10-2777 Relay Control Assembly
Installation Instructions

Exhibit 1 Relay Control Assembly

DESCRIPTION

The Relay Control Assembly enables up to twenty-four (24) programmable relays to be added to the host control panel. The assembly includes a Relay Control Card (P/N 10-2778), Bus Card (P/N 10-2769) and Interface cable (P/N 10-2784) as shown in Exhibit 1.

The bus card provides a mounting location for up to six (6) cards: CRM4 (P/N 10-2204) and/or HPM4 (P/N 10-2770). The relays can be used to provide system status indication, control of electrical loads, and general purpose switching. The bus card provides four green LEDs at each relay card position. The LEDs turn on to provide positive indication that the associated relay coil is energized.

The Control Card provides the connection point for the 24 VDC and RS485 peripheral bus wiring from the host control panel. Command operation and power is conveyed to the bus card via the ribbon cable connection.

The assembly mounts directly to the enclosure back box using the following mounting hardware provided with the module.

Standoff Hardware Kit, P/N 02-12420 (qty. 2)

02-2715	Standoff, .625" M/F, 6x32 hex (qty. 5)
02-11879	Hex-nut, 6-32 UNC (qty. 5)
4153-142	Lock washer, #6

COMPATIBILITY

The Relay Control Assembly is compatible with Fike's Cheetah Xi™ 50, Cheetah Xi™ 1016, CyberCat™ 254, CyberCat™ 1016 and CyberCat™ 50 control panels with version 5.XX firmware and higher.

SPECIFICATIONS

Control Card (P/N 10-2778)

Current Consumption:	47 mA (normal standby) 109 mA (alarm), includes bus card
Terminal blocks:	Accept 12 – 26 AWG
Peripheral (P1):	▪ RS485 connection ▪ Terminals: +/-/shld/-/+ ▪ 9600 or 38400 baud rate ▪ Bits - 1 start, 2 stop, 8 data ▪ Power-limited & Supervised ▪ 100 ohm termination resistor if last device (P/N 10-2799)
+24V (P1)[1]:	Terminals: +/-/+/- Power-Limited and Supervised
P16:	Not Used
P17:	34-pin ribbon cable connection (P/N 10-2784) Power-Limited & Non-Supervised
P23:	Factory use only (programming)
Dimensions (LxWxH):	3.7" x 6.75" x 1" (9.4 cm x 17 cm x 2.5 cm)
Operating Temp:	32ºF to 120ºF (0ºC to 49ºC)
Operating Humidity:	93% RH, non-condensing

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[1] Power for card must be supplied by the host control panel or 24 volt, battery backed, regulated, power-limited power supply listed for fire protective signaling use.

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SPECIFICATIONS – CON'T

Bus Card (P/N 10-2769)

Current Consumption:	0 mA (normal standby) 38 mA (alarm), LEDs on but no relays attached
+24V (P1)[1]:	Terminals: +24V/GND Power-Limited & Non-Supervised
P17:	34-pin ribbon cable connection (P/N 10-2784), Power-Limited & Non-Supervised
P2 – P7:	Connection point for relay card header pins[2], non-supervised
Dimensions (LxWxH):	12" x 6" x 1" (30.5 cm x 15.2 cm x 2.5 cm)

OPERATION

Operation of the relays connected to the bus card is controlled by the host control panel via its RS485 connection to the control card. This intelligent interface allows each relay to be individually programmed to turn ON in response to the activation of a specific device or panel zone and state (i.e. Trouble, Pre-Alarm, Process, Abort, Disable, Alarm, Action, Release or Test Alarm). See Programming Options. Once transferred, the relay contacts will remain in the active state until either the control panel is reset or power to the card is removed, unless configured for a non-latching event.

Each relay can be individually tested without sounding the system audible(s). This is accomplished by configuring an input switch as a process input assigned to a zone (1 - 253) dedicated to relay test. The associated relay must be assigned to activate on its original operating zone and the dedicated test zone.

⚠Caution:
When a relay is configured to activate on zone Alarm, it will also activate for a process input in the same zone.

⚠Caution:
Relays may temporarily transfer on power-up. If using relay(s) for critical functions, it is strongly recommended that the relays be disabled on power-up of the control panel.

PROGRAMMING

The relay card must be added to the control panel configuration to enable module supervision and to configure relay functions. Programming of the relay card is accomplished using a lap top computer and Fike's C-Linx software. Refer to Fike document 06-448, "C-Linx Software manual" for programming instructions. Exhibit 2 outlines the various programming options available for the card.

Programming Feature	Possible Settings (Defaults shown bold)
Peripheral Address	**2** – 32
Local Buzzer	**Enabled**/Disabled
Relay Group	Group **1** – 6
Relay Group Configuration	
Relay 1 – 4	
Function	**No Function Assigned** / On – Device Activation / On – Device Trouble / On – Device PreAlarm / On – Zone Process / On – Zone Trouble / On – Zone Supervisory / On – Zone Abort / On – Zone Disabled / On – Zone Alarm / On – Zone Predischarge / On – Zone Release / On – Test Alarm / On – Zone Action / On – Any Network Device / On – Any Network Device Trouble / On – Any Network Device PreAlarm / Off – Any Network Device / Off – All Network Device
Assignments	Device / Zone / Net Device
By Device	Loop: 1 – 4 Address: 1 – 254
By Zone	1 – 254
By Net Device	Panel: 1 – 128 Loop: 1 – 4 Address: 1 – 254

Exhibit 2 Configuration Options

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[2] The relay cards interface to the bus card via a header pin connection and are secured in place with standoffs and screws provided.

ENCLOSURE OPTIONS

The relay control assembly can be mounted inside any of the following Fike enclosures:

- CyberCat™ 1016, 23 card, FCC Enclosure (P/N 10-2483-c-L-23-o-2)
- CyberCat™ 254, 23 card, FCC Enclosure (P/N 10-2527-c-L-23-o-2)
- Cheetah Xi™ 1016, 23 card, FCC Enclosure (P/N 10-2541-c-L-23-o-2)
- 3 Slot, Remote Equipment Enclosure (P/N 10-2780-c)
- 5 Slot, Remote Equipment Enclosure (P/N 10-2781-c)

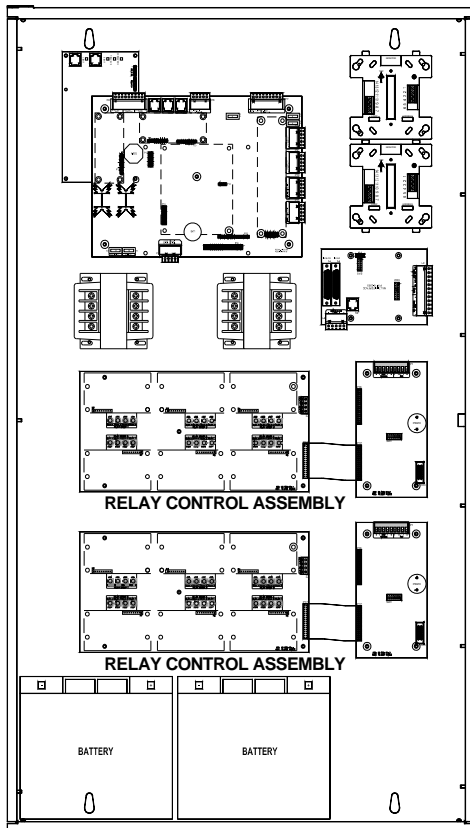See Exhibit 3 for acceptable mounting locations in the FCC enclosure.

**Exhibit 3 FCC Enclosure
with Optional Back Box (-2)**

The FCC enclosure with the Option 2 back box allows up to two (2) relay control assemblies to be installed within the enclosure.

INSTALLATION

Installation of the assembly shall be performed or supervised by a Fike trained and certified technician who is familiar with all applicable codes and regulations pertaining to the installation of this product. The components shall be installed in accordance with the instructions provided in this manual or in other documents relating to this product, the local authority having jurisdiction (AHJ), and all local, regional, and national electrical and building codes.

⚠ CAUTION
The assembly circuit boards contain static sensitive components. Observe static sensitive material handling practices.

Mount the relay card(s) standoffs to the Bus Card:

The relay cards are sold separately and must be installed prior to mounting the bus card into the enclosure. The required mounting hardware is supplied with each relay card.

1. Carefully unpack the bus card and relay card(s) and check for shipping damage.

2. Secure the F/F standoffs (qty. 5) supplied with the relay card to the bus card using the 6x32 screws provided. See Exhibit 4.

3. Do not install relay card(s) to the standoffs at this time.

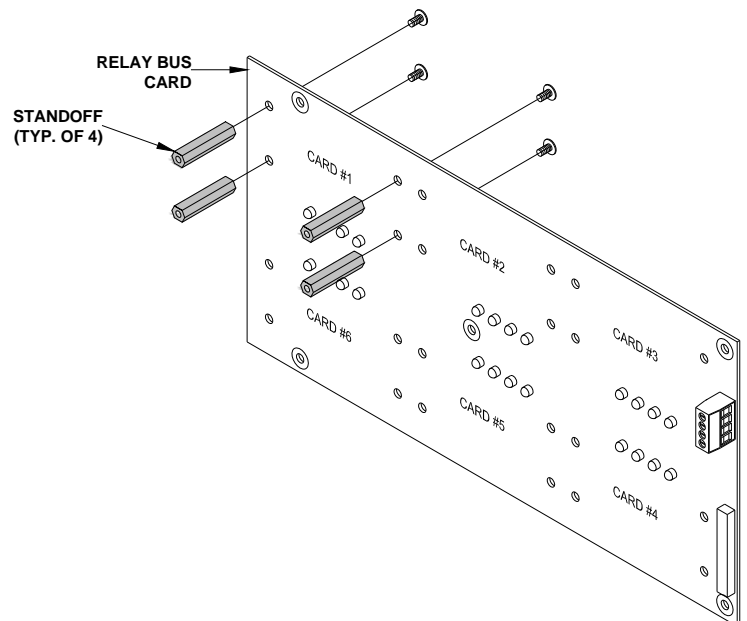4. Repeat steps 1 and 2 for additional relay cards.

Exhibit 4 Standoff Installation

NOTE: Each relay card mounting position (#1 - 6) corresponds with the "Relay Group" selection used by C-Linx to configure the relay functionality. Keep this in mind when selecting the mounting location for each relay card.

Install the relay control assembly into the enclosure:

The compatible enclosures are equipped with threaded studs in the back-box to facilitate easy installation of the Relay Control Assembly cards. The required mounting hardware is supplied with each card.

1. Verify that the enclosure is clean and free of dust and debris before installing the relay control assembly.

2. Carefully unpack the control card and check for shipping damage.

3. Install the M/F standoffs supplied with the bus card and the control card to the threaded studs in the enclosure back-box. See Exhibit 3 for mounting location.

4. Align the cards with the standoffs and secure in place with the 6x32 hex nuts and washers. See Exhibits 5 and 6.

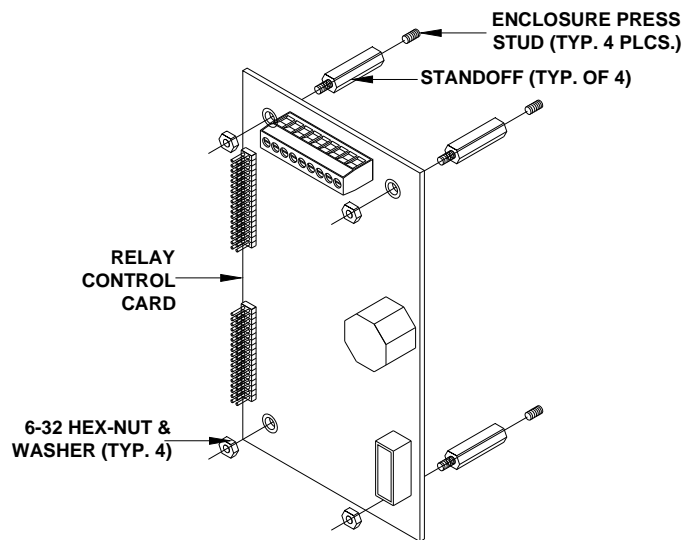5. Connect the Interface Cable (P/N 10-2784) to the P17 headers on both cards.

Exhibit 6 Control Card Mounting

Mount the relay card(s) onto the bus card:

Install the relay cards only after the relay bus card assembly has been secured to the enclosure back-box.

1. Align the header pins on the relay card with the connection terminal (P2 – P7) on the bus card and press in place making sure not to bend the pins.

2. Align the mounting holes in the relay card with the standoffs and secure with supplied screws (qty. of 4). See Exhibit 7.
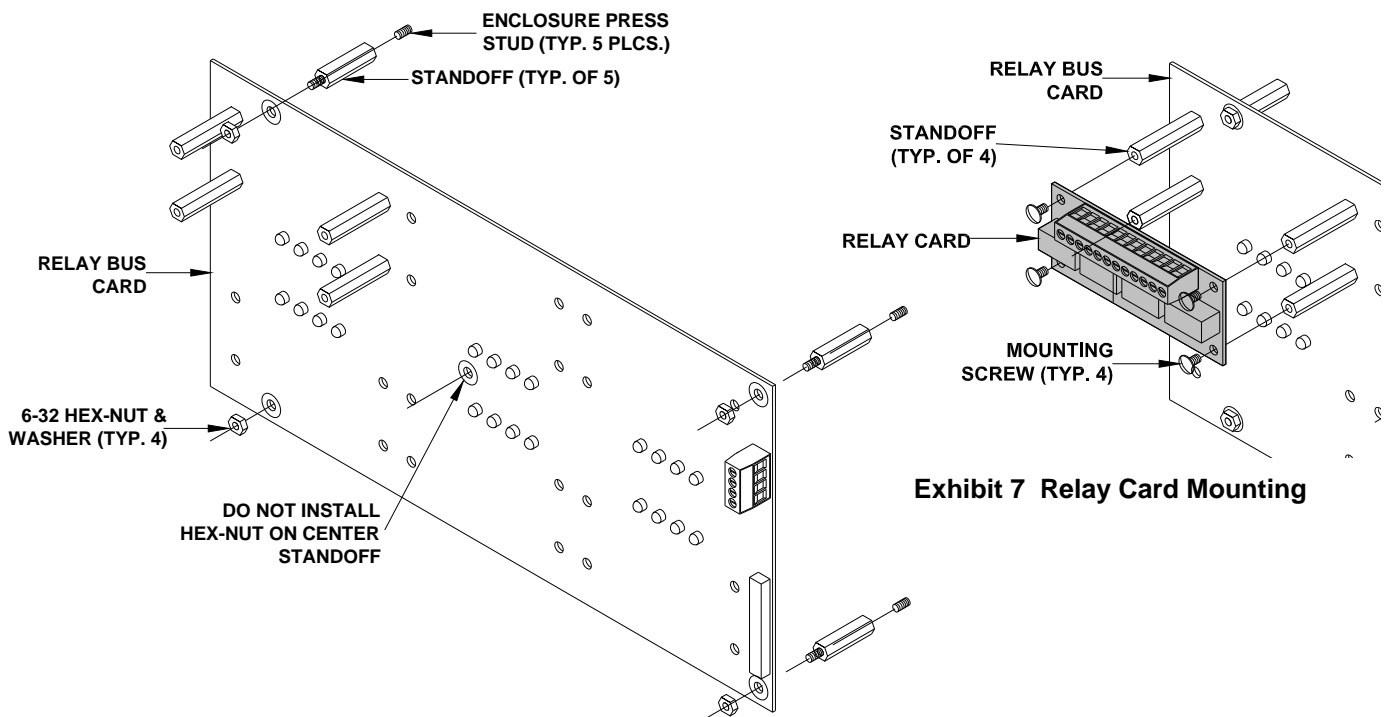

Exhibit 7 Relay Card Mounting

Exhibit 5 Relay Bus Card Mounting

SETTING DIP-SWITCHES

Each relay control card requires a unique address for identification on the RS485 peripheral bus. Dip-switch SW1 (switch 1 - 6) is used to set the address for the device. See Exhibit 8.
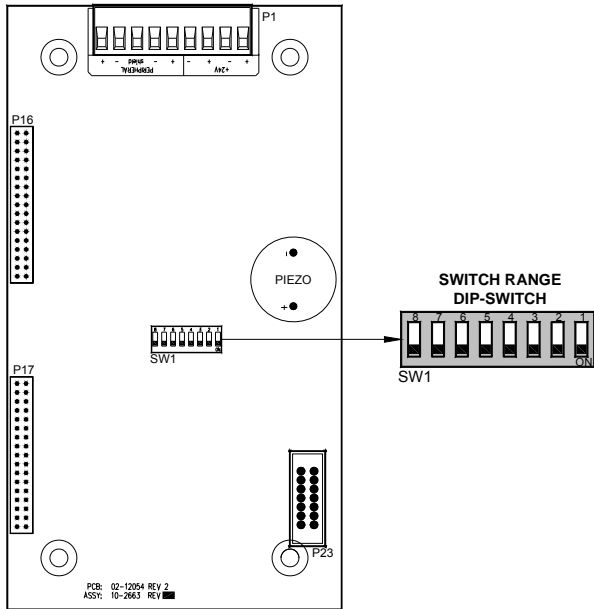

Exhibit 8 Addressing DIP-Switch

A maximum number of 31 devices can be connected to the RS485 peripheral bus circuit. The device addresses do not need to be sequential and can be set to any number between 02 and 32. Note that 00 is not a valid address and 01 is reserved for the control panel. See Exhibit 9 for DIP-switch settings for each binary address (ID number).

Binary Value	1	2	4	8	16	32
Dip Switch #	1	2	3	4	5	6
Address						
0	NOT VALID					
1	ON	◄ PANEL ONLY				
2		ON				
3	ON	ON				
4			ON			
5	ON		ON			
6		ON	ON			
7	ON	ON	ON			
8				ON		
9	ON			ON		
10		ON		ON		
11	ON	ON		ON		
12			ON	ON		
13	ON		ON	ON		
14		ON	ON	ON		
15	ON	ON	ON	ON		
16					ON	
17	ON				ON	
18		ON			ON	
19	ON	ON			ON	
20			ON		ON	
21	ON		ON		ON	
22		ON	ON		ON	
23	ON	ON	ON		ON	
24				ON	ON	
25	ON			ON	ON	
26		ON		ON	ON	
27	ON	ON		ON	ON	
28			ON	ON	ON	
29	ON		ON	ON	ON	
30		ON	ON	ON	ON	
31	ON	ON	ON	ON	ON	
32						ON

Exhibit 9 Binary Addressing Table

Dip-switch SW1 (switch 7) is used to set the peripheral bus communication speed that will be used by the control card. In the OFF position, the card will communicate at 9600 bps (standard). In the ON position, the card will communicate at 38400 bps (fast). The selected communication speed must match the host control panel settings.

⚠ **Caution**
Dip-switch 8 is used for factory testing of the control card and must be set to *OFF* for proper operation.

WIRING

1. If the system is already powered, disable critical functions and power down system. Failure to do so may result in damage to the components.

2. Connect RS485 peripheral bus wiring to terminal P1 on the relay control card as shown in Exhibit 10. This is a pass-through connection. If last device on circuit, install 100 ohm termination resistor.

3. Connect 24 VDC power wiring to terminal P1 on the relay control card as shown in Exhibit 10. Power must be supplied from host control panel or battery backed, regulated, power-limited power supply listed for fire protective signaling use.

4. Connect 24 VDC power wiring from control card to terminal P1 on the relay bus card as shown in Exhibit 10.

5. Do _NOT_ connect field wiring to relay card terminals until after programming and acceptance testing is complete.

TESTING AND PLACING INTO SERVICE

1. Before landing the field wiring to the relay terminals, thoroughly test the functionality of the relay assembly.

2. Connect field wiring to the relay terminals and validate proper operation again. Relays can be connected to power-limited or non-power-limited wiring; however, the requirement outlined in NFPA 70, National Electrical Code (NEC) requiring a minimum separation of ¼" (6 mm) between power-limited and non-power-limited wiring must be adhered to. Where relays are used for control of critical functions, coordinate testing with site manager so as not to interfere with normal facility operation.

⚠Caution

Relays may be used to switch voltages up to 125 VAC. Exercise appropriate care when testing the relay card operation. Only a qualified service technician shall test the relay functions.

⚠Caution

During the first few seconds of power-up, the associated control panel may not have full control of the relay contacts and they may momentarily chatter. If using the relays for critical functions, control the output closed or open respectively during controller power-up and power-down.

NOTES:
1. TERMINATE SHIELD WIRE, IF SHIELDED WIRE IS USED.
2. INSTALL 100 OHM TERMINATION RESISTOR IF LAST DEVICE.
3. POWER SUPPLIED FROM HOST CONTROL PANEL OR 24 VOLT, BATTERY BACKED, REGULATED, POWER-LIMITED, POWER SUPPLY LISTED FOR FIRE PROTECTIVE SIGNALING USE.
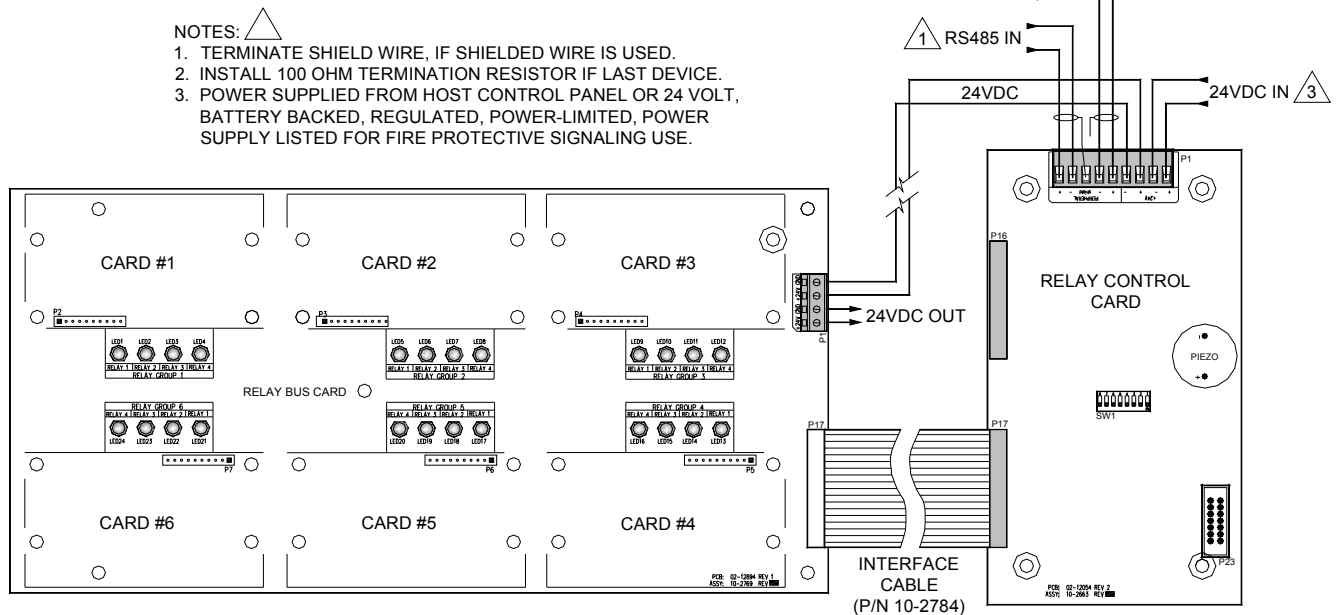
Exhibit 10 Relay Control Assembly Wiring

SERVICE AND MAINTENANCE

There are no serviceable components on the Relay Control Assembly. If the assembly should begin to operate incorrectly, first use C-Linx to validate the programming options of the cards. Should the assembly continue to operate incorrectly, remove the malfunctioning card and return it to Fike for repair or replacement using Fike's RMA procedure.

To ensure proper system operation, this product must be tested in accordance with the requirements of NFPA 72 after 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.

⚠Caution
Voltages up to 125 VAC may be present on the relay connection screw terminals. Exercise appropriate care when servicing a wired relay card. Only a qualified service technician shall perform repairs or maintenance.

PARTS LIST

Part Number	Description
10-2769	Relay Bus Card
10-2778	Relay Control Card
10-2784	34 pin Interface Cable (control to bus card)
10-2204	CRM4 Relay Card
10-2799	100 ohm Termination Resistor

Exhibit 11 Parts List

RELAY LEGEND

The following table shall be used to identify the function and switching voltage of each relay connection. The completed form shall be supplied to the end user for future reference by a qualified service technician.

⚠Caution
Relays may be used to switch voltages up to 125 VAC. Exercise appropriate care when working with the relay card connections. Only a qualified service technician shall perform testing or maintenance of the relay card.

			Assignment		
	Relay	Function	Device	Zone (1 – 254)	Net Device
Group 1	#1		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 1	#2		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 1	#3		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 1	#4		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 2	#1		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 2	#2		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 2	#3		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 2	#4		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 3	#1		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 3	#2		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 3	#3		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 3	#4		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____

	Relay	Function	Device	Zone (1 – 254)	Net Device
				Assignment	
Group 4	#1		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#2		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#3		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#4		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 5	#1		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#2		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#3		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#4		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
Group 6	#1		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#2		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#3		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____
	#4		Loop: _____ Addr: _____	Zone: _____ State: _____	Panel: _____ Loop: _____ Addr: _____