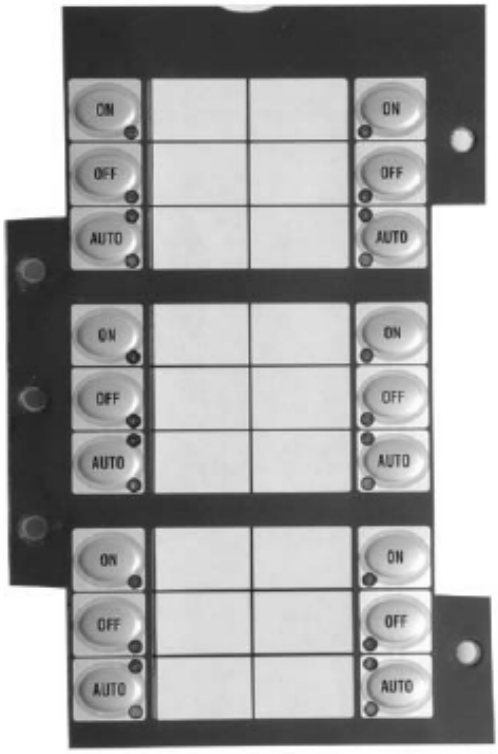
Product Manual

Six Zone Smoke Control Switch Card



P/N 10-2658

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LIST OF TABLES AND EXHIBITS

DOCUMENT HISTORY

Document Title: Six Zone Smoke Control Switch Card, Product Manual

Document Reorder Number: 06-444

Revision	Section	Date	Reason for Change
0	All Sections	10/08	Initial Release
1	Section 3.2	5/09	Clarification of dip-switch functions
2	Section 3.2	8/10	Clarification of dip-switch functions for peripheral bus communication speed setting.

ABOUT THIS MANUAL

This manual is intended to be a complete reference for the installation, operation, and service of the Fike Six Zone Smoke Control Module. The information contained in this manual shall be used by factory trained service technicians who are authorized to work on this product. This manual also serves as the Operations Manual for the component.

The first-time installer and/or user should thoroughly read and understand the instructions contained within this manual before using this device. These instructions must be followed to avoid damage to the equipment itself or adverse operating conditions caused by improper installation and programming.

PRODUCT SUPORT

If you have a question or encounter a problem not covered in this manual, you should first try to contact the distributor who installed the Fike system. Fike has a worldwide distribution network. Each distributor sells, installs, and services Fike equipment. Look on the back of the cabinet door, there should be a sticker with an indication of the distributor who installed the system. If you can not locate the distributor, please call Fike Customer Service for locating your nearest distributor, or go to our web-site at www.fike.com. If you are unable to contact your installing distributor or you simply do not know who installed the system, you can contact Fike Technical Support at (888) 628-3453, Option 2, Monday through Friday, 8:00 am to 4:30 pm CST.

SAFETY INFORMATION

Important safety admonishments are used throughout this manual to warn of possible hazards to persons or equipment.

⚠Caution

Cautions are used to indicate the presence of a hazard which will or may cause damage to the equipment if safety instructions are not followed or if the hazard is not avoided.

Note: Provides information on installation, operation, maintenance, performance or general tips that are important but not hazardous to anything or anyone.

TERMS USED IN THIS MANUAL

Authority Having Jurisdiction – The organization, office, or individual responsible for approving equipment, materials, and installation, or a procedure.

Configure – Panel set-up to properly recognize and supervise a device as the design requires.

Fire Alarm Control Unit (Panel) – A system component that receives inputs from automatic and manual fire alarm devices and might supply power to detection devices and to a transponder(s) or off-premises transmitter(s). The control unit might also operate releasing circuits or solenoids, provide transfer of power to the notification appliances, or transfer of condition to relays or devices connected to the control unit. The fire alarm control unit can be a local fire alarm control unit or a master control unit.

Power Limited – A circuit designation given for wiring purposes. The amount of current flowing through the circuit is limited versus being unlimited, or non-power limited.

Zone – A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent, or an area in which a form of control can be executed. This term is used to create the relationship between activation inputs to notification outputs and peripherals.

RS485 – A data communication standard produced by the Electronics Industry Association (EIA). This standard was developed to allow for reasonable success in transferring data over specified distances and/or data rates.

Dedicated Smoke-Control System – Systems and components install for the sole purpose of providing smoke control, and upon activation these systems operate specifically to perform smoke control functions.

Nondedicated Smoke-Control System – Systems and components that share components with some other system(s), such as building HVAC system, and upon activation causes the HVAC system to change its standard mode of operation in order to achieve the smoke control objective.

Smoke-Control System – An engineered system that uses mechanical fans to produce pressure differences across smoke barriers to inhibit smoke movement.

1.0 PRODUCT DESCRIPTION

The 10-2658, Six Zone Smoke Control Switch Card (Exhibit 1) allows the manual On-Auto-Off controls that are required for a smoke control system to be incorporated into the CyberCat™ control panel. Each control switch and LED can be programmed to provide individual control and status indication of individual pieces of smoke control equipment (both dedicated and non-dedicated) or individual smoke control zones. The card provides a tabular based display that incorporates 6 green “ON”, 6 red “OFF”, 6 white “NORMAL”, 6 yellow “FAULT” LEDs, and 18 momentary touch-pad switches. The card communicates with the associated control panel via the panel’s RS485 peripheral bus.

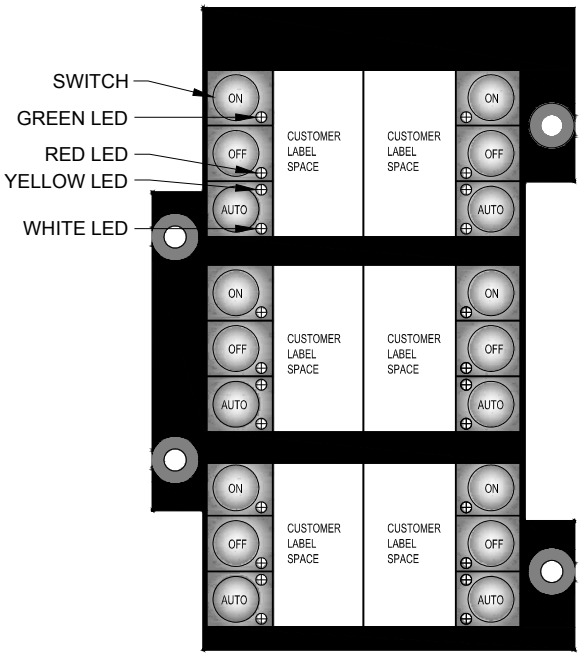

Exhibit 1: Module Operators View

1.1 COMPATIBILITY

The Smoke Control Siwch Card is compatible with the following Fike intelligent control panels: CyberCat™ 254 and CyberCat™ 1016, firmware version 4.00 or higher. In order to properly mount the card inside the control panel enclosure, a dead-front enclosure must be used. Refer to the associated control panel manual for system enclosure options.

1.2 AGENCY STANDARDS AND COMPLIANCE

This Fire Alarm product complies with the following standards:

NFPA 70 – NEC, Article 300 Wiring Methods

NFPA 70 – NEC, Article 760 Fire Protective Signaling Systems

NFPA 72 – National Fire Alarm Code

UL 864 – Control Units and Accessories for Fire Alarm Systems

1.3 RELATED FIRE ALARM STANDARDS

NFPA 1 – Fire Prevention Code
NFPA 77 – Static Electricity
NFPA 92A – Smoke-Control Systems
NFPA 92B – Smoke Management Systems
NFPA 101 – Life Safety Code
Applicable Local and State Building Codes
Requirements of the Local Authority Having Jurisdiction

1.4 RELATED DOCUMENTATION

Further details about the product referenced in this document can be found in the following manuals.

Document Title	Part Number
Smoke Control Application Guide	06-467
CyberCat™ 254/1016 Product Manual	06-326

Table 1: Related Documentation

1.5 SPECIFICATIONS

Operating Voltage Range[1]:	15 – 30 VDC
Current Draw:	102 mA (all LEDs on) in Alarm 48 mA (all LEDs off) Standby
Operating Environment[2]:	0° to 49° C (32°to 120° F) 93% RH, non-condensing
Terminal Blocks:	Accept 14 – 26 AWG Supervised and power-limited
RS485 Wiring:	Connects to panel's peripheral bus 4,000 ft. (1219 m) maximum length 96Ω maximum resistance Belden 9841 or equal
Card Dims:	3.75" (9.53 cm) W x 5.75" (14.6 cm) H

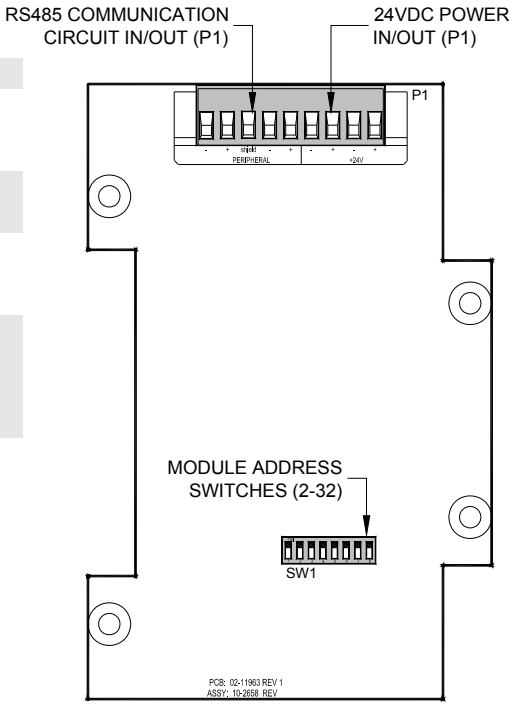

Exhibit 2: Card Component/Wiring View

[1] Power for the card is provided via a separate power loop from the associated control panel or battery backed 24VDC, regulated, power-limited, power supply listed for Fire Protective Signaling Use.

[2] The useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this component be installed in an environment with a nominal room temperature of 15-27° C / 60-80° F.

2.0 CIRCUIT / WIRING LIMITATIONS

RS485 Circuit: The panel's RS485 circuit can drive up to 32 devices including the control panel itself. The number of cards that can be installed on the system is dependent upon the number of devices installed on each fire alarm control panel's RS485 circuit. The RS485 circuit can not be T-Tapped; it must be wired in a continuous fashion. The maximum wire distance from the control panel to the card is 4,000 feet (1,219 m) of Belden 9841 low capacitance cable. For plenum applications, use Belden 82841, 82842, or 89841. Limit the total wire resistance to 96 ohms maximum. Do not run the RS485 (power-limited) cable adjacent to, or in the same conduit as 120 volts AC (non power-limited) circuits, noisy electrical circuits that are powering mechanical bells or horns, audio circuits above 25 volts RMS, or motor control circuits.

24VDC Power Circuit: Power for the card is provided via a separate power loop from the associated control panel or battery backed 24VDC, regulated, power-limited, power supply listed for Fire Protective Signaling Use. The card must be accounted for in the control panel power and battery calculations. Utilize the power information provided in Section 1.6 for these calculations. If the control panel is configured to supervise the card, a loss of power will register as a communication failure at the control panel.

Note: If card power is supplied from a source other than the control panel, a ground fault condition could occur.

3.0 INSTALLATION

The following installation instructions must be strictly adhered to when installing the card to prevent potential damage to the card and the associated control panel. The instructions must be strictly adhered to in order to prevent potential damage to the card and the associated control panel.

Caution

The card and associated control panel contains static sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use anti-static packaging to protect electronic assemblies removed from the unit.

Caution

Never remove or install boards, internal cables or components with power applied. Failure to follow the instructions provided in this section can result in irreparable damage to the system components. This damage may adversely affect the operation of the control unit but its effect may not be readily apparent.

3.1 MOUNTING THE CARD

1. Carefully unpack the card and check for shipping damage.
2. Fill out and install custom label in slot provided in card faceplate. Label templates can be downloaded from Fike's Forum web page.
3. Select the mounting location for the card on the dead-front panel and remove the blank filler plate as shown in Exhibit 3.

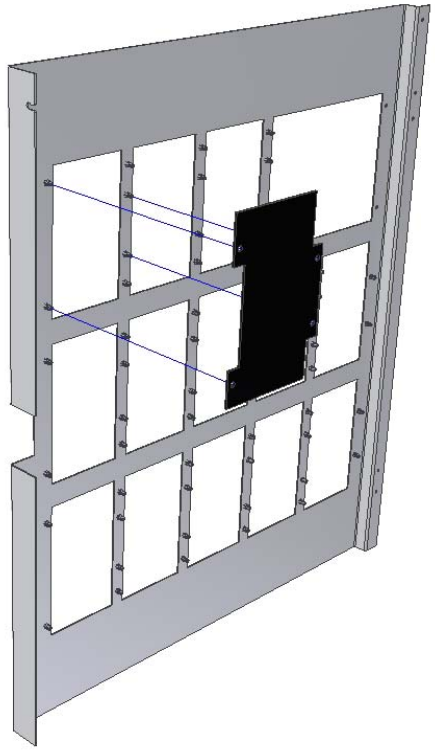

Exhibit 3: Card Mounting to Dead-front

4. Install the card onto the four threaded standoffs on the dead-front panel as shown in Exhibit 4 and secure using the four hex nuts provided.

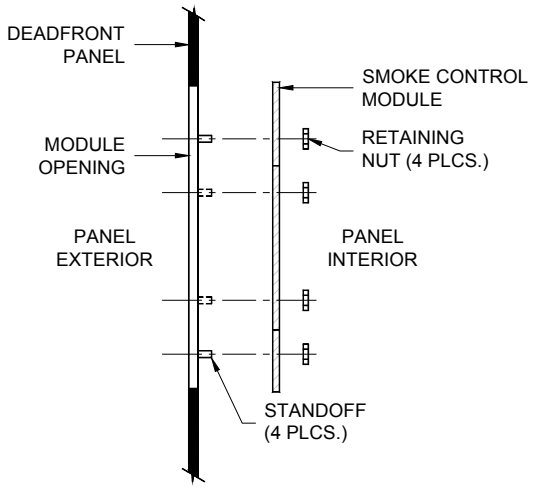

Exhibit 4: Securing the Card

3.2 DIP SWITCH SETTINGS

Each device 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 as shown in Exhibit 5. 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 Table 2 for DIP switch settings for each binary address (ID number).

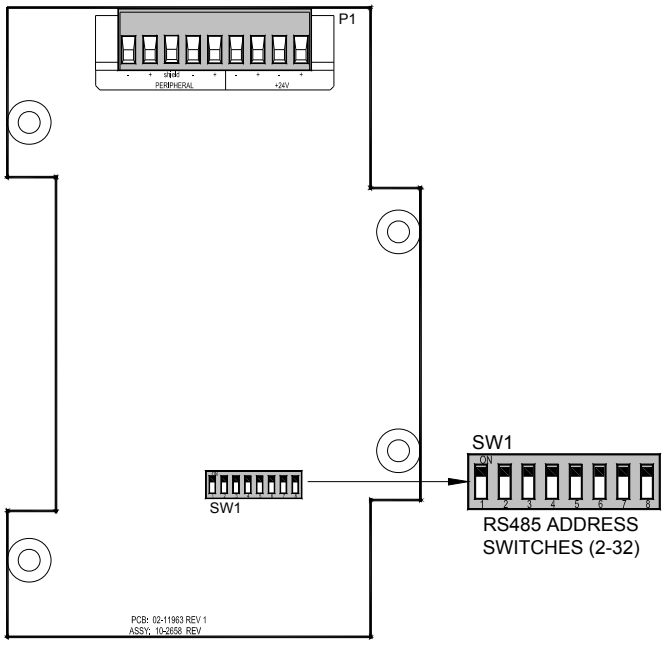

Exhibit 5: Card Addressing

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

Table 2: Binary Addressing

The functionality of DIP-switch 7 varies depending upon the card's firmware version as described below:

Firmware version 1.17
In the 'ON' position, all module LEDs will cycle ON and OFF until the switch is turned off (LED test).

Firmware version 1.20
Sets the peripheral bus communication speed that will be used by the card to communicate with the host control panel. 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 set on the card must match the host control panel settings. In addition, all devices connected to the same peripheral bus must use the same communication speed setting.

⚠Caution

Turning dip-switch 8 on will cause all LEDs on the card to flash and the card's configuration will be cleared. Use C-Linx to resend the configuration to the card.

3.3 PULL WIRING TO CARD

Unless otherwise detailed in this manual or in other documents relating to this device, the designer, installation and service technician shall utilize published standards and references such as: NFPA 70 National Electrical Code; NFPA 72 National Fire Alarm Code; and other standards which may be relevant to the Local Authority Having Jurisdiction (AHJ) for field wiring installation requirements.

⚠Caution

If connecting the card to an existing system, disconnect AC power, batteries, and RS485 circuit from control panel and wait 60 seconds prior to card installation. Failure to do so can damage circuits.

1. Pull RS485 and 24VDC power wiring to card's terminal block. Leave sufficient wire to make connections at card terminals without straining board components.
2. Temporarily short conductors at one end and measure the total wire resistance. Compare measured value(s) to the listed circuit limitations for the particular panel that the card is being tied to. If values are within the circuit limitations, proceed to next step.

⚠Caution

If megger testing of field wiring is required, all field devices MUST be disconnected from the circuit prior to testing. Megger testing could damage electronic components.

3.4 CONNECT WIRING

1. Disconnect AC power and batteries from the control panel and wait 60 seconds prior to connecting field wiring. Failure to do so can damage circuits.
2. Disconnect all RS485 connections from the control panel.
3. Connect the RS485 circuit wiring to card's removable terminal block P1 as illustrated in Exhibit 6.
4. Remove the 100-ohm resistor and connect outgoing RS485 circuit wiring to terminal block P1 as illustrated in Exhibit 6. If last device on the circuit, leave the resistor in place.
5. Connect the 24VDC wiring to card's removable terminal block P1 as illustrated in Exhibit 6.
6. Connect outgoing 24VDC wiring (if applicable) to card's removable terminal block P1 as illustrated in Exhibit 6.

⚠Caution

1. Do not over tighten screw terminals. Over tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.
2. Do not reverse the 24VDC power and RS485 wiring. Damage to the system will occur.

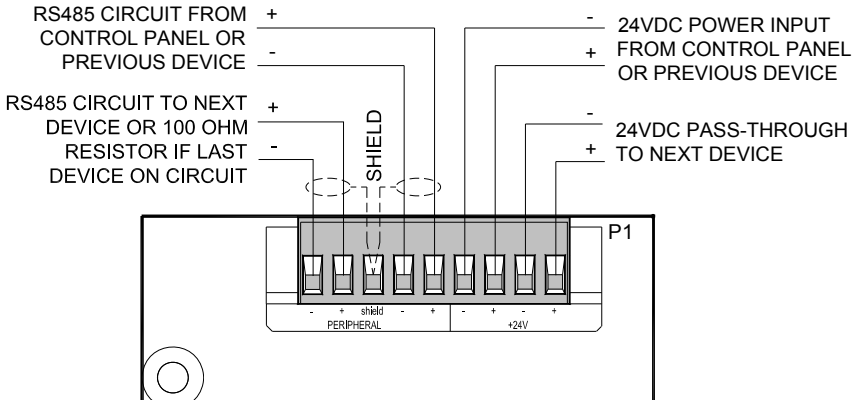

Exhibit 6: RS485 and Power Wiring Connections

3.5 POWER-UP CARD

1. After all cards, cables and components have been properly installed; reapply AC power and batteries (in that order) to the associated control panel or field power supply. Immediately remove power if the panel or card(s) shows signs of abnormal operation.
2. Reconnect all RS485 connections to the control panel.

4.0 PROGRAM CARD

Each card must be programmed through the associated control panel using a lap top computer and Fike's C-Linx software. Refer to Fike document 06-448, "C-Linx Software manual" for programming instructions. Programming cable 10-1874A is used to download the configuration to the card via the control panel's P3, programming port.

4.1 PROGRAMMING OPTIONS

The card's switches and LEDs are separated into six groups and are defaulted to perform smoke control functions (ON/OFF/AUTO). Exhibit 7 shows the numbering sequence for the switch/LED groups.

The operation of card's LEDs varies depending on the status of the smoke control system as follows:

- Flashes upon initiation of one of the smoke control override switches until confirmation of desired smoke control override function is achieved via activation of monitor module(s) connected to smoke control equipment status relay contacts.
- Flashes if time limit has expired for smoke control equipment to achieve their desired state (trouble operation).
- Steady On when in normal operation.

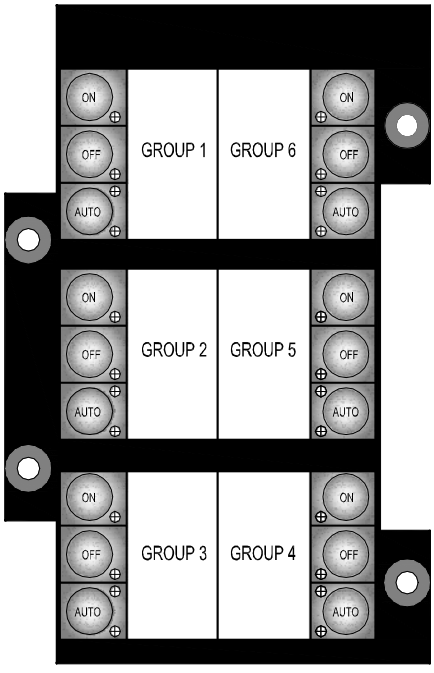

Exhibit 7: Switch / LED Groups

The following table outlines the various system functions that each switch and LED can be assigned to.

Programming Feature	Possible Settings (Defaults shown bold)
Smoke Group Configuration	
Group	**1** - 6
Switch Configuration	On / Off / Auto
Switch Function	**No Function Assigned** / Smoke Control
Select Relay Actions (when switch is pressed)	**None** / On / Auto / Off • ON – overrides up to 25 addressable relays on the panel's SLCs. • AUTO – returns up to 25 addressable relays back to automatic configured state. • OFF – overrides up to 25 addressable relays on the panel's SLCs.
Action Start	Action starts with confirmation address OR delay timer / Action starts with confirmation address AND delay timer
Confirmation Address	Loop **0** – 4 Address **0** – 254 Browse for Input (panel, loop, address)
Relay Address	Panel **0** – 128 Loop **0** – 4 Address **0** – 254 Browse for Relay (panel, loop, address)
Delay (relay activation)	**0** – 255 seconds
Delay Timer Start	Delay timer starts immediately / Delay timer starts after confirmation address activates
LED Configuration	On / Off / Auto / Fault
LED Function	**No Function Assigned** / On – Any Network Device / On – All Network Device / Off – Any Network Device / Off – All Network Device / Auto LED Function / Fault LED Function
Timer	**0** – 255 seconds
Device Assignments (max. 50 device addresses)	Panel: **0** – 128 Loop: **0** – 4 Address: **0** – 254 Browse for Relay (panel, loop, address)
Self Test	**Disabled** / Enabled
Time for weekly Self Test	Day: Sunday – Saturday **Wednesday** Time: **6:00 AM** (24 hr.)
Miscellaneous	
Peripheral Address	**2** – 32
Local Buzzer	**Enabled** / Disabled
Graphic Switch Configuration (CFG1 & CFG2)	**No Function Assigned** / Reset / Silence / Acknowledge / Drill / LED Test **Note:** Switch activation affects only local panel unless other panels are programmed to respond to network events.
Graphic LED Configuration (CFG1 – CFG3)	No Function Assigned / Panel Silence / Panel Drill / Panel Walktest / Panel Comm OK / Panel Power OK **Note:** LEDs respond to local panel only.

Table 3: Programming Options

5.0 TESTING AND PLACING INTO SERVICE

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.

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.

6.0 SERVICING

There are no serviceable components on this card.

Reserved for future use.

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