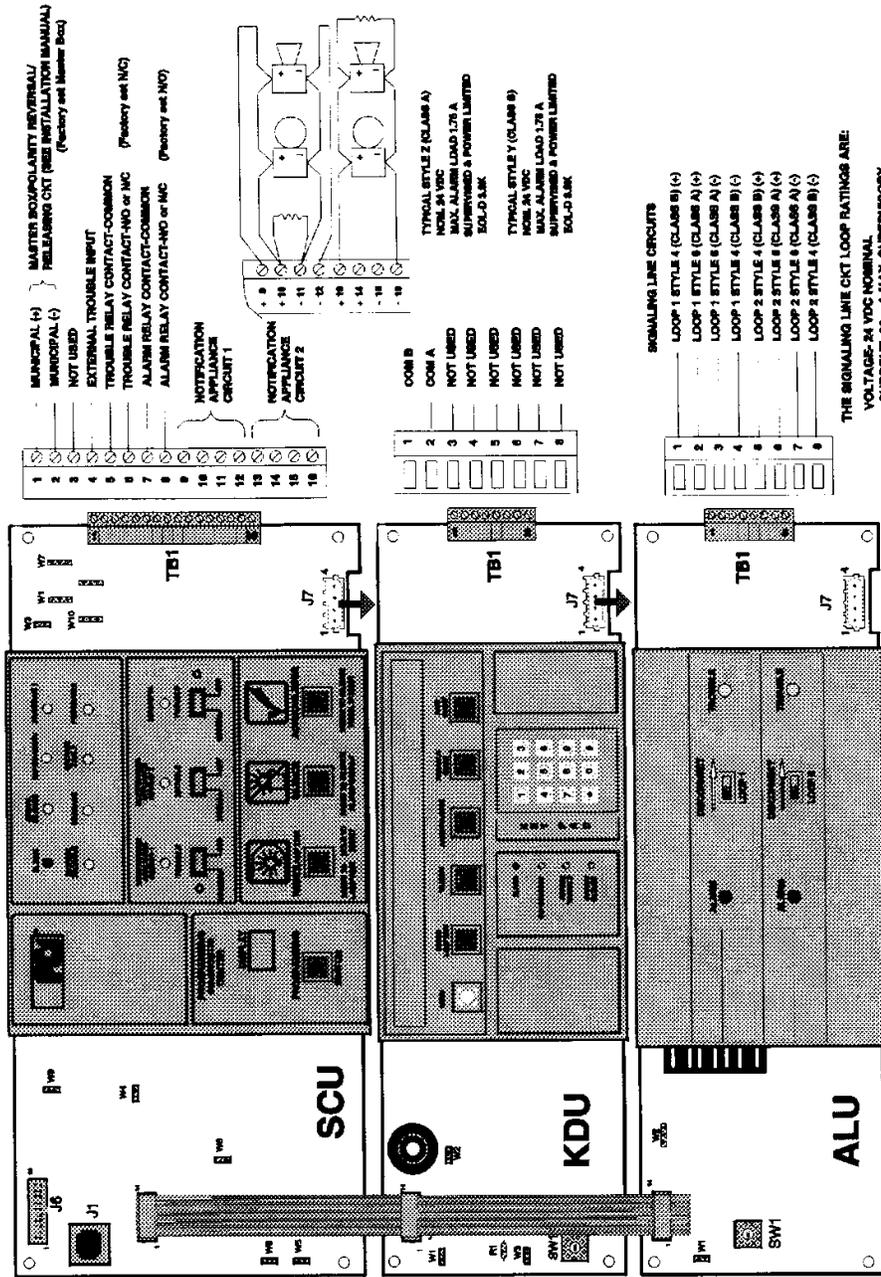
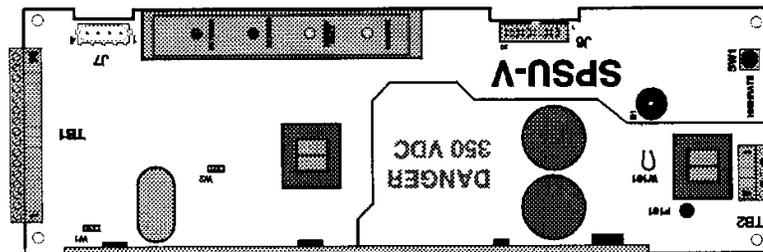
**NOTE:** For systems equipped with the PSU/ACU/XFMR power supply unit, see Section Six, PSU/ACU/XFMR SUPPLEMENT. Only the SPSU-V can be used in the FireVac<sup>®</sup>7200 cabinets or in releasing applications with the Releasing Device Unit (RDU).

### 1.2.3 System Control Unit (SCU)

The System Control Unit (SCU) contains the microprocessor, system operating software and the system configuration memory. The SCU functions as the system information and control center processing all messages from any programmed unit. The System Control Unit also incorporates two notification appliance circuits, remote city output (city box or line reversal), releasing output, alarm and trouble dry contacts and a programming/diagnostic center with a two-digit display.

The SCU is approximately one and one-half unit size and mounts in the top position of CAB-B, -C, -D or FireVac<sup>®</sup>7200 cabinet. In the CAB-A the SCU mounts below the SPSU and KDU-L/KDU.

- 1 NON-RESETTABLE 8+ (24 VDC, 1.7 AMPS MAX)
- 2 COMMON NEGATIVE (-)
- 3 RESETTABLE 8+ (24 VDC, 1.7 AMPS MAX)
- 4 NOT USED
- 5 EXT. TRANSFER CONTROL
- 6 EARTH GROUND
- 7 NOT USED
- 8 BATTERY (+) } 88 AMP/HR MAX
- 9 BATTERY (-) } 24VDC nominal
- 10 BATTERY (+) } Charge output 27.5VDC
- 11 NOT USED } @ 1 OR 2 AMP Max.
- 12 CONNECTS TO DBU TB1-14 IF INSTALLED
- 13 NOT USED
- 14 NOT USED
- 15 NOT USED
- 16 NOT USED



THE SIGNALING LINE CKT LOOP RATINGS ARE:  
 VOLTAGE-24 VDC NOMINAL  
 CURRENT-20 mA MAX. SUPERVISORY  
 110 mA MAX. ALARM  
 700 mA MAX. SHORTED  
 40 OHMS MAX. LINE RESISTANCE  
 0.5 uF MAX. CAPACITANCE  
 POWER LIMITED & SUPERVISED  
 USE UNSHIELDED, TWISTED PAIR

**OPTIONS:**  
 The 7200 SERIES is suitable for installation as  
 Styles B, D (Class B, A) Initiating Circuits &  
 Styles Y, Z (Class B, A) Notification Appliance  
 Circuits

### **1.2.4 Keyboard Display Unit, Local (KDU-L), Keyboard Display Unit (KDU) (Optional)**

The Keyboard Display Unit, Local (KDU-L) provides an 80-character back-lit alpha-numeric liquid crystal display which indicates system status. A 12-key keypad permits user access to the system. The KDU-L also contains four (4) system status LED indicators.

The KDU-L is a full-size unit, requires 24 VDC for operation and mounts in any convenient unit/module position. The KDU-L cannot be used in the FireVac<sup>®</sup>7200 remote cabinet nor can it be remotely located without being mounted within a remote Distributed Intelligent Unit (DIU) package.

The Keyboard Display Unit (KDU) provides the same features as the Keyboard Display Unit, Local (KDU-L). However, it contains an audible sounder and can be remotely located. Remote units require a Keyboard Display Unit (KDU-L/KDU) or Panel Bus Adapter (PBA) in the main system for FCINET<sup>®</sup> remote communications.

### **1.2.5 Analog Loop Unit (ALU) (Optional)**

The Analog Loop Unit (ALU) provides communication with all analog addressable initiating devices and control points. Each ALU provides two (2) signaling line circuits. Each signaling line circuit can accommodate 197 addressable points (99 analog sensors and 98 monitor and/or output modules), for a maximum of 394 points per ALU.

The ALU may be used for releasing devices service in conjunction with the AOM-2 or AOM-2S Addressable Output module.

The circuit wires should be unshielded, twisted-pair installed in separate, grounded conduit to protect the circuit from extraneous electrical interference. Maximum line resistance is 40 ohms, maximum line capacitance is 0.5 uf. Signaling line circuits (initiating/control) can be wired as Class A, Style 6, or Class B, Style 4. Fault isolator modules are required for wiring as Class A, Style 7.

The ALU is a full-size unit and mounts in any available unit position.

### **1.2.6 Quad Zone Unit (QZU-L)/Sprinkler Supervisory Unit (Optional) (SSU-Canada only)**

The Quad Zone Unit (QZU-L) provides the 7200 Series with four (4) Class A, Style D or Class B, Style B initiating circuits. Each initiating circuit provides a red "ALARM" LED and a yellow "TROUBLE" LED, along with a supervised, power limited annunciator output for LED indicators.

The Sprinkler Supervisory Unit (SSU) is identical to the QZU-L except it is to be used only in Canada for supervisory signaling. The "ALARM" LED for each initiating circuit is yellow.

The QZU-L/SSU is a full-size unit and mounts in any available unit position.

### **1.2.7 Eight Zone Unit (EZU-L) (Optional)**

The Eight Zone Unit (EZU-L) provides eight (8) Class B, Style B initiating circuits which may be wired as Class A, Style D when installed together with the Eight Zone Daughter Board (EZD-L). Each initiating circuit provides a red "ALARM" LED and a yellow "TROUBLE" LED. The EZU-L is a full-size unit and mounts in any available unit position.

#### **1.2.7.1 Eight Zone Daughter (EZD-L) (Optional)**

The Eight Zone Daughter (EZD) allows the EZU-L initiating circuits to be wired Class A, Style D. It also provides a supervised, power limited, LED annunciator output. The EZD-L mounts behind the EZU-L.

#### **1.2.7.2 Eight Zone Annunciator (EZA-L) (Optional)**

The Eight Zone Annunciator (EZA-L) provides a supervised, power limited annunciator output for LED indicators. The EZA-L mounts in place of the EZD-L behind the EZU-L.

### **1.2.8 Dual Signal Unit (DSU) (Optional)**

The Dual Signal Unit (DSU) provides a four (4) ampere power supply, two (2) notification appliance circuits, and a 1.75 amp. @ 24 VDC resettable/non-resettable output.

The DSU consists of two, (2) components which must be ordered separately:

- Dual Signal Unit (DSU) (order separately)
- Transformer (XFMR) (order separately)

The DSU is a full-size unit and mounts in any available unit position.

**NOTE:** The DSU does not charge batteries. Battery charging is performed by the system power supply.

### **1.2.9 Quad Relay Unit (QRU/QRU-EOL) (Optional)**

The Quad Relay Unit (QRU) contains four (4), dry, independent Form “C” relay contacts which may be activated via system software or 24 VDC system power supply input. The contacts are rated 2 amps @ 24 VDC (resistive). They are intended for connection to circuits powered from a Listed, power limited source of supply.

These relays may be used to interface with the FireVac® III Emergency Voice Evacuation System.

Each relay circuit provides user status LEDs and circuit control switches.

The QRU-EOL is identical to the QRU with the added feature of being able to provide FCINET® Class A, Style 6 communications.

The QRU/QRU-EOL is a half-size unit and mounts in any available unit position.

### **1.2.10 High Current Relay Unit (HRU) (Optional)**

The High Current Relay Unit (HRU) contains four (4), dry, independent Form “C” relay contacts which may be activated via system software or from a 24 VDC system power supply input. These contacts are rated 5 amps @ 24 VDC/120 VAC (resistive), and 1/6 HP @ 120 VAC. They are intended for connection to circuits powered from a Listed, power limited source of supply.

Per Underwriter’s Laboratories requirements, if non-power limited wiring is connected to the unit, all wiring will be non-power limited and must be routed via conduit from a knockout on the side of the cabinet opposite any power limited circuits.

These relays may be used to interface with the FireVac® III Emergency Voice Evacuation System.

Each relay circuit provides user status LEDs and circuit control switches.

The HRU is a full-size unit and mounts in any available unit position.

### **1.2.11 Zone Coder Unit (ZCU) (Optional)**

The Zone Coder Unit (ZCU) provides multiple positive, series non-interfering and successive coded output patterns which are used to code jumper-selected audible notification appliance circuits and relay circuits. The ZCU can provide over 1,500 distinct coded output patterns. In the event of multiple code activations, the first code activated will be transmitted, while up to eight (8) alarm codes will await their turn to sound.

The Zone Coder Unit monitors system alarm activity to avoid interference with inputs from coded devices, such as coded stations or transmitters, on the initiating device circuits. If the ZCU senses activity from a coded station, it will suspend its own coded operation until the coded input ceases for five (5) seconds. In order to avoid interference between coded station/transmitter circuits, it is recommended that all coded stations/transmitters be wired into a single initiating circuit. This will ensure proper Series Non-Interfering (SNI) operation.

The ZCU is a half-size unit and mounts in any available unit position. Only one (1) ZCU may be installed in a system.

### **1.2.12 Distributed Intelligent Unit (DIU) (Optional)**

The Distributed Intelligent Unit (DIU) contains status and system control switches such as “RESET”, “SILENCE” and “ACKNOWLEDGE”. The DIU is a full size unit. It is located remotely from the main 7200 Series enclosure and contains its own ground fault detection circuitry. The DIU enclosure also contains a PSU/ACU/XFMR or SPSU-V power supply which furnishes operating power for the DIU and other optional units.

The DIU accepts input from the SCU via the FCINET® and may be remotely located, 4,000 feet, (via twisted pair) from the main control. The DIU features degrade mode operation which enables it to control its own units in the event of communication failure between it and the main System Control Unit (SCU). It incorporates two (2) notification appliance circuits rated 1.75 amperes each.

DIUs require a Keyboard Display Unit (KDU/KDU-L) or Panel Bus Adapter (PBA) in the main system for FCINET® remote communication.

### 1.2.13 Remote Annunciator Unit (RAU/RAU-FV) (Optional)

The Remote Annunciator Unit (RAU) provides outputs suitable for driving remote annunciator points, either LED or incandescent lamp. The RAU has provision for connection of remote system control switches such as “RESET”, “SILENCE”, “ACKNOWLEDGE” and “DRILL”. These switches must be located in the same annunciator cabinet.

The RAU can drive up to 32 output points. It must be installed adjacent to or within an associated FCI RZA series annunciator cabinet. If the RAU is not installed within the annunciator, the RAU-CA enclosure must be located within the same room as the annunciator and all wiring must be in conduit (or similarly mechanically protected) not to exceed 20 feet in length. A Keyboard Display Unit (KDU/KDU-L) or Panel Bus Adapter (PBA) is required in the main system for FCINET<sup>®</sup> remote communication.

The RAU-FV provides an interface between the 7200 Series and the FireVac<sup>®</sup> III Emergency Voice Evacuation System. The RAU-FV mounts inside the Operation Control Center (OCC) of the FireVac<sup>®</sup> III cabinet.

### 1.2.14 Panel Bus Adapter (PBA) (Optional)

The Panel Bus Adapter (PBA) furnishes transient protection and field wiring connections for communication and power outputs for the FCINET<sup>®</sup> remote communications, including the FireVac<sup>®</sup> 7200. The PBA mounts below the system power supply. When a system includes a KDU/KDU-L Keyboard Display Unit, a PBA is not required.

### 1.2.15 Releasing Device Unit (RDU)

The Releasing Device Unit controls the operation of up to ten (10) preaction sprinkler, deluge sprinkler, or special agent extinguishing systems and provides communication with all sensors and control modules used to control operation of the suppression systems. It provides a signaling line circuit that can accommodate 99 analog sensors and 98 monitor and/or output modules (AMM-2/-4, AOM-2, AOM-2S), and contains an RS-485 circuit for connection of up to 31 Abort/Timer Units (ATU), with a maximum of five per release zone.

The RDU is not suitable for general fire alarm signaling.

The RDU features a 20-character display to indicate the state of any of its suppression systems. Sensors can be cross-zoned or configured in a counting zone for automatic activation of a suppression system. The monitor modules may be used in conjunction with manual release stations, abort switches to interrupt a discharge countdown, and with squirt switches for reactivation of a discharge control.

AOM-2 or AOM-2S modules are used to actuate the release device for the fire suppression system.

The RDU is a full-size unit and mounts in any available unit position, but only in the same cabinet as the KDU/KDU-L for applications per NFPA Standard 12A.



#### NOTICE

Use only the Listed and Approved releasing methods and devices (solenoids) referenced in this manual to actuate a fire suppression system. Refer to the suppression system manufacturer's Listed and Approved installation manual for the proper use of the suppression system in a particular application. Agents that suppress fires by oxygen dilution shall be provided with Listed, Approved, mechanically operated time delays and stop valves to control the discharge to a protected area.

### 1.2.16 Abort/Timer Unit (ATU)

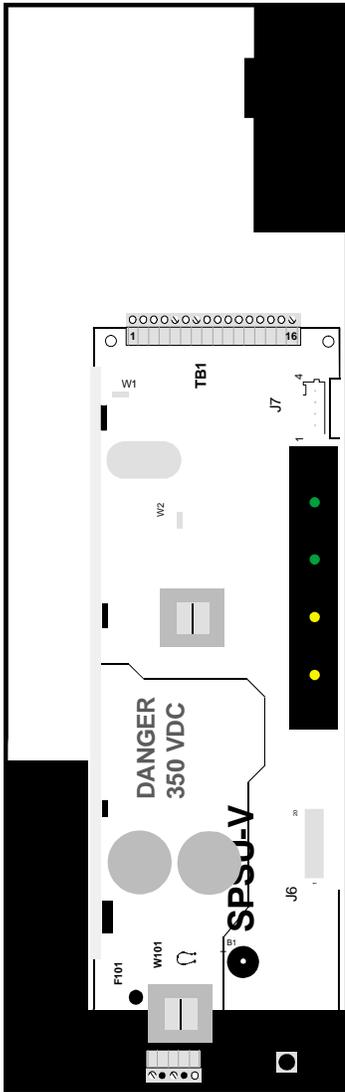
The Abort/Timer Unit (ATU) is an addressable abort switch containing a display for an individual suppression system. Upon suppression system activation by automatic means, the display indicates the time remaining until suppression discharge. The ATU can be remotely located. A single RDU unit can accommodate up to 31 ATU units, with a maximum of five ATUs assigned to a specific releasing zone.

### 1.2.17 Addressable Interface Unit (IDU)

The Addressable Interface Unit (IDU) provides two (2) retrofit Class A, Style 6 or Class B, Style 4 signaling line circuits specifically designed to incorporate existing initiating and control modules installed in FCI Model FC-ID and FCID-X addressable fire alarm systems into the 7200 Series.

See the IDU Installation/Operating Manual Addendum, P/N 9000-0437 for additional information.

**SECTION TWO**  
**INSTALLATION/TERMINAL**  
**DESCRIPTIONS**



**Switching Power Supply Unit (SPSU-V)  
CAB-B, C, D, FV7200 Cabinets**

**⚠ DANGER**

High voltages are present inside the cabinet!  
Component failure can cause high voltages  
to be present on any terminals!

**NOTICE**

For 240 VAC operation, Jumper W101 **MUST** be cut and connections **MUST** be made as shown in Figure 2-1 on Page 2-4

**Switching Power Supply Unit (SPSU) CAB-A**

## SECTION 2: INSTALLATION/TERMINAL DESCRIPTIONS

### 2.1 Switching Power Supply Unit (SPSU/SPSU-V)

Table 2-1 SPSU/SPSU-V Connections, Jumpers, LEDs

FIELD WIRING CONNECTIONS		
Designation	Description	Comments
TB1-1, -2	Ext. Non-resettable Positive (+)	Auxiliary power circuit, non-resettable, 24 VDC, @ 1.7 amps. Power-limited.
TB1-3, -4	Common Negative ( - )	System Common. Power-limited.
TB1-5	Ext. Reset. Positive (+)	Resettable 4-wire smoke detector power, 24 VDC @ 1.7 amps. Power-limited.
TB1-6		Not used.
TB1-7	Ext. Transfer control	Power-limited. (Rigid conduit, max. 20 feet)
TB1-8	Earth Ground	Minimum wire size 14 AWG; Provides protection from lightning and other electrical disturbances. Failure to connect proper ground eliminates protection: see Section 2.1.4.
TB1-9		Not used.
TB1-10	Battery Positive (+)	See Section 2.1.6, Non power-limited. Supervised
TB1-11	Battery Negative ( - )	See Section 2.1.6, Non power-limited. Supervised
TB1-12, 13, 15, 16		Not used.
TB1-14	DSU Control	Connect to DSU TB1-14 (If DSU is installed).
TB2-1		“Hot” side of 120/240 VAC input. See Fig. 2-1
TB2-2		Not used. See Fig. 2-1
TB2-3 Middle		“Ground” side of 120 VAC input. See Fig. 2-1
TB2-4		Not used. See Fig. 2-1
TB2-5		“Neutral” of 120 VAC input, “Hot” side of 240 VAC input. See Fig. 2-1
CONNECTORS		
J6	20-pin	Communication cable - connects to J6 of SCU (or DIU).
J7	4-wire (rd-blk-yel-gry)	Connects to SCU <b>J7</b> . (or DIU) (system power)
LED		
AC POWER	Green	Monitors AC input.
LEDs (SPSU-V)		
AC POWER	Green	Monitors AC input.
DC POWER	Green	Monitors output of power supply.
BATTERY		
FAULT	Yellow	Lights to Indicate low or no battery condition.
HIGH RATE	Yellow	Lights when batteries are charging at the high rate
JUMPERS		
W1 (SPSU-V)	3-pin	LEFT for 1 amp. charge rate, RIGHT for 2 amp. charge rate.
W1 (SPSU)	3-pin	LEFT for 1 amp. charge rate RIGHT for 2 amp. charge rate.
W3	2-pin	IN to use charger, OUT to disable charger.
W101		Cut for 240 VAC operation.
SWITCH (SPSU-V)		
S1	Push	Places charger into “High Rate” operation.

**NOTE! THE TOTAL OF ALL OUTPUTS FROM THE SPSU MUST NOT EXCEED 4 OR 5 AMPERES!**



**WARNING!** High voltage is present inside the shielded cage. Disconnect AC power and batteries before removing the cage, which should be done only by authorized personnel. Component failure can cause high voltages to be present on any terminals.

### 2.1.1 General

The Switching Power Supply Unit, Vertical (SPSU-V) is located on the left side of the cabinet. The SPSU is used only in the CAB-A configuration, and mounts horizontally at the top of the cabinet, directly underneath the Keyboard Display Unit (KDU/KDU-L).

The unit provides an integral 6 ampere, power limited, power supply with 1 or 2 amperes (selectable) dedicated for the dual rate battery charger, and the remaining current providing power for system, initiating, notification and auxiliary device operation. See Table 2-1 for proper jumper orientation. A terminal block that can accommodate up to 12 AWG wire is provided.

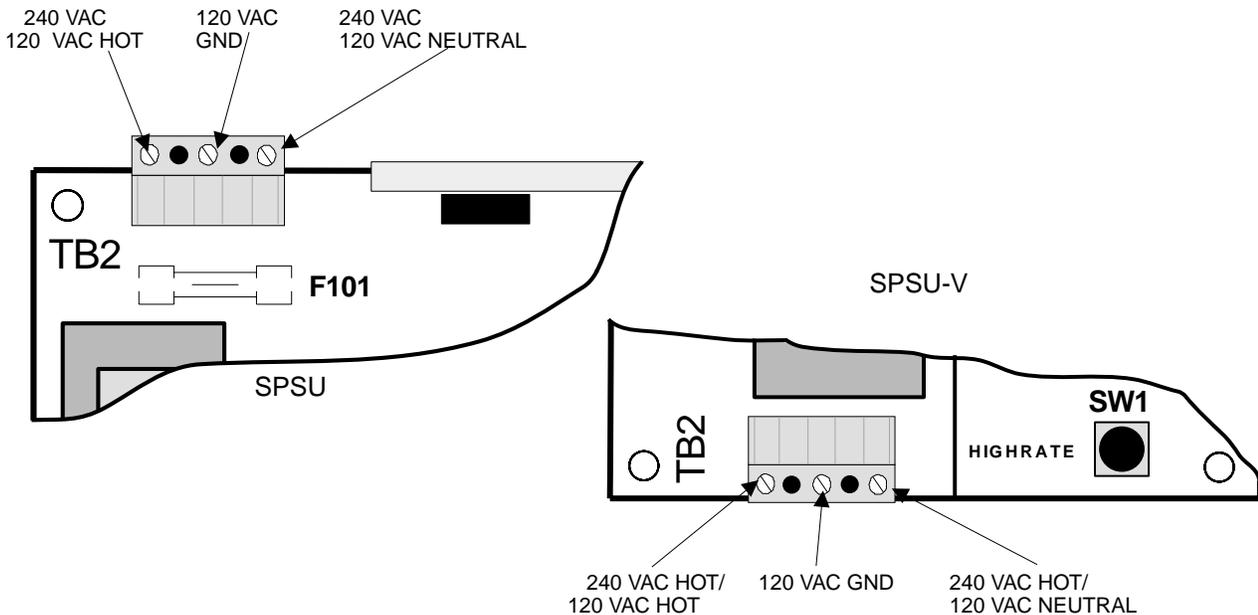
Upon loss or degradation (brown-out) of line voltage AC power to 85% of nominal, the system automatically transfers to standby batteries, the "AC POWER" LED and backlighting of the KDU/KDU-L will extinguish, the "SYSTEM TROUBLE" LED will light and the audible sounder will sound.

Table 2-1 provides information on field wiring connections, jumpers, fuses, switches and LEDs. See Section 2.1.7 for a list of batteries approved for use with the SPSU/SPSU-V.

The SPSU/SPSU-V also contains a terminal block, TB2, for connection to 120 VAC, 3 amp. max., or 240 VAC, 2 amp. max. This connection must be to a dedicated branch circuit and mechanically protected. All means of disconnecting the circuit must be clearly marked "FIRE ALARM CIRCUIT CONTROL" and accessible only to authorized personnel. Fusing of this circuit must comply with local codes for overcurrent protection, and/or Article 760 — "Fire Protective Signaling Systems" of the National Electrical Code, NFPA 70. See Figure 2-1.

**NOTE:** The SPSU/SPSU-V is not Listed by Underwriters Laboratories of Canada.

**NOTE:** Jumper **W101** on the SPSU/SPSU-V must be set for the proper input voltage at all times.



**Figure 2-1 SPSU-V AC Input Connections**

### 2.1.2 Non-resettable Auxiliary Power Circuit, 24 VDC (Power limited)

Terminals TB1-1 and TB1-2, are positive (+). This output, located on the SPSU/SPSU-V terminal block, must be used in conjunction with Terminal TB1-3 or TB1-4 COMMON (-). It may be used to furnish operating power for FM-900 Series door holders or any other auxiliary devices.

Voltage	24 VDC (nominal)
Ripple voltage.	1.7 VAC (RMS)(Max.)
Output	1.7 amperes (Max.) PTC protected.
Power limited	

Operation of the system "RESET/LAMP TEST" switch does not interrupt the output from these terminals.

### 2.1.3 Resettable Auxiliary Power Circuit, 24 VDC (Power limited)

Terminal **TB1-5** is positive (+). This output, located on the SPSU/SPSU-V terminal block, must be used in conjunction with Terminal **TB1-3** or **TB1-4** COMMON (-). It may be used to furnish operating power for 4-wire smoke detectors CPD, PSD, W/CPD-101 base, 301I/P/PT with 301B4 base, and projected beam detector SPB-24

Voltage	24 VDC (nominal),
Ripple voltage	1.7 VAC (RMS) (max.)
Output	1.7 amperes (max.) PTC protected.
Power limited	

This output is interrupted by operation of the system "RESET/LAMP TEST" switch. This switch must be held for a minimum of five (5) seconds.

### 2.1.4 Earth Ground



**NOTICE:** Terminals **TB1-8** on the SPSU/SPSU-V plug-in terminal block must be connected to an earth ground connection per Article 760 of the National Electric Code. Failure to make a proper earth ground connection to a metallic cold water pipe or driven ground rod to this terminal will result in loss of lightning protection, reduce the tolerance of the system to transients, and will adversely affect the operation of the system. Panel neutral or conduit ground is not acceptable; minimum wire size is 14 AWG.

### 2.1.5 "High Rate" Switch (SPSU-V only)

Pressing this switch on the SPSU-V places the charger into HIGH RATE operation. The "HIGH RATE" LED will light, while the system audible sounder will sound after a 45 second delay. If the batteries are low, the charger will remain in the "HIGH RATE" condition until the batteries are fully charged.

### 2.1.6 Standby Battery Connections

Terminals **TB1-10 (+)** and **TB1-11 (-)** on the SPSU/SPSU-V are for the connection of 24 volt rechargeable batteries (see list below). Be sure to observe polarity. Presence of the battery is supervised.

If a battery fault is detected, the KDU/KDU-L display will indicate the fault, the "BATTERY FAULT" LED on the SPSU-V will light, and the audible sounder will sound.

The SPSU/SPSU-V can charge batteries up to 55 AH; maximum charge current is 2 amperes. Protection circuitry is provided for reverse connection of the batteries.

### 2.1.7 Approved Batteries

Use only the following lead-calcium batteries:

Model	Qty	Amp/hour	Model	Qty	Amp/hour
B-6R	(2)	6 AH	B-17R	(2)	17 AH
B-7R	(2)	7 AH	B-31	(2)	31 AH
B-15	(2)	15 AH	B-55	(2)	55 AH (2 amp. charge)

**NOTE:** Total current draw in normal standby condition depends on the number of system units, current consuming initiating devices and normally energized peripheral devices.

Current draw in alarm condition depends on the number of units affected by the alarm, energized initiating and/or control devices, notification appliances and peripheral devices such as releasing solenoids.

The size of the standby battery depends upon the size of the control panel. Calculate the battery size using Tables 2-2 and 2-3.

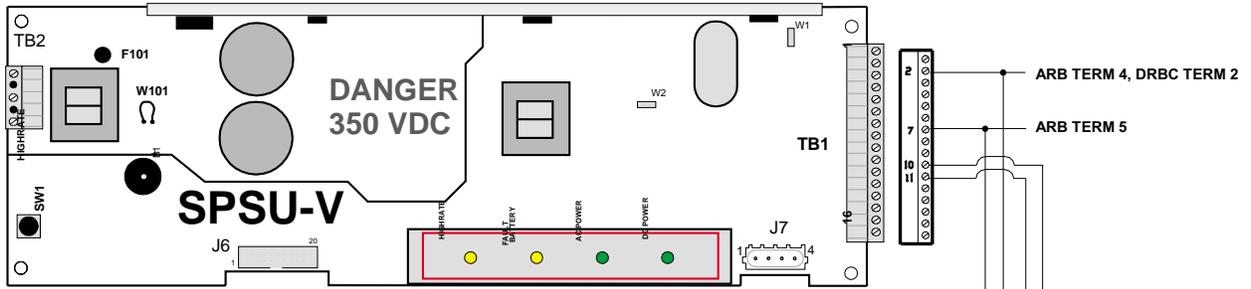
The FCI Model DRBC-1 battery charger can maintain batteries up to 110 AH in capacity. For batteries greater than 110 AH, a suitable Listed external charger must be used.

Do not exceed the maximum standby currents indicated below when charging 55 AH batteries with the SPSU-V power supply:

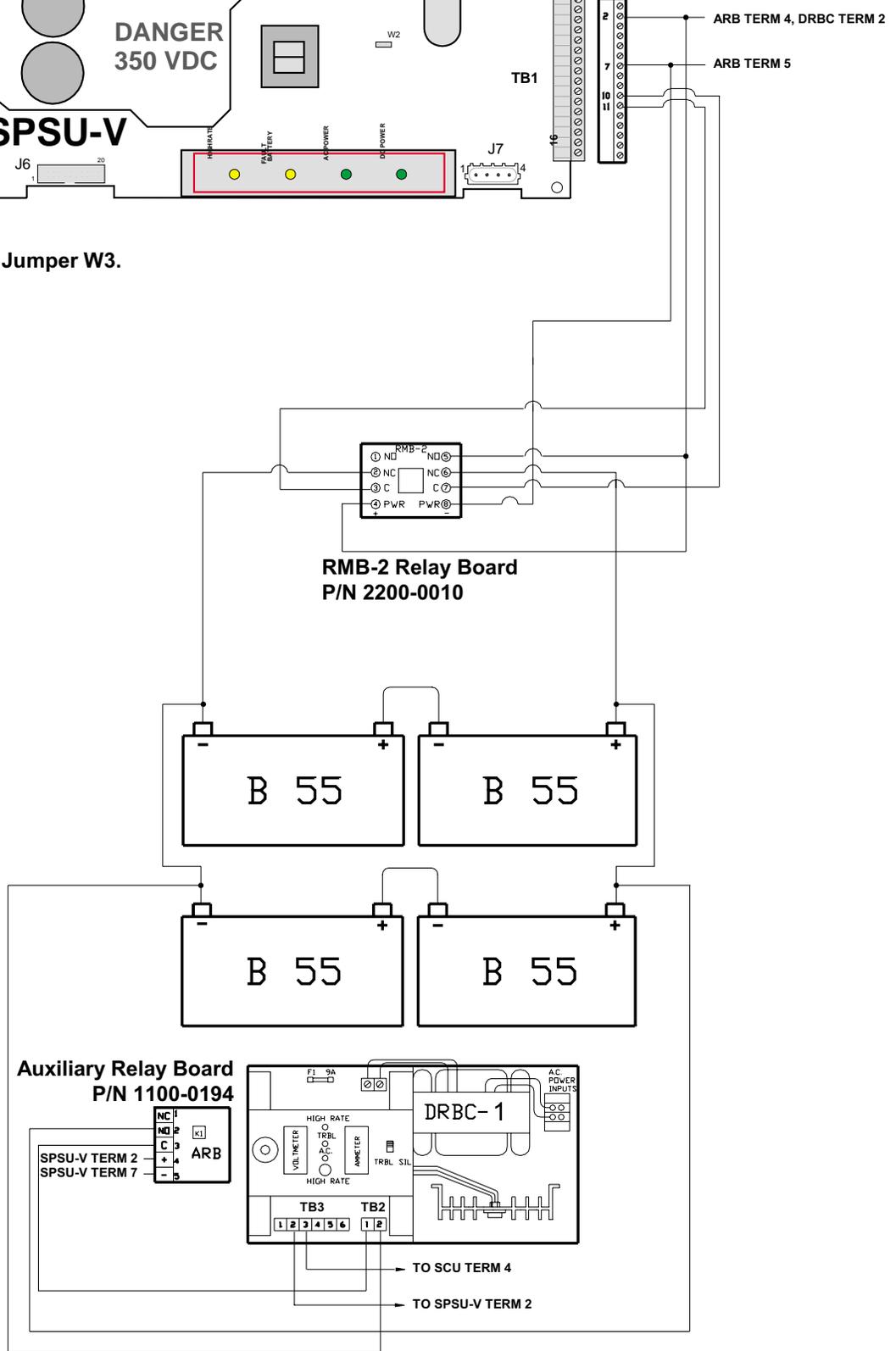
Standby Hours	Alarm Period (Minutes)	Max. Standby current	Max. Alarm Current
24	5	1.575 amps.	4.0 amps.
60	5	0.675 amps.	3.5 amps.

Do not exceed the maximum standby currents indicated below when charging 110 AH batteries with the DRBC-1 charger:

Standby Hours	Alarm Period (Minutes)	Max. Standby current	Max. Alarm Current
24	5	3.15 amps.	5.0 amps.
60	5	1.35 amps.	5.0 amps.
90	10	0.70 amps.	5.0 amps.



**Note: Remove Jumper W3.**



**Fig. 2-1a Connection of DRBC-1 Charger**

## 2.1.8 Standby Battery Calculations

The size of the standby batteries is calculated by totaling quantities of devices and units in Tables 2-2a, 2-2b, and completing the calculations in Table 2-3.

**Table 2-2a Battery Standby Chart**

Qty	Module	Description	Supv. Current	Alarm Current	Total Supv. Current	Total Alarm Current
1	SPSU or SPSU-V	Switching Power Supply Unit	.010 A	.015 A	.010 A	.015 A
	SCU	System Control Unit	.050 A	.260 A		
	AAI	Addressable Amplifier Interface	.021 A	.080 A		
	ADC	Audio Driver Card	.043 A	.054 A		
	AEU	Audio Evacuation Unit	.065 A	.085 A		
	ALU	Analog Loop Unit	.065 A	.085 A		
	ATU	Abort Timer Unit	.014 A	.030 A		
	BAU	Bulk Amplifier Unit	.070 A	.178 A		
	Backplane	(Main and Expansion)	.005 A	.005 A		
	CCU	Command Control Unit	.017 A	.042 A		
	DIU	Distributed Intelligent Unit	.017 A	.072 A		
	DSU	Dual Signal Unit	.025 A	.075 A		
	EZU-L	Eight Zone Unit	.045 A	.086 A		
	EZD-L	Eight Zone Daughter Board	.002 A	.009 A		
	EZA-L	Eight Zone Annunc. Board	.002 A	.009 A		
	FCI-PA-25	25-watt amplifier	.020 A	1.0 A		
	FCI-PSM	Power supply charger unit	.030 A	.030 A		
	FCI-MB	Amplifier Mother Board w/25-watt amplifier	.180 A	.180 A		
	HRU	High Current Relay Unit	.004 A	.034 A*		
	IDU	Addressable Interface Unit	.065 A	.085 A		
	KDU-L	Keyboard Display Unit, Local	.060 A	.065 A		
	KDU	Keyboard Display Unit, Remote	.060 A	.065 A		
	PA-120R	amplifier, 120 W	.180 A	11.0 A		
	PA-250R	Amplifier, 250 W	.600 A	17.0 A		
	PTT-D	Push-to-talk Driver	.005 A	.025 A		
	PTT-R	Push-to-talk Receiver	.020 A	.120 A		
	QZU-L	Quad Zone Unit	.027 A	.062 A		
	QRU	Quad Relay Unit	.004 A	.023 A*		
	RAU	Remote Annunciator Unit	.018 A	**		
		" (incandescent lamps)	.018 A	**		
	RAU-FV	Remote Annunciator Unit	.018 A	**		
	RDU	Releasing Device Unit	.065 A	.085 A		
	RSM	Remote Signal Module	.009 A	.036 A		
	RZM	Remote Zone Module	.015 A	.076 A		
	RZST-1	Remote Zone Signaling Transponder	.031 A	.031 A		
	SIB	Status Indicator Board	.017 A	.037 A		
	SIM-P	Switch input Module - Phone	.017 A	.037 A		
	SIM-S	Switch input Module - Speaker	.017 A	.037 A		
	SIM-A	Switch input Module - Auxiliary	.017 A	.037 A		

**SUB-TOTAL**

**NOTE:**

† Alarm current is limited by zone module circuitry and is not involved in battery calculation.

\* Alarm current is for one (1) active relay.

\*\* Alarm current: Add .007 A for each LED, or add .075 A for each incandescent lamp.

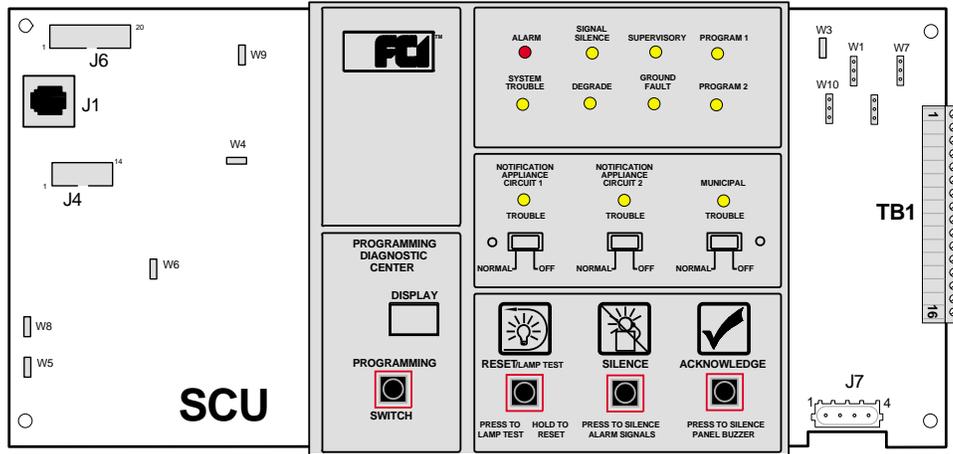
**Table 2-2b Battery Standby Chart**

Qty	Module	Description	Supv. Current	Alarm Current	Total Supv. Current	Total Alarm Current
	SSU	Sprinkler Supervisory Unit	.027 A	.062 A		
	TCU	Telephone Control Unit	.017 A	.020 A		
	TCU-R	Telephone Control Unit, Remote	.017 A	.020 A		
	ZCU	Zone Coder Unit	.001 A	.037 A		
	411 DACT	Digital Communicator	.175 A	.245 A		
	FC-5129	Digital Communicator	.084 A	.154 A		
	FLD-1	Fiber-optic Line Driver Module	.045 A	.045 A		
		2-wire smoke det., Ionization		†		†
		2-wire smoke det., Photoelectric		†		†
		4-wire smoke detectors				
		EOL relays				
		Analog sensors				
		Monitor modules				
		Notification appliances				
		Misc. peripheral devices				
		Sub-totals from Table 2-2a				
<b>TOTAL</b>						
<b>NOTE:</b>						
† The alarm current is limited by zone module circuitry and is not involved in battery calculations.						

**Table 2-3 Battery Calculations**

A	Total Supervisory Current from Table 2-2	
B	Enter number of standby hours per NFPA requirements for the specific installation (See note)	
C	Multiply Line A times hours in Line B	
D	Total alarm current from Table 2-3	
E	Enter alarm period in hours ( 5 min. = .084 hour) (See Note)	
F	Multiply Line D times Line E	
G	Total of lines C&F	
H	Multiply line G by 1.2 (Total ampere/hours required*)	
<p>* Use next size battery with capacity greater than required. See 2.3.4 for a list of approved batteries. If battery requirements are greater than 55 ampere/hours, use an external Listed battery charger.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>Local, Central Station and Proprietary systems require 24 hour standby with 5 minute alarm period.</li> <li>Municipally connected systems require 60 hour standby with 5 minute alarm period.</li> <li>Factory Mutual Research requires 90 hour standby with 10 minute alarm period for preaction/deluge systems.</li> <li>For Emergency Voice/Alarm Communication service, the system shall be capable of operating the system for 24 hours under a maximum normal load and then operating the system during an alarm condition for a period of 2 hours. Fifteen (15) minutes of evacuation alarm operation at maximum alarm load shall be considered the equivalent of 2 hours of alarm operation.</li> </ul>		

This page is reserved for future use.



**System Control Unit (SCU)**

**Table 2-2 SCU Field Wiring, Jumpers, Switches, LEDs**

FIELD WIRING CONNECTIONS		
Designation	Description	Comments
TB1-1	Municipal (+) Supervised	Municipal/releasing connection (Polarity shown in alarm condition). See 2.2.1. Auxiliary (city box) circuit is non power limited. Remote station (polarity reversal) and releasing circuits are power-limited.
TB1-2	Municipal (-) Supervised	Municipal/releasing connection (Polarity shown in alarm condition). See 2.2.1. Auxiliary (city box) circuit is non power limited. Remote station (polarity reversal) and releasing circuits are power-limited.
TB1-3		Not used.
TB1-4		External trouble input, (5-24 VDC).
TB1-5	Trbl Com.	Trouble Relay Contact - Common. See 2.2.2. Intended only for connection to circuits powered from a Listed power-limited source of supply.
TB1-6	Trbl N/O, N/C	Programmable Trouble Relay Contact, N/O or N/C. See 2.2.2. Intended only for connection to circuits powered from a Listed power-limited source of supply.
TB1-7	Alm Com	Alarm Relay Contact, Common. See 2.2.3. Intended only for connection to circuits powered from a Listed power-limited source of supply.
TB1-8	Alm N/O, N/C	Programmable Alarm Relay Contact, N/O or N/C. See 2.2.3. Intended only for connection to circuits powered from a Listed power-limited source of supply.
TB1-9, thru 12	Notif. Appl. Ckt. 1	Notification Appliance Ckt. 1, Power-Limited. Supervised.
TB1-13 thru 16	Notif. Appl. Ckt. 2	Notification Appliance Ckt. 2, Power-Limited. Supervised.

## 2.2 System Control Unit (SCU)

In addition to the microprocessor system operating software and memory, the System Control Unit (SCU) contains two notification appliance circuits, remote city output and alarm/trouble dry contacts. Table 2-4 lists the SCU field wiring connections, switches, LEDs and jumpers.

Table 2-4 SCU (Continued)		
Designation	Description	Comments
<b>JUMPERS</b>		
W1, W2	Municipal ckt	Configure for city box/releasing or polarity reversal operation. (See Figure 2-2A, B, C)
W3	Pol. Rev. Trbl.	OUT to allow transmission of trouble conditions via polarity reversal circuit (See Figure 2-2A, B, C)
W4	RS-232 Supv.	OUT to supervise RS-232 port.
W5	Notif. Appl. Ckt 1	IN to allow coding of Notification Appliance Circuit 1.
W6	Termination	Leave in OUT position.
W7	Trbl. Relay	“NC” position for Trouble Relay N/C operation, “NO” for N/O operation.
W8	Notif. Appl. Ckt 2	IN to allow coding of Notification Appliance Circuit 2.
W9	Group Ack.	IN to acknowledge ten (10) events with a single operation of the “ACKNOWLEDGE” switch.
W10	Alarm Relay	“NC” position for Alarm Relay N/C operation, “NO” for N/O operation.
<b>LEDs</b>		
Red	ALARM	
Yellow	SUPERVISORY	
Yellow	SYSTEM TROUBLE	
Yellow	GROUND FAULT	
Yellow	TROUBLE NOTIFICATION APPLIANCE CIRCUIT 1	
Yellow	TROUBLE MUNICIPAL	
Yellow	SIGNAL SILENCE	
Yellow	PROGRAM 1 (Using FCP-7200)	
Yellow	PROGRAM 2 (Using FCP-7200)	
Yellow	DEGRADE	
Yellow	TROUBLE NOTIFICATION APPLIANCE CIRCUIT 2	
<b>SWITCHES</b>		
Silence (SW1)		Silences silenceable outputs (Pressing switch toggles ON/OFF).
Acknowledge (SW2)		Acknowledges change in panel status and silences trouble sounder.
Reset/Lamp Test (SW3)		Resets system and/or tests LEDs. (Hold for 5 seconds to reset)
Programming (SW4)		Activates Programming/Diagnostic Center.
Notification 1 (SW5)		Disconnect switch for Notification Appliance Circuit 1.
Municipal (SW6)		Disconnect switch for city/releasing connection.
Notification 2 (SW7)		Disconnect switch for Notification Appliance Circuit 2.
<b>CONNECTORS</b>		
J1	RS232	RJ11 or DB9 (Used previous To SCU Rev. P) connector for printer, OTS or FCP download connection. See 2.2.8.
J4	FCINET®	14-conductor FCINET® harness connects to all subsequent units.
J6	Pwr comm.	20-conductor cable connecting to power supply.
J7	System power	4-wire power cable from power supply, connects to all subsequent units/back planes. (See FCI manual P/N 9000-0405).

## 2.2.1 Master Box/Releasing/Polarity Reversal

Terminals **TB1-1 (+)** and **TB1-2 (-)**, on the SCU are for the supervised connection of a local energy city master box, releasing solenoid, connection of a Listed, compatible, polarity sensitive, remote station receiver via leased telephone lines, or to a Proprietary or Central Station Transmitter.

### A. City Master Box

Connection to a U.L. Listed local energy city master box must comply with NFPA Standard 72, Auxiliary Fire Alarm Systems.

A "MUNICIPAL" switch is provided for use when testing and servicing the control panel. When the switch is in the "OFF" position, the city box/solenoid cannot be energized. In addition, the yellow "MUNICIPAL TROUBLE" and "SYSTEM TROUBLE" LED will light and the audible sounder will sound. This output is factory set as a "non-silenceable" output.

To connect the local energy city master box, remove the 220 ohm, 5 watt resistor from Terminals **TB1-1 (+)** and **TB1-2 (-)** and connect the master box to these terminals.. Do not connect this resistor to the master box or transmitter; leave it in the bottom of the control panel for trouble shooting purposes. See Figure 2-2A.

### B. Releasing Wiring

To connect a releasing solenoid, remove the 220 ohm, 5 watt resistor from Terminals **TB1-1 (+)** and **TB1-2 (-)** and connect the solenoid to these terminals. Do not connect this resistor to the solenoid; leave it in the bottom of the control panel for troubleshooting purposes. See Figure 2-2C.

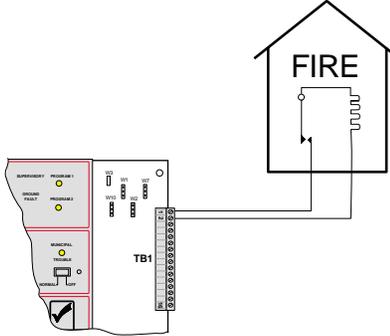
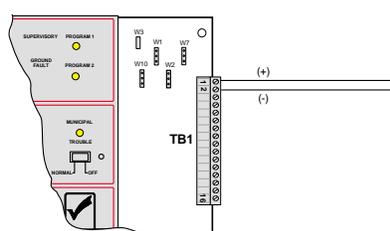
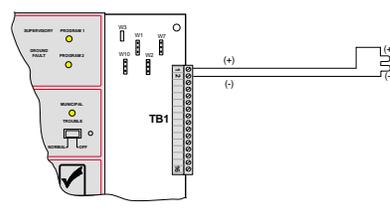
Use only the approved solenoids listed below.

**NOTE:** Releasing devices may also be energized directly from the ALU signaling line circuit with AOM-2 or AOM-2S Addressable Output modules.

### Approved Solenoid Devices for System Control Unit (SCU)

See FCI Addendum P/N 9000-0427 for a list of UL Listed and Factory Mutual Approved solenoid devices for use with the SCU.

**NOTE:** Per NFPA and UL requirements, a releasing device must have a dedicated manual release station in the vicinity which is capable of actuating the releasing circuit.

CITY MASTER BOX OUTPUT	POLARITY REVERSAL OUTPUT	RELEASING OUTPUT
Supervised, Non power-Limited	Supervised, Power-Limited	Supervised, Power-Limited
Nominal voltage 24 VDC Supervisory current .0018 amp. Alarm current (max.) .510 amp.) Trip coil resistance (max.) 14.5 ohms Line resistance (max.) 35 ohms	Nominal voltage 24 VDC Max. ripple voltage 1.7 VAC (RMS) Supervisory current .012 amp. Alarm current .012 amp.	Nominal voltage 24 VDC Supervisory current .0018 amp. Alarm current (max.) 1.0 amp.
<b>JUMPERS:</b> W3 OUT W1 "MB" position W2 "MB" position	<b>JUMPERS:</b> W3 OUT for trouble transmission W1 IN for no trouble transmission W2 "PR" position	<b>JUMPERS:</b> W3 OUT W1 "MB" position W2 "MB" position UL Listed releasing device, 24 VDC
	 <p style="text-align: center;">* Shown in alarm condition</p>	
<b>Figure 2-2A City Box</b>	<b>Figure 2-2B Polarity Reversal</b>	<b>Figure 2-2C Releasing</b>

### D. Polarity Reversal

Terminals **TB1-1 (+)** and **TB1-2 (-)** are used for connection to a Listed, compatible, polarity reversal remote station receiver via leased telephone lines.

A "MUNICIPAL" switch is provided for use when testing and servicing the control panel. When the switch is in the "OFF" position, the polarity reversal circuit cannot be energized. In addition, the yellow "MUNICIPAL TROUBLE" and "SYSTEM TROUBLE" LEDs will light and the audible sounder will sound.

To connect the telephone lines, remove the 220 ohm, 5 watt resistor from Terminals **TB1-1 (+)** and **TB1-2 (-)** and connect the telephone lines to these terminals. In the quiescent condition, Terminal **TB1-1** is negative and **TB1-2** is positive. In the alarm condition, the polarity of these terminals will be reversed. For transmission of a trouble signal to the remote station, make sure that Jumper **W3** is removed. See Figure 2-2B.

### E. Connection to Proprietary or Central Station Transmitter

To connect to a UL Listed Potter ATTE-B Alarm and Trouble Transmitter for Proprietary signaling, or signaling to a remote central station receiver, see Figure 2-3.

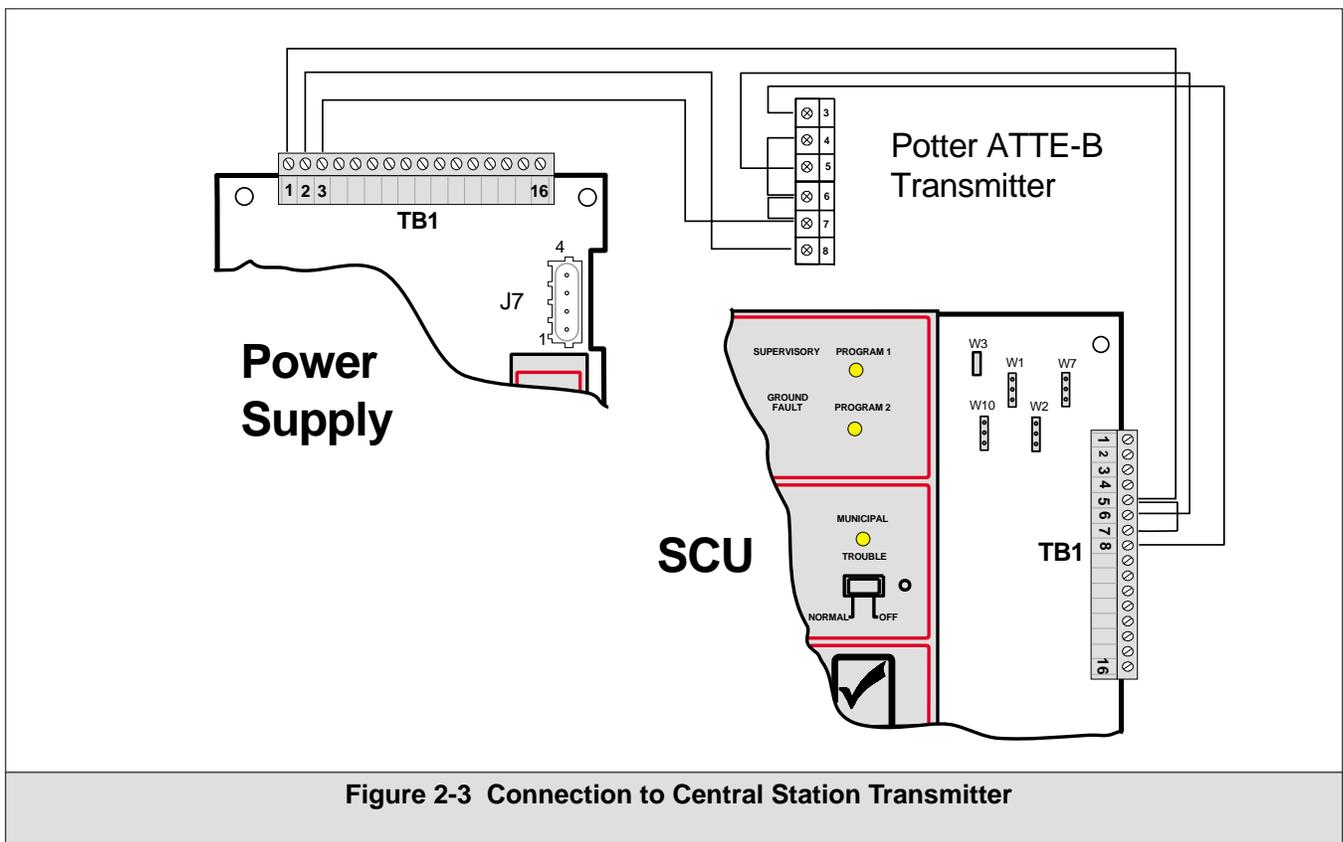


Figure 2-3 Connection to Central Station Transmitter

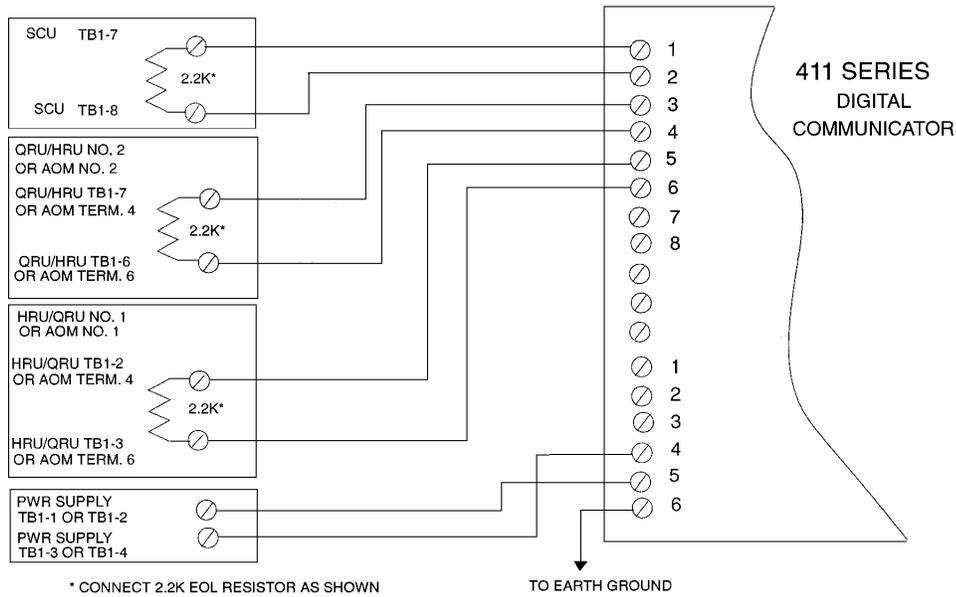
**F. Connections to Proprietary, Remote Station or Central Station via Digital communicator**

To connect to an FCI 411 or FC-5129 Series Digital Alarm Communicator Transmitter for signaling to a Proprietary, Remote Supervising Station or Central Station receiver, see Figures 2-4a, 2-4b. Signals are initiated as follows: (Based on 7200 Series Field Configuration Programming, Remote Station selection).

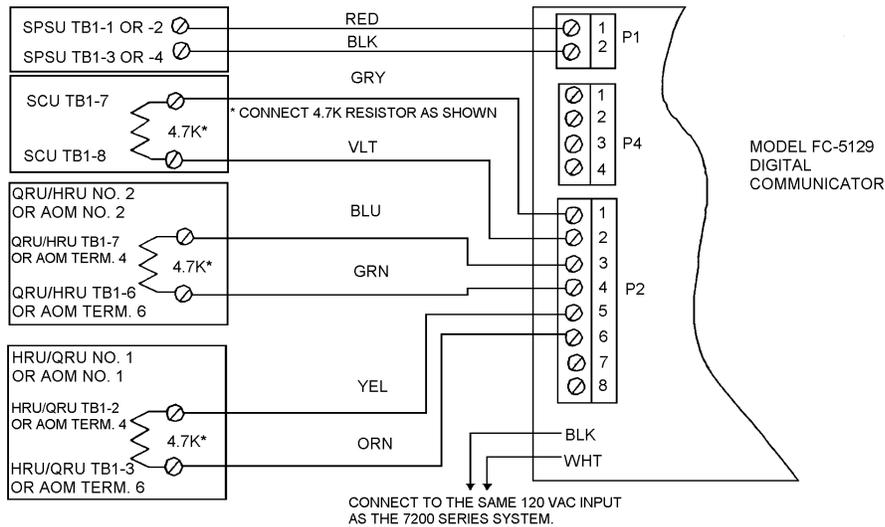
**Alarm Signals** - Are initiated from the SCU alarm output contacts.

- **Supervisory Signals** - Are initiated from Relay 1 of the first QRU or HRU unit if the system is so equipped. If no QRU or HRU unit is installed, then the signal will initiate from the first AOM module installed on the first signaling line circuit of ALU unit Number 1.
- **Trouble Signals** - Are initiated from Relay 2 of the first QRU or HRU unit if the system is so equipped. If no QRU or HRU unit is installed, then the signal will initiate from the second AOM module installed on the first signaling line circuit of ALU unit Number 1.

**NOTE:** SCU Jumpers **W7** and **W10** **MUST** be installed in the "NO" position.



**Figure 2-4a Connections to a Model 411 Digital Communicator**



**Figure 2-4b Connections to a Model FC-5129 Digital Communicator**

## 2.2.2 System Trouble Contacts

The SCU provides a set of dry trouble contacts which may be jumper programmed as Normally Open (Form "A") or Normally Closed (Form "B"). The contacts are rated 2 A. @ 24 VDC. (resistive) and are intended for connection to circuits powered from a Listed power limited source of supply. See Table 2-4.

## 2.2.3 System Alarm Contacts

The SCU provides a set of dry alarm contacts which may be jumper programmed as Normally Open (Form "A") or Normally Closed (Form "B"). The contacts are rated 2 A. @ 24 VDC. (resistive) and are intended for connection to circuits powered from a Listed power limited source of supply. See Table 2-4.

## 2.2.4 Notification Appliance Circuits

Each notification appliance circuit is overload protected and individually supervised for opens, grounds, and short circuits.

### A. Wiring Instructions (Circuit polarities are shown in alarm condition.)

Terminals **TB1-9** thru- **12** are for Circuit 1, Terminals **TB1-13** thru **-16** are for Circuit 2. See Figure 2-5 for Class B, Style Y wiring and Figure 2-6 for Class A, Style Z wiring.

### B. Jumper Instructions

Jumpers **W5** and **W8** must be arranged for either coded or non-coded operation. See Table 2-4. Jumpers are factory set for non-coded operation.

### C. Notification Appliance Circuit Switches

A switch is provided on the SCU for each notification appliance circuit. These switches are used to disconnect the circuits for servicing or maintenance.

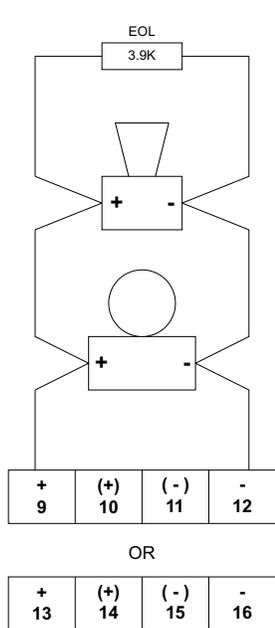
#### 2.2.4.1 Coded Patterns

The below listed coded patterns are programmed via software. For user-definable codes, see the Zone Coder Unit (ZCU), Sec. 2.10.3.

- March-time 60 BPM code
- March-time 120 BPM code
- Temporal Pattern

## 2.2.5 Approved Notification Appliances

Use only the U.L. Listed notification appliances listed in FCI Addendum, P/N 9000-0427. Refer to the individual instructions furnished with each appliance.



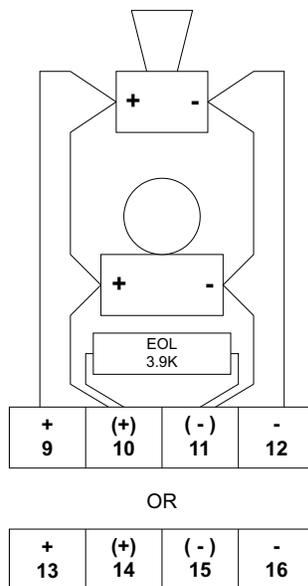
Use UL Listed Model EOL-R (3.9K)  
End of Line Unit

**RATINGS PER CIRCUIT**

Supervised - Power-Limited  
Nominal Voltage: 24 VDC  
Max. Ripple voltage: 1.7 VAC (RMS)  
Max. Alarm current: 1.75 amp per circuit  
Supervisory current: 0.0008 amp.

Circuits shown in alarm condition

Be sure to observe polarity and use only polarized devices



**Figure 2-5 Class B, Style Y Circuits**

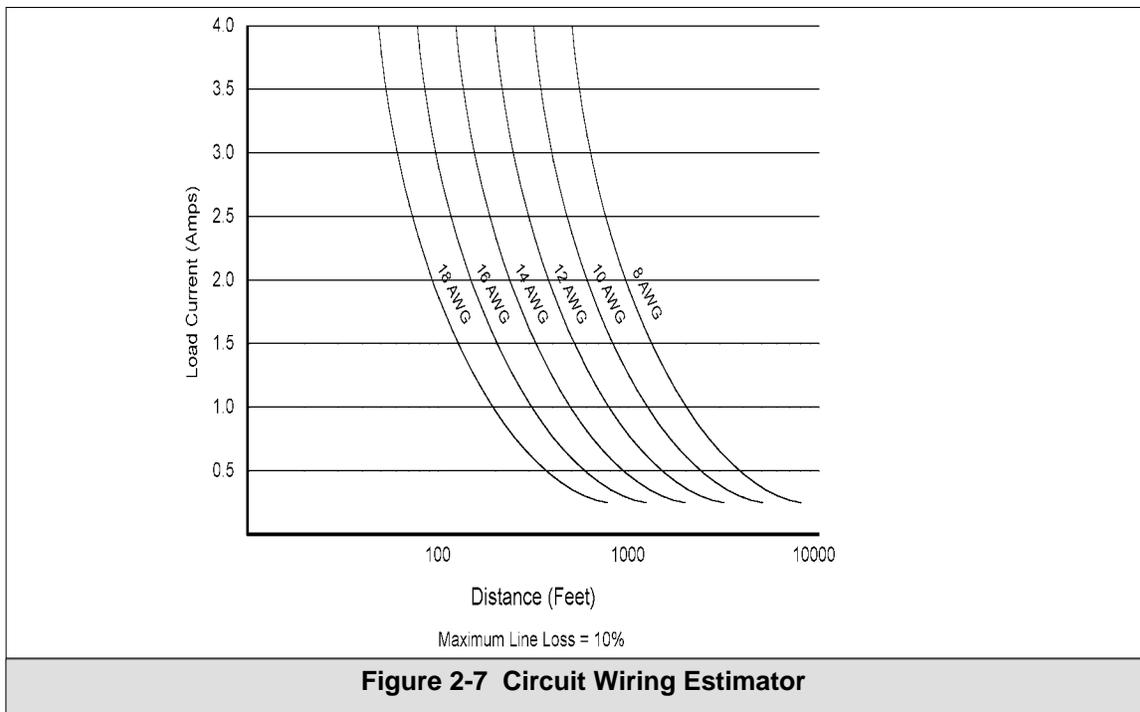
**Figure 2-6 Class A, Style Z Circuits**

**2.2.6 Notification Appliance Circuit Wiring Estimator**

To determine the required wire size for each notification appliance circuit, use the chart shown in Figure 2-7 and follow these steps:

- Compute the notification appliance current. (number of devices multiplied by the device current = amperes)
- Compute the distance in feet from the control panel to the last notification appliance or releasing device.
- Locate total appliance load (amperes) on the vertical axis of the chart; locate wire distance (in feet) on the horizontal axis; find the point where they intersect.
- Read wire size in AWG on the curved line to the right of the point of intersection.

**For wire lengths less than 100 feet, use 18 AWG minimum.**



## 2.2.7 Programming/Diagnostic Center

The two-digit, 7 segment code displayed on the SCU indicates various system conditions. The different conditions are as follows:

Condition	Display
Alarm	AL
Pre-Alarm	PA
Supervisory (Off-normal)	SU
Trouble	tr
Fire Drill	dr
Walk Test	[ ]
Normal	o° (Blinking)
Reset	rS
AC Brown-out	(blank)
*Auto configuration	CF
*Switch Programming	PG
Error Programming Entry	EE
FCP Programming	LP
Phone Call In	PH

\* Auto configuration and switch programming do not apply to FireVac<sup>®</sup>7200 systems or to the releasing portion of systems that use one or more Releasing Device Units (RDU).

## 2.2.8 RS-232 Output

The RS-232 output (**J1**) provides a standard serial port for connection to a Listed output device for supplementary type service. Typical examples of such devices include any UL Listed EDP device (remote printer or video terminal), any UL Listed Signaling Device (such as the Keltron VS4095/5 printer), or any UL Listed Signal System Unit (such as the Model BBM Buffered Data Broadcast Unit TL160A-R2).

Depending on SCU PC board revision, the SCU may be equipped with either a DB9 or RJ11 connector.

### Ratings:

15 VDC (max.)  
 0.05 amp. (max.) current  
 1200 baud  
 8 bits, 1 stop bit, no parity.  
 Power limited

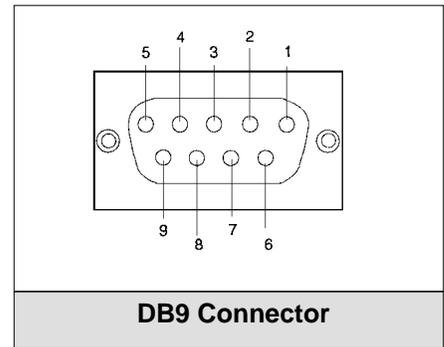
### 2.2.8.1 RS-232 DB9 Connector (Used on SCUs prior to Revision “P”)

The pins on the RS-232 serial connector **J1** are as follows:

Top Row (Right to left)		Bottom Row (Right to left)	
Pin 1	N.C.	Pin 6	N.C.
Pin 2	RXD	Pin 7	N.C.
Pin 3	TXD	Pin 8	N.C.
Pin 4	DTR	Pin 9	Supervision
Pin 5	GND		

Available cables for RS-232 DB9 connection:

Part No.	Model	Description
6100-0022	PCC-9	PC-7200 (9 to 9 pin)
6100-0021	PHC	PTR-7200 (9 to 25 pin)



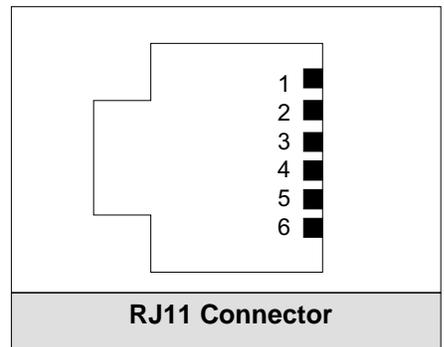
### 2.2.8.2 RJ11 Connector (Used on SCUs Rev. “P” and later)

Connections to the RJ11 serial connector **J1** are as follows:

Terminal	Description
2	RXD
3, 4	GND
5	TXD
6	Supervision

Available cables for RS232 RJ11 connection:

Part No.	Model	Description
6100-0077	RJ11-DB9PC	RJ11 to 9-pin DB9 (Connector PC/SCU replacement) (See Fig. 2-7).
6100-0074	RJ11-DB25	RJ11 to 25-pin (DB25) (connector only) (See Fig. 2-8)
6100-0075	RJ11C-6	RJ11 to RJ11 cable, 6-inches
6100-0076	RJ11C-20	RJ11 to RJ11 cable, 20 feet



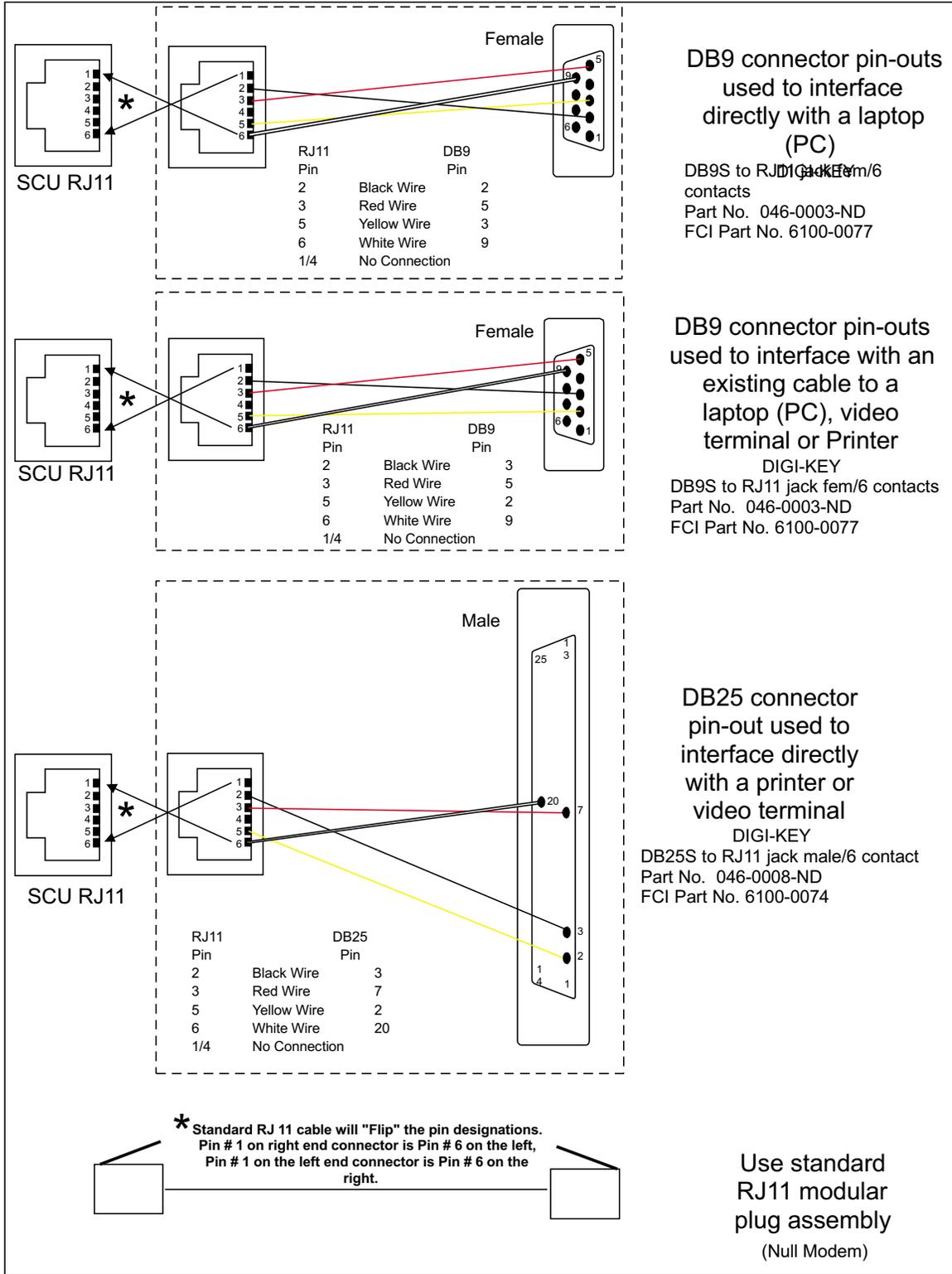
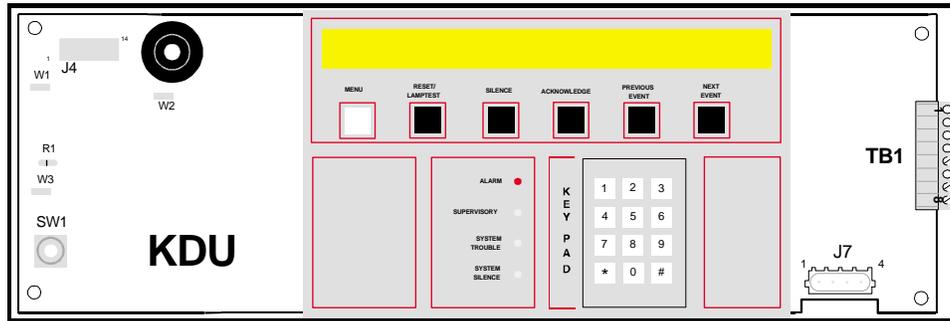
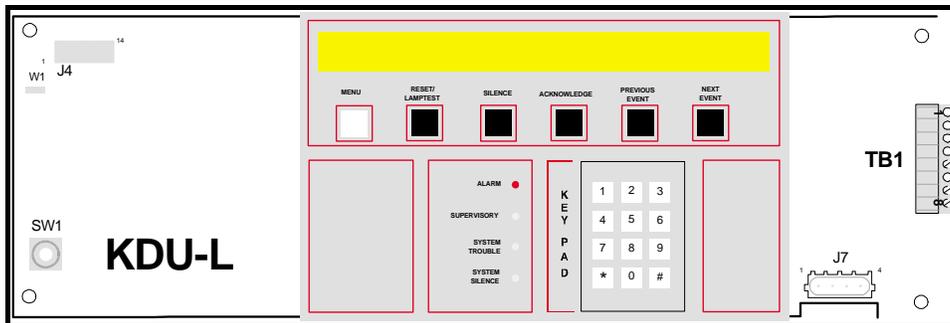


Fig. 2-8 Interfacing of RJ11 to DB9



**Keyboard Display Unit (KDU)**



**Keyboard Display Unit, Local (KDU-L)**

## 2.3 Keyboard Display Unit, (KDU) (Optional)

Table 2-5 KDU/KDU-L Switches, LEDs, Connectors		
Designation	Description	Comments
<b>SWITCHES</b>		
SW1	rotary	16-position address switch. See 2.3.2
Menu (SW2)		Allows access to the various menus available.
Reset/Lamp Test (SW3)		Performs a lamp test of the KDU/KDU-L, followed by a System Reset.
Silence (SW4)		Silences all silenceable outputs. (Pressing switch toggles On/Off)
Acknowledge (SW5)		Acknowledges an event.
Previous Event (SW6)		Allows review of the event history log.
Next Event (SW7)		Allows forward viewing of the event history log.
<b>LEDs, DISPLAY</b>		
Alarm	red	Lights upon an alarm.
Supervisory	yellow	Lights when any supervisory device is off-normal.
System Trouble	yellow	Lights upon any trouble signal in the system.
System Silence	yellow	Lights when outputs have been silenced.
Display	80-character	Backlit LCD display. KDU/L when backlit indicates presence of AC power. Displays system events.
<b>CONNECTORS</b>		
J1	16-pin	Connects LCD display to printed circuit board.
J2		Factory use.
J4	FCINET <sup>®</sup> 14-pin	Communication from <b>J4</b> of previous unit to the next unit.
J7	4-wire (Rd-blk-yel-gry)	Power from <b>J7</b> of previous unit to <b>J7</b> of next unit.
<b>FIELD WIRING CONNECTIONS (REMOTE INPUTS ONLY)</b>		
TB1-1	COM B	Connection for FCINET <sup>®</sup> remote communications. Supervised
TB1-2	COM A	Connection for FCINET <sup>®</sup> remote communications. Supervised
TB1-3		Not used
TB1-4		External trouble input from remote KDU power supply.
TB1-5, -6		Not used.
TB1-7		Connects to (+) 24 VDC when KDU is remotely located.
TB1-8		Connects to (-) 24 VDC when KDU is remotely located. (Power output to FireVac <sup>®</sup> 7200 Remote Command Center) Supervised
<b>FIELD WIRING CONNECTIONS (SYSTEM OUTPUTS)</b>		
TB1-1	COM B	Connection for remote KDU, DIU and RAU/RAU-FV. Supervised
TB1-2	COM A	Connection for remote KDU, DIU and RAU/RAU-FV. Supervised
TB1-3 thru-8		Not used
<b>JUMPERS (KDU)</b>		
W1		Factory use (OUT)
W2		OUT to disable KDU audible trouble sounder. IN for remote KDU.
W3		IN for backlight except when system is on standby batteries. OUT for no backlight except for new events or alarm conditions.
R1	Resistor	Disconnect one end if KDU is used in limited function mode. (See 2.3.3)
<b>JUMPER (KDU-L)</b>		
W1		Factory use (OUT)

### 2.3.1 General

The Keyboard Display Unit provides an 80-character back-lit alpha-numeric display which indicates system status and provides diagnostic fault messages. A 12-key keypad permits user access to the system.

Up to fifteen (15) KDU-L/KDUs may be installed in a system as control devices. An additional fifteen (15) unsupervised (passive) units may also be connected. These passive units cannot be used as control devices. Care must be observed to make certain adequate power is available.

The KDU and KDU-L are full-size units.

#### 2.3.1.1 Keyboard Display Unit (KDU)

The KDU may be configured in the Full Menu, Limited Function, or the Passive Display Mode (Unsupervised). The KDU may be located up to 4,000 feet away from the main control, including in a FireVac 7200 Remote Command Center, using 12-14 AWG twisted unshielded wire. When remotely located, it must be mounted in a Model RHBS, RHBF, RHRS or RHRF enclosure, and a Keyboard Display Unit (KDU-L/KDU) or Panel Bus Adapter (PBA) is required in the main system cabinet for FCINET<sup>®</sup> remote communications.

#### 2.3.1.2 Keyboard Display Unit, Local (KDU-L)

The KDU-L provides the same functions as the KDU, except it cannot be remotely located and is configured in the Full Menu Mode.

#### Ratings

Operating voltage	24 VDC (nominal)
Supervisory current	0.060 amp.
Alarm current	0.065 amp. (max.)

### 2.3.2 Address Switch

The Address Switch, **SW1**, is a 16-position rotary switch labeled "0" thru "9" and "A" thru "F" ( A=10, B=11 . . . F=15). It is located in the lower left section of the KDU/KDU-L. The address switch must not be set to position "0" (zero) and multiple KDU-L/KDU switches **must not be set to the same address**.

### 2.3.3 Operation Modes and Options (KDU)

The KDU may be configured in any one of the three following operation modes:

#### Full Menu Mode

In this mode, the KDU displays system information and can perform numerous system control functions. If the KDU is to be remotely located, it will be fully supervised in this mode, and supervision of any local power supply is possible. Since this is an active unit, it is included in the fifteen (15) KDU-L/KDUs per system and in the overall 30 units/system requirement.

To select this mode, choose any address other than zero "0" and leave **R1** installed.

#### Limited Function Mode

In this mode, the KDU displays system information and can perform three basic control functions:

- Reset
- Acknowledge
- Signal Silence

If the KDU is to be remotely located, it will be fully supervised in this mode, and supervision of any local power supply is possible. To select this mode, choose any KDU-L/KDU address other than zero "0" and remove resistor **R1**. Since this is an active unit, it is included in the fifteen (15) KDU-L/KDU per system, and in the overall 30 units/system requirement.

#### Passive Display Mode (Unsupervised)

In this mode, the KDU displays system information only, and has no control capability. If this KDU is to be remotely located, it will be unsupervised and monitoring of any local power supply is not possible. Since this is a passive unit, it is not included in the fifteen (15) active KDU-L/KDUs, but is included in the overall 30 units/system requirement. Resistor **R1** must be removed and the address switch must be placed in the zero "0" position.

**NOTE:** Jumper **W3** must be installed when a KDU is used in a CAB-A configuration. The constantly lit display indicates "AC ON" condition.

### 2.3.4 Jumpers

Refer to Table 2-5 for jumper selections.

### 2.3.5 Typical Display Operation

**In normal condition:** The KDU/KDU-L will display the current time and date, the word “Day” or “Night” to indicate the current operation mode, and the message “Normal Condition” unless the user specifies a custom (40-character) message.

**During any abnormal condition:** The KDU/KDU-L will scroll the active events by priority; Alarm, Pre-alarm, Supervisory and unacknowledged Troubles. Acknowledged troubles will not be displayed when higher priority conditions exist.

### 2.3.6 Event-Log Review

When there are no active events in the system, the event history log may be reviewed by using the “PREVIOUS EVENT” and “NEXT EVENT” switches on the KDU/KDU-L.

Every operation of the “PREVIOUS EVENT” switch will display a previous event starting from the most recent, in descending order until the beginning of the event log is reached. The display will then read: “NO EARLIER EVENTS,” “PRESS NEXT EVENT FOR LATER EVENTS.”

To return to the latest event after reviewing previous ones, every operation of the “NEXT EVENT” switch will display the events in ascending order until the current one is reached. At this time the display will read: “NO LATER EVENTS,” “PRESS PREVIOUS EVENT FOR EARLIER EVENTS.”

If an event occurs during a log review, the new event will override the display and cancel the review process. The KDU/KDU-L will cancel a review process if the “PREVIOUS EVENT” or “NEXT EVENT” switches are not operated for thirty seconds. The operator may cancel the review at any time by pressing the “star” (\*) key on the keypad.

### 2.3.7 The Menu System

Unless the system is in the alarm condition, you may access all menu functions by pressing the MENU switch. All menu functions are password protected. If you press the MENU switch but have not obtained password access, the menu will prompt you to enter a password. After one minute in normal operation, access will be canceled and further use of the menus will require re-entering of the password.

The menu items are labeled on the display above each switch. When such labels are visible, the normal switch functions (as labeled on the overlay) are overridden by the menu functions.

If no switch is operated for 30 seconds, the KDU/KDU-L will default to normal operation.

While you are using the menus, a switch is always labeled “BACK”. Pressing this switch moves you back to the previous menu. If you press “BACK” repeatedly, you will eventually exit the menus and return to normal operation. Alternately, you may press the “star” (\*) key on the keypad at any time to return to normal operation.

#### 2.3.7.1 Changing Parameters

There are three methods of changing parameters within a menu option, if parameters must be changed. (Example: specifying an output device to be turned on or off), These methods are as follows:

- **<Select>switches:** allow you to select one of the several parameters to change, e.g. unit type, unit address, and output number. These switches will move you left and right through parameters.
- **Down - Up switches:** allow you to scroll through a list of options, such as unit types, which cannot be specified by a decimal number. Down-Up is also used to specify unit addresses 0-9, A-F.
- **Keypad Numeric Keys:** allow you to enter all decimal information, such as analog device addresses.

The use of these switches is consistent among the various menu options. See Section 2.3.9 for KDU/KDU-L Operating Instructions for an example.

## 2.3.8 KDU/KDU-L Menu Functions

The functions accessible by the menu are as follows:

### Walk

Walk A	Start or stop an audible walk test.
Walk S	Start or stop a silent walk test.
Drill	Start or stop a fire drill.
DrTst	Start or stop a fire-drill-with-battery test.

### Sensr

Read	Read the sensitivity of an analog sensor, or range.
Set	Set the sensitivity of an analog sensor.
Comp.	Drift-compensate an analog sensor, or range.
Test	Test an analog sensor.
Init.	Initialize all analog sensors.

### I/O

Outon	Turn an output on.
OutOff	Turn an output off.
Dsabl	Disable an analog I/O point, or range.
Enabl	Re-enable an analog I/O point, or range.

**NOTE:** These functions do not allow access to an Audio Evacuation Unit (AEU).

### System

Time	Set system time and date.
Volts	Read power supply status.
Log	Print all or part of the event log.
Passwd	Change access passwords.
Reset	Reset the system and clear the event log. (Hard reset)
Autoconfig	Automatic configuration of system and signaling line circuits.



## B. Performing a Function

A. Press the appropriate switch for the desired function. For this example I/O, Input/Output control,

Select an option:					
Back	Walk	Sensr	I/O	System	
MENU	RESET	SILENCE	ACKN	PREV EV	NEXT EV
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Press the “OutOn” switch to turn an output ON.

Input/Output Options - Select:					
Back	OutOn	OutOff	Dsabl		Enabl
MENU	RESET	SILENCE	ACKN	PREV EV	NEXT EV
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C. Using the <<Select>> and “Down/Up” switches, select the appropriate output to be turned on. (Example shows SCU Output 1). Refer to Section C regarding <<Select>> and “Down/Up” switch usage.

Output On: SCU		Output 1			
Back	<<Select>>	Down	Up	Enter	
MENU	RESET	SILENCE	ACKN	PREV EV	NEXT EV
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. When the correct selection is showing, press “ENTER”.

<b>Output On: ALU1, Loop 1, Address 126</b>					
Back	<<Select>>	Down	Up	Enter	
MENU	RESET	SILENCE	ACKN	PREV EV	NEXT EV
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Changes don't take effect until you press “ENTER”. You can use “BACK” to leave the function, abandoning any changes made.

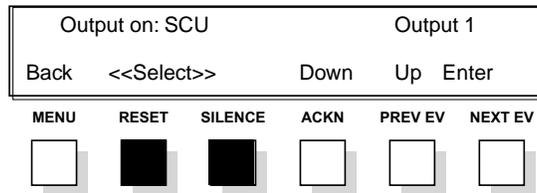
E. Continue with other functions. When finished, press “BACK” repeatedly, or press the star (\*) key on the keypad to return to normal. Output 1

Input/Output Options - Select:					
Back	OutOn	OutOff	Dsabl		Enabl
MENU	RESET	SILENCE	ACKN	PREV EV	NEXT EV
<input checked="" type="checkbox"/>	<input type="checkbox"/>				

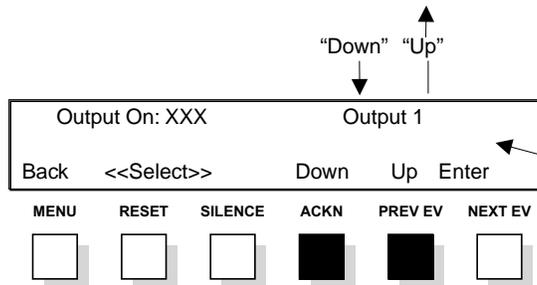
C. Using the <<SELECT>>, “DOWN” and “UP” switches

When the “<<SELECT>>”, “Down” and “UP” switches are displayed, you can use the switches to modify selections on the menu.

A. Use the <<SELECT>> switch to move the cursor between fields (left or right).

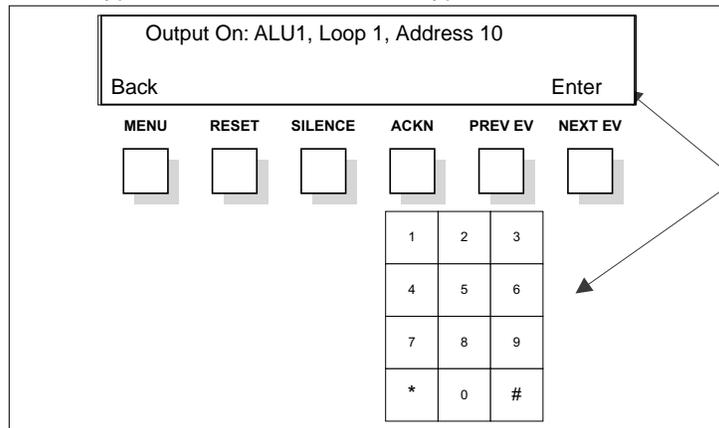


B. To change a non-numeric field, use the “Down” and “UP” switches to select from a list of options.



Notice that other display conditions may change as you move through the list of options.

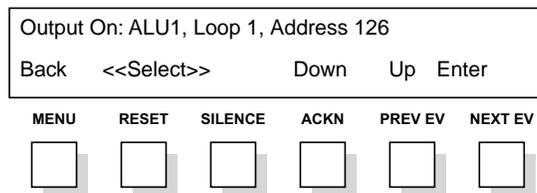
C. To change a numeric field, type in the number on the keypad.



Type numbers on the keypad until you have the correct value in the display.

**NOTE:** Analog sensor addresses are 01-99, addressable devices (AMM, AOM) are 101-198.

D. When the display shows exactly what you want, press “ENTER” to accept the selection.



### 2.3.10 Remote KDU Power Wiring

Remote KDUs must be mounted in a locked enclosure.

The quantity of remote KDUs that can be installed on a single circuit is determined as follows:

Use the formula  $N=75/R$  (This formula is for power considerations only).

Where N = The quantity of KDU units, and R = Total DC resistance of the wire in the entire circuit.

Round off the answer DOWNWARD to the nearest whole number.

**NOTE:** IF remote KDU units and RAU units are to be intermixed in the same circuit, use the formula  $N=50/R$ .

**Example:** A circuit with a length of 2,000 feet using 12 AWG solid wire.

The DC resistance of 12 AWG solid wire is 2 ohms/thousand feet.

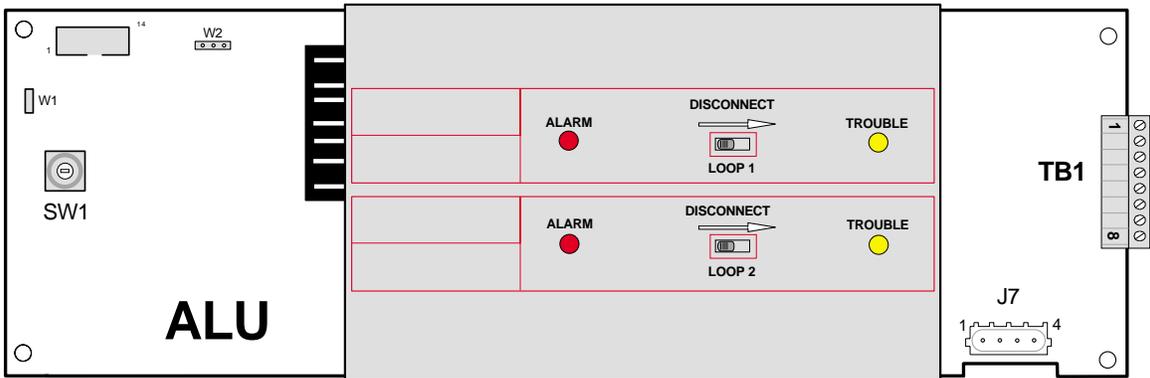
The total resistance of the circuit is (2,000 feet out, 2,000 feet return = 4,000 feet) x 2 = 8 ohms.

75 divided by 8 ohms = 9.38. Rounding off downward, the answer is 9.

Therefore, the circuit can accommodate a MAXIMUM of nine (9) remote KDU units.

**NOTE:** If the quantity of KDUs exceeds the capacity of the PSU/SPSU/SPSU-V, an auxiliary power supply, such as the model SNAC alarm extender panel, may be used. Be sure to connect the negative ( - ) terminal of the SNAC to PSU/SPSU Terminal **TB1-3** or **TB1-4**.

This page is reserved for future use.



Analog Loop Unit (ALU)

## 2.4 Analog Loop Unit (ALU) (Optional)

### 2.4.1 General

The Analog Loop Unit (ALU) provides two (2) Class A, Style 6/7 or Class B, Style 4 signaling line circuits. Each signaling line circuit can accommodate 197 addressable points (99 analog sensors and 98 monitor and/or output modules), for a maximum of 394 points per ALU.

In systems configured with Field Configuration Program Version 5.2 or later, the signaling line circuit wiring may be parallel or "straight lay" wire. Consult with the factory for wiring limitations.

The ALU is a full-size unit. Additional ALUs can be added to a maximum of 15 per system.

**NOTE:** If a signaling line circuit is disconnected via its disconnect switch and a device on the circuit is put into alarm, the alarm initiating device must be restored to normal and a system reset performed prior to returning the disconnect switch to normal.

**NOTE:** A dedicated system power supply is required for every five (5) ALU, AEU, RDU or IDU units. The Distributed Intelligent Unit (DIU) with its associated power supply meets this requirement.

**Table 2-6 ALU Connections, Jumpers, LEDs, Switches**

Designation	Description	Comments
<b>FIELD WIRING CONNECTIONS</b>		
<b>TB1-1 thru-4</b>	Loop 1	Signaling Line Circuit 1. See Figure 2-9. Supervised
<b>TB1-5 thru-8</b>	Loop 2	Signaling Line Circuit 2. See Figure 2-9. Supervised
<b>JUMPERS</b>		
<b>W1</b>		Factory use. (Out)
<b>W2</b>	3-pin (2 position)	AOM, AOM-2 Degrade Operation: Jumper <b>OUT</b> - Modules do not energize. Jump Pins <b>1, 2</b> - Modules energize, can be silenced. Jump Pins <b>2, 3</b> - Modules energized, cannot be silenced.
<b>LEDs</b>		
Loop 1 Trouble	Yellow	Lights to indicate trouble in Signaling Line Circuit 1.
Loop 1 Alarm	Red	Lights to indicate alarm in Signaling Line Circuit 1.
Loop 2 Trouble	Yellow	Lights to indicate trouble in Signaling Line Circuit 2.
Loop 2 Alarm	Red	Lights to indicate alarm in Signaling Line Circuit 2.
<b>SWITCHES</b>		
<b>SW-1</b>	rotary	16-position address switch. See 2.4.2
<b>DISCONNECT (SW-2)</b>	2-pos. slide	Disconnect/walk test switch for Signaling Line Circuit 1.
<b>DISCONNECT (SW-3)</b>	2-pos. slide	Disconnect/walk test switch for Signaling Line Circuit 2.
<b>CONNECTORS</b>		
<b>J4</b>	FCINET®	Communication from <b>J4</b> of previous unit to <b>J4</b> of next unit.
<b>J7</b>	4-wire (rd-blk-yel-gry)	Power from <b>J7</b> of previous unit to <b>J7</b> of next unit.

## 2.4.2 Address Switch

The Address Switch, **SW1**, is a 16-position rotary switch labeled "0" thru "9" and "A" thru "F" ( A=10, B=11 . . . F=15). It is located in the lower left section of the ALU. If only one ALU is installed, the switch must be set to position "1" (one). The address switch must not be set to position "0" (zero) and multiple ALU switches **must not be set to the same address**.

## 2.4.3 Approved Analog Addressable Devices

Only the manufacturer approved, U.L. Listed, Factory Mutual Approved analog sensors, bases, monitor modules, and/or control modules listed in the publication P/N 9000-0427 can be used on 7200 Series signaling line circuits. In the event of common mode noise problems, a Noise Control Module (NCM-1) may be installed. See Figure 2-9. The white wire lead must be connected to earth ground.

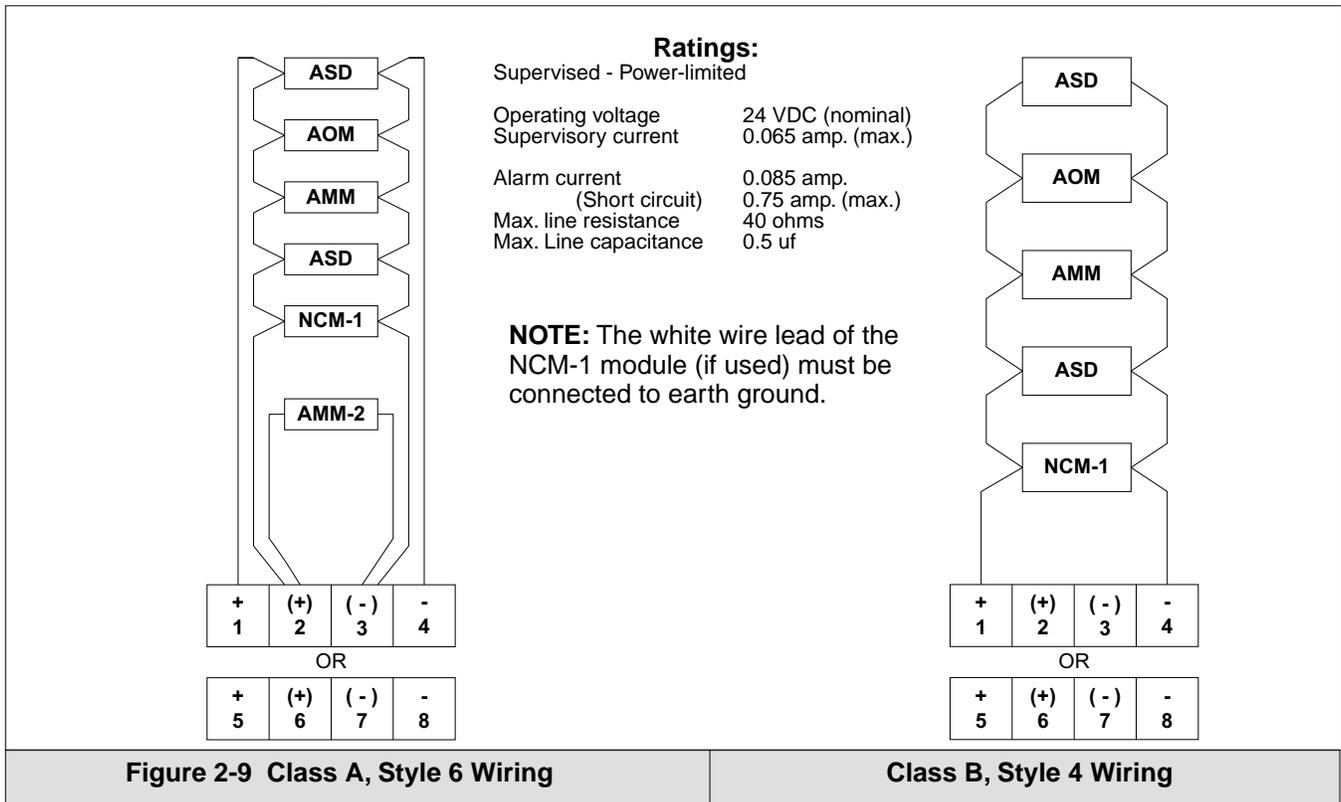
## 2.4.4 Drift Compensation Program

The ALU incorporates a Drift Compensation Program which performs continuous testing of analog devices including sensitivity testing. The program will compensate analog sensors for age and environmental conditions. If a problem should occur to an analog sensor, a "Test Failed", "Dirty" or Very Dirty" indication for the specific sensor will be generated and displayed.

## 2.4.5 Analog Signaling Line Circuit Wiring

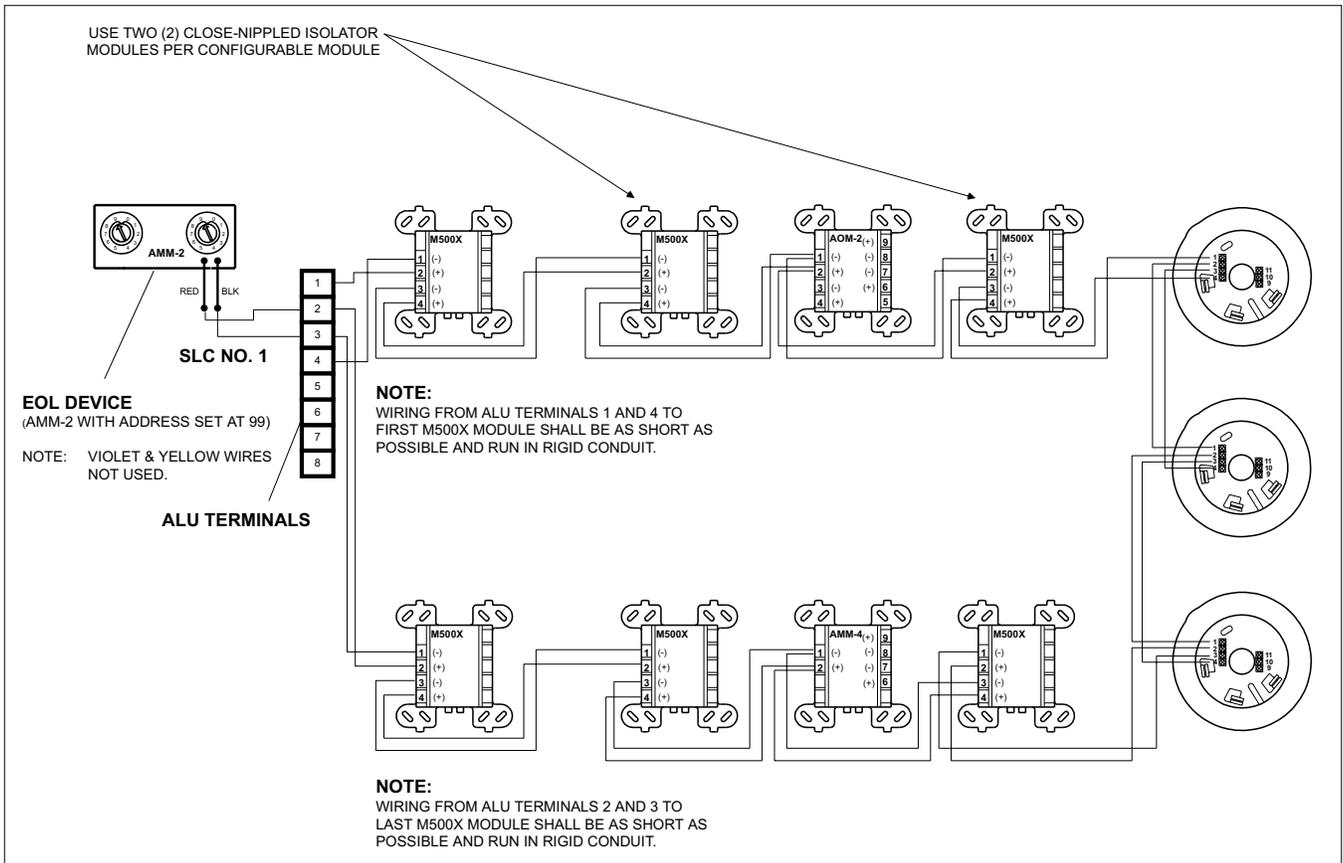
### A. Class A, 4-Wire Wiring Instructions (similar to NFPA Style 6)

- Connect an electronic EOL device (consisting of an AMM-2 module, Address "99") (red wire and black wire) to ALU as shown in Figure 2-9. (Yellow and violet wires not used.)
- Connect field wiring to the analog addressable initiating/control devices as shown in Figure 2-9.
- Be sure to observe polarity.
- Maximum allowable field wiring resistance is 40 ohms per circuit. Use unshielded, twisted pair cable. (See 2.4.1 for exception)
- Maximum circuit capacitance is 0.5 uf.



**NOTICE:** If an AMM-2 module is used in a Class A, Style 6/7 signaling line circuit, any trouble signals from the AMM-2 will not self-restore, but must be acknowledged and reset.

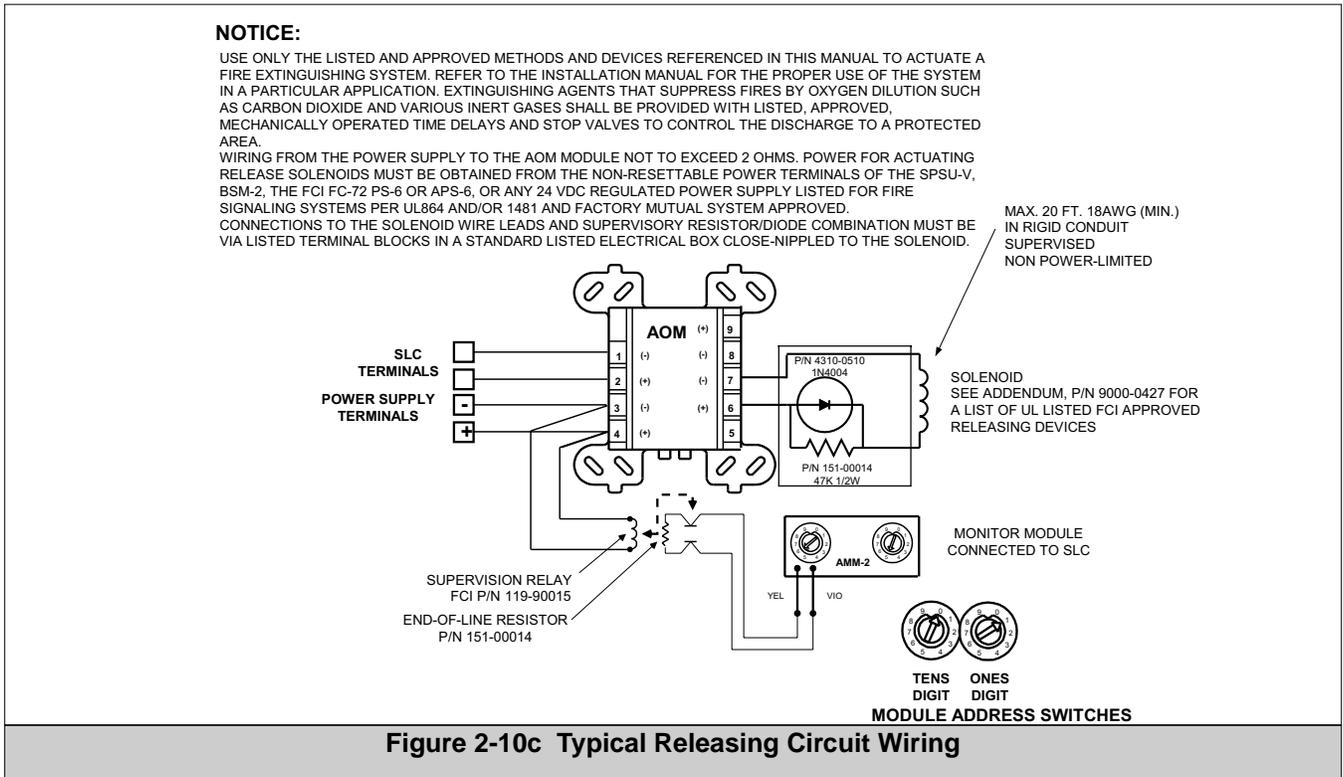




**Figure 2-10b Class A, Style 7 Wiring, with Isolator Bases**

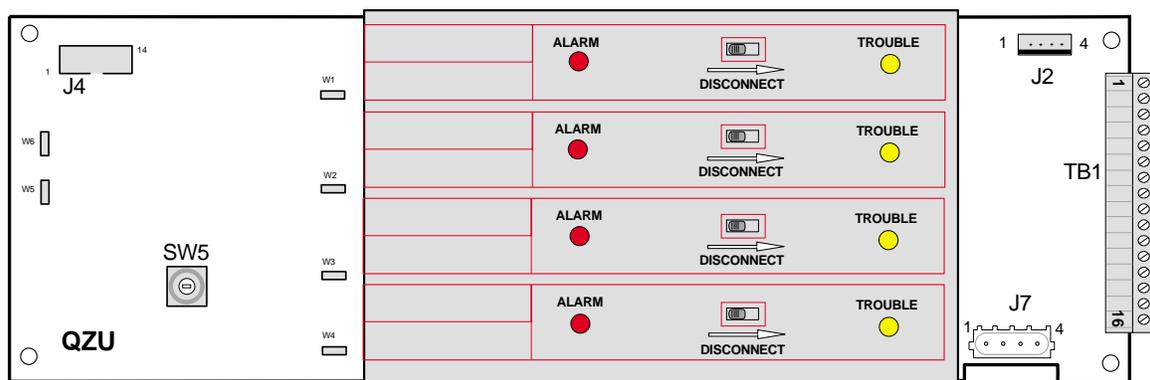
### 2.4.5.1 Releasing Circuit Wiring

See Figure 2-10c for releasing circuit wiring using the AOM-2 or AOM-2S Addressable Output Module.



**Figure 2-10c Typical Releasing Circuit Wiring**

This page is reserved for future use.



**Quad Zone Unit (QZU)/Sprinkler Supervisory Unit (SSU)**

QZU/SSU LED Function Chart	
LED Function	Indicates
Flashing ALARM LED only	Unacknowledged QZU Alarm or SSU Supervisory
Steadily lit ALARM LED only	Acknowledged QZU Alarm or SSU Supervisory
Flashing TROUBLE LED only	Walk Test mode
Steadily lit TROUBLE LED only	Circuit fault
Alternating ALARM and TROUBLE LEDs	Supervisory alarm (QZU only)
Flashing ALARM and TROUBLE LEDs	Circuit Verification

## 2.5 Quad Zone Unit (QZU-L)/Sprinkler Supervisory Unit (SSU - Canada) (Optional)

### 2.5.1 General

The Quad Zone Unit/Sprinkler Supervisory Unit (QZU-L/SSU) provides four (4) Class A, Style D or Class B, Style B initiating device circuits. The QZU/SSU is a full-size unit. Additional QZU-L/SSUs can be added to a maximum of 15 units per system.

The SSU is for use in Canada only. It is identical to the QZU except for yellow "ALARM" LEDs and is for use only with supervisory switches for supervisory signaling.

**Table 2-7 QZU-L/SSU Connections, Jumpers, LEDs**

Designation	Description	Comments
<b>FIELD WIRING CONNECTIONS</b>		
TB1-1, 2, 3, 4	Class B (+) Class A return (+) Class A return (-) Class B (-)	Class A, Style D or Class B, Style B Zone Circuit 1. See Figure 2-13. Supervised
TB1-5, 6, 7, 8	Class B (+) Class A return (+) Class A return (-) Class B (-)	Class A, Style D or Class B, Style B Zone Circuit 2. See Figure 2-13. Supervised
TB1-9, 10, 11, 12	Class B (+) Class A return (+) Class A return (-) Class B (-)	Class A, Style D or Class B, Style B Zone Circuit 3. See Figure 2-13. Supervised
TB1-13, 14, 15, 16	Class B (+) Class A return (+) Class A return (-) Class B (-)	Class A, Style D or Class B, Style B Zone Circuit 4. See Figure 2-13. Supervised
<b>JUMPERS</b>		
W1	Zone 1:	IN for supervision of remote LED annunciator. OUT if supervision is not required or annunciator is not used.
W2		Same as above except Zone 2.
W3		Same as above except Zone 3.
W4		Same as above except Zone 4.
W5		IN if any zone(s) on QZU has coded input.
W6		Factory use (OUT).
<b>LEDs (QZU)</b>		
Zones 1-4	Red	Alarm LED, Zones 1 thru 4.
Zones 1-4	Yellow	Trouble LED, Zones 1 thru 4.
<b>LEDs (SSU)</b>		
Zones 1-4	Yellow	Supervisory LED, Zones 1 thru 4.
Zones 1-4	Yellow	Trouble LED, Zones 1 thru 4.
<b>SWITCHES</b>		
Disconnect (SW1 - SW4)	2-pos. slide sw.	Disconnect /Walk Test Switch, Zones 1 thru 4.
SW5	rotary	16 position address switch. See 2.5.2.
<b>CONNECTORS</b>		
J2	4-pin	To remote zone annunciator.
J4	FCINET®	Communication from J4 of previous unit to J4 of next unit.
J7	4-wire (rd-blk-yel-gry)	Power from J7 of previous unit to J7 of next unit.

**NOTE:** If a zone is disconnected via its disconnect switch and a device on the circuit is put into alarm, the alarm initiating device must be restored to normal and a system reset performed prior to returning the disconnect switch to normal.

### 2.5.1.1 QZU-L Alarm Levels

The QZU-L zones can detect two distinct alarm levels:

- A Level 1 alarm occurs when the resistance across the initiating circuit is approximately 1,000 ohms. A two-wire smoke detector or supervisory sprinkler switch with series resistor will cause a Level 1 alarm which can be verified.
- A Level 2 alarm is detected whenever the resistance is less than 200 ohms. Contact devices, such as manual stations, heat detectors, etc. will cause a Level 2 alarm which cannot be verified.

The number of two-wire detectors which can be used varies with the type of detector. See FCI Addendum, P/N 9000-0427 for a list of these detectors and quantities that can be accommodated per circuit. The compatibility identifier for the QZU-L is QZU01.

### 2.5.2 Address Switch

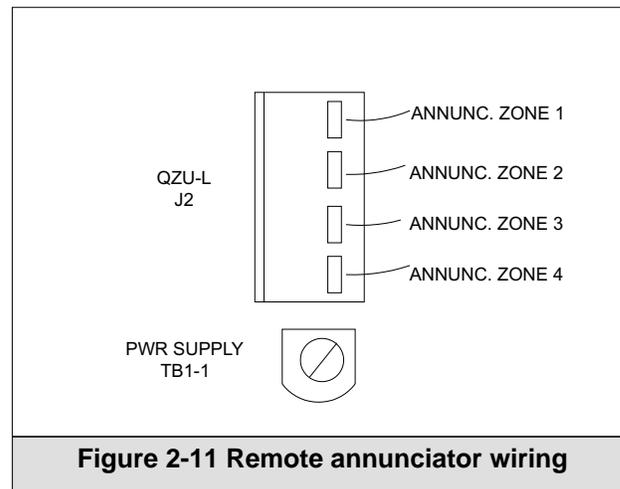
The Address Switch, **SW5**, is a 16-position rotary switch labeled "0" thru "9" and "A" thru "F" (A=10, B=11 . . . F=15). It is located in the lower left section of the unit. If only one QZU-L/SSU is installed, the switch must be set to position "1" (one). The address switch must not be set to "0" (zero) and multiple QZU-L/SSU switches **must not be set to the same address.**

### 2.5.3 Annunciation

A 4-pin cable assembly is furnished with each QZU-L/SSU. Table 2-9 provides annunciator jumper configuration instructions. See Figure 2-12 for wiring.

#### Ratings

Operating voltage	24 VDC (nominal)
Supervisory current	0.007 amp. (max.)
Power limited	
Supervised	



**Figure 2-11 Remote annunciator wiring**

## 2.5.4 Quad Zone Unit/Sprinkler Supervisory Unit (QZU-L/SSU) Wiring

### A. Class B, Style B and Class A, Style D Wiring Instructions

remove the end of line resistor (EOL) from the plug-in terminal block and install it in the last initiating device being monitored. Connect field wiring to the initiating devices as shown in Figure 2-13.

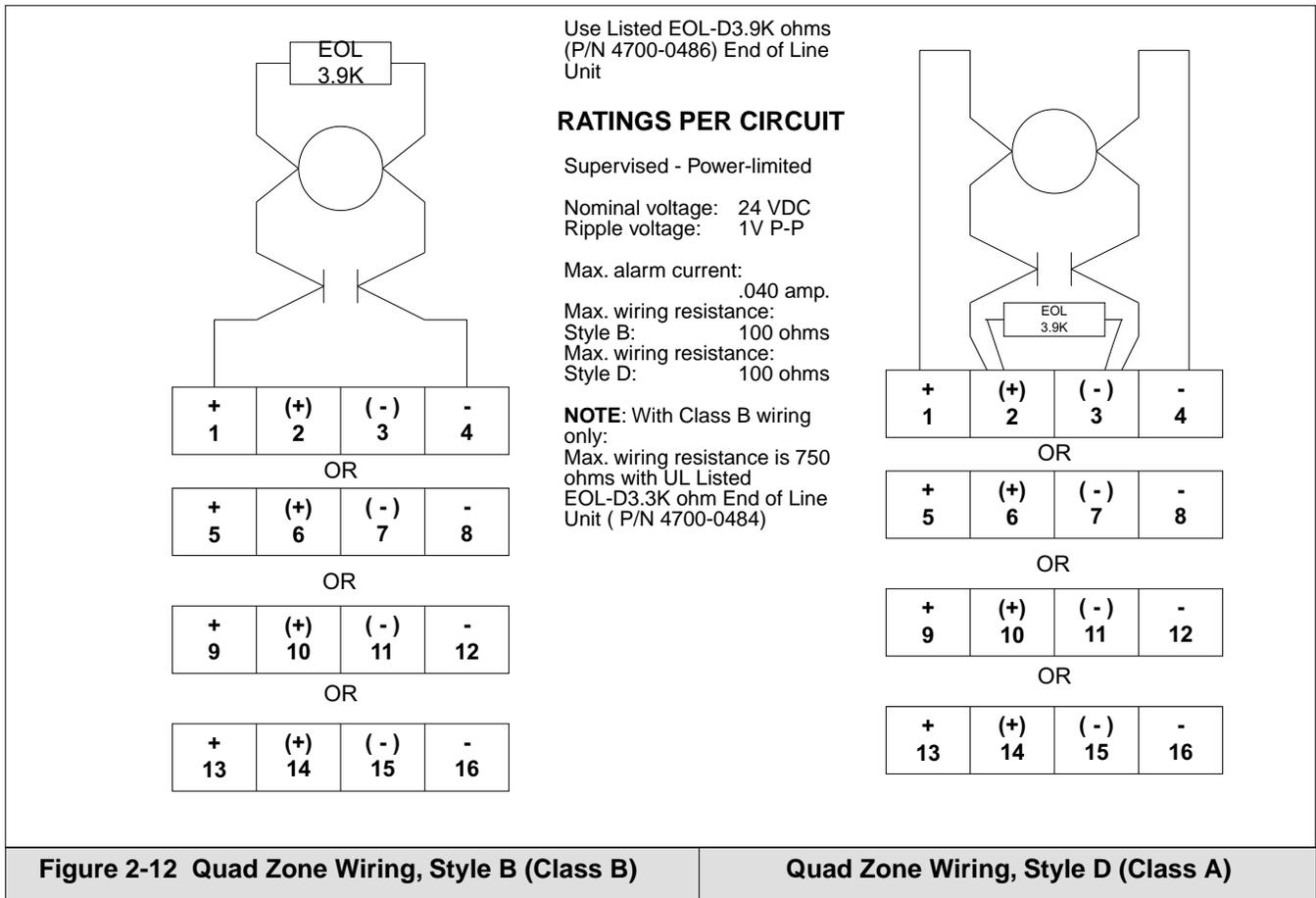
**NOTE:** We recommend that, in a Class B circuit, normally open contact devices be installed electrically closer to the control panel. Removable devices (such as smoke detectors) should be located electrically further from the control panel.

### B. Class A, Style D Wiring Instructions

Connect field wiring to the initiating devices as shown in Figure 2-13.

### C. Waterflow and Supervisory Wiring Instructions

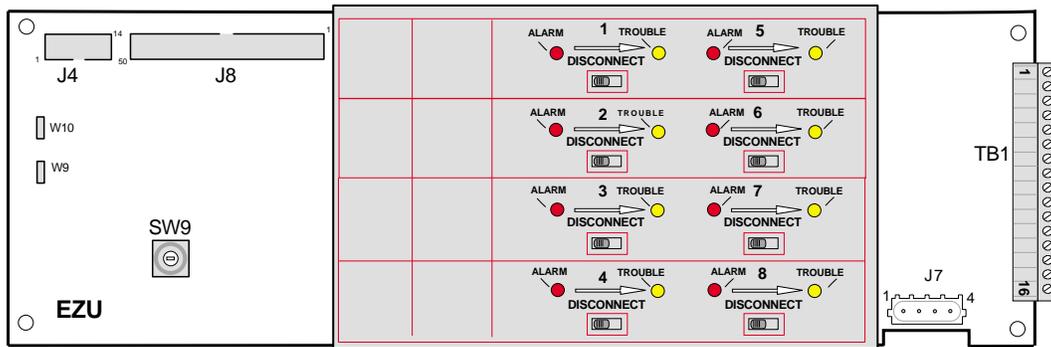
- **If only waterflow switches** are to be used on a circuit, it can be programmed for a Level 2 alarm.
- **If only supervisory switches** are to be used on a circuit, it can be programmed for a Level 1 alarm.
- **If BOTH waterflow and supervisory switches** are to be mixed in the same circuit, the waterflow alarm switches are wired directly across the initiating circuit, and the supervisory switches must have a 1000 ohm resistor inside the device, wired in series with the normally open contacts. This will cause a Level 2 alarm. Use FCI Model EPS-40 supervisory switch or equivalent.



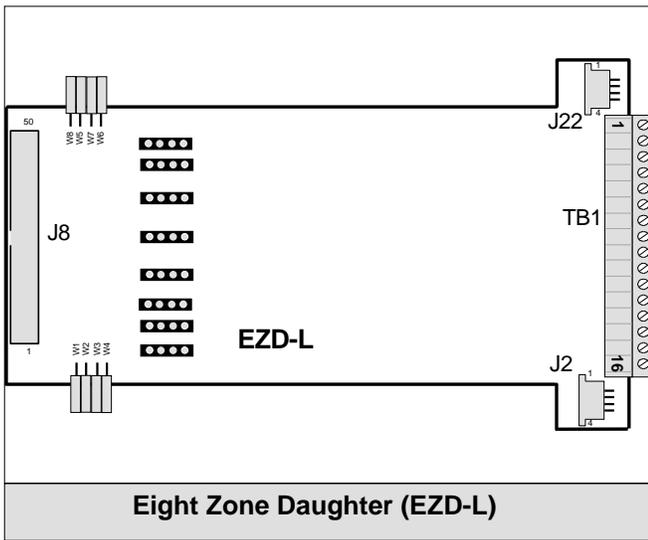
**NOTE:** Only compatible, manufacturer approved, U.L. Listed initiating devices can be used. For a list of compatible two-wire smoke detectors see FCI Addendum, P/N 9000-0427.

### D. SSU Supervisory Wiring Instructions

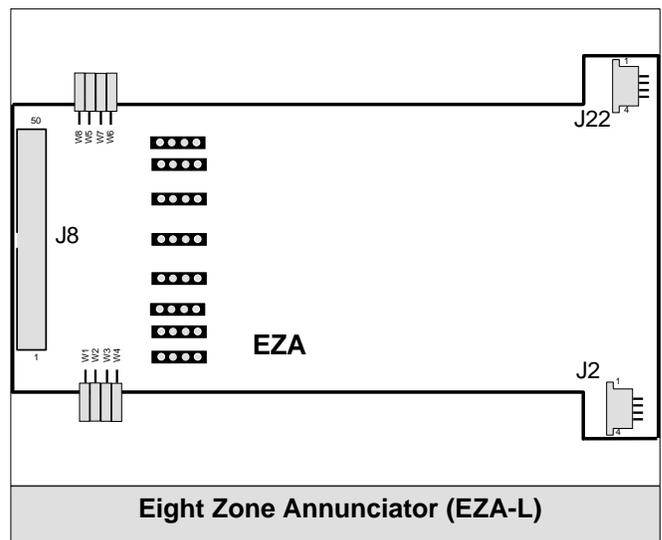
The SSU is Listed by Underwriters Laboratories of Canada for supervisory signaling only. It is Listed for use only with supervisory switches (contact devices). SSU alarms cannot be verified.



**Eight Zone Unit (EZU-L)**



**Eight Zone Daughter (EZD-L)**



**Eight Zone Annunciator (EZA-L)**

**EZU LED Function Chart**

LED Function	Indicates
Flashing ALARM LED only	Unacknowledged EZU-L Alarm
Steadily lit ALARM LED only	Acknowledged EZU-L Alarm
Flashing TROUBLE LED only	Walk Test mode
Steadily lit TROUBLE LED only	Circuit fault
Alternating ALARM and TROUBLE LEDs	Supervisory alarm

## 2.6 Eight Zone Unit (EZU-L), Eight Zone Daughter (EZD-L), Eight Zone Annunciator (EZA-L) (Optional)

### 2.6.1 General

The Eight Zone Unit (EZU-L) provides eight (8) Class B, Style B initiating device circuits. Optional Daughter Board (EZD-L) provides Class A, Style D wiring including annunciator outputs for the EZU-L zones, and Optional Daughter Board (EZA-L) provides annunciator output only. The EZU-L is a full-size unit. Additional EZU-Ls can be added to a maximum of 15 per system.

**Table 2-8 EZU-L/EZD-L/EZA-L Connections, Jumpers, LEDs**

Designation	Description	Comments
<b>EZU FIELD WIRING</b>		
TB1-1	Class B (+)	Class B, Style B zone circuit 1. See Fig. 2-15.
TB1-2	Class B (-)	Class B, Style B zone circuit 1. See Fig. 2-15.
TB1-3,4		Same as above except Zone 2.
TB1-5,6	Supervised	Same as above except Zone 3.
TB1-7,8	Circuits	Same as above except Zone 4.
TB1-9,10		Same as above except Zone 5.
TB1-11,12		Same as above except Zone 6.
TB1-13,14		Same as above except Zone 7.
TB1-15,16		Same as above except Zone 8.
<b>EZD-L FIELD WIRING</b>		
TB1-16	Class A, (+) return	Class A, Style D return for zone circuit 1, See Fig. 2-15.
TB1-15	Class A (-) return	Class A, Style D return for zone circuit 1, See Fig. 2-15.
TB1-14, 13		Same as above except Zone 2.
TB1-12, 11	Supervised	Same as above except Zone 3.
TB1-10, 9	Circuits	Same as above except Zone 4.
TB1-8, 7		Same as above except Zone 5.
TB1-6, 5		Same as above except Zone 6.
TB1-4, 3		Same as above except Zone 7.
TB1-2, 1		Same as above except Zone 8.
<b>JUMPERS (EZD-L/EZA-L)</b>		
W1 thru W8		Zones 1 thru 8 - IN for supervision of remote LED annunciator, OUT if supervision not required or annunciator not used.
<b>JUMPERS (EZU-L)</b>		
W9		Coded input option. IN if any zone(s) on EZU-L has coded input.
W10		Factory use. (OUT)
<b>LEDs (EZU-L)</b>		
Zones 1-8	Red	Alarm LED, Zones 1 thru 8.
Zones 1-8	Yellow	Trouble LED, Zones 1 thru 8.
<b>SWITCHES (EZU-L)</b>		
Disconnect (SW1-SW8)	2-pos . Slide	Disconnect/Walk Test Switch - Zones 1 thru 8.
SW9	rotary	16-position address switch See Sec. 2.6.2.
<b>CONNECTORS (EZU-L)</b>		
J4	FCINET <sup>®</sup>	Communications from <b>J4</b> of previous unit to <b>J4</b> of next unit.
J7	4-wire (rd-blk-yel-gry)	Power from J7 of previous unit to J7 of next unit.
J8	40-pin	Connects to <b>J8</b> of Eight Zone Daughter (EZD-L) or Eight Zone Annunciator (EZA-L).
<b>CONNECTORS (EZD-L/EZA-L)</b>		
J2	4-pin	Zones 1 thru 4 output to remote zone annunciator.
J22	4-pin	Zones 4 thru 8 output to remote zone annunciator.

**NOTE:** We recommend that, in a Class B circuit, normally open contact devices be installed electrically closer to the control panel. Removable devices (such as smoke detectors) should be located electrically further from the control panel.

### 2.6.1.1 EZU-L Alarm Levels

- A Level 1 alarm occurs when the resistance across the initiating circuit is approximately 1,000 ohms. A two-wire smoke detector or supervisory sprinkler switch with series resistor will cause a Level 1 alarm which can be verified.
- A Level 2 alarm is detected whenever the resistance is less than 200 ohms. Contact devices, such as manual stations, heat detectors, etc. will cause a Level 2 alarm which cannot be verified.

The quantity of two-wire detectors which can be used varies with the type of detector. See FCI Addendum, P/N 9000-0427 for a list of these detectors and quantities that can be accommodated per circuit. The compatibility identifier for the EZU-L is EZU01.

### 2.6.2 Address Switch

The Address Switch, **SW9**, is a 16-position rotary switch labeled "0" thru "9" and "A" thru "F" (A=10, B=11 . . . F=15). It is located in the lower left section of the EZU. If only one unit is installed, the switch must be set to position "1" (one). The address switch must not be set to "0" (zero) and multiple EZU-L switches **must not be set to the same address**.

### 2.6.3 Annunciation

Two 4-pin cable assemblies are furnished with each EZD-L/EZA-L. Table 2-8 provides annunciator jumper configuration instructions. See Figure 2-14 for wiring.

#### Ratings

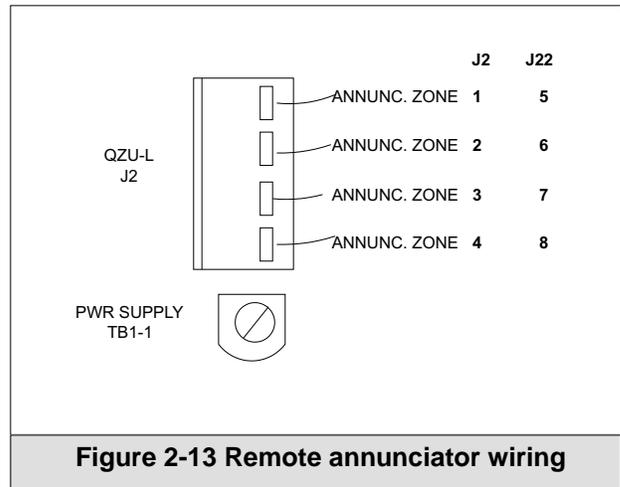
Operating voltage	24 VDC (nominal)
Supervisory current	0.007 amp. (max.)
Power limited	
Supervised	

#### 2.6.3.1 Eight Zone Daughter (EZD-L) (Optional)

The EZD-L mounts directly behind the EZU-L and does not occupy any panel space of its own. Two wires of the Class A, Style D wiring are connected to TB-1 of the EZU-L, while the return pair of wires connect to TB-1 of the EZD-L. See Figure 2-15. The compatibility identifier for the EZD-L is EZD01.

#### 2.6.3.2 Eight Zone Annunciator (EZA-L) (Optional)

The Eight Zone Annunciator (EZA-L) is similar to the EZD-L except it furnishes only supervised, power limited annunciator outputs.



## 2.6.4 Eight Zone Unit (EZU-L) Wiring

### A. Class A, Style D or Class B, Style B Wiring Instructions

Class A, Style D wiring can be used if an Eight Zone Daughter (EZD-L) is installed in conjunction with the EZU-L.

Connect field wiring to the initiating devices as shown in Figure 2-15.

**NOTE:** We recommend that, in a Class B circuit, normally open contact devices be installed electrically closer to the control panel. Removable devices (such as smoke detectors) should be located electrically further from the control panel.

### B. Waterflow and Supervisory Wiring Instructions

- **If only waterflow switches** are to be used on a circuit, it can be programmed for a Level 2 alarm.
- **If only supervisory switches** are to be used on a circuit, it can be programmed for a Level 1 alarm.
- **If BOTH waterflow and supervisory switches** are to be mixed in the same circuit, the waterflow alarm switches are wired directly across the initiating circuit, and the supervisory switches must have a 1000 ohm resistor inside the device, wired in series with the normally open contacts. This will cause a Level 2 alarm. Use FCI Model WFBS-2S supervisory switch or equivalent.

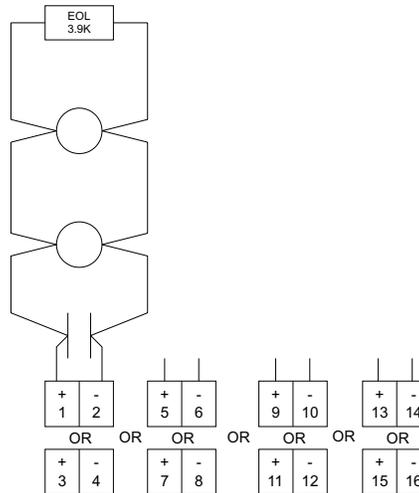
Use Listed EOL-D3.9K ohms (P/N 4700-0486) End of Line Unit  
For Style D wiring, end of line units are permanently mounted on the EZD-L board.

#### RATINGS PER CIRCUIT

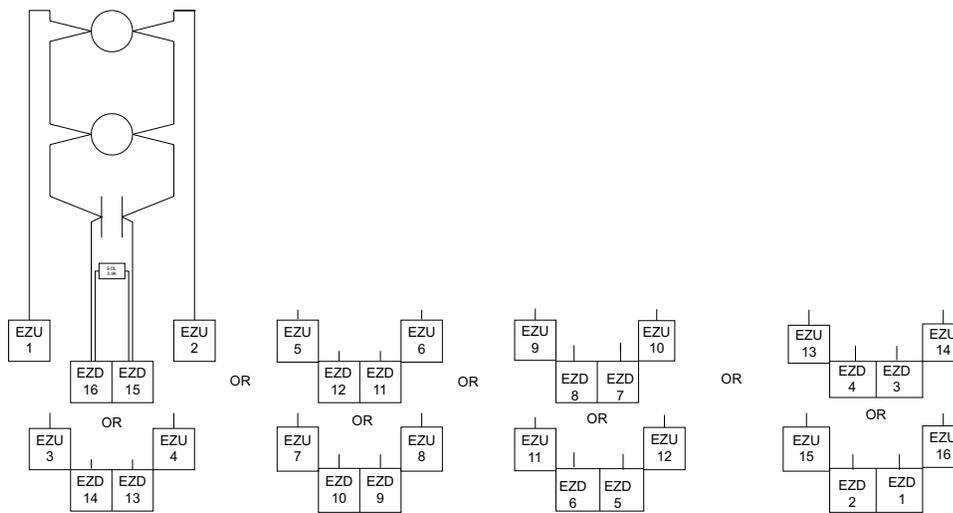
Supervised - Power-limited

Nominal voltage: 24 VDC  
Ripple voltage: 1V P-P  
Max. Det. Load: .0025 amp.  
Max. alarm current: .040 amp.  
Max. wiring resistance:  
Style B: 100 ohms  
Style D: 100 ohms

**NOTE:** With Class B wiring only:  
Max. wiring resistance is 750 ohms with UL Listed EOL-D3.3K ohm End of Line Unit ( P/N 4700-0484)

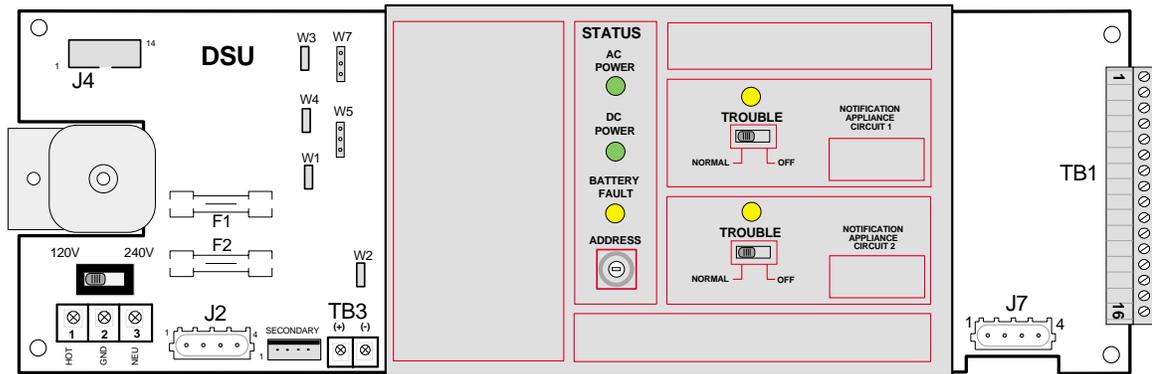


### EZU-L Class B, Style B Wiring



**Figure 2-14 EZU-L/EZD-L Class A, Style D Wiring**

**NOTE:** Only compatible, manufacturer approved, U.L. Listed initiating devices can be used. For a list of compatible two-wire smoke detectors see FCI Addendum, P/N 9000-0427.



Dual Signal Unit (DSU)

DSU LED Function Chart	
<b>LED Function</b> AC POWER	<b>Indicates</b> Presence of AC
DC POWER	Power production
BATTERY FAULT	Low or missing batteries
TROUBLE NAC 1	Trouble in NAC 1
TROUBLE NAC 2	Trouble in NAC 2

## 2.7 The Dual Signal Unit (DSU) ( Optional)

**Table 2-9 DSU Connections, Switches, Jumpers**

<b>FIELD WIRING CONNECTIONS</b>		
TB1-1	Class B (+)	Class B or A, Style Y or Z
TB1-2	Class A return (+)	Notification Appliance Circuit 1. Power limited.
TB1-3	Class A return (-)	Supervised
TB1-4	Class B (-)	
TB1-5	Class B (+)	Class B or A, Style Y or Z
TB1-6	Class A return (+)	Notification Appliance Circuit 2. Power limited.
TB1-7	Class A return (-)	Supervised
TB1-8	Class B (-)	
TB1-9	B+ Control	Connect to power supply TB1-5 (Resettable B+) if resettable B+ is desired on DSU Term. TB1-15. (See Jumper W1 below.)
TB1-12	Notif. Appl.1	Notif. Appl. Circuit 1 remote control. Power limited.
TB1-13	Notif. Appl. 2	Notif. Appl. Circuit 2 remote control. Power limited.
TB1-14	AC Trans. Control	To TB1-14 of pwr supply and all other DSUs. Power limited, supv'd
TB1-15	Aux. Power +	Auxiliary 24 VDC power limited output, configure as resettable or non-resettable. See 2.7.4.
TB1-16	Aux. Power -	Auxiliary 24 VDC power limited output common. See 2.7.4.
TB-2-1	AC "Hot"	"Hot" terminal for 120/240 VAC input. Non-power limited.
TB-2-2	AC "Ground"	"Ground" terminal for 120/240 VAC input. Non-power limited.
TB-2-3	AC "Neutral"	"Neutral" terminal for 120/240 VAC input. Non-power limited.
TB3-1	Battery +	Battery positive (+) terminal. Non-power limited. Supervised
TB3-2	Battery -	Battery negative (-) terminal. Non-power limited. Supervised
<b>SWITCHES</b>		
AC (SW1)	120-240 VAC	Select for 120 VAC or 240 VAC input operation.
SW2	rotary	16-position address switch. See 2.7.2
Disconnect (SW5)	Notification 1	Disconnect switch for Notification Appliance Circuit 1.
Disconnect (SW6)	Notification 2	Disconnect switch for Notification Appliance Circuit 2.
<b>JUMPERS</b>		
W1		IN if auxiliary power output is to be resettable, OUT if not. (see TB1-9 above)
W2		Factory use. (OUT)
W3		IN for coding of Notification Appliance Circuit 1.
W4		IN for coding of Notification Appliance Circuit 2.
W5		Notification Appliance Circuit 2 Degrade operation: OUT - Circuit will not energize. "SIL" position - Circuit energizes, can be silenced. "NS" position - Circuit energizes, cannot be silenced.
W7		Same as <b>W5</b> , except controls Notification Appliance Circuit 1
<b>CONNECTORS</b>		
J2	2-wire (blk, blk)	Transformer primary.
J3	4-wire (2 yel, 2 orn)	Transformer secondary.
J4	FCINET <sup>®</sup>	Communications from <b>J4</b> of previous unit to <b>J4</b> of next unit.
J7	4-wire (rd-blk-yel-gry)	Power from J7 of previous unit to J7 of next unit.
J9		Future use.
<b>FUSES</b>		
F1	6.25 A. Slo-Blo	Main power fuse.
F2	6.25 A. Slo-Blo	Battery fuse.

### 2.7.1 General

The Dual Signal Unit is mounted in the lowest available position in the cabinet to allow proper connection to the associated transformer (ordered separately). It provides 1.75 amperes of auxiliary power and two (2) 1.75 amp. notification appliance circuits with a total of 4 amperes from all circuits combined. Connections are shown in Table 2-9. The DSU is a full-unit size. Additional DSUs can be added to a maximum of fifteen (15) per system.

### 2.7.2 Address Switch

The Address Switch, **SW2**, is a 16-position rotary switch labeled "0" thru "9" and "A" thru "F" ( A=10, B=11 . . F=15). It is located in the central section of the DSU. If only one DSU is installed, the switch must be set to position "1" (one). The switch must not be set to "0" (zero), and multiple DSU switches **must not be set to the same address**.

### 2.7.3 AC Input

The DSU contains a 3-terminal strip, **TB2** , in the lower left corner for connection to a 120 VAC source fused at 2 amperes. (Non-power limited). Set Switch **S1** in the left position. This connection must be to a dedicated branch circuit and mechanically protected. All means of disconnecting the circuit must be clearly marked "FIRE ALARM CIRCUIT CONTROL" and accessible only to authorized personnel. Fusing of this circuit must comply with local codes for over current protection, and/or Article 760 "FIRE PROTECTIVE SIGNALING SYSTEMS" of the National Electrical Code, NFPA 70. See Figure 2-16.

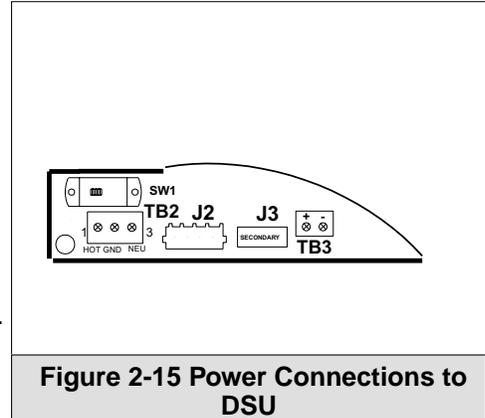


Figure 2-15 Power Connections to DSU

### 2.7.4 External Power Outputs

**NOTE:** If the transformer connector with orange/yellow leads is incompatible with DSU connector **J3**, use adapter, P/N 6100-0055.

**NOTICE: DO NOT APPLY POWER TO THE DSU BEFORE APPLYING POWER TO THE SPSU/V.** Power must be applied to the DSU AT THE SAME TIME or AFTER power is applied to the SPSU/V.

Terminal **TB1-15** is jumper configurable to provide 1.75 amp. @ 24 VDC auxiliary power output resettable OR non-resettable, power limited. This output must be used in conjunction with Terminal **TB1-16** (- COMMON). It may be used to furnish operating power for FM-900 Series door holders, SPB-24 four-wire smoke detectors or any other auxiliary devices. See Table 2-9 for jumper instructions.

### 2.7.5 Standby Battery Connections

Terminal **TB3-1** (+) must be connected to Battery (+). Terminal **TB3-2** (-) must be connected to Battery (-). Non-power limited. See Figure 2-16.

**NOTE:** The DSU supervises battery connections, but does not have battery charging capabilities.

**NOTICE: The battery standby wiring and field connections have been changed in accordance with latest UL requirements. Units shipped prior to May 1, 1995 have different standby battery wiring and field connections. If the original instructions are not available, contact the factory Technical support Dept.**

**NOTICE: THE MAXIMUM AMOUNT OF CURRENT THAT CAN BE DRAWN FROM THE DSU MUST NOT EXCEED 4.0 AMPERES. (Nominal 24 VDC, non-regulated)**

## 2.7.6 Notification Appliance Circuits

Each notification appliance circuit is power limited, overload protected and individually supervised for opens, grounds and short circuits.

### A. Wiring Instructions

See Figure 2-17 for Class B, Style Y and Class A, Style Z wiring connections.

### B. Jumper instructions

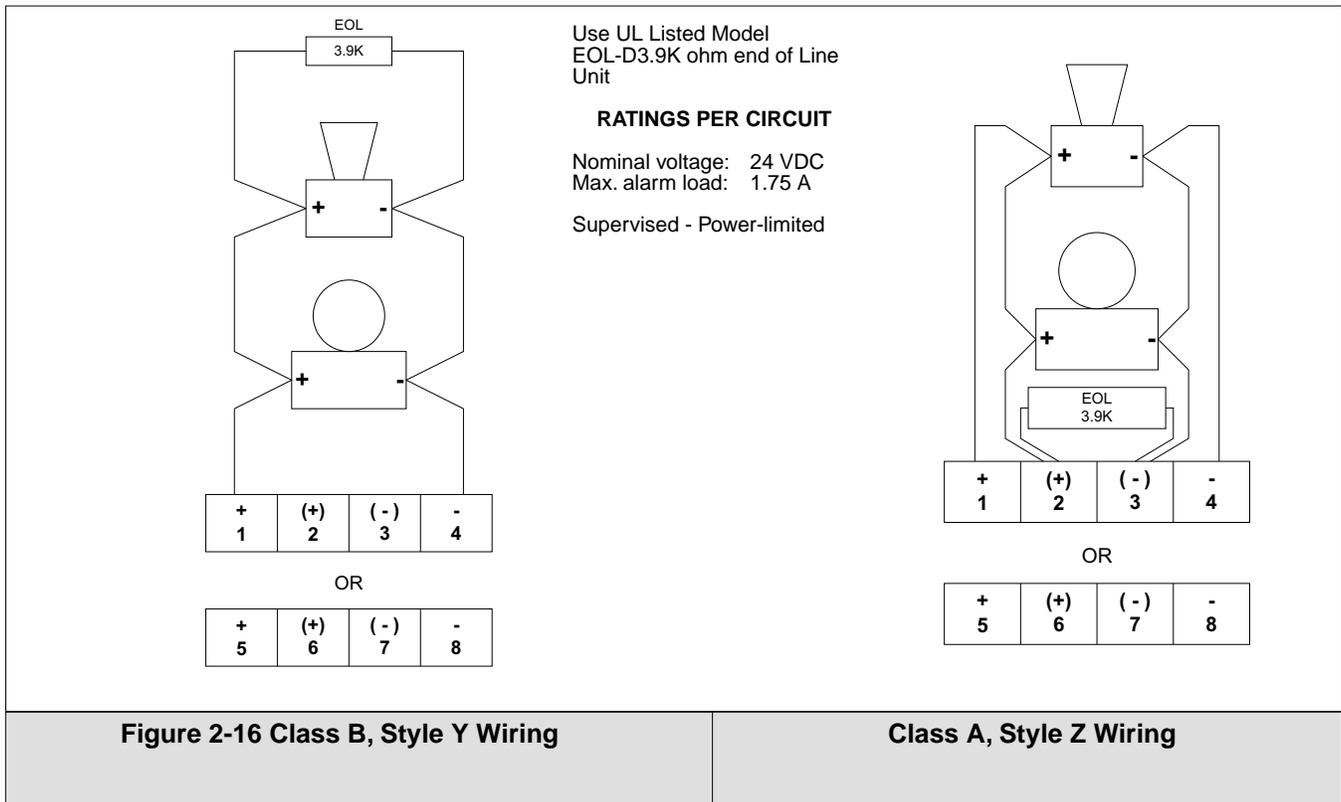
See Table 2-8 for jumper instructions. Jumpers **W3** and **W4** are left out for non-coded operation.

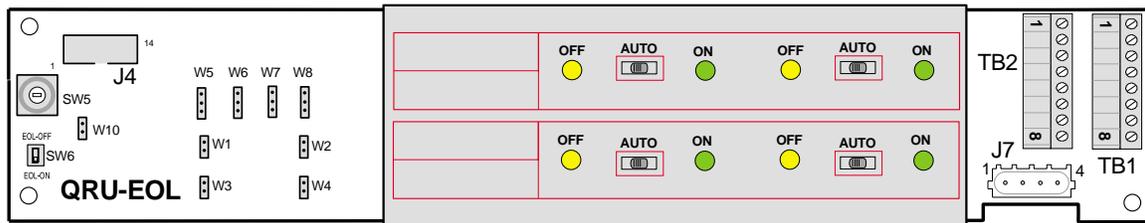
#### 2.7.6.1 Coded Patterns

See Section 2.2.4.1 for a list of Temporal and other coded patterns available.

## 2.7.7 Approved Notification Appliances

See FCI Addendum, P/N 9000-0427 for a list of notification appliances approved for use with this module.





**Quad Relay Unit (QRU)**

## 2.8 Quad Relay Unit (QRU/QRU-EOL) (Optional)

### 2.8.1 General

The Quad Relay Unit (QRU) provides four, (4) independent Form “C” (SPDT) relay contacts, each rated 2 A. @ 30 VDC (resistive). Each relay may be controlled via software or from a 24 VDC input. The contacts are intended for connection to circuits powered from a Listed power limited source of supply. See Table 2-10 below for information regarding LEDs and jumpers.

The QRU-EOL is identical to the QRU with the added feature of providing FCINET® Class A, Style 6 communications. (QRU-EOL P/N 1120-0586, Rev. B)

The QRU/QRU-EOL is half-unit size. Additional QRUs can be added to a maximum of fifteen (15) per system.

**Table 2-10 QRU Connections, Jumpers, LEDs, Switches**

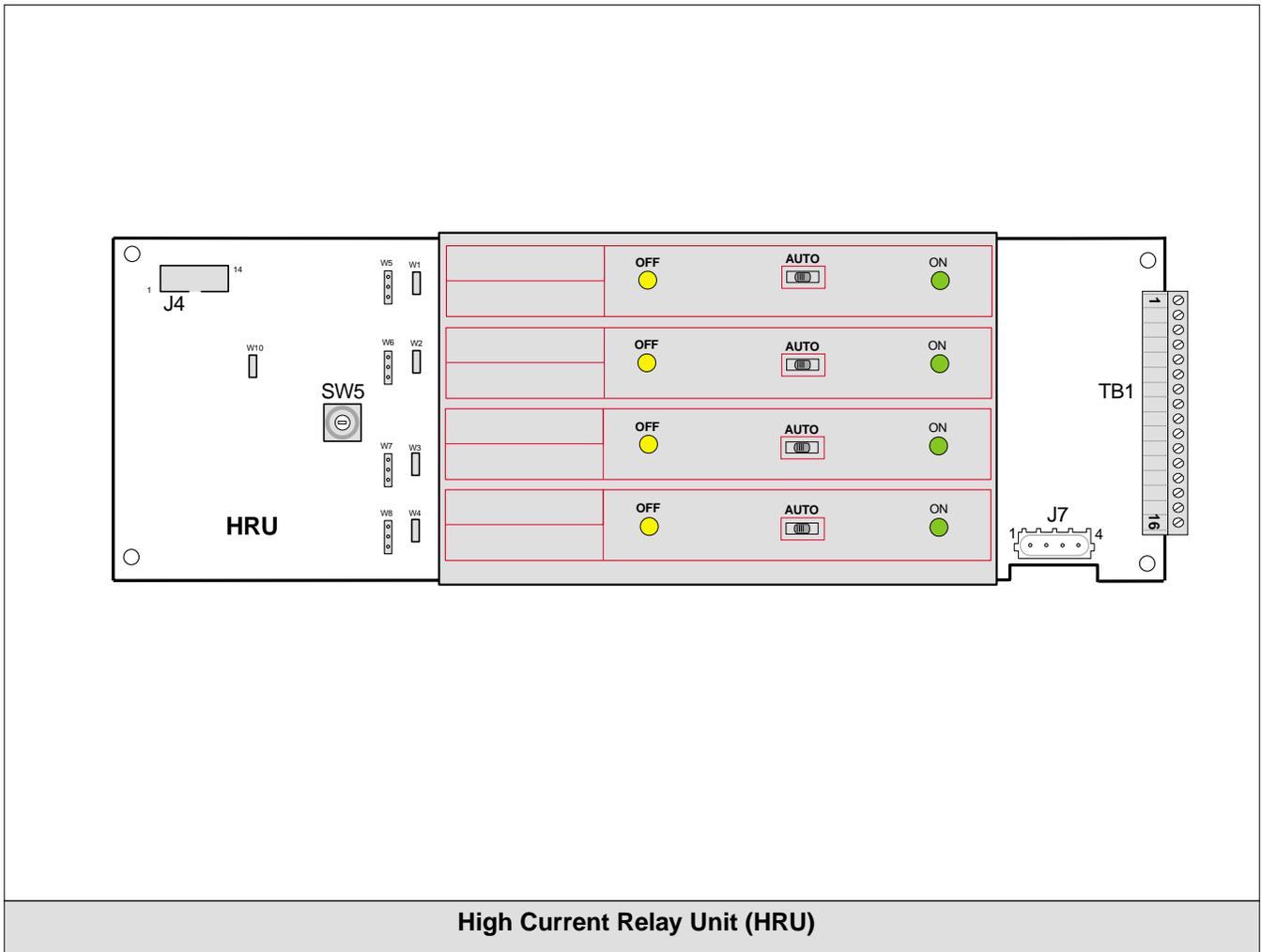
Table 2-10 QRU Connections, Jumpers, LEDs, Switches					
<b>FIELD WIRING CONNECTIONS</b>					
Circuit	Term. Brd	Input Term. +24 VDC	N/C Terminal	Common Terminal	N/O Terminal
1	TB1	TB1-4	TB1-1	TB1-2	TB1-3
2	TB1	TB1-8	TB1-5	TB1-6	TB1-7
3	TB2	TB2-4	TB2-1	TB2-2	TB2-3
4	TB2	TB2-8	TB2-5	TB2-6	TB2-7
Designation	Description	Comments			
<b>JUMPERS</b>					
W1 thru W4		Code, Non-code control for Relays 1 thru 4, respectively. IN - If relay is to follow system coded output. OUT - For steady operation regardless of system output pattern.			
W5 thru W8		Degrade Mode operation for Relays 1 thru 4, respectively: OUT - Relays do not energize. “SIL” position - Relays energize, can be silenced. “NS” position - Relays energize, cannot be silenced.			
W10		Factory use. (OUT)			
<b>LEDs</b>					
Relay 1 OFF	Yellow	Lights when relay is disconnected or in trouble.			
Relay 1 ON	Green	Lights when relay is energized.			
Relay 2 OFF	Yellow	Lights when relay is disconnected or in trouble.			
Relay 2 ON	Green	Lights when relay is energized.			
Relay 3 OFF	Yellow	Lights when relay is disconnected or in trouble.			
Relay 4 OFF	Yellow	Lights when relay is disconnected or in trouble.			
Relay 4 ON	Green	Lights when relay is energized.			
<b>SWITCHES</b>					
AUTO/OFF/ON (SW1 thru SW4)	3-pos. slide sw.	Switches for Relays 1 thru 4.			
SW5	rotary	16-position address switch. See 2.8.2			
SW6 (P/N 1120-0586 Rev. B)	Rocker	“EOL OFF” position for normal operation “EOL ON” position when QRU is used as EOL unit for Style 6 operation. See Section 2.13			
<b>CONNECTORS</b>					
J4	FCINET®	Communications from J4 of previous unit to J4 of next unit.			
J7	4-wire (rd-blk-yel-gry)	Power from J7 of previous unit to J7 of next unit.			

### 2.8.2 Address Switch

The Address Switch, **SW5**, is a 16-position rotary switch labeled "0" thru "9" and "A" thru "F" (A=10, B=11 . . . F=15). It is located to the left of the overlay on the QRU. If only one unit is installed, the switch must be set to position "1" (one). The address switch must not be set to "0" (zero) and multiple QRU switches **must not be set to the same address**.

### 2.8.3 Quad Relay Unit Wiring

Connect wiring to terminals on the QRU as shown in Table 2-10.



## 2.9 High Current Relay Unit (HRU) (Optional)

### 2.9.1 General

The High Current Relay Unit (HRU) provides four, (4) independent Form “C” (SPDT) relay contacts, each rated 5A @ 24 VDC/120 VAC (resistive), or 1.6 HP @ 120 VAC. Each relay may be controlled via software or from a 24 VDC input. See Table 2-11. A protective cover is provided for the terminal block for use when 120 VAC is controlled by the relays. Per UL requirements, if non-power limited wiring is connected to Terminal Block TB1, wiring to this terminal block will be non-power limited and must be routed via conduit from a knock-out on the side of the cabinet opposite from any power limited circuits.

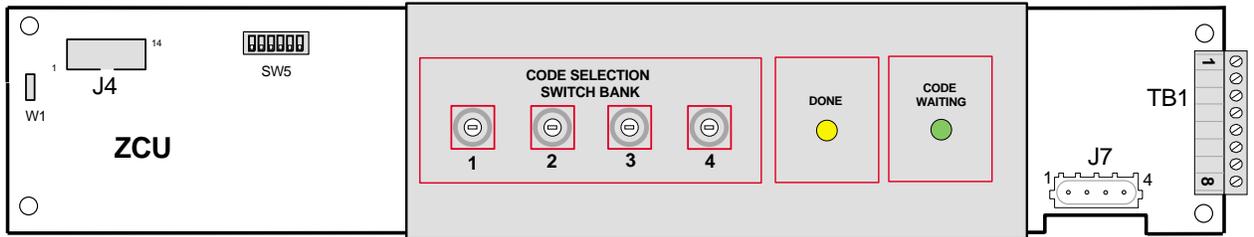
The HRU is full-unit size. Additional HRUs can be added to a maximum of fifteen (15) per system.

**Table 2-11 HRU Connections, Jumpers, LEDs, Switches**

Circuit	Term Brd	Input Term. +24 VDC	N/C Terminal	Common Terminal	N/O Terminal
<b>FIELD WIRING CONNECTIONS</b>					
1	TB1	TB1-4	TB1-1	TB1-2	TB1-3
2	TB1	TB1-8	TB1-5	TB1-6	TB1-7
3	TB1	TB1-12	TB1-9	TB1-10	TB1-11
4	TB1	TB1-16	TB1-13	TB1-14	TB1-15
<b>Designation</b>	<b>Description</b>	<b>Comments</b>			
<b>JUMPERS</b>					
W1 thru W4		Relays 1 thru 4, respectively. IN if relay is to follow system coded output. OUT for steady operation regardless of system output pattern.			
W5 thru W8		Degrade Mode operation for Relays 1 thru 4, respectively: OUT - Relays do not energize. “SIL” position - Relays energize, can be silenced. “NS” position - Relays energize, cannot be silenced.			
W9		Factory use. (OUT)			
W10		Factory use. (OUT)			
<b>LEDs</b>					
Relay 1 OFF	Yellow	Lights when relay is disconnected or in trouble.			
Relay 1 ON	Green	Lights when relay is energized.			
Relay 2 OFF	Yellow	Lights when relay is disconnected or in trouble.			
Relay 2 ON	Green	Lights when relay is energized.			
Relay 4 ON	Green	Lights when relay is energized.			
<b>SWITCHES</b>					
AUTO/OFF/ON (SW1 - SW4)	3-pos. slide sw.	Switch for Relays 1 thru 4.			
SW5	rotary	16-position address switch. See 2.9.2			
<b>CONNECTORS</b>					
J4	FCINET®	Communications from <b>J4</b> of previous unit to <b>J4</b> of next unit.			
J7	4-wire (Rd-blk-yel-gry)	Power from J7 of previous unit to J7 of next unit.			

### 2.9.2 Address Switch

The Address Switch, **SW5**, is a 16-position rotary switch labeled “0” thru “9” and “A” thru “F” (A=10, B=11 . . . F=15). It is located to the left of the overlay on the HRU. If only one unit is installed, the switch must be set to position “1” (one). The address switch must not be set to “0” (zero) and multiple HRU switches **must not be set to the same address**.



**Zone Coder Unit (ZCU)**

## 2.10 Zone Coder Unit (ZCU) (Optional)

### 2.10.1 General

The Zone Coder Unit (ZCU) provides multiple Positive, Non-interfering, and Successive (PNIS) coded output patterns which are used to code jumper-selected audible notification appliance and relay circuits. In the event of multiple code activations, the first code activated will be transmitted, while up to eight (8) alarm codes will await their turn to sound. It also monitors system alarm activity to avoid interference from coded devices on the QZU/EZU circuits. The largest 4-digit code is 6-6-6-6, while the largest 3-digit code is 13-13-13.

The ZCU contains a “Pre-code Alert” feature. Upon receipt of the first code, the notification appliances sound steadily for five seconds, and then are silenced for three seconds before starting the code.

The ZCU also features a “Post-code Pattern”. Upon completion of all codes, the ZCU can cause a fixed code or march-time pattern to sound on all notification appliance circuits until silenced, reset, or interrupted by a subsequent coded alarm.

The ZCU is a half-unit size and only one (1) ZCU can be installed in a 7200 Series.

**NOTE:** The ZCU cannot be used in conjunction with the FireVac<sup>®</sup>7200 Emergency Voice/Alarm Communication System.

**Table 2-12 ZCU Connections, Jumpers, LEDs, Switches**

Designation	Description	Comments
<b>FIELD WIRING CONNECTIONS</b>		
TB1-1	First round (C)	Relay 1 first round relay contact Common (C)
TB1-2	First round (N/C)	Relay 1 first round relay contact Normally Closed (N/C)
TB1-3	First round (N/O)	Relay 1 first round relay contact Normally Open (N/O)
TB1-4		Not used
TB1-5		Not used
TB1-6	Last round (C)	Relay 2 first round relay contact Common (C)
TB1-2	Last round (N/C)	Relay 2 first round relay contact Normally Closed (N/C)
TB1-3	Last round (N/O)	Relay 2 first round relay contact Normally Open (N/O)
<b>JUMPER</b>		
W1		Factory use (OUT)
<b>LEDs</b>		
LED1 (yellow)	CODE WAITING	Lights to indicate an additional coded pattern is awaiting its turn.
LED2 (Yellow)	DONE	Lights to indicate all coded patterns are complete.
<b>SWITCHES</b>		
SW1 thru SW4	Coding	Set 1st thru 4th digits of coded pattern. (Front panel programming)
SW5	DIP	Selects code speed, number of rounds.
<b>CONNECTORS</b>		
J4	FCINET <sup>®</sup>	Communication from <b>J4</b> of previous unit to <b>J4</b> of next unit.
J7	4-wire (Rd-blk-yel-gry)	Power from <b>J7</b> of previous unit to <b>J7</b> of next unit.

### 2.10.2 Relays

The ZCU provides two relay outputs, each rated 2 A. @ 30 VDC (resistive). They are intended for connection to circuits powered from a Listed power limited source of supply.

- **Relay 1** - Energizes at the conclusion of the first round of the first code. It remains energized until the system is reset.
- **Relay 2** - Energizes at the conclusion of the last round of the first code and remains energized until the system is reset.

## 2.10.3 Generating Coded Patterns

### 2.10.3.1 Configuration

1. Set the System Control Unit (SCU) for a non-code (steady) notification appliance pattern. ALL fixed codes must be generated by the ZCU only.
2. Arrange the desired audible notification appliance circuits and/or relay outputs for coded operation via the jumpers on each unit.
3. If coded initiating devices (such as coded stations) are to be used in conjunction with the ZCU, the coded devices should all be wired into the same initiating device circuit so the coded devices will not interfere with each other. If this is not practical, we recommend that the coded devices be connected to circuits in the same QZU or EZU. In this case, the QZU or EZU will prevent the different circuits from interfering with each other.

**NOTE:** While the 7200 Series control can prevent interference between zone circuits, it cannot prevent loss of signals if more than one coded initiating device is actuated simultaneously.

### 2.10.3.2 Programming

The ZCU can be front-panel or FCP programmed. A DIP switch is provided on the ZCU for timing between pulses and post-code patterns. Refer to Table 2-13.

Please note the following:

- Each coded digit must consist of no more than 6 pulses.
- ZCU codes can contain either three or four digits only.
- The “zero” setting of the coding switches cannot be used for any of the first three digits. However, the “zero” setting may be used to suppress the fourth digit when a three-digit code is desired.
- Per NFPA Standards, no round of code may consist of fewer than 3 impulses, and systems must sound a minimum of three (3) rounds of code.

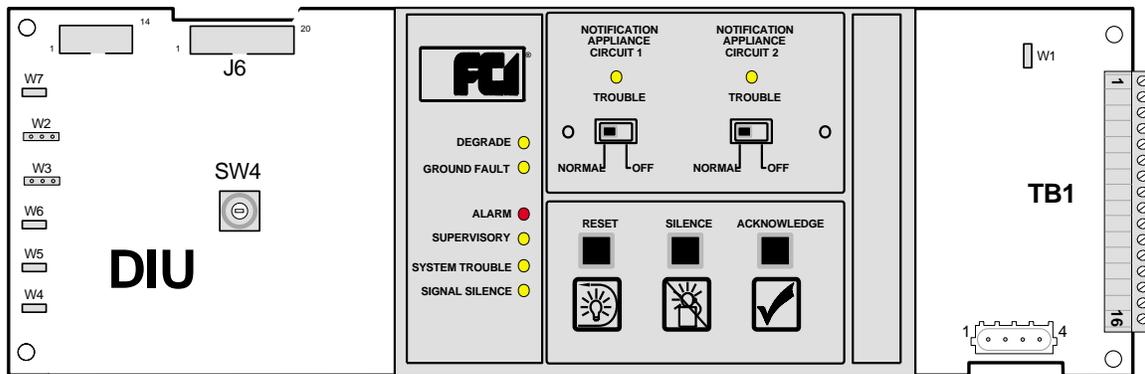
The ZCU also features a “Post-code Pattern”. Upon completion of all codes, the ZCU can cause a fixed code or march-time pattern to sound on all notification appliance circuits until silenced, reset, or interrupted by a subsequent coded alarm.

The ZCU is a half-unit size and only one (1) ZCU can be installed in a 7200 Series.

**Table 2-13 ZCU DIP Switch Settings**

Position					Result
1	2	3	4	5	
OFF					1/2 second between pulses
ON					1 second between pulses
	OFF				3 rounds of code
	ON				4 rounds of code
<b>Post-code Patterns: (sound after zone codes are complete)</b>					
	OFF	OFF	OFF		Continuous non-code (steady)
	ON	OFF	OFF		Continuous March Time 120 BPM
	OFF	ON	OFF		Continuous March Time 60 BPM
	OFF	OFF	ON		Continuous repeat of final zone code SW1 thru SW4 set to “zero”
	ON	OFF	ON		Continuous repeat of code set on rotary switches. SW1 thru SW4 set to desired code
	ON	ON	ON		Stop after selected number of rounds.
	OFF	ON	ON		ATT-1S (Special chip only)

This page is reserved for future use.



Distributed Intelligent Unit (DIU)

## 2.11 Distributed Intelligent Unit (DIU) (Optional)

### 2.11.1 General

The Distributed Intelligent Unit (DIU) mounts in a remote CAB-B, -C or -D enclosure with an SPSU-V power supply unit. It can also mount in a CAB-A enclosure with an SPSU power supply unit. The DIU has its own ground fault detection circuitry and controls other optional units. When the DIU is mounted in the CAB-A, only ALUs may be mounted as optional units.

The primary function of the DIU is to coordinate the auxiliary degrade alarm circuit (ADAC<sup>®</sup>) at a remote location in the event of a loss of FCINET<sup>®</sup> communications.

The DIU may be located up to 4,000 feet from the SCU via twisted pair cable and is opto-isolated from the SCU and other DIUs.

**Table 2-14 DIU Field Wiring Connections, Jumpers, etc.**

Designation	Description	Comments
<b>FIELD WIRING CONNECTIONS</b>		
TB1-1		Not used.
TB1-2		Not used.
TB1-3	COM A	FCINET <sup>®</sup> Supervised
TB1-4	COM B	FCINET <sup>®</sup> Supervised
TB1-5		External Trouble Input.
TB1-6		Not used.
TB1-7		Coded input (+) from dedicated SCU NAC.
TB1-8		Coded input (-) from dedicated SCU NAC.
TB1-9	Class B (+)	Class B or A, Style Y or Z - Notification Appliance Circuit 1 Supervised
TB1-10	Class A return (+)	
TB1-11	Class A return (-)	
TB1-12	Class B (-)	
TB1-13	Class B (+)	Class B or A, Style Y or Z - Notification Appliance Circuit 2 Supervised
TB1-14	Class A return (+)	
TB1-15	Class A return (-)	
TB1-16	Class B (-)	
<b>JUMPERS</b>		
W1		Factory use (OUT).
W2		Notification Appliance Circuit 1 Degrade operation: OUT - Circuit will not energize. "SIL" position - Circuit energizes, can be silenced. "NS" position - Circuit energizes, cannot be silenced.
W3		Same as W2, except controls Notification Appliance Circuit 2.
W4		IN when coded input is connected to TB1-7, TB1-8. OUT for non-coded operation.
W5		IN for coding of Notification Appliance Circuit 1.
W6		IN for coding of Notification Appliance Circuit 2.
W7		Factory Use (OUT).
<b>SWITCHES</b>		
Silence	SW1	Silences all active "silenceable" outputs. (Pressing switch toggles "ON/OFF")
Acknowledge	SW2	Acknowledges system events.
Reset	SW3	Resets entire system. (Hold for five seconds).
	SW4	rotary 16-position address switch. See 2.11.2.
<b>CONNECTORS</b>		
J4	FCINET <sup>®</sup>	Communication harness, connects to <b>J4</b> of the next unit.
J6	Pwr Comm.	20-conductor cable connecting to power supply.

**Ratings:**

Operating voltage	24 VDC (nominal)
Supervisory current	0.017 amp. (max.)
Coded input Current	0.006 amp. (From dedicated SCU notification appliance circuit.)
Power limited	

**2.11.2 Address Switch**

The Address Switch, **SW4**, is a 16-position rotary switch labeled "0" thru "9" and "A" thru "F" (A=10, B=11 . . F=15). It is located in the left section of the DIU. If only one DIU is installed, the switch must be set to position "1" (one). The address switch must not be set to "0" (zero) and multiple DIU switches **must not be set to the same address**.

**2.11.3 Coding**

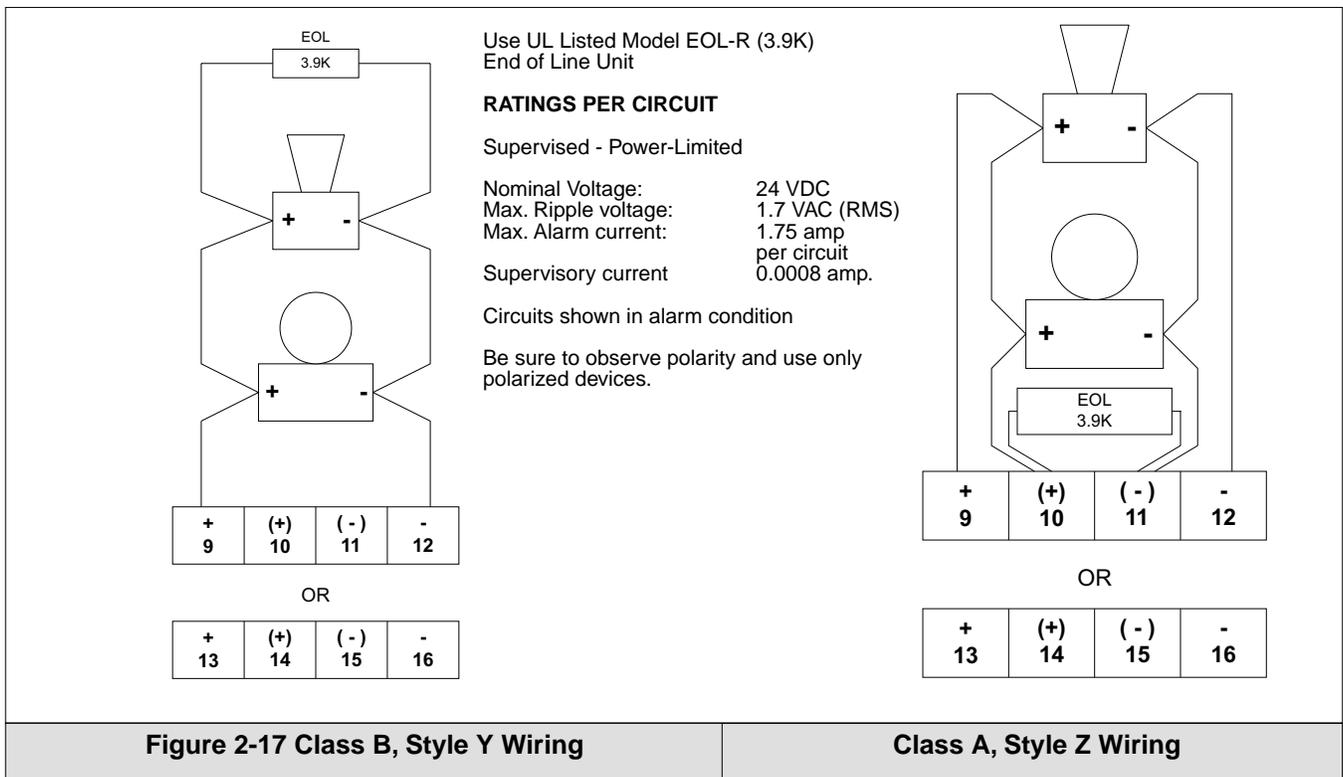
The DIU allows Temporal Pattern and other coding of its notification appliance circuits, as well as coding of any additional notification appliance circuits or relays located with it. The coded pattern originates from a dedicated notification appliance circuit of the SCU which must be wired for coding capabilities. See Table 2-14 for jumper information.

**2.11.4 Notification Appliance Circuits**

The DIU provides two (2) notification appliance circuits which are overload protected and individually supervised for opens, grounds and short circuits.

**A. Wiring Instructions**

See Figure 2-18 for Class B, Style Y and Class A, Style Z wiring instructions.



**2.11.5 Approved Notification Appliances**

See FCI Addendum, P/N 9000-0427 for a list of notification appliances approved for use with this unit.

This page is reserved for future use.

### 2.11.6 Primary FCINET<sup>®</sup> Wiring

The FCINET<sup>®</sup> can be wired in "star", "home run" or "daisy chain" configuration. See Figures 2-19, 2-20 and 2-21.

**NOTE:** FCI recommends that all outdoor FCINET and coded signal wiring be installed underground in dedicated, metallic conduit, or approved equal.

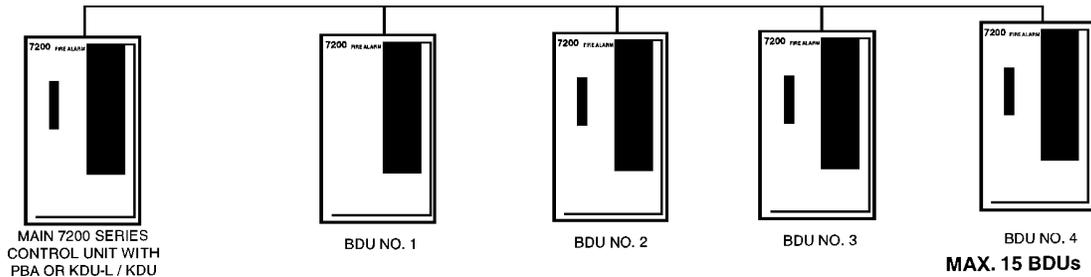


Figure 2-18 Several BDUs "Daisy Chained"

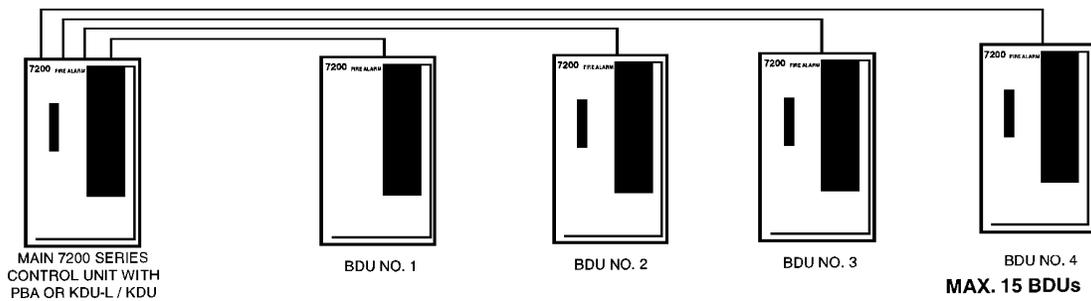


Figure 2-19 Primary FCINET<sup>®</sup> Wiring ("Star Bus")

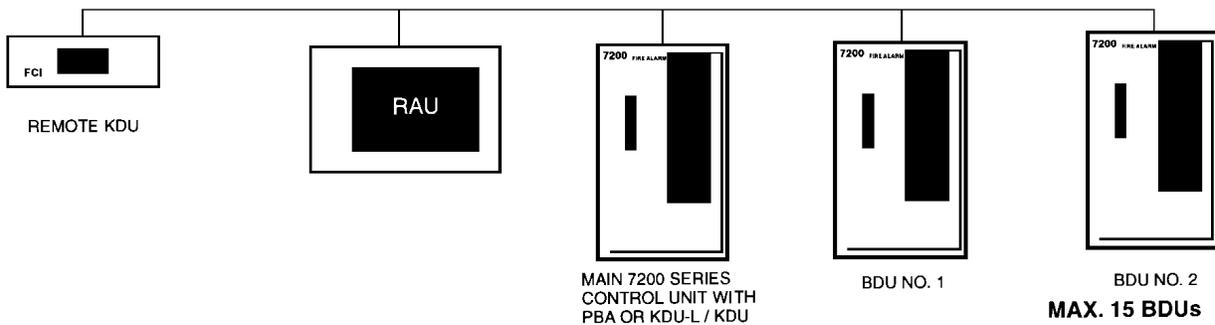
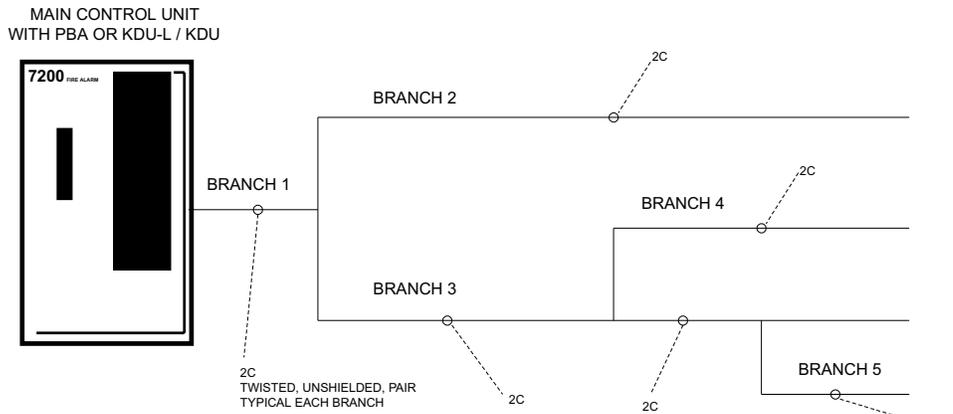


Figure 2-20 Wiring miscellaneous remote units

### 2.11.7 FCINET<sup>®</sup> Remote Wiring

The FCINET<sup>®</sup> can be run from the main cabinet via a KDU/KDU-L or PBA to remotely-located units, such as DIUs, KDUs and RAU/RAU-FVs. The total length of FCINET<sup>®</sup> wiring that can be run is limited to 4,000 feet of twisted pair, unshielded. See Figure 2-22. (Wire lengths shown are for example only).

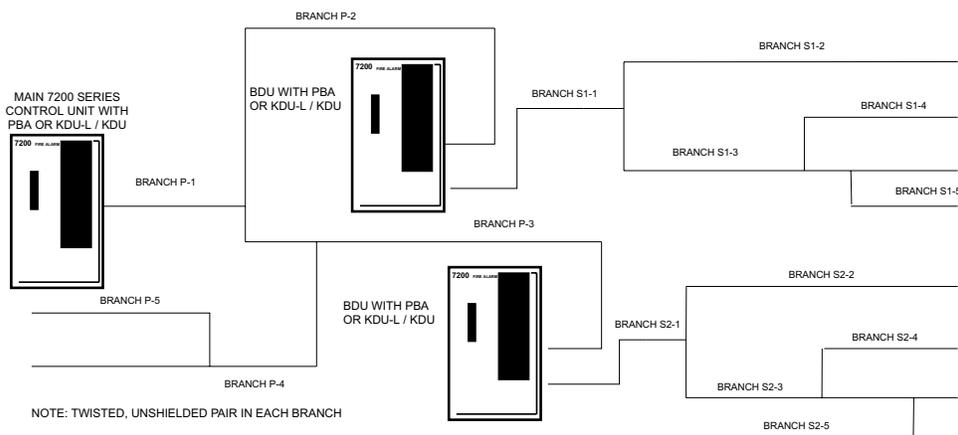
The RS-485 FCINET<sup>®</sup> can also connect to an FCI Model FLD-1 Fiberoptic Line Driver Module that can connect via fiberoptic link up to fifteen (15) Distributed Intelligent Units (DIU) up to 1.75 km away. Each remote unit must have a dedicated FLD-1 Module.



The length of Branch 1 + Branch 2 + Branch 3 + Branch 4 + Branch 5 = 4,000 feet maximum.

**Figure 2-21 Primary FCINET<sup>®</sup>, Style 4**

Any two DIUs connected to an FCINET<sup>®</sup> may have a secondary FCINET<sup>®</sup> each with a limitation of 4,000 feet of twisted-pair, unshielded cable. In order to access the secondary FCINET<sup>®</sup>, the DIU must have a KDU/KDU-L or PBA. Overall total FCINET<sup>®</sup> capacity is 12,000 feet from all FCINETs combined. See Figure 2-23. There can be no more than 30 units in any 7200 Series.



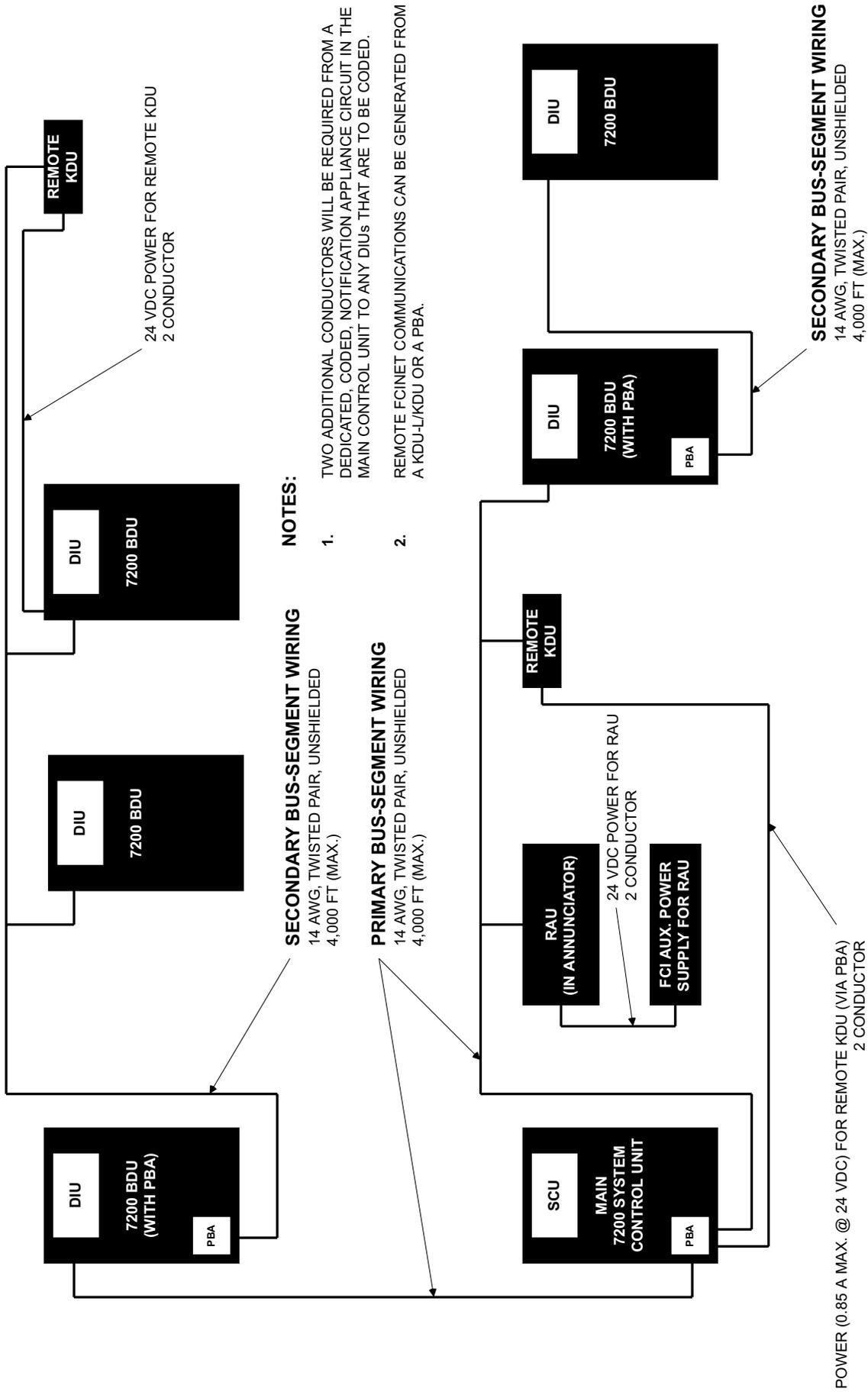
Branch P-1 + Branch P-2 + Branch P-3 + Branch P-4 + Branch P-5 = 4,000 feet maximum.

Branch S1-1 + Branch S1-2 + Branch S1-3 + Branch S1-4 + Branch S1-5 = 4,000 feet maximum.

Branch S2-1 + Branch S2-2 + Branch S2-3 + Branch S2-4 + Branch S2-5 = 4,000 feet maximum.

All FCINETs<sup>®</sup> combined cannot exceed 12,000 feet

**Figure 2-22 Limitations for Secondary FCINETs<sup>®</sup>**

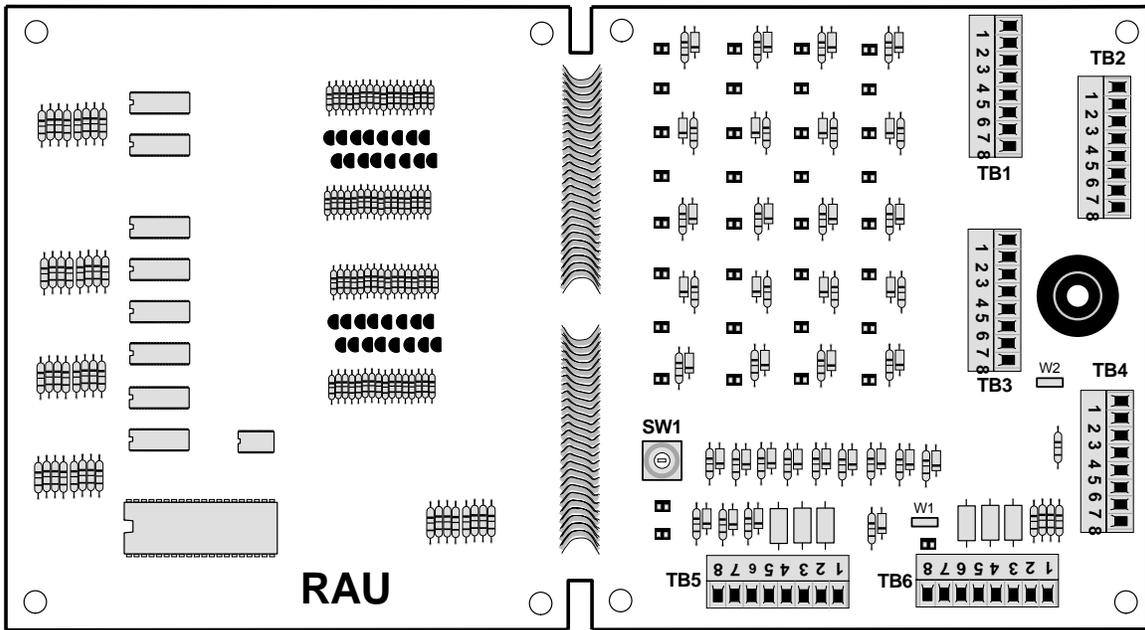


**NOTES:**

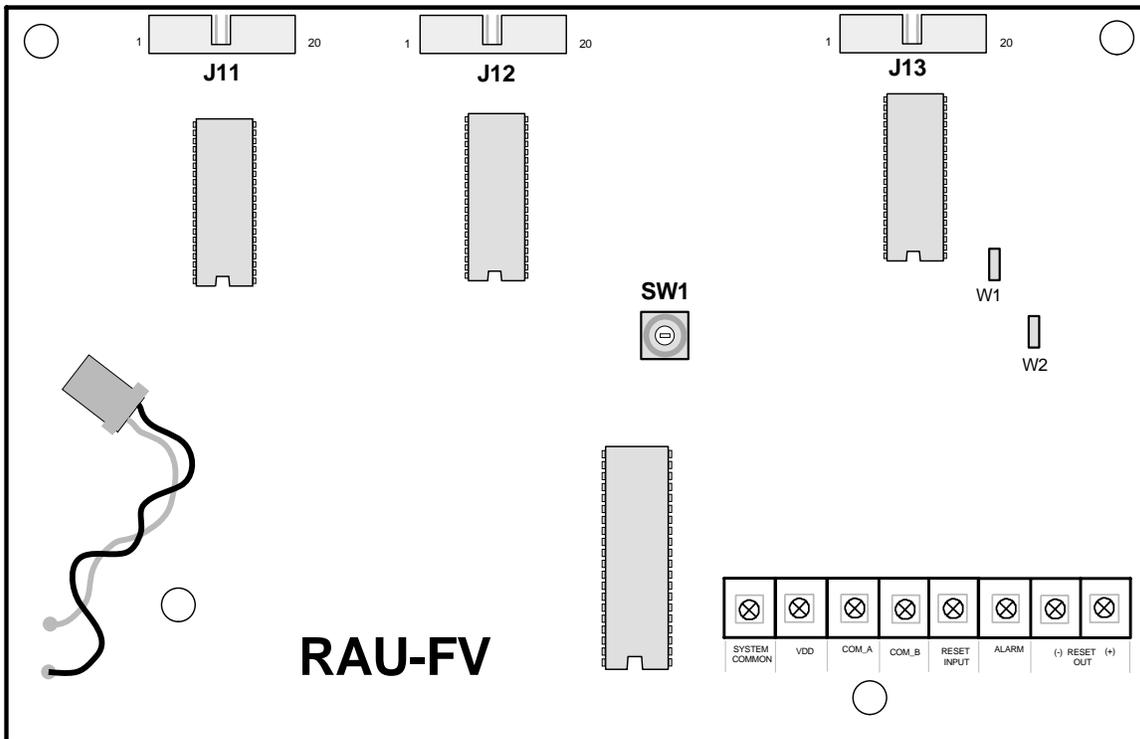
1. TWO ADDITIONAL CONDUCTORS WILL BE REQUIRED FROM A DEDICATED, CODED, NOTIFICATION APPLIANCE CIRCUIT IN THE MAIN CONTROL UNIT TO ANY DIUs THAT ARE TO BE CODED.
2. REMOTE FCINET COMMUNICATIONS CAN BE GENERATED FROM A KDU-L/KDU OR A PBA.

# TYPICAL 7200 SERIES DISTRIBUTED SYSTEM





Remote Annunciator Unit (RAU)



Remote Annunciator Unit (RAU-FV)

## 2.12 Remote Annunciator Unit (RAU/RAU-FV) (Optional)

### 2.12.1 General

The Remote Annunciator Unit (RAU) provides the 7200 Series with outputs for driving remote annunciator points, either LED or incandescent lamp. A single RAU can drive up to 32 points, and multiple RAUs can be used. The RAU can also drive remote system status LEDs and provides connections for remote switches that provide system control functions, such as Reset, Silence, Acknowledge and Drill. These UL Listed switches must be located in the remote annunciator cabinet or immediately adjacent to the RAU. If mounted adjacent to the RAU, all connections from the RAU to the switches must remain in the same room as the RAU and be close-nipped or in rigid conduit not to exceed twenty (20) feet in length. These switch circuits are rated .001 A. @ 24 VDC, and require normally open (N/O) momentary type switches.

The RAU-FV is Listed for driving inputs to the FireVac<sup>®</sup> III Emergency Voice Evacuation System. It can activate up to 60 loudspeaker circuits, 60 auxiliary control circuits, or a combination of both. An RAU-FV odd address number will provide 30 outputs, an even address number will provide 60 outputs. (i.e. 1 = 30 outputs, 2 = 60 outputs).

**Table 2-15 RAU Field Wiring, Jumpers, Switches**

Designation	Description	Comments
TB1-1 thru 8		Annunciator output terminals (Points 1 thru 8). Supervised
TB2-1 thru 8		Annunciator output terminals (Points 9 thru 16). Supervised
TB3-1 thru 8		Annunciator output terminals (Points 17 thru 24). Supervised
TB4-1 thru 8		Annunciator output terminals (Points 25 thru 32). Supervised
TB5-1		24 VDC ( - ) Supervised
TB5-2		24 VDC ( + ) Supervised
TB5-3		LED/Lamp Common ( + )
TB5-4		Remote Acknowledge Switch ( - ) (momentary)
TB5-5		Remote Drill Switch ( - ) (momentary)
TB5-6		System audible silence switch ( - )(momentary)
TB5-7		Remote Reset Switch ( - ) (momentary)
TB5-8		Remote Lamp Test Switch ( - ) (momentary)
TB6-1		Remote Switch Common ( - )
TB6-2, -3		Not used
TB6-4	COM B	FCINET <sup>®</sup>
TB6-5	COM A	FCINET <sup>®</sup>
TB6-6		System Silence LED
TB6-7		System Trouble LED
TB6-8		System Alarm LED
<b>JUMPERS</b>		
W1		Factory use (OUT)
W2		IN for audible sounder OUT for no audible sounder
<b>SWITCH</b>		
SW1	rotary	16-position address switch. See 2.12.2.
<b>FUSES (Part No. 4300-0018)</b>		
F1 thru F32	0.2 A.	Microfuses for incandescent lamp output points 1 thru 32, respectively.
<b>RESISTORS</b>		
R1 thru R32		Cut for incandescent lamp output points 1 thru 32, respectively.
<b>CONNECTORS</b>		
J1, 2, 3, 4	Permanent Ribbon	Connects both board segments.

The RAU is 6 1/2 inches high by 12 1/4 inches wide. Both RAU and remote system control switches must be located adjacent to or within the remote annunciator cabinet. The board is scored so it can be readily separated and the two sections stacked over one another in the annunciator cabinet.

The RAU-FV replaces the Alarm Input Board (AIB) in the FireVac®III cabinet.

As many as fifteen (15) RAU/RAU-FV units may be used in a 7200 Series. These may be located remotely, up to 4,000 feet, using twisted cable.

**NOTE:** The RAU-FV is for use with the FireVac®III.

**NOTE:** If Auto-configured and not FCP-7200 programmed, the RAU is configured for 16 Alarm/Trouble zones.

**Ratings**

Voltage	24 VDC (nominal)
Supervisory Current (Max.)	0.007 amp. 0.007 amp. each LED/FireVac®III input or 0.075 amp. each Incandescent lamp
Total alarm current	2.5 amps. (Max.)

Table 2-16 RAU-FV Field Wiring, Jumpers, Switches		
Designation	Description	Comments
<b>RAU-FV FIELD WIRING</b>		
TB1-1	( - ) Power IN	System Common. Connects to SPSU/PSU <b>TB1-3</b> . Supervised
TB1-2	(+) Power IN	24 VDC non-resettable power. Connects to SPSU/PSU <b>TB1-1</b> . Supervised
TB1-3	COM A	FCINET®. Supervised
TB1-4	COM B	FCINET®. Supervised
TB1-5	Reset Input	Connects to FireVac®III Main Control Board (MCB) TB1-33. (Connect TB1-32 and TB2-33 together at the FireVac®III.
TB1-6	General Alarm Input	Connects to Main Control Board (MCB) TB2-30
TB1-7	( - ) Power OUT	FireVac®III Common. Connects to Main Control Board (MCB) TB2-31
TB1-8	(+) Power OUT	FireVac®III 24 VDC power, switched. Connects to Main Control Board (MCB) TB1-34
<b>JUMPERS</b>		
W1		OUT - (Factory use)
W2	Reset Monitoring	OUT - No 7200 reset from FireVac®III IN - 7200 resets from FireVac®III Reset Switch
<b>SWITCH</b>		
SW1	Rotary Switch	Address Switch: ODD = Outputs 1-32 only EVEN = Outputs 1-60
<b>CONNECTORS</b>		
J11	Outputs 41-60	Connects to FireVac®III Alarm Input Harness (AIH) to Mother Board-speakers (MBS) and/or Mother Board-Auxiliary (MBA)
J12	Outputs 21-40	Connects to AIH to MBS and/or MBA
J13	Outputs 1-20	Connects to AIH to MBS and/or MBA
Alarm Pulse		Twisted pair/2-pin Molex to J8 of MCB

**2.12.2 Address Switch**

The Address Switch, **SW1**, is a 16-position rotary switch located near the center of the RAU/RAU-FV. The address switch must not be set to "0" (zero) and multiple RAU/RAU-FV switches **must not be set to the same address.**

### 2.12.3 Annunciator Outputs

The RAU is capable of driving LED outputs or incandescent lamps. Annunciator outputs are continually supervised. Connect outputs as indicated below.

#### A. LED Outputs

The RAU unit provides common positive (+) LED output (up to .007 A. per point). Connect the common to **TB5-3**. **DO NOT** install fuses **F1** through **F32**. **DO NOT** cut resistors connected across each fuse.

#### B. Incandescent Lamp Outputs

The RAU provides common positive (+) incandescent lamp output (up to .075 A. per point). Fuses **F1** through **F32** are to be installed in all points used for incandescent annunciation. The resistor (**R1** thru **R32**) connected across each fuse must be cut. (Fuses **F1** through **F32** and resistors **R1** thru **R32** correspond to annunciator points 1 thru 32 respectively).

#### B. Unused Outputs

Any unused output points not having an LED or incandescent lamp installed must be connected to **TB5-3**. **DO NOT** install fuse or cut resistors associated with these outputs.

### 2.12.4 Remote RAU/RAU-FV Power Wiring

Up to fifteen (15) RAU/RAU-FVs may be located remotely from the control panel. The quantity of remote RAU/RAU-FVs that can be installed on a single circuit is determined as follows:

Use the formula  $N=50/R$  (This formula is for power considerations only).

Where N = The quantity of RAU/RAU-FVs.

Where R = total DC resistance of the wire in the entire circuit.

Round off the answer DOWNWARD to the nearest whole number.

If remote KDUs and RAU/RAU-FVs are to be intermixed in the same circuit, the same formula applies.

Example: A circuit with a length of 2,000 feet using 12 AWG solid wire.

The DC resistance of 12 AWG solid wire is 2 ohms/thousand feet.

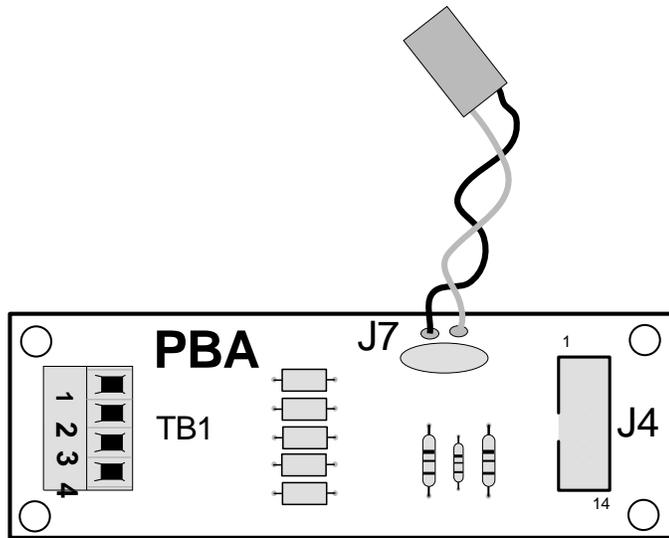
The total resistance of the circuit is: (2,000 feet out, 2,000 feet return = 4,000 feet) x 2 = 8 ohms.

50 divided by 8 ohms = 6.25. Rounding off downward, the answer is 6.

Therefore, the circuit can accommodate a MAXIMUM of six (6) RAU/RAU-FVs.

**NOTE:** If the RAU is used to drive incandescent lamps, a remote power source providing additional power of .075 A per lamp plus .007 A is required.

**NOTE:** If the number of remote RAU/RAU-FV circuits exceeds the capacity of the power supply, an auxiliary power supply such as the Model SNAC extender panel may be used. Connect the negative ( - ) of the SNAC to power supply Terminals TB1-3 or TB1-4.



Panel Bus Adapter (PBA)

## 2.13 Panel Bus Adapter (PBA) (Optional) (CAB-B, -C, -D)

### 2.13.1 General

The Panel Bus Adapter (PBA) provides transient suppression for the power and FCINET<sup>®</sup> communication lines to remote mounted units. It mounts below the power supply. See Figure 2-24 for PBA mounting locations.

The PBA is not required when a KDU/KDU-L is installed, since the KDU/KDU-L also furnishes transient suppression. The PBA measures 1 1/2" high by 4 1/2" wide.

Table 2-17 PBA Connections

Designation	Description	Comments
<b>WIRING CONNECTIONS TO REMOTE UNITS</b>		
TB1-1		( - ) 24 VDC (1 amp. max., subject to overall power limit)
TB1-2		( + ) 24 VDC (1 amp. max., subject to overall power limit)
TB1-3	COM A	FCINET <sup>®</sup> Supervised
TB1-4	COM B	FCINET <sup>®</sup> Supervised
<b>CONNECTORS</b>		
J4	FCINET <sup>®</sup>	Communication from J4 of last unit in the system (CAB-B, -C, -D)

**NOTE:** Wiring to Terminals TB1-3 (COM A) and TB1-4 (COM B) is to be twisted pair, unshielded.

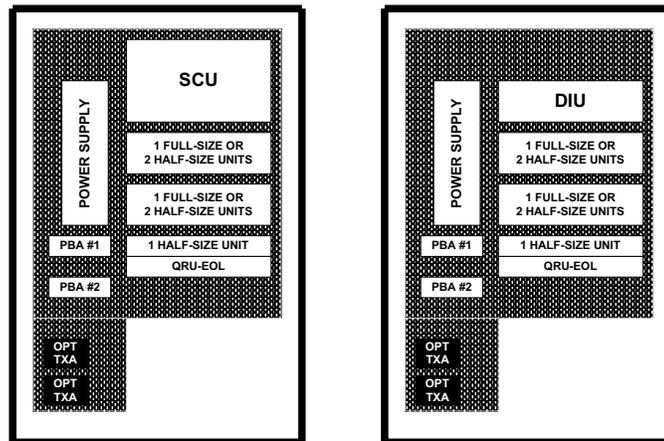
### 2.13.2 Style 6 FCINET<sup>®</sup> Operation (CAB-B, -C, -D) (QRU-EOL)

The FCINET<sup>®</sup> may be configured for NFPA Class A, Style 6 operation by installing a QRU-EOL and an additional PBA adapter. The QRU-EOL is used as an end of line device for the FCINET<sup>®</sup>, while the PBA offers transient protection for the FCINET<sup>®</sup> return communication wiring.

The QRU-EOL monitors its connection to the SCU through connector **J4** in the same manner as all other 7200 Series units. The EOL feature in the QRU-EOL is activated by placing **SW6** in the “EOL-ON” position. In the event of a loss of FCINET<sup>®</sup> communications, the relay contacts will close the connection between the two PBAs. These two PBAs are connected to the outgoing FCINET<sup>®</sup> wiring (PBA No. 1) and the returning wiring (PBA No. 2). See Figure 2-24.

A loss of FCINET<sup>®</sup> communication will be reported as a “COMMA FAULT Qrux” (x = address number).

During this condition, the QRU-EOL will check the FCINET<sup>®</sup> periodically and restore the fault if the break has been repaired.



**Figure 2-23 Typical QRU-EOL Installation with all PBAs**

**NOTE:** Figure 2-24 shows a typical installation of a QRU-EOL and its associated PBA on a TXA plate. The equipment needed for a Style 6 application is two (2) PBAs, one (1) QRU-EOL and a 14-conductor FCINET<sup>®</sup> cable.

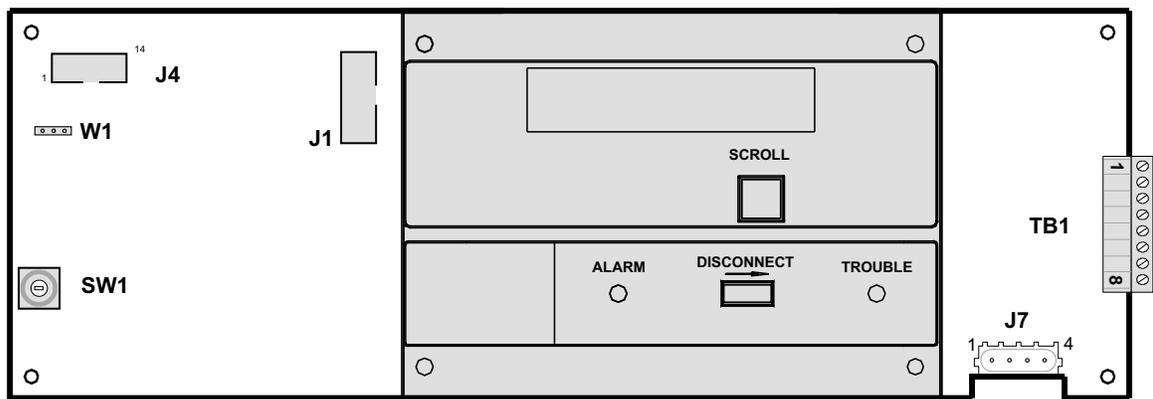
**NOTE:** The outgoing FCINET<sup>®</sup> can be obtained from a KDU-L/KDU instead of a PBA if the main system contains one.

**NOTE:** The Transformer Plate, (P/N 1420-0192) has no provision for an additional PBA.

**NOTE:** The FCINET<sup>®</sup> is limited to 4,000 feet of wire. Style 6 devices cannot be located more than 2,000 feet away from the control to which they are wired, to ensure that the 4,000 foot limit is not exceeded.



This page is reserved for future use.



**Releasing Device Unit (RDU)**

## 2.14 Releasing Device Unit (RDU) (Optional)

### 2.14.1 General

The Releasing Device Unit (RDU) provides one (1) Class A, Style 6/7 or Class B, Style 4 signaling line circuit. The circuit can accommodate 197 addressable points (99 analog sensors and 98 monitor and/or output modules).

The RDU is a full-size unit. Additional RDUs can be added to a maximum of 15 per system.



**NOTICE:** Use only the Listed and Approved releasing methods and devices (solenoids) referenced in this manual to actuate a fire suppression system. Refer to the suppression system manufacturer's installation manual for the proper use of the suppression system in a particular application. Extinguishing agents that suppress fires by oxygen dilution shall be provided with Listed, Approved mechanically operated time delays and stop valves to control the discharge to a protected area.

**NOTE:** A dedicated system power supply is required for every five (5) ALU, AEU, RDU or IDU units. The SPSU-V and Distributed Intelligent Unit (DIU) with associated power supply both meet this requirement.

### 2.14.2 Address Switch

The Address Switch, **SW1**, is a 16-position rotary switch labeled "0" thru "9" and "A" thru "F" (A=10, B=11 . . . F=15). It is located in the lower left section of the RDU. If only one RDU is installed, the switch must be set to position "1" (one). The address switch must not be set to position "0" (zero) and multiple RDU switches **must not be set to the same address**.

**NOTE:** Power for actuating releasing solenoids via remote control modules must be obtained from the non-resettable power terminals of the SPSU-V, FC-72 PS-6 or APS-6 mounted in a Listed cabinet, or other regulated, 24 VDC power supply Listed/Approved for fire alarm use.

**Table 2-18 RDU Connections, Jumpers, LEDs, Switches**

Designation	Description	Comments
<b>FIELD WIRING CONNECTIONS</b>		
TB1-1	AMM-2/-4 & AOM-2/-2S SLC (+)	Class A/B Out, Supervised
TB1-1	AMM-2/-4 & AOM-2/-2S SLC (+)	Class A return, Supervised
TB1-1	AMM-2/-4 & AOM-2/-2S SLC (-)	Class A return, Supervised
TB1-1	AMM-2/-4 & AOM-2/-2S SLC (-)	Class A/B Out, Supervised
TB1-5		Not used
TB1-6	ATU (+)	RDUNET + (To Abort/Timer Unit (ATU) Supervised
TB1-7	ATU (-)	RDUNET - (To Abort/Timer Unit (ATU) Supervised
TB1-8		Not used
<b>JUMPER</b>		
W1		Factory use (OUT)
<b>LEDs</b>		
Loop Trouble	Yellow	Lights to indicate trouble in Signaling Line Circuit or RDUNET
Loop alarm	Red	Lights to indicate alarm in Signaling Line Circuit.
<b>SWITCHES</b>		
SW-1	rotary	16-position address switch. See 2.14.2
DISCONNECT (SW-3)	2-pos. Slide	Disconnect/walk test switch for Signaling Line Circuit.
<b>CONNECTORS</b>		
J4	FCINET	Communication from J4 of previous unit to J4 on next unit.
J7	4-wire (rd-blk-yel-gry)	Power from J7 of previous unit to J7 of next unit.

### 2.14.3 Approved Analog Addressable Devices

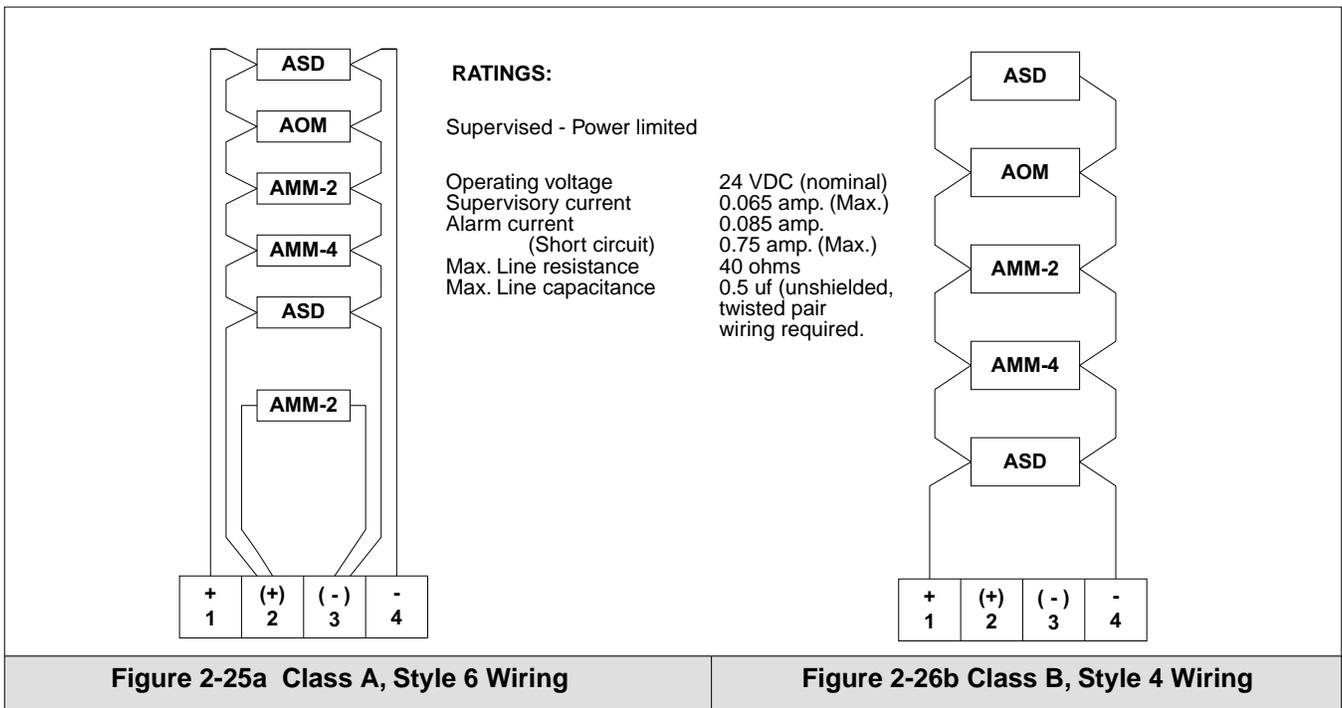
Only the analog sensors, bases, monitor modules, and/or control modules listed in Publication P/N 9000-0427 can be used on the RDU signaling line circuit.

**NOTE:** The area covered by an automatic detection device for a fire suppression system shall not exceed one half the maximum area for the detector as determined by the application of NFPA 72 (1996) Chapter 5.

### 2.14.4 Releasing Device Circuit Wiring

#### A. Class A, 4-Wire Wiring Instructions (similar to NFPA Style 6)

- Connect an electronic EOL device (consisting of an AMM-2 module, Address "99") (red wire and black wire) to the signaling line circuit as shown in Figure 2-26. (Yellow and violet wires not used.)
- Connect field wiring to the analog addressable initiating/control devices as shown in Figure 2-26a.
- Be sure to observe polarity.
- Maximum allowable field wiring resistance for the circuit is 40 ohms. Use unshielded, twisted pair cable.
- Maximum circuit capacitance is 0.5 uF.



#### B. Class B, 2-Wire Wiring Instructions (similar to NFPA Style 4)

- Connect field wiring to the analog addressable initiating/control devices as shown in Figure 2-26b.
- Be sure to observe polarity.
- No end of line unit (Address 99) is required.
- Maximum allowable field wiring resistance is 40 ohms. Use unshielded, twisted pair cable.
- Maximum circuit capacitance is 0.5 uf.

**NOTICE:** If an AMM-2 module is used in a Class A, Style 6/7 signaling line circuit, any trouble signals from the AMM-2 will not self-restore, but must be acknowledged and reset.

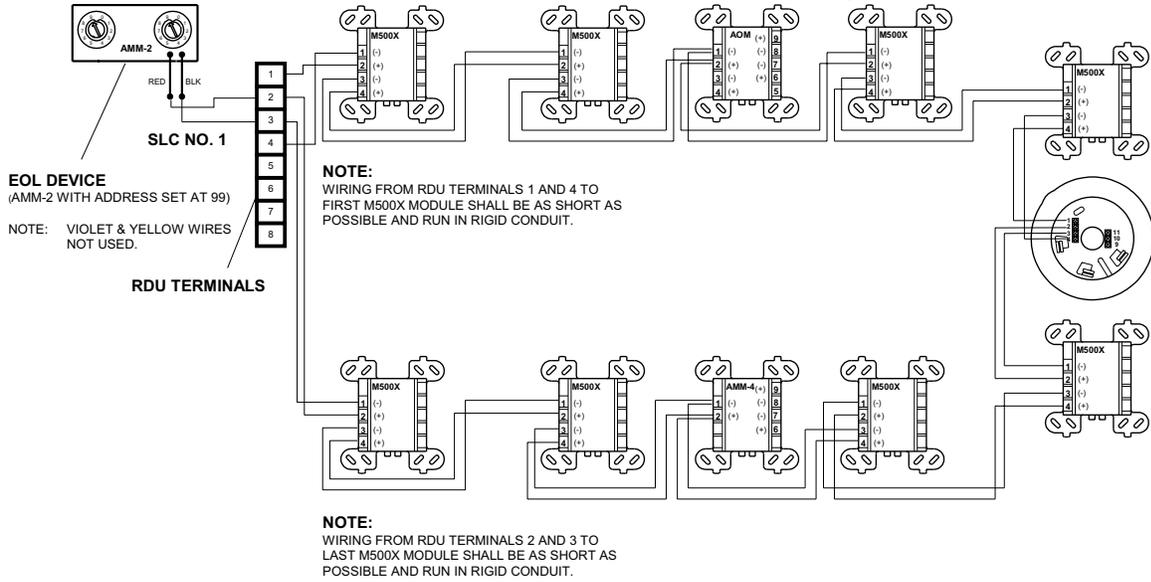
#### C. Class A, Style 7 (Style 7 requires Fault Isolator Module M500X or Isolator Base B524BI/B224BI)

These modules are used in Class A signaling line circuits to enable part of the circuit to continue operating when a short circuit occurs on it. The modules automatically restore the signaling line circuit to normal when the short circuit is removed.

For short circuit protection, two (2) modules must be installed, close-nipped, per protected device. The pair of isolator modules will disconnect the device if a short circuit occurs on the SLC at that device.

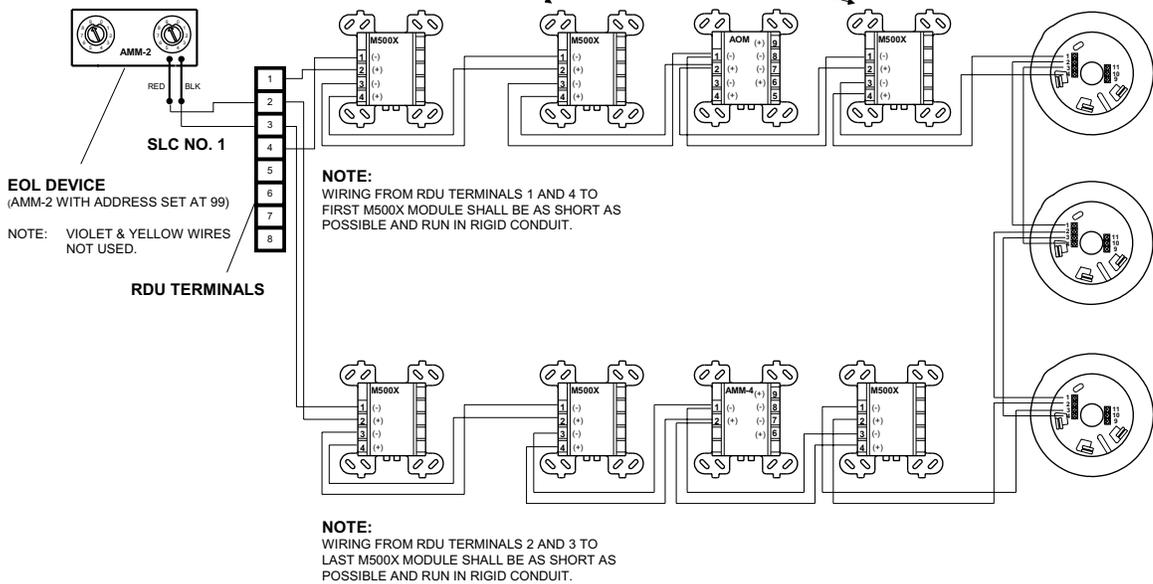
See Figures 2-27, 2-28.

USE TWO (2) CLOSE-NIPPLED ISOLATOR  
MODULES PER CONFIGURABLE FIELD DEVICE



**Figure 2-27 Class A, Style 7 Wiring, M500X Module**

USE TWO (2) CLOSE-NIPPLED ISOLATOR  
MODULES PER CONFIGURABLE MODULE



**Figure 2-28 Class A, Style 7 Wiring, with Isolator Bases**

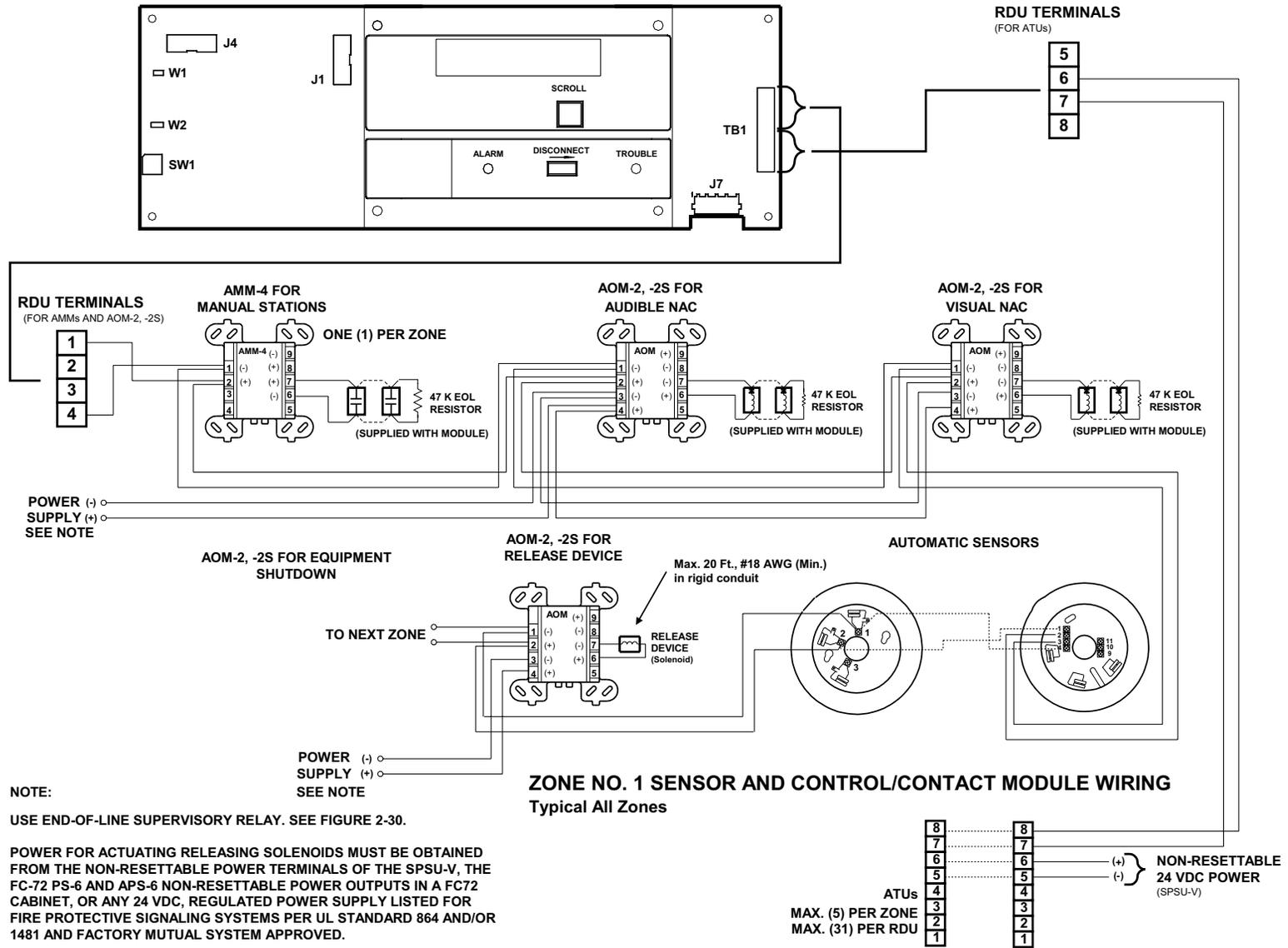
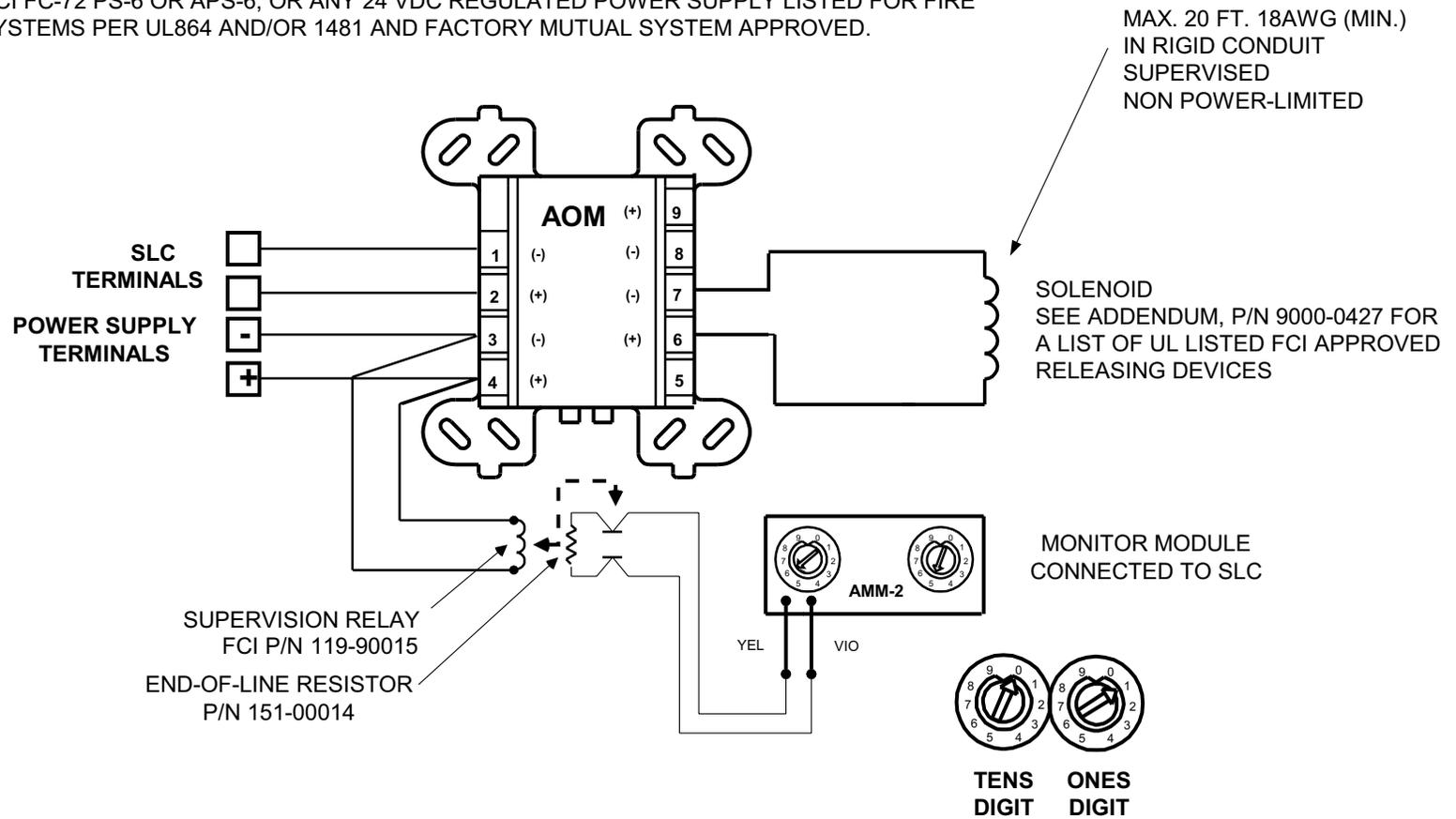


Figure 2-29 Typical Releasing Circuit Wiring

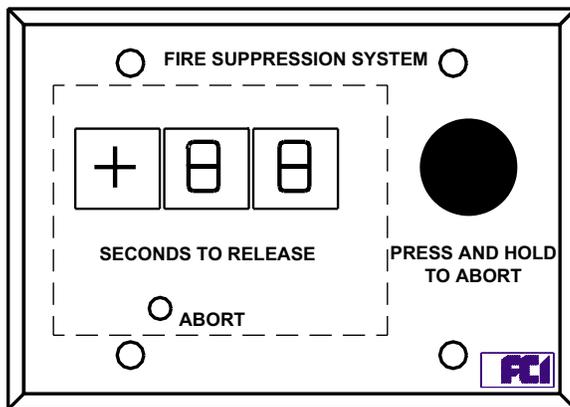
**NOTICE:**

USE ONLY THE LISTED AND APPROVED METHODS AND DEVICES REFERENCED IN THIS MANUAL TO ACTUATE A FIRE EXTINGUISHING SYSTEM. REFER TO THE INSTALLATION MANUAL FOR THE PROPER USE OF THE SYSTEM IN A PARTICULAR APPLICATION. EXTINGUISHING AGENTS THAT SUPPRESS FIRES BY OXYGEN DILUTION SUCH AS CARBON DIOXIDE AND VARIOUS INERT GASES SHALL BE PROVIDED WITH LISTED, APPROVED, MECHANICALLY OPERATED TIME DELAYS AND STOP VALVES TO CONTROL THE DISCHARGE TO A PROTECTED AREA.

WIRING FROM THE POWER SUPPLY TO THE AOM MODULE NOT TO EXCEED 2 OHMS. POWER FOR ACTUATING RELEASE SOLENOIDS MUST BE OBTAINED FROM THE NON-RESETTABLE POWER TERMINALS OF THE SPSU-V, BSM-2, THE FCI FC-72 PS-6 OR APS-6, OR ANY 24 VDC REGULATED POWER SUPPLY LISTED FOR FIRE SIGNALING SYSTEMS PER UL864 AND/OR 1481 AND FACTORY MUTUAL SYSTEM APPROVED.



**Figure 2-30 Power Routing for Releasing AOM-2, -2S Modules**



**Abort Timer Unit (ATU)**

## 2.15 ABORT TIMER UNIT (ATU) (Optional)

### 2.15.1 General

The Abort Timer Unit is an addressable abort switch that contains a display for an individual suppression system. Upon automatic activation of the suppression system by the Releasing Device Unit (RDU), the display will indicate the time remaining before the suppression system will discharge.

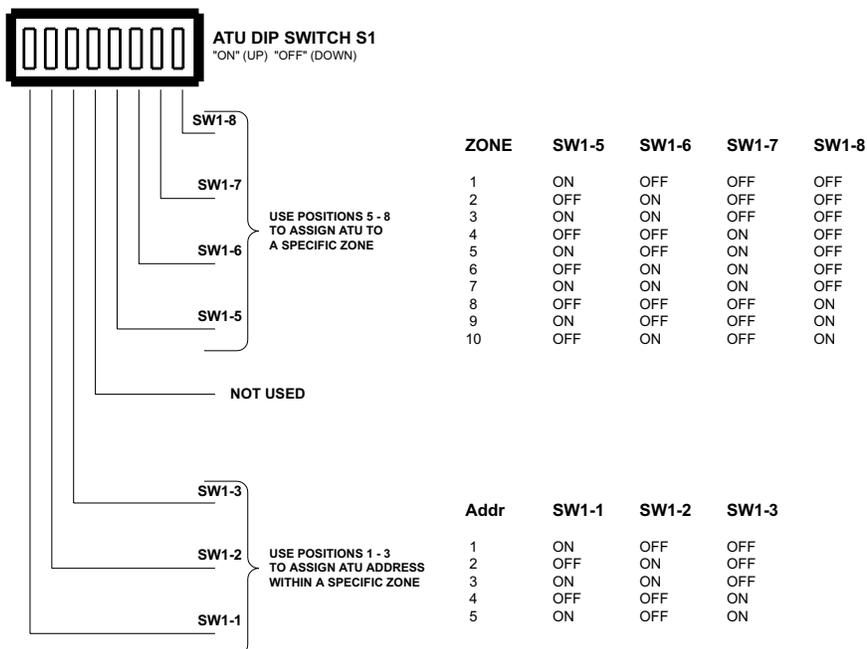
A single Releasing Device Unit (RDU) can accommodate up to 31 Abort Timer Units, with a maximum of five per releasing zone.

The ATU mounts on a standard three-gang box and can be remotely located. The maximum wire length for the ATU/RDU communication circuit is 4,000 feet.

### 2.15.2 Address Switch

Set the Address Switch SW1 to the proper position. See Table 2-19 for settings.

**Table 2-19 Address Switch Settings**



### 2.15.3 RDUNET<sup>®</sup> Wiring Connections

See Table 2-20 for RDUNET wiring connections between the RDU and ATU. Minimum recommended wire size is 18 AWG. The maximum wire length for the circuit is 4,000 feet.

Table 2-20 ATU Wiring Connections		
Designation	Description	Comments
<b>WIRING CONNECTIONS TO REMOTE UNITS</b>		
TB1-1		Earth ground
TB1-2		Not used
TB1-3		To "Abort Switch - " (Terminal of Abort button)
TB1-4		To "Abort Switch + " (Terminal of Abort button)
TB1-5		To System Common, Supervised
TB1-6		+24 VDC IN, Supervised
TB1-7	RS-485	To RDUNET B (RDU TB1-7), Supervised
TB1-8	RS-485	To RDUNET A (RDU TB1-6), Supervised
<b>SWITCH</b>		
SW1	DIP	Address Switch
<b>LED</b>		
LED1	Yellow	Abort Indicating LED

### 2.15.4 ATU Power Wiring Connections

The number of remote ATUs that can be installed on a single circuit is determined as follows:

Use the formula:  $N = 100/R$ , where N - the quantity of ATUs, and R = total DC resistance of the wire in the entire circuit. Round the number N downward to the nearest whole number.

**EXAMPLE:**

An ATU circuit having a length of 500 feet, using 14 AWG wire. (The DC resistance of 14 AWG wire is 3.1 ohms/1,000 feet).

500 feet out, 500 return = 1,000 feet. Therefore, DC resistance of the circuit is 3.1 ohms.

Using the formula  $N = 100/R$ , 100 divided by 3.1 = 32.2

Therefore, rounding downward, the circuit can accommodate 32 ATUs can be installed on the circuit.



**SECTION THREE**  
**POWER-UP/TEST PROCEDURE**



## SECTION 3.0: POWER UP/TEST PROCEDURE

**NOTE:** Before connecting any power to the control panel, read and perform the following:

### 3.1 General

- Verify that the control panel has been properly installed.
- Verify that notification appliance and municipal circuit wiring polarities are correct.
- Verify that all switches are set to their correct positions.
- Verify that all jumpers are installed properly according to their configuration requirements.
- Verify that all mounting hardware is properly secured; especially module mounting screws.
- Verify that all cables and connectors are securely installed.
- Verify that all address switches are set properly.
- Verify that AC input selector switches or jumpers on units so equipped are set properly for the transformer and AC input voltage.

**IMPORTANT:** Notify appropriate personnel (building occupants, fire department, security, etc.) that the system is going to be powered up.

### 3.2 Powering Up

- Verify that the batteries are disconnected from the system.
- Apply AC power to the control unit. At this time, the initialization sequence will occur for approximately ten seconds. After the initialization period, the power LEDs and/or KDU/KDU-L backlit display will light. This will be followed by a system trouble and “BATTERY FAULT” indication, since the batteries are not yet connected. If other fault conditions exist, they will be displayed. Pressing the “ACKNOWLEDGE” switch will silence the audible sounder.
- Connect system batteries to the control panel. The “BATTERY FAULT” condition should clear.

**NOTICE:** Do not connect batteries to the system before AC power is applied.

**NOTE:** If batteries connected to the system are not fully charged, a “BATTERY HIGH RATE” indication will persist until they are fully charged. The audible sounder for “BATTERY HIGH RATE” is delayed for 40 seconds.

### 3.3 Software Programming

The 7200 Series system must be configured using the Field Configuration Program. Auto-configuration cannot be used if an Audio Evacuation Unit (AEU) or Releasing Device Unit (RDU) is present in the system. Copies of the system configuration/operation should be given to all parties involved.

#### 3.3.1 Passwords

The following field-programmable passwords have been factory set:

Level 1 Password	110000	Allows terminal viewing of programmed commands.
Level 2 Password	220000	Allows activation of Walk Test, Drill and modification of time and date.
Level 3 Password	330000	Allows system programming.
Level 4 Password	440000	Allows system initialization and configuration.

**NOTE:** These functions do not allow access to an Audio Evacuation Unit (AEU), or Releasing Device Unit (RDU).

### 3.3.2 Auto-Configuration from the SCU

**NOTE: Do not use switch configuration if an Audio Evacuation Unit (AEU) or Releasing Device Unit (RDU) is present.**

When all the units have been installed, and the individual unit address switches have been properly set, an auto-configuration must be performed to allow the SCU to recognize all units in the system and automatically install a General Alarm default program which causes all alarm outputs to activate in the event an alarm is received. This is a two-step process and requires a Level 4 password.

A) Press and hold the “RESET” switch. Then press the “PROGRAMMING” (PROG) switch once.



B) RELEASE both simultaneously.



C) If this is done properly, the display will read “13”. If it reads anything else, you must repeat the above steps.  
 D) Press the “ACKNOWLEDGE” (ACK) switch. The display will read “AC” or “CF”. If “AC”, follow the next step; if “CF”, proceed to step “F”.

E) Enter the Level 4 password (factory preset at 440000) by pressing the PROG switch until the first digit of the password appears in the left display window, and then the “SILENCE” (SIL) switch until the second digit of the password appears in the right display window. Press the “ACK” switch once. Repeat for each pair of password digits until the complete password is entered.



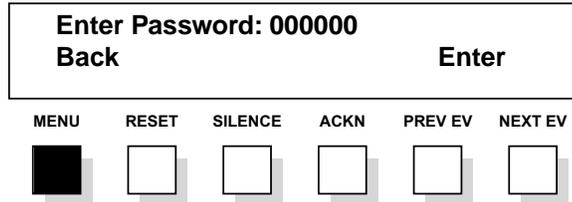
F) The display will show “CF” (configuring). This configuration display process may take 30 seconds or more. During this time, the processor identifies all units in the system and all Analog Loop Units will search their circuits and configure the devices installed. Various unit LEDs may flash; this is normal. At the end of the display configuration process, the panel will reset and all outputs will be programmed to operate as general alarm control.



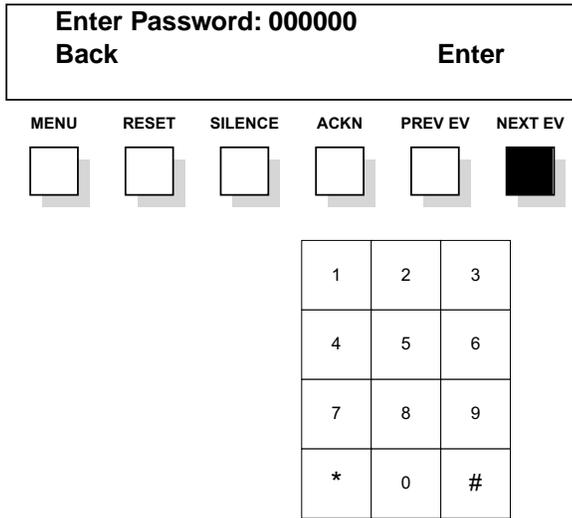
Normal display (blinking dots)

### 3.3.3 Auto-Configuration from the KDU/KDU-L

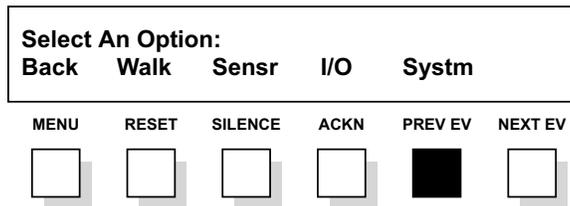
A. Press the “MENU” switch and you will be prompted to enter a password.



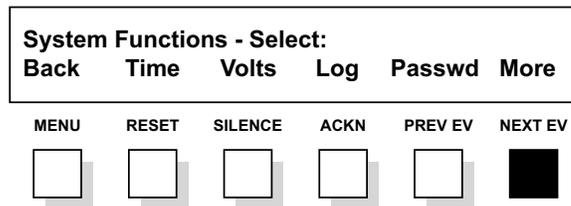
B. Using the 12-key keypad, enter the Level 4 password and press the “ENTER” (formerly the “NEXT EVENT”) switch.



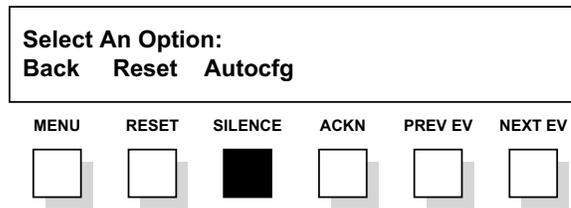
C. The menu will now be displayed. Press the “SYSTEM” (formerly the “PREV EVENT” ) switch. The first of two system screens will now be displayed.



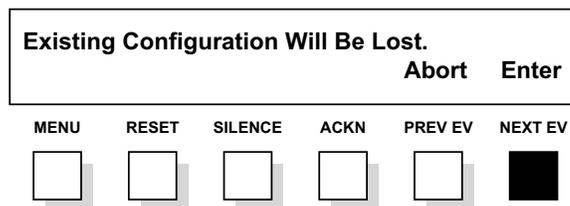
D. Press the "MORE" (formerly the "NEXT EVENT") switch to get to the second screen.



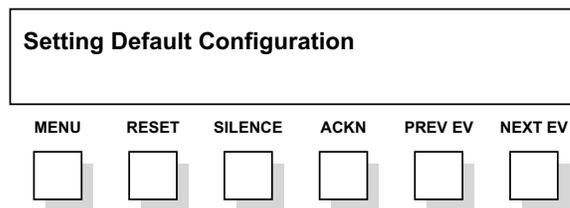
E. The switch for Automatic Configuration is marked "AUTOCFG" (formerly "SILENCE"). Press this switch.



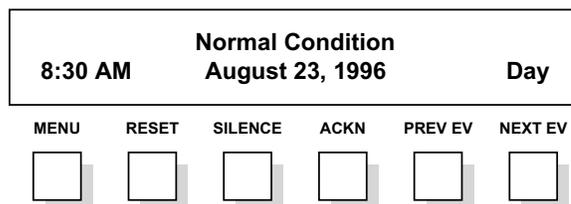
F. A warning: "Existing configuration will be lost" will be displayed.



G. If the "ABORT" (formerly "PREV EVENT") switch is pressed, the display will revert to the "System Functions" menu screen. By pressing the "ENTER" (formerly "NEXT EVENT") switch, the Auto-Configure routine will commence.



H. As the Automatic Configuration proceeds, the display will show the different functions that are occurring, (Setting Default Configuration, Finding Units, etc.) Auto-Configuration ends with a "System Reset" and the KDU/KDU-L will show a "Normal Condition".



### 3.3.4 ALU Auto-configuration

During auto-configuration, the ALU will automatically be configured to detect and register the following:

- Ionization Sensor set at 3% sensitivity.
- Photoelectronic Sensor set at “Low” or 2.5% sensitivity.
- Heat Sensor.
- Addressable Output Module.
- Addressable Output Module modified for Form “C” operation.
- Monitor Module.
- Addressable Output Modules are configured as silenceable outputs. Addressable Output Modules modified for Form “C” operation are configured as non-silenceable. Both modules are included in the system general alarm list, and will activate on any alarm condition.

Monitor modules are configured as one of the following types, depending on the range of addresses in which it falls:

<b>Address</b>	<b>Monitor Module Type</b>	<b>Circuit Total</b>
00	Illegal address	
01-49	Manual Station	49
50-59	Supervisory Switch (non-latching)	10
60-69	Waterflow Switch (non-silenceable)	10
70-74	Future use	5
75-79	Future use	5
80-84	Fire Alarm Control Panel (FACP)	5
85-89	Remote Zone	5
90-98	N/O contacts	9
99	End-of-line (used for Class “A” only)	

Unless otherwise specified, all monitor modules latch into alarm when actuated and automatically restore trouble conditions about one minute after the cause of trouble is removed.

Any changes to the above must be made via the Field Configuration Program (FCP).

### 3.4 System Test

The system must be properly configured before performing any tests. Prior to starting the test, notify all building occupants that the fire alarm system will be tested. Likewise, upon completion of testing, the building occupants should again be notified.

A complete system test of all system devices and functions should be performed on a regular basis per NFPA 72, Inspection, Testing and Maintenance, and/or the local codes/local authority having jurisdiction.

We recommend that this test be witnessed by the building owner/operator and the local authority having jurisdiction/fire services.



#### CAUTION

Before testing systems equipped with Releasing Device Units (RDU), either disconnect all sources of power to the system and be sure that all solenoids are disconnected, or disable all RDU releasing devices per 3.4.1 below in order to avoid accidental discharge of suppression agent.  
After testing is complete, again disconnect all sources of power before reconnecting solenoids.

#### 3.4.1 Procedure for Disabling RDU Releasing Devices

Use the following procedure to disable RDU releasing devices:

- 1) Press the KDU/KDU-L MENU Switch.
- 2) Use the KDU/KDU-L keypad to enter the system 6-digit password.
- 3) Press the NEXT EVENT Switch to enter the password.
- 4) Press the ACKNOWLEDGE Switch to select the Input/Output (I/O) function.

**NOTE:** Be sure that the last letter in the unit-type field is flashing. For example, if the unit-type field displays "ALU", the "U" should be flashing. Use the RESET/LAMP TEST Switch to move to the unit-type field if the last letter of the current unit is not flashing.

- 5) Press the PREVIOUS EVENT Switch to select the Disable operation.
- 6) If the RDU unit type is not displayed, press the ACKNOWLEDGE and/or PREVIOUS EVENT switches to scroll among the unit types until the RDU unit type is displayed.
- 7) Press the SILENCE Switch to move to the RDU unit-number field.
- 8) Press the ACKNOWLEDGE and/or PREVIOUS EVENT switches to scroll to the RDU with the device(s) to be disabled.
- 9) Press the SILENCE Switch to move to the RDU Loop field. The RDU has only one loop; press the SILENCE Switch to move to the device-address field.
- 10) Use the KDU/KDU-L keypad to enter the specific releasing device address or range of addresses to be disabled.
- 11) Press the NEXT EVENT Switch to enter the disable command. The specific releasing device or range of releasing devices will now be disabled.

You may now proceed to test the initiating devices of the zone associated with the disabled releasing device(s).



**NOTICE:** Do not enable the releasing devices until testing is complete and the system has been returned to normal.

To enable the releasing devices, repeat the above procedure, except choose the Enable command in Step 5.

## 3.5 Dual Mode Walk Test Procedure

**NOTE:** The System History Event Log will be written over by Walk Test data.

**NOTE:** We recommend connection of a printer to the SCU Unit during performance of this test.

**NOTE:** The system has a programmable time-out feature that cancels walk test if an event does not occur within a specified time limit. The factory default for walk test time-out is 60 minutes.

### 3.5.1 General

The Walk Test program operates in two (2) modes:

- Audible Mode - The user in the field can test with sounding of the notification appliances.
- Silent Mode - The user in the field can test without sounding the notification appliances.

### 3.5.2 Walk Test Activation (SCU)

The Walk Test program requires a Level 2 (or higher) password. To enter the program:

- 1) Press the "PROGRAMMING" (PROG) Switch once until the display shows "01".
- 2) Press the "ACKNOWLEDGE" (ACK) Switch once. The display will show "AC".
- 3) Enter the Level 2 password by pressing the "PROG" Switch until the first digit of the password appears in the left display window, and then the "SILENCE" (SIL) Switch until the second digit of the password appears in the right display window.
- 4) Press the "ACK" Switch once. The display will read "15" indicating the Audible mode. If the Silent mode is desired, press the "PROGRAMMING" Switch to change the display to "16".

MODE	DISPLAY CODE
Audible Test	"15"
Silent Test	"16"
- 5) Press the "ACK" Switch once. The display will read "[ ]", indicating that the system is in Walk Test.
- 6) Press the "ACK" Switch again to silence the audible sounder.
- 7) Select the zones/signaling line circuits to be Walk Tested by moving the appropriate circuit disconnect switches to the "DISCONNECT" position.



**CAUTION: FAILURE TO DISCONNECT THE ZONE/SIGNALING LINE CIRCUIT DURING THE WALK TEST WILL CAUSE AN ALARM, POSSIBLY INCLUDING OPERATION OF THE RELEASING FUNCTIONS OR CITY CIRCUITS.**

- 8) Refer to device testing.

### 3.5.3 Walk Test Activation (KDU/KDU-L)

- 1) Press the “MENU” switch.
- 2) Type the Level 2 (or higher) password on the numeric keypad.
- 3) Press the “NEXT EVENT” switch to “Enter” the password (Notice the word “Enter” appears above this switch on the display).
- 4) Press the “RESET/LAMP TEST” switch to select the “Walk” option (notice the word “Walk” appears above this switch).
- 5) Press the “RESET/LAMP” TEST switch again for an audible (Walk A) walk test or press the SILENCE key for a silent (Walk S) walk test. Observe the KDU/KDU-L display indicates Walk Test, audible or silent. The system will also enter into a trouble condition.
- 6) Press the “ACKNOWLEDGE” switch on the KDU/KDU-L to silence the audible sounder.
- 7) Select the zone/signaling line circuits to be walk tested by moving the appropriate circuit disconnect switches to the “DISCONNECT” position.
- 8) Refer to device testing.



CAUTION: FAILURE TO DISCONNECT THE ZONE/SIGNALING LINE CIRCUIT DURING THE WALK TEST WILL CAUSE AN ALARM, POSSIBLY INCLUDING RELEASING FUNCTIONS OR OPERATION OF THE CITY CIRCUITS.

### 3.5.4 Device Testing

#### 3.5.4.1 Alarm Test

All alarm initiating devices connected to the disconnected zones/signaling line circuits may be tested for alarm actuation by placing each device (i.e. smoke detectors, manual stations, etc.) into alarm individually.

- If the Silent Mode is selected, only the printer (if connected) will record the event (Alarm, Zone/Circuit Number/Device Address, Time, Date). In this mode, the notification appliance circuits will **NOT** activate.
- If the Audible Mode is selected, the printer (if connected) will record the event and the notification appliance circuits will pulse **four (4)** times each time an initiating device is actuated.

**NOTE:** Each smoke detector tested for alarm will be automatically reset after the alarm has been recorded. All normally open contact devices must be manually reset.

#### 3.5.4.2 Supervisory/Tamper Test

- All supervisory/tamper devices connected to the disconnected zones/signaling line circuits may be tested by actuating each device (i.e. OS&Y valve, post indicator valve, etc.) individually.
- If the Silent mode is selected, only the printer (if connected) will record the event (Supervisory, Zone/Circuit Number/Device Address, Time, Date). In this mode, the notification appliance circuits will **NOT** activate.
- If the Audible mode is selected, the printer (if connected) will record the event and the notification appliance circuits will pulse **three (3)** times each time a supervisory device is actuated.

#### 3.5.4.3 Supervision Test

The supervision of the devices connected to the disconnected zones/signaling line circuits wiring may be tested by removing individual devices (i.e. smoke detectors, manual stations, etc.) from the initiating circuits one at a time.

- If the Silent mode is selected, only the printer (if connected) will record the event (Trouble, Zone/Circuit Number/Device Address, Time, Date). In this mode, the notification appliance circuits will **NOT** activate.
- If the Audible mode is selected, the printer (if connected) will record the event and the notification appliance circuits will pulse **two (2)** times each time a device is removed from the initiating circuit.

### 3.5.5 System Restoration

Verify that all actuated alarm initiating devices have been restored to their normal positions.

To exit the Walk Test program, replace all operated circuit disconnect switches to their "NORMAL" positions and repeat the activation steps for SCU or KDU-L/KDU Dual Mode Walk Test activation, or reset the system.



**CAUTION:** FAILURE TO RESTORE INITIATING DEVICES TO NORMAL CONDITION AND/OR REPLACING OPERATED CIRCUIT DISCONNECT SWITCHES TO NORMAL POSITIONS WILL CAUSE A GENERAL ALARM, INCLUDING OPERATION OF THE MUNICIPAL CIRCUITS AND POSSIBLE OPERATION OF THE RELEASING CIRCUITS.

### 3.6 Fire Drill Procedure

#### 3.6.1 General

The Fire Drill Program is available in two modes:

- The "Drill" mode energizes all notification appliances via the system power supply.
- The "DrillTst" mode energizes all notification appliances directly from the standby batteries.

**NOTE:** At any time during a fire drill, the notification appliance circuits programmed to be silenceable may be silenced by the System Silence switch. An actual alarm from any zone or signaling line circuit will override any Drill function.

#### 3.6.2 Fire Drill Activation (SCU)

The Fire Drill Program requires a Level 2 (or higher) password:

MODE	DISPLAY CODE	DESCRIPTION
Audible Test	"17"	Energizes all notification appliances.
Audible With Battery Test	"18"	Energizes all notification appliances with the system operating on battery power.

To enter the Fire Drill program:

- 1) Press the "PROGRAMMING" (PROG) switch twice to make the display show "02".
- 2) Press the "ACKNOWLEDGE" (ACK) switch once. The display will show "AC".
- 3) Enter the Level 2 (or higher) password by pressing the "PROG" switch until the first digit of the password appears in the left display window, and then the "SILENCE" (SIL) switch until the second digit of the password appears in the right display window.
- 4) Press the "ACK" switch once. The display will read "17" indicating the Audible Test. If the Audible Test With Battery is desired, press the "PROG" switch once. The display shows "18".
- 5) Press the "ACK" switch again. The display will read "dr" indicating that the system is in the drill mode.
- 6) Press the "ACK" switch to silence the resulting trouble condition.

### **3.6.3 Fire Drill Activation (KDU/KDU-L)**

- 1) Press the "MENU" switch.
- 2) Type the Level 2 (or higher) password on the numeric keypad.
- 3) Press the "NEXT EVENT" switch to "Enter" the password, (Notice the word "Enter" appears above this switch on the display).
- 4) Press the "RESET/LAMP TEST" switch on the KDU/KDU-L to select the walk option (notice the word "Walk" appears above this switch).
- 5) Press the "ACKNOWLEDGE" switch for fire drill (Drill) or press the "PREVIOUS EVENT" switch for fire drill with standby battery (DrillTst) test. The system will now enter a fire drill and energize the notification appliance circuits.  
The KDU/KDU-L will display the message "Fire Drill" if fire drill was selected or "Batt Test" if fire drill with battery test was selected.

### **3.6.4 Fire Drill Restoration**

The Fire Drill can be stopped at any time by repeating the activation steps or by resetting the system.

Follow the above procedure to enable the releasing devices, selecting the Enable operation in Step 4.

**SECTION FOUR**  
**GLOSSARY OF TERMS**



## 4.0 GLOSSARY OF TERMS

<b>Acknowledge</b>	A switch that silences the control panel audible sounder.
<b>Address Switch</b>	A rotary or DIP switch on an addressable module or sensor used to assign its' address.
<b>Auto Configuration</b>	The process of programming a microprocessor based control panel to recognize all installed units and generate a general alarm default program, without the use of a computer.
<b>B+</b>	Used by FCI to describe the (+) 24 VDC operating power output of a control panel.
<b>City Box Circuit</b>	A circuit that energizes or triggers a local energy city "master" fire alarm box connected to a municipal fire alarm system.
<b>Coded Pattern</b>	A signal pulsed in a prescribed code with not less than three impulses. The signal is to be repeated for a minimum of three times. Example: Coded "Threes" (3-3-3) per ANSI S3.41.
<b>Coded Zone</b>	A zone set up for non-latching operation, which follows a coded pattern generated by the initiating device . This zone circuit causes the associated notification appliance circuits to follow the coded pattern.
<b>Control Functions</b>	Functions which are secondary to alarm functions during an alarm condition. These can include air handling shutdown, damper operation, elevator recall, door holders, etc.
<b>Cross Zoned/Anded</b>	A system where two or more zones or addressable devices must go into alarm to initiate a sequence of events.
<b>Cutoff</b>	(Time Limit Cutoff). A programmable option which automatically silences notification appliances after a predetermined period of time. Any subsequent alarm will resound the notification appliances.
<b>Day/nite</b>	The controlling of the P.A.S. function or analog sensor sensitivity based on time of day, i.e.: day time (occupied) active, night time (unoccupied) not active.
<b>Deluge</b>	A sprinkler system wherein all sprinkler heads operate simultaneously upon energization of a sprinkler solenoid valve.
<b>Disconnect</b>	Removes a specific input/output from the alarm bus, while retaining normal supervisory functions. Disconnect switches may also be used for switch programming and Walk Test.
<b>Drill Switch</b>	A switch that energizes notification appliances only, without notifying the fire department or energizing control functions.

<b>Dry Contacts</b>	A set of terminals which have no voltage present. Used to control output devices (door holders, air handling units, elevators, etc. . .). These contacts are available in three arrangements: Form "A" ( normally open) Form "B" (normally closed) Form "C"( 1 open, 1 closed, with a single, common armature). (SPDT)
<b>Field Configuration Program (FCP)</b>	A copyrighted software program that enables licensees and/or sub-licensees to program the control panel to perform intricate functions not possible with auto configuration.
<b>FCINET<sup>®</sup></b>	Serial communication bus protocol used in the 7200 Series.
<b>Float Charge</b>	A battery charging current sufficient to maintain the battery under normal operating conditions.
<b>General Alarm</b>	A system configuration wherein the initiation of any alarm results in activation of all outputs.
<b>Inhibit</b>	A programmable option which prevents notification appliances from being silenced until the inhibit time period expires.
<b>Lamp Test</b>	Lights all LEDs (including annunciator outputs) while also energizing the audible sounder. A system lamp test does not activate RAU outputs. These can be tested using the RAU local lamp test.
<b>Manual Release</b>	A zone programmed to release an extinguishing agent directly, without being delayed by a timing function or cross-zoning.
<b>Microprocessor Failure</b>	A condition wherein the microprocessor can no longer process information and make decisions. During this condition, degrade-mode alarm processing is provided.
<b>Multi-level Zone</b>	A zone providing three status types of indication, where all three types can be processed at the same time: (Open/Fault, Current Level 1, Current Level 2). Separate and distinct control/signaling is possible from each type of status.
<b>Multi-appliance Circuit Patterns</b>	A notification appliance circuit that can generate two or more pattern types, based on zone input selection.
<b>Non-latching</b>	A circuit which follows its initiating signal. When the signal is removed, the device/circuit returns to normal. Typically used for coded signals.
<b>Non-Resettable</b>	A voltage that is not affected by the reset switch.

<b>P.A.S.</b>	Positive Alarm Sequence: A timing sequence where the activation of programmed output circuits is based upon two (2) timing functions. Timing Function 1 is based upon alarm acknowledgment. If the alarm is not acknowledged within a programmed time period, preprogrammed output circuits activate. If the alarm is acknowledged, Timing Function 2 is activated. If the alarm is not reset within a programmed time period, preprogrammed output circuits activate.
<b>PNIS</b>	Positive Non-Interfering And Successive. A scheme which prevents simultaneously generated coded outputs from interfering with each other. It permits any zone to transmit, in turn, its assigned code once the previously activated zone has completed transmitting its code.
<b>Preaction</b>	A preliminary alarm condition that precedes a general alarm condition. Mostly used to describe a dry sprinkler system that fills with water upon energization of a solenoid valve caused by an alarm in a fire alarm system.
<b>Releasing Device</b>	A solenoid that operates a valve used to discharge an extinguishing agent.
<b>Release Output</b>	An output which supervises the connection and controls the function of an extinguishing agent solenoid. This output is normally controlled by an "Anded" group (Cross Zone) Manual Release and Agent Abort.
<b>Resettable</b>	A voltage output that is interrupted by operation of the reset switch.
<b>Reverse Polarity Output</b>	During an alarm, this output reverses the polarity of a voltage applied to a leased telephone line connected to a remote supervised station, indicating an alarm condition. Absence of voltage at the receiving unit indicates a trouble condition.
<b>Silence</b>	A switch that deactivates all silenceable notification appliance circuits.
<b>SNI ( Series Non-Interfering)</b>	A circuit which prevents simultaneously generated coded outputs from interfering with each other. Unlike Positive SNI operation, (PNIS), simultaneously generated codes may be lost while awaiting their turn. Example: A mechanically operated coding device (pull station) may have its spring run down while awaiting its turn to signal.
<b>Subsequent Alarm</b>	A feature which causes silenced notification appliances to re-energize or resound upon receipt of a following or subsequent alarm.
<b>Supervisory/ Tamper</b>	Contacts, which when activated by an off-normal condition (usually in a sprinkler system) initiate a separate and distinct signal other than alarm or trouble.
<b>Trouble Reminder</b>	The reactivation of a silenced audible sounder when a trouble condition has not been rectified within a programmed time period.
<b>Verified Zone</b>	A zone detection circuit that differentiates between a specified current draw and a short circuit. During a current draw, the zone is reset. If another current draw occurs within a set period of time, an alarm will result. If the current draw does not recur within a set period, the system will return to normal. (May also activate trouble circuitry). A short circuit causes an immediate alarm condition.



**SECTION FIVE**  
**TRANSIENT OVERVOLTAGE**  
**PROTECTION**



## SECTION 5.0: TRANSIENT OVERVOLTAGE PROTECTION

In order to comply with the new and revised requirements of UL Standard 864, (Control Units for Fire Protective Signaling Systems), for transient overvoltage protection on circuits extending outside the building in which the control unit is installed, a Listed secondary transient overvoltage protector (Ditek Model DTK-2LVLPSCP) is required on the following circuits as follows:

- Always required for polarity reversal (remote station) circuits.
- Required if any interconnecting wiring between the control unit and the municipal box extends outside the building for more than 1,000 feet.
- Required if there exists any possibility that a power cross could result on any interconnecting wiring between the control unit and the municipal box that extends outside the building.

### 5.1 Routing Of Power-Limited Field Wiring Circuits

UL Standard 864, (Control Units for Fire Protective Signaling Systems), requires that a minimum of 1/4 inch separation be maintained between power-limited circuits and non power-limited circuits. The control unit is designed so the required separation between these circuits (power-limited vs. non power-limited) is maintained at the field wiring terminals.

In order to fully comply with the intent of these requirements, however, the minimum 1/4 inch separation must also be maintained between the field wiring conductors of power-limited circuits and non power-limited circuits. This may be accomplished by routing the field wiring as shown in the following diagram.

Unless otherwise indicated on the unit, all field wiring circuits are power-limited except:

- AC power circuit
- Standby battery circuit
- Municipal box (auxiliary) circuit

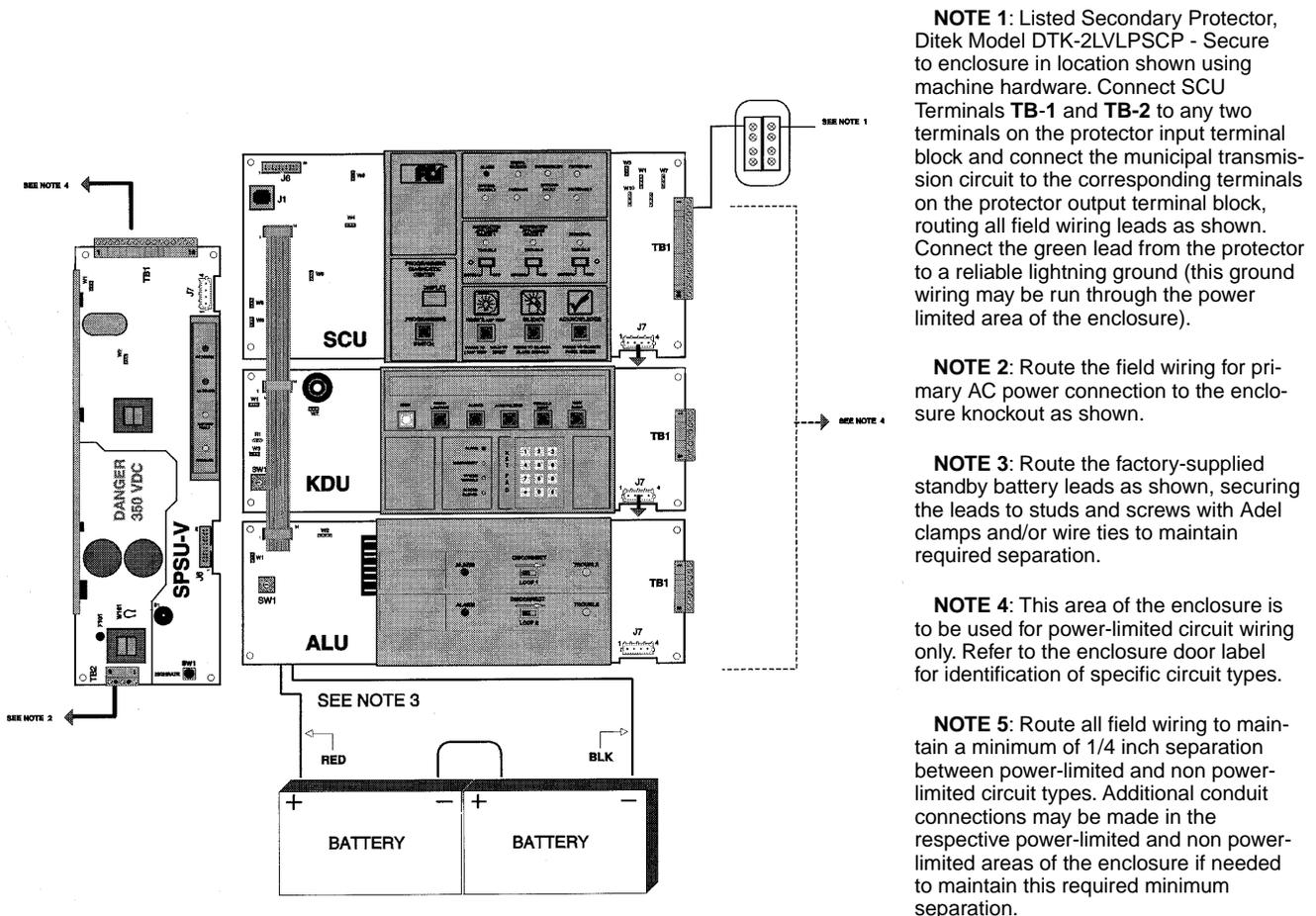
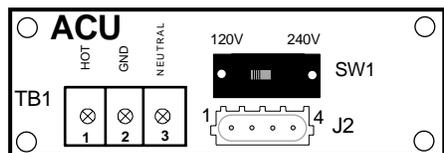
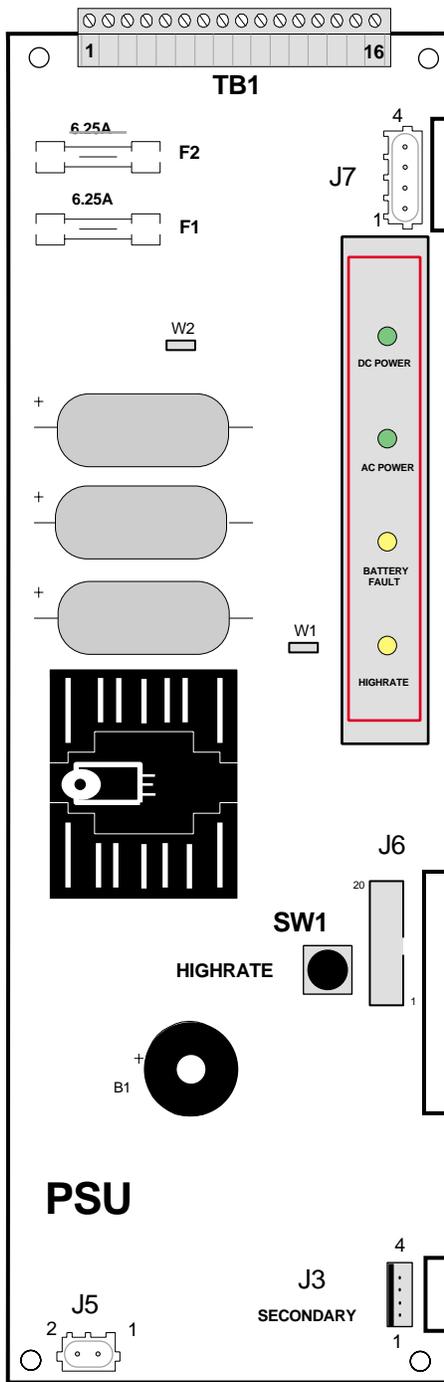


Fig. 5-1 Routing of Power-Limited Field Wiring Circuits



**SECTION SIX  
PSU/ACU/XFMR  
SUPPLEMENT**



Power Supply Unit (PSU/ACU/XFMR) CAB-B, -C or -D

# SECTION 6.0: INSTALLATION/TERMINAL DESCRIPTIONS

## 6.1 Power Supply Unit (PSU/ACU/XFMR)

Table 6-1 PSU/ACU Connections, Fuses, Jumpers, LEDs		
<b>FIELD WIRING CONNECTIONS (PSU)</b>		
<b>Designation</b>	<b>Description</b>	<b>Comments</b>
<b>TB1-1, -2</b>	Ext. Non-resettable Positive (+)	Auxiliary power circuit, non-resettable, 24 VDC, @ 1.7 amps. Power limited.
<b>TB1-3, -4</b>	Common Negative ( - )	System Common. Power limited.
<b>TB1-5</b>	Ext. Reset. Positive (+)	Resettable 4-wire smoke detector power, 24 VDC @ 1.7 amps., power limited.
<b>TB1-6,</b>		Not used.
<b>TB1-7</b>	Ext. Transfer Control	Power limited. (Rigid conduit, max. 20 feet)
<b>TB1-8</b>	Earth Ground	Minimum wire size 14 AWG; Provides protection from lightning and other electrical disturbances. Failure to connect a proper ground eliminates protection: see Section 6.2.3.
<b>TB1-9</b>		Not used.
<b>TB1-10</b>	Battery Positive (+)	See Section 6.2.5 (max. battery size 34 A/H) Non-power limited.
<b>TB1-11</b>	Battery Negative ( - )	See Section 6.2.5, Non-power limited.
<b>TB1-12, 13, 15, 16</b>		Not used.
<b>TB1-14</b>	DSU Trans. Control	Connects to DSU <b>TB1-14</b> ONLY. (If DSU is installed)
<b>FUSES</b>		
<b>F1</b>	6.25 amp.	Main DC fuse (Slo-Blo)
<b>F2</b>	6.25 amp.	Battery fuse (Slo-Blo)
<b>PSU/ACU/XFMR- CONNECTORS</b>		
<b>J2 (ACU)</b>	2-wire (blk-blk)	Connects to XFMR transformer primary.
<b>J3 (PSU)</b>	4-Pin (yel-yel-orn-orn)	Connects to XFMR transformer secondary.
<b>J5 (PSU)</b>	2-pin (yel-gry)	From <b>P2</b> of ACU. (brownout)
<b>J6 (PSU)</b>	20-pin	Communication cable - connects to <b>J6</b> of SCU (or DIU).
<b>J7 (PSU)</b>	4-wire (rd-blk-yel-gry)	Connects to SCU <b>J7</b> . (system power)
<b>LEDs</b>		
AC POWER	Green	Lights to indicate AC input.
DC POWER	Green	Lights to indicate power supply is operating.
BATTERY FAULT	Yellow	Lights to Indicate low or no battery condition.
BATTERY HIGH RATE	Yellow	Lights when the batteries are charging at high rate.
<b>JUMPER</b>		
<b>W1</b>	2-pin	OUT for sealed lead-calcium batteries, IN for vented nicad batteries.
<b>W2</b>	2-pin	OUT when external battery charger is used, IN if PSU charger is being used.
<b>SWITCH</b>		
PSU S1	Push	Places charger into "High Rate" operation
ACU S1	Slide	(Leave in 120 VAC position).

**NOTE: The PSU/ACU/XFMR cannot be used to power the FireVac<sup>®</sup>7200 Emergency Voice/Alarm Communication System or the RDU Releasing Device Unit.**

### 6.1.1 Power Supply Unit (PSU)

The Power Supply Unit (PSU) is located on the left side of the cabinet. It provides an integral 5 ampere, power limited, power supply with 1 ampere dedicated for the dual rate battery charger, and the remaining 4 amperes providing power for system, initiating, notification and auxiliary device operation. A terminal block that can accommodate up to 12 AWG wire is provided.

Upon loss or degradation (brown-out) of line voltage AC power to 85% of nominal, the system automatically transfers to standby batteries, the “AC POWER” and “DC POWER” LEDs will extinguish, the “SYSTEM TROUBLE” LED will light and the audible sounder will sound.

Table 6-1 provides information on field wiring connections, jumpers, fuses, switches and LEDs. See Section 6.2.6 for a list of approved batteries for use with the PSU.

### 6.1.2 AC Unit (ACU)

The ACU contains a 3-terminal block for connection of 120 VAC, 2 amp. max. Electrical connections to the ACU must be to a dedicated branch circuit and mechanically protected. All means of disconnecting the circuit must be clearly marked “FIRE ALARM CIRCUIT CONTROL” and accessible only to authorized personnel. Fusing of this circuit must comply with local codes for over current protection, and/or Article 760 — “FIRE PROTECTIVE SIGNALING SYSTEMS” of the National Electrical Code, NFPA 70.

**NOTE:** Switch **SW1** on the ACU must be set to 120 VAC.

**NOTICE:** Per Underwriters Laboratories of Canada, the neutral of an AC input source must be connected to the mounting stud located on the backbox of the system enclosure instead of the ACU.

## 6.2 PSU External Power Outputs

### 6.2.1 Non-resettable Auxiliary Power Circuit, 24 VDC (Power-Limited)

Terminals **TB1-1** and **TB1-2**, positive (+). This output, located on the PSU terminal block, must be used in conjunction with Terminal **TB1-3** or **TB1-4** COMMON (-). It may be used to furnish operating power for FM-900 Series door holders or any other auxiliary devices.

Voltage	24 VDC (nominal)
Maximum ripple voltage.	1.7 VAC (RMS)
Maximum output	1.7 amperes, PTC protected.
Power-limited	

Operation of the system “RESET/LAMP TEST” switch does not interrupt the output from these terminals.

### 6.2.2 Resettable Auxiliary Power Circuit, 24 VDC (Power-Limited)

Terminal **TB1-5**, positive (+). This output, located on the terminal block, must be used in conjunction with Terminal **TB1-3** or **TB1-4** COMMON (-). It may be used to furnish operating power for 4-wire smoke detectors CPD, PSD, W/CPD-101 base, 301I/P/PT with 301B4 base, and projected beam Detector SPB-24.

Voltage	24 VDC (nominal),
Maximum ripple voltage	1.7 VAC (RMS)
Maximum output	1.7 amperes, PTC protected.
Power limited	

This output is interrupted by operation of the system “RESET/LAMP TEST” switch.

### 6.2.3 Earth Ground



**WARNING:** Terminals **TB1-8** on the PSU plug-in terminal block must be connected to an earth ground connection per Article 760 of the National Electric Code. Failure to make a proper earth ground connection to a metallic cold water pipe or driven ground rod to this terminal will result in loss of lightning protection, reduce the tolerance of the system to transients, and will adversely affect the operation of the system. Panel neutral or conduit ground is not acceptable; minimum wire size is 14 AWG.

### 6.2.4 “High Rate” Switch

Pressing this switch places the charger into HIGH RATE operation. The “HIGH RATE” LED will light, while the audible sounder will sound after a 45 second delay. If the batteries are low, the charger will remain in the “HIGH RATE” condition until the batteries are fully charged.

### 6.2.5 Standby Battery Connections

Terminals **TB1-10 (+)** and **TB1-11 (-)** on the terminal block are for connection of 24 volt rechargeable batteries (see list below). Be sure to observe polarity. Presence of the battery is supervised.

If a battery fault is detected, the “BATTERY FAULT” LED will light, the “SYSTEM TROUBLE” LED will light, and the audible sounder will sound. The automatic dual-rate charge circuitry is capable of recharging batteries with capacity ratings from 6 to 34 ampere hours (AH); maximum charge current is limited to 1 ampere. Protection circuitry is provided for reverse connection of the batteries.

### 6.2.6 Approved Batteries

Use only the following batteries:

#### Lead-calcium batteries:

Model	Qty	Amp/hour
B-6R	(2)	6 AH
B-7R	(2)	7 AH
B-15	(2)	15 AH
B-17R	(2)	17 AH
B-31	(2)	31 AH

#### Nickel cadmium batteries

Model	Amp/hour
BN-11	11 AH
BN-18	8 AH
BN-25	15 AH
BN-34	34 AH

See Table 6-1 for proper jumper orientation for the different types of battery.

### 6.2.7 Standby Battery Calculations

The size of the standby batteries is calculated by totaling quantities of devices and units in Table 6-2 below, and completing the calculations in Table 6-3.s

**Table 6-2 Battery Standby Chart**

Qty	Module	Description	Supv. Current	Alarm Current	Total Supv. Current	Total Alarm Current
1	PSU	Power Supply Unit	.012 A	.012 A		
1	SCU	System Control Unit	.050 A	.260 A	.050 A	.260 A
	QZU	Quad Zone Unit	.027 A	.062 A		
	QRU	Quad Relay Unit	.004 A	.023 A*		
	HRU	High Current Relay Unit	.004 A	.034 A*		
	EZU-L	Eight Zone Unit	.045 A	.086 A		
	EZD-L	Eight Zone Daughter Board	.002 A	.009 A		
	EZA-L	Eight Zone Annunc. Board	.002 A	.009 A		
	DSU	Dual Signal Unit	.025 A	.075 A		
	ZCU	Zone Coder Unit	.001 A	.037 A		
	ALU	Analog Loop Unit	.065 A	.085 A		
	KDU-L	Keyboard Display Unit, Local	.060 A	.065 A		
	KDU	Keyboard Display Unit, Remote	.060 A	.065 A		
	RAU	Remote Annunciator Unit	.018 A	**		
		" (incandescent lamps)	.018A	**		
	RAU-FV	Remote Annunciator Unit	.018 A	**		
	SSU	Sprinkler Supervisory Unit (ULC Only)	.027 A	.062 A		
	DIU	Distributed Intelligent Unit	.017 A	.072 A		
		Smoke Det., Ionization		†		†
		Smoke Det., Photoelectric		†		†
		Notification appliances				
<b>TOTALS</b>						
<b>NOTE:</b>						
† Alarm current is limited by zone module circuitry and is not involved in battery calculation.						
* Alarm current is for one (1) active relay.						
** Alarm current: Add .007 A for each LED, or add .075 A for each incandescent lamp.						

**Table 6-3 Battery Calculations**

A	Total Supervisory Current from Table 6-2	
B	Enter number of standby hours per NFPA requirements for the specific installation †	
C	Multiply Line A times hours in Line B	
D	Total alarm current from Table 6-2	
E	Enter alarm period in hours ( 5 min. = .084 hour)	
F	Multiply Line D times Line E	
G	Total of lines C&F	
H	Multiply line G by 1.2 (Total ampere/hours required*)	
<p>† Local, Central Station and Proprietary systems require 24 hour standby with 5 minute alarm period. Municipally connected systems require 60 hour standby with 5 minute alarm period. Factory Mutual Research requires 90 hour standby with 15 minute alarm period for preaction/deluge systems.</p> <p>* *Use next size battery with capacity greater than required.</p> <p>See 6.2.6 for a list of approved batteries.</p>		