



¹⁰⁻⁰⁶³ Product Manual

Conventional Fire Alarm/Suppression System



Manual P/N: 06-297 Rev. 2, 04/08

Fike[®]

World Headquarters 704 South 10th Street P.O. Box 610 Blue Springs, Missouri 64013 U.S.A.

Phone: +1.800.979.FIKE (3453) +1.816.229.3405 Fax: +1.816.229.0314

Copyright Information

This document may not be reproduced, in whole or in part, by any means without the prior express written permission of the copyright owner. All Fike documentation and hardware are copyrighted with all rights reserved.

Fike[®] is a registered trademark of Fike Corporation.

Disclaimers

The information contained in this manual is as accurate as possible. Fike does not guarantee that this manual is technically correct, complete, or free from writing problems or that this product is free from minor flaws.

In accordance with our policy of continuing product and system improvement, Fike reserves the right to change designs or specifications without obligation and without further notice.

Reader Responses

Fike encourages input from our distributors and end users on how we can improve this manual and even the product itself. Please direct all calls of this nature to Fike's Systems Sales Department at (800)-979-FIKE (3453), option 21.

Any communication received becomes the property of Fike Corporation.

Warranties

Fike provides a one-year limited manufacturer's warranty on this product. The standard warranty is printed in each Marketing Price List. All warranty returns must be returned from an authorized Fike Distributor. Contact Fike's Marketing Department for further warranty information. 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 should be indicated on the box of the item being returned. Contact the appropriate Regional Sales Manager for further information regarding Return Material Procedures.

Limitation of Liability

Fike Corporation cannot be held liable for any damages resulting from the use or misuse of this product.

Quality Notice

Fike Corporation has maintained ISO 9001 certification since 1996. Prior to shipment, we thoroughly test our products and review our documentation to assure the highest quality in all respects

This page intentionally left blank

TABLE OF CONTENTS

Sect	tion		Page
1.0 F	Preface.		
	1.1	About This Manual	
	1.2	Product Support	
	1.3	Revision History	1
	14	Terms Used in this Manual	2-3
	1.5	Symbols Used in this Manual	4
	1.6	Safety Notices	
2.0 F	Product	Overview	
	2.1	Product Description	
	22	Listings and Approvals	7
	2.3	Agency Compliance and Standards	
	24	Related Documentation	8
	2.5	SHP PRO Features	
3.0 E	Equipme	ent/Products	11
	3.1	Main Panel Hardware	
	3.2	Input Devices	
	3.3	Output Devices	
	3.4	Ancillary Devices	
	3.5	Spare Parts	
	3.6	Specifications	
	3.7	Enclosure Specifications	29-31
4.0 I	nstallati	ion	
	4.1	Enclosure Installation	
	4.2	Power and Field	
	4.3	Wiring Verification	
	4.4	System Module Installation	
	4.5	Initial Power-Up	
	4.6	Complete Field Wiring / Wiring Diagrams	
	4.7	System Configuration	43-49
	4.8	Checkout System	
	4.9	Releasing Hardware	
5 0 C	Deratio	ns	51
J. J C	E 1	Licor Switch Interaction	E1
	ນ. ເ ຮັບ	Silonoing Dulog	
	5.Z	Supervisory and Trouble Status LED's	
	ວ.ວ ຬ 4	Supervisory and frouble Status LED S	
	5.4 5.5	Latoning versus ivon-Latoning Troubles	
	5.5	Supervision Response Times	
	5.6 5.7	Low Power Conditions	
	D./		
	5.8	i ypical Alarm Operation	

5.9

5.10

5.11

6.0 Servicing	g	
6.1	Checkout	
6.2	Maintenance	
6.3	Troubleshooting	
Appendix 1		
Batte	ry Calculations	
Appendix 2		
Syste	em Operation Posting	
Index		

1.0 PREFACE

1.1 ABOUT THIS MANUAL

This manual is intended to be a complete reference for the installation, operation, and service of the Fike Single Hazard Panel Professional (SHP Pro) Fire Alarm/Suppression Control System. The information contained in this manual must be utilized by the factory trained Fike distributor in order to properly install, test and service the SHP Pro. This manual can also be used by the end user as an Operations Manual for the SHP Pro.

Before you refer to any section in this manual, and before you attempt to install or use the SHP Pro, be sure to read the important safety notices in section 1.6.

This manual is divided into sections for easy reference. 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 possible damage to the SHP Pro itself or adverse operating conditions caused by improper installation and programming.

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 that installed the protection system. Fike has a worldwide distribution network. Each distributor sells, installs, and services Fike equipment. Look on the inside of the door. left side, there should be a sticker with an indication of the distributor who sold 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 Product Support at (800) 979-FIKE (3453), Monday through Friday, 8:00 a.m. to 4:30 p.m. CST.

1.3 REVISION HISTORY

Document Title: SHP Pro Conventional Fire Alarm/Suppression System Product Manual

Document Reorder Number: 06-297

Revision	Section	Date	Reason for Change
0	All Sections	10/2003	Initial Release
1	All Sections	07/2006	UL 9 th Edition Revision
2	All Sections	04/2008	UL 9 th Edition Revision

1.4 TERMS USED IN THIS MANUAL

The following are various terms used in this manual with a brief description of each:

Ω

Symbol for "ohm". Unit of resistance.

AC Normal State

("AC Normal" Green LED ON) The system is in the AC Normal state when appropriate AC power is being applied to the system.

Abort

An input to a suppression system to prevent an unwanted discharge of fire suppressant agent. The SHP Pro has several different abort types.

Alarm State

("Alarm" Red LED ON, Piezo pulsing) The alarm occurs when an input circuit configured for alarm operation has been activated. Activation typically initiated by a detector or contact device. The system leaves the alarm state upon entry into the pre-discharge or release state.

Class A wiring

Input circuits capable of transmitting an alarm signal during a single open or a nonsimultaneous single ground fault on a circuit conductor shall be designated as Style D or Class A. Similarly, output circuits capable of activating during a single open or a nonsimultaneous ground fault on a circuit conductor shall be designated as Style Z or Class A. Commonly referred to as redundant or 4-wire connection; this manual refers to 4wire connections as Class A wiring.

Class B wiring

Input circuits incapable of transmitting and alarm signal beyond the location of the fault condition (listed for Class A wiring above) shall be designated as Style B or Class B. Similarly, output circuits incapable of operating beyond the location of the fault condition shall be designated as Style Y or Class B. This manual refers to 2-wire connections as Class B wiring

Initiating Device

A system component that originates transmission of a change-of-state condition, such as in a smoke detector, manual fire alarm box, or supervisory switch. This manual interchanges the terms initiating device and input device.

Initiating Device Circuit

A circuit to which automatic or manual initiating devices are connected where the signal received does not identify the individual device operated. This manual interchanges the terms initiating device circuit and input circuit.

Normal State

("Trouble" Yellow LED OFF) The system is in the normal state when the power supply and all circuits are configured properly, connected, and responding properly. The system remains in normal state until a trouble condition occurs.

Cross-zone Detection

A detection scheme where two detectors must activate before the system enters into the predischarge state: at least one detector from each detection initiating circuit must be active.

Notification Appliance

A fire alarm system component such as a bell, horn, speaker, light, or textual display that provides audible, tactile, or visible output, or any combination thereof. The device notifies building occupants of system status. This manual interchanges the terms notification and audible appliance.

Notification Appliance Circuit

A circuit or path directly connected to a notification appliance(s). This manual interchanges the terms notification appliance circuit and audible circuit.

Non Power-Limited

A circuit designation given for wiring purposes. The amount of current flowing through the circuit is unlimited vs. being limited, or powerlimited. AC power and Battery wiring is Non Power-limited.

Power-Limited

A circuit designation given for wiring purposes. The amount of current flowing through the circuit is limited (typically by fuse) vs. being unlimited, or non-power-limited. The SHP Pro input and output circuits are power-limited. The circuit has a maximum power that flows through it or it current limits and opens the circuit.

Pre-discharge Delay

The time (in seconds) that the system will delay entering the release state after the zone's detection type has been satisfied. Activation of an abort switch will have an effect on this value, depending upon the abort type selected.

Pre-discharge State

("Alarm" Red LED ON, Piezo chirping) The predischarge state occurs when the zone's detection type input conditions are satisfied (Cross-zone Detection, Sequential Alarm Detection, or Single Detector Release). Upon time delay countdown completion (unless delayed by a pertinent activated abort input), the system leaves the pre-discharge state and enters the release state.

Release State

("Alarm" Red LED ON, Piezo chirping) The release state occurs upon completion of the pre-discharge state or upon activation of a manual release input. At the start of the release state, output circuits configured for releasing shall operate

Sequential Detection

A detection scheme where the sum total of active detectors on the detection initiating circuits must be two or more before the system will enter the pre-discharge state.

Single Detector Release Detection

A detection scheme where activation of one detector causes the system to enter the predischarge state. SDR (Single Detector Release) detector(s) are installed on initiating circuits setup for sequential detection.

Solenoid On Time

The time (in minutes) that the solenoid is activated upon entering the release state. Reset of the system overrides this value.

Supervisory State

("Supervisory" Yellow LED ON, Piezo Warble) The supervisory state occurs upon activation of a supervisory input circuit. The supervisory state is non-latching and will follow the status of the supervisory input contact.

Trouble State

("Trouble" Yellow LED ON, Piezo Constant) The trouble state occurs upon any detectable condition which could impair system operation including connection problems, ground faults, hardware problems. power problems. configuration problems, or prematurely activated abort inputs. Certain trouble conditions are latching; others allow the system to reset upon trouble condition removal. Depending upon the type of trouble condition, the system may or may not remain operational. When the system is in trouble state, it is not in the normal state.

1.5 SYMBOLS USED IN THIS MANUAL

The following cautions and warnings appear in this manual. Be certain to read all of the following warning and cautions before attempting to install or use this device. Personal injury or accidental release of the suppression system may result if these warnings and cautions are not followed!



Warning Symbol – This symbol is used in this manual to warn of possible injury or death from improper use or application of the product under noted conditions.



Caution Symbol – This symbol warns of possible personal injury or equipment damage under noted conditions. Follow all safety standards of professional practice and the recommendations in this manual. Using equipment in ways other than described in this manual can present serious safety hazards or cause equipment damage.



Notes – This symbol indicates the message is important, but is not of a Warning or Caution category. These notes can be of great benefit to the user and should be read.



Tips – Tips provide advice that may save time during a procedure, or help to clarify an issue. Tips may include additional reference.

1.6 SAFETY NOTICES

Be certain to read all the following warnings and cautions before installing or using this device. Accidental damage to the device could result if these warnings and cautions are not heeded!

ł	CAUTION:	The SHP Pro contains static sensitive components. Handle the electronics by the edges only and avoid touching the integrated components. Keep the electronics in the protective static bags it was shipped in until time for installation. Always ground yourself with a proper wrist strap before handling the module(s). If the installer is properly grounded at all times, damage due to static discharge will not occur. If the module requires repair or return to Fike, it must be shipped in an anti-static bag.
⚠	CAUTION:	To ensure proper system operation after installation of the SHP Pro, this device must be tested in accordance with NFPA 72. Re-acceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.
STOP	WARNING:	Failure to disconnect power to the releasing circuit(s) and completely disarm the solenoid(s) or any other "critical operation" contacts prior to system testing may cause accidental activation of the system.

This page intentionally left blank

2.0 PRODUCT OVERVIEW

2.1 PRODUCT DESCRIPTION

The Fike SHP Pro (P/N 10-063 Series) is a compact, cost-effective, conventional fire alarm and suppression releasing panel. The SHP Pro is designed for use with Fike Clean Agent Fire Suppressant, CO₂, sprinkler (pre-action/deluge), or other industrial solenoid-based suppression systems. The SHP Pro controller is shipped from the factory pre-configured for Clean Agent suppression operation.

The main controller contains all electronics required for a complete detection and control system suitable for most applications. Optional modules, which plug into the main circuit board, are available to add increased functionality to the system.

2.2 LISTINGS AND APPROVALS

Approval Agency		File Number
Underwriters Laborato	ories	S2203
Туре:	Local, R	emote Station, Station PPU
Service Type: Type Signaling	A-Autor M-Manu WF-Wa SS-Spri Releasi g: Non-co	natic Fire Alarm, Ial Fire Alarm ter-flow Alarm, nkler Supervisory, ng, DACT ded
Factory Mutual (FM)		3017159
California State Fire M	7165-0900:135	
City of New York (ME	461-04-E	
Hona Kona		206/0877 VII



2.3 AGENCY COMPLIANCE AND STANDARDS

2.3.1 This Fire Alarm Control Panel Complies With the Following NFPA and UL Standards

NFPA 72 – National Fire Alarm Code

UL 864 – Control Units and Accessories for Fire Alarm Systems

2.3.2 Related Fire Alarm Standards

The installer should also be familiar with the following standards.

National Fire Protection Association (NFPA) Codes:

NFPA 12	- Carbon Dioxide Extinguishing Systems (High Pressure Only)
NFPA 12A	– Halon 1301 Extinguishing Systems
NFPA 13	– Sprinkler Systems
NFPA 15	 Water Spray Fixed Systems
NFPA 16	 Deluge, Foam-water and Foam-water Spray Systems
NFPA 70	 – National Electrical Code (NEC)
NFPA 70, Article 300	 Wiring Methods
NFPA 70, Article 760	 Fire Protective Signaling Systems
NFPA 72	 National Fire Alarm Code
NFPA 101	 Life Safety Code
NFPA 110	 Emergency Standby Power Systems
NFPA 2001	 Clean Agent Fire Extinguishing Systems

Underwriters Laboratories (UL) Standards:

- UL 38 Manually Actuated Signaling Boxes
- UL 217 Smoke Detectors, Single and Multiple Station
- UL 228 Door Closers Holders for Fire Protective Signaling Systems
- UL 268 Smoke Detectors for Fire Protective Signaling Systems
- UL 268A Smoke Detectors for Duct Applications
- UL 346 Waterflow Indicators for Fire Protective Signaling Systems
- UL 464 Audible Signaling Appliances
- UL 521 Heat Detectors for Fire Protective Signaling Systems
- UL 1481 Power Supplies for Fire Protective Signaling Systems
- UL 1638 Visual Signaling Appliances
- UL 1971 Visual Signaling Appliances

Factory Mutual (FM) Standards:

FMRC 1011 and 1012- Deluge and Pre-action Sprinkler SystemsFMRC 3820- Electrical Utilization Equipment

Applicable Local and State Building Codes Requirements of the Local Authority Having Jurisdiction

2.4 RELATED DOCUMENTATION

To obtain a complete understanding of the specific features of the SHP Pro or to become familiar with related functions in general, refer to the documentation listed below. Please reference the most current version or the version noted on the label located on the product.

Document Title	Part Number	Revision No, Date
Agent Release Module (ARM III) Manual	06-106	1, 07/03
Compatible Notification Appliances and Releasing Devices	06-186	5, 08/07
The DACT/Fire Communicator Addendum	06-159	1, 04/01
The DACT/Fire Communicator Manual	06-160	1, 04/01
System Operation Posting, SHP PRO	02-11060	0, 02/04

2.5 SHP PRO FEATURES

General

- Microprocessor-controlled
- Power-limited on all circuits except power connections (P1)
- □ Four operational modes:
 - 1. Clean agent release (10-2452-1)
 - 2. Clean agent release with pre-action sprinkler operation (10-2452-1)
 - 3. Pre-action sprinkler (10-2452-1, 10-2452-2)
 - 4. Industrial releasing (10-2452-1)
- Ten system status LEDs to provide positive indication of system status
- Seven segment diagnostic LED for trouble and event occurrences
- System configuration via dip-switches
- Local piezo with distinct event tones
- Reset switch
- Audible silence switch
- Disable Mode for audible and release circuits, and relays
- □ Alarm and trouble resound
- Power
 - Integral power supply at 24VDC nominal;
 1.0 Amp total normal standby
 4.0 Amp alarm
 - Selection of 120, or 240VAC power input at 50 or 60 hertz
 - Re-settable and non-re-settable special application power output
 - Battery/Earth fault supervision
 - 7 AH to 40 AH battery options, up to 90 hours (Factory Mutual) standby
- Enclosure
 - Steel enclosure 21" high by 14.35" wide by 4" deep (Back-box dimensions)
 - Enclosure is equipped with a .50" wide lip to facilitate flush mounting
 - Removable door for easy installation
 - Enclosure is available in Red or Gray

- Initiating Device Circuits
 - Up to two Style B initiating device circuits capable of sequential alarm, cross-zone, or single detector release operation with an overall system capacity of 50 detectors maximum
 - three Style B initiating device circuits capable of monitoring closed contact devices
 - Optional Class A module that converts all five initiating device circuits to Style D wiring and operation
- Notification Appliance Circuits
 - □ Three Style Y notification appliance circuits rated at 2.0 amps each
 - Optional Class A module that converts all five output circuits to Style Z (3 NAC, 2 releasing)
- Releasing Circuits
 - One Agent Release circuit with maximum of 6 ARM III's
 - One Solenoid release circuit which can activate one 24V or two 12V solenoids
 - Model 10-063-1 provides option to use both releasing circuits simultaneously
- Relays
 - General Alarm, Supervisory and Trouble relays
 - Two Optional CRM4 modules to add eight more SPDT dry relay contact outputs
- Sprinkler Monitoring Points
 - Waterflow input
 - Supervisory input

This page intentionally left blank

3.0 EQUIPMENT/PRODUCTS

3.1 MAIN PANEL HARDWARE

The 10-063 SHP Pro control panel consists of a red (or gray) metal enclosure with removable door for ease of mounting flush or surface. The backbox is 21" high x 14.35 " wide x 4 " deep. It also includes a 0.5" lip around the back box to facilitate flush mounting.

Refer to Section 3.7 for a complete detail of the back-box dimensions.

The basic part numbers for the components covered in further detail in this section are as follows:

Part Number	Description			
10-063-m-c-p	SHP Pro Control System m: 1 = all modes 2 = sprinkler mode only c: R = red, G = gray p: 1 = 120VAC, 2 = 240VAC			
10-2452 - m	SHP Pro Controller Printed Circuit Board m: 1 = all modes 2 = sprinkler mode only Compatibility Identifier for this product is " SHP PRO "			
10-2450 Class A Input Module				
10-2448	Class A Output Module			
10-2204	CRM4 Relay Module			
10-2190-b	Battery Assembly AH selection b: 1 = 7 AH, 2 = 18 AH			
02-3468 Battery, 12VDC, 33 AH				
10-2154-C Battery Enclosure, 33 AH, where C= R for Red; G for				
A02-0252 Battery, 12 VDC, 40 AH (requires 66AH enclosure)				
10-2236-C	Battery Enclosure, 66 AH, where C= R for Red; G for Gray			

• 10-063 SHP PRO Control System

Includes the main controller, transformer, and steel enclosure (red or gray). The enclosure door is equipped with a standard Fike keylock and a viewing window covered with clear lexan. The enclosure includes space for installing batteries (up to 18 AH – ordered separately).



• 10-2452 Series SHP PRO Controller

The controller is the heart of the SHP Pro control panel. It contains the system's central processing unit, power supply, and other primary components. It also includes the electronics required to support the optional Class A modules and CRM4 Relay modules.

• 10-2450 CLASS A INPUT MODULE

The optional Class A Input Module allows any of the five initiating device circuits to be wired Class A (Style D) versus the standard Class B (Style B). The Class A module mounts directly onto the SHP Pro Controller at P6 utilizing two standoffs supplied with the module.

• 10-2448 CLASS A OUTPUT MODULE

The optional Class A Output Module allows all of the three notification appliance and both releasing circuits to be wired Class A (Style Z) versus the standard Class B (Style Y). The Class A module mounts directly onto the SHP Pro Controller at P7 utilizing two standoffs supplied with the module.

• 10-2204 CRM4 RELAY MODULE

The optional CRM4 Relay Module provides four SPDT dry contact relays, which activate upon selected events per the configuration switches. The CRM4 Relay modules mount directly onto the SHP Pro Controller at P8 or P9 utilizing four stand-offs supplied with the module. FIKE











- 10-2190-B Battery Assembly,
- 02-3468 33 AH Battery,

• A02-0252 40 AH Battery

Batteries are required for alarm systems for maintaining emergency back-up power. Two each 12V batteries are required and are to be wired in series for maintaining a 24VDC back-up. Most systems require at least a 24 hour standby current with 5 minutes alarm current for determining minimum battery size. Refer to Appendix 1 for Battery Calculation form for determining required battery size for system. The 10-2190-1 consists of 2 each 7A-H, 12VDC batteries with a wiring harness. The 10-2190-2 consists of 2 each 18 A-H, 12VDC batteries with the same wiring harness. The 02-3468 and A02-0252 are a single battery part number, a pair would be required for a single SHP Pro system.



• 10-2154-C Battery Enclosure, 33 AH where C=R for Red, G for

Gray

The 33 AH Enclosure is a heavy gauge metal enclosure 21"w x 11"h x 5"d and is large enough to house two each 33 AH batteries. Conduit knockouts are provided to provide entry of battery wiring. The box lid is installed onto the back-box using the 4 mounting screws provided.



• 10-2236-C Battery Enclosure, 66 AH where C=R for Red, G for Gray

The 66 AH Enclosure is a heavy gauge metal enclosure

26 1/4"w x 14"h x 7"d and is large enough to house two each 40 AH batteries. Conduit knockouts are provided to provide entry of battery wiring. The box lid is installed onto the back-box using the 4 mounting screws provided.



3.2 INPUT DEVICES

The SHP Pro is required to list compatibility with specific conventional detectors. The following items have been approved for use with the SHP Pro. Refer to the Detection Input Compatibility portion of Section 3.6, Specifications, for selecting the appropriate detector base and head.

Other devices such as contact closure input devices, contact closure detectors, notification appliances, and Solenoids are listed in the Fike Compatibility Document, P/N 06-186.

Mfg	Old Part Number	Part Number	Mfg Model Number	Description
		63-1015	2451	Photoelectric (Discontinued)
		63-1017	2451TH	Photo/heat
		67-1025	1451	Ionization
sor		60-1027	5451	135° Thermal
Sen		63-1014	2151	Photoelectric (Low Profile)
tem		67-1040	1151	Ionization (Low Profile) (Discontinued)
Sys		67-1023	1151	Ionization (Discontinued)
		67-1026	B401BR470	470 Ω, 6"
		67-1029	B110RLP	470 $\Omega,6"$, Low Profile
		67-1031	B401B	0 Ω, 6"
		63-1024	SLR-24	Photoelectric Detector
		67-1033	SIJ-24	Ionization Detector
		63-1025	SLR-24H	Photo/Thermal Detector
		60-1020	DFE-135	135° F Fixed Temperature Heat Detector
		60-1022	DFE-190	190° F Fixed Temperature Heat Detector
		60-1029	DCD-135	135° F Fixed, Rate of Rise Heat Detector
		60-1030	DCD-190	190° F Fixed, Rate of Rise Heat Detector
chiki		67-1034	NS6-224	430 Ω, 6" Base
Ho		67-1036	NS4-224	430 Ω, 4" Base
		67-1035	NS6-220	220 Ω , 6" Base (SDR or Cross-zone Only)
		67-1037	NS4-220	220 Ω , 4" Base (SDR or Cross-zone Only)
	67-1027	See note below	HSB-224	430 Ω, 6" Base
	67-1028	See note below	YBA-M224	430 Ω , 4" Base (Discontinued)
	67-1010	See note below	HSB-220	220 Ω , 6" Base (SDR or Cross-zone Only)
	67-1017	See note below	YBA-M220	220 Ω, 4" Base (SDR or Cross-zone Only) (Discontinued)

NOTE: If using LED graphic, it is required to use the older type bases. Please note on the order, "Using conventional graphic with panel, do not substitute bases".

System Sensor 400 Series Smoke Detectors

• 63-1015 Photoelectric Detector (2451)

(**Discontinued**) The 400 Series photoelectronic smoke detector contains an optical sensing chamber designed to sense the presence of smoke particles produced by a wide range of combustion sources. A custom integrated circuit incorporates signal processing to reduce false alarms.

• 63-1017 Photo/Heat Detector (2451TH)

Same as 63-1015 (2451) above, but with a 135° F (57.2 C) fixed temperature, restorable, bi-metallic heat sensor. The alarm contact will transfer if either of the detection types sense the fire.

• 67-1025 Ionization Detector (1451)

The 400 Series ionization smoke detector includes a specially designed dual source, dual unipolar detection chamber design which will sense the presence of smoke particles produce by fast combustion as well as slow smoldering fires. This chamber exhibits increased stability, significantly reduces nuisance alarms, and provides better performance at higher velocities.

• 60-1027 135° Thermal (5451)

The 400 Series thermal rate-of-rise with fixed heat detector contains a unique dual thermistor heat sensing circuit to provide maximum performance and solid state reliability. It is designed to initiate an alarm at 135° F and respond to a temperature increase in excess of 15° per minute. This enables the heat detector to communicate an alarm to the central control panel prior to reaching the static set point for these high rates of rise, providing a timely response to both rapid and slow temperature increases. This model should be used in applications where rapid response is desired and where rapid temperature increases would only be caused by a fire emergency.











Warning: Heat detectors are for property protection only, not life safety!

System Sensor 100 Series, Low Profile , Smoke Detectors

• 63-1014 Photoelectric Detector, Low Profile (2151)

The 100 Series photoelectronic smoke detector contains a unique optical sensing chamber designed to sense particles produced by a wide range of combustion sources. A custom integrated circuit incorporates signal processing to reduce false alarms. 1.6" deep profile. Built-in test switch. Two LED's blink in standby and constant in alarm. Field sensitivity metering using optional test module.



67-1040 Ionization Detector, Low Profile (1151)

(**Discontinued**) The 100 Series ionization smoke detector includes a single source, dual chamber design that senses smoke particles. This chamber exhibits excellent stability, significantly reducing nuisance alarms, and provides good performance at higher air velocities. 1.6" deep profile. Built-in test switch. Two LED's blink in standby and constant in alarm. Field sensitivity metering using optional test module.

System Sensor Bases

• 67-1026 470 Ω Base, 6" (B401BR470)

A 6" conventional detection base for use with the **400** Series System Sensor Smoke detectors. It contains a 470 Ω current limiting resistor to provide the ability to provide sequential detection.

67-1029 470 Ω Base, 6" Low Profile (B110RLP)

A 6" conventional detection base for use with the **100** Series System Sensor Smoke detectors. It contains a 470 Ω current limiting resistor to provide the ability to provide sequential detection.

• 67-1031 0 Ω Base, 6" (B401B)

A 6" conventional detection base for use with the **400** Series System Sensor Smoke detectors. It contains NO current limiting resistor, so it provides either a single detector release or cross-zoned detection if utilizing both detection circuits.

Fike private labeled Hochiki detectors

• 63-1024 Photoelectric Detector

The photoelectric smoke detector is well suited for fires ranging from smoldering to flaming. It utilizes two bi-colored LED's for indication of status. In a normal standby condition the LED's flash Green every 3 seconds. When the detector senses that it's sensitivity has drifted outside the UL listed sensitivity window the LED's will flash Red every 3 seconds. When the detector senses smoke and goes into alarm the status LED's will latch ON Red.

• 67-1033 Ionization Detector

The Ion Detector can be used in areas where early warning of superheated or flaming combustibles is expected. It utilizes two bicolored LED's for status indication purposes. In a normal standby condition the LED's flash Green approximately once each second. When the detector senses smoke and goes into alarm the status LED's will latch ON Red.

• 60-1020 Heat Detector 135°F / Fixed Temp

• 60-1022 Heat Detector 190°F / Fixed Temp

The heat detector is suited for installation where high heat output fires are expected or in areas where ambient conditions would not allow use of other detection methods. Each detector is fixed temperature rated for 135° F (60-1020) where ambient temperatures do not exceed 120° F or 190° F (60-1022) where ambient temperatures exceed 120° F but not 160° F. Features mechanically operated contact closures. **Contact is not latching.**

- 60-1029 Heat Detector 135°F / Rate-of-Rise
- 60-1030 Heat Detector 190°F / Rate-of-Rise

The fixed temperature / rate-of-rise heat detector features electronic circuitry to close normally open contacts when the fixed temperature is reached or when the rate-of-rise is greater than $12^{\circ}F$ / minute.



Warning: Heat detectors are for property protection only, not life safety!









Fike private labeled Hochiki bases

• 67-1034 6" Base

Electronics-free 6" base with plastic tamper-lock lug. Contains a 430Ω resistor. Can be used for Sequential or Cross-zone detection.

- 67-1036 4" Base
 - 4" version of the 67-1034
- 67-1035 6" Base

Electronics-free base with plastic tamper-lock lug. Contains a 220Ω resistor. Can be used with Cross-zone or Single Detector Release detection.

- 67-1037 4" Base
 - 4" version of the 67-1035

3.3 OUTPUT DEVICES

Refer	to	FIKE	Notifica	ation	Applia	ince	and
Releas	sing	Comp	atibility	Docu	ument	(06-	186).









3.4 ANCILLARY DEVICES

The following table lists several ancillary devices that can be used in conjunction with the SHP Pro panel to provide increased system flexibility and performance.

For detailed wiring instructions for each of these devices refer to the appropriate product manual.

P/N	Manual P/N	Description	Function	
10-2256	06-159	Digital Alarm Communicator Transmitter (DACT)Complies with NFPA 72-Supervising S Fire Alarm System		
10-2476		5 Zone Digital Alarm Communicator Transmitter (DACT)	Complies with NFPA 72-Supervising Statio Fire Alarm System	
10-1832	06-106	ARM-III (Agent Release Module)	Provides primary means for Fike's Clean Agent suppression systems	
		Conventional Graphic Annunciator	Provides graphic point annunciation for detectors	

• 10-2256 Digital Alarm Communicator Transmitter (DACT)

The SHP Pro panel is capable of communicating to a Central Station via the DACT (optional). The DACT monitors the relay outputs of the SHP Pro. This model provides 4 channel inputs; 3 standard inputs with one programmable selection. It is necessary to program the DACT with the 10-2257 programmer and 10-2258 cable or 10-2259 modem and 06-151 software.



• 10-2476 5 Zone Digital Alarm Communicator Transmitter (DACT)

The 5 zone DACT contains inputs configurable for one of the seven types of conditions: Fire Alarm, Waterflow Alarm, Supervisory, Monitor Alarm, System Fault, AC Failure, and Low Battery. It is programmable using the 10-2477 programmer.



• 10-1832 Agent Release Module (ARM III)

The SHP Pro panel is capable of supporting up to 6 ARM's on the single Agent Release Output Circuit. The ARM is required for each Clean Agent Suppressant Container. Refer to the ARM manual, 06-106 for detailed instructions on the ARM.



Conventional Graphic Annunciator

Fike Graphic Annunciators provide a graphic display of the protected area using LED's to indicate the location of the smoke detectors. The LED will illuminate when the detector is in alarm. If using the Hochiki smoke detectors with the graphic, it is necessary to use the older model bases.

Requires 67-1027 or 67-1010 sensor bases.



3.5 SPARE PARTS

Description	Part Number		
Keylock with cam	02-1606		
Panel Key Only (without cam)	02-4983		
Battery, 7 Amp-Hour	02-2018		
Battery, 18 Amp-Hour	02-2820		
Battery, 33 Amp-Hour	02-3468		
Battery, 40 Amp-Hour	A02-0252		
Wire Assembly, 7/18 AH Batteries	10-2192		
Standoff and lock washer/hex nut kit (30 each)	02-4035		
Transformer, 110VAC	02-10881		
Transformer, 240 VAC	02-10882		
Releasing circuit end-of-line (EOL) assembly, 1.5K	10-2462		
Switch circuit 3,4 & 5 EOL assembly, 20K	10-2461		
Detection circuit 1 & 2 circuit EOL assembly, 4.3K	10-2318		
Audible output circuit EOL assembly, 1.2K	10-2570		
Fuse, 10 Amp, Mini Auto, Fast Acting (For F1 & F2)	02-4173		
Fuse, 4 Amp, Mini Auto, Fast Acting (For F3 & F4)	02-11412		
Flashbulb (for testing ARM III release) 12/box	02-3799		
End Of Line Relay - Hochiki	02-4667		
End Of Line Relay – System Sensor	02-4981		
Touch-Up Paint (Not available from	Fike)		
Red-Sherwin Williams - #F63VXR9951-4343 Polane 2.8T Plus Polyurethane Enamel			
Gray-Sherwin Williams - #F63VXA9975 Polane T Plus Polyurethane Enamel			

3.6 SPECIFICATIONS

Environmental:

All electronics are rated 32° - 120°F (0° - 49°C) 93% relative humidity

Primary Input AC Power:

120 VAC, 50/60 Hertz, 2.6 Amps, 250 VA 240 VAC, 50/60 Hertz, 1.5 Amps 250 VA System AC line power must originate from a dedicated circuit at the main building power distribution center. The circuit breaker shall be equipped with a lockout mechanism and be clearly labeled as a "**Fire Protection Control Circuit.**"

• P1 - Power Supply Input:

10-2452-m Controller Board:

The controller's internal power supply provides 4.135 amps of 24VDC power. Power consumption of the controller itself is 0.135 amps at 24VDC in the normal standby mode. 8 " high x 11" wide x 3" deep; (1.2 lbs).

TERMINAL	DESCRIPTION	NOMINAL RANGE	SPECIFICATION DETAILS
24 VAC Term. 1 & 2	Transformer secondary	20.5-28.1VAC non-power-limited Supervised	Fused by F1 (10 Amp field replaceable fuse.) P/N 02-4173
BATTERY Term. 3 & 4 + -	Standby Battery	24VDC nominal non-power-limited Supervised	Sealed lead-acid batteries only. 40 amp-hour maximum. Maximum supply current: 8 amps/ 27VDC Maximum charge current: 1.5 amps/ 27Vdc Batteries larger than 18 AH shall be mounted in external enclosure and the following qualifications apply: Wire Gauge shall be 14 AWG minimum. Maximum wire length shall not exceed 10 feet.

• P2 – Relays:

	TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
N	Term. 1 C	Common		SPDT Form C relay contact
ALAR	Term. 2 NC	Normally Closed	Non Power-limited	DC operation: 2 amps @30VDC (pf=.35) AC operation: .5 amps @250VAC (pf=.35)
	Term. 3 NO	Normally Open		Common (Non Programmable)
୷≿	Term. 4 C	Common		SPDT Form C relay contact
SUPE	Term. 5 NC	Normally Closed	Non Power-limited	DC operation: 2 amps @30VDC (pf=.35) AC operation: .5 amps @250VAC (pf=.35)
	Term. 6 NO	Normally Open		Common (Non Programmable)
E E	Term. 7 C	Common		SPDT Form C relay contact
ROUE	Term. 8 NO	Normally Open	Non Power-limited	DC operation: 2 amps @30VDC (pf=.35) AC operation: .5 amps @250VAC (pf=.35)
F	Term. 9 NC	Normally Closed		Common (Non Programmable)

P

NOTE: May be connected to power-limited or non power-limited sources. All connections to terminal block shall be either power-limited or non-power-limited, not both.

• P3 – Input Circuits:

TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
DETECT # 1 Term. 1 & 2 - + DETECT # 2 Term. 4 & 5 - +	Detection inputs	Power-limited Class B (Class A with optional 10-2450 module) 4.3K Ω EOL resistor (yellow, orange, red)	Used for conventional detectors listed with this panel (see next section) or contact closure type detectors listed for fire alarm use, or linear heat detection cabling. 19.9 - 27.5 VDC 360 mA max <u>Max. Wiring Resistance</u> Compatible Detectors = 20Ω Linear Heat Detection = 440Ω Contact Closure = 440Ω
INPUT #3 Term. 6 & 7 - + INPUT # 4 Term. 9 & 10 - + INPUT # 5 Term. 11 & 12 - +	Contact closure inputs	Power-limited Class B (Class A with optional 10-2450 module) 20K Ω EOL resistor (red, black, orange)	 Used for contact closure inputs such as Manual Release, Abort, Waterflow and Supervisory listed for fire alarm use, or linear heat detection cabling. 5 VDC max. 0.5 mA max. 100 Ω maximum wire resistance

DETECTION BASE COMPATIBILITY

						Maxim	um Base Circuit	es per
Fike P/N	Size	Char. Ω	Manufacturer	Mfg. P/N	Manufacturer Compatibility ID	Sequential	Cross -zone	Single Detector Release
67-1034	6"	430	Hochiki	NS6-224	HB-53	25	25	N/A
67-1036	4"	430	Hochiki	NS4-224	HB-5	25	25	N/A
C02-1164	6"	390	Hochiki	HS-221D	HB-4	N/A	25	N/A
67-1035	6"	220	Hochiki	NS6-220	HB-56	N/A	25	25
67-1037	4"	220	Hochiki	NS4-220	HB-3	N/A	25	25
67-1026	6"	470	System Sensor	B401BR470	61-09 <mark>3-02A</mark>	25	25	N/A
67-1029	6"	470	System Sensor	B110RLP	61-09 <mark>3-02A</mark>	25	25	N/A
67-1031	6"	0	System Sensor	B401B	61-09 <mark>3-02A</mark>	N/A	N/A	N/A

P

NOTE: If using LED graphic, it is required to use the older type bases as listed in Section 3.2. Please note on the order, "*Using conventional graphic with panel, do not substitute bases*".

NOTE: Detectors of different models/manufacturers shall not be mixed on the system.

DETECTOR COMPATIBILITY



NOTE: Use Hochiki detectors with Hochiki bases and System Sensor detectors with System Sensor bases. **ALSO:** Detectors of different models/manufacturers shall not be mixed on the system.

HOCHIKI

Fike P/N	Туре	Mfg. P/N	Mfg Compatibility ID
63-1024	Photoelectric	SLR-24	HD-3
63-1025	Photo/Heat	SLR-24H	HD-3
67-1033	Ionization	SIJ-24	HD-3
60-1029	Thermal, 135 w/Rate of Rise	DCD-135	
60-1030	Thermal, 190 w/Rate of Rise	DCD-190	
63-032	Photoelectric, Baseless	SLR-835B-2	
60-1020	Thermal, 135 Fixed Temp	AL-DFE-135	
60-1022	Thermal, 190 Fixed Temp	AL-DFE-190	

SYSTEM SENSOR

Fike P/N	Туре	Mfg. P/N	Mfg Compatibility ID
63-1015	Photoelectric	2451	А
63-1017	Photo/Heat	2451TH	А
67-1025	Ionization	1451	А
60-1027	135 Thermal	5451	А
63-1014	Photoelectric	2151	А
67-1023	Ionization	1151	A

LINEAR HEAT DETECTION CABLING

UL approved to 8800 feet* FM approved to 10000 feet*

-		
Туре	Mfg. P/N	Spool Length
155 degF, 0.05Ω/ft	TC155	500 feet
155 degF, 0.05Ω/ft	TC155	1500 feet
155 degF, 0.05Ω/ft	TC155	3000 feet
172 degF, 0.05Ω/ft	TC172	500 feet
172 degF, 0.05Ω/ft	TC172	1500 feet
172 degF, 0.05Ω/ft	TC172	3000 feet
190 degF, 0.05Ω/ft	TC190	500 feet
190 degF, 0.05Ω/ft	TC190	1500 feet
190 degF, 0.05Ω/ft	TC190	3000 feet
220 degF, 0.05Ω/ft	TC220	500 feet
220 degF, 0.05Ω/ft	TC220	1500 feet
220 degF, 0.05Ω/ft	TC220	3000 feet
	Type $155 \deg F, 0.05\Omega/ft$ $155 \deg F, 0.05\Omega/ft$ $155 \deg F, 0.05\Omega/ft$ $172 \deg F, 0.05\Omega/ft$ $172 \deg F, 0.05\Omega/ft$ $172 \deg F, 0.05\Omega/ft$ $190 \deg F, 0.05\Omega/ft$ $190 \deg F, 0.05\Omega/ft$ $190 \deg F, 0.05\Omega/ft$ $190 \deg F, 0.05\Omega/ft$ $220 \deg F, 0.05\Omega/ft$ $220 \deg F, 0.05\Omega/ft$ $220 \deg F, 0.05\Omega/ft$	TypeMfg. P/N155 degF, $0.05\Omega/ft$ TC155155 degF, $0.05\Omega/ft$ TC155155 degF, $0.05\Omega/ft$ TC155172 degF, $0.05\Omega/ft$ TC172172 degF, $0.05\Omega/ft$ TC172172 degF, $0.05\Omega/ft$ TC172172 degF, $0.05\Omega/ft$ TC172190 degF, $0.05\Omega/ft$ TC190190 degF, $0.05\Omega/ft$ TC190190 degF, $0.05\Omega/ft$ TC190220 degF, $0.05\Omega/ft$ TC200220 degF, $0.05\Omega/ft$ TC220220 degF, $0.05\Omega/ft$ TC220220 degF, $0.05\Omega/ft$ TC220

*Applies to Detect inputs only

• P4 – Auxiliary Output Circuits:

NOTE: Total current for system modules, notification appliances circuits, releasing devices, and regulated power circuits MUST NOT exceed the 4.0 Amps supplied by the SHP Pro controller .

TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
RES Resettable Power-limited		Power-limited Supervised	Used for 4-wire type detectors or others requiring power to drop out temporarily upon reset of the control panel.
OUTPUT	Power	·	24VDC nominal (Range = 19.8 VDC to 27.3 VDC)
1erm. 1 & 2 + -			2.0 Amp maximum, Special Application
			Fused by F3 (4 Amp – p/n 02-11412)
AUX OUTPUT Term. 2 & 3 - +	Auxiliary Output Power	Power-limited Supervised	Used for devices requiring constant 24VDC. 24 VDC nominal (Range = 19.8 VDC to 27.3 VDC) 2.0 Amp maximum, Special Application Fused by F4 (4 Amp – p/n 02-11412)



NOTE: Resettable and non-resettable auxiliary power output share the same negative output terminal (#2).

Compatible Devices with Auxiliary Output Circuits:

Innovair™ Series Duct Detectors		Manufacturer	MFG p/n
63-033	Duct Detector Unit, Photo-Electric	System Sensor	DH100ACDCLP
67-031	Duct Detector Unit, Ionization	System Sensor	DH100ACDCLI

Switches with Countdown Timers		Manufacturer	MFG p/n
20-040	Digital Countdown Timer w/ Abort Switch	Fike	
20-046	Countdown Timer / Abort Switch / Manual Pull	Fike	

DACT		Manufacturer	MFG p/n
10-2256	DACT	Fike	
10-2476	DACT, 5 Zone Digital Alarm Communicator	Bosch	D9602

• P5 – Notification Appliance and Releasing Circuits:

TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
AUDIBLE #1 Term. 1 & 2 + - AUDIBLE #2 Term. 4 & 5 + - AUDIBLE #3 Term. 6 & 7 + -	Notification outputs	Power-limited Class B (Style Y) or Class A with optional module, 10-2448 Maximum wire resistance limited by the chart following 1.2K Ω EOL Resistor (Brown, Red, Red)	24VDC nominal, 27.9VDC maximum (16-33 maximum RMS voltage range limits) 2.0 Amps maximum, Regulated Fike tested indicating appliances compatible with the SHP Pro are detailed in the Fike compatibility document, P/N 06-186
AGENT RELEASE Term. 9 & 10 + - polarity shown in normal state	Suppressant Agent Release output	Power-limited Class B (Style Y) or Class A with optional module, 10-2448 1.5K Ω EOL Resistor (Brown, Green, Red)	 24 VDC nominal, Special Application 2 Amps maximum Requires Fike's ARM III, P/N 10-1832 6 ARM III's maximum Maximum wire resistance: 35 Ω
SOLENOID Term. 11 & 12 + -	Sprinkler, Foam Micromist, Inert Gas, and CO ₂ Solenoid Release output	Power-limited Class B (Style Y) or Class A with optional module, 10-2448 Maximum wire resistance limited by the chart following	 24 VDC nominal, Special Application 2 Amps Maximum Fike tested and UL/FM approved valves, 0.100 1.4 amp valve (18-240 Ω) detailed in the Fike compatibility document. P/N 06-186 (FM Group 2 panel) The solenoid circuit does not require an EOL. It supervises through the coil for wiring integrity. *For testing purposes only*To simulate the proper solenoid resistance, a 200 Ω, 5 watt resistor can be used (P/N 02-2686).

FIELD WIRING LIMITATIONS FOR AUDIBLE AND SOLENOID OUTPUTS

Max Current (Amps)	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.5	2.0
Audibles 1-3 (Max Ω s)	24	12	8	6	4.8	4.0	3.0	2.4	1.6	1.2
Agent Release (Max Ω s)	35	35	35	35	35	35	35	35	35	35
Solenoid (Max Ωs)	12	6	4	3	2.4	2.0	1.5	1.2	0.8	0.6

• P6 – Optional Class A Input Module (P/N 10-2450):

TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS		
DETECT # 1 Term. 1 & 2 ++ DETECT # 2 Term. 3 & 4 ++	Detection inputs		Used for conventional detectors listed with this panel (see next section) or contact closure type detectors listed for fire alarm use.		
		Power-limited Class A	19.9 – 27.5VDC		
			360 mA max		
			Max. Wiring Resistance		
			Compatible Detectors = 20Ω Linear Heat Detection = 440Ω Contact Closure = 440Ω		
INPUT # 3 Term. 5 & 6 ++		Power-limited Class A	Used for contact closure inputs such as Manual Release, Abort, Waterflow and Supervisory listed for fire alarm use.		
INPUT # 4 Term. 7 & 8 ++	Contact closure inputs		5 VDC max.		
			0.5 mA max.		
INPUT # 5 Term. 9 & 10 ++			100 Ω maximum wire resistance		

• P7 – Optional Class A Output Module (P/N 10-2448):

TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS		
AUDIBLE #1			24VDC nominal		
Term. 1 & 2			2.0 Amps maximum, Regulated		
AUDIBLE #2 Term. 3 & 4 ++ AUDIBLE #3 Term. 5 & 6	Notification outputs	Power-limited Class A Maximum wire resistance limited by the chart on previous page	Fike tested indicating appliances compatible with the SHP Pro are detailed in the Fike compatibility document, P/N 06-186		
++					
AGENT RELEASE Term. 7 & 8 ++ polarity shown in normal state	Suppressant Agent Release output		24 VDC nominal, Special Application		
		Power-limited Class A	2 Amps maximum		
			Requires Fike's ARM III, P/N 10-1832		
			6 ARM III's maximum		
			Maximum wire resistance: 35 Ω		
	Sprinkler, Foam Micromist, Inert Gas, and CO ₂ Solenoid Release output		24 VDC nominal, Special Application		
SOLENOID Term. 9 & 10 ++			2 Amps Maximum		
		Power-limited Class A Maximum wire resistance limited by the chart on previous page	Fike tested and UL/FM approved valves, 0.100 – 1.4 amp valve (18-240 Ω) detailed in the Fike compatibility document. P/N 06-186 (FM Group 2 panel)		
			The solenoid circuit does not require an EOL, it supervises through the coil for wiring integrity.		
			*For testing purposes only*To simulate the proper solenoid resistance, a 200 Ω , 5 watt resistor can be used (P/N 02-2686).		

• P8 – Optional CRM4 Relays (P/N 10-2204):

	TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS
4	Term. 1 C	Common		SPDT Form C relay contact
ЕГАҮ	Term. 2 NC	Normally Closed	Non Power-limited	DC operation: 2 amps @30VDC (pf=.35) AC operation: 5 amps @120VAC (pf=.35)
R	Term. 3 NO	Normally Open		(Function defined by application)

NOTE: May be connected to power-limited or non power-limited sources. All connections to terminal block shall be either power-limited or non-power-limited, not both

P9 – Optional CRM4 Relays (P/N 10-2204):

	TERMINAL	DESCRIPTION	WIRING	SPECIFICATION DETAILS		
1-4	Term. 1 C	Common		SPDT Form C relay contact		
ELAY	Term. 2 NC	Normally Closed	Non Power-limited	DC operation: 2 amps @ 30VDC (pf=.35) AC operation: .5 amps @120VAC (pf=.35)		
R	Term. 3 NO	Normally Open		(Function defined by application)		

NOTE: May be connected to power-limited or non power-limited sources. All connections to terminal block shall be either power-limited or non-power-limited, not both

P

3.7 ENCLOSURE SPECIFICATIONS

• Mounting Methods:

Surface: Use tear-drop openings in back of back-box

Flush: Use tear-drop openings in back of back-box and 3/16 dia. thru holes, 2 each side for secure installation. This method provides a ½ " lip around back-box and removable door with full swing.

- Weight: 15 lbs. empty
- Dimension: 22" High x 15.25" Wide x 4.5" Deep with attached door. See below for precise dimensions

The SHP Pro enclosure includes the back-box, door, and power transformer assembly. The enclosure is available in red or gray color options. Optional modules are shipped separately and must be installed in the field.





33 AH Battery Enclosure

```
P/N: 10-2154-C (C = color)
R = Red
G = Grey
```

Mounting Methods:

- Surface: Use tear-drop openings in back of back-box
- Flush: Use tear-drop openings in back of back-box and 3/16 dia. thru holes, 2 each side for secure installation. This method provides a ½ " lip around back-box and removable door with full swing.
- Weight: 18 lbs. empty
- Dimension: 11" High x 21" Wide x 5" Deep with attached door. See below for precise dimensions



Back View Tear Drop location for Mounting
66 AH Battery Enclosure

• P/N: 10-2236-C (C = color) R = Red G = Grey

Mounting Methods:

Surface: Use 1/2" diameter thru holes, 4 each in back of enclosure

Flush: Use ¹/₂" diameter thru holes, 4 each in back of enclosure and recess into wall for secure installation.

Weight: 47 lbs. empty

• Dimension: 14" High x 26 1/4" Wide x 7" Deep with attached door. See below for precise dimensions



Back View Tear Drop location for Mounting

4.0 INSTALLATION

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION, AND OTHER INVOLVED PARTIES										
This product incorporates field-programmable firmware. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific										
	values or not used at a	all as indicted below.								
Program feature or option	Program feature or option Permitted in UL 864?(Y/N) Possible settings Settings permitted in UL									
Abort Types 1 - 4 Yes Types 1-4 Use types 2-3										
Vicromist Operation No Use or Don't use Don't use										

90.23 (UL 864)

INSTALLATION OVERVIEW

System installation is independent of whether the modules were ordered separately or as part of a complete SHP Pro system. For optional modules not used, skip the instructions detailing their installation. Proper system installation requires following steps 4.1 - 4.9 in order.

4.1 ENCLOSURE INSTALLATION

The mounting location for the control panel enclosure is very important. Vibration, dust, moisture, electromagnetic interference, and radio frequency interference are all types of problems that could adversely affect the successful operation of the equipment. Choose a mounting location that is free from environmental problems. Refer to Section 3.6, Specifications, for the exact temperature ratings of the equipment. Do not install in an environment that exceeds these temperature ranges. The SHP Pro Control System enclosure is not fire rated.



CAUTION: Do not install on or in a Fire Rated Wall.

The control panel should be installed so the viewing window is approximately 60" above the floor. The back-box can be surface or flush mounted as desired. For surface mounting, utilize the four 'tear-drop' openings in the back of the box. For flush mounting, cut the opening in the wall to fit the 21" high by 14.35" wide back-box. Reference Section 3.7, Enclosure Specifications, for enclosure dimensions.



Determine the maximum number of conductors needed from the design. Wire is to be routed to the control panel through back-box via knock-out openings (Reference Section 3.7). Conduit knock-outs are provided for two distinct conduit sizes. Removing just the inside hole creates a one-half inch (1/2") opening. Removing the entire opening provides a three-quarter inch (3/4") opening.



CAUTION: Do not install the electronic assemblies into the back-box until the environment is free from construction dust.

Unless otherwise detailed in this manual, or in other documents relating to this control panel, the technician shall utilize published standards and references such as NFPA 70 National Electrical Code, NFPA 72 National Fire Alarm Code, NFPA 2001 Standard for Clean Agent Fire Extinguishing Systems, and others, which may be relevant to the Local Authority Having Jurisdiction.

4.2 POWER AND FIELD WIRING

Field Wiring / Power-limited Requirements: Route all field wiring through the appropriate conduit knockouts. Provide adequate wire length for strain relief. SHP Pro terminal blocks (including CRM4 and Class-A modules) accept single wire from 14 to 30 AWG.

Non Power-limited - SHP Pro bottom side (P1) connections including AC Power, and Battery power are non-power-limited and shall be routed only in the enclosure's left side.

Power-limited - SHP Pro top (P3) and right side (P4 & P5) connections are power-limited and shall not be routed within 2" of the enclosure's left side to ensure segregation from the non-power-limited wiring. NOTE: SHP Pro left side (P2) connections including Alarm, Supervisory, and Trouble relays may be connected to power-limited or non power-limited sources. All connections to terminal block shall be either power-limited or non-power-limited, not both. Also, if connected to power-limited sources, that wiring MUST always be segregated for non power-limited wiring feeding transformer and P1 bottom side connections by a minimum of 2 inches.

When planning the type of wire to be used, refer to National Electrical Code, NFPA 70. This information was derived from the 2005 edition.

AWG	Stranding	Nominal Diameter	Uncoated Copper (Ωs /1000')	Coated Copper (Ωs /1000')
18	solid	0.040"	7.77	8.08
18	7	0.046"	7.95	8.45
16	solid	0.051"	4.89	5.08
16	7	0.058"	4.99	5.29
14	solid	0.064"	3.07	3.19
14	7	0.073"	3.14	3.26

Abort Switch Wiring Criteria:

Abort input circuits are to be wired only with momentary contact switches so they cannot be left activated without human interaction.

AC Power & Chassis Wiring

AC power must originate from a dedicated 10 - 20 amp circuit at the main building power distribution center. The circuit breaker must be equipped with a lockout mechanism and be clearly labeled as a

"Fire Protection Control Circuit."



NOTE: Complete wiring with AC power off and locked-out. Likewise, remove F2 fuse from the controller board to ensure the batteries cannot provide system power until wiring is completed and system is ready for checkout. Do not attach gas cartridge actuators or other non-restorable electrical devices until the system has been proven to be fully operational.

(Also see Section 4.5 and 4.6)

Transformer:

The transformer mounts to the four press studs. Align on the studs and attach with four 6-32 nuts and washers. Ensure the power to be used is compatible with the transformer assembly (120VAC or 240VAC). For 120VAC or 240VAC operation, connect the AC hot (line) and neutral directly to the transformer. Connect ground to the chassis standoff. When completed, verify continuity from chassis (green wire) to enclosure and to conduit.



4.3 WIRING VERIFICATION

After pulling the wire into the enclosure, verify wire for ground-fault absence and acceptable impedances prior to connecting the initiating and indicating circuits.



CAUTION: Field devices shall not be connected if using meggar or any means that applies voltages in excess of device ratings (to prevent damage to the devices).

P

NOTE: To test for ground fault use a resistor or jumper valued at 0 Ω .

Input Circuits:

- 1. Verify no stray voltages exist on any field wiring prior to device installation.
- 2. Verify each conductor is free from shorts between all other conductors and chassis.
- Measure wire resistance with a short across the circuit at a point furthest from circuit start. This is typically across EOL for Class B and at the panel for Class A. Verify per these limits:

Detector Circuits Input1, Input2: Less than: 20 $\Omega s/10$ per leg

Contact Monitor Circuits Input3, Input4 and Input 5 Less than: 100 Ωs/50per leg

4. If using contact closure type devices on Detection input #1 or #2, clip the respective "0 ohm resistor" to limit the current flowing through the circuit. (shown near the top of the board on the wiring diagram in section 4.2).

Output Circuits:

- 1. Verify no stray voltages exist on any field wiring prior to device installation.
- 2. Verify each conductor is free from shorts between all other conductors and chassis.
- Measure circuit impedance with a short across loop at point furthest from circuit start. This is typically across the EOL or Solenoid for class B and at the panel for Class A.

Verify per these limits:

Max Current (Amps)	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.5	2.0
Audibles 1-3 (Max Ω s)	24	12	8	6	4.8	4.0	3.0	2.4	1.6	1.2
Agent Release (Max Ω s)	35	35	35	35	35	35	35	35	35	35
Solenoid (Max Ω s)	12	6	4	3	2.4	2.0	1.5	1.2	0.8	0.6

4.4 SYSTEM MODULE INSTALLATION

• Install system modules after the enclosure has been installed and cleaned of all dust and debris. Modules include the appropriate mounting hardware. Prior to handling or installing any modules, appropriate anti-static procedures must be followed per Section 1.6.



NOTE: Optional modules should be mounted to controller prior to mounting controller into enclosure.

SHP Pro Controller:

The SHP Pro Controller mounts on the five standoffs in the upper half of the enclosure. Secure using the four 6-32 nuts & four lock washers provided.



Optional Modules (4 places as shown below)



Class A Input Module:

Install the two standoffs onto the main control board as shown. The optional Class-A input module connects to header P6. Align using standoffs, and secure into place.



Class A Output Module:

Install the two standoffs onto the main control boards as shown. The optional Class A output module connects to header P7. Align using standoffs, and secure into place.

CRM4:

The optional CRM4's mount on four standoffs on the SHP Pro's left side P8 and P9 headers. Align using standoffs, press and secure into place.



4.5 INITIAL POWER-UP

Prior to power-up, interconnect the transformer secondary winding to SHP Pro P1-1 & P1-2 per the wiring diagram. Ensure AC power is wired per the wiring diagram.

With other EOL's still connected, power the system up and validate AC Normal state (green LED). Upon Power-up (or reset) all LED's and piezo are on for 2-4 seconds. Only the following troubles should be annunciated (within 30 seconds).

*Trouble LED (yellow) should be illuminated *Diagnostic LED (**E**) since batteries are not connected

P

NOTE: Do not proceed until system is free of troubles except these.

4.6 COMPLETE FIELD WIRING

Power the system down by removing and locking out the AC power. Determine the installation application from one of the four applications shown in this section and complete all field wiring per the wiring diagrams in this section. Do not connect any releasing hardware (such as initiators or GCA's) at this time.

4.6.1 CIRCUIT CONFIGURATION

Common specifications to all applications:

- Three notification appliance circuits. Each NAC is capable of annunciating a continuous, slow, fast, or synchronized audible/visual output. Modes of operation are described in the Audible Options Table in Section 4.7.1.
- Audible circuits are synced together (if the sync option is selected for the Audible Circuits.)
- Three dedicated relays outputs configured for Alarm, Trouble, and Supervisory. Contact ratings 2A, 30VDC.
- One each, resettable and continuous 2.0A auxiliary outputs.
- Expansion slots compatible with optional Class A input module, Class A output module, and two each CRM4 modules
- 7 segment display for panel condition indication



- Primary indicator LEDs AC Normal Alarm Pre-discharge Release Supervisory Outputs Disabled Trouble Panel Silenced Abort Ground Fault
- Integral power supply capable of 4.0 amps output with 40AH battery charging capability.
- Five initiating device circuits compatible with Class A module
- Input 1: Compatible with either 2 wire smoke detectors as Sequential, Cross-zone (with input 2), or Single Detector Release
- **NOTE:** If using 0 Ω detector bases or contact closure devices on Input 1 or Input 2 circuits, clip the pertinent "0 Ω jumper". Clipping this jumper limits the current to 100 mA for the associated circuit.
- Input 2: Compatible with either 2 wire smoke detectors as Sequential, Cross-zone (with input 1), or Single Detector Release

Hochiki 430 $\Omega,$ 220 Ω System Sensor 470 Ω Compatible with contact closure alarm devices

- Input 3: Compatible with contact closure devices
- Input 4: Compatible with contact closure devices
- Input 5: Compatible with contact closure devices

4.6.2 WIRING DIAGRAMS

SHP PRO CONTROLLER



CLASS A INPUT MODULE, 10-2450

This optional module allows "Class A" wiring of all of the five initiating circuits versus the standard Class B wiring. It mounts directly onto the SHP Pro header P6. If used, all of the five circuits must be wired as Class A rather than Class B. Dimensions: 4 7/8" long by 2 1/8" tall by 2" deep Shipping Weight: 0.10 lbs.



Detection Inputs 1 and 2:



Contact Closure Inputs 3 and 4:



CLASS A INDICATING APPLIANCE & RELEASE CIRCUITS MODULE, 10-2448

This optional module allows "Class A" wiring of the three notification appliance, agent release and solenoid output circuits versus the standard Class B wiring. It mounts directly onto the SHP Pro header P7. If used, all of the circuits must be wired as Class A rather than Class B. Dimensions: 4" long by 2" tall by 2" deep

Shipping Weight: 0.10 lbs.

Audible Outputs 1 thru 3:



Clean Agent Release Output:



SHP PRO Product Manual Manual P/N: 06-297 Page 41 of 68 Rev. 2, 04/08

CRM4, 10-2204 RELAY MODULE

The optional Relay Module provides 4 additional dry relay contacts. The relay module is mounted to the SHP Pro main controller at header P8 and/or P9 and is mechanically secured using the (4)-supplied standoffs and screws.

Dimensions: 3 ¹/₂" long by 1 ¹/₂" tall by 2" deep Shipping Weight: 0.10 lbs.

\oplus	000	000	000	000	
P42	C NC NO RELAY 1	C NC NO RELAY 2	C NC NO RELAY3	C NC NO RELAY4	POWER
					-
	000000	000 P4 😭			\bigcirc

4.7 SYSTEM CONFIGURATION (SW4 Settings)

Set the configuration dipswitch, SW4 to provide the appropriate operation for the installation application:

																					ę	S9/1	0/1	1			l	
																			0/0/0	0/0/1	0/1/0	0/1/1	1/0/0	1/0/1	1/1/0	1/1/1		
	Industrial	Application 4				Industrial Solenoid Releasing									Y / N	15 seconds	30 seconds	90 seconds	Solenoid ON continuous	Solenoid ON 5 minutes	Solenoid ON 10 minutes	Solenoid ON 15 minutes	Solenoid ON 20 minutes	Solenoid ON 30 minutes	Micromist - Machinery Spc.	Micromist - Turbine Gen.	tial / SDR	Zone
Application Only	Preaction	Application 3			Preaction		Delay	/(2 hours)	Option 1	Poption 2	Poption 3	9 Option 4	ex Sync	sensor Sync		Not Annicable			Det1 activates SOL	Det2 activates SOL	Det1 OR 2 activates SOL	Det1 AND 2 activates SOL	WF activates SOL	WF does not activate SOL			Sequent	Cross
	Clean Agent & Preaction	Application 2		Clean Agent & Preaction			No	AC Delay	Audible	Audible	Audible	Audible	Gent	System S	0 seconds	15 seconds	30 seconds	60 seconds	Abort - Type 1	Abort - Type 2	Abort - Type 3	Abort - Type 4	0 / 0 Det1 activates SOL	0 / 1 WF activates SOL	1 / 0 Det1 OR WF activates SOL	1 / 1 Det1 AND WF activates SOL	Ĥ S11/S12	
	Clean Agent	Application 1	Clean Agent																				Agent Release Module	24VDC Solenoid			Sequential / SDR	Cross Zone
	0 = Off	1 = On	0/0	0/1	1/0	1/1	0	1	0/0	0/1	1/0	1/1	0	1	0/0	0/1	1/0	1/1	0/0	0/1	1/0	1/1	0	1			0	-
	Function			Analication			Trni Ible Relav			Audible	Operation		(Aua. Sync		Pre-discharge	Delay			Abort Type or	SOL ON time		Activation	Control				Deleciini i ype
	SW4	Position		C3 / C3	70/10		ŝ	3		CA / CE	3		Ğ	00		C7 / C8	20 10			0107			2	- 0			C10	710

P NOTE: (Audible Options Table in Section 4.7.1)

4.7.1 Audible Options

		Audi	ble Options	
				Non-silenceable
Option #	SW4/SW5	Audible 1	Audible 2	Audible 3 (on until reset)
Option 1	0/0			
Alarm Pre-discharge Release		ON (continous)	ON (continous) ON (continous)	ON (continous)
Option 2	0/1			
Alarm Pre-discharge Release		ON (continous)	ON (continous) ON (continous) ON (continous)	ON (continous)
Option 3	1/0			
Alarm Pre-discharge Release		ON (slow) ON (Fast) ON (continous)	ON (continous) ON (continous) ON (continous)	ON (continous)
Option 4	1/1			
Alarm Pre-discharge Release		ON (slow) ON (fast) ON (continous)	ON (sync-continous) ON (sync-continous) ON (sync-continous)	ON (sync-continous)
NOTE:	Option 4, combinati but the sti	Audible 2 - Wh on horn/strobes robe will remain	en using this option , and the panel is sile on until reset.	with compatible enced, the horn will turn off

P

NOTE: When using more than one Audible circuit for audible device operation (horn or bell), the installation shall not allow two circuits to provide different audible indication during the same state in the same area of protection. For example, using Audible Option 3 with horns attached to circuits 1 and 2 would provide different annunciation during the Alarm state (slow on Audible 1, continuous on Audible 2).

4.7.2 ABORT TYPES:

These abort types are programmable via SW4 configuration switches S9-S10. Countdown starts when the system enters the pre-discharge state.

P

NOTE: The ABORT switch delays releases initiated by automatic detection schemes. Releases initiated by activated Manual Release input circuits <u>override</u> the Abort Switch.

TYPE 1:

The abort is effective only if active upon entry into pre-discharge state. Countdown continues during abort activation. Upon abort deactivation (during pre-discharge), the release cannot again be aborted, so release occurs upon countdown completion. Conforms to Industrial Risk Insurers (IRI) requirements. (*Not UL approved*)

TYPE 2:

Countdown continues during abort activation. Release occurs when both the countdown is completed and the abort is deactivated.

TYPE 3:

If the abort is active during pre-discharge, release occurs upon abort deactivation.

TYPE 4:

Upon abort deactivation, countdown occurs from the full programmed countdown time. Prior to countdown completion, abort activation extends the countdown time to the programmed length. Does not conform to UL requirements, but is allowed by some Local Authority having Jurisdiction. Type 4 with "0" countdown also provides "NYC mode" as described in the note below. (Not UL approved)



NOTE: For Abort = 4 with countdown = 00, system operates in "NYC mode" with a 90 second verification delay, then a 30 second countdown after each abort input deactivation. During the 90 second verification delay, the system emulates continuous abort activation. After the 90 second delay, the system starts a 30 second pre-discharge delay.

4.7.3 Application #1 Detail - Clean Agent Release Only

Circuit Configurations

Input 1	Detection					
Input 2	Detection					
Input 3	Manual Release					
Input 4	Abort					
Input 5	Supervisory					
Audible 1	Refer to Audible Option table					
Audible 2	Refer to Audible Option table					
Audible 3	Refer to Audible Option table					
ARM	Clean Agent					
Solenoid	Clean Agent					
Relay 1 (main)	Alarm					
Relay 2 (main)	Supervisory					
Relay 3 (main)	Trouble					
P8 Relay 1 (CRM4-1)	Alarm					
Relay 2 (CRM4-1)	Pre-discharge					
Relay 3 (CRM4-1)	Release					
Relay 4 (CRM4-1)	Abort					
P9 Relay 1 (CRM4-2)	Alarm					
Relay 2 (CRM4-2)	Release					
Relay 3 (CRM4-2)	Supervisory					
Relay 4 (CRM4-2)	Trouble					

Configuration Selections

Switch Position	0 = OFF	Operational Characteristics
	1 = ON	
S1/S2	0/0	Mode 1 Select
S3	0	Trouble Relay - No Delay
	1	Trouble Relay - AC Power Failure Delay (2 hours)
S4/S5	0/0	Audible Option 1
	0/1	Audible Option 2
	1/0	Audible Option 3
	1/1	Audible Option 4
S6	0	Sync Protocol - Gentex*
	1	Sync Protocol - System Sensor*
S7/S8	0/0	Pre-discharge Delay - 0 seconds
	0/1	Pre-discharge Delay - 15 seconds
	1/0	Pre-discharge Delay - 30 seconds
	1/1	Pre-discharge Delay - 60 seconds
S9/S10	0/0	Abort Type - 1
	0/1	Abort Type - 2
	1/0	Abort Type - 3
	1/1	Abort Type - 4
S11	0	Agent Release Module
	1	24 VDC Solenoid
S12	0	Sequential or Single Detector Release**
	1	Cross-Zone



**Sequential Detection shall be accomplished using 430 Ω bases.

**Single Detetector Release shall be accomplished using 220 Ω bases.

4.7.4 Application #2 Detail – Clean Agent AND Sprinkler Preaction

Circuit Configurations

Input 1	Detection**					
Input 2	Waterflow***					
Input 3	Vanual Release					
Input 4	Abort					
Input 5	Supervisory					
Audible 1	Refer to Audible Option table					
Audible 2	Refer to Audible Option table					
Audible 3	Refer to Audible Option table					
ARM	Clean Agent					
Solenoid	24 V					
Relay 1 (main)	Alarm					
Relay 2 (main)	Supervisory					
Relay 3 (main)	Trouble					
P8 Relay 1 (CRM4-1)	Alarm					
Relay 2 (CRM4-1)	Pre-discharge					
Relay 3 (CRM4-1)	Release					
Relay 4 (CRM4-1)	Abort					
P9 Relay 1 (CRM4-2)	Alarm					
Relay 2 (CRM4-2)	Waterflow					
Relay 3 (CRM4-2)	Supervisory					
Relay 4 (CRM4-2)	Trouble					

Configuration Selections

Switch Position	0 = OFF	Operational Characteristics
	1 = ON	
S1/S2	0/1	Mode 2 Select
S3	0	Trouble Relay - No Delay
	1	Trouble Relay - AC Power Failure Delay (2 hours)
S4/S5	0/0	Audible Option 1
	0/1	Audible Option 2
	1/0	Audible Option 3
	1/1	Audible Option 4
S6	0	Sync Protocol - Gentex*
	1	Sync Protocol - System Sensor*
S7/S8	0/0	Pre-discharge Delay - 0 seconds
	0/1	Pre-discharge Delay - 15 seconds
	1/0	Pre-discharge Delay - 30 seconds
	1/1	Pre-discharge Delay - 60 seconds
S9/S10	0/0	Abort Type - 1
	0/1	Abort Type - 2 for Agent Release Ouput
	1/0	Abort Type - 3 only (not Solenoid)
	1/1	Abort Type - 4
S11/S12	0/0	Detect 1 activates solenoid**
	0/1	Waterflow activates solenoid
	1/0	Detect 1 OR Waterflow activates solenoid
	1/1	Detect 1 AND Waterflow activate solenoid



*Requires Audible Option 4

**Sequential Detection shall be accomplished using 430 Ω bases.





***Waterflow input does not effect (completely independent from) clean agent releasing activities.

4.7.5 Application #3 Detail - Preaction Sprinkler, Deluge (10-063-2 this detail only)

Circuit Configurations

3						
Input 1	Detection					
Input 2	Detection					
Input 3	Manual Release					
Input 4	Waterflow					
Input 5	Supervisory					
Audible 1	Refer to Audible Option table					
Audible 2	Refer to Audible Option table					
Audible 3	Refer to Audible Option table					
ARM	N/A					
Solenoid	24 V					
Relay 1 (main)	Alarm					
Relay 2 (main)	Supervisory					
Relay 3 (main)	Trouble					
P8 Relay 1 (CRM4-1)	Alarm					
Relay 2 (CRM4-1)	Waterflow					
Relay 3 (CRM4-1)	Supervisory					
Relay 4 (CRM4-1)	Trouble					
P9 Relay 1 (CRM4-2)	Alarm					
Relay 2 (CRM4-2)	Waterflow					
Relay 3 (CRM4-2)	Supervisory					
Relay 4 (CRM4-2)	Trouble					

Configuration Selections

Switch Position	0 = OFF	Operational Characteristics
	1 = ON	
S1/S2	1/0	Mode 3 Select
S3	0	Trouble Relay - No Delay
	1	Trouble Relay - AC Power Failure Delay (2 hours)
S4/S5	0/0	Audible Option 1
	0/1	Audible Option 2
	1/0	Audible Option 3
	1/1	Audible Option 4
S6	0	Sync Protocol - Gentex*
	1	Sync Protocol - System Sensor*
S7	х	Not Used
S8	х	Not Used
S9/S10	0/0	Input 1 activates solenoid
	0/1	Input 2 activates solenoid
	1/0	Input 1 OR Input 2 activates solenoid
	1/1	Input 1 AND Input 2 activates solenoid
S11	0	Waterflow activates solenoid
	1	Waterflow does not activate solenoid
S12	0	Sequential or Single Detector Release**
	1	Cross-Zone
		S9 & S10 operation is void when cross-zone
		operation is selected



*Requires Audible Option 4

**Sequential Detection shall be accomplished using 430 Ω bases.

**Single Detetector Release shall be accomplished using 220 Ω bases.

4.7.6 Application #4 Detail – Industrial Solenoid (CO2, Watermist, Foam, Deluge)

Circuit Configurations

Input 1	Detection						
Input 2	Detection						
Input 3	Manual Release						
Input 4	Abort (hardcoded to Type 4)						
Input 5	Supervisory						
Audible 1	Refer to Audible Option table						
Audible 2	Refer to Audible Option table						
Audible 3	Refer to Audible Option table						
ARM	N/A						
Solenoid	24 V						
Relay 1 (main)	Alarm						
Relay 2 (main)	Supervisory						
Relay 3 (main)	Trouble						
P8 Relay 1 (CRM4-1)	Alarm						
Relay 2 (CRM4-1)	Pre-discharge						
Relay 3 (CRM4-1)	Release						
Relay 4 (CRM4-1)	Abort						
P9 Relay 1 (CRM4-2)	Alarm						
Relay 2 (CRM4-2)	Release						
Relay 3 (CRM4-2)	Supervisory						
Relay 4 (CRM4-2)	Trouble						

Configuration Selections

Switch Position	0 = OFF	Operational Characteristics
	1 = ON	
S1/S2	1/1	Mode 4 Select
S3	0	Trouble Relay - No Delay
	1	Trouble Relay - AC Power Failure Delay (2 hours)
S4/S5	0/0	Audible Option 1
	0/1	Audible Option 2
	1/0	Audible Option 3
	1/1	Audible Option 4
S6	0	Sync Protocol - Gentex*
	1	Sync Protocol - System Sensor*
S7/S8	0/0	N/A - See 2 nd note in section 4.7.2
	0/1	Pre-discharge Delay - 15 seconds
	1/0	Pre-discharge Delay - 30 seconds
	1/1	Pre-discharge Delay - 60 seconds
S9/S10/S11	0/0/0	Solenoid on continuous
	0/0/1	Solenoid on 5 minutes
	0/1/0	Solenoid on 10 minutes
	0/1/1	Solenoid on 15 minutes
	1/0/0	Solenoid on 20 minutes
	1/0/1	Solenoid on 30 minutes
	1/1/0	Micromist - Machinery Space***
	1/1/1	Micromist - Turbine Generator***
S12	0	Sequential or Single Detector Release**
	1	Cross-Zone

*Requires Audible Option 4

 \mathbb{C} **Sequential Detection shall be accomplished using 430 Ω bases. **Single Detetector Release shall be accomplished using 220 Ω bases.



***Micromist operation not UL 864 9th Edition approved.

4.8 **CHECKOUT SYSTEM**

Power the system up and again verify no troubles except for missing batteries. Connect the batteries per the Wiring diagram. After pressing reset switch, verify trouble LED does not illuminate. Perform system check-out per Chapter 6.



NOTE: Enable/Disable switch (SW3) should be in the "disable position" upon power-up and power-down to protect against accidental release.

4.9 **RELEASING HARDWARE**

After complete system check-out, connect the releasing hardware according to the appropriate documentation, and enable the Releasing Circuits via SW3.

5.0 OPERATIONS

5.1 USER SWITCH INTERACTION

The user switches provide these capabilities:

- Silence Switch: Silences audibles & piezo. Changes flashing LED's to steady. If held for 3 seconds it will toggle the panel between current history, last 20 events, and A/D conversion (Fike development use only).
- Reset Switch: Resets system including turning off outputs, interrupting resettable power. Momentarily activates piezo, all LED's, and trouble relay. **Displays panel application number.** Restores system to normal state.
- Enable/Disable: Disables the agent release and solenoid circuit.

Disables audible circuits and all relay outputs excluding supervisory and trouble.

5.2 SILENCING RULES

- The Silence switch silences audibles #1 and 2 (but does not effect Relays).
- After silencing, entry into new states only sounds that state's audibles (except entry into release state resounds pre-discharge audibles.
- Alarm, Waterflow, Supervisory, Predischarge, Release, and Trouble LED's stay on steady after silencing to acknowledge operator action.
- If the panel is left silenced for a period of approximately 18 hours, the panel will automatically resound.



Event	LED	Piezo
Upon supervision alarm or trouble	Flashes (2 second rep)	On
Upon silence acknowledge	Steady	Off
Upon event clear	Off	Off
Upon event recurrence	Flashes (2 second rep)	On

Flashes occur for one second every 2 seconds.

Piezo operation is: {Alarm Events: Chirp} {Supervisory: Warble} {Trouble: On steady} Piezo priority is in same order; alarm events over supervisory events over trouble events.





When an ARM III releasing mechanism is used, do NOT flip the ENABLE/DISABLE switch to the DISABLE position when a ground fault is present on the system. Depending on the source of the ground fault, disabling the release circuit could inadvertently activate the ARM.

LATCHING TROUBLES

Input circuit open (Codes 1, 2, 3, 4, and 5) Agent Release Open (Code 9) Solenoid Open (Code 11) IntelliFET failure (Code H).

All other troubles are non-latching (upon restoration to a normal condition). If all troubles are non-latching and all have cleared, system clears to normal. Upon clearing of non-latching troubles (including AC power loss) the diagnostic code will clear, the trouble relay will return to normal, and the LED will extinguish.

NOTE: Press and hold the SILENCE button for 3 seconds to display the history of the last 20 events on the diagnostics display. If pressed and held another 3 seconds, it will display A/D information. (Contact Fike Technical Support for use of this feature.)

5.5 SUPERVISION RESPONSE TIMES

Supervision of circuits is designed to be within 90 seconds on all circuits.

Supervision is delayed up to 15 seconds immediately after a reset or power-up for detection input only.

5.6 LOW POWER CONDITIONS

5.6.1 AC POWER

The system is designed to suspend detector operation if AC power is missing and system battery power falls below 20.4V ("F" trouble) since detector operation is not guaranteed at these voltages. System field design and maintenance should be such to prevent this occurrence. After occurrence, restarting the system requires return of AC power in conjunction with a manual system reset.

System will register brown-out trouble if AC voltage is less than approximately 85% of rating. Both AC power and battery power are enabled at all times, allowing each to supplement the other. Partial fallout of one power source permits the other to provide most of the needed power.

5.6.2 BATTERY POWER

The system is designed to monitor the battery charging circuit. (Older panels used to monitor voltage only instead of current.) If the batteries do not monitor enough current being drawn by the batteries, the panel will produce a battery failure trouble.



NOTE: During any active alarm or supervisory event, the panel does NOT supervise for loss of battery charging current.

Audible circuits are not NOTE: (P supervised during any active alarm condition.

5.7 DIAGNOSTIC LED CODE DESIGNATORS

The current events, history events and Analog to Digital conversion can be viewed by pressing the silence switch for 3 seconds. This will toggle the panel segment diagnostic LED.

The seven segment diagnostic LED cycles through display of these codes (with or without a period) for the events that have occurred since the last reset. For example, if input circuit #3 is activated, the LED displays "**3**."



NOTE: The period portion of the display is often overlooked. When viewing the diagnostic codes, do not overlook the period.

P

NOTE: The letter "**b**" is often misinterpreted as the number **6**.

			Code with			
Circuit/Mode	Code	Condition	Period	Condition		
DETECT #1	1	Open*	1.	Activated*		
DETECT #2	2	Open*	2.	Activated*		
INPUT #3	E	Open*	Э.	Activated*		
INPUT #4	ч	Open*	Ч.	Activated**		
INPUT #5	5	Open*	5.	Activated		
AUDIBLE #1	6	Open	Б.	Shorted		
AUDIBLE #2	ר	Open	٦.	Shorted		
AUDIBLE #3	8	Open	8.	Shorted		
AGENT RELEASE	9	Open*	9.	Shorted		
SOLENOID	11	Open*	11.	Shorted		
Abort Input	R	Valid Abort				
Invalid Abort	Ь	Abort, premature	Ь.	Abort, late		
2nd Alarm Active	Ľ	Input Circuit 1*	Ε.	Input Circuit 2*		
DISABLED (toggle switch)	Ь					
Battery Failure	Е	Missing Battery				
System Voltage	F	Low Voltage (<19 VDC)				
Microcontroller	Н	Intelli-FET (FAILED)*	Н.	5V ref./ADC failure		
Ground Fault	0					
Reset	Р					
Power Failure	-	AC Brown-out (<85%)				
Auxiliary Output	٥	AUX Output #1 Open	0.	AUX Output #2 Open		

*Latching Condition, requires Reset to clear.

**Latching only for Application 3

5.8 TYPICAL ALARM OPERATION

Upon alarm of a first detector, system enters alarm state. Typical response includes:

Piezo:	Chirp (On & Off pattern) until silenced.
Alarm LED:	Flash. After silencing, illuminate steady.
Alarm Relay:	Activate.
Alarm Audibles:	Activate until silenced.

Upon alarm of a second detector meeting the cross-zone or sequential alarm detection criteria (or alarm of the first SDR detector), system enters pre-discharge state. Typical response changes to:

Piezo:	Chirp (On & Off pattern) until silenced.
Pre-discharge LED:	Flash. After silencing, illuminate steady.
Pre-discharge Relay:	Activate. Alarm relay also remains active
Alarm Audibles:	Activate until silenced.
Pre-discharge Audibles:	Activate until silenced.

Upon completion of pre-discharge countdown (or activation of a manual release), system enters release state. Typical response changes to:

Chirp (On & Off pattern) until silenced.
Flash. After silencing, illuminate steady.
Activate. Alarm & Pre-discharge relays also remain active.
Activate until silenced.
OFF
Activate. (Unsilence if silenced)
Activate until silenced.
Activate AgtRel or solenoid circuit.

Upon activation of the Abort Switch, system responds with a trouble condition if it is not a valid abort time. While activated during a valid abort time, typical system response includes:

Piezo:	Chirp (On & Off pattern) until silenced.
Abort LED:	Flash while Abort is active. Steady after silencing.
Abort Relay:	Activated while Abort is held.
Count-down timer:	Modified (or paused) per abort type description.
Pre-discharge Audibles:	Unsilenced upon deactivation of abort switch, if pertinent

NOTE: During activation of multiple events, piezo priority is alarm over supervisory over trouble.

Alarm events are latching and require the operator to reset the panel to clear the event.

5.9 SUPERVISORY OPERATION

Upon activation of a supervisory input, system enters supervisory state. Typical response includes:

Piezo:	Warble (On & Off pattern) until silenced.
Supervisory LED:	Flash. After silencing, illuminate steady.
Supervisory Relay:	Activate.

A supervisory input is non-latching and the panel will follow the status of the input.

5.10 TROUBLE OPERATION

Upon occurrence of a trouble condition, system enters trouble state. Typical response includes:

Piezo:	Steady on until silenced.
Trouble LED:	Flash. After silencing, illuminate steady.
Trouble Relay:	Activate.
Diagnostic LED:	Displays code or codes corresponding to trouble conditions.

Many trouble events are non-latching (see section 5.4). If the trouble is non-latching and it clears, the panel will return to normal. If the trouble is latching, the operator will be required to press the RESET switch to clear the trouble event.

5.11 SHP PRO INPUT / OUTPUT MATRIX

Panel Application 1 Agent	Clean	Audible 1	Audible 2	Audible 3	Clean Agent (ARM)	Solenoid (2-12V or 1-24V)	P2 Alarm Relay	P2 Supervisory Relay	P2 Trouble Relay	P8 Relay 1 - Alarm	P8 Relay 2 - Predischarge	P8 Relay 3 - Release	P8 Relay 4 - Abort	P9 Relay 1 - Alarm	P9 Relay 2 - Release	P9 Relay 3 - Supervisory	P9 Relay 4 - Trouble
Alarm				-			ON			ON				ON			
Pre-discharge]	aldi	ple			ON			ON	ON			ON			
Valid Abort		Ι	auding	ço.									ON				
Pologog	S11 = 0	6	e ation		ON		ON			ON	ON	ON		ON	ON		
Release	S11 = 1	2	04			ON	ON			ON	ON	ON		ON	ON		
Invalid Abort*	•								ON *				ON				ON *
Supervisory								ON								ON	
SW3 Disable		Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	ON	ON	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	ON	ON
Trouble									ON								ON

*A trouble condition will be created if the Abort is initiated with no alarm present.

See next page for Application #2 - Clean Agent Release AND Sprinkler Preaction

Panel Application 3 Preaction	Audible 1	Audible 2	Audible 3	Clean Agent (ARM)	Solenoid (2-12V or 1-24V)	P2 Alarm Relay	P2 Supervisory Relay	P2 Trouble Relay	P8 Relay 1 - Alarm	P8 Relay 2 - Waterflow	P8 Relay 3 - Supervisory	P8 Relay 4 - Trouble	P9 Relay 1 - Alarm	P9 Relay 2 - Waterflow	P9 Relay 3 - Supervisory	P9 Relay 4 - Trouble
Alarm						ON			ON				ON			
Pre-discharge	T	a me	nº le		ON	ON			ON				ON			
Release	ં જ	Judicoti	1301		ON	ON			ON				ON			
Waterflow (alarm)	1	8. Or	-		ON **	ON			ON	ON			ON	ON		
Supervisory							ON				ON				ON	
SW3 Disable	Disabled	Disabled	Disabled		Disabled	Disabled	ON	ON	Disabled	Disabled	ON	ON	Disabled	Disabled	ON	ON
Trouble								ON								ON
A transfer and Press of the second of the Alicentic Self-state of the second second																

*A trouble condition will be created if the Abort is initiated with no alarm present. **Switch 11 determines the operation of the Solenoid with the Waterflow input (SW11 = OFF, Solenoid will activate with Waterflow input active)

Panel Application 4 Industrial Solenoid Releasing	Audible 1	Audible 2	Audible 3	Clean Agent (ARM)	Solenoid (2-12V or 1-24V)	P2 Alarm Relay	P2 Supervisory Relay	P2 Trouble Relay	P8 Relay 1 - Alarm	P8 Relay 2 - Predischarge	P8 Relay 3 - Release	P8 Relay 4 - Abort	P9 Relay 1 - Alarm	P9 Relay 2 - Release	P9 Relay 3 - Supervisory	P9 Relay 4 - Trouble
Alarm						ON			ON				ON			
Pre-discharge	Ι.	a she	n5 10			ON			ON	ON			ON			
Valid Abort	S ^e	^{cudis} otic	130									ON				
Release	Ι	8° U			ON	ON			ON	ON	ON		ON	ON		
Invalid Abort*								ON *				ON				ON *
Supervisory							ON								ON	
SW3 Disable	Disabled	Disabled	Disabled		Disabled	Disabled	ON	ON	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	ON	ON
Trouble								ON								ON

*A trouble condition will be created if the Abort is initiated with no alarm present.



NOTE: Audible Options Table is Section 4.7.1

Panel Application 2 Detector 1 Operates Solenoid	Audible 1	Audible 2	Audible 3	Clean Agent (ARM)	Solenoid (2-12V or 1-24)	P2 Alarm Relay	P2 Supervisory Relay	P2 Trouble Relay	P8 Relay 1 - Alarm	P8 Relay 2 - Predischarç	P8 Relay 3 - Release	P8 Relay 4 - Abort	P9 Relay 1 - Alarm	P9 Relay 2 - Release	P9 Relay 3 - Supervisory	P9 Relay 4 - Trouble
Alarm			.0.			ON			ON				ON			
Pre-discharge Release	-	dible	abit		ON	ON			ON	ON	ON		ON			
Manual Release		e autions				ON			ON		ON		ON			
Waterflow	5	opt				ON			ON				ON	ON		
Abort						-		ON *				ON				ON *
Supervisory							ON								ON	
SW3 Disable	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	ON	ON	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	ON	ON
Irouble								ON								ON
Panel Application 2 Waterflow Operates Solenoid Alarm Pre-discharge Release Manual Release Waterflow Abort Supervisory SW3 Disable Trouble	F agging Aregina Second	se subible phone Disabled	anle Disabled	Clean Agent (ARM)	NO Solenoid (2-12V or 1-24V)	NO N	NO NO NO NO NO NO NO NO NO NO NO NO NO N	XO XO *	ON ON ON ON ON ON ON ON	B8 Kelay 2 - Predischarge	See	P8 Relay 4 - Abort	Disabled	barren construction of the second construction o	XO XO XO XO XO XO XO XO XO XO XO XO XO X	NO NO XO
Panel Application 2 Detector 1 OR Waterflow Operates Solenoid	Audible 1	Audible 2	Audible 3	Clean Agent (ARM)	Solenoid (2-12V or 1-24V)	2 P2 Alarm Relay	P2 Supervisory Relay	P2 Trouble Relay	2 P8 Relay 1 - Alarm	P8 Relay 2 - Predischarge	P8 Relay 3 - Release	P8 Relay 4 - Abort	2 P9 Relay 1 - Alarm	P9 Relay 2 - Release	P9 Relay 3 - Supervisory	P9 Relay 4 - Trouble
Pre-discharge	1		nle		ON	ON			ON	ON			ON			
Release	1	udilo.	31	ON	ON	ON			ON	ON	ON		ON			
Manual Release		e ation		ON	ON	ON			ON	ON	ON		ON			
Waterflow		70			ON	ON			ON				ON	ON		
Abort								ON *				ON				ON *
SW3 Disable	Disahlad	Disabled	Disahled	Disabled	Disabled	Disahlad		ON	Disabled	Disabled	Disabled	Disahlad	Disabled	Disabled		ON
Trouble	DISCUTCU	DISCUICU	DISCUICU	DISCUTED	DISCUICU	ושמטוכע		ON	Diaduleu	DISCUTCU	Digablea	Digabled	Diadoleu	DISCUICU	0.11	ON
Panel Application 2 Detector 1 AND Waterflow Operates Solenoid Alarm	Audible 1	Audible 2	Audible 3	Clean Agent (ARM)	Solenoid (2-12V or 1-24V)	⊃ P2 Alarm Relay	P2 Supervisory Relay	P2 Trouble Relay	2 P8 Relay 1 - Alarm	P8 Relay 2 - Predischarge	P8 Relay 3 - Release	P8 Relay 4 - Abort	2 P9 Relay 1 - Alarm	P9 Relay 2 - Release	P9 Relay 3 - Supervisory	P9 Relay 4 - Trouble
Pre-discharge	1		nle		ON					ON						
Release	1	udibi .	34	ON	ON	ON			ON	ON	ON		ON			
Manual Release		e ation.		ON	ON	ON			ON	ON	ON		ON			
Waterflow	<u>د</u>	07			ON	ON			ON				ON	ON		
Abort	<u> </u>						011	ON *	<u> </u>	<u> </u>		ON			011	ON *
Supervisory	1	1	1				ON								ON	L
	Dischlart	Dischlart	Dischlard	Dischlard	Dischlart	Dischlar	0.11	ŝ	Dischiel	Dischlard	Dicable	Dischlad	Dischlad	Dischlard	<u></u>	ON:
I rouble	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	ON	ON ON	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	ON	ON ON

6.0 SERVICING

Qualified individuals shall perform Inspection, Testing, and Maintenance. Fike provides a training class on the SHP Pro for Factory Authorized Distributors. The training class provides Certification for Installation, Service and Maintenance of the SHP Pro. The certified individual performing the service must have also read this entire manual and understand the basics of Fire Alarm Systems, codes, and standards. Before proceeding with any testing, notify all building occupants and any parties monitoring the Fire Control System. Notification must also be performed at the conclusion of the testing.

6.1 CHECKOUT

After system installation per previous chapters, verify system operation to the satisfaction of the authority having jurisdiction. As required, the *Record of Completion* in Chapter 1 of NFPA 72 must be completed.

If using releasing initiators/GCA in conjunction with the ARM-III module:

- 1.) Releasing circuits should not be initiator/GCA operated with the connected during checkout. If the integrity of the releasing circuit is required to be tested, install a flashbulb (P/N 02-3799) in place of the initiator/GCA. Do not connect initiators/GCA to ARM III if any ground faults are present on the system.
- 2.) Follow ARM-III manual 06-106 for safety considerations and ARM-III wiring.



When an ARM III releasing mechanism is used, do NOT flip the ENABLE/DISABLE switch to the DISABLE position when a ground fault is present on the system. Depending on the source of the ground fault, disabling the release circuit could inadvertently activate the ARM.



NOTE: Use the Arm /Disable Switch (SW3) to disable the Agent Release and Solenoid circuits during system checkout and maintenance. As a minimum, place SW3 in the "disable" position upon system power-up and power-down. After power-down, allow the ARM-III module ten minutes to self-discharge prior to maintenance to prevent accidental firing of actuators.

6.2 MAINTENANCE

Periodic maintenance, replacement and testing shall be, as a minimum, performed per NFPA 72. Maintenance shall be performed by a trained or authorized Fike representative. Certain components of the SHP Pro require replacement, even though no obvious sign of failure is present.

- Batteries (Lead Acid) Replace every 3 years according to date of manufacture
- Gas Cartridge Actuator (GCA) Replace every 10 years according to date of manufacture
- Initiator Replace every 5 years according to date of installation

6.3 TROUBLESHOOTING

System troubles and events are displayed via the diagnostic LED codes defined in Section 5.7. Additional troubleshooting aids are provided in Section 6.3.1,

6.3.1 EVENT DESCRIPTION / POSSIBLE RESOLUTION

Diagnostic Display		
Code	Description	Tips For Resolution
1	Detection Circuit 1 open	 Verify correct value EOL resistor (4.3K Ω - Yellow,
		Orange, Red)
2	Detection Circuit 2 open	• Measure field wiring resistance = 20Ω or less.
		 Verify all devices are installed properly (smoke
		detector heads installed on bases).
		Remove field wiring and install a 4.3K Ω resistor at the papel to verify the SUD Pro Control Board in
		functioning property
		 Latching requires Reset to clear
7	Input Circuit 3 open	 Verify correct value EOL resistor (20K Ω - Red.
		Black, Orange)
Ч	Input Circuit 4 open	• Measure field wiring resistance = 100Ω or less.
5	Input Circuit 5 open	 Verify all field devices are installed properly.
		• Remove field wiring and install a 20K Ω resistor at
		the panel to verify the SHP Pro Control Board is
		functioning properly.
		Latching, requires Reset to clear
1.	Detection Circuit 1 activated	• If device was not the cause of the activation,
_	Detection Circuit 2 activated	Check field wiring for shorts, or a faulty device.
<i>2</i> .		
Э.	Input Circuit 3 activated	 Input 1, 2, & 3 latching, requires Reset to clear
Ч.	Input Circuit 4 activated	 If Application 3, input 4 latching, requires Reset to slope.
5.	Input Circuit 5 activated	clear
Б	Audible Circuit 1 open	 Verify correct value EOL resistor (1.2K Ω - Brown,
_		Red, Red)
1	Audible Circuit 2 open	 Measure field wiring resistance = reference section 4.2
	Audible Circuit 3 open	 Verify all field devices are installed properly
D NOTE: The number 6 is		 Remove field wiring and install a 1 2K O resistor
often confused with the		at the panel to verify the SHP Pro Control Board is
letter " b ".		functioning properly.
9	Agent Release Circuit open	 Verify correct value EOL resistor (1.2K Ω - Brown,
_		Red, Red)
		 Measure field wiring resistance = reference
		section 4.2.
		 Verify all field devices are installed properly.
		Is Agent Disconnect Switch in DISCONNECTED
		mode?
		• Remove field withing and install a 1.5K Ω resistor at the papel to verify the SHP Pro Control Board is
		functioning properly
		 Latching, requires Reset to clear
11	Solenoid Circuit open	Measure field wiring resistance = reference
	• -	section 4.2.
		• Verify all field devices are installed properly.
		• Remove field wiring and install a 200K Ω , 5 watt
		resistor (p/n 02-2686) at the panel to simulate the
		solenoid and verify the SHP Pro Control Board is
		iunctioning property.
		► Latoning, requires reset to clear

Diagnostic Display			
Code	Description		Tips For Resolution
Б.	Audible Circuit 1 shorted	•	Check field wiring for short circuit or a faulty device
٦.	Audible Circuit 2 shorted	•	If panel has released agent, replace GCA.
8.	Audible Circuit 3 shorted	•	Verify EOL resistor value is correct.
9	Agent Release Circuit shorted OR		
2.	Actuator Circuit is Open		
11.	Solenoid Circuit shorted		
Я	Valid abort	٠	Normal Operation. No resolution required.
Ь	Abort premature	٠	Normal Operation. No resolution required.
NOTE : The letter "b" is often confused with the number 6 .			
Ь.	Abort late	+	Normal Operation. No resolution required.
E	2nd Alarm active on input 1 if using	٠	Input Circuit 1 active. Verify cause from input
-	430 Ω bases. Always activates on		device and not a short.
	first alarmif using 220 Ω or 0 Ω	•	Latching, requires Reset to clear
	bases.		
Г	2nd Alarm active on input 2 if using	•	Input Circuit 2 active. Verify cause from input
<u> </u>	430 Ω bases. Always activates on		device and not a short.
	first alarmif using 220 Ω or 0 Ω	•	Latching, requires Reset to clear
	bases.		5 , 1
Ч	Outputs disabled	•	Check Switch 3 (Enable/Disable) to see if it is in
U			the Disable position
E	Missing battery	+	Verify batteries are installed properly
		•	Verify each battery has approximately the same
			voltage
		•	Remove battery wiring harness and replace with a
			4.3K Ω , 1/4 wall resistor (same as detection EOL, 10-2318) and verify charger voltage
C C	Low Voltage (<19 VDC)	•	Reference Section 5.6 Low Power Conditions
F		Å	Check AC and DC power input
	Intelli-EET lost	•	Reset panel if trouble does not clear replace
п		ľ	SHP Pro Control Board
		•	Latching, requires Reset to clear
н	5V Reference / ADC failure	•	Reset panel, if trouble does not clear, replace
<i>/</i> /.			SHP Pro Control Board
0	Ground Fault	+	Remove field wiring from terminal strips to isolate
			the wire with the ground fault. When panel clears,
			troubleshoot wire.
٥	Resettable AUX power missing	•	Remove field wiring from Resettable AUX circuit
			and check field wiring for short
	Continuous AUX power missing	•	Remove field wiring from Continuous AUX circuit
<i>.</i>		Ľ	and check fuse F4. If fuse is blown, replace fuse
			and check field wiring for short.
P	Reset	•	Normal Operation. No resolution required.
-	AC Brown-out (<85% AC)	•	Measure primary voltage to transformer and
			secondary voltage off transformer.

This page intentionally left blank

APPENDIX 1 BATTERY CALCULATIONS

The SHP Pro is designed for use with batteries up to 40 AH in capacity. Each battery pack contains two 12V batteries which can be installed in the SHP Pro enclosure. Battery back-up duration must be extended for sprinkler supervisory systems. Minimum battery capacity must exceed (by more than 10%) normal operation power followed by alarm operation power for these durations:

Operation Type	Normal Operation	Alarm Operation
Local & Sprinkler Supervisory	90 hours (FM only)	5 minutes
Remote Station	60 hours	5 minutes
Local Operation Only	24 hours	5 minutes

Each battery pack's maximum current consumption for normal operation is:

---Max Normal Operation Current---

<u>Battery Pack</u>	<u>Description</u>	24 hour back-up	90 hour back-up (FM Only)
10-2190-1	7 Amp-Hour Battery Pack	0.260 A	Not applicable
10-2190-2	18 Amp-Hour Battery Pack	0.590 A	0.171 A
<u>Battery</u> 02-3468* A02-0252*	12V, 33 Amp-Hour Battery 12V, 40 Amp-Hour Battery	1.106 A 1.346 A	0.295 A 0.359 A

NOTE: SHP Pro requires 2 12V batteries for operation.

"Total normal current" and "total alarm current" can each be calculated as the sum of:

- A.) SHP Pro controller current
- B.) CRM4 current for relays activated while in alarm
- C.) Output current to activated indicating devices.
- D.) Auxiliary current from Aux Power Out circuit.

Module Type:	Module Current Consumption
10-2452 Controller	0.135 Amps
10-2450 Class-A Module	0.000 Amps
10-2448 Class-A Module	0.000 Amps
10-2204 CRM4 Module	0.000 Amps (0.010A each relay while active)
Normal operation power (in Amp-Hours)	= (total normal current) X [24, 60, or 90 hours (FM Only)
Alarm operation power	= (total alarm current) X (0.0833 hours).

The selected battery capacity must exceed the sum of the Normal and Alarm power plus a 20% battery power derating safety margin to ensure adequate system voltages are maintained. If using an uninterruptable power supply that supplies power in excess of the above time durations; NFPA 72 allows lesser amounts of system internal battery capacity.

P

NOTE: The SHP Pro 0.135 Amp current includes power to activate the normally energized trouble relay and power for the maximum number of two wire detectors. The CRM4's 0.010 Amps alarm current per relay is for the activated relays.

A battery calculation form that illustrates a typical battery calculation example is shown in following pages.

This page intentionally left blank



**- Total alarm current shall not exceed 4.135 amps.

SHP Pro Battery Calculation Form

Example



"System Operation Posting" on the next page is offered without headers or footers so distributor may make copies to post adjacent to control equipment.

"System Operation Posting" P/N 02-11060 REV 2

P/N 02-11060 REV 2 OPERATING INSTRUCTIONS FIKE 10-063 SHP PRO CONTROL SYSTEM

OPERATIONAL CONDITIONS -

<u>SYS</u>	<u>TEM STATUS</u>	LED's ON	AUDIBLE STATUS
Norr	nal Standby:	AC Normal Green LED	All audibles off
Syst	em Trouble:	Trouble Yellow LED	Local piezo on, Trouble audible(s) on
Syst	em Alarm:	Alarm Red LED	Local piezo pulses, Alarm audible(s) on
Pre-	discharge:	Alarm Red LED	Local piezo pulses, Pre-discharge audible(s) on In sprinkler mode, Alarm audible(s) also on
Rele	ase:	Alarm Red LED	Local piezo pulses, Release audible(s) on In sprinkler mode, pre-discharge and alarm audibles are on in place of release audible.
Abor	t:	Abort Yellow LED	Local piezo on, Trouble audible(s) on Delays release initiated by detection scheme.
To S	ilence Panel:	Press SILENCE button	Silences audibles & piezo. Changes flashing LED's to steady. If held for 3 seconds it will toggle the panel between current history, last 20 events, and A/D conversion.
To F	Reset Panel:	Press RESET button	Resets system including turning off outputs, interrupting resettable power. Momentarily activates piezo, all LED's, and trouble relay. Displays panel option number. Restores system to normal state.
To D	bisable Releasin	g and Audible Circuits:	
		Flip Enable/Disable Switch (SW	 Panel still operates normally. Audibles and releasing or solenoid circuits will not activate in this state.
	CAUTION:	Remove AC and battery power b	pefore servicing equipment.
P	NOTE:	The ABORT switch delays relea by activation of the Manual Rele Manual for functionality of differe	ses initiated by automatic detection schemes. Releases initiated base input circuit OVERRIDES the abort switch. See Operation ent abort types.
F	Refer to System	Service Label attached to insid	le of door for listing of Diagnostic Codes.
IN C	ASE OF TROU	IBLE CONTACT:	
	<u> </u>		· · · · · · · · · · · · · · · · · · ·
		······································	
	Phone #		
		OR	
		Customer Service Departr Fike Corporation +1.816.229.3405	ment
Refe	er to Fike Install	ation, Operation and Maintena	nce Manual #06-297
Frar	me this sheet ar	nd place adjacent to control equ	upment.

This page intentionally left blank
INDEX

0

Α

В

Battery	[,] 4,	2, 9	9, 11,	13,	19,	21,	22,	30,	31,	33,	38,	52,	61,	63,
65														
Battery	Cal	cula	tions											4

С

Class A	2, 9, 11, 12	2, 23, 26,	27, 28,	35, 37,	38, 40, 41
Class B		2	12, 23,	26, 28,	35, 40, 41
CRM4	9	9, 11, 12,	28, 33,	37, 38,	42, 61, 63
Cross-Zone			3, 9, 14,	16, 18,	23, 38, 54

D

DACT	
Detection2, 3, 7, 14, 15, 16, 17, 1	8, 21, 23, 24, 27, 35, 40, 45,
52, 54, 65	
Diagnostics Codes	

Ε

Enclosures.. 3, 9, 11, 13, 22, 29, 30, 31, 32, 33, 34, 35, 36, 61

F

Fuse	.3,	21,	22,	25,	33
------	-----	-----	-----	-----	----

G

GCA		33, 38, 57
Graphic14	4,	19, 20, 23

I

Installation 3, 1, 5, 9, 17, 29, 30, 31, 32, 35, 38, 43, 44, 57, 65

L

LED3, 2, 3, 9, 14,	16, 17, 20	23, 38,	50, 51,	52, 53,	54, 57,
65					
Linear Heat Detection	on			23	, 24, 27

Μ

Maintenance	2, 5	7,	65
-------------	------	----	----

Ν

NAC		2	2, 9	, 38
Non Power-Limited	2,	22,	28	, 33

Ρ

Piezo	
Power Calculations	
Power Limited	
Power-Limited	. 2, 3, 9, 22, 23, 25, 26, 27, 28, 33
Pre-Action	
Pre-Discharge	

R

Relays 9, 11, 12, 19, 2	1, 22, 28, 33, 38,	42, 51, 52, 54,	61, 63,
65			
Release 1, 2, 3, 4, 8,	9, 16, 18, 19, 20,	21, 23, 26, 27,	28, 35,
38, 41, 45, 46, 50, 5	1, 54, 57, 65		
Reset		, 50, 51, 52, 53,	54, 65
Reset Switch			

S

Sequential	
Silence	
Silencing	
Solenoid3, 5, 7, 9, 26, 27, 28,	35, 41, 49, 51, 52, 54, 57, 65
Specifications	i, 3, 14, 22, 29, 32, 38
Sprinkler	, 9, 11, 26, 28, 47, 48, 61, 65
Supervisory3, 2, 3, 7, 9, 19,	23, 27, 33, 38, 51, 52, 54, 61
System Check Out	

Т

Transformer			11,	21, 22,	29, 33,	34, 38
Trouble	3, 2, 3	, 9, 22,	33, 38,	50, 51,	52, 54,	61, 65
Trouble Codes						53

W

Waterflow	8, 9, 19, 23, 27, 51
Wiring 3, 2, 3, 5, 8, 9, 13, 19, 22, 23, 25,	26, 27, 28, 33, 35,
38, 39, 40, 41, 50, 57	
Chassis	
Class A	
Field	
Initiators	
Resistance Chart	

This page intentionally left blank



704 South 10th Street P.O. Box 610 Blue Springs, Missouri 64013 U.S.A. +1.800.979.FIKE (3453) Fax: +1.816.229.0314 http://www.fike.com