City and Relay Cards Installation Instructions

Introduction

This publication describes the installation procedure for the following:

- 4100-6031/6032 City Circuit Cards
- 4100-6033 Alarm Relay Card

This product is compatible with 4100U and 4100ES Fire Alarm Control Panels (FACP).

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Cautions, Warnings, and Regulatory Information

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.

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.

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.

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 NFPA72-1999, Chapter 7 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.

Introduction to the City and Relay Cards

Overview

This section describes the city and relay cards in turn, and lists their electrical specifications.

The City Card

The 4100-6031/6032 City Card is used to annunciate alarms and other urgent indications to remote facilities. When the 4100 goes into alarm, city card circuits are activated, and annunciation immediately occurs at the remote facility. Reverse polarity modules or local energy modules (for reaching the Public Service Fire Communications Center) receive annunciations at the remote site.

Each city circuit module has two circuits, which are configurable for alarm, trouble, or supervisory reporting. In the event of a CPU failure, a city card configured for a trouble output sends a trouble to the city circuit.

Note: Only one city card can be installed per system.

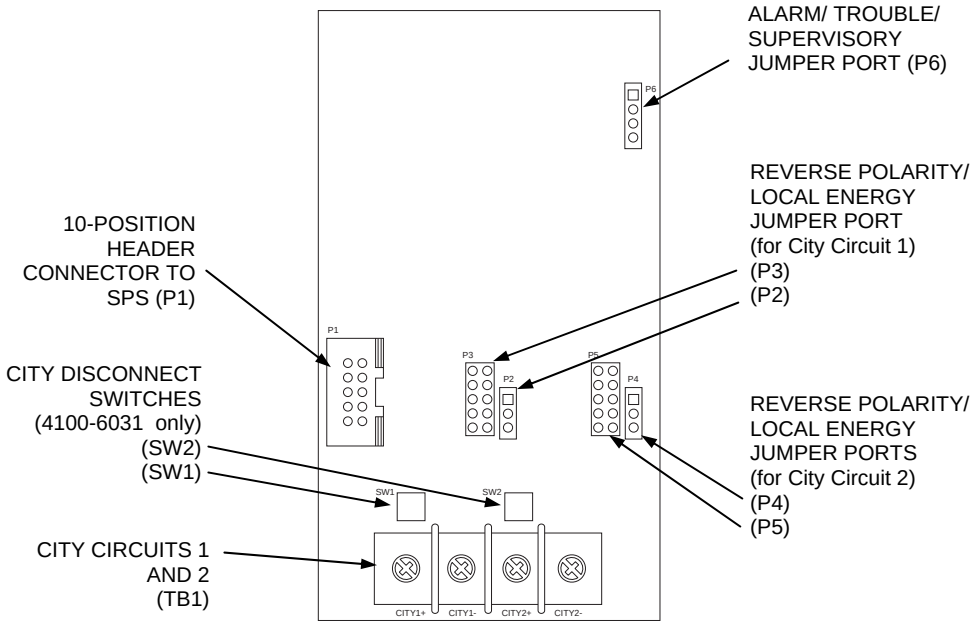

Figure 1. 4100-6031/6032 City Card

Table 1 lists the city card's specifications.

Table 1. Specifications

Electrical Specifications	
Input voltage	20 to 32 VDC
Current	20 mA @ 24 VDC, nominal 36 mA @ 24 VDC, both relays on
Output voltage	5 V +/-5%, nominal
Environmental Specifications	
Normal operating temperature	77° F (25° C)
Operating temperature	32° to 120° F (0° to 49° C)
Humidity	10% to 93% non-condensing @ 90° F (32° C)

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The Relay Card

The 4100-6033 Relay Card is used to provide common unsupervised control functions or indications for devices such as fans and doors.

Each relay module has three circuits: one each for alarm, trouble, and supervisory signals.

Figure 2, below, is an illustration of the relay card.

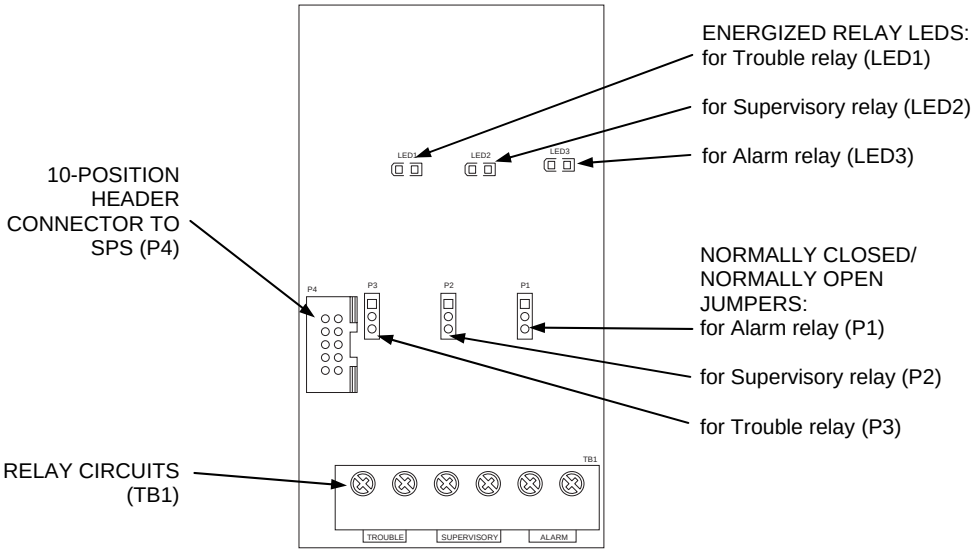

Figure 2. 4100-6033 Relay Card

Table 2 lists the relay card's electrical specifications.

Table 2. Specifications

Electrical Specifications	
Input voltage	20 to 32 VDC
Input current	15 mA @ 24 VDC, nominal / standby 37 mA @ 24 VDC, all relays on
Output voltage	5 V +/-5%, nominal
Output current	6 mA, nominal / standby 12 mA, all relays on
Environmental Specifications	
Normal operating temperature	77° F (25° C)
Operating temperature	32° to 120° F (0° to 49° C)
Humidity	10% to 93% non-condensing @ 90° F (32° C)

LEDs

LED1, LED2, and LED3 illuminate when relays are energized. LED1 corresponds to Relay K3, LED2 to Relay K2, and LED3 to Relay K1.

Installing the City or Relay Card onto an SPS, EPS or RPS

Mounting

The city and relay cards mount identically onto the System Power Supply (SPS) and the Remote Power Supply (RPS), see Figure 3. These cards are mounted on the underside of the Extended Power Supply (EPS), see Figure 4. Use the following instructions to mount either card.

Note: The city card connects to the SPS and the EPS only. The Relay card connects to the SPS, the EPS and the RPS.

1. Disconnect battery and then AC power at the breaker from the FACP.
2. Secure the card to the SPS, EPS or RPS with the plastic standoffs as shown in Figure 3.
3. On a SPS or a RPS, use the supplied slotted torx screw (441-002) and plastic sleeve to secure the lower right corner of the module. (see Figure 3).

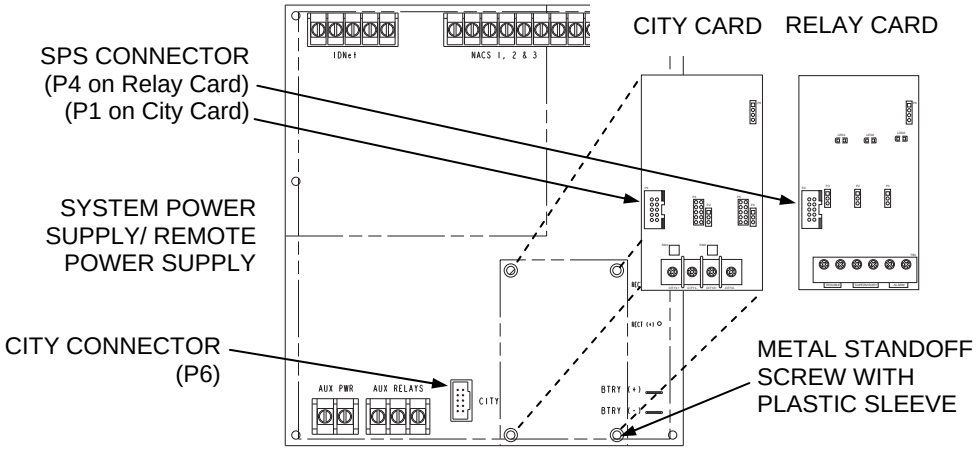

Figure 3. City Card Hardware Slot

4. On an EPS, use the supplied slotted torx screw (441-002) and plastic sleeve to secure the card to the bottom left tab located on the underside of the EPS chassis. (see Figure 4).

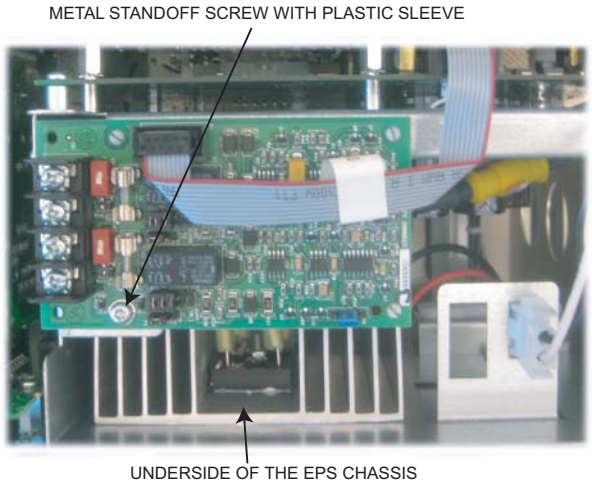

Figure 4. City Card Hardware Slot

Installing the City or Relay Card onto a Power Supply

Communications/ Power Connection

Each card comes with two Power/Communication Harnesses. Use harness 733-952 to connect the cards to an SPS or RPS. Use harness 734-260 to connect the cards to an EPS (see Figure 5). Use the harness to connect one end from P1 on the city card or P4 on the relay card to the connector labeled CITY on the Power Supply. Once this is done, you can apply AC power at the breaker and then battery power to the FACP.

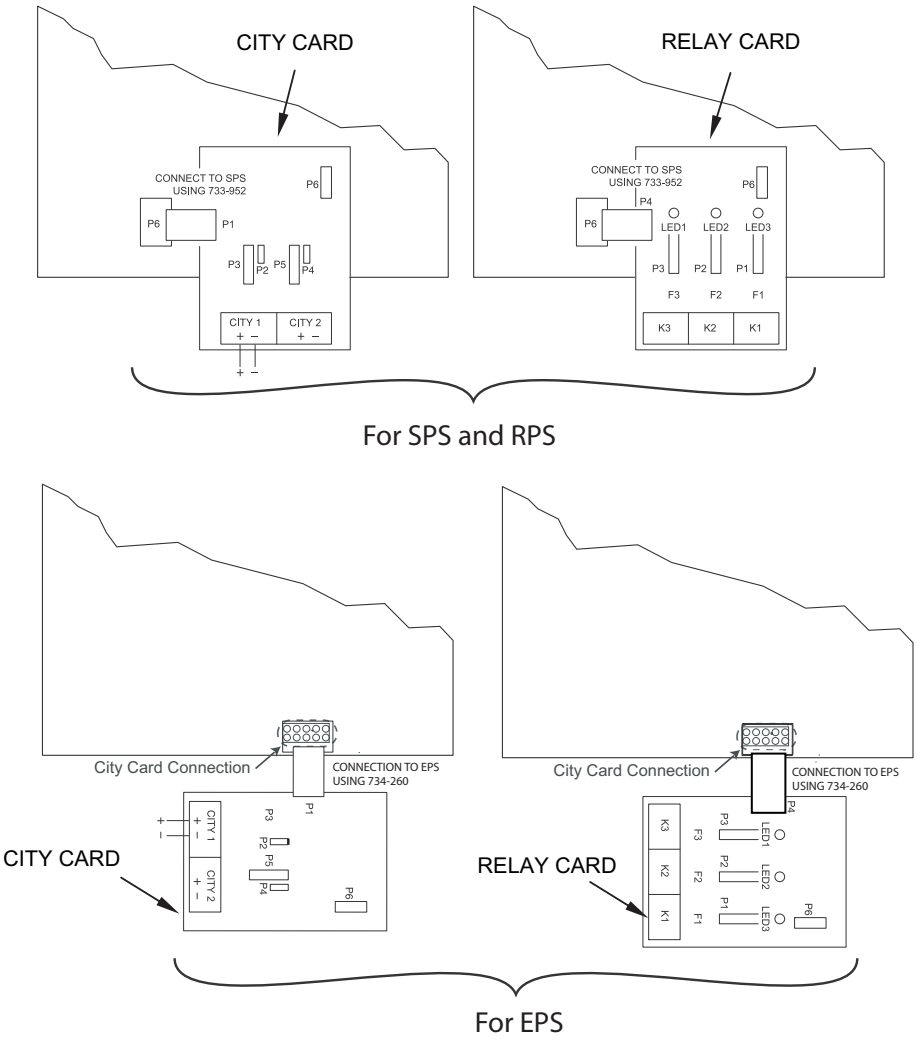

Figure 5. City Card or Relay Card Connection to the Power Supply

Configuring the Card

Overview

Card configuration depends on the type of card used. This section describes how to configure all types of cards.

4100-6031/6032 City Cards Configuration

For the 4100-6031/6032 City Cards, use the information in Table 3 and the bullets below to set the jumper positions for reverse polarity and local energy operations.

Table 3. Jumper Positions for Reverse Polarity and Local Energy

	Jumper Positions	
	Reverse Polarity	**Local Energy**
City Circuit 1	P3: 1-2, 3-4, 5-6 P2: 2-3	P3: 7-8, 9-10 P2: 1-2
City Circuit 2	P5: 1-2, 3-4, 5-6 P4: 2-3	P5: 7-8, 9-10 P4: 1-2

P6: You must select either supervisory or trouble operation for the second circuit by setting P6.

- To configure City 2 for *supervisory* activation, install jumpers on port P6 to positions 1 and 2, and another to positions 3 and 4. City 1 sends a trouble to the city by dropping circuit power when reverse polarity is selected.
- To configure City 2 for *trouble* activation, install a jumper on port P6 in positions 2 and 3. City 1 sends alarms only to the city.

Disconnect Settings (4100-6031 City Card only)

The 4100-6031 City Card has two disconnect switches (SW1 / City Circuit 1 and SW2 / City Circuit 2). Turn the switches to the ON position for normal operation and to the OFF position to test the system without transmitting alarms to the city. The 4100-6032 City Card does not have disconnect switches.

4100-6033 Relay Card Configuration

Use the information in Table 4 to set the jumper positions for normally open (NO) and normally closed (NC) circuits for the 4100-6033 Relay Card.

Table 4. Jumper Positions for NO and NC Circuits

	Jumper Positions	
	Normally Open	**Normally Closed**
Alarm relay	P1: 2-3 (jumper toward bottom)	P1: 1-2 (jumper toward top)
Supervisory relay	P2: 2-3 (jumper toward bottom)	P2: 1-2 (jumper toward top)
Trouble relay	P3: 2-3 (jumper toward bottom)	P3: 1-2 (jumper toward top)

Software Requirements

The city and relay card options must be selected via the panel Programmer. Refer to the *ES Panel Programmer's Manual* (574-849).

Field Wiring

Overview

This section describes wiring and wiring guidelines for city and relay cards.

City Card Guidelines

- Wiring is not power-limited.
- Wiring is supervised.
- Conductors must test free of all grounds before connecting to the system.
- All wiring that leaves the building requires overvoltage protection. Install the 2081-9044 Module inside a UL Listed electrical box wherever wire enters or exits the building. A maximum of four 2081-9044 Modules may be connected to one channel.
- Minimum wire size for reverse polarity is 20 AWG (0.5176 mm^2). Maximum wire size is 12 AWG (3.309 mm^2).
- Minimum wire size for local energy is 18 AWG (0.8231 mm^2). Maximum wire size is 12 AWG (3.309 mm^2).
- *P3 on SPS:* City/Relay Hardwired Trouble Jumper. Position 1-2 removes trouble monitoring on Relay 3 (default) of the 4100-6033 Alarm Relay Card; Position 2-3 activates the 4100-6031/6032 City Cards or the 4100-6033 Alarm Relay Card when the system microprocessor fails. Always use Position 2-3 for 4100-6031/6032 City Cards.

Relay Card Guidelines

- All wiring is 18 AWG (0.8231 mm^2) to 12 AWG (3.309 mm^2).
- When relay power through auxiliary contacts is provided by the SPS or RPS, relay wiring is power-limited.
- Conductors must test free of all grounds before connecting to the system.
- Relay circuits are fused at 3 A. Replace with 208-163.
- Relay circuits are not supervised.
- The relay circuit is rated to switch 2 A at 30 VAC or 32 VDC, resistive load.
- Relay contacts are Normally Open or Normally Closed dry contacts. Suppression is provided to earth ground. Damage may result from switching voltages to a greater amount than that for which they are rated.
- Relay operation is under software control. If Relay 3 is not programmed as “Trouble,” move Jumper P3 on the SPS to Positions 1 and 2.
- *P3 on SPS:* City/Relay Hardwired Trouble Jumper. Position 1-2 removes trouble monitoring on Relay 3 (default) of the 4100-6033 Alarm Relay Card; Position 2-3 activates the trouble relay on the 4100-6033 Alarm Relay Card.

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Relay Card Guidelines

- *Auxiliary power only:* Supervision must be provided if the auxiliary power circuit is to be wired as a power-limited circuit. 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 the figure below 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.

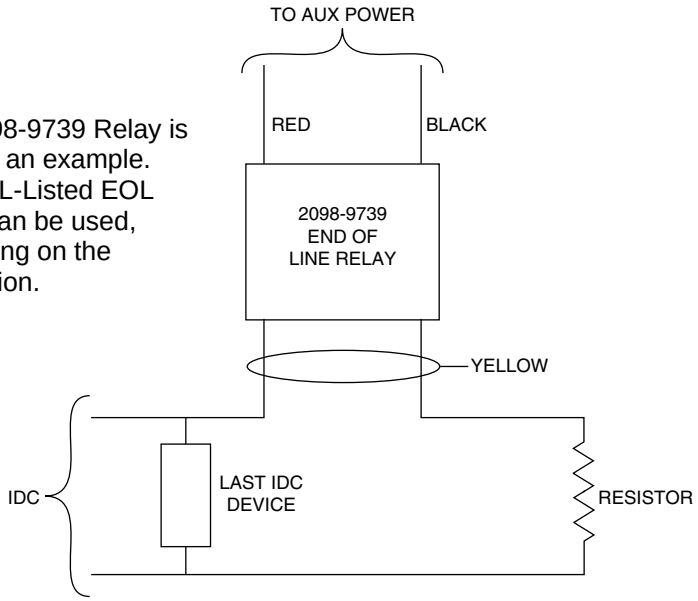
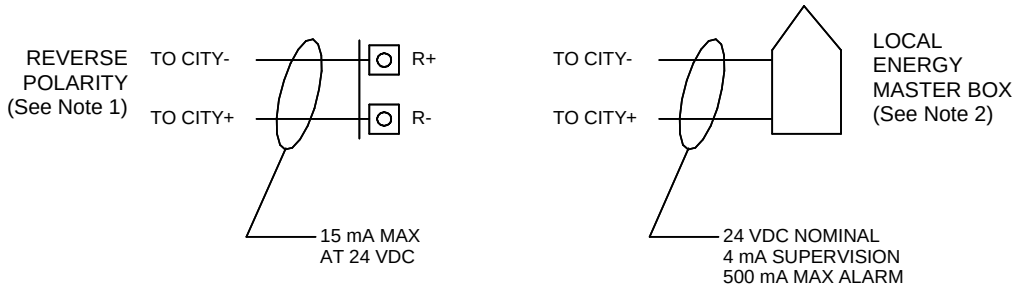


Figure 6. The EOL Relay

City Card Wiring

Use Figure 7 and the notes below to wire the city card for reverse polarity or to a local energy master box. All wiring is terminated at TB1 on the city card. Leave the 2.2 K Ω, ½ W resistor (part number 378-038; red/red/red), installed from the "+" to the "-" terminals of unused circuits on TB1.



Notes:

1. Intended for connection to a polarity reversal circuit of a remote station receiving unit having compatible ratings. 19-32 VDC, 2 V p-p ripple maximum.
2. Intended for connection to 14.5 Ω trip coil.

Figure 7. City Circuit Wiring

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Relay Card Wiring

Use Table 5, below, to wire the relay card. All wiring is terminated at TB1 on the relay card.

Table 5. Relay Card Wiring

Screw Terminal	Signal Type	Contact
TB1-1	Alarm	Selected contact (NO or NC)
TB1-2	Alarm	Center contact, fused at 3 A
TB1-3	Supervisory	Selected contact (NO or NC)
TB1-4	Supervisory	Center contact, fused at 3 A
TB1-5	Trouble	Selected contact (NO or NC)
TB1-6	Trouble	Center contact, fused at 3 A

Each circuit is rated at 2A (maximum) for 20 to 30VDC. A 3A fuse connects between the center arm of each relay and the field wiring.