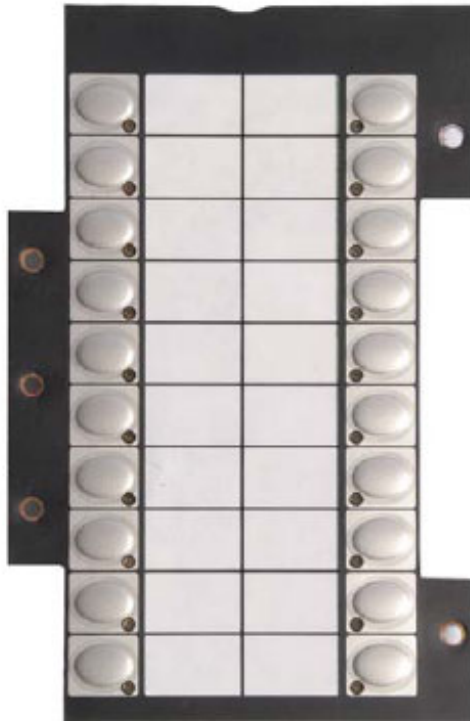




10-2728

Fire-Phone Card



DEVELOPED BY

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Fike maintains a repair department that is available to repair and return existing electronic components or exchange/purchase previously repaired inventory component (advance replacement). All returns must be approved prior to return. A Material Return Authorization (MRA) number must be indicated on the box of the item being returned. Contact the appropriate Regional Sales Manager for further information regarding product return procedures.

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While every precaution has been taken during the preparation of this manual to ensure the accuracy of its content, Fike assumes no responsibility for errors or omissions.

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1.0 ABOUT THIS MANUAL

This manual is intended to be a complete reference for the installation, operation and service of the Fike Fire-Phone Card. 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.

1.1 DOCUMENT HISTORY

Document Title: Fire-Phone Card, Product Manual

Document Reorder Number: 06-559


Revision	Section	Date	Reason for Change
0	All Sections	05/2010	Initial Release
1	Sections 2.6 and 3.3	06/2011	Added Series 500 Loop Specs.
2	Section 2.5 Specifications	11/2021	Added maximum capacitance value for Series 500 Loop

1.2 PRODUCT SUPPORT


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.

1.3 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.

1.4 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.

Fire Command Center – The principal attended or un-attended location where the status of the detection, alarm communications, and control systems is displayed and from which the system(s) can be manually controlled.

2.0 PRODUCT DESCRIPTION

The 10-2728, Fire-Phone card (See Exhibit 1) is used on all systems that require addressable firefighter's phone operation; as it is the source of the systems fire phone control module addressable loop (Series 500). This addressable loop allows up to 99 fire-phone control modules to be connected to the circuit.

The card provides twenty (20) configurable switches that can be used by the system operator to selectively connect fire-phone control modules to the voice systems fire-phone bus. This connection allows two-way communication between the master fire-phone located in the fire command center (FCC) and remote phones strategically located throughout the facility. Each switch is provided with a red LED, that when lit indicates the active status of the switch.

The card is designed to be mounted to the CyberCat™ enclosures dead-front door panel. It communicates with the host fire alarm control panel via the panel's RS485 peripheral bus connection.

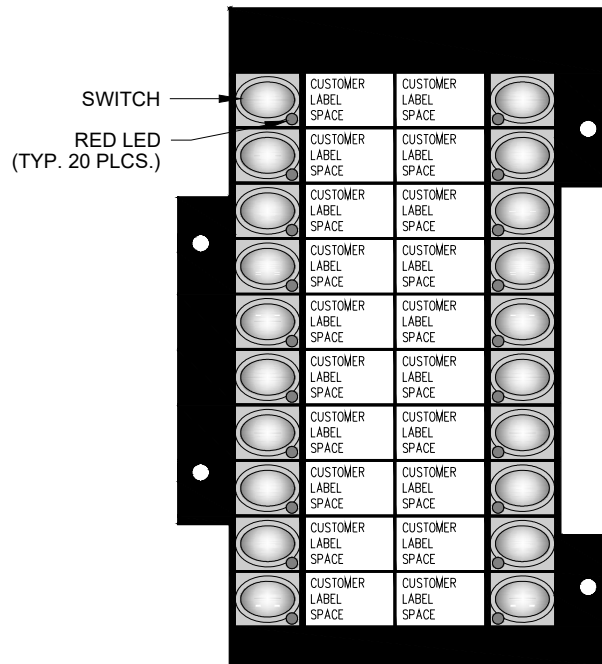


Exhibit 1: Operators View

2.1 COMPATIBILITY

The Fire-Phone card is compatible with the following Fike Intelligent control panels: CyberCat™ 254 and CyberCat™ 1016, firmware version 5.XX and 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 information.

2.2 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

2.3 RELATED FIRE ALARM STANDARDS

- NFPA 1 - Fire Prevention Code
- NFPA 77 - Static Electricity
- NFPA 101 - Life Safety Code
- Applicable Local and State Building Codes
- Requirements of the Local Authority Having Jurisdiction

2.4 RELATED DOCUMENTATION

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

Document Title	Part Number
CyberCat™ 254/1016 Installation Manual	06-326
CyberCat™ 254/1016 Operation & Maintenance Manual	06-326-2
Supplemental Fire-Phone Card Product Manual	06-560

Exhibit 2: Related Documentation

2.5 SPECIFICATIONS

Operating Temperature: 0° to 49° C (32°to 120° F), 93% RH¹

Terminal blocks accept 14-26 AWG

Card Dims: 3.75" (9.53 cm) W x 5.75" (14.6 cm) H

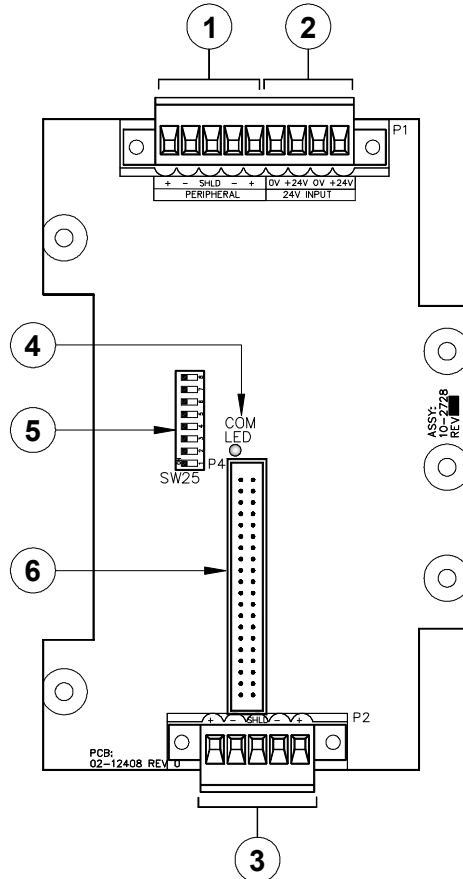


Exhibit 3: Terminal Designations

¹ 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.

Exhibit 4: Terminal Specifications

ID	Terminal Block	Terminal Labels	Function and Electrical Ratings/Requirements	Wiring Requirements
1	P1	Peripherals (+,-,shld,+,-)	<ul style="list-style-type: none"> Power-limited and supervised Connects to RS485 peripheral devices 31 peripheral devices maximum Typical circuit voltage will vary between 0 – 1 VDC. It should never be a constant voltage or 0 VDC Peripheral devices must be configured as supervised if 2-way communication is required Supports Class B or Class A 	<ul style="list-style-type: none"> RS485 wiring: Belden 9841 or equal. Use Belden 82841, 82842, or 89841 for plenum applications Maximum wire length of 4000 ft. (1219m), 9600 bps, 5 VDC, 1mA Maximum wire impedance 96Ω Maximum wire capacitance 0.05uF Class B – Requires 100Ω termination resistor on the last device on circuit, P/N 02-2519 (supplied with each device) Class A – Requires Class A peripheral bus card (P/N 10-2792) T-tapping of circuit is NOT allowed
2	P1	24V Input (+24V,0V, +24V, 0V)	<ul style="list-style-type: none"> Operating Voltage Range: 24 VDC, regulated Alarm Current = 75 mA (all LEDs on) Standby Current = 53 mA (all LEDs off) Power-limited and supervised² Power must be supplied 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. 	<ul style="list-style-type: none"> If power is supplied from a source other than the control panel, a ground fault condition could occur. To correct this problem, disable (isolate) ground fault detection on the field power supply. Ground fault detection will be performed by the host control panel. The card must be accounted for in the system power and battery calculations.
3	P2	Series 500 Addressable Loop (+, -, shld, -, +)	<ul style="list-style-type: none"> Power-limited and supervised Supports up to 99 fire-phone modules (P/N 24-135) Support Class B or Class A Normal voltage: 15 to 32 VDC 	<ul style="list-style-type: none"> Shielded cable should be used for electrically noisy environments or where circuit is to be run in same conduit as voice system speaker circuits. Maximum loop resistance: 76-99 fire-phone modules = 7Ω 51-75 fire-phone modules = 10Ω 26-50 fire-phone modules = 16Ω 1-25 fire-phone modules = 31Ω Capacitance: 0.35μF maximum
4		COM LED	<ul style="list-style-type: none"> Illuminates steady to indicate presence of RS485 communication with the host fire alarm control panel. Flashes to indicate loss of RS485 communication with the host control panel. 	
5	SW25		<ul style="list-style-type: none"> Peripheral bus address switch. 	
6	P4		<ul style="list-style-type: none"> Connection point for interface ribbon cable from supplemental fire-phone card(s). 	

² If the control panel is configured to supervise the card, a loss of power will register as a communication failure at the control panel.

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.

⚠ 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

A dead-front enclosure must be used in order to properly mount the card inside the control panel. Refer to the associated control panel manual for system enclosure information.

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 install onto the four threaded standoffs (See Exhibit 5).
4. Secure the card to the dead-front panel using the mounting hardware supplied with the card (P/N 02-12195).

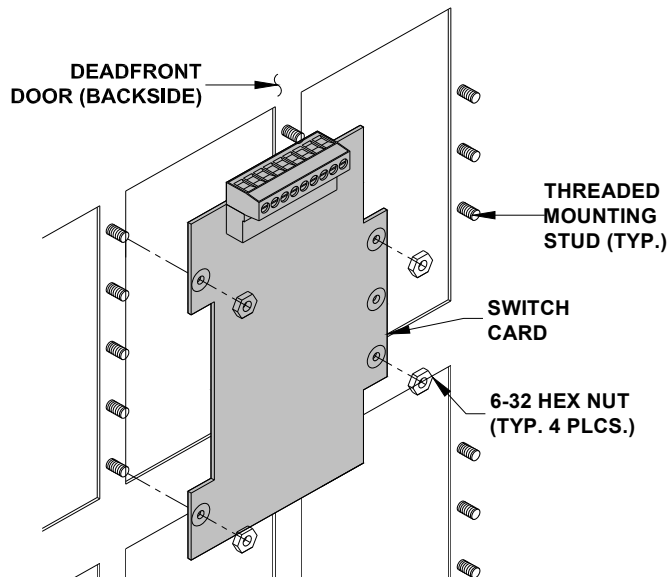


Exhibit 5: Mounting Card to Dead-front Panel

3.2 SET THE CARD'S BINARY ADDRESS

Each device requires a unique address for identification on the RS485 peripheral bus. DIP-switch SW25 (switch 1-6) is used to set the address for the device (See Exhibit 6). 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 7 for DIP-switch settings for each binary address (ID number).

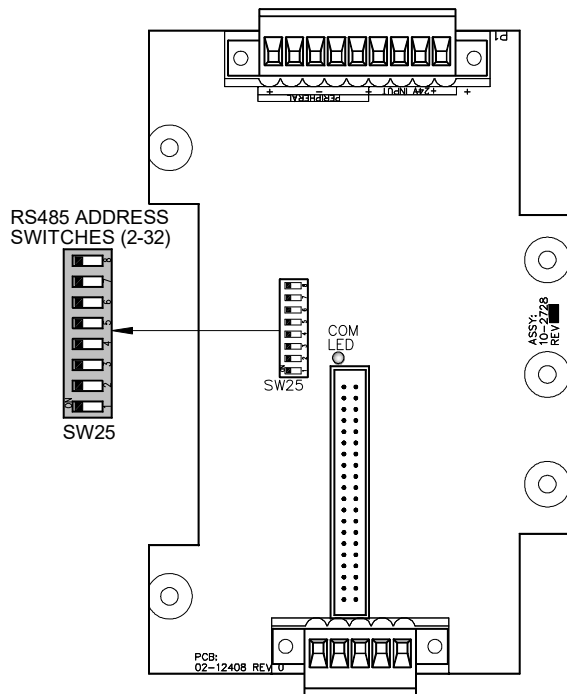


Exhibit 6: Card Addressing

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

Exhibit 7: Binary Addressing

Dip-switch 7 is used to disable the local audible on the fire-phone card. In the ON position (default), the local audible will sound each time an incoming call signal is received. In the OFF position, the local audible is disabled.

Dip-switch 8 is used to set the peripheral bus communication speed that will be used by the fire-phone card to communicate with the CyberCat™ panel. 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. In the OFF position, the card will communicate at 9600 bps (standard). In the ON position, the card will communicate at 38400 bps (fast).

3.3 PULL WIRING TO CARD

Unless otherwise detailed in this manual or in other documents relating to this card, 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.

1. Pull RS485, 24VDC power, and fire-phone SLC wiring (Series 500 loop) to card’s terminal blocks. Leave sufficient wire to make connections at card terminals without straining board components.

Note: 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.

2. Temporarily short RS485 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.
3. Temporarily short the Series 500 loop wiring at one end and measure the total wire resistance. Compare measured value(s) to the values listed in the table below. Acceptable circuit resistance depends upon the total number of fire-phone control modules (P/N 24-135) connected to the loop.

Number of modules	Maximum wire resistance
76 – 99	7Ω
51 – 75	10Ω
26 – 50	16Ω
1 – 25	31Ω

Exhibit 8: Series 500 Loop Wire Resistance

⚠ 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 FIELD WIRING TO CARD

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 (See Exhibit 9).
4. Remove the 100-ohm resistor and connect outgoing RS485 circuit wiring to terminal block P1 (See Exhibit 9). If last device on the circuit, leave the resistor in place.
5. Connect the 24VDC wiring to card’s removable terminal block P1 (See Exhibit 9).
6. Connect outgoing 24VDC wiring (if applicable) to card’s removable terminal block P1 (See Exhibit 9).
7. Connect Series 500 loop wiring to card (See Exhibit 9).
8. Connect ribbon cable to supplemental fire-phone card(s) if applicable. Refer to Fike document 06-560.

⚠ 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.

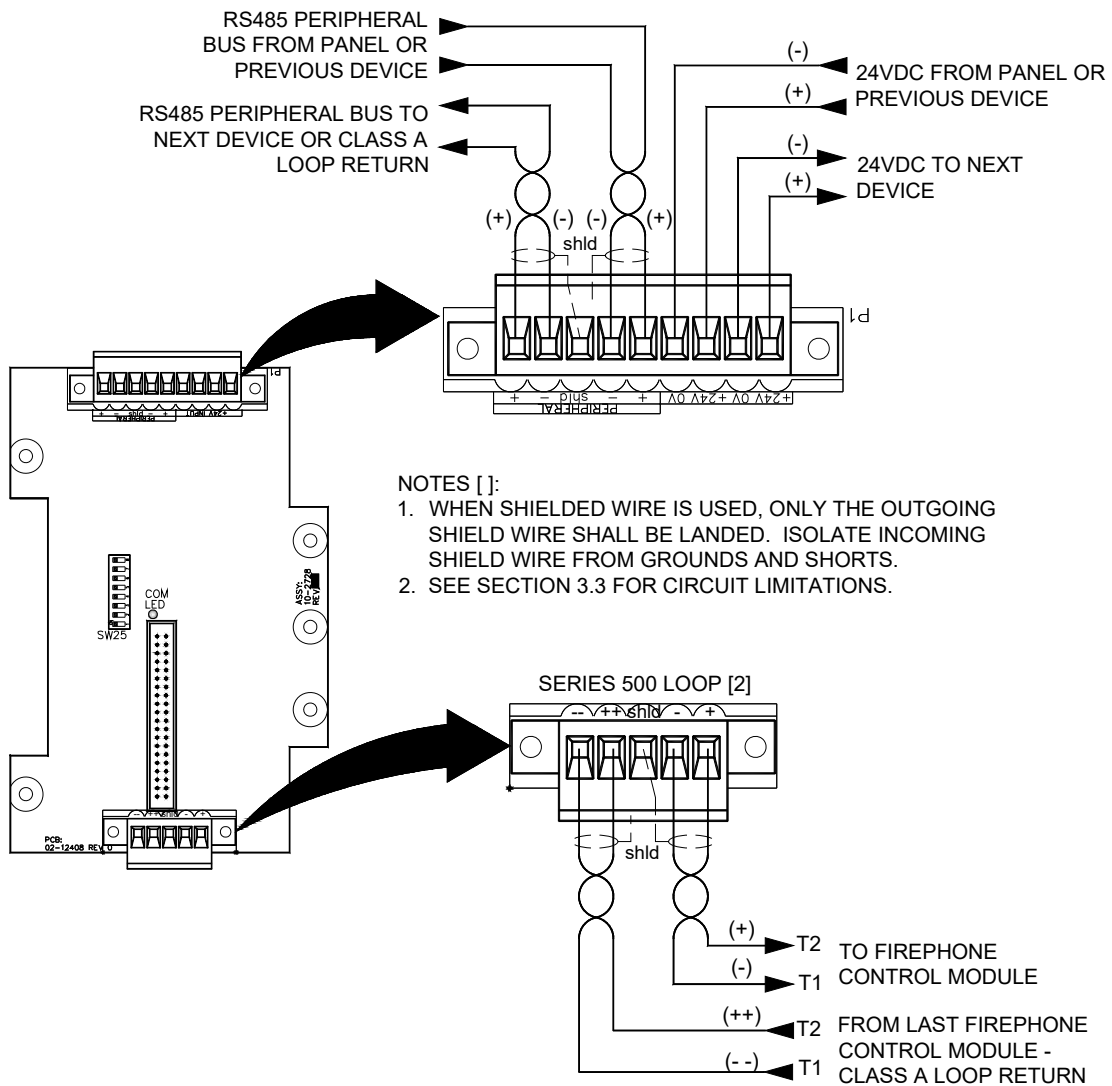


Exhibit 9: Card Wiring



3.5 POWERING-UP THE CARD

1. After all boards, 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 and verify that the communication LED illuminates steady.

4.0 PROGRAMMING

Programming of the 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. Programming cable 10-1874A is used to download the configuration to the card via the control panel’s P3 configuration port.

The following table identifies the configurable features of the fire-phone card that can be changed by using the panel’s programming software C-Linx. The table also identifies features that are available, but are not permitted to be used per the CyberCat™ system’s UL listing.

Exhibit 10: UL (90.23) Programming Features

Circuit or Component	Program Feature or Option	Permitted in UL 864? (Y/N)	Possible Settings (Defaults shown bold)	Settings permitted in UL 864	Notes
Fire Phone Card	Peripheral Address	Y	2 - 32		
	SLC Wiring Class	Y	Class A / Class B		
	Device Address	Y	1 – 99		1

Notes:

1. Select the fire-phone module addresses that are connected to the fire-phone riser (Series 500 loop). This selection is used by the CyberCat™ panel to perform supervision of the modules.

Note: The last unused switch on the fire-phone switch card defaults to provide a silence switch for the fire-phone modules integral audible.

4.1 SWITCH NUMBERING SEQUENCE

Each switch on the fire-phone card is hard coded to a specific fire-phone control module address (1-99). For Example: If fire-phone module address eleven (11) is not used, then switch eleven will not be used. Exhibit 11 shows the numbering sequence for the fire-phone card switches.

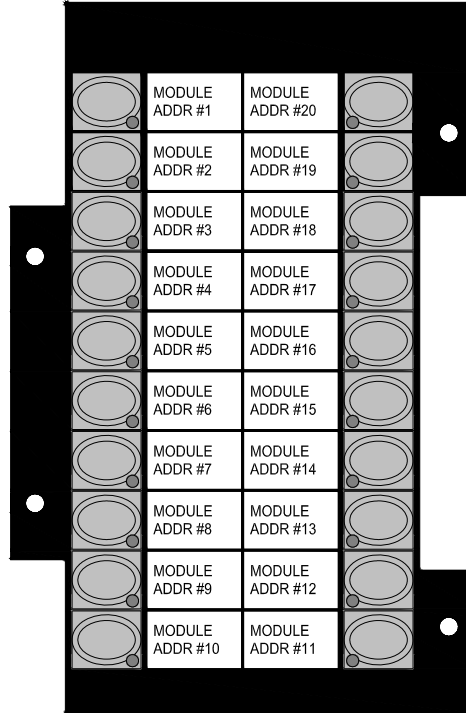


Exhibit 11: Switch Numbering Sequence

If more than twenty fire-phone control modules are to be used, a supplemental fire-phone card must be added to the system.

5.0 OPERATION

The Fire-Phone card allows you to manually connect remote fire phones to the voice evacuation systems fire-phone bus. The card provides controls and indicators for up to twenty (20) fire-phones. The function of the controls and indicators provided on the card is described as follows.

Incoming Call Initiation

An incoming call signal is initiated by the fire-phone card when a firefighter plugs a portable handset into a remote phone jack. This causes the red LED on the corresponding Fire-Phone card to flash and the integral audible on the fire-phone card to sound indicating the incoming call at the Fire Command Center. The firefighter will hear a ringing tone in the handset until the call is connected at the Fire Command Center.

Connecting an Incoming Call

Press the corresponding switch on the fire-phone card to connect the incoming call to the fire-phone bus. This causes the associated red LED to illuminate steady and the integral audible on the fire-phone card to silence.

Additional Incoming Calls

The associated red LEDs will flash and the integral audible on the Fire-Phone card will resound. You can either choose to connect the incoming call to the fire phone bus as previously described, or you can choose not to connect them. The fire phone bus allows you to connect a maximum of five (5) remote phones to the phone riser at one time in a party-line configuration.

Silence Switch

By default, the last unused switch on the Fire-Phone card(s) is automatically designated as a Silence switch. For example: If the last fire-phone module device address used is 72; then switch 73 on the fire-phone card will be defaulted to audible silence. When pressed, the switch will silence the integral audible on the fire-phone card; however, the red LED indicating the incoming call will continue to flash until connected.

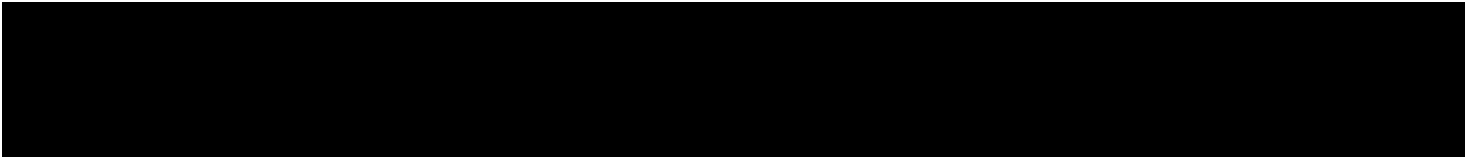
6.0 TESTING AND PLACING INTO SERVICE

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.

7.0 SERVICING

There are no serviceable components on this card.



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