INSTALLATION GUIDE

XR2500F ADDRESSABLE FIRE ALARM CONTROL PANEL

Digital Monitoring Products

MODEL XR2500F
COMMAND PROCESSOR
INSTALLATION GUIDE

FCC NOTICE

This equipment generates and uses radio frequency energy and, if not installed and used properly in strict accordance with the manufacturer's instructions, may cause interference with radio and television reception. It has been type tested and found to comply with the limits for a Class A computing device in accordance with the specification in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the installer is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna

Relocate the computer with respect to the receiver

Move the computer away from the receiver

Plug the compute into a different outlet so that computer and receiver are on different branch circuits

If necessary, the installer should consult the dealer or an experienced radio/television technician for additional suggestions. The installer may find the following booklet, prepared by the Federal Communications Commission, helpful:

"How to identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402

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Listings and Approvals

Revisions to This Document

This section explains the changes made to this document during this revision. It lists the date and identifies the change(s) made, the related section number and section heading, and a summary of the change.

Date	Section Number and Heading	Quick Explanation of Changes
10/05	2.6 Wiring Diagram	Updated End-of-Line (EOL) resistor information.
	6.5 LX-Bus Expansion	Added LX-Bus wiring information.
	12.6 Outputs	Clarified output operation.
	13.2 Output Expansion	Clarified 716 and 717 zone expander operation.
	14.1 Wiring Diagram	Updated EOL resistor information. Added 693 and Thinline keypad models.
	14.3 Accessory Devices	Added 693 and Thinline keypad models.
	14.4 Mounting Keypads	Added 693 and Thinline keypad models.
	14.5 Connecting Bus Devices	Clarified J22 on-board LX-Bus information.
	15.7 Standby Battery Calculations	Added 693 and Thinline keypad models.
	15.8 Standby Battery Selection	Added notes regarding transformers and battery recharge time.
	16.1 Terminals 5 and 6	Clarified bell output operation.
	21.1 Dry Contact Relay Outputs	Removed unsupported functions from listing.
	21.3 Output Harness Wiring	Removed 431 reference. Revised J2 Output Color Code wire colors.
	23.1 J23 6-Pin Header Description	Added J16 reset information.
	24.1 J22 LX-Bus Description	Added LX-Bus wiring information.
	39.1 through 39.5	Added New York City MEA Specifications. Note: Subsequent section numbers changed.
	Back Page	Added Listings and Approvals.

Introduction

1.1 Overview

The DMP XR2500F Addressable Fire Alarm Control Panel (FACP) is an expandable 24 VDC Fire Alarm Control with built-in DACT and LCD Fire Command Center keyboard with membrane keyswitch. A complete system can provide a total of 574 programmable inputs and outputs for commercial and industrial fire alarm service. The 24 VDC 4 Amp notification appliance power is distributed between two class B style W NAC outputs. Additional NAC outputs can be added with conventional supervision modules or addressable power supply/ boosters. Addressable smoke detectors and input modules round out the XR2500F to deliver a truly flexible and expansive fire detection and notification system. The Fire Alarm Control Panel is shipped pre-wired in a red metal enclosure housing the necessary components to monitor and control fire alarm notification appliances. The enclosure dimensions are as follows: 32" H x 14.5" W x 4" D. The lid adds about 0.5" to each side.

1.2 System Components

The XR2500F FACP consists of the following components:

- One Model XR2500F Command Processor panel
- Two Model 866 Class B Style W NAC modules
- One Model 504-24 VDC Power Supply
- One 16 VAC, 56 VA transformer
- One Model 481 Zone Expansion Interface Card
- One Model 893A Dual Phone Line module
- One Model 630F PCB and membrane switch
- One 28 VAC transformer
- Two Model 305 Plug-in Relays
- One Metal Backplate

1.3 Power Specifications

Command Processor:

Transformer Input: 16 VAC 56 VA
Standby battery: 12 VDC, 1.0 Amps Max. charging current
Auxiliary power: 12 VDC output at 1.5 Amp Max
All circuits are inherent Power Limited except red battery wires.

NAC Output:

24 VDC 4 Amps shared between NAC 1 and 2

Note: For UL installations, the total current combined from Auxiliary Power cannot exceed:
1.3 Amps with a 50 VA transformer, 1.0 Amp Max for Auxiliary Power
1.9 Amps with a 56 VA transformer, 1.0 Amp Max for Auxiliary Power.

1.4 Before You Begin

Before installing the XR2500F, we recommend you read through the entire contents of this guide. Familiarize yourself with the panel features and the key points to remember during the installation. Be sure to read and understand all of the caution statements printed in bold italics.

1.5 About this Guide

The information in this guide is organized into five sections: Table of Contents, Introduction, Installation, Compliance, and System Wiring Diagrams.

- The Table of Contents at the front lists the headings and subheadings used throughout each guide section.
- The Introduction section provides an overview of the XR2500F and this document.
- The Installation section begins with enclosure mounting instructions. Wiring diagrams for each component also appear in this section.
- The Compliance section lists all UL listings the XR2500F currently follows.
- The System Wiring Diagrams provide illustrations of typical XR2500F systems.

1.6 How to use this Guide

To locate information about the XR2500F installation, refer to the Table of Contents at the front of this guide. Find the subject heading that best describes the information you need and turn to the section number shown to the left of the heading. If you cannot find the information you need under that heading, scan through a few of the headings and read the text under those that sound similar.

Mounting

2.1 Mounting the Enclosure

The XR2500F must be mounted in a secure, dry location to protect the unit from damage due to tampering and the elements. The enclosure can be either flush mounted or surface mounted and includes a hinged door with lock. The hole in the enclosure door allows access to the Fire Command Center without opening the door. Figure 1 illustrates the mounting hole locations for the panel enclosure.

The enclosure dimensions are 32" tall, 14.5" wide, by 4" deep. The lid adds about 0.5" to each side.

2.2 Surface Mounting

The enclosure center hole should be attached to a wall stud. Due to the enclosure weight, especially the batteries, it is extremely important to mount the enclosure on the stud. Attach the two holes beside the center hole to sheetrock to secure enclosure. When mounting the enclosure, be sure to leave room for the panel door to swing open. The door lock should be easily accessible.

2.3 Flush Mounting

The enclosure can also be flush mounted. Use 1" screws to secure the enclosure between two studs using the two sets of holes on the sides of the enclosure. Use the top and bottom holes to secure to horizontal studs, if necessary.

2.4 Fire Command Center LCD Keyboard

A Fire Command Center LCD Keyboard has been factory installed on the XR2500F enclosure. A keyswitch has also been installed and pre-wired to the left of the keyboard. The user can turn the keyswitch to enable the four function keys without opening the enclosure door.

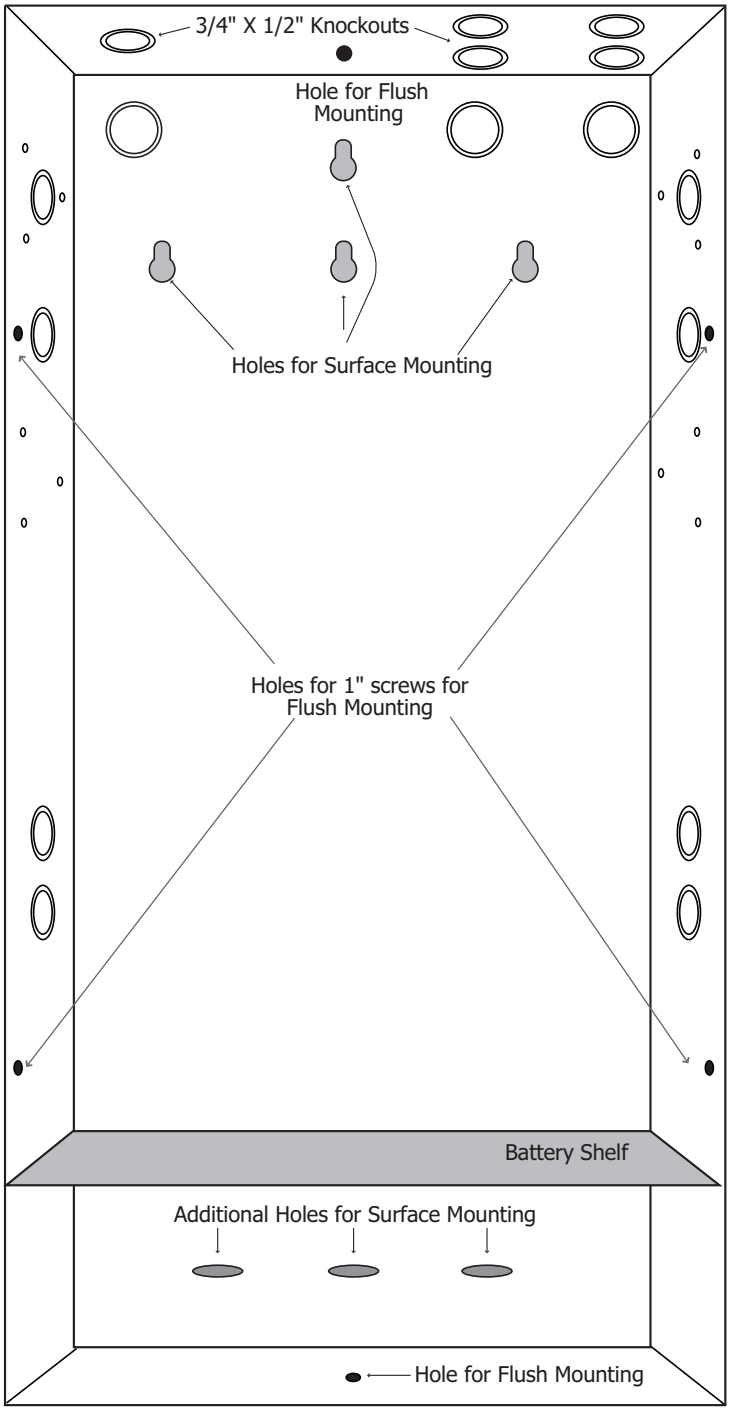


Figure 1: Mounting the XR2500F Enclosure

2.5 Metal Backplate

The XR2500F components are pre-wired and installed on a metal backplate. The backplate can be easily removed to keep components safe during pre-wire activities.

Remove AC and battery power from the XR2500F panel before removing the backplate. Disconnect all battery, transformer, and the Fire Command Center LCD keyboard wires. Also remove the AC wires from the 504-24 power supply. From the panel, disconnect the AC wires from terminals 1 and 2. Disconnect the battery wires either from the batteries or the panel terminals 3 and 4. Finally, disconnect the keyboard wires from panel terminals 7, 8, 9, and 10.

Remove the screws securing the backplate to the enclosure. Loosen the two top screws that the backplate hangs on. After loosening and removing the screws, lift the backplate up slightly and pull the backplate toward you. When reinstalling the backplate, be sure all connections are secure.

Figure 2 illustrates the backplate and the components. The backplate is shown in light gray.

2.6 Wiring Diagram

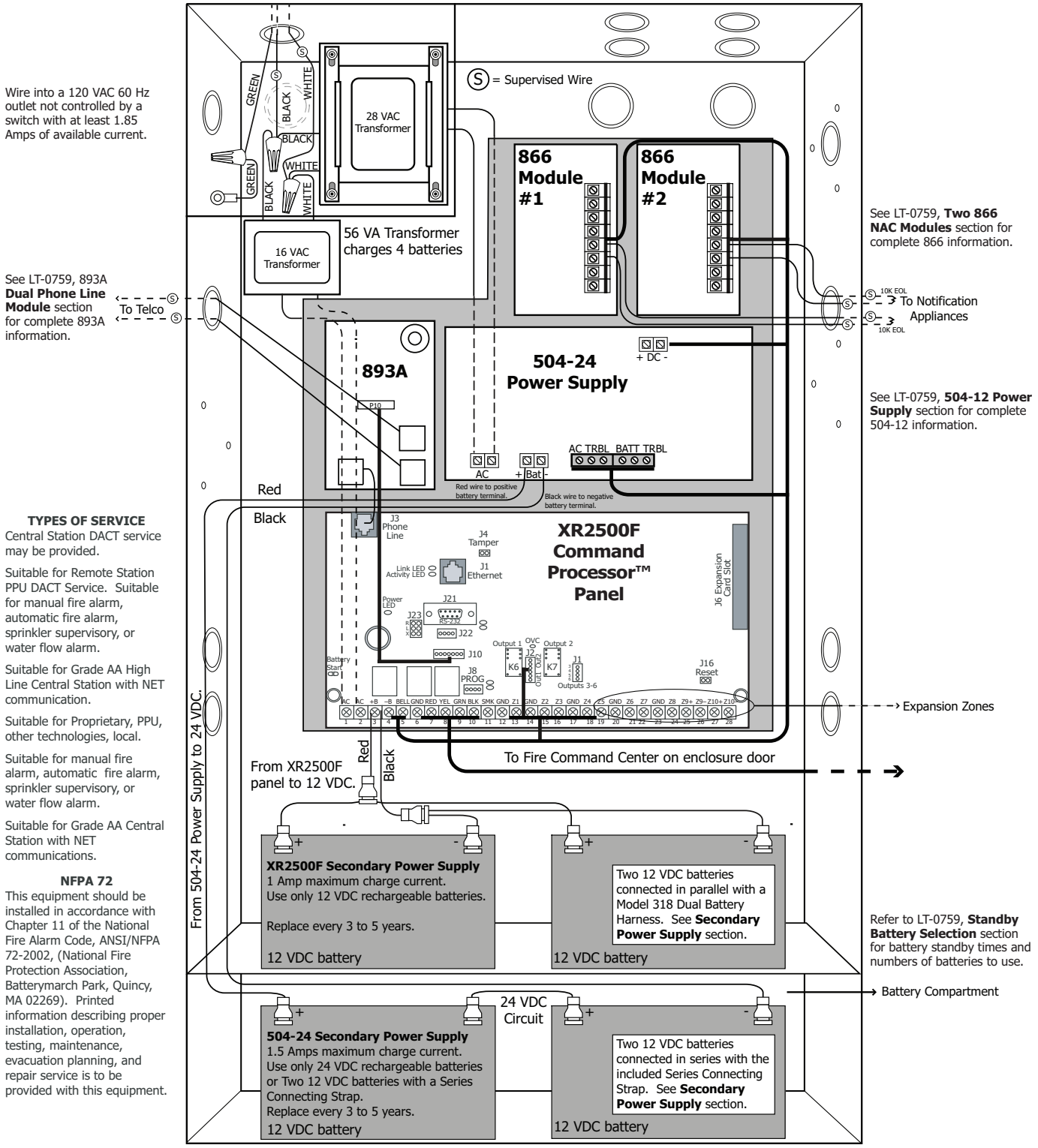
The XR2500F system below shows the component layout. The wires shown in this guide have been factory installed and connected. The dashed lines represent wires running underneath or behind a component. Detailed wiring diagrams for each supplied component appear in following sections of this guide.

WARNING

THIS UNIT MAY BE PROGRAMMED TO USE AN ALARM VERIFICATION FEATURE THAT RESULTS IN DELAY OF THE SYSTEM ALARM SIGNAL FROM THE INDICATED CIRCUITS. THE TOTAL DELAY (CONTROL UNIT PLUS SMOKE DETECTORS) SHALL NOT EXCEED 60 SECONDS. NO OTHER SMOKE DETECTOR SHALL BE CONNECTED TO THESE CIRCUITS UNLESS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).

Zones 9, 10, and all expanded zones are suitable for Class B (as applicable for the initiating and signaling line circuits per UL 864 Table 48.2 or 48.3). Installation limits under local Authority Having Jurisdiction (AHJ).

Verification Zones	Control Unit Delay	Smoke Model	Detector Delay
_____	13.6 sec.	_____	____sec.



TYPES OF SERVICE

Central Station DACT service may be provided.

Suitable for Remote Station PPU DACT Service. Suitable for manual fire alarm, automatic fire alarm, sprinkler supervisory, or water flow alarm.

Suitable for Grade AA High Line Central Station with NET communication.

Suitable for Proprietary, PPU, other technologies, local.

Suitable for manual fire alarm, automatic fire alarm, sprinkler supervisory, or water flow alarm.

Suitable for Grade AA Central Station with NET communications.

NFPA 72

This equipment should be installed in accordance with Chapter 11 of the National Fire Alarm Code, ANSI/NFPA 72-2002, (National Fire Protection Association, Batterymarch Park, Quincy, MA 02269). Printed information describing proper installation, operation, testing, maintenance, evacuation planning, and repair service is to be provided with this equipment.

Figure 2: XR2500F System

AC Connection

3.1 Transformers and AC Power Connection

The AC connection should be completed by a licensed electrician.

Never share the Fire Alarm Control Panel circuit with any other equipment.

The XR2500F comes supplied with two transformers: the 16 VAC 56 VA transformer and the 28 VAC 175 VA transformer. The 28 VAC and the 16 VAC transformer white leads and black leads must be connected together respectively. These wires must be connected to an unswitched 120 VAC 60 Hz power source with at least 1.85 Amps of available current.

Black wire - attach the black 120 VAC wire to the transformer black wires.

White wire - attach the white 120 VAC wire to the transformer white wires.

Green wire - attach the green wire lead to the green wire attached to the enclosure.

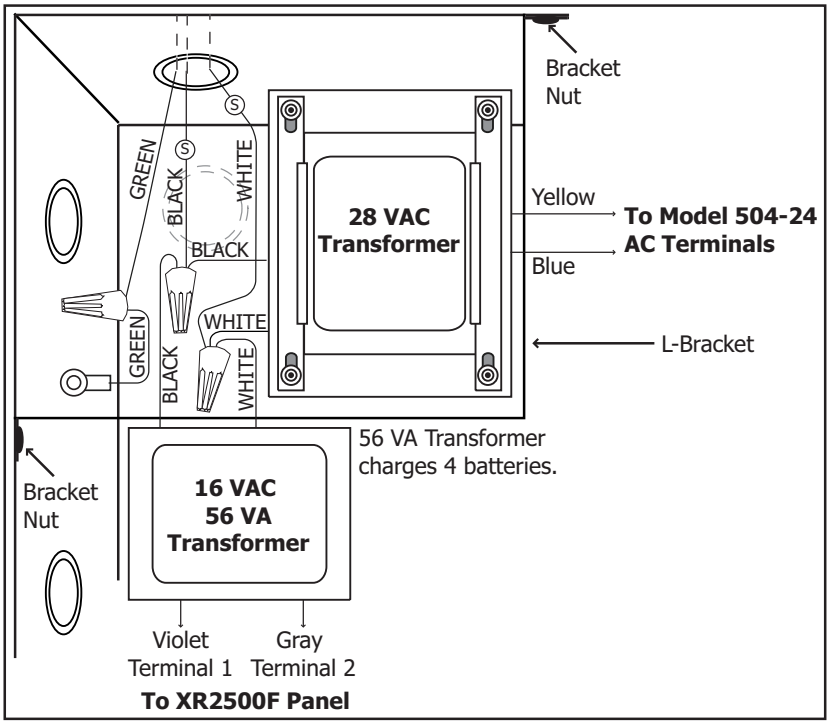


Figure 3: Transformers and AC Power Connection

Always ground the panel before applying power to any devices! Use 18 AWG or larger for all power connections. The XR2500F must be properly grounded before connecting any devices or applying power to the panel. Proper grounding protects against Electrostatic Discharge (ESD) that can damage system components.

3.2 28 VAC Transformer

The 28 VAC Transformer supplies power to the AC terminals of the 504-24 Power Supply which is factory pre-wired to the two 866 NAC modules. The 28 VAC is located in the upper right hand corner of the enclosure surrounded by a metal divider. See Figure 3 above and the 504-24 Power Supply section.

3.3 16 VAC Transformer

The 16 VAC 56 VA transformer supplies power to the XR2500F panel and is factory pre-wired. See Figure 3: Transformers and AC Power Connection. Also refer to Figure 11: XR2500F Panel Wiring Diagram.

3.4 Earth Ground from the XR2500F Panel

The XR2500F terminal 4 must be connected to earth ground using 14 AWG or larger wire to provide proper transient suppression. DMP recommends connecting to a cold water pipe, building ground, or ground rod only. Do not connect to an electrical ground or conduit, sprinkler or gas pipes, or to a telephone company ground.

Secondary Power Supply

4.1 Description

The XR2500F system includes pre-wired cables for connecting a 24 VDC battery to the 504-24 power supply and a 12 VDC battery to the XR2500F panel. For 24 VDC battery operation to the 504-24, connect two 12 VDC sealed lead-acid batteries in series using the included series connecting strap. See Figure 4. Observe polarity when connecting all batteries.

Use sealed lead-acid batteries only. Use the DMP Model 367, 368, 369, 365, 366, 12 VDC sealed lead-acid rechargeable batteries. Batteries supplied by DMP or manufactured by Eagle Picher or Yuasa have been tested to ensure proper charging with DMP products.

Gel cell batteries cannot be used with the XR2500F panel.

4.2 Battery Connection to XR2500F Command Processor panel

For 12 VDC battery operation to the XR2500F, connect the black battery lead to the battery negative terminal. The black battery wire connects to XR2500F panel terminal 4.

Connect the red battery lead to the battery positive terminal. The red battery wire connects to XR2500F panel terminal 3. See Figure 11 and Figure 2.

Add a second battery in parallel using the DMP Model 318 Dual Battery Harness. When wiring two batteries with the Model 318 Dual Battery Harness, plug the Dual Battery Harness red male end into the panel red female battery lead. Plug the Dual Battery Harness black male end into the panel black female battery lead. Attach both Dual Wiring Harness female leads to the two batteries as described above. See Table 3: Battery Calculations.

4.3 Battery Connection to the 504-24 Power Supply

The 504-24 is powered by 24 VDC. Two 12 VDC batteries connect together using the series connecting strap. The black battery wire connects to the 24 VDC battery negative terminal and to the 504-24 negative AC terminal.

The red battery wire connects to the 24 VDC battery positive terminal and to the 504-24 positive AC terminal. See Figure 4, Figure 9, and Figure 2. Also see the Battery Information section.

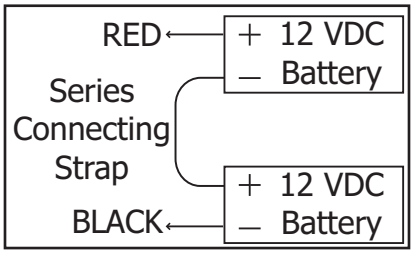


Figure 4: 24 VDC Battery Wiring

Two 866 NAC Modules

5.1 Description

Each 866 provides one style W indicating circuit for supervising UL polarized notification appliances, such as bells, strobes, and horns. See Table 1: Notification Appliances for a list of approved notification appliances.

5.2 Connection

Each 866 module is pre-installed on the removable backplate using the standard three-hole configuration. The modules are factory pre-wired to each other, the 504-24, and the XR2500F panel. Refer to the figure below and to Figure 2: XR2500F System for wiring connections.

You can connect 24 VDC Notification Appliances to terminals 5 and 6 of each module. Each module provides a zone of notification and can be activated separately.

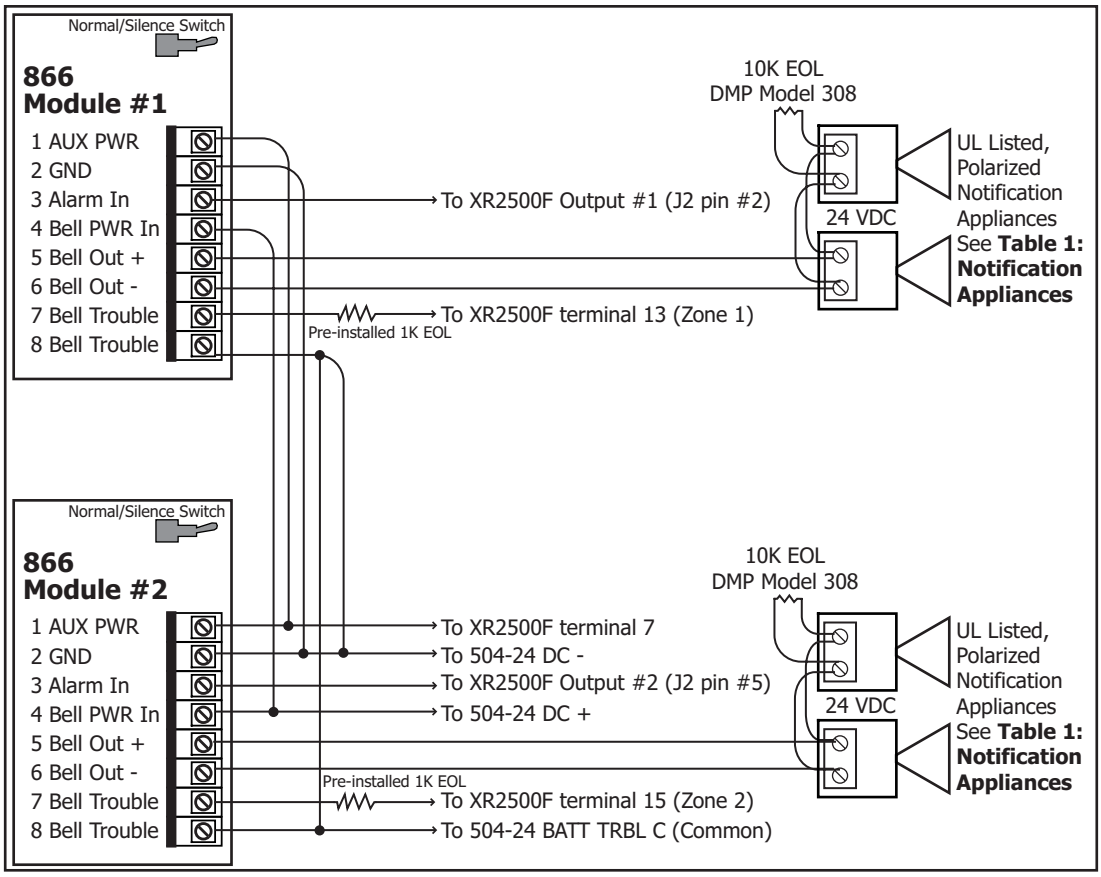


Figure 5: 866 Modules Wiring

5.3 Bell Silence/Bell Trouble

A bell silence switch on the 866 module is provided to prevent indicating devices from sounding during system testing. When the Silence position is selected, a 15-second delay occurs before the 866 bell trouble contacts (terminals 7 and 8) open. Select the Normal position after testing to return the 866 module to normal operation.

5.4 Notification Appliances

The following table indicates the approved notification appliances that can be used with the XR2500F system.

DMP Part Number	Description	Wheelock Model No.	12V	24V
802	Multi-tone Horn	MT-12/24	X	X
803	Standard Horn	NH-12/24	X	X
831	Sync Module, Single circuit	SM-12/24-R	X	X
832	Sync Module, Dual circuit	DM-12/24-R	X	X
901	Mini Horn	MIZ-24		X
904	Horn	AH-24		X
904WP	Weatherproof Horn	AH-24WP		X
906-6	6-Inch Bell	MB-G6-24-R		X
906-10	10-Inch Bell	MB-G10-24-R		X
921WP-75W	Weatherproof Strobe	RSS-2475C-FW		X
921-MCW	Multi-Candela Strobe	RSS-24MCW-F		X
922-MCW	Multi-Candela Strobe with Retrofit Plate	RSSP-24-MCW-F		X
923-MCW	Multi-Candela Horn Strobe	NS-24MCW-F		X
924-MCW	Multi-Candela Audible Strobe	AS-24MCW-F		X
924WP-75W	Weatherproof Audible Strobe	ASWP-2475W		X

Table 1: Notification Appliances

LX-Bus™ Operation

6.1 Description

The XR2500F Command Processor™ panel supports LX-Bus operation directly from the panel. Each LX-Bus circuit provides 100 additional zones. Use J22 LX-Bus Header for the first 100 zones. Use the installed 481 Zone Expansion Interface Card for the next 100 zones. This provides a total of 200 expansion zones. To install up to four additional Interface Cards use a Model 461 Interface Adaptor Card.

6.2 XR2500F On-board LX-Bus

To enable J22 to operate as an LX-Bus, place a jumper on the two pins next to the letter "L" on the J23 6-Pin header. When using J22 as an LX-Bus, connect a DMP Model 300 4-wire Harness to the J22 4-pin header labeled LX-BUS. This provides the first 100 LX-Bus zones numbered 500-599. Respect wire colors when connecting devices and use all four wires. Reset the panel using J16 jumper to activate LX-Bus operation.

Note: Do NOT use shielded wire when using the LX-Bus. Do NOT connect the wires from the 4-wire harness to the panel terminals.

6.3 LX-Bus 481 Zone Expansion Interface Card

The 481 Zone Expansion Interface Card provides an additional 100 zones to the XR2500F. When used in conjunction with the on-board J22 LX-Bus the 481 LX-Bus zones are numbered 600 to 699.

6.4 Installing the 481 Card

Remove AC and battery power from the XR2500F panel and ground yourself before handling and installing the 481 Card.

1. Align the 481 Card 50 pin connector with the XR2500F panel J6 connector.
2. Press the 481 onto the J6 connector while applying even pressure to both sides.

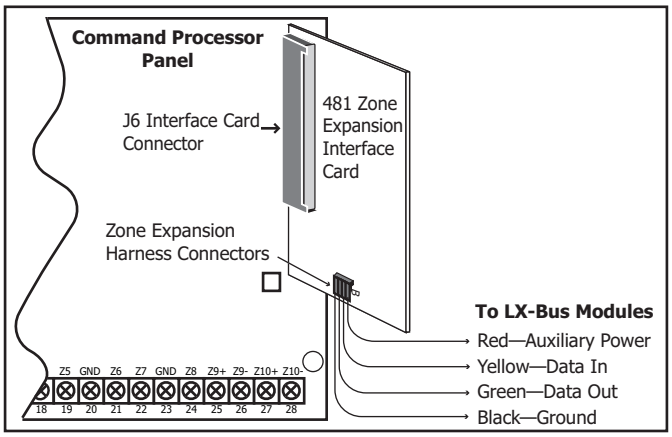


Figure 6: 481 Wiring

6.5 LX-Bus™ Expansion Capability

The on-board LX-Bus and the 481 Card each provide one 4-wire LX-Bus™ connection that allows you to connect up to 100 Model 521LX, 521LXT, or SLRLX Addressable Smoke Detectors. Also each LX-Bus™ could connect up to 25 Model 714, 715, and 725 Zone Expanders or 716 Output Expanders, up to six Model 714-16 or 715-16 Zone Expanders, and up to 100 Model 711 Zone Expanders. Power for the devices connected to the 481 Card is provided through the expansion harness Black and Red wires.

893A Dual Phone Line Module

7.1 Description

The 893A is a dual telephone line supervision module that allows the panel to indicate a phone line failure to the premises and the central monitoring station. After the 893A senses a failure on the main line, it switches to the backup, or secondary, phone line. The 893A installs on the removable backplate above the XR2500F circuit board.

7.2 Connection

The prewired 893A connects the panel to the public telephone network through an installed DMP 356 RJ Cable between the XR2500F panel J3 connector and the 893A Module J3 connector labeled PANEL.

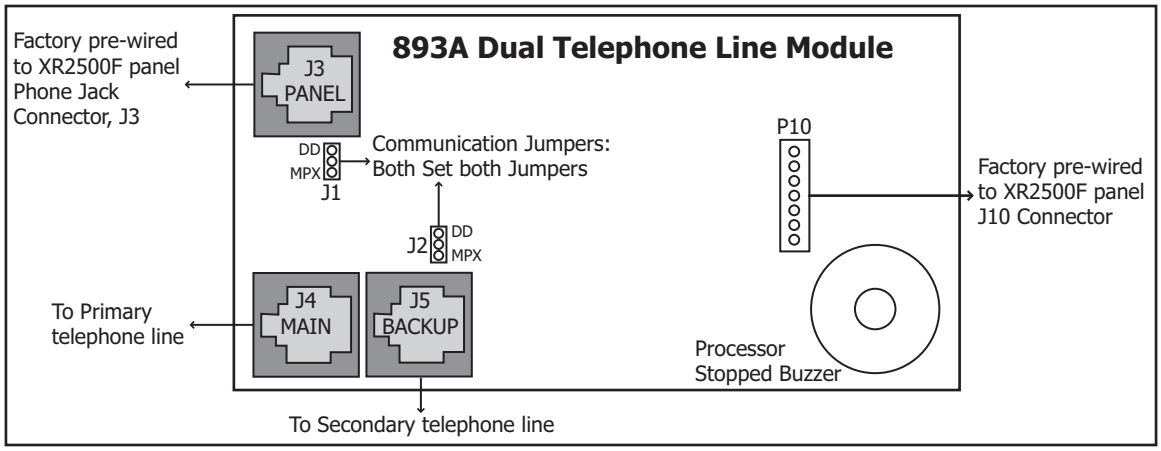


Figure 8: 893A Dual Phone Line Module Wiring

7.3 Jumper Settings

The 893A module has two sets of jumpers. Both communication jumpers must be set for DD (digital dialer) operation. Do not set the 893A jumpers next to MPX. The 893A Module supports multiplex operation, but the XR2500F panel does not.

7.4 Digital Dialer

You can configure the 893A to provide two lines of digital dialer. The XR2500F is preset at the factory for Digital Dialer. The Main modular jack (J4) is used for the primary digital dialer line. The Backup modular jack (J5) is used for the secondary digital dialer line.

7.5 Phone Line Monitor

The 893A uses a phone line monitor for the main and backup phone lines. When sending a report, the 893A verifies the main phone line is working before sending data. If the line is bad, the module tests the backup phone line. The 893A sends the report on the first working phone line.

The phone line monitor has a two-minute trouble delay and a one-minute restore delay. Phone line trouble is displayed in the Fire Command Center LCD Status List as a System Trouble. The Fire Command Center LCD is factory programmed to display system troubles in the Status List.

7.6 Processor Fail Buzzer

The 893A module also monitors the panel CPU and sounds a trouble buzzer whenever either the panel processor is reset using J16 or the processor stops functioning.

7.7 J10 893A Connector

The 893A Dual Phone Line Module connects to the XR2500F J10. Refer to the 893A Installation Sheet (LT-0135) for complete information.

7.8 Ground start

Ground start phone service cannot be used on commercial or residential fire applications.

7.9 Notification

The user must not repair registered terminal equipment. In case of trouble, immediately unplug the device from the telephone jack. The factory warranty provides for repairs. Registered terminal equipment may not be used on party lines or in connection with coin telephones. Notify the telephone company with the following information:

a. The particular line(s) where the service is connected

b. The FCC registration number as listed in Section 7.5

c. The ringer equivalence

d. The device make, model, and serial number (see the serial # sticker on the panel)

7.10 FCC Registration

The Model XR2500F complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the outside of the enclosure of this equipment is a label that contains, among other information, a product identifier in the format US:CCKAL00BXR500. If requested this number must be provided to the telephone company.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. See installation instructions for details.

The Ringer Equivalence Number (REN) is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

If the XR2500F causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with the Model XR2500F, for repair or warranty information, please contact DMP at the address and telephone number listed on the back of this document. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

If your premises has specially wired alarm equipment connected to the telephone line, ensure the installation of the XR2500F does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

Caution: To ensure proper operation, this equipment must be installed according to the installation instructions in this manual. To verify that the equipment is operating properly and can successfully report an alarm, this equipment must be tested immediately after installation, and periodically thereafter, according to the test instructions in this document and the XR500 Series Programming Guide (LT-0679). Additionally, verification of Line Seize capability should be made immediately after installation, and periodically thereafter, in order to ensure that this equipment can initiate a call even when other equipment (telephone, answering system, computer modem, etc.) connected to the same line is in use.

504-24 Power Supply

8.1 Description

The 504-24 is a power limited, switching power supply that meets UL, CSFM, NFPA, and FCC compliance standards. Model 504-24 is rated for 24 VDC @ 4 Amps maximum and supplies power to the 866 Modules.

8.2 LEDs

The 504-24 has two status LEDs that show the current state of power. The green LED indicates low AC input. The red LED indicates low standby battery power after AC has failed.

8.3 504-24 Condition Chart

Condition	Voltage Levels
AC Trouble	Approximately. 102 VAC
Battery Trouble	Below 23.6 VDC
Battery Restoral	Above 25.0 VDC
Battery Cutoff	Below 20.4 VDC

LED	Status	Condition
AC LED (Green)	On	AC Good
AC LED (Green)	Off	AC Bad
DC LED (Red)	On	Battery Good
DC LED (Red)	Off	Battery Bad

Table 2: 504-24 Condition and LED Indicators

8.4 504-24 UL Listings

For UL 603 Power Supplies for Burglary Alarm Systems and UL 294 Power Supplies for Access Control System applications: Voltage Range of 22.9 to 25.5 VDC.

For UL 1481 Power Supplies for Fire Protective Signaling the following maximum battery standby Ampere hours apply for 24 hours of battery backup:

Battery Standby Maximum: 49.2Ah

Output Voltage: 24 VDC

Output Current: 1.5A standby, 4 Amp alarm

8.5 24 VDC NAC Standby Battery Calculations

The following calculation defines the total number of standby battery Amp-hours required to support operation of the NACs and any other devices attached to the 504-24 power supply. From this calculation, assemble the appropriate number of batteries that will just exceed the calculated total Amp-hour requirement. The 866 NACs receive power for internal operation from the XR2500F panel and do not enter in this calculation themselves.

1. Add all standby current values including the power supply operating current.
2. Multiply the total standby current by the number of standby hours needed.
3. Add all alarm current values from the notification appliances attached to the 866 NACs and multiply by 0.25.
4. Add the total alarm mA-hour with the total standby mA-hour and then multiply this number by 0.001.

	Power Supply Operating Current		200	mA
	Other Standby Current	+	_____	mA
1.	Total Standby Current	+	_____	mA
	Number of Standby Hours Required	X	_____	hr
2.	Total Standby (mA-hr) Required	=	_____	mA-hr
3.	Total Alarm Current	=	_____	mA
	Total Alarm Current X 0.25	=	_____	mA-hr
	(0.25 = 5 minutes in alarm)			
	Total Standby (Required)	+	_____	mA-hr
	Total	=	_____	mA-hr
		X	0.001	
4.	Total Required Amp-hours	=	_____	

Table 3: Battery Calculations

8.6 Connection

The 24 VDC power supply is completely pre-wired. Refer to the following 504-24 wiring diagram for specific wire connections.

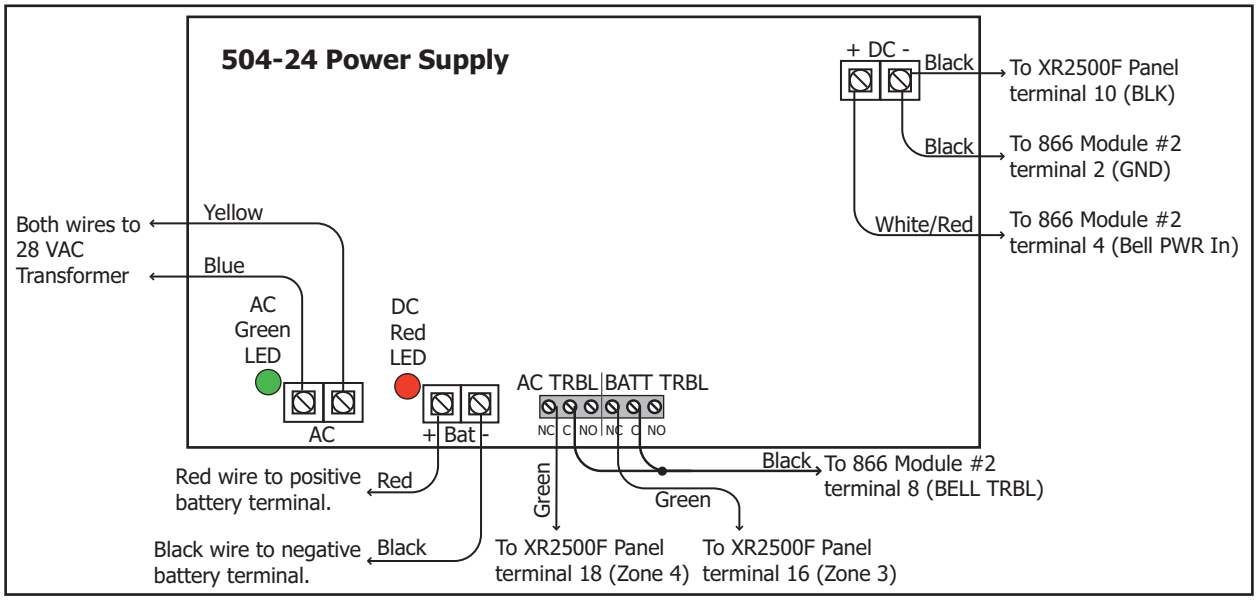


Figure 9: 504-24 Wiring

Interconnect Wiring Harness

9.1 Interconnect Harness

This chart explains the wire colors on the Interconnect Wiring Harnesses. It also explains to what each wire connects.

Wire Color	Connection From	Connection To
Red	Panel Terminal 7 (DC Power)	866 Module #2 Terminal 1 (Auxiliary Power)
Black	Panel Terminal 10 (Common)	504-24 DC - Negative DC Terminal (Ground)
Brown	Panel Terminal 13 (Zone 1)	866 Module #1 Terminal 7 (Bell Trouble)
Violet	Panel Terminal 15 (Zone 2)	866 Module #2 Terminal 7 (Bell Trouble)
Green	Panel Terminal 16 (Zone 3)	504-24 Battery Trouble Terminal N/O
White	Panel Terminal 18 (Zone 4)	504-24 AC Trouble Terminal N/C
Gray	Panel J2 Pin 2 (Common)	866 Module #1 Terminal 3 (Alarm In)
Orange	Panel J2 Pin 3 (Output 1 N/O)	Panel Terminal #5 (Bell Output)
White	Panel J2 Pin 5 (Common)	866 Module #2 Terminal 3 (Alarm In)
Yellow	Panel J2 Pin 6 (Output 2 N/O)	Panel Terminal #5 (Bell Output)
White/Red	504-24 DC + (Positive DC Terminal)	866 Module #2 Terminal 4 (Bell Power In)
Black	504-24 DC - (Negative DC Terminal)	866 Module #2 Terminal 2 (Ground)
Red	866 Module #2 Terminal 1 (Auxiliary Power)	866 Module #1 Terminal 1 (Auxiliary Power)
Black	866 Module #2 Terminal 2 (Ground)	866 Module #1 Terminal 2 (Ground)
Black	866 Module #2 Terminal 2 (Ground)	866 Module #1 Terminal 8 (Bell Trouble)
White/Red	866 Module #2 Terminal 4 (Bell Power In)	866 Module #1 Terminal 4 (Bell Power In)
Black	866 Module #2 Terminal 8 (Bell Trouble)	504-24 Battery Trouble Common Terminal
Black	866 Module #2 Terminal 8 (Bell Trouble)	866 Module #1 Terminal 8 (Bell Trouble)

Table 4: Interconnect Wiring Harness

Fire Command Center

10.1 Description

The XR2500F provides an LCD display and 20-key keyboard for programming and system user operation. The Fire Command Center is installed on the XR2500F enclosure door. A keyswitch is installed and pre-wired to the left of the keyboard. The user must turn the keyswitch to enable the four function keys. See the illustration below.

Figure 10: Fire Command Center LCD and Keyboard

10.2 Connection

The display and keyboard are factory pre-wired to the XR2500F panel terminals 7, 8, 9, and 10. For standby battery calculations, the display draws 92mA of current in normal standby or alarm condition. See Panel Standby Battery Calculations. The keyswitch is pre-wired to the membrane keyboard.

10.3 Remote Fire Command Center

Up to fifteen Model 630F Remote Fire Command Centers may be remotely attached to the XR2500F system. See the 630F Installation Guide (LT-0741) for complete information.

Panel Features

11.1 Description

The DMP XR2500F Command Processor™ Panel is a versatile 12 VDC, fire communicator panel with battery backup. The XR2500F provides eight on-board grounded zones for connecting Model 860, Class A zones and two on-board 12 VDC Class B, Stye A powered zones. The powered zones have a reset capability to provide for 2-wire smoke detectors, relays, or other latching devices. The XR2500F can communicate to one or two DMP SCS-1/SCS-1R Receivers using digital dialer or network communication, or to non-DMP receivers using the Contact ID format.

11.2 Connection

The XR2500F Command Processor panel is factory pre-wired and controls the other components in the system. Refer to the wiring diagram below for wiring. See the following sections for descriptions of additional XR2500F applications.

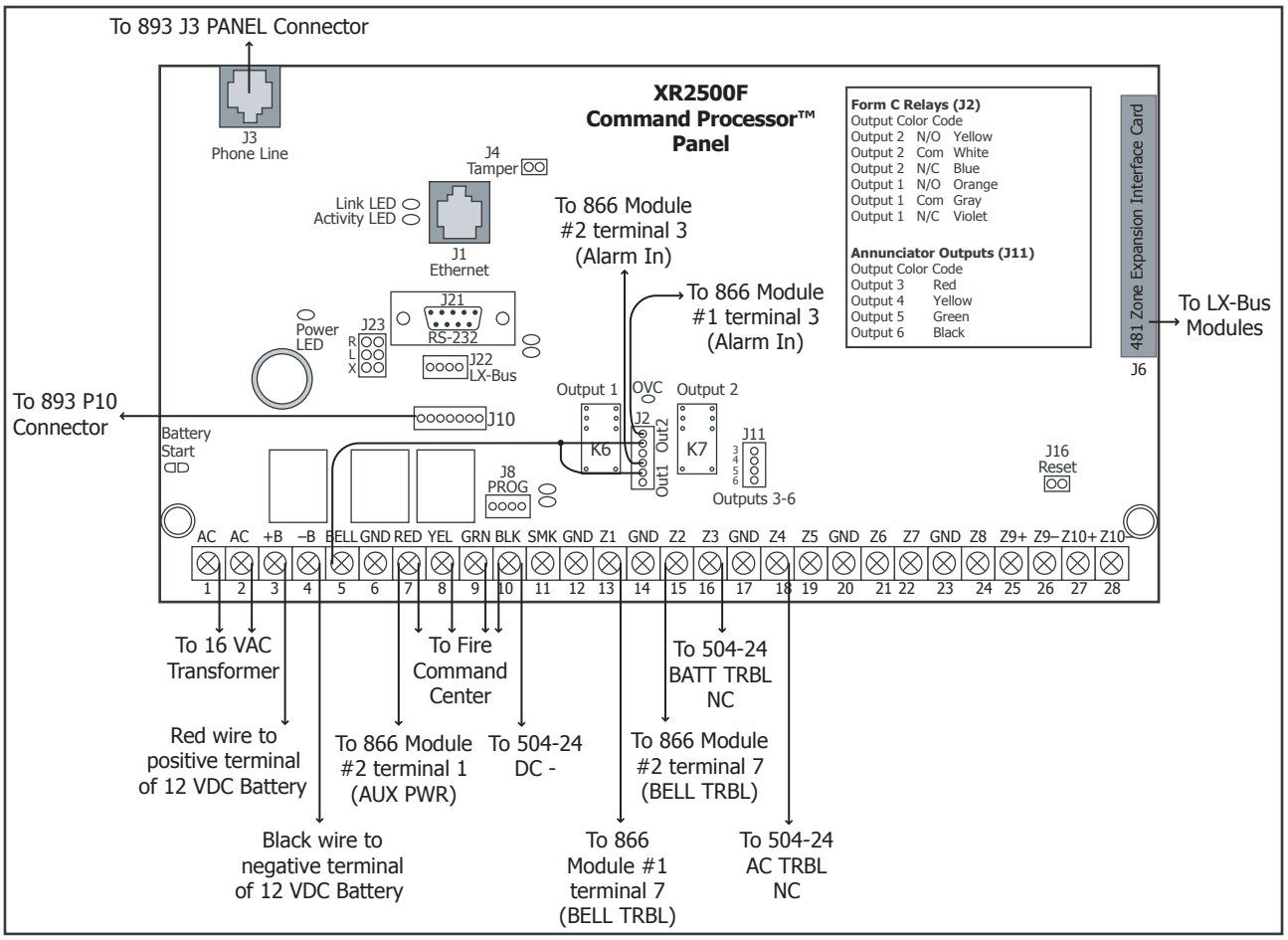


Figure 11: XR2500F Panel Wiring

11.3 Relays

The XR2500F ships with two Model 305 Relays pre-installed to allow zone alarm control for the 866 NAC Modules. When a fire alarm occurs the bell output is factory programmed to turn on and provide power to the contacts of the relays. Specific zone programming determines whether one or both relays turn on signal voltage to the 866 NACs. This allows control of the NACs by zone.

11.4 Zone Reference

The XR2500F has been pre-wired in the factory. The first 866 NAC module connects to Zone 1. The second 866 NAC module connects to Zone 2. Zones 3 and 4 connect to the 504-24 power supply.

XR2500F Product Specifications

12.1 Power Supply

Transformer Input: Primary input: 120 VAC, 60 Hz, Secondary output: 16 VAC 56 VA

Standby Battery: 12 VDC, 1.0 Amps Max. charging current

Auxiliary: 12 VDC output at 1.5 Amp Max

Bell Output: 12 VDC at 1.5 Amp Max

Note: The combined Auxiliary and Bell outputs total cannot exceed 3 Amps with a 56 VA Transformer.

All circuits are inherent Power Limited except the red battery wire and AC terminal.

Note: For UL installations, the total current combined from Auxiliary and Bell Power cannot exceed:
1.3 Amps with a 50 VA transformer, 1.0 Amp Max for Auxiliary Power
1.9 Amps with a 56 VA transformer, 1.0 Amp Max for Auxiliary Power and 1.5 Amp Max for Bell.

12.2 Communication

Built-in dialer communication to DMP Model SCS-1/SCS-1R Receivers

Built-in Contact ID communication to non-DMP receivers

893A Dual Phone Line Module with phone line supervision

Can operate as a local panel

12.3 Panel Zones

Eight 1k Ohm EOL burglary zones (zones 1 to 8). Connect to 869 Class A module for burglary applications. Two 3.3k Ohm EOL powered zone with reset (zones 9 and 10).

Note: Use the supplied DMP Model 311 1k Ohm and DMP Model 301 3.3k Ohm resistors.

12.4 Keypad Bus

You can connect up to 16 of the following supervised keypads and expansion modules to the keypad bus:

- Alphanumeric Fire Command Centers or keypads
- Four- and/or single-zone expansion modules
- Single-zone detectors
- Access control modules

12.5 LX-Bus™

You can connect the following devices to the LX-Bus™ provided by the DMP 481 (supplied) or by the 462N, 481, 462P, 462FM, and 472 Interface Cards up to the maximum number of LX-Bus™ addresses. See Accessory Devices.

- Model 521LX or 521LXT Smoke Detectors with CleanMe
- Model SLRLX Smoke Detectors
- Sixteen-, eight-, four- and/or single-zone expansion modules
- Single-zone detectors
- Relay output expansion modules
- Graphic annunciator modules

12.6 Outputs

The XR2500F provides two pre-installed Model 305 Single Pole, Double Throw (SPDT) relay outputs, each rated 1 Amp at 30 VDC resistive (power limited sources only).

The XR2500F also provides four open collector outputs rated for 50mA each. The open collector outputs provide ground connection for a positive voltage source. A Model 300 Output Harness is required to use these outputs and may be connected to a Model 860 Relay Output Module.

Expansion

13.1 Zone Expansion

Up to 574 fire and burglary zones are available on the XR2500F using DMP Security Command keypad remote zone capability and zone expansion modules. The panel keypad data bus supports up to sixteen supervised device addresses with each address supporting up to four programmable expansion zones.

Up to 500 zones are available using the on-board LX-Bus along with additional expansion modules. Use the 461 Interface Adaptor, 462N, 462P, 462FM, or 481 interface cards, and any combination of sixteen, eight, four, and single point zone expander modules and single point LX-Bus detectors.

Combined current requirements of additional modules may require an additional 504-24 or 502-12 power supply. See section Standby Battery Calculations when calculating power requirements.

Note: Do not use shielded wire for LX-Bus or Keypad Bus circuits.

13.2 Output Expansion

Note: Do not use shielded wire for LX-Bus or Keypad Bus circuits.

In addition to the two SPDT relays and four open collector outputs on the XR2500F, you can also connect up to 25 Model 716 Output Expansion Modules to each LX-Bus. These modules can provide an additional 500 programmable SPDT relays.

The XR2500F provides 100 Output Schedules you can use for programming the 716 to perform a variety of annunciation and control functions. You can also assign the 716 outputs to any panel Output Options such as Fire Alarm, Communication Fail, or Phone Trouble Outputs. Refer to the 716 Installation Guide (LT-0183).

The LX-Bus™ also supports the Model 717 Graphic Annunciator Module. Each 717 module supplies 20 switched ground outputs that follow the state of their assigned zones.

Note: The 717 supports the first eight keypad bus zones. To follow Keypad Bus zones nine through 16, install multiple 716 modules. Refer to the 717 Installation Guide (LT-0235) and 716 Installation Guide (LT-0183).

Accessory Devices

14.1 Wiring Diagram

The XR2500F system below shows some of the accessory modules you can connect for use in various applications. A brief description of each module follows in section 14.3.

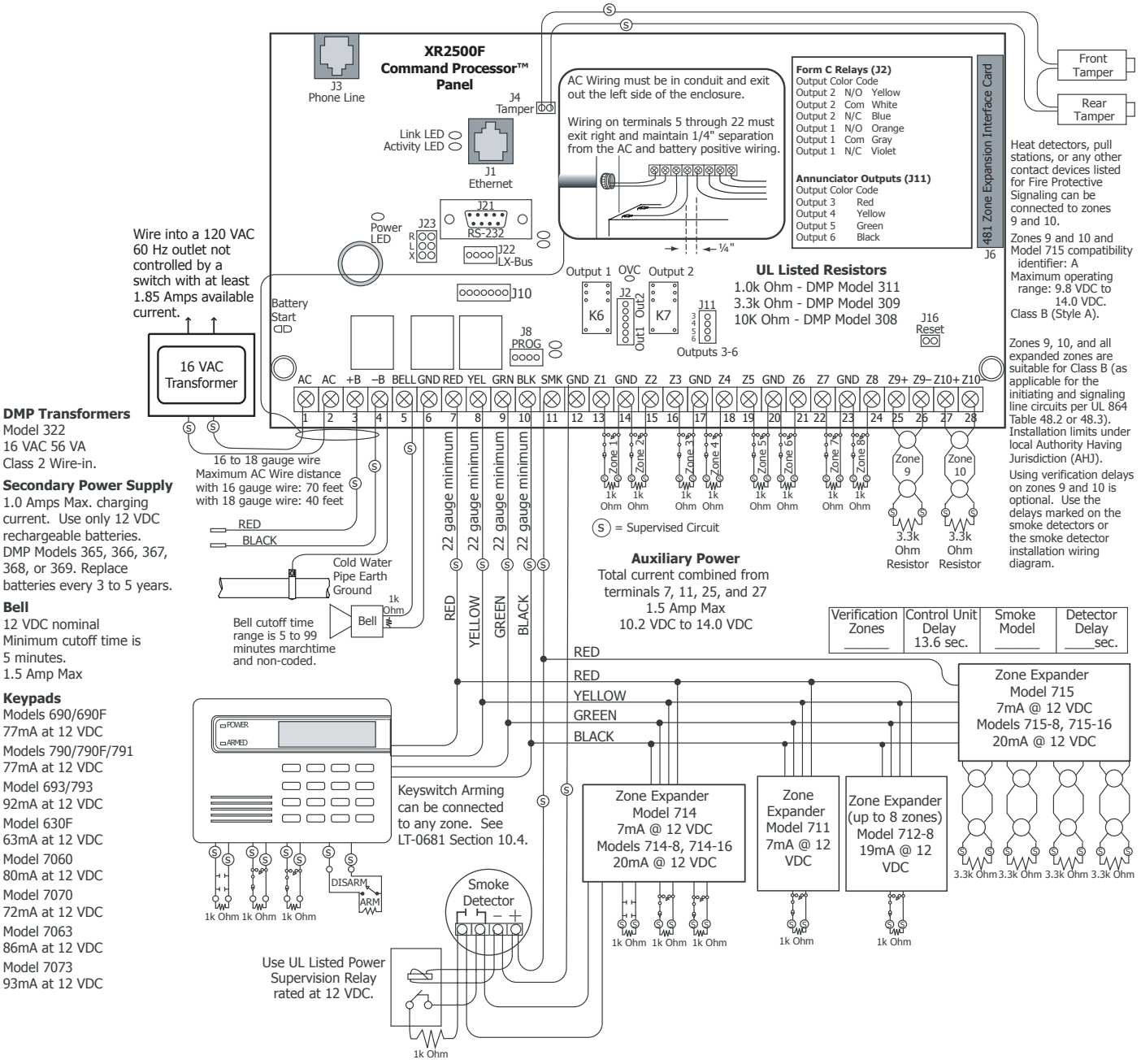


Figure 12: Typical XR2500F Wiring Diagram

14.2 Lightning Protection

Metal Oxide Varistors and Transient Voltage Suppressors help protect against voltage surges on XR2500F input and output circuits. Additional surge protection is available by installing the DMP 370 or 370RJ Lightning Suppressors.

14.3 Accessory Devices

Interface Adaptor and Interface Cards	
461 Interface Adaptor Card	Allows you to connect two or more expansion interface cards to the XR2500F panel. The 461 is an expansion board that plugs into the panel J6 Interface Connector and is required when using two or more Interface Cards. Use combinations of Interface Cards for expanding zones, network interfacing, and local printing.
462N Network Interface Card	Allows you to connect the XR2500F to any compatible data network and use its communication capability in place of standard dial out telephone lines. The 462N also provides an LX-Bus™ for connecting zone and output expansion modules to the panel. The 462N is listed for Grade AA Burglary communication and supplementary signaling.
462P Printer Interface Card	Allows you to connect the XR2500F to any compatible serial printer providing the user with real-time event recording. The 462P also provides an LX-Bus™ for connecting zone and output expansion modules.
* 462FM 9600 Baud Modem	Allows you to remote-connect to the panel over telephone lines and upload/download at 9600 baud using a standard Hayes compatible modem. The card shares the phone line with the panel and provides 100 LX-Bus zones and/or outputs.
481 Expansion Interface Card	Provides one LX-Bus for connecting up to 100 zone and output expansion modules.
Zone and Output Expansion Modules	
710/710F Bus Splitter/Repeater	Allows you to increase keypad or LX-Bus™ wiring distance to 2500 feet. Model 710F is for 24 VDC applications.
711 Single Point Zone Expanders	Provides one Class B zone for connecting devices.
712-8 Zone Expander	Provides Class B zones for connecting burglary devices.
714, 714-8, 714-16 Zone Expanders	Provides Class B zones for connecting non-powered fire devices.
715, 715-8, 715-16 Zone Expanders	Provides 12 VDC Class B powered zones for connecting smoke detectors, glassbreak detectors, and other 2- or 4-wire devices.
725 Zone Expanders	Provides 24 VDC Class B powered zones for connecting smoke detectors, glassbreak detectors, and other 2- or 4-wire devices. Requires 710F Bus Splitter/Repeater.
716 Output Expander	Provides four Form C relays (SPDT) and four switched grounds (open collector) for use in a variety of remote annunciation and control applications.
717 Graphic Annunciator Module	Provides 20 zone following annunciator outputs (open collector) for use in a variety of remote annunciation and control applications for use on the keypad bus only.
Indicating and Initiating Devices	
865 Supervised Style Y or Z Notification Circuit Module	Provides supervised alarm current when using the XR2500F panel bell output and up to 5 Amps at 12 or 24 VDC when using a listed auxiliary power supply. The 865 can supervise 2-wire Style Y or Z circuits for ground faults, opens, shorts, and shorts with individual LED annunciation.
866 Notification Circuit Module	Provides supervised alarm current using the XR2500F panel bell output and up to 5 Amps at 12 or 24 VDC when using a listed auxiliary power supply. The 866 can supervise Style W circuits for opens and shorts.
867 Style W LX-Bus Notification Circuit Module	Provides supervised alarm current using the XR2500F panel bell output and up to 5 Amps at 12 or 24 VDC when using a listed auxiliary power supply. The 867 connects to the XR2500F panel LX-Bus™ and provides one 2-wire Style W notification circuit for ground fault, open, and short conditions. Individual Bell Relay addresses Bell Ring styles.
869 Dual Style D Initiating Module	Provides two Style D, 4-wire initiating zones for connecting waterflow switches and other non-powered fire and burglary devices.
Accessory Modules and Keypads	
893A Dual Phone Line Module	Allows you to supervise two standard phone lines connected to an XR2500F panel. The 893A module monitors the main and backup phone lines for a sustained voltage drop and alerts users when the phone line is bad.
* ePAD™ Virtual Keypads	Allows users to control the security system from any computer in the world using the Internet.
LCD keypads	Allows you to control the panel from various remote locations. Connect up to sixteen supervised Model 690/690F, 790/790F, 791 Security Command® keypads, 693/793 Easy Entry™ keypads, or 7060, 7063, 7070, or 7073 Thinline keypads to the keypad bus using terminals 7, 8, 9, and 10.
Addressable Smoke Detectors	
521LX SLRLX	Single-zone, addressable module conventional smoke/smoke heat detectors that connect to the LX-Bus. Includes remote maintenance reporting, drift compensation, and multi-criteria detection.
*** These devices have not been investigated by UL and shall not be used in UL installations.**	

Table 5: Accessory Devices

14.4 Mounting Keypads and Zone Expansion Modules

LCD keypads have removable covers that allow you to easily mount the keypad to a wall or other flat surface using the screw holes on each corner of the base. Before mounting the base, connect the keypad wire harness leads to the keypad cable from the panel and to any device wiring run to that location. Then attach the harness to the pin connector on the PC board, mount the base, and install the keypad cover making sure all of the keys extend through their respective holes.

For mounting keypads on solid walls, or for applications where conduit is required, use the Model 695 1-1/2" deep or the Model 696 1/2" deep backboxes.

The DMP 711, 712-8, 714, 715, 716, and 717 modules are each contained in molded plastic housings with removable covers. The base provides you with mounting holes for installing the unit to a wall, switch plate, or other surface.

14.5 Connecting LX-Bus and Keypad Bus Devices

Several factors determine the DMP LX-Bus™ and keypad bus performance characteristics: the wire length and gauge used, the number of devices connected, and the voltage at each device. When planning an LX-Bus™ and keypad bus installation, keep in mind the following information:

1. DMP recommends using 18 or 22-gauge unshielded wire for all keypad and LX-Bus circuits. **Do not** use twisted pair or shielded wire for LX-Bus and keypad bus data circuits.
2. On keypad bus circuits, to maintain auxiliary power integrity when using 22-gauge wire do not exceed 500 feet. When using 18-gauge wire do not exceed 1,000 feet. To increase the wire length or to add devices, install an additional power supply that is UL listed for Fire Protective Signaling, power limited, and regulated (12 VDC nominal) with battery backup.
   Note: Each panel allows a specific number of supervised keypads. Add additional keypads in the unsupervised mode. Refer to the panel installation guide for the specific number of supervised keypads allowed.
3. Maximum distance for any one bus circuit (length of wire) is 2,500 feet regardless of the wire gauge. This distance can be in the form of one long wire run or multiple branches with all wiring totaling no more than 2,500 feet. As wire distance from the panel increases, DC voltage on the wire decreases. Maximum number of LX-Bus devices per 2,500 feet circuit is 40. **When using the on-board J22 LX-Bus, the maximum number of LX-Bus devices per 2,500 foot circuit is 25.** See J22 LX-Bus Expansion Connector section later in this document.
4. Maximum voltage drop between the panel (or auxiliary power supply) and any device is 2.0 VDC. If the voltage at any device is less than the required level, an auxiliary power supply should be added at the end of the circuit.

For additional information refer to the LX-Bus/Keypad Bus Wiring Application Note (LT-2031) and/or 710/710F Installation Sheet (LT-0310).

Expansion Interface Cards (Models 481, 462N, 462P, 462FM, and 472)

The LX-Bus provided on these cards requires only a 4-wire cable between the card and any devices connected to the bus. You can connect devices (zone or output expansion modules) together on the same cable or provide separate runs back to the card. Each LX-Bus provides up to 100 zones or outputs.

Note: Do not use twisted pair or shielded wire when connecting an LX-Bus or keypad bus.

Battery Information

15.1 Battery Only Restart

When powering up the XR2500F panel without AC power, briefly short across the battery start pads to pull in the battery cutoff relay. The leads need a momentary short only. Once the relay has pulled in, the battery voltage holds it in that condition. If the XR2500F panel is powered up with an AC transformer, the battery cutoff relay is pulled in automatically. For battery start pad location refer to Figure 11.

15.2 Battery Replacement Period

DMP recommends replacing the battery every 3 to 5 years under normal use.

15.3 Discharge/Recharge

The XR2500F battery charging circuit float charges at 13.9 VDC at a maximum current of 1.0 Amps using a 56 VA transformer. Listed below are the various battery voltage level conditions:

Battery Trouble:	Below	11.9 VDC
Battery Cutoff:	Below	10.2 VDC
Battery Restored:	Above	12.6 VDC

15.4 Battery Supervision

The XR2500F tests the battery when AC power is present. The test is done every three minutes and lasts for five seconds. During the test, the panel places a load on the battery; if the battery voltage falls below 11.9 VDC a low battery is detected. If AC power is not present, a low battery is detected any time the battery voltage falls below 11.9 VDC.

If a low battery is detected with AC power present, the test repeats every two minutes until the battery charges above 12.6 VDC indicating the battery has restored voltage. If a weak battery is replaced with a fully charged battery, the restored battery is not detected until the next two minute test completes.

15.5 Battery Cutoff

The panel disconnects the battery any time the battery voltage drops below 10.2 VDC. This prevents battery deep discharge damage.

15.6 XR2500F Power Requirements

During AC power failure, the XR2500F panel and all auxiliary devices connected to the XR2500F draw their power from the battery. All devices must be taken into consideration when calculating the battery standby capacity. On the following page is a list of the XR2500F panel power requirements.

- XR2500F Command Processor™ Panel
- The Fire Command Center
- 893A Dual Phone Line Module
- Two 866 NAC modules
- 481 Zone Expansion Interface Card

Then add the additional current draw of Remote Fire Command Centers, Security Command® keypads, zone expansion modules, smoke detector output, and any other auxiliary devices used in the system for the total current required. The total is then multiplied by the number of standby hours required to calculate the total ampere-hours required.

See the XR2500F Standby Battery Power Calculations chart on the following page and the Standby Battery Selection information on the next page.

15.7 XR2500F Standby Battery Calculations

Standby Battery Power Calculations	Standby Current				Alarm Current			
XR2500F Control Panel	Qty 1	x	180mA	180 mA	Qty 1	x	180mA	180 mA
Relay Outputs 1-2 (ON)	Qty _____	x	30mA	_____	Qty _____	x	30mA	_____
Switch Grounds 3-6 (ON)	Qty _____	x	5mA	_____	Qty _____	x	5mA	_____
Active Zones 1-8	Qty _____	x	1.6mA	_____	Qty _____	x	*2mA	_____
Active Zones 9-10	Qty _____	x	4mA	_____	Qty _____	x	30mA	_____
2-Wire Smoke Detectors	Qty _____	x	0.1mA	_____	Qty _____	x	0.1mA	_____
Panel Bell Output							1500mA	_____mA
893A Dual Phone Line Module	Qty _____	x	12mA	_____	Qty _____	x	50mA	_____
461 Interface Adaptor Card			7mA	_____		x	7mA	_____
462N Network Interface Card	Qty _____	x	50mA	_____	Qty _____	x	50mA	_____
462P Printer Interface Card	Qty _____	x	50mA	_____	Qty _____	x	50mA	_____
462FM 9600 Baud Modem	Qty _____	x	265mA	_____	Qty _____	x	265mA	_____
481 Expansion Interface Card	Qty _____	x	15mA	_____	Qty _____	x	15mA	_____
865 Style Y or Z Notification Module	Qty _____	x	26mA	_____	Qty _____	x	85mA	_____
866 Style W Notification Module	Qty _____	x	45mA	_____	Qty _____	x	75mA	_____
867 LX-Bus Style W Notification Module	Qty _____	x	30mA	_____	Qty _____	x	85mA	_____
630F Remote Fire Command Center	Qty _____	x	63mA	_____	Qty _____	x	92mA	_____
690/690F Security Command Keypad	Qty _____	x	77mA	_____	Qty _____	x	84mA	_____
693/793 Easy Entry Keypad	Qty _____	x	92mA	_____	Qty _____	x	120mA	_____
Active Zones (EOL Installed)			1.6mA	_____	Qty _____	x	*2mA	_____
790/790F Security Command Keypad	Qty _____	x	77mA	_____	Qty _____	x	84mA	_____
Active Zones (EOL Installed)			1.6mA	_____	Qty _____	x	*2mA	_____
791 Easy Entry Keypad	Qty _____	x	77mA	_____	Qty _____	x	84mA	_____
Active Zones (EOL Installed)			1.6mA	_____	Qty _____	x	*2mA	_____
7060 Thinline Keypad	Qty _____	x	80mA	_____	Qty _____	x	84mA	_____
7063 Thinline Keypad	Qty _____	x	86mA	_____	Qty _____	x	112mA	_____
7070 Thinline Keypad	Qty _____	x	72mA	_____	Qty _____	x	87mA	_____
Active Zones (EOL Installed)			1.6mA	_____	Qty _____	x	*2mA	_____
7073 Thinline Keypad	Qty _____	x	93mA	_____	Qty _____	x	112mA	_____
Active Zones (EOL Installed)			1.6mA	_____	Qty _____	x	*2mA	_____
733 Wiegand Interface Module	Qty _____	x	30mA	_____	Qty _____	x	30mA	_____
Active Zones (EOL Installed)	Qty _____	x	1.6mA	_____	Qty _____	x	*2mA	_____
Annunciator (ON)					Qty _____	x	20mA	_____
734 Wiegand Interface Module	Qty _____	x	30mA	_____	Qty _____	x	30mA	_____
Active Zones (EOL Installed)	Qty _____	x	1.6mA	_____	Qty _____	x	*2mA	_____
Annunciator (ON)					Qty _____	x	20mA	_____
Copy Sub-Totals to next page			Sub-Total Standby	_____mA			Sub-Total Alarm	_____mA

***Based on 10% of active zones in alarm.**

Standby Battery Power Calculations	Standby Current				Alarm Current			
736P POPIT Interface Module	Qty _____	x	25mA	_____	Qty _____	x	25mA	_____
Radionics Popex, POPITs, OctoPOPITs	Qty _____	x	___mA	_____	Qty _____	x	___mA	_____
710 Bus Splitter/Repeater Module	Qty _____	x	30mA	_____	Qty _____	x	30mA	_____
710F Fire Bus Splitter/Repeater Module	Qty _____	x	40mA	_____	Qty _____	x	40mA	_____
711, 714 Zone Expansion Modules	Qty _____	x	7mA	_____	Qty _____	x	7mA	_____
Active Zones (EOL Installed)	Qty _____	x	1.6mA	_____	Qty _____	x	*2mA	_____
712-8 Zone Expansion Module	Qty _____	x	19mA	_____	Qty _____	x	19mA	_____
Active Zones (EOL Installed)	Qty _____	x	1.6mA	_____	Qty _____	x	*2mA	_____
714-8, 714-16 Zone Expansion Module	Qty _____	x	20mA	_____	Qty _____	x	20mA	_____
Active Zones (EOL Installed)	Qty _____	x	1.6mA	_____	Qty _____	x	*2mA	_____
715 Zone Expansion Module	Qty _____	x	7mA	_____	Qty _____	x	7mA	_____
Active Zones (EOL Installed)	Qty _____	x	4mA	_____	Qty _____	x	*30mA	_____
2-Wire Smokes	Qty _____	x	.1mA	_____	Qty _____	x	.1mA	_____
715-8, 715-16 Zone Expansion Modules	Qty _____	x	20mA	_____	Qty _____	x	20mA	_____
Active Zones (EOL Installed)	Qty _____	x	4mA	_____	Qty _____	x	*30mA	_____
2-Wire Smokes	Qty _____	x	.1mA	_____	Qty _____	x	.1mA	_____
716 Output Expansion Module	Qty _____	x	7mA	_____	Qty _____	x	7mA	_____
Active Form C Relays					Qty _____	x	28mA	_____
717 Graphic Annunciator Module	Qty _____	x	10mA	_____	Qty _____	x	10mA	_____
Annunciator Outputs					Qty _____	x	1mA	_____
521LX, 521LXT, SLRLX Smoke Detectors	Qty _____	x	8.8mA	_____	Qty _____	x	*28mA	_____
Aux. Powered Devices on Terminals 7 and 11 Other than Keypads and LX-Bus Modules				_____mA				_____mA
This page only			Sub-Total Standby	_____mA			Sub-Total Alarm	_____mA
Sub-Totals from previous page			Sub-Total Standby	_____mA			Sub-Total Alarm	_____mA
*Based on 10% of active zones in alarm			Total Standby	_____mA			Total Alarm	_____mA

Total Standby_____mA x number of Standby Hours needed _____ = _____mA-hours

Total Alarm _____mA +_____mA-hours

Total _____mA-hours

X .001

= _____Amp-hrs Required

Refer to section 15.8 for standby battery selection.

15.8 Standby Battery Selection

To choose the type and number of batteries needed for 24, 60, or 72 hours of standby power based on the Amp Hours Required calculation from section 6.8 XR500 Series Power Requirements, perform the following:

1. Select the desired standby hours required from the table below: 24, 60, or 72 hours
2. Select the desired battery size: Model 368 (12 VDC 4.5 Ah), Model 369 (12 VDC 7 Ah), Model 367 (12 VDC 7.7 Ah), Model 365 (12 VDC 9 Ah), Model 366 (12 VDC 18 Ah).
3. Select a Max. Ah Available number that is just greater than the number calculated as the Amp Hours Required.
4. Install the number of batteries shown in the corresponding No. of Batteries required column.

Example: If the Amp Hours Required calculation equals 22 Ah for 24 hours of standby time and 4.5 Ah batteries are desired, install six (6) Model 368 (12 VDC, 4.5 Ah) batteries.

For UL installations, all batteries shall be installed in a DMP Model 350 enclosure and all wiring shall run through conduit. The enclosure shall be installed to the left of the XR500 Series enclosure to ensure Battery and AC wire separation.

24 hours of standby power

4.5 Ah Batteries	
Max. Ah Available	No. of Batteries
8	2
12	3
16	4
20	5
24	6
28	7
32	8
36	9
40	10

7 Ah Batteries	
Max. Ah Available	No. of Batteries
6	1
12	2
18	3
24	4
31	5
37	6
43	7

7.7 Ah Batteries	
Max. Ah Available	No. of Batteries
6	1
13	2
20	3
27	4
34	5
41	6

9 Ah Batteries	
Max. Ah Available	No. of Batteries
8	1
16	2
24	3
32	4
40	5

18 Ah Batteries	
Max. Ah Available	No. of Batteries
16	1
32	2
48	3

Note: 48 hours is the typical battery recharge time for any of the Number of Batteries shown in this section.

60 hours of standby power

7 Ah Batteries	
Max. Ah Available	No. of Batteries
13	2
20	3
27	4
33	5
40	6
47	7
54	8
60	9
67	10

7.7 Ah Batteries	
Max. Ah Available	No. of Batteries
14	2
22	3
29	4
37	5
44	6
52	7
59	8
67	9

9 Ah Batteries	
Max. Ah Available	No. of Batteries
17	2
26	3
34	4
43	5
52	6
61	7
69	8

18 Ah Batteries	
Max. Ah Available	No. of Batteries
17	1
34	2
52	3
69	4

Note: 48 hours is the typical battery recharge time for any of the Number of Batteries shown in this section.

72 hours of standby power

9 Ah Batteries	
Max. Ah Available	No. of Batteries
16	2
25	3
33	4
42	5
50	6
59	7
67	8

18 Ah Batteries	
Max. Ah Available	No. of Batteries
16	1
33	2
50	3
67	4

Note: 72 hours is the typical battery recharge time required for any of the Number of Batteries shown in this section.

Note: If the Amp Hours Required calculation is greater than any Max. Ah Available number shown on a table, then add power supply(s) to power some system devices allowing the Amp Hours Required calculation to be reduced.

Bell Output

16.1 Terminals 5 and 6

Terminal 5 supplies positive 12 VDC to power alarm bells or horns. This output can be steady, pulsed, or temporal depending upon the Bell Action specified in Output Options. Terminal 6 is the ground reference for the bell circuit. This supervised output detects 10k Ohms or less as normal. The indicating appliance can supply this resistance. If using a horn or siren, a 1k Ohm 1/2 W EOL resistor (provided) should be added across the bell circuit to provide supervision.

Keypad Bus

17.1 Description

XR2500F panel terminals 7, 8, 9, and 10 are for the keypad bus. In addition to Fire Command Centers and Remote Fire Command Centers, you can connect up to sixteen supervised keypads and multiple unsupervised keypads to the XR2500F. In addition to Security Command keypads, you can also connect any combination of zone expansion modules, 5845LX Glassbreak detectors, and 6155LX PIRs to the data bus. Refer to the specific device Installation sheet for the maximum number of keypad Bus devices.

Refer to the section titled LX-Bus for complete information about the LX-Bus 4-pin header and expansion slot.

Note: Do not use shielded wire for LX-Bus/Keypad Bus circuits.

17.2 Terminal 7 - RED

This terminal supplies positive 12 VDC to power Fire Command Centers and zone expansion modules. Terminal 7 also supplies power for any auxiliary device. The ground reference for terminal 7 is terminal 10.

The output current is shared with the smoke power output on terminal 11 and Zones 9 and 10. Current draw for all connected devices must not exceed the panel maximum current rating.

17.3 Terminal 8 - YELLOW

Terminal 8 receives data from keypads and zone expansion modules. It cannot be used for any other purpose.

17.4 Terminal 9 - GREEN

Terminal 9 transmits data to keypads and zone expansion modules. It cannot be used for any other purpose.

17.5 Terminal 10 - BLACK

Terminal 10 is the ground reference for Fire Command Centers, zone expansion modules, and all auxiliary devices being powered by terminal 7.

17.6 J8 Programming Connection

A 4-pin header (J8) is provided to connect a keypad when using a DMP Model 330 Programming Cable. This provides a quick and easy connection for panel programming.

You may also use the J8 Programming Header to connect Keypad Bus devices. This is an alternative to connecting keypad bus devices to terminals 7, 8, 9, and 10.

17.7 OVC LED

The Overcurrent LED (OVC) lights Red when the devices connected to the Keypad Bus and LX-Bus(es) draw more current than the panel is rated for. The OVC is located above Outputs 1 and 2 on the panel and turns a steady Red when lit. When the OVC LED lights Red, the LX-Bus(es) and Keypad bus are shut down.

Smoke and Glassbreak Detector Output

18.1 Terminals 11 and 12

Terminal 11 supplies positive 12 VDC to power 4-wire smoke detectors and other powered devices. This output can be turned off by the user for five seconds using the Sensor Reset User Menu option to allow latched devices to reset. Terminal 12 is the ground reference for terminal 11. See LT-0164 for a list of approved 4-wire smoke detectors and power supervision relays.

18.2 Current Rating

The Output current from terminal 11 is shared with terminals 7, 25, and 27.

The total current draw of all devices powered from the panel must be included with terminal 11 calculations and must not exceed the maximum output rating.

Powered Zones for 2-Wire Smoke Detectors

19.1 Terminals 25–26 and 27–28

Panel terminals 25 through 28 provide two resettable Class B, Style A, 2-wire powered zones. For programming purposes the zone numbers are 9 and 10.

Note: The maximum wire length for either zone 9 or zone 10 is 3000 feet using 18 AWG or 1000 feet using 22 AWG.

When using 725 Zone Expansion Modules, use included, UL Listed 6.8k Ohm EOL resistors. The UL compatibility identifier for the zones using 725 Zone Expansion Modules is B. When using 715 Zone Expansion modules, use UL Listed 3.3k Ohm EOL resistors, Model 309. For all other zone expansion modules, use UL Listed 1.0k Ohm Model 310 EOL resistors. The UL compatibility identifier for the zones is A.

Note: Do not mix detectors from different manufacturers on the same zone.

Caution: Performing a Sensor Reset momentarily drops power to the devices on Zones 9 and 10. The panel views these zones (9 and 10) as "Open" while the power is absent.

19.2 Compatible 2-Wire Smoke Detector Chart

Manufacturer	Model	Detector ID	Base	Base ID	DC Voltage Range	# of Detectors (12V/24V)	Zone Expansion Modules	Panel Zones
Detection Systems	DS230, DS230F	B/A	MB2W, MB2WL	A	8.5-33	10	725	
Detection Systems	DS250, DS250TH	B	MB2W, MB2WL	A	8.5-33	10/12	715, 715-8, 715-16, 725	9 & 10
Detection Systems	DS250HD	B	MB2W, MB2WL	A	8.5-33	10	715, 715-8, 715-16	9 & 10
Detection Systems	DS260	B/A	MB2W, MB2WL	A	8.5-33	17	725	
Detection Systems	DS282, DS282TH, DS282THC, DS282THS	B			8.5-33	10/12	715, 715-8, 715-16, 725	9 & 10
DMP/Hochiki	SLR-835	HD-3	NS6-100	HB-55	8-35	7/14	725	9 & 10
DMP/Hochiki	SLR-835B	HD-6	N/A		8-35	7/14	725	9 & 10
Hochiki	SLR-835B-2 SLR-835BH-2	HD-6	N/A		8-35	14	725	9 & 10
Hochiki	SLR-24, SLR-24H	HD-3	NS4-220	HB-3	15-33	15	725	9 & 10
Hochiki	SIJ-24, DCD-190, DCD-135	HD-3	NS4-220	HB-3	15-33	15	725	9 & 10
Hochiki	SLR-24, SLR-24H	HD-3	NS6-220	HB-3	15-33	15	725	9 & 10
Hochiki	SIJ-24	HD-3	NS6-220	HB-3	15-33	20	725	9 & 10
Hochiki	DCD-190, DCD-135	HD-3	NS6-220	HB-3	15-33	16	725	9 & 10
Sentrol/ESL	429AT, 521B, 521BXT, 521NB, 521NBXT	S09A			6.5-20	12	715, 715-8, 715-16	9 & 10
Sentrol/ESL	429C, 429CT, 521B/BXT	S10A			8.5-33	12	725	
Sentrol/ESL	429CRT, 429CST, 429CSST, 521CRXT	S11A			8.5-33	12	725	
Sentrol/ESL	711U, 712U, 713-5U, 713-6U, 721U, 721UT	S10A	701E, 70-1U, 702E, 702U	S00	8.5-33	12	725	
Sentrol/ESL	731U, 723U	S11A	701E, 701U, 702E, 702U, 702RE, 702RU	S00	8.5-33	12	725	
System Sensor	1400	A			8.5-35	10	715, 715-8, 715-16	9 & 10
System Sensor	1151, 2151	A	B110PL, B401		8.5-35	10/10	715, 715-8, 715-16, 725	9 & 10
System Sensor	1451, 2451TH	A	B401, B401B		8.5-35	10	715, 715-8, 715-16	9 & 10
System Sensor	1451DH	A	DH400		8.5-35	10	715, 715-8, 715-16	9 & 10
System Sensor	2100T, 2100B, 2100TB, 2100D, 2100TD	A			8.5-35	10	715, 715-8, 715-16	9 & 10
System Sensor	2400, 2400AT, 2400AIT, 2400TH	A			8.5-35	10	715, 715-8, 715-16	9 & 10
System Sensor	2451	A	B401, B401B, DH400		8.5-35	10	715, 715-8, 715-16	9 & 10
System Sensor	2W-B, 2WT-B	A			8.5-35	10	715, 715-8, 715-16	9 & 10
System Sensor	DH100P, DH100LP	A			8.5-35	10	715, 715-8, 715-16, 725	9 & 10

Table 6: Compatible 2-Wire Smoke Detectors

Protection Zones

20.1 Terminals 13–24

Zones 1 to 8 (terminals 13 to 24) on the XR2500F panel are all grounded burglary zones. For programming purposes, the zone numbers are 1 through 8. Listed below are terminal 13 to 24 connection functions.

Terminal	Function	Terminal	Function
13	Zone 1 voltage sensing	19	Zone 5 voltage sensing
14	Ground for Zones 1 and 2	20	Ground for Zones 5 and 6
15	Zone 2 voltage sensing	21	Zone 6 voltage sensing
16	Zone 3 voltage sensing	22	Zone 7 voltage sensing
17	Ground for Zones 3 and 4	23	Ground for Zones 7 and 8
18	Zone 4 voltage sensing	24	Zone 8 voltage sensing

Note: Zones 1 through 4 have been pre-wired to the two 866 NAC modules and the 504-24 power supply. All other zones are available.

The voltage sensing terminal measures the voltage across a 1k Ohm End-of-Line resistor to ground. Use DMP Model 311 1k Ohm resistors. Dry contact sensing devices can be used in series (normally-closed) or in parallel (normally-open) with any of the burglary protection zones.

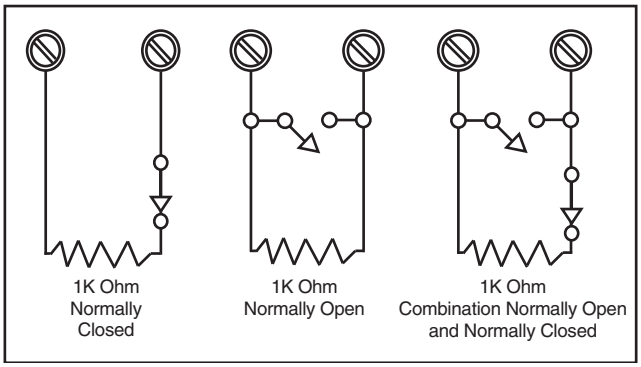


Figure 12: Protection Zone Wiring

20.2 Operational Parameters

Each protection zone detects three conditions: Open, Normal, and Short. Listed below are voltage and resistance parameters for each condition:

Condition	Resistance on zone	Voltage on positive terminal
Open	over 1300 Ohms	over 2.0 VDC
Normal	600 to 1300 Ohms	1.2 to 2.0 VDC
Short	under 600 Ohms	under 1.2 VDC

20.3 Zone Response Time

A condition must be present on a zone for 500 milliseconds before it is detected by the XR2500F panel. Ensure detection devices used on the protection zones are rated for use with this delay. Zones 1-10 can also be programmed for a fast response delay of 160 milliseconds.

20.4 Keyswitch Arming Zone

Using a keyswitch on an Arming type zone allows you to arm and disarm selected areas without having to enter a user code.

Dry Contact Relay Outputs

21.1 Description

The XR2500F panel provides two auxiliary SPDT relays with the two DMP Model 305 relays in K6 (Output 1) and K7 (Output 2) and a Model 431 Output Harness on the J2 6-pin Header. Each relay provides one SPDT set of contacts that can be operated by any of the functions listed below:

1) Activation by zone condition: Steady, Pulsing, Momentary, and Follow
2) Activation by 24-hour 7-day schedule: One on and one off time a day for each relay
3) Manual activation from the Security Command keypad menu
4) Communication failure
5) Armed area annunciation
6) Fire Alarm or Fire Trouble
7) Ambush Alarm
8) Exit and Entry timers
9) System Ready
10) Late to Close

Refer to the XR500 Series Programming Guide (LT-0679) for specific information.

21.2 Contact Rating

The Model 305 relay contacts are rated for 1 Amp at 30 VDC resistive. You can connect auxiliary power to the Relay Output 1 common terminal by installing the gray harness wire to terminal 7. Current draw for all connected devices must not exceed the panel maximum current rating.

21.3 Output Harness Wiring

The Output Harness is pre-installed on the 6-pin header labeled J2. Output 2 uses the top three prongs, and Output 1 uses the bottom three prongs. Outputs 1 and 2 are prewired to the 866 NAC modules located within the XR2500F enclosure. For reference, the wire harness and contact locations are shown below:

Contact	Color
Output 1 normally closed	Violet
Output 1 common	Gray
Output 1 normally open	Orange
Output 2 normally closed	Blue
Output 2 common	White
Output 2 normally open	Yellow

J11 Annunciator Outputs

22.1 Description

The four annunciator outputs can be programmed to indicate the activity of the panel zones or conditions occurring on the system. Annunciator **outputs do not provide a voltage but instead switch-to-ground** a voltage from another source. The outputs can respond to any of the conditions listed in section 22.1.

22.2 Model 300 Harness Wiring

Access the open collector outputs by installing DMP 300 Harness on the 4-pin header labeled J11. The output locations are shown below. For UL applications, devices connected to the outputs must be located within the same room as the panel.

Output	Color	Wire	Output	Color	Wire
3	Red	1	5	Green	3
4	Yellow	2	6	Black	4

22.3 Model 860 Relay Module

Connect a Model 860 Relay Module to the J11 on the XR2500F panel to provide relays for outputs 3-6. Use these relays for electrical isolation between the alarm panel and other systems or for switching voltage to control various functions. Power is supplied to the relay coils from a single wire connected to the panel auxiliary power terminal 7. The module includes one relay and provides three additional sockets for expansion of up to four relays. Mount the 860 inside the panel enclosure using the 3-hole pattern and plastic standoffs. Refer to the 860 Module Install Sheet (LT-0484) as needed.

Model 305 Relay Contact Rating: 1 Amp at 30 VDC

J23 6-Pin Header

23.1 Description

The XR2500F Command Processor™ panel supports RS-232, LX-Bus and future expansion operation. These operations cannot function at the same time. Install a jumper on one pair of J23 headers to indicate how the panel is programmed to operate. Refer to the table below when installing a jumper on J23. When a jumper is installed or moved on the 6-pin header, briefly reset the panel using the J16 jumper to activate the selected operation.

J23 6-Pin Header	
Letter	**Operation**
R	Standard RS-232
L	LX-Bus
X	Future Expansion

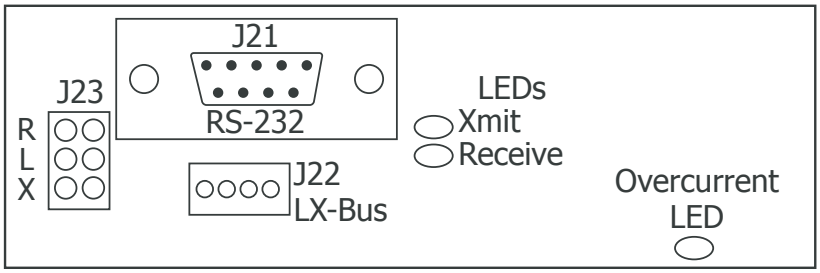


Figure 14: J23 6-Pin Header

J22 LX-Bus Expansion Connector

24.1 Description

J22 LX-Bus and J21 RS-232 connectors cannot be used at the same time. Either use J21 to connect a serial device for PC Log Reporting, or use J22 to connect an LX-Bus device. This is determined by where you install the jumper on J23 6-Pin Header. Reset the panel using J16 jumper to activate selected J23 operation.

Note: Do NOT use shielded wire when using the LX-Bus. Do NOT connect the wires from the 4-wire harness to the panel terminals.

24.2 LX-Bus Interface Cards

Refer to the following tables to identify zone locations and numbers relative to J22 operation.

J22 LX-Bus Enabled			One Interface Card			461 Adaptor Card and Multiple Interface Cards	
LX-Bus	Zone Numbers	AND	LX-Bus	Zone Numbers	OR	LX-Bus	Zone Numbers
1	500-599		2	600-699		2 (A)	600-699
						3 (B)	700-799
						4 (C)	800-899
						5 (D)	900-999

J22 LX-Bus NOT Enabled	One Interface Card			461 Adaptor Card and Multiple Interface Cards	
	LX-Bus	Zone Numbers	OR	LX-Bus	Zone Numbers
	1	500-599		1 (A)	500-599
				2 (B)	600-699
				3 (C)	700-799
				4 (D)	800-899
				5 (E)	900-999

24.3 LX-Bus LEDs

The two LEDs, located near the bottom-right corner of J21 indicate data transmission and receipt. The top LED flashes green to indicate the panel is transmitting LX-Bus data. The bottom LED flashes yellow to indicate the panel is receiving LX-Bus data.

24.4. OVC LED

The Overcurrent LED (OVC) lights Red when the devices connected to the Keypad Bus and LX-Bus(es) draw more current than the panel is rated for. The OVC is located above Outputs 1 and 2 on the panel and turns a steady Red when lit. When the OVC LED lights Red, the LX-Bus(es) and keypad bus shut down.

J21 Serial Connector

25.1 Description

Note: J22 LX-Bus and J21 RS-232 connectors cannot be used at the same time. Either use J21 to connect a serial device, or use J22 to connect an LX-Bus device. This is determined by where you install the jumper on the J23 6-Pin Header. Reset the panel using J16 jumper to activate selected J23 operation.

To enable J21 to operate in RS-232 mode place a jumper on the two pins next to the letter "R" on the J23 6-Pin header. The Serial Connector allows the XR2500F panel to transmit PC Log Reports directly to an RS-232 device.

25.2 Serial Connector LEDs

The two LEDs, located near the bottom-right corner of J21 indicate data transmission and receipt. The top LED flashes green to indicate the panel is transmitting serial data. The bottom LED flashes yellow to indicate the panel is receiving serial data.

J1 Ethernet Connector

26.1 Description

The J1 Ethernet Connector is available to connect directly to an Ethernet network using a standard patch cable.

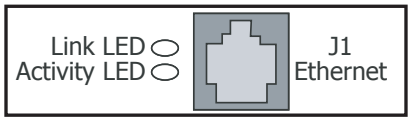


Figure 15: J1 Header and LEDs

26.2 Ethernet LEDs

The two LEDs, located to the left of J1 Ethernet Connector, indicate network operation. The top, Activity LED flashes green to indicate the network traffic is good. The bottom, Link LED flashes yellow to indicate messages are being sent and received.

Reset and Tamper Headers

27.1 J16 Reset Header

The reset header is located just above the terminal strip on the right side of the circuit board and is used to reset the XR2500F microprocessor. To reset the panel when first installing the system, install the reset jumper before applying power to the panel. After connecting the AC and battery, remove the reset jumper.

To reset the panel while the system is operational, for example, prior to reprogramming, install the reset jumper without powering down the system. Remove the reset jumper after one or two seconds.

After resetting the panel, begin programming within 30 minutes. If you wait longer than 30 minutes, you must reset the panel again.

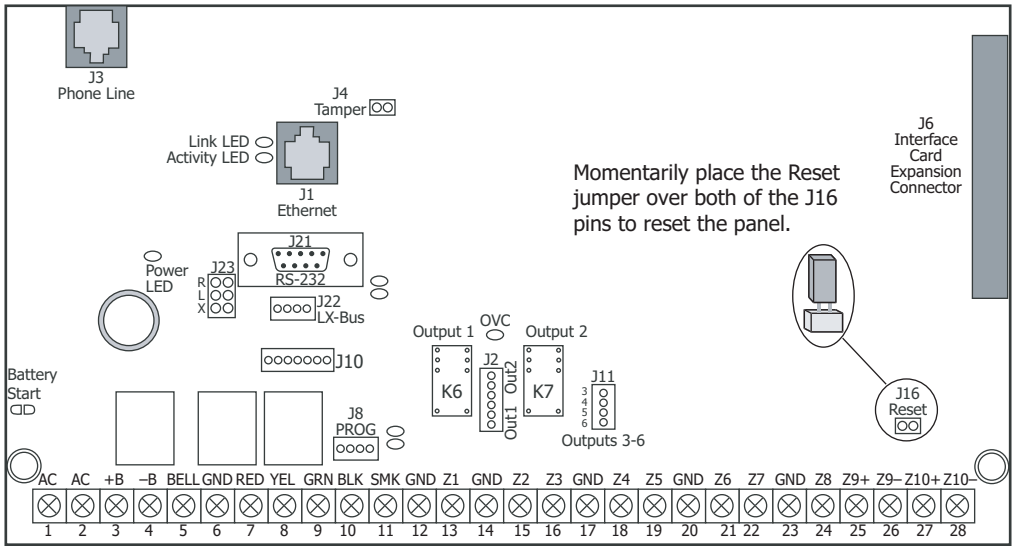


Figure 16: XR2500F Panel Showing the Reset Jumper

27.2 J4 Tamper Header

The J4 header is for use with the optional DMP 306 Tamper Harness. The harness connects to one or more tamper switches mounted inside the panel enclosure to supervise against unauthorized enclosure opening or removal. Refer to the wiring diagram on the enclosure door for correct tamper switch wiring.

How the Tamper Works

If the enclosure is opened or removed while one or more of the system areas are armed, a panel tamper alarm is indicated. If all areas are disarmed, a panel tamper trouble is indicated.

Universal UL Burglary Specifications

28.1 Introduction

The programming and installation specifications contained in this section must be completed when installing the XR2500F panel in accordance with any of the UL burglary standards. Additional specifications may be required by a particular standard.

28.2 Wiring

All wiring must be in accordance with NEC, ANSI/NFPA 70, UL 681. All transformer wires must be installed in conduit.

28.3 Control Outside of Protected Area

A Potter EVD or Sentrol 5402 should be used in place of a lined cabinet when the panel is installed outside of the protected area. Front and rear tamper switches are required. Refer to the system wiring diagram and Figure 2.

28.4 Police Station Phone Numbers

The digital dialer telephone number programmed for communication must not be a police station phone number.

28.5 System Maintenance

To ensure continuous satisfactory operation of any alarm system, proper installation and regular maintenance by the installing alarm company and frequent testing by the end user is essential. Offering a maintenance program and acquainting the user with the correct procedures for system use and testing is also the responsibility of the installing alarm company.

28.6 UL Listed Receivers

UL has verified operation with the DMP SCS-1 and SCS-1R, Sur-Gard SG-HLR2-DG, FBII CP220PB, Osborne-Hoffman Quick-Alert, and Radionics D6500 receivers. It is the installer's responsibility to verify compatibility between the XR2500F and the receiver used during installation. The installer shall verify the compatibility of the receiver and the system on a yearly basis.

Area Information

29.1 Ownership

The control unit system shall be under one ownership.

29.2 Annunciation

The System shall be installed so that when arming any area from any keypad, the local bell shall annunciate.

29.3 Trouble Display

The Status List programming shall be set to annunciate all trouble messages at all keypads. See the XR500 Series Programming Guide (LT-0679).

29.4 Closing Wait

The Closing Wait option must be programmed YES. See the XR500 Series Programming Guide (LT-0679).

29.5 Local Bell Supervision

When a local bell is employed, the power supply for the bell shall be under 24-hour protection. Proper personnel for maintenance or security of the system shall be able to disarm that area.

UL 1023 Specifications

Household Burglar-Alarm System Units

30.1 Audible Devices

At least one listed audible device (Ademco AB12M) rated to operate over the voltage rate of 11.7 VDC to 12.8 VDC and rated at 85 DB minimum must be used.

30.2 Auxiliary Circuits

At least one burglary alarm initiating device shall be used on the system. If the voltage for the device is applied by the control unit the burglary alarm initiating device shall be rated to operate over the range of 11.5 VDC to 12.7 VDC.

30.3 Bell Cutoff

The Bell Cutoff time cannot be less than five minutes. See the XR500 Series Programming Guide (LT-0679).

30.4 Entry Delay

The maximum entry delay used must not be more than 45 seconds. See the XR500 Series Programming Guide (LT-0679).

30.5 Exit Delay

The maximum exit delay used must not be more than 60 seconds. See the XR500 Series Programming Guide (LT-0679).

30.6 Weekly Test

The product should be tested weekly.

UL 1635 Specifications

Digital Burglar Alarm Communicator System Units

31.1 System Trouble Display

The Status List Display must include at least one keypad that displays system monitor troubles. See the XR500 Series Programming Guide (LT-0679).

31.2 Digital Dialer Telephone Number

Both programmed telephone numbers must begin with a P. See the XR500 Series Programming Guide (LT-0679).

31.3 Test Time

The Test Time option must be programmed so that the XR2500F sends a report once every 24 hours. See the XR500 Series Programming Guide (LT-0679).

31.4 Closing Wait

The Closing Wait option must be programmed YES. See the XR500 Series Programming Guide (LT-0679).

31.5 Entry Delay

The maximum entry delay used must not be more than 60 seconds. See the XR500 Series Programming Guide (LT-0679).

31.6 Exit Delay

The maximum exit delay used must not be more than 60 seconds. See the XR500 Series Programming Guide (LT-0679).

UL 1610 AND 1076 Specifications

Central-Station and Proprietary Burglar-Alarm Units

32.1 Opening/Closing Reports

The Opening/Closing Reports option must be programmed as YES. See the XR500 Series Programming Guide (LT-0679).

32.2 Closing Wait

The Closing Wait option must be programmed YES. See the XR500 Series Programming Guide (LT-0679).

32.3 Entry Delay

The maximum entry delay used must not be more than 60 seconds. See the XR500 Series Programming Guide (LT-0679).

32.4 Exit Delay

The maximum exit delay used must not be more than 60 seconds. See the XR500 Series Programming Guide (LT-0679).

32.5 Proprietary Dialer

The Model XR2500F provides Grade A proprietary service when configured as a digital dialer.

32.6 Grade B Central Station

Grade B Central Station service can be provided under by adding a Grade A Ademco AB12M bell and bell housing.

32.7 Bell Cutoff

The Bell Cutoff time cannot be less than 15 minutes. See the XR500 Series Programming Guide (LT-0679).

32.8 AA Network Communication

High Line Security is provided when configured as a NET system using an XR500N panel or an XR500 panel with an iCOM™ Internet Alarm Router. The NET Check-in time must be set from 01 to 06 minutes or AA. When a dialer is required for 06 minute check-in time, an attack resistant enclosure (DMP Model 350A) is required. When the check-in time is set to a number less than 200 seconds, an attack resistant enclosure is not required. See sections 3.2, 3.2.1, and 3.3 of the XR500 Series Programming Guide (LT-0679).

To provide High Line Encrypted security, install an XR500E panel or an XR500 panel with an iCOM-E™ Encrypted Network Alarm Router.

For high line security operation, communication between the Premise and Supervising Station provides 128 bit encryption when using an XR500E panel or an XR500 panel with an iCOM-E Encrypted Network Alarm Router.

The Model XR500 Series Protected Premises Control Unit is suitable for Grade AA service when configured for NET communication with SCS-1/SCS-1R receiving system. This configuration is approved for the following:

AMCX - Central Station Alarm Units
APOU - Proprietary Alarm Units

UL 365 and 609 Specifications

Police Station Connected and Local Burglar Alarm Units and Systems

33.1 System Trouble Display

The Status List Display must include at least one keypad that displays system monitor troubles. See the XR500 Series Programming Guide (LT-0679).

33.2 Entry Delay

The maximum entry delay used must not be more than 60 seconds. See the XR500 Series Programing Guide (LT-0679).

33.3 Exit Delay

The maximum exit delay used must not be more than 60 seconds. See the XR500 Series Programming Guide (LT-0679).

33.4 Grade A Bell

A Grade A local audible signal appliance must be used such as Ademco AB12M bell and bell housing.

33.5 Bell Cutoff

The Bell Cutoff time cannot be less than 15 minutes. See the XR500 Series Programming Guide (LT-0679).

33.6 Automatic Bell Test

The Automatic Bell Test option must be programmed as YES. See the XR500 Series Programming Guide (LT-0679).

33.7 Line Security for Police Connect

Basic line security is provided when the Model XR2500F is configured as a dialer system.

33.8 High Line Security

High Line Security is provided when configured as a NET system using an XR500N panel or an XR500 panel with an iCOM™ Internet Alarm Router. The NET Check-in time must be set from 01 to 06 minutes or AA. When a dialer is required for 06 minute check-in time, an attack resistant enclosure (DMP Model 350A) is required. When the check-in time is set to a number less than 200 seconds, an attack resistant enclosure is not required. See sections 3.2, 3.2.1, and 3.3 of the XR500 Series Programming Guide (LT-0679).

To provide High Line Encrypted security, install an XR500E panel or an XR500 panel with an iCOM-E™ Encrypted Network Alarm Router.

For high line security operation, communication between the Premise and Supervising Station provides 128 bit encryption when using an XR500E panel or an XR500 panel with an iCOM-E Encrypted Network Alarm Router.

UL 294 Specifications

34.1 Panel Designation

The XR2500F is designated as a stand alone unit.

34.2 Compatible Devices

The following devices are compatible with the XR2500F panels.

Access Control	
733 Wiegand Interface Module	Proximity reader connector
734 Wiegand Interface Module	Programmable proximity reader connector
OP-08CB Motion Detector	Infrared sensor.
* PB-2 REX Button	Exit control push button
PP-6005B Proxpoint Plus® Reader	Proximity reader
MP-5365 Miniprox® Reader	Slimline proximity reader
PR-5455 ProxPro® II Reader	Long range reader with sounder
MX-5375 Maxi-Prox™ Reader	Long range reader compatible with 1351 Prox Pass
*** This device has not been investigated by UL and shall not be used in UL installations.**	

Universal UL and NFPA Fire Alarm Specifications

35.1 Introduction

The programming and installation specifications contained in this section must be completed when installing the Model XR2500F in accordance with any of the UL or NFPA fire standards. Additional specifications may be required by a particular standard.

35.2 Wiring

All wiring must be in accordance with NEC, ANSI/NFPA 70.

35.3 Transformer

A wire-in transformer should be used. Use the supplied 16 VAC 56 VA transformer. The transformer must be mounted within 20 feet of the panel and connected by conduit.

35.4 End-of-Line Resistor

The DMP Model 310 1K Ohm EOL resistor should be used on all 1K Ohm EOL fire zones.

35.5 System Trouble Display

The Status List Display must include at least one keypad that displays system monitor troubles. See the XR500 Series Programming Guide (LT-0679).

35.6 Fire Display

The Status List Display must include at least one keypad that displays troubles and alarms on fire type zones. See the XR500 Series Programming Guide (LT-0679).

35.7 Police Station Phone Number

The digital dialer telephone number programmed for communication must not be a police station phone number, unless that phone number is specifically provided for that purpose.

35.8 System Maintenance

To ensure continuous satisfactory operation of any alarm system, proper installation and regular maintenance by the installing alarm company and frequent testing by the end user is essential. Offering a maintenance program and acquainting the user with the correct procedures for system use and testing is also the responsibility of the installing alarm company.

35.9 Audible Alarm

Fire Type zones must be programmed to activate an audible alarm. The Bell Action for Fire Type zones must not be programmed as "N". See the XR500 Series Programming Guide (LT-0679).

35.10 Fire Zone Programming

If a retard delay is used on a waterflow zone, it cannot exceed 90 seconds and any retard delay in the waterflow initiating devices must be subtracted from the 90 seconds allowed. See the XR500 Series Programming Guide (LT-0679). The retard delay should not be used on a zone with smoke detectors.

35.11 Style D Zones

If required, the DMP 869 Dual Style D Initiating Module provides for connection of two Style D zones to the Model XR2500F. See the 869 Installation Guide (LT-0186) and sections 29.2 and 37.2 of this guide for wiring information.

35.12 Video Option

The Video option must be selected as NO when any fire protection is connected to the XR2500F. See the XR500 Series Programming Guide (LT-0679).

35.13 UL Listed Receivers

Use the DMP SCS-1/SCS-1R (SDLC), Sur-Gard SG-HLR2-DG (CID), FBII CP220PB (CID), and Osborne-Hoffman Quick-Alert (CID) receivers.

UL 864 NFPA 72 (Chapter 9) Specifications

Control Units for Fire-Protective Signaling Systems

36.1 Zone Restoral Reports

The Restoral Reports option must be selected as YES or Disarm. See the XR500 Series Programming Guide (LT-0679).

36.2 Power Fail Delay

The Power Fail Delay option must be selected as required by the service of the panel. For Central Station service: 6-12, for Remote Station service: 12-15. See the XR500 Series Programming Guide (LT-0679).

36.3 Sprinkler Supervisory

Any zone used for sprinkler supervisory must be programmed with "SPRINKLR XXX" as the zone name. The last three characters in the zone name may be assigned a number to identify the zone. The Model 893A Dual Phone Line Module must be used on all sprinkler supervisory systems.

36.4 DACT Systems

Two phone lines must be used. The two phone lines cannot be ground start or party lines. The 893A Dual Phone Line Module is used to provide two phone line connections to the system. The 2ND Phone Line communication option must be selected as DD. See the XR500 Series Programming Guide (LT-0679).

Two different phone numbers must be programmed for digital communication. See the XR500 Series Programming Guide (LT-0679). The Test Time option must be programmed so that the XR2500F sends a report every 24 hours. See the XR500 Series Programming Guide (LT-0679).

36.5 Local Protective Signaling Systems

The DMP Model 865, 866, or 867 Notification Circuit Module must be used on the bell circuit for detection of shorts and grounds. See sections 32.1 to 32.2 in this guide for wiring diagrams. Model 690/690F, 790/790F, 793, 630F keypads that are used to display troubles for local fire alarm systems must be installed within a DMP Model 777 with 777S 1.0" spacer. Any burglary or other off premises communication must be done with the Model 893A Dual Phone Line Module. For local commercial fire installations, the 893A is required.

36.6 Remote Station Protective Signaling Systems

You must provide 60 hours of standby battery. See section 16.9 in this guide for standby battery calculations. Two Radionics Model D127 Reversing Relay Modules provide two reversing polarity telephone connections. See the D127 Installation Instruction sheet for wiring details. A DMP Model 893A is used to provide two line dialer communication.

36.7 Fire Protective Signaling Systems

The XR2500F Panel must be programmed as described below for Fire Protective Signaling Systems using Internet or Intranet network alarm communication.

- UL AA must be programmed as NO
- SUB CODE must be programmed as YES
- CHECKIN must be programmed as 1
- RETRY TIME must be programmed as 1
- FAIL TIME must be programmed as 1
- NET TRBL must be programmed as YES

UL 985 NFPA 72 (Chapter 2) Specifications

Household Fire Warning System Units

37.1 Bell Output Definition

The Model XR2500F panel Bell Output must be programmed to operate steady on burglary alarms and pulsed or temporal on fire alarms. See the XR500 Series Programming Guide (LT-0679).

37.2 Audible Devices

At least one listed audible device rated to operate over the voltage rate of 11.7 VDC to 12.8 VDC and rated at 85 DB minimum must be used.

37.3 Auxiliary Circuits

At least one fire alarm initiating device shall be used on the system. If the voltage for the device is applied by the control unit the fire alarm initiating device shall be rated to operate over the range of 11.5 VDC to 12.7 VDC.

37.4 Bell Cutoff

The Bell Cutoff time cannot be less than five minutes. See the XR500 Series Programming Guide (LT-0679).

California State Fire Marshal Specifications

38.1 Bell Output Definition

The Model XR2500F panel Bell Output must be programmed to operate steady on burglary alarms and pulsed, temporal, or California School Code on fire alarms. See the XR500 Series Programming Guide (LT-0679).

New York City (MEA) Specifications

39.1 Introduction

The programming and installation specifications contained in this section must be completed when installing the XR500 Series panel for New York City (MEA) fire alarm installations that provide a digital dialer with network IP communication as backup. Fire alarm installations that use two digital dialer telephone lines do not need to comply with these specifications.

39.2 Digital Dialer and Network Communication

When used with a central office communicator or a transmitter, the installation and operation of the equipment and devices shall comply with 3RCNY 17-01. The installation shall employ the digital dialer as the primary communicator (using telephone line) with network IP communication as backup or secondary means of communication. It shall have the capability of transmitting separate and distinct signals to indicate manual pull station alarm, automatic detection alarm, sprinkler waterflow alarm, supervisory signal indications and trouble indications.

39.3 Wiring

All wiring must be in accordance with NEC, ANSI, and NFPA 70. All network cabling must be installed in accordance with NFPA 70 for communication circuits.

39.4 Communication Programming

For digital dialer communication with supervised network backup, program the following:

COMM TYPE = NET
SECOND LINE = DD
RECEIVER 1
  ALARMS = YES
  FIRST PHONE NUMBER = Central Station Receiver Phone Number
RECEIVER 2
  ALARMS = YES
  FIRST PHONE NUMBER = Central Station Receiver Phone Number

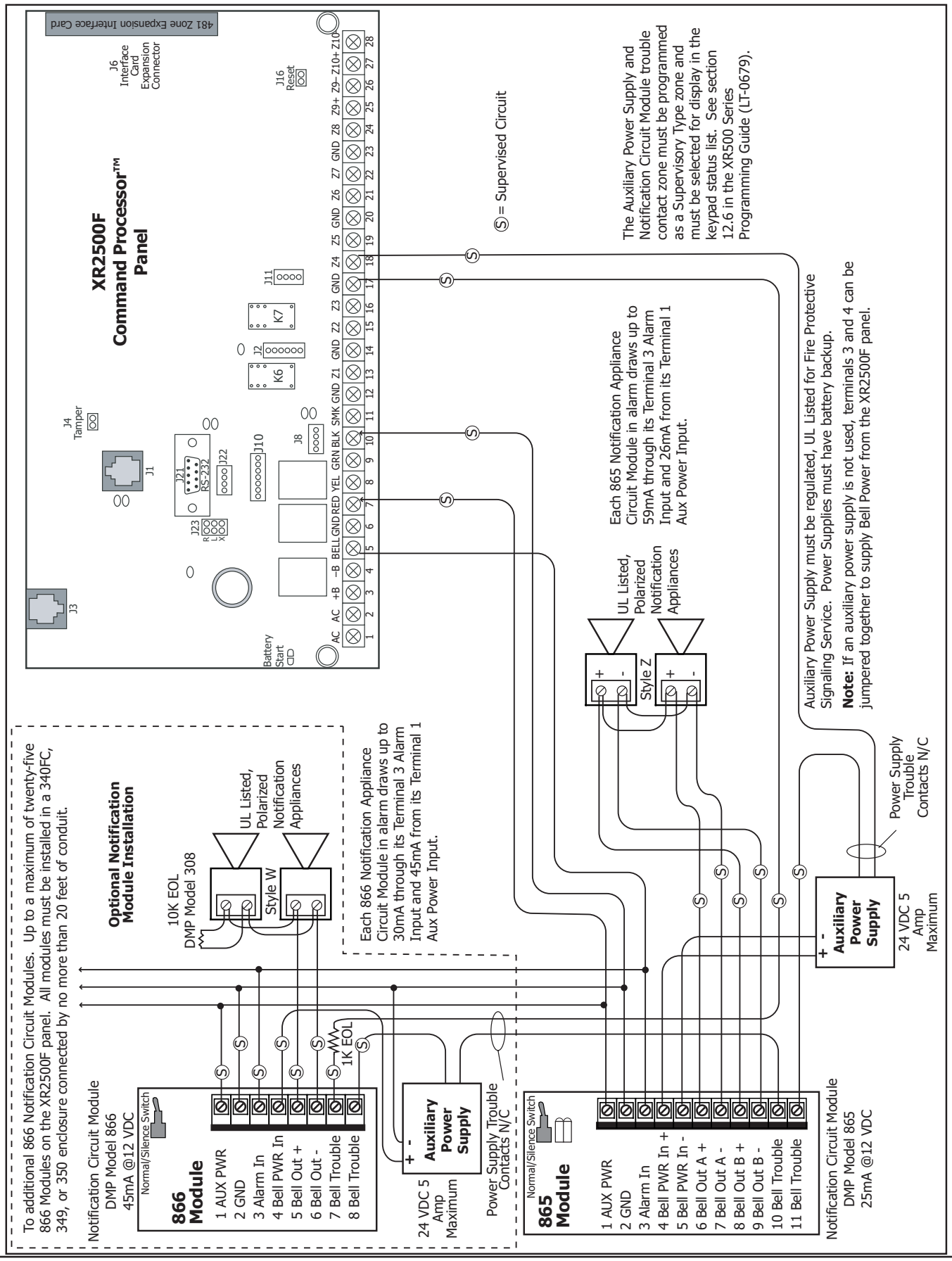
See the XR500 Series Programming Guide (LT-0679).

39.5 Additional Requirements

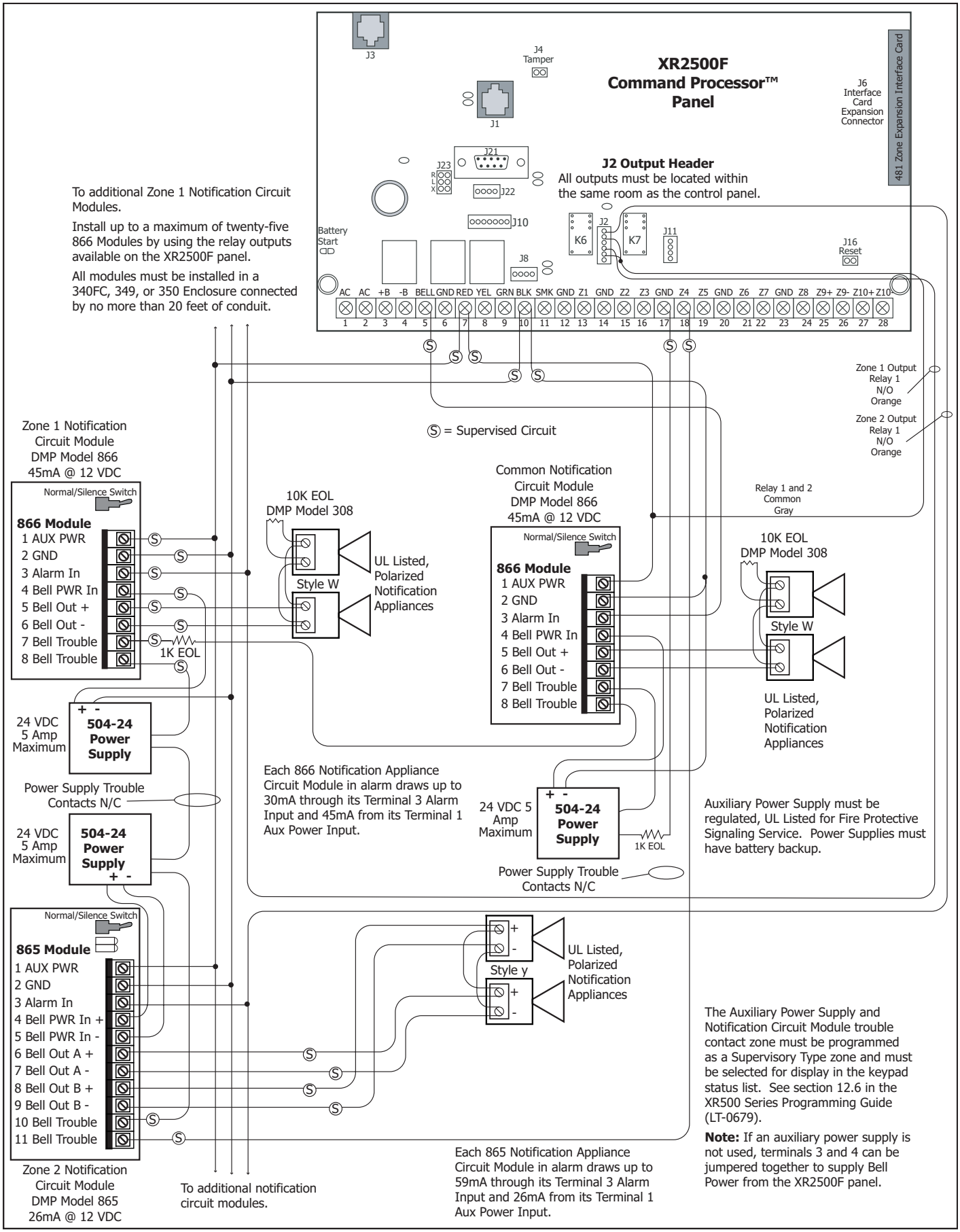
Program and install the equipment to comply with NFPA basic fire requirements. Refer to the Universal UL and NFPA Fire Alarm Specifications and UL 864 NFPA 72 (Chapter 9) Specifications earlier in this document.

Wiring Diagrams

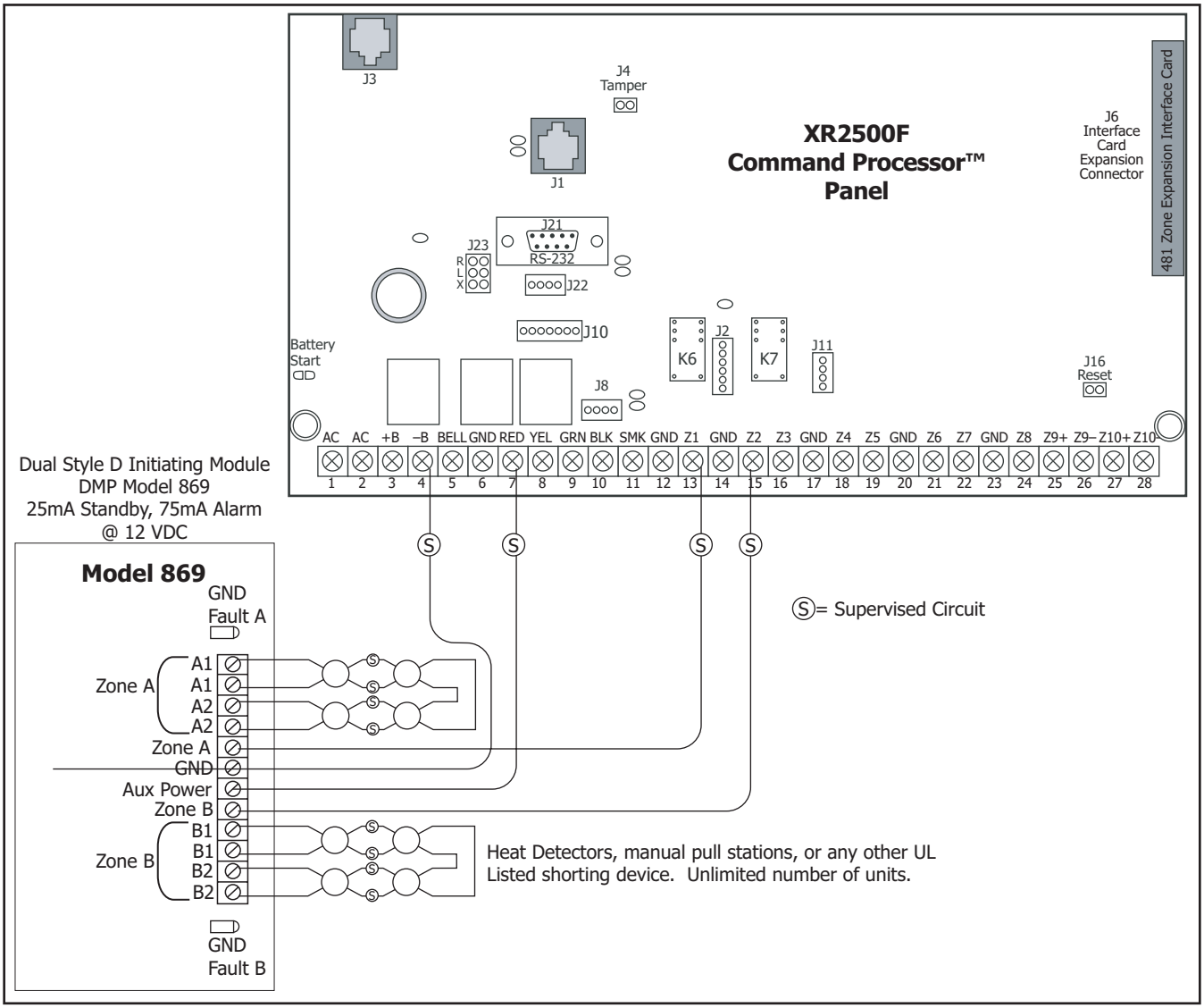
40.1 Multiple Notification Circuit Modules



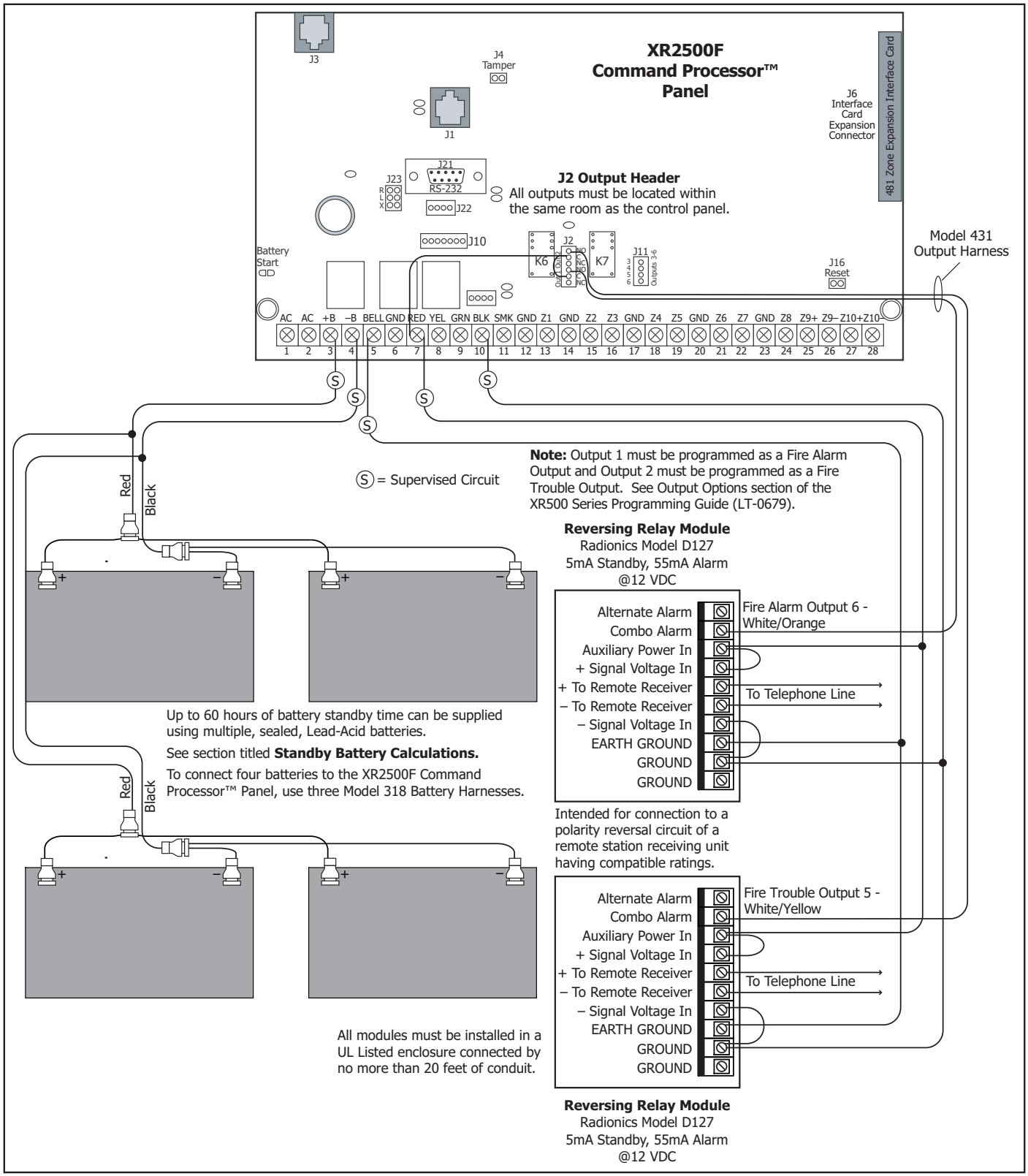
40.2 Multiple Notification Circuit Modules for Zoned Annunciation



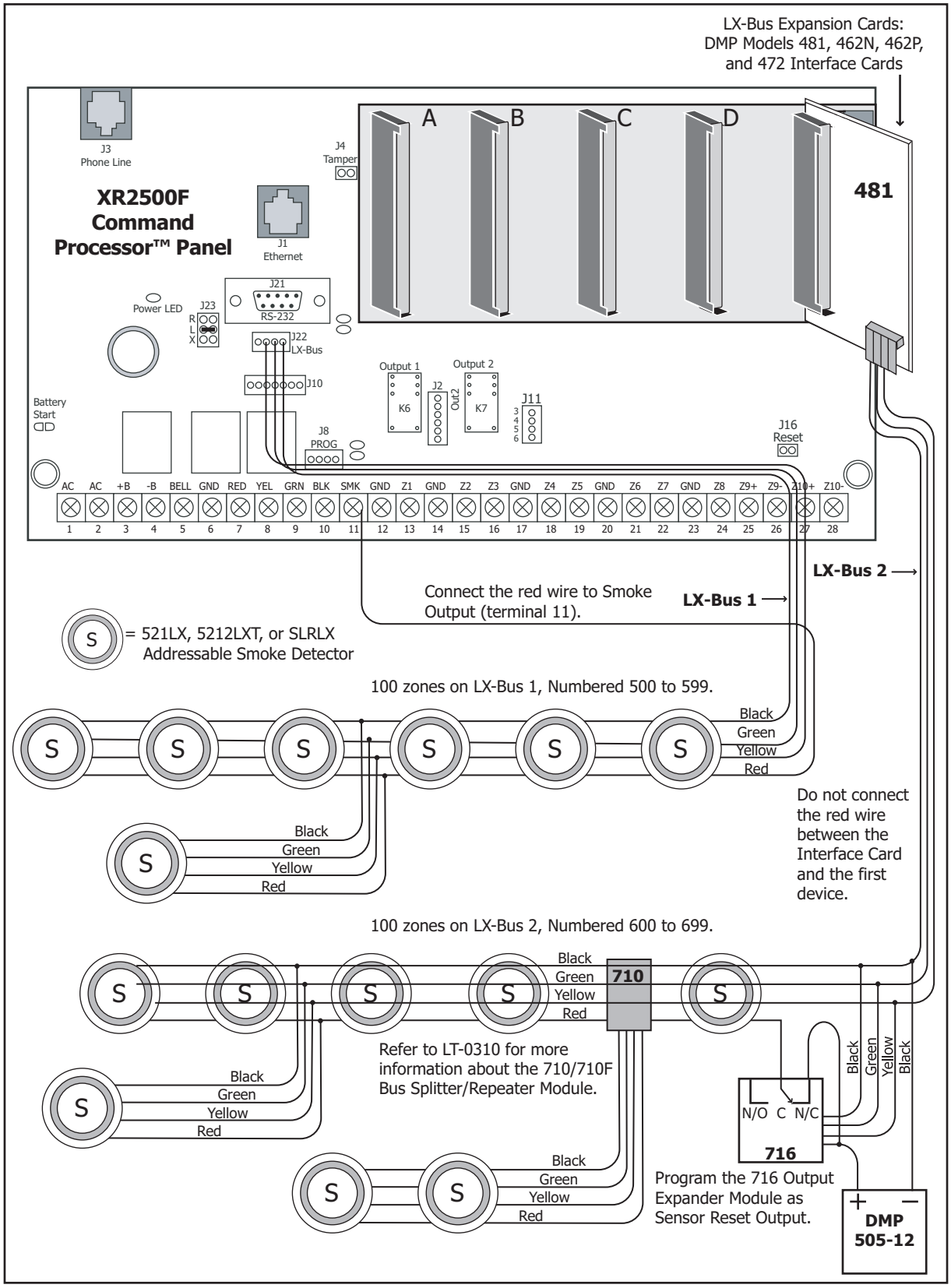
40.3 Dual Style D Zone Module Installation



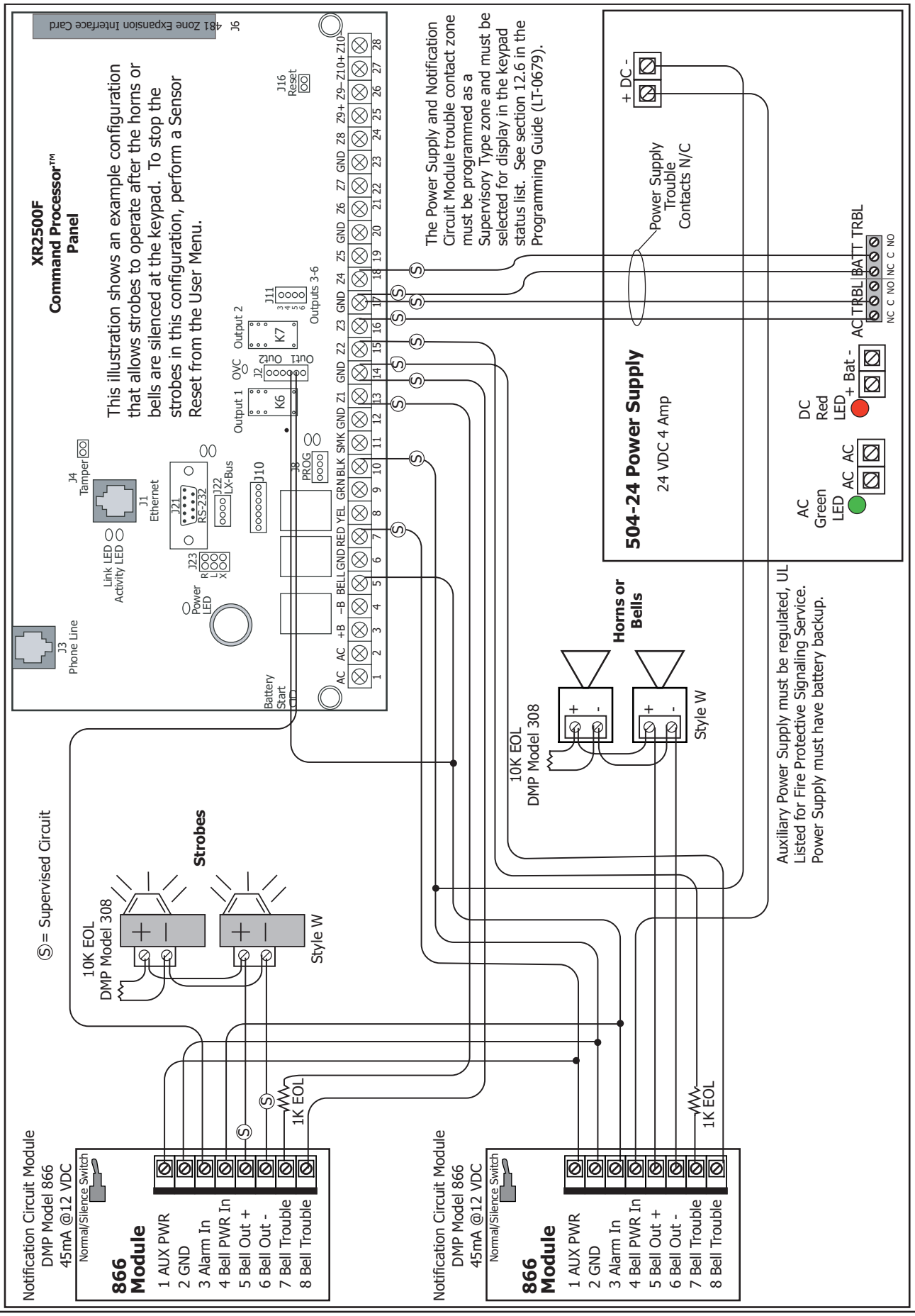
40.4 Remote Station Reversing Relay Connection



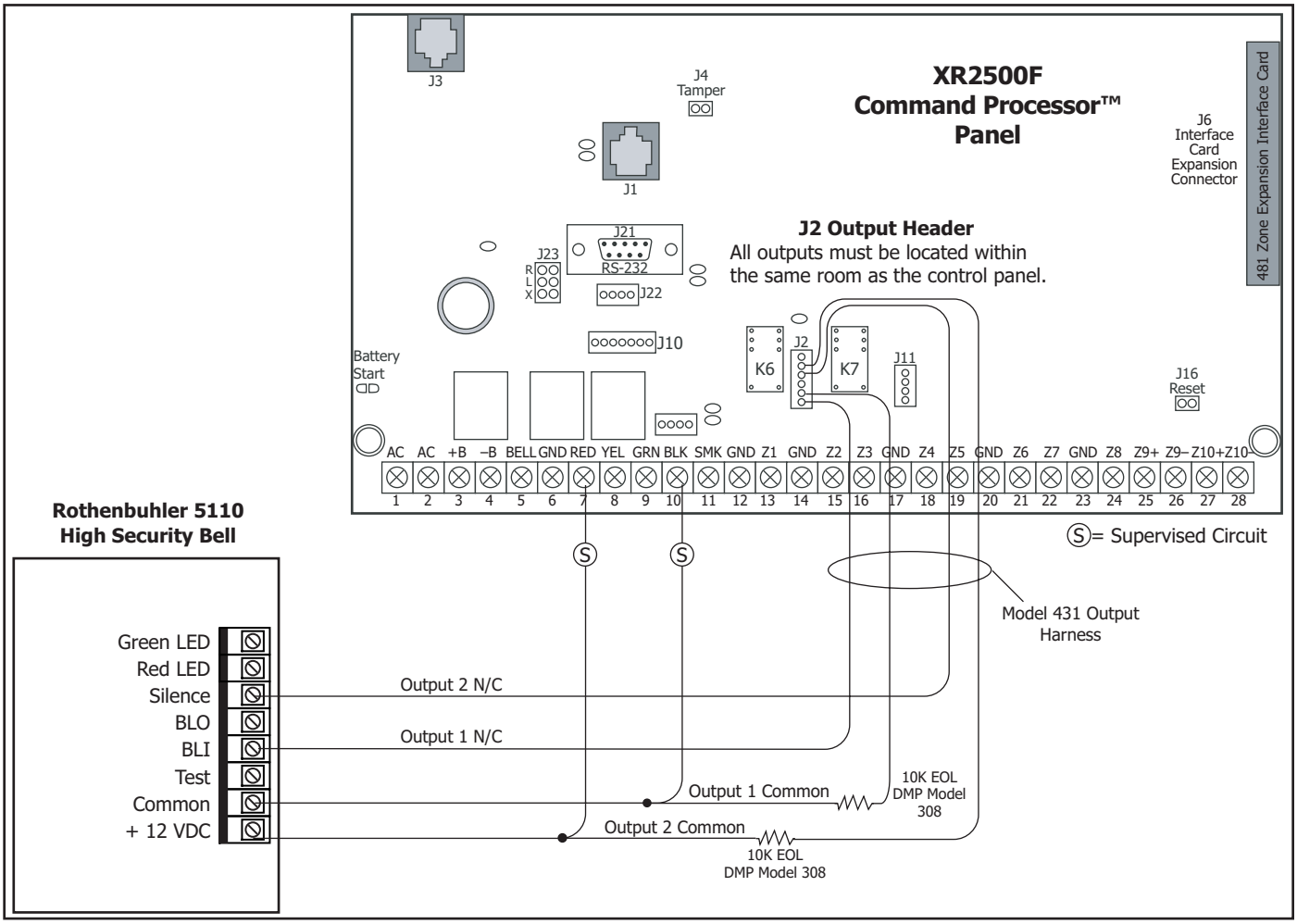
40.5 Second LX-Bus™ with Auxiliary Power Supply



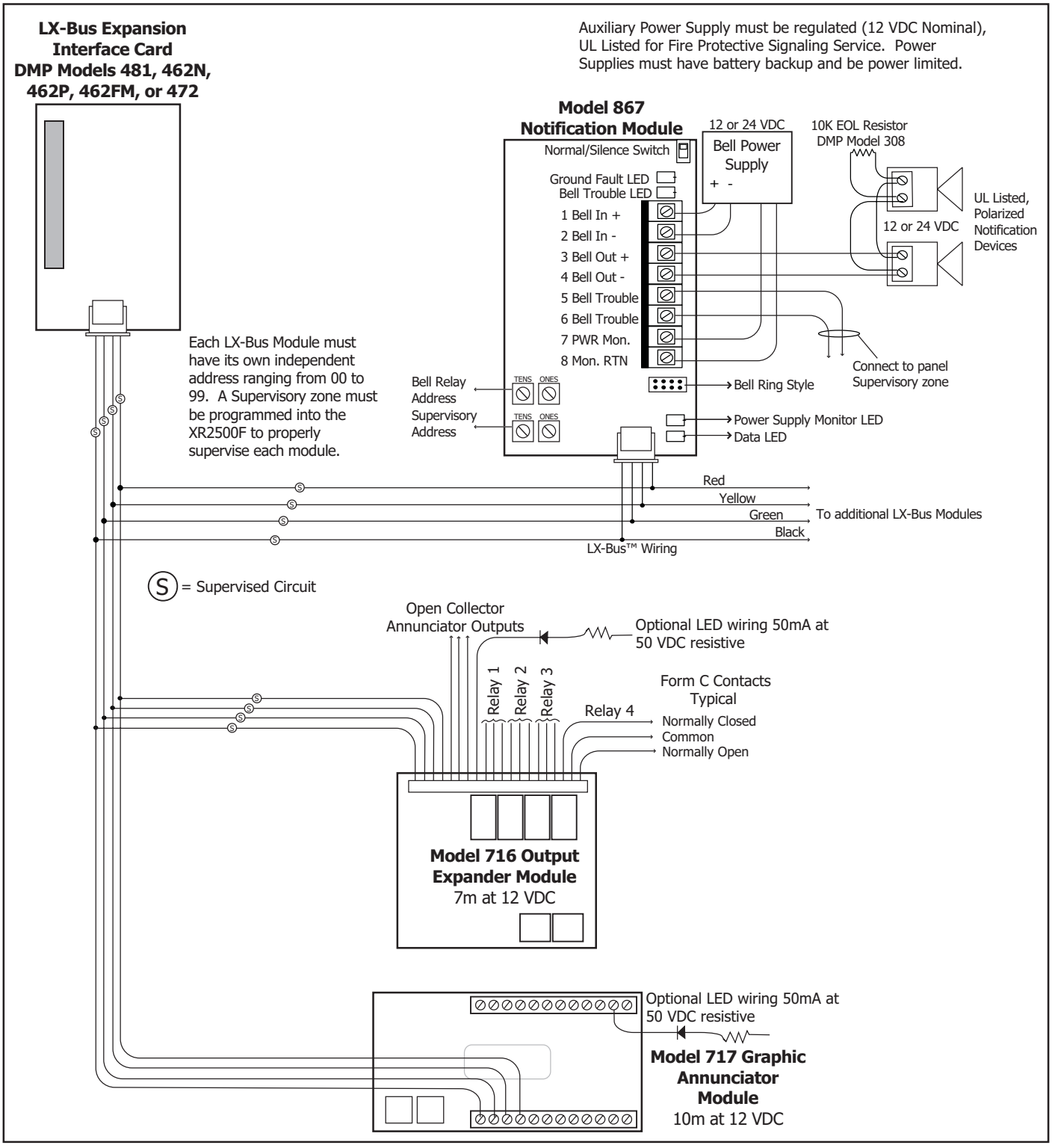
40.6 Multiple Notification Circuits with Strobes and Bells



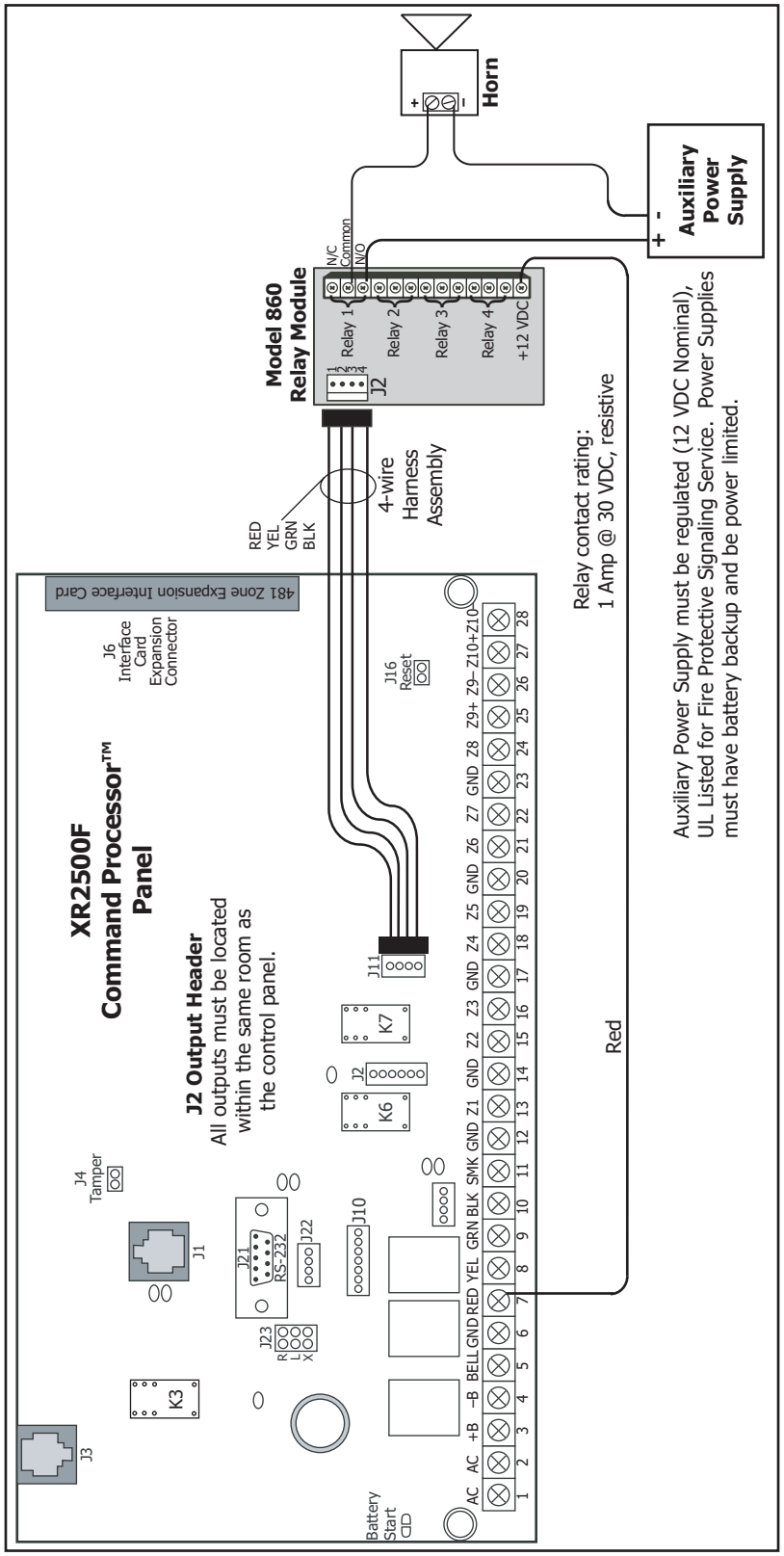
40.7 Rothenbuhler 5110 High Security Bell Wiring



40.8 LX-Bus™ Module Connection



40.9 Model 860 Relay Module Connection



OPERATING INSTRUCTIONS
MODEL XR2500F PANELS

NORMAL STANDBY CONDITION
When the system is in the normal standby condition, the keypad shows either the time of day or a blank display.

ALARM CONDITION
When the system is in an alarm condition, the keypad display shows the violated zone name(s) followed by an alarm display.

ALARM SILENCE
To silence the alarm while the bell or siren is sounding, enter your code number and press the COMMAND key. This silences the alarm but does *not* cancel any alarm reports to the central station.

RESETTING DETECTORS
To reset a smoke or other detector, enter the User Menu by pressing the COMMAND key until **MENU? NO YES** appears in the display. Press the top row key under **YES**. The display shows **ENTER CODE: -**. Enter your code number and press COMMAND. The keypad display now shows **ALARM SILENCE?** if your code allows. Press the COMMAND key until **SENSOR RESET?** appears in the display. Press any top row key.

TROUBLE CONDITION
When a device is in a trouble condition, the keypad tones and displays the zone or device name followed by **TRBL**. Press any top row key to silence.

SYSTEM TESTING
You should test the security system periodically to ensure proper operation. You can do this through a function in the User Menu. After entering the User Menu, press the COMMAND key until **SYSTEM TEST?** displays. Press the left most top row Select key. The system bell, battery, and communication to the central station receiver system is then tested.

ALARM SERVICE
If service is required for this system, please contact:

Company_____

Address _____

Telephone_____

Mounting Instructions
Attach the above operating instructions to the front, or framed and located adjacent to, the panel or a Security Command keypad with an alphanumeric display.

Listings and Approvals
Underwriters Laboratories (UL) Listed
- UL 294 Access Control System Units
- UL 365 Police Connected Burglar
- UL 609 Local Burglar
- UL 1023 Household Burglar
- UL 1076 Proprietary Burglar
- UL 1610 Central Station Burglar
- UL 1635 Digital Burglar
- UL 985 Household Fire Warning
- UL 864 Fire Protective Signaling

California State Fire Marshal (CSFM)
New York City (MEA)
FCC Part 15
FCC Part 68 Registration ID CCKAL00BXR500

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