



4010ES and 4100/4120-Series Class A / Class B Zone Modules Installation Instructions

Introduction

This publication describes the installation procedure for the following modules.

Model	Description	Required Back Box
4100-5001	8 Zone Class B – Connects Fire Initiating Devices Only	2975-91xx Back Box (4100)
4100/ 4120-5004	8 Zone Class B – Connects either Fire Initiating Devices or Security Devices	2975-91xx Back Box (4100)
4100-5005	8 Zone Class B – Connects either Fire Initiating Devices or Security Devices	2975-94xx Back Box (4100U/4100ES)
4010-9920	8 Zone Class B – Connects Fire Initiating Devices Only	4010ES Back Boxes
4100-5011/ 5012	8 Zone Class A – Connects Fire Initiating Devices Only	2975-91xx Back Box (4100)
4100/ 4120-5014	8 Zone Class A – Connects either Fire Initiating Devices or Security Devices	2975-91xx Back Box (4100)
4100-5015	8 Zone Class A – Connects either Fire Initiating Devices or Security Devices	2975-94xx Back Box (4100U/4100ES)
4010-9921	8 Zone Class A – Connects Fire Initiating Devices Only	4010ES Back Boxes

Related Documentation

- *Field Wiring Diagram for 4100 Power Limited (841-731) or,*
- *Field Wiring Diagram for 4100 Non Power Limited (841-995)*
- *4100ES Fire Alarm System Installation Guide (574-848)*
- *4010ES Fire Alarm System Installation Guide (579-989)*

In this Publication

This publication discusses the following topics:

Topic	See Page #
Cautions and Warnings	2
Setting the Card Address Switch	3
Installing Motherboards into 2975-91xx Back Boxes (4100)	5
Installing Motherboards into 2975-94xx Back Boxes (4100U/4100ES)	9
Installing Motherboards into 4010ES Back Boxes	14
Installing the Daughter Card	18
Wiring Guidelines	19
Class A Monitor Zone Wiring	22
Class A Monitor Zone – Waterflow Switch Wiring	23
Class B Monitor Zone Wiring	24
Class B Waterflow and Tamper Switch Wiring	25
4100/4120-5004 and 4100-5005 Security Wiring	27

Cautions and Warnings

READ AND SAVE THESE INSTRUCTIONS. Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depend upon proper installation.



DO NOT INSTALL ANY SIMPLEX® PRODUCT THAT APPEARS DAMAGED. Upon unpacking your Simplex product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify an authorized Simplex product supplier.



ELECTRICAL HAZARD - Disconnect electrical field power when making any internal adjustments or repairs. All repairs should be performed by a representative or authorized agent of your local Simplex product supplier.



STATIC HAZARD - Static electricity can damage components. Handle as follows:

- Ground yourself before opening or installing components.
- Prior to installation, keep components wrapped in anti-static material at all times.



EYE SAFETY HAZARD - Under certain fiber optic application conditions, the optical output of this device may exceed eye safety limits. Do not use magnification (such as a microscope or other focusing equipment) when viewing the output of this device.

FCC RULES AND REGULATIONS – PART 15 - This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

SYSTEM REACCEPTANCE TEST AFTER SOFTWARE CHANGES. To ensure proper system operation, this product must be tested in accordance with NFPA-72 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

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

Setting the Card Address Switch

Switches

Switch SW1 on the monitor daughter cards is a bank of eight dip switches. From left to right (see figure below) these switches are designated as SW1-1 through SW1-8. The function of these switches is as follows:

- **SW1-1.** This switch sets the baud rate for the serial communication line running between the card and the CPU. Set this switch to ON.
- **SW1-2 through SW1-8.** These switches set the card's address within the FACP. (These switches must be set to the value assigned to the card by the Programmer.) Refer to Table 1 for a complete list of the switch settings for all of the possible card addresses. Move a switch to the down position to turn it ON or to the up position to turn it OFF.

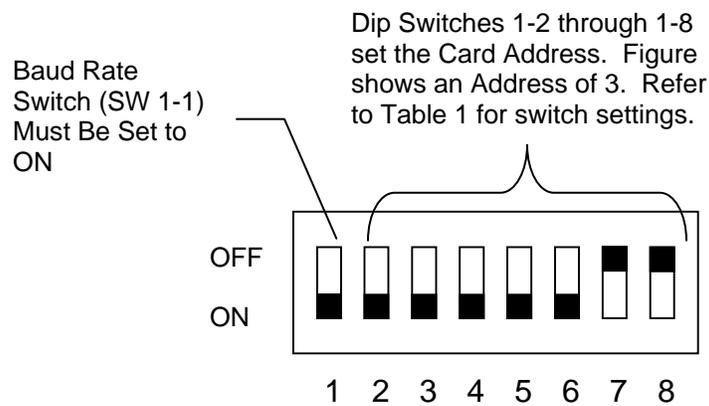


Figure 1. Address DIP Switch

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Installing Motherboards into 2975-91xx Back Boxes (4100)

Overview

The zone modules can be mounted to 4100 Back Boxes (PID series 2975-91.xx), 4100U/4100ES Back Boxes (PID series 2975-94.xx), or 4010ES Back Boxes.

- 4100-5001, -5004, -5011, and -5014 modules mount in 4100 Back Boxes.
- 4100-5005 and -5015 modules mount in 4100U/4100ES Back Boxes.
- 4010-9920 and -9921 modules mount in 4010ES Back Boxes.

This section describes mounting the 4100-5001, -5004, -5011, and -5014 versions into 4100 Back Boxes.

Installing into a 2975-91xx Master Controller Bay

Use the following guidelines and instruction when installing into a master controller bay.

- If the 575-274 Master Motherboard is used, it must be installed in the leftmost position of this bay. If the 575-274 Master Motherboard is not used, the CPU motherboard must be installed in the leftmost position of the bay.
- The power supply must be installed in the rightmost position of the bay.
- Relay cards must be installed in the slots immediately to the left of the power supply. This is necessary to allow for the proper routing of non-power limited wiring (120 VAC wiring connected to the relay card).
- If used, the Class B motherboard (575-275) must be installed to the left of the relay cards. If a physical bridge is used with the Class B motherboard, it must be to the right of any motherboards using NICs. This allows for earth ground detection via the physical bridge.

Install the motherboard as described below.

1. Orient the motherboard so that the connector labeled J1 is on the right and the header labeled P1 is on the left.
2. Slide the motherboard you are installing to the left until the pins are completely inserted in the connector of a previously installed motherboard.
3. Secure the motherboard to the chassis with four torx screws.

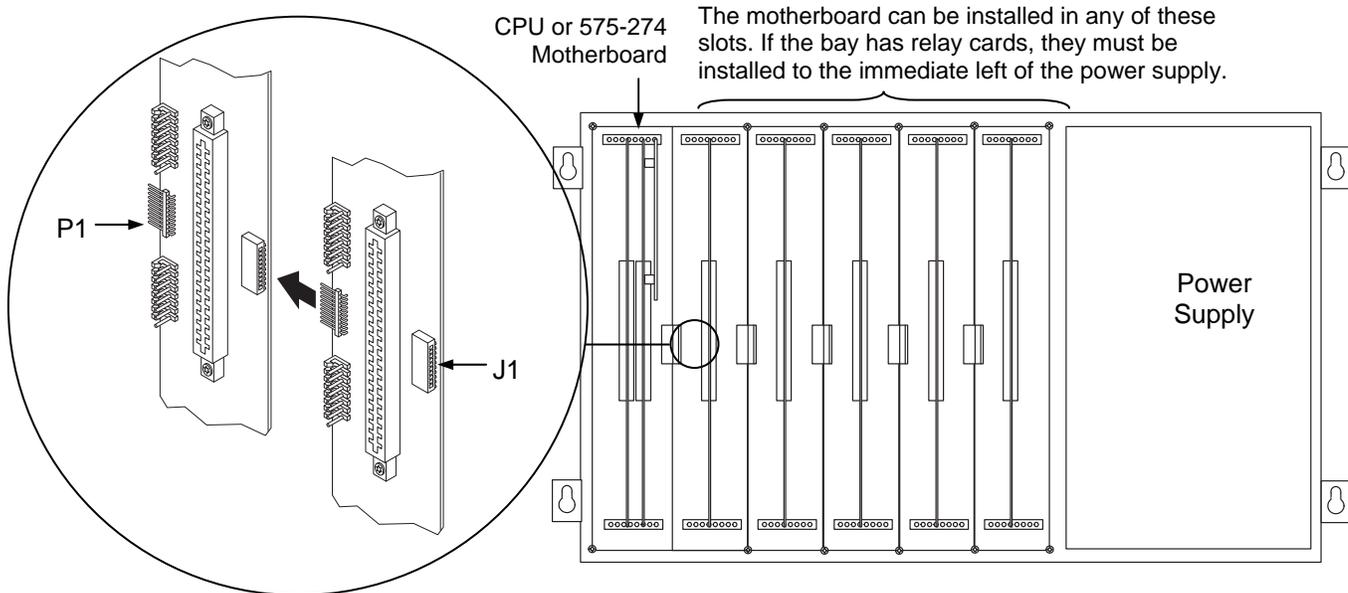


Figure 2. Installing the Motherboard into a 4100 Master Controller Bay

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Installing Motherboards into 2975-91xx Back Boxes (4100), *Continued*

Installing into a 2975-91xx Expansion Bay

Review the following guidelines before mounting the motherboard into a 2975-91xx Expansion Bay.

- If a power supply is installed in the bay, it must be installed on the far right of the bay and any relay modules must be installed in the slots immediately to its left.
- Relay cards must be installed in the rightmost possible slots. This is necessary to allow for the proper routing of non-power limited wiring (typically 120 VAC wiring), which could be connected to a relay module.
- If a 4100/4120-0155 SDACT, 4100-6052 Event Reporting DACT, 4100-6053 Point Reporting DACT, or a 4100/4120-0153 CCDACT is installed in the bay, it must be installed in the far left or far right slot. Neither of these modules contains the J1 or P1 connectors, which are used to distribute power and communications to adjacent modules.

Use the following directions and Figure 3 to install a motherboard into an expansion bay.

1. Orient the motherboard with the connector labeled J1 on the right and the header labeled P1 on the left.
2. Match the connector on the previously installed motherboard with the pins on the motherboard you are installing. Slide the motherboard to the left until the pins are completely inserted in the connector of the previously installed motherboard. If you are installing the leftmost board, the pins will remain unconnected.
3. Secure the motherboard to the chassis with four torx screws.

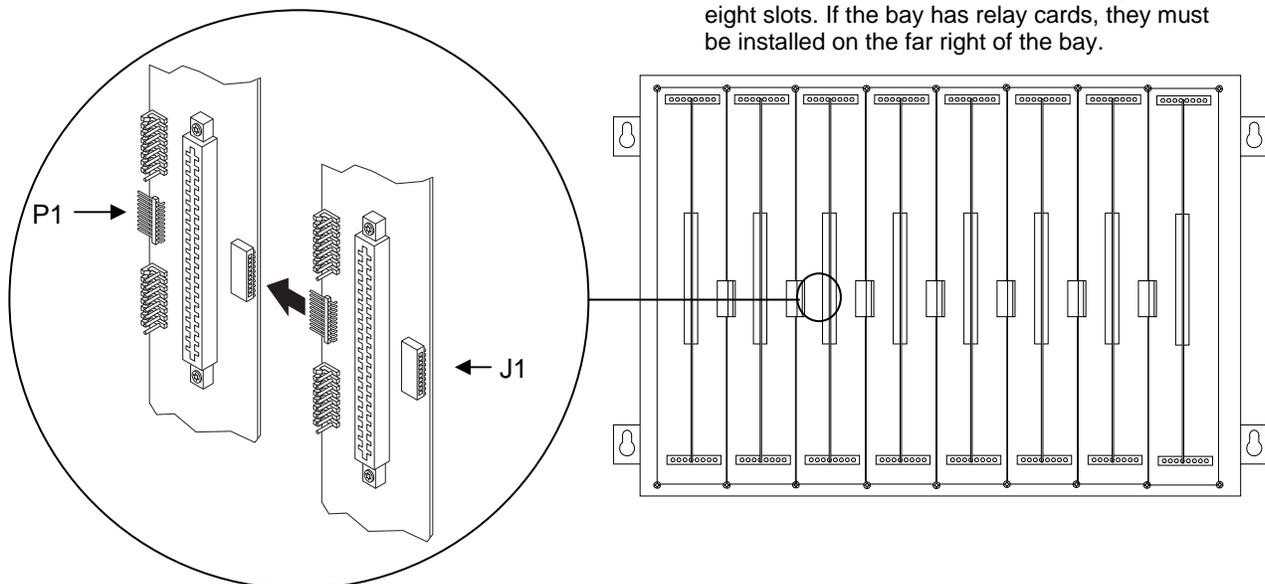


Figure 3. Installing the Motherboard into a 4100 Expansion Bay

4. If you are installing the leftmost motherboard, connect a 733-525 Power and Communication Harness. Continue to the next topic to connect the harness.

Continued on next page

Installing Motherboards into 2975-91xx Back Boxes (4100), *Continued*

Connecting the 733-525 Harness

If you need to connect a 733-525 Harness to a motherboard, refer to Figure 4 and follow these steps. Make sure to route the power and communication wiring on the left side of the bay.

1. Connect one end of the harness to a motherboard in an adjacent bay.

If the adjacent bay is a master controller bay, connect the harness to the P2 and P3 connectors of the master controller motherboard and continue to step 2.

If the adjacent bay is an expansion bay, connect the harness to the P2 and P3 connectors of the motherboard installed in the leftmost slot. (If a 4100/4120-0155 SDACT, 4100-6052 Event Reporting DACT, 4100-6053 Point Reporting DACT, or a 4100/4120-0153 CCDACT occupies the leftmost slot, connect the harness to the motherboard in the second slot from the left.) Connect the harness as follows:

- a. Insert the harness connector with the blue wire into the P2 connector. Note that the P2 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.
- b. Insert the harness connector with the white wire into the P3 connector. Note that the P3 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.

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Installing Motherboards into 2975-91xx Back Boxes (4100), *Continued*

Connecting the 733-525 Harness

2. Connect the other end of the harness to the leftmost motherboard in the next bay, as described below. Make sure to route the wiring on the left side of the bay.
 - a. Insert the harness connector with the blue wire into the P2 connector. Note that the P2 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.
 - b. Insert the harness connector with the white wire into the P3 connector. Note that the P3 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.

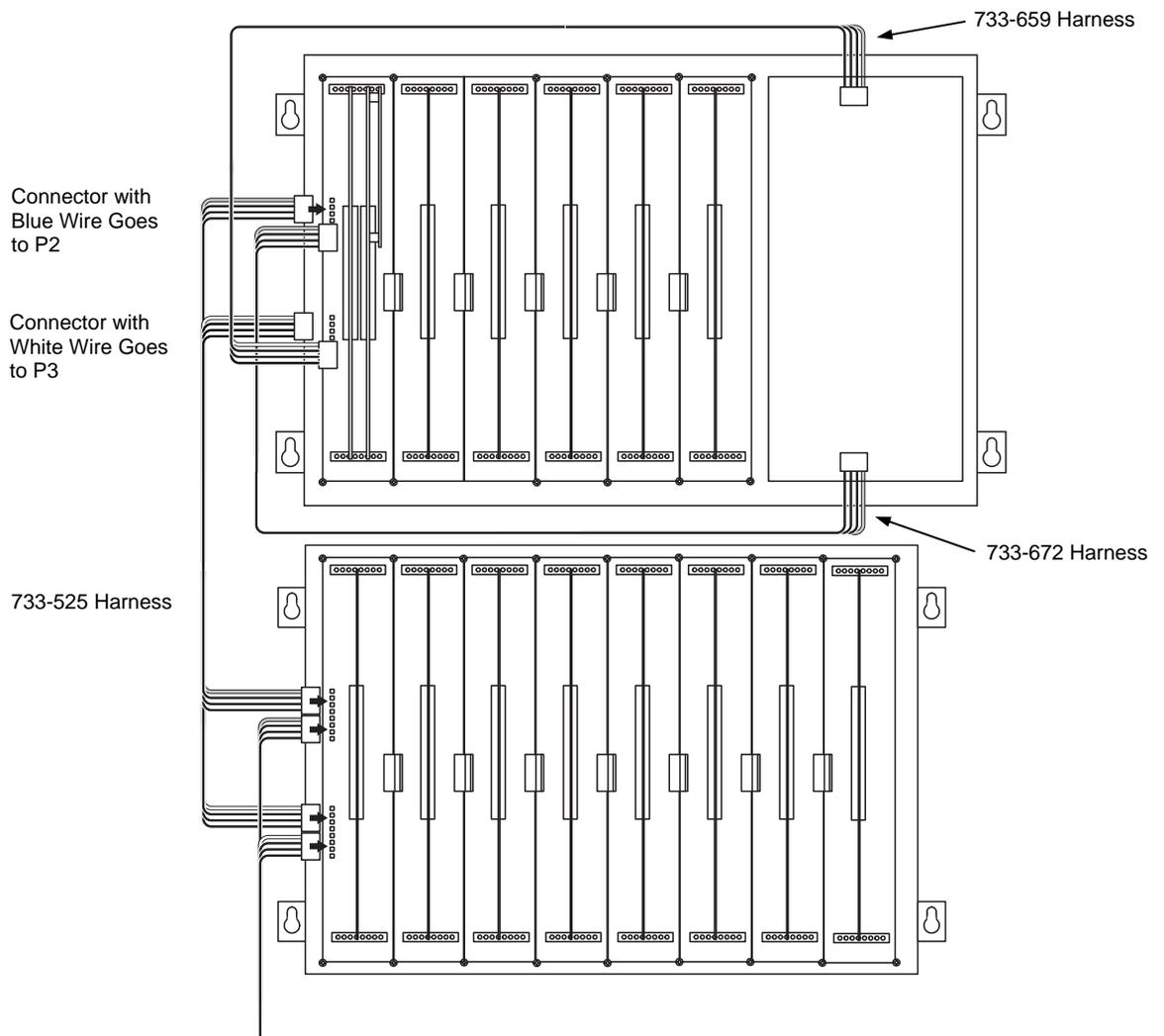


Figure 4. Power and Communication Wiring for Motherboards (4100)

Installing Motherboards into 2975-94xx Back Boxes (4100U/4100ES)

Overview

The zone modules can be mounted to 4100 Back Boxes (PID series 2975-91.xx), 4100U/4100ES Back Boxes (PID series 2975-94.xx), or 4010ES Back Boxes.

- 4100-5001, -5004, -5011, and -5014 modules mount in 4100 Back Boxes.
- 4100-5005 and -5015 modules mount in 4100U/4100ES Back Boxes.
- 4010-9920 and -9921 modules mount in 4010ES Back Boxes.

This section describes mounting the 4100-5005 and -5015 versions into 4100U/4100ES Back Boxes.

Installing into a 2975-94xx CPU Bay

Up to two motherboards may be installed with the system CPU in the CPU bay.

Use the following directions to mount a motherboard into a CPU bay.

1. Orient the motherboard with the connector labeled J1 on the right and the header labeled P1 on the left.
2. Slide the motherboard to the right until the pins from P1 on the motherboard to the right are completely inserted in the motherboard's J1 connector.
3. Attach four lockwashers and metal standoffs to the chassis, and secure the motherboard to the chassis using four #6 screws.

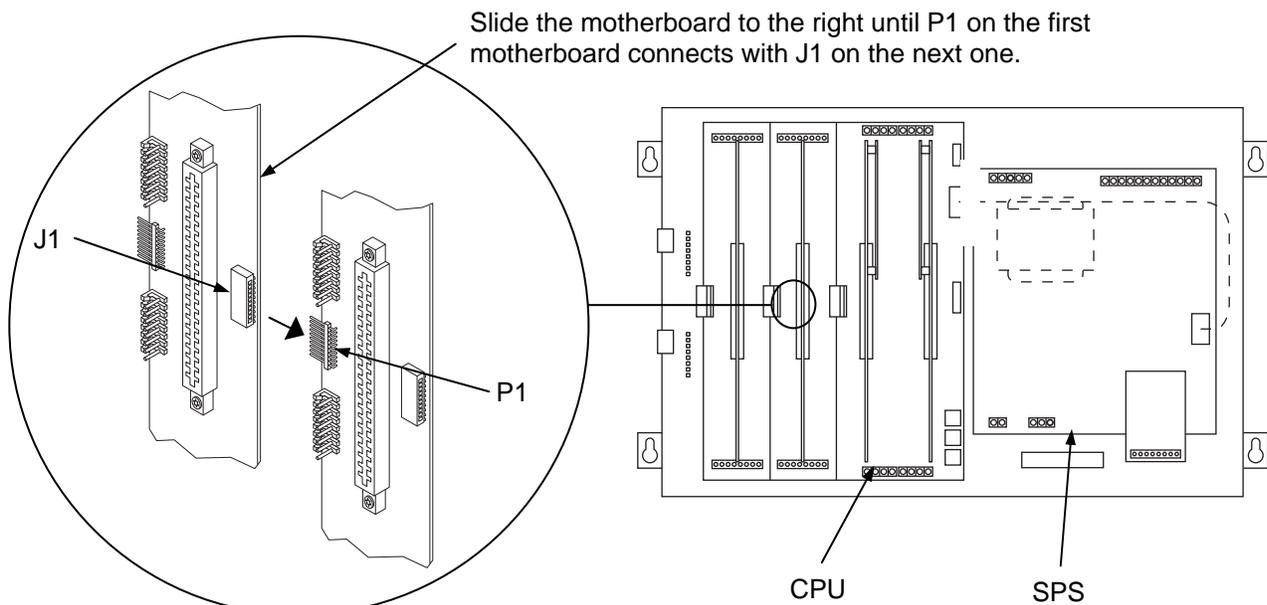


Figure 5. Installing the Motherboard into a 4100U/4100ES CPU Bay

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Installing Motherboards into 2975-94xx Back Boxes (4100U/4100ES), Continued

Installing into a 2975-94xx Expansion Bay

When installing 2 x 11 1/2-inch motherboards in a 4100U/4100ES expansion bay, adhere to the following guidelines:

- Each expansion bay assembly includes a chassis, two end supports, one LED/switch frame, and a power distribution interface (PDI) board.
- An expansion bay holds up to eight 4" x 5" modules. A double-size module, such as the expansion power supply (XPS), takes up two blocks of space as shown below.
- Up to seven 2" x 11 1/2" motherboards can be installed in an expansion bay **if no 4" x 5" modules are installed in the bay**. Motherboards are mounted on top of the PDI in expansion bays. The data and power that would normally be bussed via the PDI is instead routed across the boards via ribbon cable from one board to the next.
- As shown in the figure below, motherboards can be installed alongside 4" x 5" cards, if necessary.
- The leftmost slot must not contain a motherboard.
- 4" x 5" cards must be added from right to left.
- Motherboards must be added from left to right.

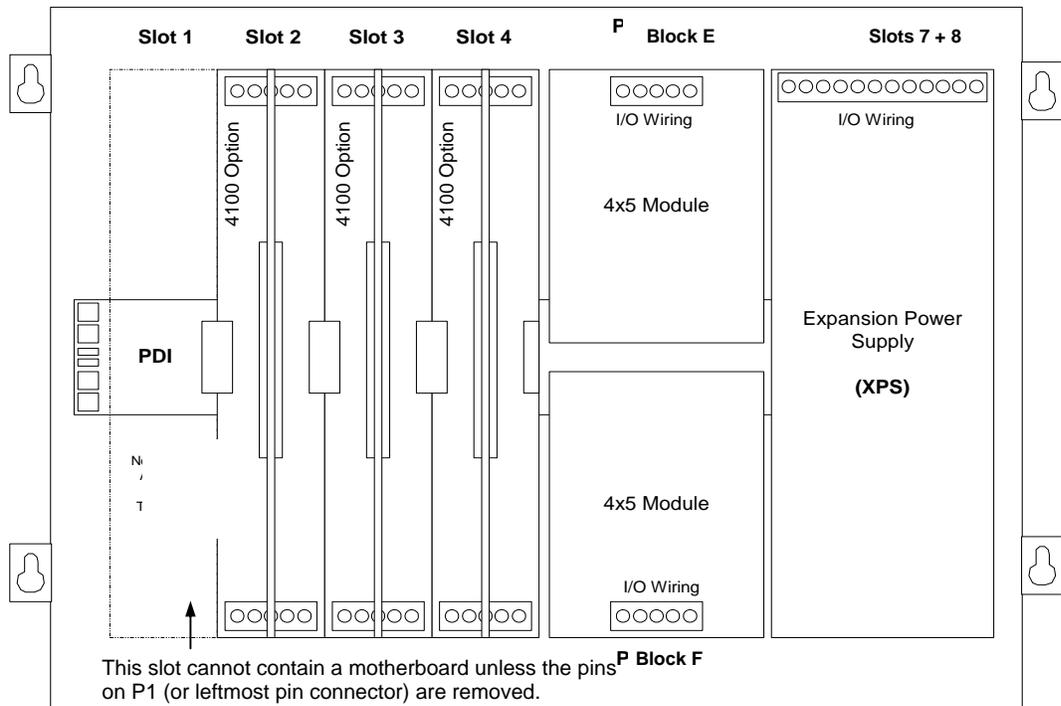


Figure 6. Installing the Motherboard in a 4100U/4100ES Expansion Bay

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Installing Motherboards into 2975-94xx Back Boxes (4100U/4100ES), *Continued*

Installing into a 2975-94xx Expansion Bay

Use the following procedure when installing motherboards in an expansion bay. Start with the second slot from the left and fill to the right.

1. Orient the motherboard with the connector labeled J1 on the right and the header labeled P1 on the left.
2. Attach four metal threaded standoffs and lockwashers into the screw holes on the chassis.
3. Attach two grey plastic standoffs to the motherboard socket mounting screws.
4. Secure the motherboard to the standoffs using four #6 torx screws as shown in Figure 7.

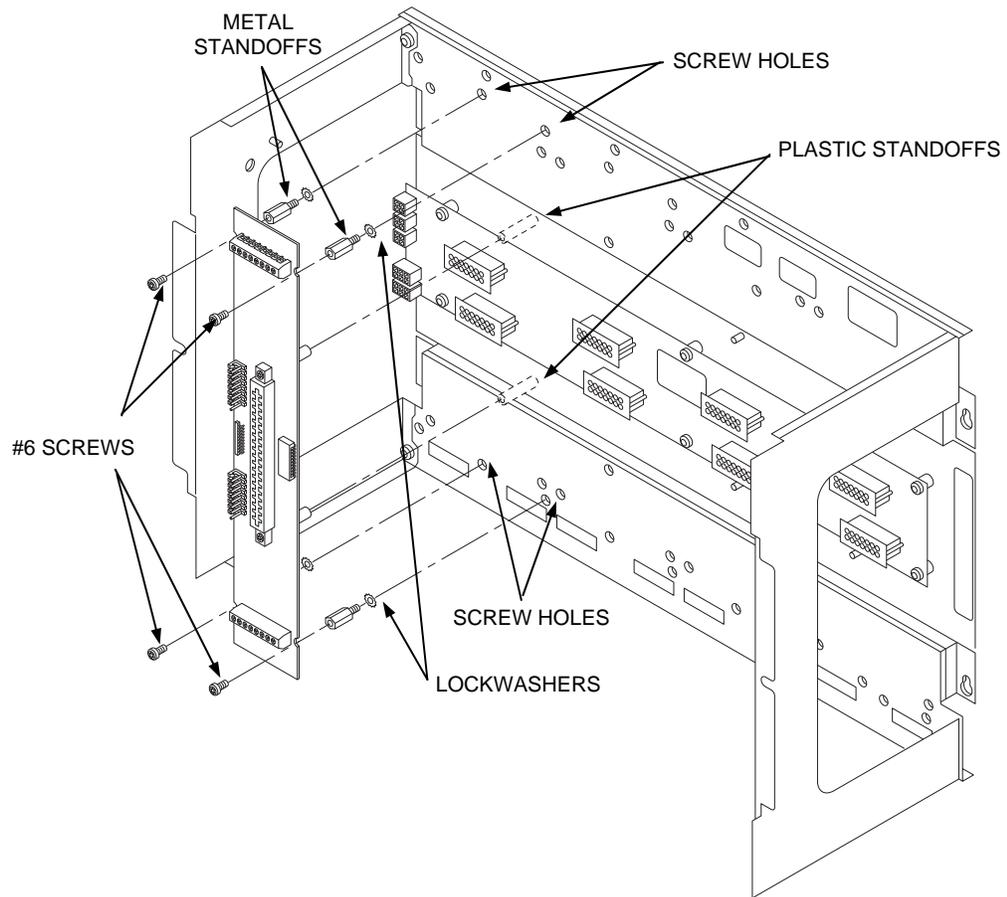


Figure 7. Installing the Motherboard in a 4100U/4100ES Expansion Bay

5. If you are installing the leftmost motherboard, connect a 733-525 Power and Communication Harness. Continue to the next topic to connect the harness.

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Installing Motherboards into 2975-94xx Back Boxes (4100U/4100ES),

Continued

Connecting the 733-525 Harness

If you need to connect a 733-525 Harness to a motherboard, refer to Figure 8 and follow these steps. Make sure to route the power and communication wiring on the left side of the bay.

1. Connect one end of the harness to a motherboard in an adjacent bay.

If the adjacent bay is the CPU bay with no additional motherboards, connect the harness to the P8 and P7 connectors of the CPU motherboard.

- Insert the harness connector with the blue wire into the P8 connector. Note that the P8 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.
- Insert the harness connector with the white wire into the P7 connector. Note that the P7 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.

If the adjacent bay is an expansion bay or a CPU bay with additional motherboards, connect the harness to the P2 and P3 connectors of the motherboard installed in the leftmost slot. (If a 4100/4120-0155 SDACT, 4100-6052 Event Reporting DACT, 4100-6053 Point Reporting DACT, or a 4100/4120-0153 CCDACT occupies the leftmost slot, connect the harness to the motherboard in the second slot from the left.) Connect the harness as follows:

- Insert the harness connector with the blue wire into the P2 connector. Note that the P2 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.
- Insert the harness connector with the white wire into the P3 connector. Note that the P3 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.

2. Connect the other end of the harness to the leftmost motherboard in the next bay, as described below. Make sure to route the wiring on the left side of the bay.

- Insert the harness connector with the blue wire into the P2 connector. Note that the P2 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.
- Insert the harness connector with the white wire into the P3 connector. Note that the P3 connector has eight pins. Insert the harness connector on either the top four pins or the bottom four pins, not in the middle.

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Installing Motherboards into 2975-94xx Back Boxes (4100U/4100ES), Continued

Connecting the 733-525 Harness

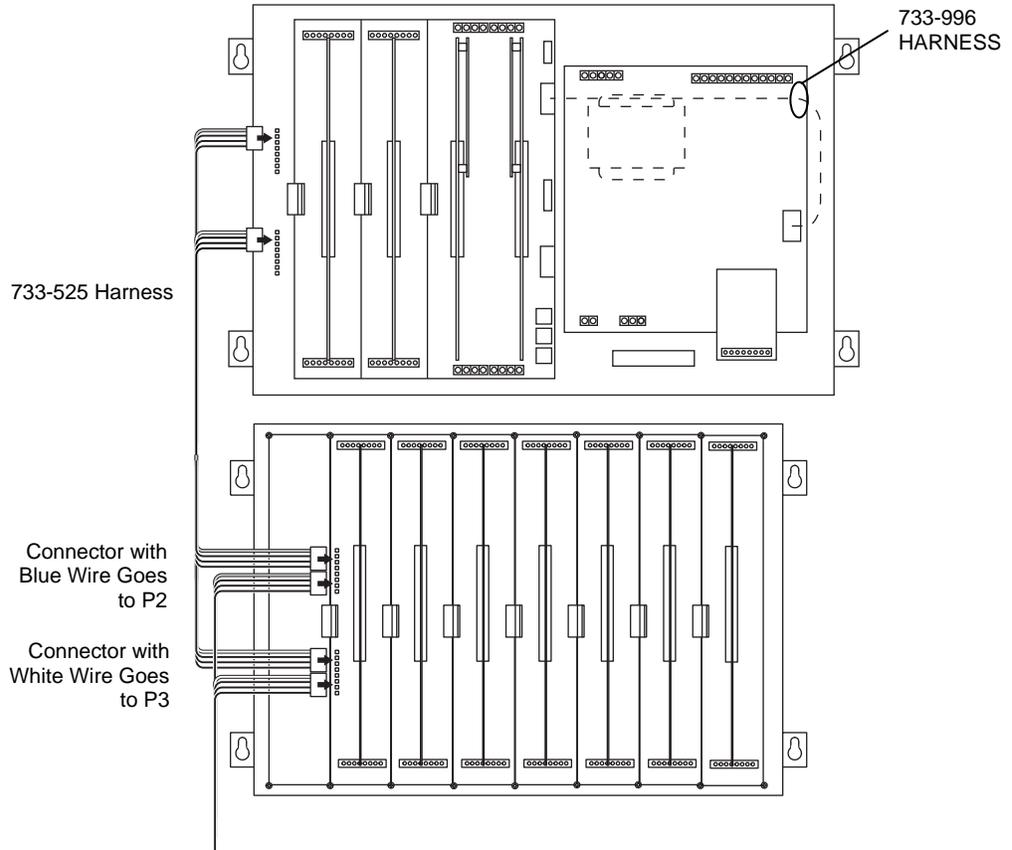


Figure 8. Power and Communication Wiring for Motherboard (4100U/4100ES)

Installing Motherboards into 4010ES Back Boxes

Overview

The zone modules can be mounted to 4100 Back Boxes (PID series 2975-91.xx), 4100U/4100ES Back Boxes (PID series 2975-94.xx) or 4010ES back boxes.

- 4100-5001, -5004, -5011, and -5014 modules mount in 4100 Back Boxes.
- 4100-5005 and -5015 modules mount in 4100U/4100ES Back Boxes.
- 4010-9920 and -9921 modules mount in 4010ES Back Boxes

This section describes mounting the 4010-9920 and 9921 versions into 4010ES Back Boxes.

Installing in a 4010ES Panel

The 4010ES Zone Card assembly is composed of a 8V DC Converter Assembly, the Zone Card and the Zone Card Motherboard. The 4010ES Zone Card assembly can be of Class A (4010-9921) or B (4010-9920). See Figures 9 and 10 for details.

The 8-Volt DC-to-DC Converter takes 24 VDC power from a system switching power supply and converts it to 8 VDC. The Converter is used when additional 8V power is required.

Class A or Class B 8 Zone Card Assemblies must be mounted inside the top bay of the 4010ES panel. They occupy the leftmost vertical block pair in the top bay (Figure 11), making the two left-most PDI blocks unavailable.

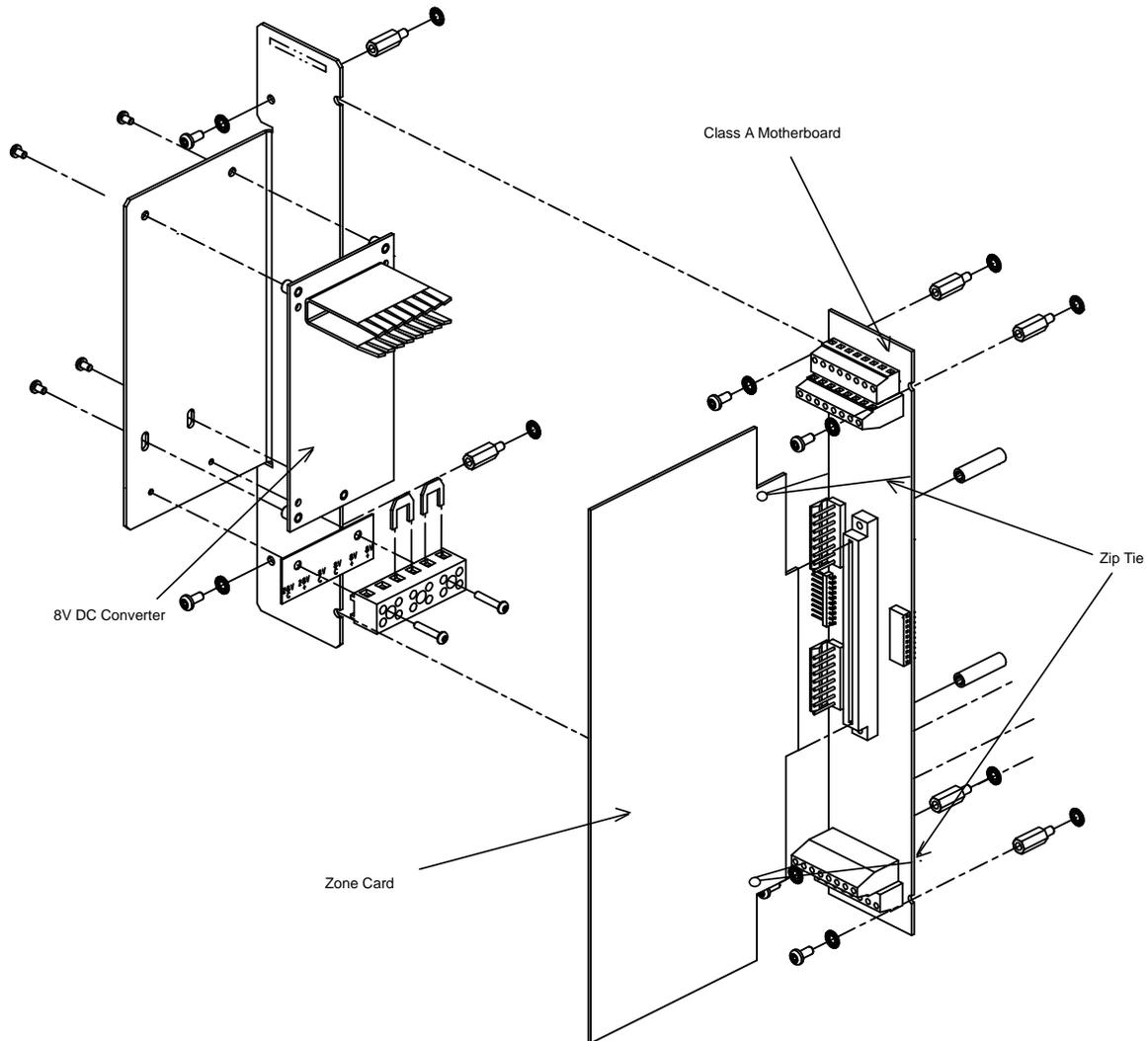


Figure 9. Class A 8 Zone Card Assembly

Installing Motherboards into 4010ES Back Boxes, *Continued*

Installing in a
4010ES Panel

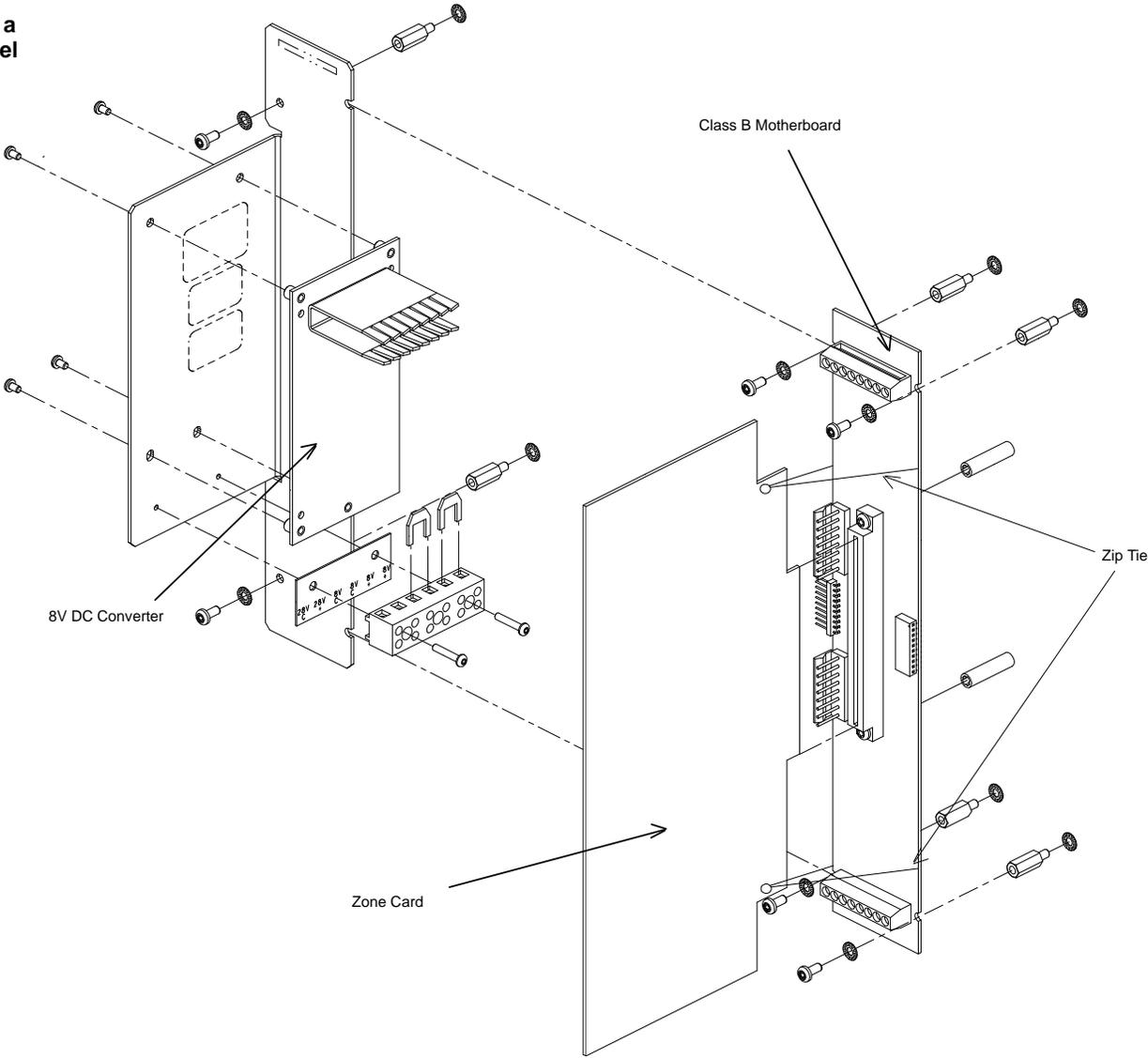


Figure 10. Class B 8 Zone Card Assembly

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Installing Motherboards into 4010ES Back Boxes, *Continued*

Installing in a 4010ES Panel

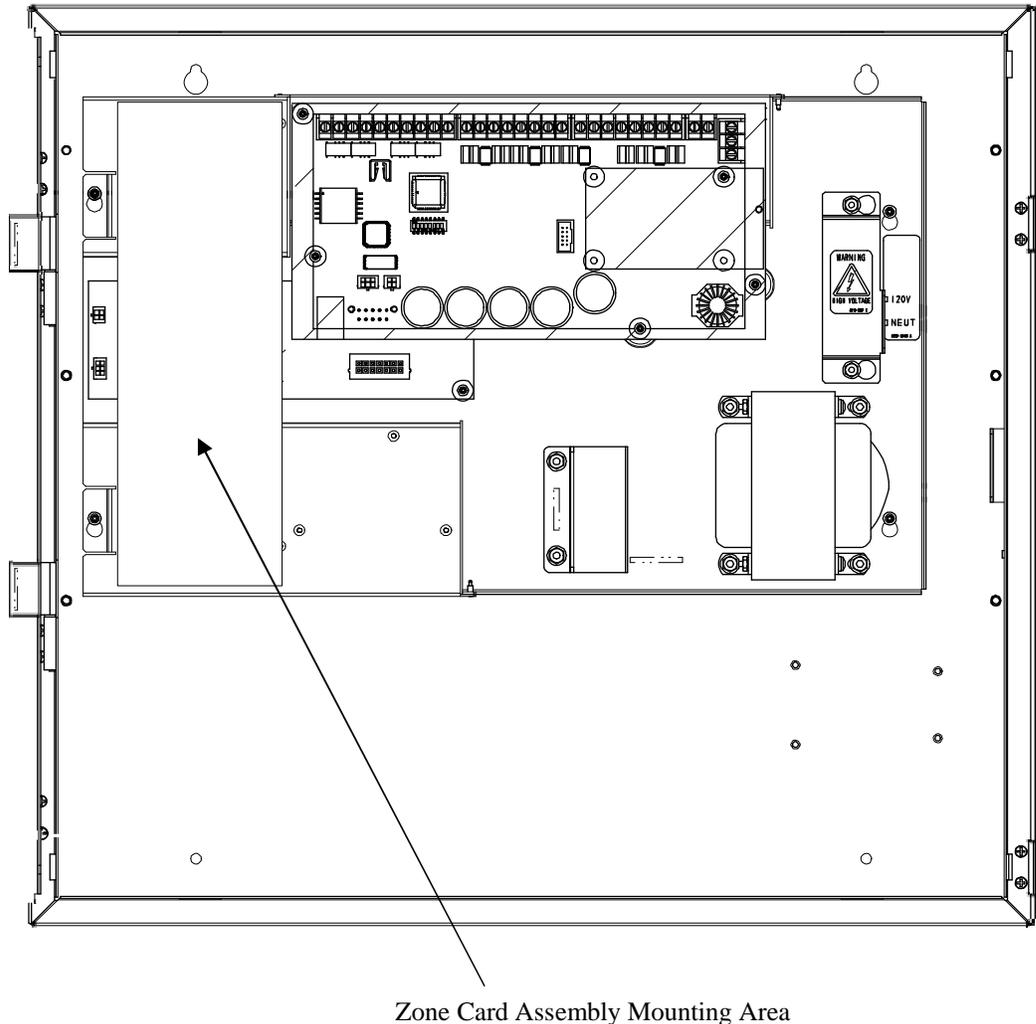


Figure 11. One-Bay Zone Card Mounting Area

Use the following directions to mount the Class A and B assemblies inside the 4010ES panel.

1. Attach the 8V DC Converter and the Zone Card Motherboard in the area indicated by Figure 11. Use the pre-drilled holes in the bay pan, as well as stand-offs and metal screws as shown in Figures 9 and 10.
2. Using harness 733-940, attach the 8V DC Converter to the Zone Card Motherboard. Connect the stripped end of the harness to connectors "24C", "24+", "8C" and "8+" on the DC converter. Attach the other end of the harness to the top four pins on connector P3 of the Zone Card Motherboard. The connectors are keyed to fit in only one direction. See Figure 12.

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Installing Motherboards into 4010ES Back Boxes, *Continued*

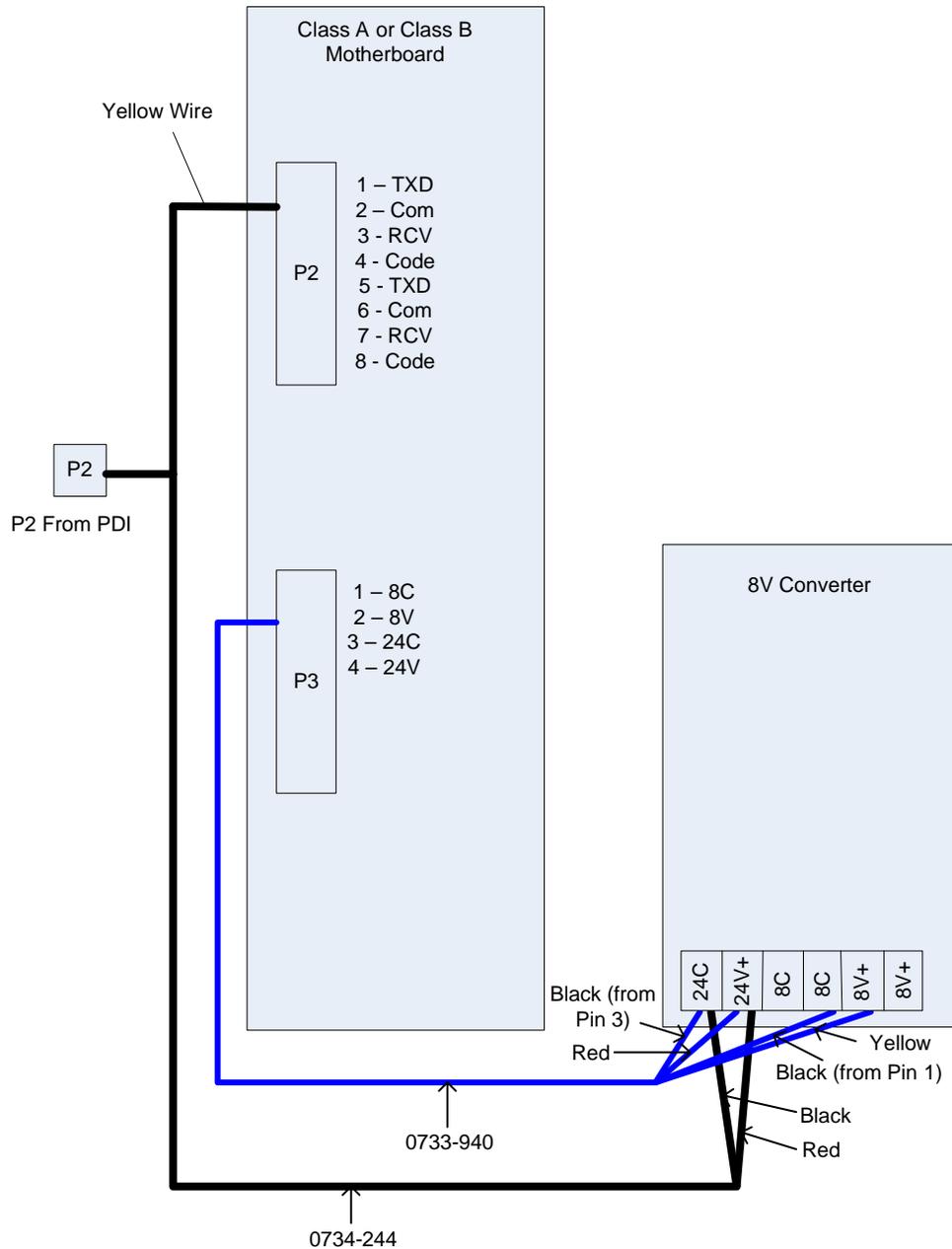


Figure 12. Zone Card Wiring

3. Attach the Core-4 connector on harness 734-244 to the Non-PDI Card Connection (P2) on the top-bay PDI.
4. Attach the flat 4-pin connector on harness 734-244 to the top four pins on connector P2 of the Zone Card Motherboard.
5. Attach the stripped end on harness 734-244 to connectors "24C" and "24+" on the 8V DC Converter.
6. Slide the Zone Card into its slot on the Motherboard (Figure 9 or Figure 10).
7. Connect the Zone Card to the Motherboard with zip ties.
8. Power the panel back up.

Installing the Daughter Card

Installing the Daughter Card

The daughter card inserts into the connector located in the center of the motherboard. The connector is keyed so that the daughter card fits only one way. Before installing the card, examine the slot in the motherboard and the fingers on the daughter card and note where the key is located.

Note: The figure below is a general-purpose illustration that applies to all daughter cards.

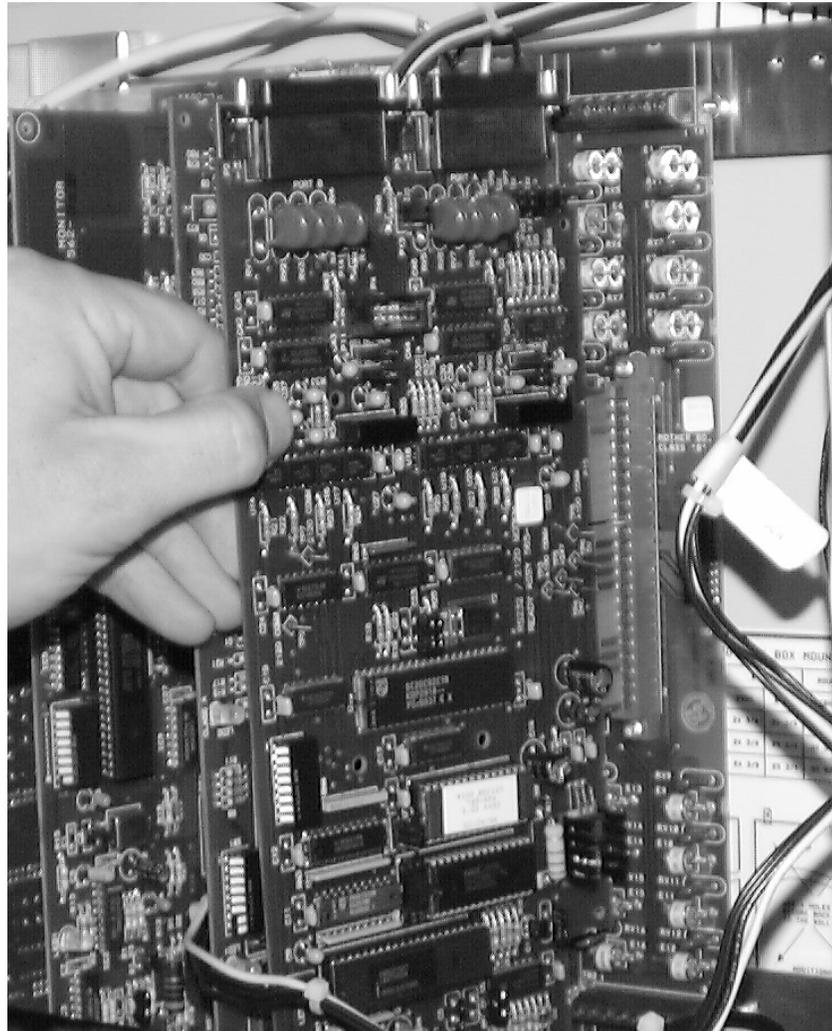


Figure 13. Installing the Daughter Card

Wiring Guidelines

Introduction

This section contains guidelines for wiring the zone modules.

General Guidelines

Make sure these guidelines are accounted for before wiring:

- All wires must be 18 AWG, twisted/shielded pair.
- All wiring is supervised.
- Conductors must test free of all grounds.
- Power must come from a Simplex-approved power supply.
- All wiring must be done using copper conductors only, unless noted otherwise.
- If shielded wire is used,
 - the metallic continuity of the shield must be maintained throughout the entire cable length.
 - the entire length of the cable must have a resistance greater than 1 Megohm to earth ground.
- Underground wiring must be free of all water.
- In areas of high lightning activity, or in areas that have large power surges, the 2081-9027 Transient Suppressor should be used on monitor points.
- Wires must not be run through elevator shafts.
- Wires that run in plenum must be in conduit.
- Splicing is permitted. All spliced connections must either be soldered (resin-core solder), crimped in metal sleeves, or encapsulated with an epoxy resin. When soldering or crimped metal sleeves are used, the junction must be insulated with a high-grade electrical tape that is as sound as the original insulating jacket. Shield continuity must be maintained throughout.
- A system ground must be provided for earth detection and lightning protection devices. This connection must comply with approved earth detection per NFPA780.
- Only system wiring can be run together in the same conduit.
- Any wiring leaving the building requires overload protectors (2081-9044). Use one overvoltage protector where wiring leaves the building and another where the wiring enters the other building.
- Circuits must not leave the building unless the following conditions are met:
 - **For underground wiring:** Circuits must run in a separate parallel wiring trough from any commercial power distribution wiring.
 - **For overhead wiring:** Circuits must be protected from lightning by the 2081-2097/2098 Isolated Loop Circuit Protectors. The outside plant wiring must be limited to one contiguous property, and the total wire length must not exceed 1 km (3.270 ft). Circuit wiring must be run on separate poles from those supporting any commercial power distribution wiring. Circuit wiring must be run in parallel with the relation to the commercial power distribution wiring, and must be separated by a minimum of 100 ft **or** the maximum span between any two adjacent poles of either the system's circuit or the power distribution circuit.

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Wiring Guidelines, *Continued*

Power-Limited Guidelines

Make sure these guidelines are accounted for before wiring for power-limited systems:

- Non-power limited field wiring (AC power, batteries, City connection) must be installed and routed in the shaded areas shown in Figure 14.
- Power-limited field wiring must be installed and routed in the non-shaded areas shown in Figure 14, with the exception of City wiring.
- Excess slack should be kept to a minimum inside the back box enclosure. The wiring should be neatly dressed and bundled together using the wire ties provided with the equipment. Anchor power-limited wiring to tie points, as shown in Figure 14.

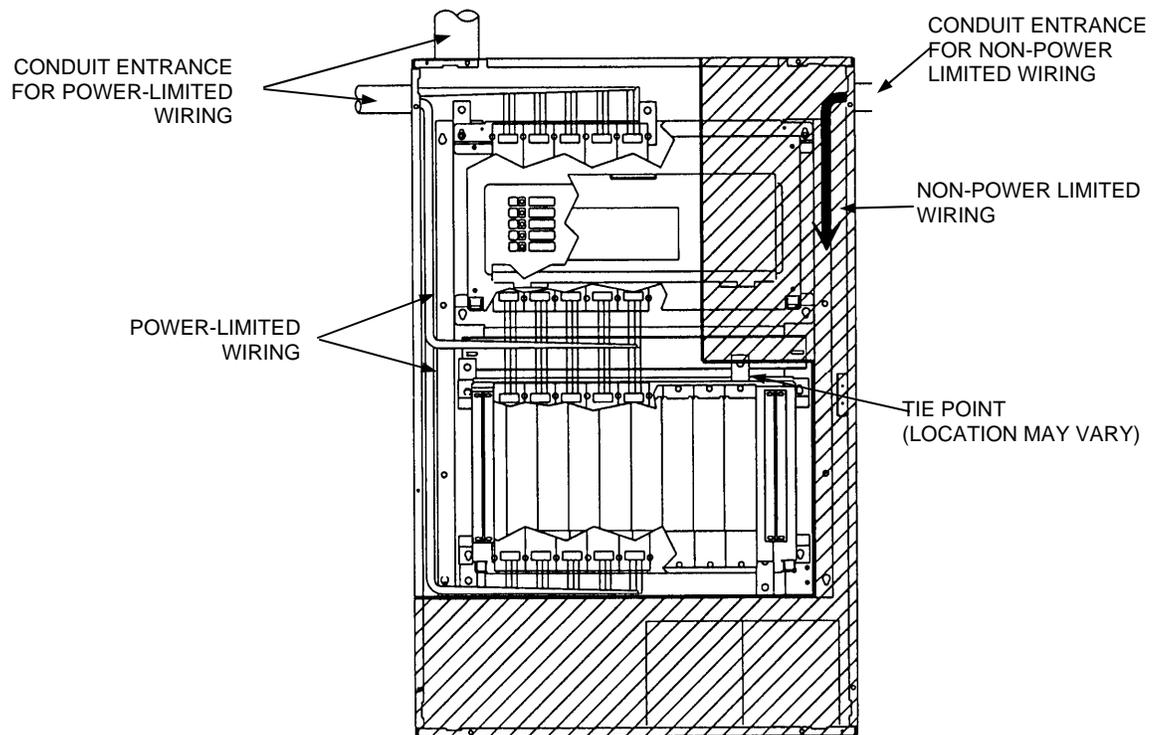


Figure 14. Power-Limited Wiring

- Tie the wiring located between bays to the internal wiring troughs, if applicable.
- When powering remote units or switching power through relay contacts, power for these circuits must be provided by a UPS-style power supply, the 4100-1108 Power Supply (8A), an MSS (for 4010ES panels) or a power-limited power supply that listed for fire-protective signaling use.
- Supervised circuit rating is as follows:
 - Standby Voltage Range @ Detector: 16.5 to 32 VDC
 - Maximum Detector Standby Load Current: 3.0 mA
 - Maximum Alarm (Short) current: 60 mA
 - Maximum Line Resistance: 50 Ohms
 - Ripple: 8% @ 120 Hz
 - EOL Resistance: 3300 Ohms

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Wiring Guidelines, Continued

Power-Limited Guidelines

- *Auxiliary power only:* In order to connect a circuit using power-limited wiring, the devices being powered must all be addressable, or a UL Listed EOL relay must be used to supervise the circuit. Refer to Figure 15 for wiring directions for the EOL relay.

Note: The 2098-9739 Relay is used as an example. Other UL Listed EOL relays can be used, depending on the application.

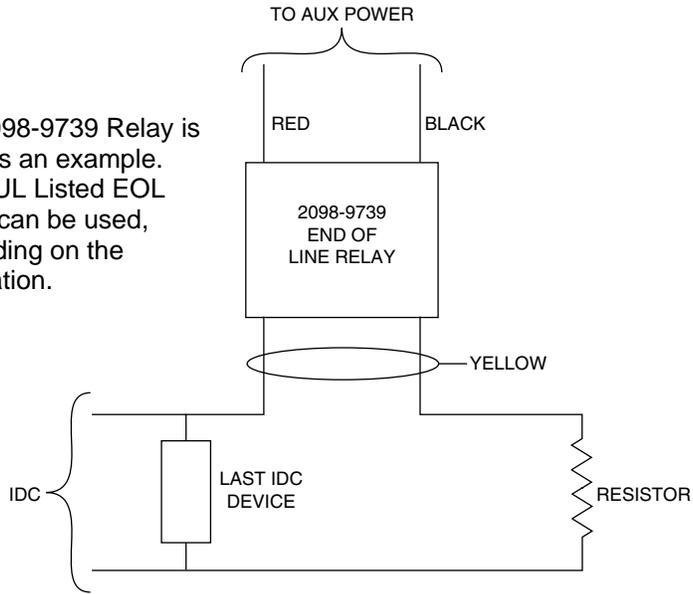


Figure 15. The EOL Relay

Class A Monitor Zone Wiring

Class A Wiring

This section shows typical wiring for a Class A monitor or security device circuit. Devices connect in the same manner to any of the following monitor zone modules. For information on wiring a waterflow switch to a class A monitor zone module, refer to the next section, “Class A Waterflow Switch Wiring.”

- 4100-5011 8 Zone Class A – Connects Fire Initiating Devices Only
- 4100-5014 8 Zone Class A – Connects either Fire Initiating Devices or Security Devices
- 4100-5015 8 Zone Class A – Connects either Fire Initiating Devices or Security Devices
- 4010-9921 8 Zone Class A – Connects Fire Initiating Devices Only

Specific Wiring Guidelines for Class A Zone Modules

- If a zone is not used, connect a 3.3 K, 1 W resistor (378-017) across zone terminals as shown in the figure.
- All device wiring must be terminated to the appropriate zone as shown on Zone 1.
- Wiring shown in the figure is typical. All detector types may be wired to any zone.
- Each zone is marked with its circuit number. Refer to the *4100 Programmer Report*, which references the exact wires connected.
- For zones that connect contacts only, the maximum line resistance is 800 Ohms.

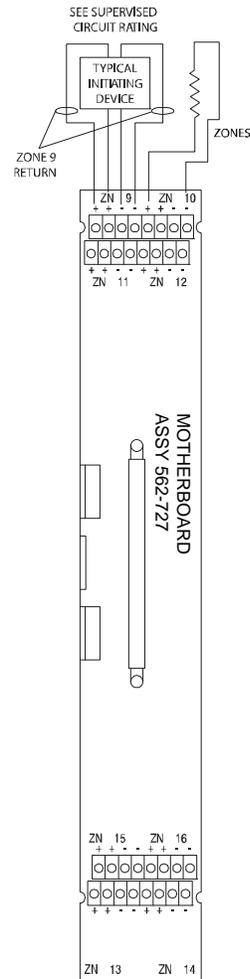


Figure 16. Class A Monitor Zone Wiring

Class A Monitor Zone – Waterflow Switch Wiring

Waterflow Switch Wiring

Figure 17 shows a waterflow switch wired to a Class A monitor zone. Adhere to both the general wiring guidelines outlined earlier in this document and the specific wiring guidelines shown below.

Specific Guidelines for Wiring a Waterflow Switch to a Class A Zone Module

- Circuit is supervised. Supervisory power is 7.3 mA @ 24 VDC.
- Rating:
 - 20.4 to 32.0 VDC
 - 60 mA @ 24 VDC
- Connect N/O waterflow contact as shown in the figure. Connect to any zone on the module.

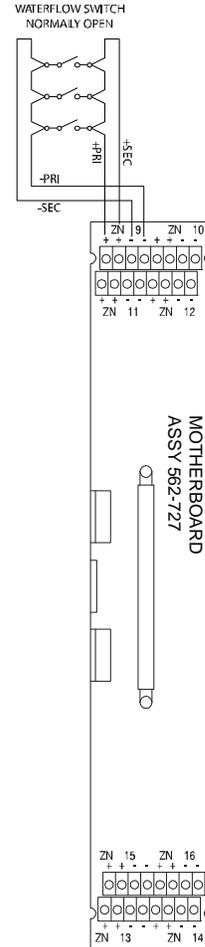


Figure 17. Class A Monitor Zone – Waterflow Switch Wiring

Class B Monitor Zone Wiring

Class B Wiring

This section shows typical wiring for a Class B monitor or security device circuit. Fire and security devices connect in the same manner to the following monitor zone modules.

- 4100-5001 8 Zone Class B – Connects Fire Initiating Devices Only
- 4100-5004 8 Zone Class B – Connects either Fire Initiating Devices or Security Devices
- 4100-5005 8 Zone Class B – Connects either Fire Initiating Devices or Security Devices
- 4010-9920 8 Zone Class B – Connects Fire Initiating Devices Only

For information on wiring a waterflow switch to a class B monitor zone module, refer to the next section “Class B Waterflow Switch Wiring.”

Specific Wiring Guidelines for Class B Zone Modules

- If a zone is not used, connect a 3.3 K, 1 W resistor (378-017) across zone terminals as shown in the figure.
- 4081-9002 EOL *Harness* (not the 378-017 EOL Resistor) is required at the last device.
- All device wiring must be terminated to the appropriate zone as shown on Zone 1.
- Wiring shown in the figure is typical. All detector types may be wired to any zone.
- Each zone is marked with its circuit number. Refer to the *4100 Programmer Report*, which references the exact wires connected.
- For zones that connect contacts only, the maximum line resistance is 800 Ohms.

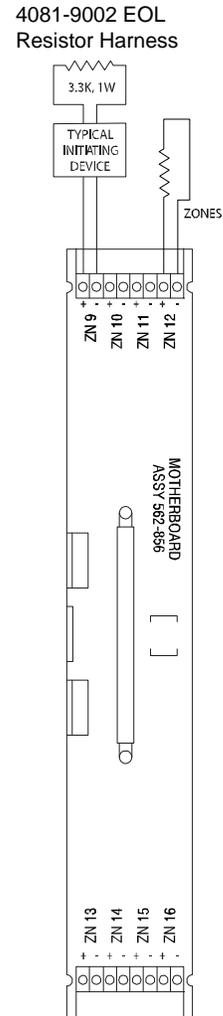


Figure 18. Class B Monitor Zone Wiring

Class B Waterflow and Tamper Switch Wiring

Overview

This section shows how to connect the zone module to waterflow switches and tamper switches, either in separate zones or in the same zone, using Class B wiring.

Wiring for Separate Zones

Figure 19 shows a NO waterflow switch and a NC tamper switch wired to separate Class B monitor zones (4100-5001, 4100-5004, 4100-5005 or 4010-9920).

Note: This application (NC tamper and NO waterflow) must use two zones. Mixing the NC tamper with the NO waterflow on the same circuit is not allowed.

Adhere to both the general wiring guidelines outlined earlier in this document and the specific wiring guidelines listed below.

Specific Guidelines for Wiring a Waterflow Switch to a Class B Zone Module

- If a zone is not used, connect a 3.3 K, 1 W resistor (378-017) across zone terminals.
- EOL *Harnesses* (not EOL resistors) are required at devices and at the ends of zone loops.
- Connect tamper switch contacts to the appropriate zone. The zone shown in the figure is an example. Tamper operation is selected via the 4100 Programmer. Do the following for the tamper switch circuit:
 - Install a 4081-9010 EOL Resistor Harness (1 K Ohm, 1 W) across each tamper contact, as shown in the figure.
 - Install a 4081-9006 EOL Resistor Harness (560 Ohm, 1 W) at the end of the loop, as shown in the figure.
- Tamper Switch Power Rating:
 - 43 mA @ 24 VDC Supervisory
 - 15.3 mA @ 24 VDC Alarm
- Connect NO waterflow contacts to any zone as shown in the figure.
- Waterflow Switch Power Rating:
 - 7.2 mA @ 24 VDC
 - 60.0 mA @ (Shorted)

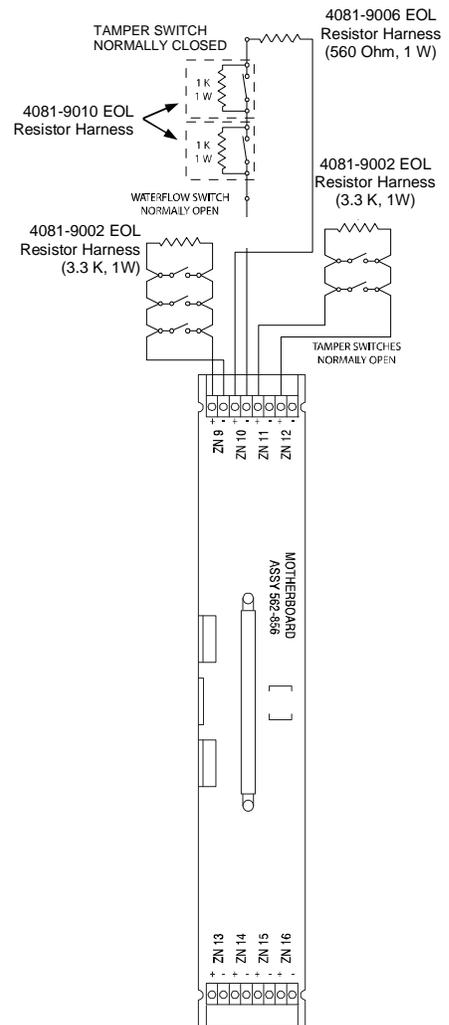


Figure 19. Class B Monitor Zone – Waterflow Switch Wiring

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Class B Waterflow and Tamper Switch Wiring, *Continued*

Wiring for One Zone

Figure 20 shows a waterflow and tamper switch, both of which are normally open devices, wired to a single Class B monitor zone (4100-5001, 4100-5004, 4100-5005 or 4010-9920). Adhere to both the general wiring guidelines outlined earlier in this document and the specific wiring guidelines listed below.

Note: Both devices must be NO. A combination of NC and NO devices is not allowed on the same zone. The programming point type for this application is WSO.

Specific Guidelines for Wiring a Waterflow Switch to a Class B Zone Module

- 4081-9002 EOL *Harness* (not the 378-017 EOL Resistor) is required at the last device.
- If a zone is not used, connect a 3.3 K, 1 W (378-017) resistor across zone terminals.
- Connect devices to the appropriate zone. The zone shown in the figure is an example.
- Each zone is marked with its circuit number. Refer to the *4100 Programmer Report*, which references the exact wires connected.
- All tamper switches must be located after a 470 Ohm resistor, as shown in the figure.

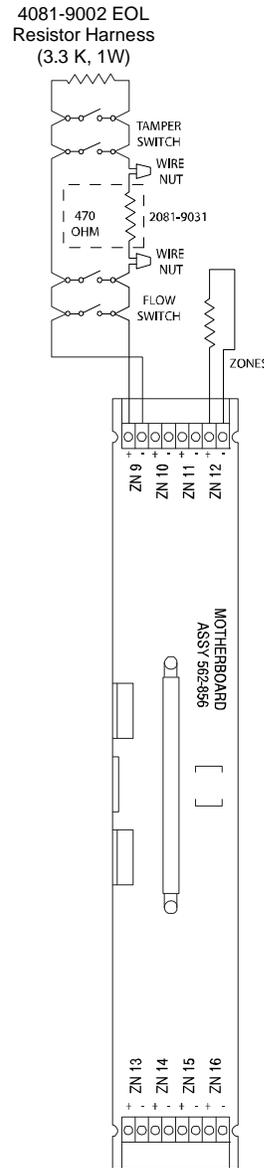
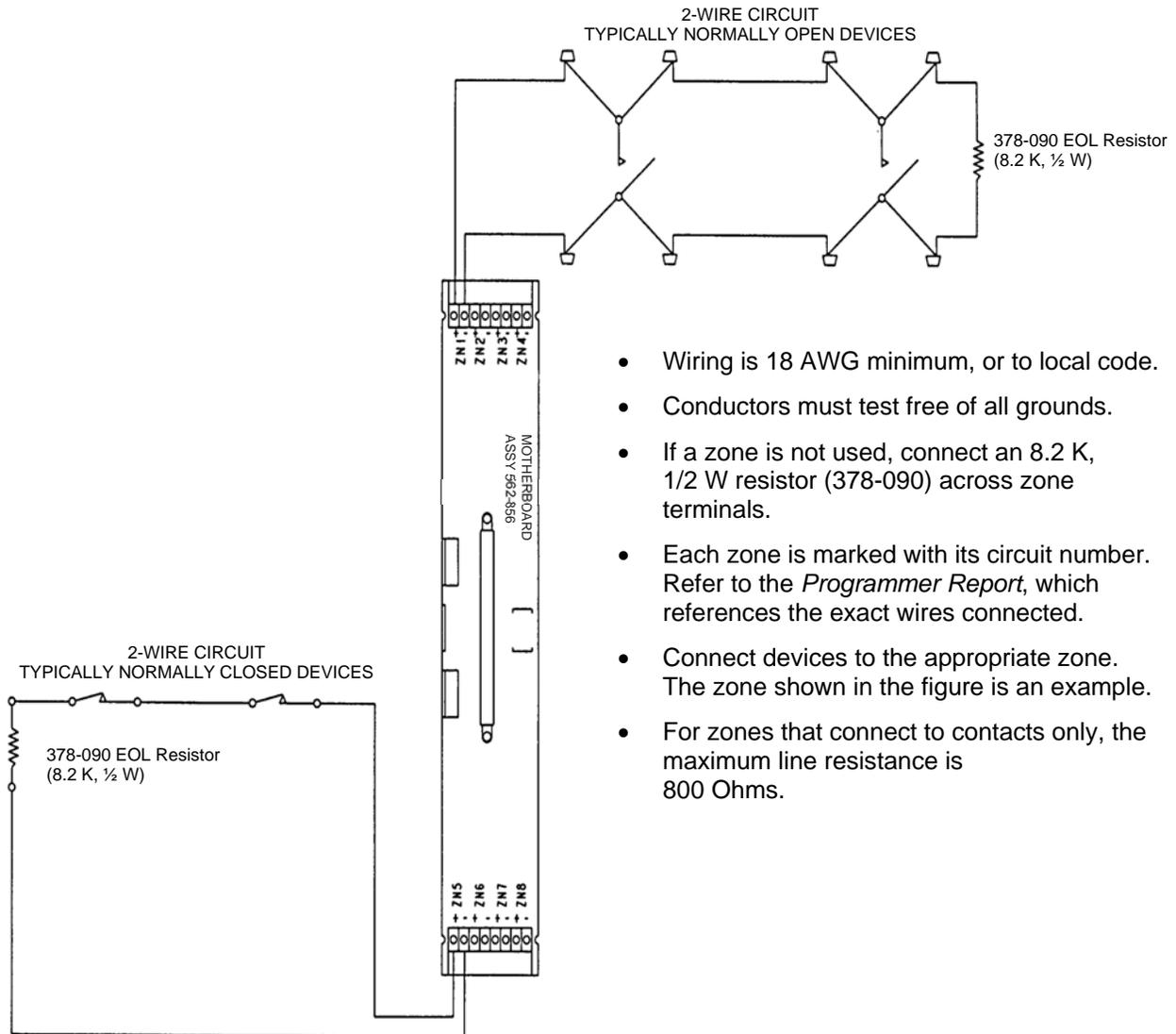


Figure 20. Class B Monitor Zone – Waterflow Switch Wiring

4100/4120-5004 and 4100-5005 Security Wiring

Use the figures in this section to wire the 4100/4120-5004 and 4100-5005 Zone Modules to security devices.



- Wiring is 18 AWG minimum, or to local code.
- Conductors must test free of all grounds.
- If a zone is not used, connect an 8.2 K, 1/2 W resistor (378-090) across zone terminals.
- Each zone is marked with its circuit number. Refer to the *Programmer Report*, which references the exact wires connected.
- Connect devices to the appropriate zone. The zone shown in the figure is an example.
- For zones that connect to contacts only, the maximum line resistance is 800 Ohms.

Figure 21. 4100/4120-5004 or 4100-5005 Security Wiring (1)

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4100/4120-5004 and 4100-5005 Security Wiring, *Continued*

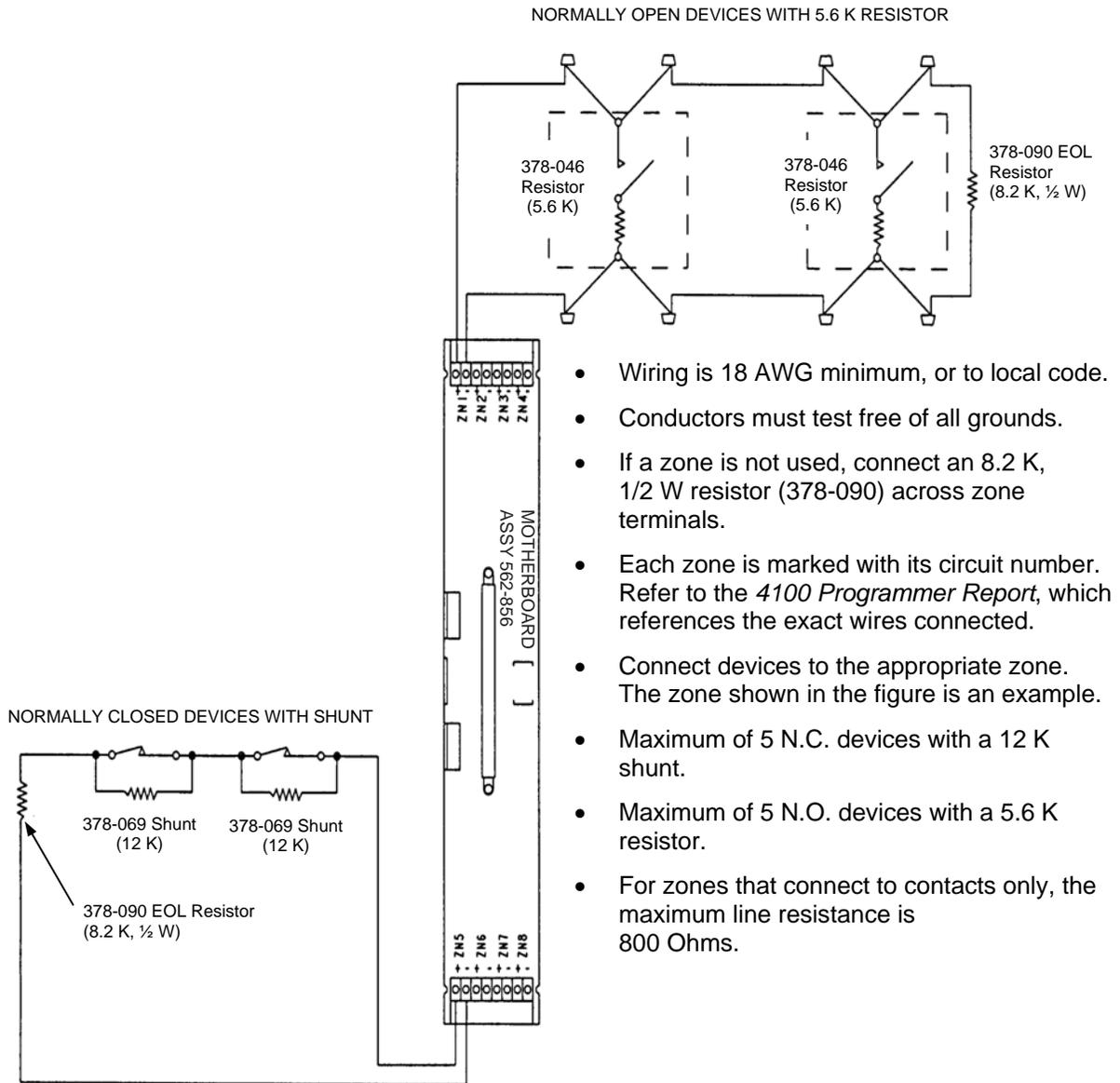


Figure 22. 4100/4120-5004 or 4100-5005 Security Wiring (2)

